



# Deployment guide for SharePoint Foundation 2010

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## Abstract

This book provides deployment instructions for Microsoft SharePoint Foundation 2010. The audiences for this book include application specialists, line-of-business application specialists, and IT administrators who are ready to deploy SharePoint Foundation 2010 and want installation steps.

The content in this book is a copy of selected content in the [SharePoint Foundation 2010 technical library](http://go.microsoft.com/fwlink/?LinkId=181463) (<http://go.microsoft.com/fwlink/?LinkId=181463>) as of the publication. For the most current content, see the technical library on the Web.

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## Getting help

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Every effort has been made to ensure the accuracy of this book. This content is also available online in the Office System TechNet Library, so if you run into problems you can check for updates at:

*<http://technet.microsoft.com/office>*

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*<http://support.microsoft.com>*

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# Deployment for SharePoint Foundation 2010

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Welcome to the deployment guide for Microsoft SharePoint Foundation 2010. The articles in this guide help you prepare to install, install, and configure SharePoint Foundation 2010. The deployment guide includes information about deployment scenarios, step-by-step installation instructions, and post-installation configuration steps. It also describes how to upgrade to SharePoint Foundation 2010.

Before installing SharePoint Foundation 2010, be sure you have reviewed the information in [Planning and architecture for SharePoint Foundation 2010](http://technet.microsoft.com/library/ab2bedd4-d12b-4825-9c10-1c5e4079e1c6(Office.14).aspx) ([http://technet.microsoft.com/library/ab2bedd4-d12b-4825-9c10-1c5e4079e1c6\(Office.14\).aspx](http://technet.microsoft.com/library/ab2bedd4-d12b-4825-9c10-1c5e4079e1c6(Office.14).aspx)).

For a graphical overview of the deployment process, download the SharePoint 2010 Products Deployment model from the [Technical diagrams \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx) ([http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf\(Office.14\).aspx](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx)) article.

In this section:

- [Deployment overview \(SharePoint Foundation 2010\)](#)  
This article provides information about deploying SharePoint Foundation 2010. The goal of this article is to provide information that can help you and your teams make fundamental decisions about deploying SharePoint Foundation 2010-based solutions in your organization.
- [Install prerequisites from a network share \(SharePoint Foundation 2010\)](#)  
This article explains how to use PrerequisiteInstaller.exe to install prerequisites from a network share. Doing so can result in a more consistent deployment.
- [Prepare for deployment \(SharePoint Foundation 2010\)](#)  
This section provides essential steps to take before you deploy Microsoft SharePoint Foundation 2010.
- [Deployment scenarios \(SharePoint Foundation 2010\)](#)  
Follow the steps in this section to deploy a single server or server farm with SharePoint Foundation 2010, or to deploy the Office Web Apps for use with SharePoint Foundation 2010.
- [Initial configuration \(SharePoint Foundation 2010\)](#)  
Follow the steps in this section to install language packs, configure farm settings and services, and create site collections.
- [Deploy customizations - overview \(SharePoint Foundation 2010\)](#)  
The articles in this section describe how to deploy site elements that have been customized by developers or Web designers in a SharePoint Foundation 2010 environment.
- [Upgrading to SharePoint Foundation 2010](#)  
Follow the steps in the upgrade guide to plan, prepare, and perform an upgrade to SharePoint Foundation 2010.



**Note:**

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If you plan to use Office Web Apps, you must install and configure them to work with SharePoint 2010 Products. For more information, see [Deploy Office Web Apps \(Installed on SharePoint 2010 Products\)](#).

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# Deployment overview (SharePoint Foundation 2010)

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This article provides information about deploying Microsoft SharePoint Foundation 2010. The goal of this article is to provide information that can help you and your teams make fundamental decisions about deploying Microsoft SharePoint Foundation-based solutions in your organization.

A SharePoint Foundation solution can vary in complexity and size, depending on your business requirements.

The ideas presented in this article apply equally to all businesses—at the end of the deployment process you and your team want to have a SharePoint Foundation-based solution up and running.

For a visual overview, see the SharePoint 2010 Products Deployment model in the [Technical diagrams \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx) ([http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf\(Office.14\).aspx](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx)) topic.

In this article:

- [Concepts](http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#concepts) (<http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#concepts>)
- [Farm topologies](http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#topologies) (<http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#topologies>)
- [Applying the information technology lifecycle to SharePoint 2010 Products](http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#lifecycle) (<http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#lifecycle>)
- [Deployment scenarios](http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#scenarios) (<http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#scenarios>)
- [Deploying a pilot or production farm](http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#pilotorproduction) (<http://technet.microsoft.com/library/a9c1a1df-db79-40aa-8cd9-2fe7e898d517.aspx#pilotorproduction>)

## Concepts

The logical consequence of SharePoint Foundation's flexibility and richness can be a high degree of complexity around installing and configuring SharePoint Foundation correctly. A fundamental understanding of the following key elements in a SharePoint Foundation environment is required in order to properly deploy and support SharePoint 2010 Products:

- Server farms
- Web applications
- Content databases
- Site collections
- Sites

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In addition to understanding the elements of a SharePoint Foundation environment and how they need to be configured for your solution, there are many things that you need to consider before putting your solution into a production environment, such as topology, server performance, server capacity, and post-setup configuration.

The only way to ensure a successful SharePoint Foundation solution deployment, with minimal risk, in a production environment is through extensive and thorough planning.

## Farm topologies

Farm topologies are described in either in terms of size or in terms of tiers, that is, in terms of physical or logical architecture. Both descriptions are valid; it is really a matter of how your IT group categorizes servers in your organization. For more information, see [Technical diagrams \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx) ([http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf\(Office.14\).aspx](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx)).

The important thing to realize is that there is no such thing as a typical farm, although some topologies may resemble each other based on the number of servers and role distribution.

### Size

This topology description uses the number of servers in a server farm to label farms as small, medium, and large. The terminology is a little misleading because small, medium, and large does not really describe capacity and scale. For example, a medium farm may seem large to a small business, but may seem small to a large enterprise.

- **Small:** A small server farm typically consists of a database server and one or more front-end Web servers. In a small farm, the front-end servers are configured as Web servers and one functions as an application servers. The application server hosts the Central Administration site and handles other farm-related tasks.
- **Medium:** A medium server farm typically consists of a database server, an application server, and two front-end Web servers. In this configuration, the application server hosts the Central Administration site and farm services, and the front-end Web servers handle search queries and client requests.
- **Large:** A large server farm typically consists of two or more clustered or mirrored database servers, several load-balanced front-end Web servers, and two or more application servers. In this configuration, each of the application servers is configured to support specific service applications or service application components. An example is the crawl component of search. The search query components are hosted on one or more servers in the Web tier. For more information, see the "Tiers" section in this article.

### Tiers

This topology description uses tiers as a model for logically arranging farm servers according to the components that they host. A SharePoint Foundation farm is deployed on one, two, or three tiers.

- **Single tier:** In a single-tier deployment, SharePoint Foundation and the database server are installed on one computer.

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- **Two tiers:** In a two-tier deployment, SharePoint Foundation components and the database are installed on separate servers. This type of deployment maps to what is called a small farm. The front-end Web servers are on the first tier and the database server is on the second tier. In the computer industry, the first tier is commonly referred to as the Web tier or presentation layer; the database server is commonly referred to as the database tier or database back-end in two- and three-tier topologies.
  - **Three tiers:** In a three-tier deployment, the front-end Web servers are on the first tier, the application servers are on the second tier, which is commonly referred to as the application tier, and the database server is on the third tier. A three-tier deployment is used for medium and large farms.

## Applying the information technology lifecycle to SharePoint 2010 Products

Installing SharePoint Foundation on one or more servers is one aspect of a much broader and lengthy process. This process is the information technology (IT) lifecycle, which consists of the following stages: evaluate, plan, deploy, and operate.

### Evaluate

During the evaluation stage, the objective is two-fold: to understand SharePoint Foundation and to evaluate SharePoint Foundation in the context of how it can address your business needs. The first level of product evaluation can be done by installing all of the product components on a single server. You do a more extensive product evaluation by a proof-of-concept deployment.

A proof-of-concept deployment on a single server or on a small farm enables you to expand the scope of your evaluation. In this deployment, non-IT staff is added to the evaluation team, which provides a broader view of how SharePoint Foundation features might be actually be used in the organization. The benefit of a proof-of-concept deployment is that you can gather initial data that can be used in the planning stage. This data—such as page views, user behavior patterns, and server resource consumption—also enables you to start building a benchmark for sizing your farm. A proof of concept is also good when evaluating service applications and determining what feature sets you are going to offer your end users.

It is important during the proof-of-concept phase that you understand the unique characteristics and functionality of these features because this understanding will help you define your overall topology. Be aware that a proof-of-concept deployment requires additional resources and extends the amount of time required to put SharePoint Foundation into production.

Virtualization provides a good platform for evaluating SharePoint Foundation because it enables you to be flexible and easily roll back to previous states before committing on a proposal.

### Plan

During the planning stage, you are either focusing on designing a solution that you can implement with SharePoint Foundation or focusing on the infrastructure required to implement and support a solution.

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Other considerations can include the geographic placement of your server farm, either in respect to its proximity to line-of-business applications or proximity to the largest concentration of consumers of line-of-business applications.

When you finish the planning stage you should have:

- An infrastructure design to support your solution
- A detailed document that describes how you will implement the solution
- A plan for testing and validating the solution
- A site and solution architecture
- An understanding of the monitoring and sustained engineering requirements to support the solution
- A record of how the solution will be governed
- An understanding of how the solution will be messaged to the consumer to drive adoption of the solution



**Tip:**

Resource and time issues may pressure you to be less rigorous during the planning stage. We recommend that you try to be as diligent as possible because missed or lightly touched planning elements can resurface as significant issues after you are in production. These issues can cause a lot of extra work, consume unbudgeted resources, and potentially take away from the success of your SharePoint Foundation.

## Deploy

During the deployment stage, you install SharePoint Foundation, configure your environment, deploy solution elements, and then start creating content. Depending on your environment and your solution, you may have several configuration steps to perform for your servers, for your services, and for your sites.

## Operate

After deployment you move to the operations stage. During this stage, you are focused on the day-to-day monitoring, maintenance, and refining of your environment.

## Deployment scenarios

There are basically two deployment scenarios with variations: single-server and multiple-server.

### Single server

A single-server deployment is well-suited for SharePoint Foundation evaluation and a proof of concept. However, depending on the size of your organization and potential complexity, you should consider using a multiple server deployment for a proof of concept. By doing so, you can establish a baseline of how the logical architecture will be defined. A common practice is to leverage virtualization to support replication of what the final physical topology will be, in addition to the underlying logical architecture.



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In a single-server deployment, SharePoint Foundation and all its components, including the database, are installed on one server. You can install SharePoint Foundation and use the built-in database (SQL Server Express) or install the full version of SQL Server on the server before you install SharePoint Foundation.



**Note:**

Single-server deployments are commonly used for development environments.



**Note:**

If you intend to use real content during a proof of concept and migrate it to either a pilot or production environment we recommend that you use the full version of SQL Server in order to facilitate an easier database migration.

## Multiple-server

A multiple-server deployment is best suited for proof-of-concept, pilot (pre-production), and production deployments.

We recommend creating a farm where SharePoint Foundation and its components are deployed across three tiers (a medium farm). This approach provides the most flexibility for scaling your farm and making adjustments to achieve performance gains. Farm servers are distributed as follows:

Web tier: Two load-balanced Web servers to handle client requests

Application tier: One server to host Central Administration and service applications

Database tier: One SQL Server database server

## Deploying a pilot or production farm

At this stage, you have most of the information you need to put your SharePoint Foundation solution in production. If you have the resourced and time, we recommend that you deploy a pilot farm first. As in the case of a proof of concept, virtualization can be leveraged for deploying a pilot farm.

### Pilot deployment

A pilot, or pre-production, deployment provides numerous benefits. It enables you to:

- Validate the design of the supporting infrastructure.
- Validate performance and capacity assumptions.
- Validate the site and solution architecture.
- Validate solution usage assumptions.
- Gather additional data for establishing performance and capacity benchmarks.
- Assess the impact of any additional features or services that you might want to add to the production farm.

At the conclusion of the pilot deployment, you can use the data you collect to adjust the various components of the solution and the infrastructure.

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Additionally, the pilot deployment enables you determine which deployment approach is going to work best for your organization.

The "Production deployment" section provides more information about deployment approaches and the preparation work that must be done before you deploy the SharePoint Foundation farm.

## Production deployment

Before you install SharePoint Foundation and deploy the farm you have to ensure that the following preparatory work has been completed:

- Ensure that the servers you are using for the farm are capable of supporting your solution. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
- Obtain installable images for any software that cannot be installed by using the Microsoft SharePoint 2010 Products Preparation Tool to check the presence of prerequisites and install any programs that are required. This tool requires an Internet connection in order to download and configure prerequisites. We recommend that you create an installation point that you can use for install the prerequisites and future software updates on the farm.
- Ensure that the required Windows Server 2008 roles are added and configured for the farm.
- Ensure that SQL Server is correctly configured. In organizations that have separate database groups, you will have to work with the database team to ensure that the correct version of SQL Server is available and patched to the required level. In addition you will have to work with the team to use a DBA-created database that is configured for your farm.
- Ensure that all the required administrative and service accounts are created in accordance with best practice guidelines in terms of privilege level. For more information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).
- Determine your deployment approach, that is to say, through the SharePoint Central Administration user interface, using the command line, or by using cmdlets provided by Windows PowerShell for SharePoint 2010 Products.

After you have finishing preparing for deployment, use the steps in the following procedure as guidance for deploying your SharePoint farm.

### Install SharePoint 2010 Products

1. On the server that will host Central Administration, run the Microsoft SharePoint Products Preparation Tool. This tool checks for required products and updates. You can choose to install SharePoint Foundation prerequisites manually, or use the Microsoft SharePoint Products Preparation Tool to install the prerequisites. For more information, see [Installing software prerequisites](#) in "Determine hardware and software requirements (SharePoint Foundation 2010)."



**Note:**

Installing prerequisites manually gives you more flexibility in testing software co-existence and surface area risk mitigation.

2. Use the Microsoft SharePoint Products Preparation Tool to install SharePoint Foundation

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prerequisites on the other Web servers that will be part of the farm.

3. Run the Setup Wizard.
4. On the first front-end Web or application server, run Setup and create a new server farm by creating a new configuration database. In most cases, this server will host the SharePoint Foundation Central Administration Web site.
5. On additional front-end Web or application servers, run Setup and add the server to the farm.
6. Run the SharePoint Products Configuration Wizard to configure the farm. In SharePoint Foundation there are options to configure the farm automatically or manually. The manual option is ideal for situations where you have not determined which service applications are required or you if prefer a phased deployment and feature offering.
7. Configure service applications.
8. Configure data collection and health monitoring.
9. Deploy solutions.
10. Create a Web application.
11. Create a site collection.
12. Add content and configure a crawl schedule.
13. Configure e-mail and mobile accounts.
14. Add users.



**Note:**

The preceding steps are general in nature. Additional steps will be required to deploy SharePoint Foundation on the topology required for your organization's solution.

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# Install prerequisites from a network share (SharePoint Foundation 2010)

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This article describes how to install Microsoft SharePoint Foundation 2010 prerequisites from an offline shared network location using the prerequisite installer (PrerequisiteInstaller.exe) tool.

Installing prerequisites from an offline location is typically required when the servers on which you want to install Microsoft SharePoint Foundation are isolated from the Internet. Even if this is not the case, installing prerequisites from an offline central location enables you to ensure farm server consistency by installing a well-known and controlled set of images.



## Note:

The Microsoft SharePoint Products Preparation Tool is a user interface built on PrerequisiteInstaller.exe. The Microsoft SharePoint Products Preparation Tool accepts no user input.

In this article:

- [Installer switches and arguments](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#switcharg) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#switcharg>)
- [Download and consolidate the prerequisites on a file share](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#download) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#download>)
- [Install the prerequisites from the command line](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#installcmd) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#installcmd>)
- [Install the prerequisites using an arguments file](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#install) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#install>)
- [Known issues](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#issues) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#issues>)

## Installer switches and arguments

By using PrerequisiteInstaller.exe with switches and arguments, you have control over which versions of the required software are installed and the location from where they are installed.

PrerequisiteInstaller.exe accepts single or multiple switch and argument pairs. A switch identifies the prerequisite and the argument specifies the action and the location of the prerequisite.

A switch and argument pair uses the following format:

`/switch: <path>`

Where:

- `/switch` is a valid switch to identify a prerequisite. For example, `/NETFX35SP1:` is the switch for .NET Framework 3.5 Service Pack 1.

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- `<path>` is expressed as the path to a local file or the path to a file share, for example, "C:\foldername\dotnetfx35.exe " or "\\<servername>\<sharename>\dotnetfx35.exe".

Each switch and its argument are separated by a colon and a space. The argument is enclosed in quotes.

The switch and argument pairs can be passed to PrerequisiteInstaller.exe at the command prompt or read from an arguments text file.

## Download and consolidate the prerequisites on a file share

The process for downloading and consolidating prerequisites consists of the steps described in the following procedures.

### ▶ To identify prerequisites

1. Refer to the [Hardware and software requirements \(SharePoint Foundation 2010\)](#) article, which contains a list of all the required and optional software for SharePoint Foundation 2010. Additionally, this document provides the download location for each prerequisite that is available for download on the Internet.
2. From the command prompt, navigate to the root of the SharePoint Foundation 2010 installation media or folder location.
3. At the command prompt, type **PrerequisiteInstaller.exe /?**. This displays a list of the command-line options and switches and their corresponding arguments for installing a prerequisite from the command-line.



#### Tip:

To copy the contents of the active About window to the Clipboard, press CTRL+C.

4. Verify that you have an accurate list of the required software. Compare the output from the prerequisite installer to the list of prerequisites in Step 1.
5. Download the prerequisites to a computer that has Internet access.

Next, use the following procedure to create a central location that you can use for installing SharePoint Foundation prerequisites on all the farm servers.

### ▶ To consolidate prerequisites

1. Create a shared folder on a computer that can be accessed by the servers on which the prerequisites will be installed.
2. Copy the files that you downloaded from the Internet to the shared folder.

After you finish creating an accessible network location for the prerequisites, use the procedure in the following section to install SharePoint Foundation 2010 prerequisites on a server.

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## Install the prerequisites from the command line

You can install one or all of the prerequisites from the command line using the following procedure.

### ▶ To install from the command line

1. From the **Start** menu, open the Command Prompt window using **the Run as administrator** option.
2. Navigate to the SharePoint Foundation source directory.
3. Type the prerequisite program switch and corresponding argument for the program that you want to install, and then press ENTER, for example:

```
PrerequisiteInstaller.exe /SQLNcli: "\\o14-sf-admin\SP_prereqs\sqlncli.msi"
```



#### Note

To install more than one prerequisite, type in each switch and argument pair, taking care to separate each pair by a space, for example:

```
PrerequisiteInstaller.exe /SQLNcli: "\\o14-sf-admin\SP_prereqs\sqlncli.msi" /ChartControl: "\\o14-sf-admin\SP_prereqs\MSChart.exe" /W2K8SP2: "\\o14-sf-admin\SP_prereqs\Windows6.0-KB948465-X64.exe" /NETFX35SP1: "\\o14-sf-admin\SP_prereqs\dotnetfx35setup.exe"
```

## Install the prerequisites using an arguments file

You can install the prerequisites from the file share using an arguments file that consists of switches and corresponding path statements to the programs that need to be installed.

When you run PrerequisiteInstaller.exe with an arguments file, the following happens:

1. PrerequisiteInstaller.exe reads the argument file to verify that each switch is valid and that the program identified in the path statement exists.



#### Note:

If you specify an argument, PrerequisiteInstaller.exe ignores the arguments file and only processes the command-line argument.

2. PrerequisiteInstaller.exe scans the local system to determine if any of the prerequisites are already installed.
3. PrerequisiteInstaller.exe installs the programs in the argument file and returns one of the following exit codes:
  - 0 - Success
  - 1 – Another instance of this application is already running
  - 2 – Invalid command line parameter
  - 1001 – A pending restart blocks installation
  - 3010 – A restart is needed

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4. If a prerequisite requires a restart, a 3010 code is generated and you are prompted to click **Finish** to restart the system. The behavior of the installer after a 3010 code is different depending on which of the following conditions exist on the computer:
- If Windows Server 2008 Service Pack 2 (SP2) is already installed on the system, the 3010 code is generated and the remaining prerequisites are installed. After the last prerequisite is installed you are prompted to restart the system.
  - If Windows Server 2008 SP2 is installed on the system by PrerequisiteInstaller.exe, the installer generates the 3010 code, and the installation of the remaining prerequisites is skipped. You are prompted to restart the system.

After the system restarts, PrerequisiteInstaller.exe starts running again because the startup file that is created before the restart contains a /continue flag.

After a restart, PrerequisiteInstaller.exe ignores the arguments file and attempts to download and install the remaining prerequisites from the Internet. For more information, see [Known issues](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#issues) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#issues>).

Use the following procedure to create an arguments file.

#### To create an arguments file

1. Using a text editor, create a new text document named PrerequisiteInstaller.Arguments.txt. Save this file to the same location as PrerequisiteInstaller.exe. This file will contain the switches and arguments that are used when you run the Microsoft SharePoint Products Preparation Tool.
2. Using a text editor, edit PrerequisiteInstaller.Arguments.txt and provide file paths to the installation source for each prerequisite switch, using the following syntax:

*/switch: <path>*

Where */switch* is a valid switch and *<path>* is a path to the installation source.

The following example shows a complete arguments file that uses a file share as a common installation point.

```
/SQLNCLI: "\\o14-sf-admin\SP_prereqs\sqlncli.msi"  
/ChartControl: "\\o14-sf-admin\SP_prereqs\MSChart.exe"  
/W2K8SP2: "\\o14-sf-admin\SP_prereqs\Windows6.0-KB948465-X64.exe"  
/NETFX35SP1: "\\o14-sf-admin\SP_prereqs\dotnetfx35setup.exe"  
/PowerShell: "\\o14-sf-admin\SP_prereqs\Windows6.0-KB968930-x64.msu"  
/KB976394: "\\o14-sf-admin\SP_prereqs\Windows6.0-KB976394-x64.msu"  
/KB976462: "\\o14-sf-admin\SP_prereqs\Windows6.1-KB976462-v2-x64.msu"  
/IDFX: "\\o14-sf-admin\SP_prereqs\Windows6.0-KB974405-x64.msu"  
/Sync: "\\o14-sf-admin\SP_prereqs\Synchronization.msi"  
/FilterPack: "\\o14-sf-admin\SP_prereqs\FilterPackx64.exe"  
/ADOMD: "\\o14-sf-admin\SP_prereqs\SQLSERVER2008_ASADOMD10.msi"  
/ReportingServices: "\\o14-sf-admin\SP_prereqs\rsSharePoint.msi"  
/Speech: "\\o14-sf-admin\SP_prereqs\SpeechPlatformRuntime.msi"
```

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/SpeechLPK: "\\o14-sf-admin\SP\_prereqs\MSSpeech\_SR\_en-US\_TELE.msi"

 **Important:**

For readability, the switches and path statements in the preceding example are displayed on separate lines. When you actually create a PrerequisiteInstaller.Arguments.txt file do not use line breaks, but separate each switch and path statement by a space. For more information, see [Known issues](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#known) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#known>).

3. After you finish editing PrerequisiteInstaller.Arguments.txt, save your edits, and verify that this file is in the same directory as PrerequisiteInstaller.exe.

Use the following procedure to install the prerequisites.

 **To install the prerequisites using an arguments file**

1. Run PrerequisiteInstaller.exe from the command prompt to install the prerequisites.

 **Caution:**

If you are prompted to click **Finish** to restart the system, do not do so. Click **Cancel**. For more information, see [Known issues](http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#known) (<http://technet.microsoft.com/library/192a6fb6-bdf1-4feb-80f9-0f519ae534bd.aspx#known>) before proceeding to the next step.

2. Restart the system manually.
3. Run PrerequisiteInstaller.exe from the command prompt.

## Known issues

There are two known issues that affect the use of an arguments file:

- Using line breaks in the arguments file  
If you create an arguments file and use line breaks to put each switch and argument on a separate line, the prerequisite installer fails. The workaround is to enter all the switch and argument pairs on a single line.
- After a computer restart, the arguments file is not used  
After a restart, PrerequisiteInstaller.exe executes the startup command file, which contains a /continue flag. The /continue flag forces the installer to ignore the arguments file.  
You must prevent a restart by deleting the startup task in this command file using one of the following options:

### Option 1

- a. Run PrerequisiteInstaller.exe by double-clicking it. The program will display the first screen with the list of prerequisites.
- b. Click **Cancel**. PrerequisiteInstaller.exe deletes the startup task.

### Option 2



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- a. From the **Start** menu, choose **Run** and then type **regedit** to open the registry.
  - b. Open the key  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer\Shell  
Folders.
  - c. Check the value for "Common Startup". This shows the directory where the startup tasks are listed.
  - d. Close the registry editor without making any changes.
  - e. Navigate to the startup directory, which is usually  
<systemdir>\ProgramData\Microsoft\Windows\Start Menu\Programs\Startup.
  - f. Delete the startup task by deleting "SharePointServerPreparationToolStartup\_0FF1CE14-0000-0000-0000-000000000000.cmd".

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# Prepare for deployment (SharePoint Foundation 2010)

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This section provides essential steps to take before you deploy Microsoft SharePoint Foundation 2010.

In this section:

- [Hardware and software requirements \(SharePoint Foundation 2010\)](#)

This article provides the minimum hardware and software requirements necessary to install SharePoint Foundation 2010.

- [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#)

This article provides information about the administrative and service accounts that are required for an initial SharePoint Foundation 2010 deployment. Additional accounts and permissions are required to fully implement all aspects of a production farm.

- [Harden SQL Server for SharePoint environments \(SharePoint Foundation 2010\)](#)

This article describes how to harden Microsoft SQL Server for SharePoint Foundation 2010 environments.

## See Also

[Deployment overview \(SharePoint Foundation 2010\)](#)

[Deployment scenarios \(SharePoint Foundation 2010\)](#)

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# Hardware and software requirements (SharePoint Foundation 2010)

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This article lists the minimum hardware and software requirements to install and run Microsoft SharePoint Foundation 2010.



## **Important:**

If you contact Microsoft technical support about a production system that does not meet the minimum hardware specifications described in this document, support will be limited until the system is upgraded to the minimum requirements.

In this article:

- [Overview](#)
- [Hardware requirements](#)
- [Software requirements](#)
- [Installing software prerequisites](#)


## Overview

Microsoft SharePoint Foundation 2010 provides for a number of installation scenarios. Currently, these installations include single server with built-in database installations and single-server or multiple-server farm installations.

## Hardware requirements

The requirements in the following table apply to single server with built-in database installations and server farm installations that include a single server or multiple servers in the farm.

Component	Minimum requirement
Processor	64-bit, four cores
RAM	4 GB for development 8 GB for single server or evaluation 16 GB for multiple-server production  The following memory configurations are recommended for the computer running Microsoft SQL Server in a production environment.


Component	Minimum requirement											
	<table border="1"> <thead> <tr> <th>Total size of content databases</th> <th>Recommended RAM</th> </tr> </thead> <tbody> <tr> <td>Minimum for multiple server</td> <td>16 GB</td> </tr> <tr> <td>Up to 2 terabytes</td> <td>32 GB</td> </tr> <tr> <td>2 terabytes to a maximum of 5 terabytes</td> <td>64 GB</td> </tr> <tr> <td>5 terabytes to a maximum of 10 terabytes</td> <td>16 GB to 129 GB</td> </tr> </tbody> </table>		Total size of content databases	Recommended RAM	Minimum for multiple server	16 GB	Up to 2 terabytes	32 GB	2 terabytes to a maximum of 5 terabytes	64 GB	5 terabytes to a maximum of 10 terabytes	16 GB to 129 GB
Total size of content databases	Recommended RAM											
Minimum for multiple server	16 GB											
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5 terabytes to a maximum of 10 terabytes	16 GB to 129 GB											
Hard disk	<p> <b>Note:</b></p> <p>These values are higher than those recommended as the minimum values for SQL Server because of the distribution of data required for a SharePoint Products 2010 environment. For more information about SQL Server system requirements, see <a href="#">Hardware and Software Requirements for Installing SQL Server 2008</a> (<a href="http://go.microsoft.com/fwlink/?LinkId=129377">http://go.microsoft.com/fwlink/?LinkId=129377</a>).</p> <p>80 GB for system drive For production use, you need additional free disk space for day-to-day operations. Maintain twice as much free space as you have RAM for production environments. For more information, see <a href="#">Capacity management and sizing for SharePoint Server 2010</a> (<a href="http://technet.microsoft.com/library/031b0634-bf99-4c23-8ebf-9d58b6a8e6ce(Office.14).aspx">http://technet.microsoft.com/library/031b0634-bf99-4c23-8ebf-9d58b6a8e6ce(Office.14).aspx</a>).</p>											



## Software requirements



The requirements in the following tables apply to single server with built-in database installations and server farm installations that include a single server and multiple servers in the farm.

The Microsoft SharePoint Products Preparation Tool — which you access from the SharePoint Foundation 2010 Start page — can assist you in the installation of the software prerequisites for SharePoint Foundation 2010. Ensure that you have an Internet connection, because some of these prerequisites are installed from the Internet. For more information, see [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#), [Deploy a single server with a built-in database \(SharePoint Foundation 2010\)](#), and [Multiple servers for a three-tier farm \(SharePoint Foundation 2010\)](#).

## Minimum requirements

Environment	Minimum requirement
Database server in a farm	<p>One of the following:</p> <ul style="list-style-type: none"> <li> <p>The 64-bit edition of Microsoft SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2. From the <a href="#">Cumulative update package 2 for SQL Server 2008 Service Pack 1</a> (<a href="http://go.microsoft.com/fwlink/?LinkId=165962">http://go.microsoft.com/fwlink/?LinkId=165962</a>) page, click the <b>View and request hotfix downloads</b> link and follow the instructions. On the Hotfix Request page, download the SQL_Server_2008_SP1_Cumulative_Update_2 file. When you install Microsoft SQL Server 2008 SP1 on Windows Server 2008 R2, you might receive a compatibility warning. You can disregard this warning and continue with your installation.</p> <p> <b>Note:</b> We do not recommend that you use CU3 or CU4, but instead CU2, CU5, or a later CU than CU5.</p> </li> <li> <p>The 64-bit edition of Microsoft SQL Server 2005 with Service Pack 3 (SP3). From the <a href="#">Cumulative update package 3 for SQL Server 2005 Service Pack 3</a> (<a href="http://go.microsoft.com/fwlink/?LinkId=165748">http://go.microsoft.com/fwlink/?LinkId=165748</a>) page, click the <b>View and request hotfix downloads</b> link and follow the instructions. On the Hotfix Request page, download the SQL_Server_2005_SP3_Cumulative_Update_3 file.</p> </li> </ul>

Environment	Minimum requirement
Single server with built-in database	<ul style="list-style-type: none"> <li>• The 64-bit edition of Windows Server 2008 Standard, Enterprise, Data Center, or Web Server with SP2. If you are running Windows Server 2008 without SP2, the Microsoft SharePoint Products Preparation Tool installs Windows Server 2008 SP2 automatically. The 64-bit edition of Windows Server 2008 R2 Standard, Enterprise, Data Center, or Web Server is also supported.</li> </ul> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• You must download an update for Windows Server 2008 before you run Setup.</li> </ul> <ul style="list-style-type: none"> <li>• Web Server (IIS) role</li> <li>• Application Server role</li> <li>• Microsoft .NET Framework version 3.5 SP1</li> <li>• SQL Server 2008 Express with SP1</li> <li>• Microsoft Sync Framework Runtime v1.0 (x64)</li> <li>• Microsoft Filter Pack 2.0</li> <li>• Microsoft Chart Controls for the Microsoft .NET Framework 3.5</li> <li>• Windows PowerShell 2.0</li> <li>• SQL Server 2008 Native Client</li> <li>• Microsoft SQL Server 2008 Analysis Services ADOMD.NET</li> <li>• ADO.NET Data Services Update for .NET Framework 3.5 SP1</li> <li>• Windows Identity Foundation (WIF)</li> </ul> <p> <b>Note:</b></p> <p>If you have Microsoft "Geneva" Framework installed, you must uninstall it before you install the Windows Identity Foundation (WIF).</p>
Front-end Web servers and application servers in a farm	<ul style="list-style-type: none"> <li>• The 64-bit edition of Windows Server 2008 Standard, Enterprise, Data Center, or Web Server with SP2. If you are running Windows Server 2008 with SP1, the Microsoft SharePoint Products Preparation Tool installs Windows</li> </ul>

Environment	Minimum requirement
	<p>Server 2008 SP2 automatically. The 64-bit edition of Windows Server 2008 R2 Standard, Enterprise, Data Center, or Web Server is also supported.</p> <p> <b>Note</b></p> <ul style="list-style-type: none"> <li>• You must download an update for Windows Server 2008 before you run Setup.</li> <li>• Web Server (IIS) role</li> <li>• Application Server role</li> <li>• Microsoft .NET Framework version 3.5 SP1</li> <li>• Microsoft Sync Framework Runtime v1.0 (x64)</li> <li>• Microsoft Filter Pack 2.0</li> <li>• Microsoft Chart Controls for the Microsoft .NET Framework 3.5</li> <li>• Windows PowerShell 2.0</li> <li>• SQL Server 2008 Native Client</li> <li>• Microsoft SQL Server 2008 Analysis Services ADOMD.NET</li> <li>• ADO.NET Data Services Update for .NET Framework 3.5 SP1</li> <li>• Windows Identity Foundation (WIF)</li> </ul> <p> <b>Note:</b></p> <p>If you have Microsoft "Geneva" Framework installed, you must uninstall it before you install the Windows Identity Foundation (WIF).</p>
Client computer	<ul style="list-style-type: none"> <li>• A supported browser. For more information, see <a href="http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx">Plan browser support (SharePoint Foundation 2010)</a> (<a href="http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx">http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx</a>).</li> </ul>

**Optional software**

Environment	Optional software
Client computer	<ul style="list-style-type: none"> <li>• Microsoft Office 2010 client. For more information, see <a href="http://go.microsoft.com/fwlink/?LinkId=179358">Microsoft Office 2010 Beta</a> (<a href="http://go.microsoft.com/fwlink/?LinkId=179358">http://go.microsoft.com/fwlink/?LinkId=179358</a>).</li> <li>• Microsoft Silverlight 3</li> <li>• Windows 7 or Windows Vista. For more information, see <a href="http://go.microsoft.com/fwlink/?LinkId=164557">Setting Up the Development Environment for SharePoint Server</a> (<a href="http://go.microsoft.com/fwlink/?LinkId=164557">http://go.microsoft.com/fwlink/?LinkId=164557</a>).</li> </ul>

## Installing software prerequisites

To install Windows Server 2008 or Microsoft SQL Server, you can go to the Web sites listed in this section. You can install all other software prerequisites through the SharePoint Foundation Start page. Most of the software prerequisites are also available from Web sites listed in this section. The Web Server (IIS) role and the Application Server role can be enabled manually in Server Manager.

In scenarios where installing prerequisites directly from the Internet is not possible or desirable, you can install the prerequisites from a network share. For more information, see [Install prerequisites from a network share \(SharePoint Foundation 2010\)](#).

- [Microsoft SQL Server 2008 SP1](http://go.microsoft.com/fwlink/?LinkId=166490) (<http://go.microsoft.com/fwlink/?LinkId=166490>)
- [Cumulative update package 2 for SQL Server 2008 Service Pack 1](http://go.microsoft.com/fwlink/?LinkId=165962) (<http://go.microsoft.com/fwlink/?LinkId=165962>).
- [Microsoft SQL Server 2005 SP3](http://go.microsoft.com/fwlink/?LinkId=166496) (<http://go.microsoft.com/fwlink/?LinkId=166496>)
- [Cumulative update package 3 for SQL Server 2005 Service Pack 3](http://go.microsoft.com/fwlink/?LinkId=165748) (<http://go.microsoft.com/fwlink/?LinkId=165748>).
- [Microsoft Windows Server 2008 Standard SP2](http://go.microsoft.com/fwlink/?LinkId=166500) (<http://go.microsoft.com/fwlink/?LinkId=166500>)
- [Windows Server 2008 with SP 2 FIX: A hotfix that provides a method to support the token authentication without transport security or message encryption in WCF is available for the .NET Framework 3.5 SP1](http://go.microsoft.com/fwlink/?LinkId=160770) (<http://go.microsoft.com/fwlink/?LinkId=160770>).
- [Windows Server 2008 R2 FIX: A hotfix that provides a method to support the token authentication without transport security or message encryption in WCF is available for the .NET Framework 3.5 SP1](http://go.microsoft.com/fwlink/?LinkId=166231) (<http://go.microsoft.com/fwlink/?LinkId=166231>).
- [Microsoft .NET Framework 3.5 Service Pack 1](http://go.microsoft.com/fwlink/?LinkId=131037) (<http://go.microsoft.com/fwlink/?LinkId=131037>)
- [Microsoft SQL Server 2008 Express Edition Service Pack 1](http://go.microsoft.com/fwlink/?LinkId=166503) (<http://go.microsoft.com/fwlink/?LinkId=166503>)



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- [Windows Identity Framework for Windows Server 2008](http://go.microsoft.com/fwlink/?LinkID=160381)  
(<http://go.microsoft.com/fwlink/?LinkID=160381>)
  - [Windows Identity Framework for Windows Server 2008 R2](http://go.microsoft.com/fwlink/?LinkID=166363)  
(<http://go.microsoft.com/fwlink/?LinkID=166363>)
  - [Microsoft Sync Framework v1.0](http://go.microsoft.com/fwlink/?LinkID=141237&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=141237&clcid=0x409>)
  - [Microsoft Office 2010 Filter Packs](http://go.microsoft.com/fwlink/?LinkID=191851) (<http://go.microsoft.com/fwlink/?LinkID=191851>)
  - [Microsoft Chart Controls for Microsoft .NET Framework 3.5](http://go.microsoft.com/fwlink/?LinkID=141512)  
(<http://go.microsoft.com/fwlink/?LinkID=141512>)
  - [Windows PowerShell 2.0](http://go.microsoft.com/fwlink/?LinkID=161023) (<http://go.microsoft.com/fwlink/?LinkID=161023>)
  - [Microsoft SQL Server 2008 Native Client](http://go.microsoft.com/fwlink/?LinkID=166505) (<http://go.microsoft.com/fwlink/?LinkID=166505>)
  - [Microsoft SQL Server 2008 Analysis Services ADOMD.NET](http://go.microsoft.com/fwlink/?LinkID=130651)  
(<http://go.microsoft.com/fwlink/?LinkID=130651>)
  - [Microsoft Silverlight 3](http://go.microsoft.com/fwlink/?LinkID=166506) (<http://go.microsoft.com/fwlink/?LinkID=166506>)
  - [ADO.NET Data Services Update for .NET Framework 3.5 SP1](http://go.microsoft.com/fwlink/?LinkID=163519)  
(<http://go.microsoft.com/fwlink/?LinkID=163519>) for Windows Server 2008 SP2
  - [ADO.NET Data Services Update for .NET Framework 3.5 SP1](http://go.microsoft.com/fwlink/?LinkID=163524)  
(<http://go.microsoft.com/fwlink/?LinkID=163524>) for Windows Server 2008 R2 or Windows 7

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# Administrative and service accounts required for initial deployment (SharePoint Foundation 2010)

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This article provides information about the administrative and service accounts that are required for an initial Microsoft SharePoint Foundation 2010 deployment. Additional accounts and permissions are required to fully implement all aspects of a production farm.

## Required permissions

To deploy SharePoint Foundation 2010 on a server farm, you must provide credentials for several different accounts.

The following table describes the accounts that are used to install and configure SharePoint Foundation 2010.

Account	Purpose	Requirements
SQL Server service account	<p>The SQL Server service account is used to run SQL Server. It is the service account for the following SQL Server services:</p> <ul style="list-style-type: none"><li>• MSSQLSERVER</li><li>• SQLSERVERAGENT</li></ul> <p>If you do not use the default SQL Server instance, in the Windows Services console, these services will be shown as the following:</p> <ul style="list-style-type: none"><li>• MSSQL\$InstanceName</li><li>• SQLAgent\$InstanceName</li></ul>	<p>Use either a Local System account or a domain user account.</p> <p>If you plan to back up to or restore from an external resource, permissions to the external resource must be granted to the appropriate account. If you use a domain user account for the SQL Server service account, grant permissions to that domain user account. However, if you use the Network Service or the Local System account, grant permissions to the external resource to the machine account (domain_name\SQL_hostname\$).</p> <p>The instance name is arbitrary and was created when Microsoft SQL Server was installed.</p>
Setup user account	<p>The Setup user account is used to run the following:</p> <ul style="list-style-type: none"><li>• Setup</li></ul>	<ul style="list-style-type: none"><li>• Domain user account.</li><li>• Member of the Administrators group on each server on which</li></ul>

Account	Purpose	Requirements
	<ul style="list-style-type: none"> <li>SharePoint Products Configuration Wizard</li> </ul>	<p>Setup is run.</p> <ul style="list-style-type: none"> <li>SQL Server login on the computer that runs SQL Server.</li> <li>Member of the following SQL Server security roles: <ul style="list-style-type: none"> <li><b>securityadmin</b> fixed server role</li> <li><b>dbcreator</b> fixed server role</li> </ul> </li> </ul> <p>If you run Windows PowerShell cmdlets that affect a database, this account must be a member of the <b>db_owner</b> fixed database role for the database.</p>
Server farm account or database access account	<p>The server farm account is used to perform the following tasks:</p> <ul style="list-style-type: none"> <li>Configure and manage the server farm.</li> <li>Act as the application pool identity for the SharePoint Central Administration Web site.</li> <li>Run the Microsoft SharePoint Foundation Workflow Timer Service.</li> </ul>	<ul style="list-style-type: none"> <li>Domain user account.</li> </ul> <p>Additional permissions are automatically granted for the server farm account on Web servers and application servers that are joined to a server farm.</p> <p>The server farm account is automatically added as a SQL Server login on the computer that runs SQL Server. The account is added to the following SQL Server security roles:</p> <ul style="list-style-type: none"> <li><b>dbcreator</b> fixed server role</li> <li><b>securityadmin</b> fixed server role</li> <li><b>db_owner</b> fixed database role for all SharePoint databases in the server farm</li> </ul>

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# Harden SQL Server for SharePoint environments (SharePoint Foundation 2010)

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This article describes how to harden Microsoft SQL Server for Microsoft SharePoint 2010 Products environments.

In this article:

- [Summary of hardening recommendations](http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section1) (<http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section1>)
- [Configure a SQL Server instance to listen on a non-default port](http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section2) (<http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section2>)
- [Configure Windows Firewall to block default SQL Server listening ports](http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section3) (<http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section3>)
- [Configure Windows Firewall to open manually assigned ports](http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section4) (<http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section4>)
- [Configure a SQL client alias](http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section5) (<http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section5>)
- [Test the SQL client alias](http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section6) (<http://technet.microsoft.com/library/191b0a28-616d-4650-94a1-4b19f0a828d8.aspx#section6>)

## Summary of hardening recommendations

For secure server farm environments, the recommendation is to do the following:

- Block UDP port 1434.
- Configure named instances of SQL Server to listen on a nonstandard port (other than TCP port 1433 or UDP port 1434).
- For additional security, block TCP port 1433 and reassign the port that is used by the default instance to a different port.
- Configure SQL Server client aliases on all front-end Web servers and application servers in the server farm. After you block TCP port 1433 or UDP port 1434, SQL Server client aliases are necessary on all computers that communicate with the computer running SQL Server.

For more information about these recommendations, see [Plan security hardening \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/7deea288-47e2-4be2-9e22-4e0cbf79b162(Office.14).aspx) ([http://technet.microsoft.com/library/7deea288-47e2-4be2-9e22-4e0cbf79b162\(Office.14\).aspx](http://technet.microsoft.com/library/7deea288-47e2-4be2-9e22-4e0cbf79b162(Office.14).aspx)).

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# Configure a SQL Server instance to listen on a non-default port

Use SQL Server Configuration Manager to change the TCP port that is used by an instance of SQL Server.

1. On the computer running SQL Server, open SQL Server Configuration Manager.
2. In the left pane, expand **SQL Server Network Configuration**.
3. Click the corresponding entry for the instance that you are configuring. The default instance is listed as **Protocols for MSSQLSERVER**. Named instances will appear as **Protocols for named\_instance**.
4. In the right pane, right-click **TCP/IP**, and then click **Properties**.
5. Click the **IP Addresses** tab. For every IP address that is assigned to the computer running SQL Server, there is a corresponding entry on this tab. By default, SQL Server listens on all IP addresses that are assigned to the computer.
6. To globally change the port that the default instance is listening on, follow these steps:
  - a. For each IP address except **IPAll**, clear all values for both **TCP dynamic ports** and **TCP Port**.
  - b. For **IPAll**, clear the value for **TCP dynamic ports**. In the **TCP Port** field, enter the port that you want the instance of SQL Server to listen on. For example, enter 40000.
7. To globally change the port that a named instance is listening on, perform the following steps:
  - a. For each IP address including **IPAll**, clear all values for **TCP dynamic ports**. A value of 0 for this field indicates that SQL Server uses a dynamic TCP port for the IP address. A blank entry for this value means that SQL Server will not use a dynamic TCP port for the IP address.
  - b. For each IP address except **IPAll**, clear all values for **TCP Port**.
  - c. For **IPAll**, clear the value for **TCP dynamic ports**. In the **TCP Port** field, enter the port that you want the instance of SQL Server to listen on. For example, enter 40000.
8. Click **OK**. You will receive a message indicating that the change will not take effect until the SQL Server service is restarted. Click **OK**.
9. Close SQL Server Configuration Manager.
10. Restart the SQL Server service and confirm that the computer running SQL Server is listening on the port that you selected. You can confirm this by looking in the event viewer log after restarting the SQL Server service. Look for an information event similar to the following event:

Event Type:Information  
Event Source:MSSQL\$MSSQLSERVER  
Event Category:(2)  
Event ID:26022  
Date:3/6/2008  
Time:1:46:11 PM  
User:N/A

---

Computer:*computer\_name*

Description:

Server is listening on [ 'any' <ipv4>50000]

## Configure Windows Firewall to block default SQL Server listening ports

1. In **Control Panel**, open **Windows Firewall**. Click **Change settings** to open the **Windows Firewall Settings** dialog box
2. On the **General** tab, click **On**. Ensure that the **Don't allow exceptions** check box is cleared.
3. On the **Exceptions** tab, click **Add Port**.
4. In the **Add a Port** dialog box, enter a name for the port. For example, enter UDP-1434. Then, enter the port number. For example, enter 1434.
5. Click the appropriate option: **UDP** or **TCP**. For example, to block port 1434, click **UDP**. To block port 1433, click **TCP**.
6. Click **Change Scope** and ensure that the scope for this exception is set to **Any computer (including those on the Internet)**.
7. Click **OK**.
8. On the **Exceptions** tab, locate the exception you created. To block the port, clear the check box for this exception. By default, this check box is selected, which means that the port is open.

## Configure Windows Firewall to open manually assigned ports

1. Follow steps 1 through 7 in the previous procedure to create an exception for the port you manually assigned to an instance of SQL Server. For example, create an exception for TCP port 40000.
2. On the **Exceptions** tab, locate the exception that you created. Ensure that the check box for the exception is selected. By default, this check box is selected, which means that the port is open.



**Note:**

For more information about how to use Internet Protocol security (IPsec) to secure communication to and from your computer running SQL Server, see the Microsoft Knowledge Base article 233256: [How to Enable IPsec Traffic Through a Firewall](http://go.microsoft.com/fwlink/?LinkId=76142) (<http://go.microsoft.com/fwlink/?LinkId=76142>).

## Configure a SQL client alias

If you block UDP port 1434 or TCP port 1433 on the computer running SQL Server, you must create a SQL Server client alias on all other computers in the server farm. You can use SQL Server client components to create a SQL Server client alias for computers that connect to SQL Server.

- 
1. Run Setup for SQL Server on the target computer, and select the following client components to install:
    - a. **Connectivity Components**
    - b. **Management Tools**
  2. Open SQL Server Configuration Manager.
  3. In the left pane, click **SQL Native Client Configuration**.
  4. In the right pane, right-click **Aliases**, and select **New Alias**.
  5. In the **Alias** dialog box, enter a name for the alias and then enter the port number for the database instance. For example, enter `SharePoint_alias`.
  6. In the **Port No** field, enter the port number for the database instance. For example, enter 40000. Ensure that the protocol is set to TCP/IP.
  7. In the **Server** field, enter the name of the computer running SQL Server.
  8. Click **Apply**, and then click **OK**.

## Test the SQL client alias

Test connectivity to the computer running SQL Server by using Microsoft SQL Server Management Studio, which is available by installing SQL Server client components.

1. Open SQL Server Management Studio.
2. When you are prompted to enter a server name, enter the name of the alias that you created, and then click **Connect**. If the connection is successful, SQL Server Management Studio is populated with objects that correspond to the remote database.



**Note:**

To check connectivity to additional database instances from within SQL Server Management Studio, click **Connect**, and then click **Database Engine**.

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# Deployment scenarios (SharePoint Foundation 2010)

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This section describes how to deploy Microsoft SharePoint Foundation 2010 on one or more servers to create different topologies that you can use for testing and implementing Microsoft SharePoint Foundation 2010 solutions at different stages of the deployment life cycle.

In this section:

- [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#)  
This article describes how to install SharePoint Foundation 2010 on a single server. This deployment uses Microsoft SQL Server and can easily be scaled out to create two- and three-tier farm topologies.
- [Deploy a single server with a built-in database \(SharePoint Foundation 2010\)](#)  
This article describes how to install SharePoint Foundation 2010 on a single server. This deployment uses SQL Server Express and is typically used for evaluating SharePoint Foundation 2010.
- [Multiple servers for a three-tier farm \(SharePoint Foundation 2010\)](#)  
This article describes how to install SharePoint Foundation 2010 on multiple servers. This deployment uses Microsoft SQL Server and the resulting three-tier topology provides the foundation for implementing any solution.
- [Quick start: Deploy single server in an isolated Hyper-V environment \(SharePoint Foundation 2010\)](#)  
This article describes how to use Windows PowerShell to install SharePoint Foundation 2010 on a single server that uses either SQL Server Express or Microsoft SQL Server. Use the included Windows PowerShell code to quickly install SharePoint Foundation 2010 in an isolated Hyper-V environment that you can use for to evaluate SharePoint Foundation 2010.
- [Deploy by using DBA-created databases \(SharePoint Foundation 2010\)](#)  
This article describes how to deploy Microsoft SharePoint Foundation 2010 in a farm environment that uses DBA-created databases.
- [Deploy in a virtual environment \(SharePoint Foundation 2010\)](#)  
This article describes guidance for deploying a virtual environment.



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# Deploy a single server with SQL Server (SharePoint Foundation 2010)

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This article describes how to perform a clean installation of Microsoft SharePoint Foundation 2010 on a single server farm.

In this article:

- [Overview](#)
- [Before you begin](#)
- [Install SharePoint Foundation 2010](#)
- [Post-installation steps](#)

## Overview

When you install SharePoint Foundation 2010 on a single server farm, you can configure SharePoint Foundation 2010 to meet your specific needs. After Setup and the SharePoint Products Configuration Wizard have been completed, you will have installed binaries, configured security permissions, registry settings, the configuration database, and the content database, and installed the SharePoint Central Administration Web site. Next, you can choose to run the Farm Configuration Wizard to configure the farm, select the services that you want to use in the farm, and create the first site collection, or you can manually perform the farm configuration at your own pace.

A single server farm typically consists of one server that runs both Microsoft SQL Server and SharePoint Foundation 2010. You can deploy SharePoint Foundation 2010 in a single server farm environment if you are hosting only a few sites for a limited number of users. This configuration is also useful if you want to configure a farm to meet your needs first, and then add servers to the farm at a later stage.



### Note:

This guide does not explain how to install SharePoint Foundation 2010 in a multiple server farm environment or how to upgrade from previous releases of SharePoint Foundation. For more information, see [Multiple servers for a three-tier farm \(SharePoint Foundation 2010\)](#). For more information about upgrade, see [Upgrading to SharePoint Foundation 2010](#).

## Before you begin

Before you begin deployment, do the following:

- Ensure that you are familiar with the operating-system guidelines described in [Performance Tuning Guidelines for Windows Server 2008](#) ([http://www.microsoft.com/whdc/system/sysperf/Perf\\_tun\\_srv.mspx](http://www.microsoft.com/whdc/system/sysperf/Perf_tun_srv.mspx)) and [Performance Tuning Guidelines for Windows Server 2008 R2](#) ([http://www.microsoft.com/whdc/system/sysperf/Perf\\_tun\\_srv-R2.mspx](http://www.microsoft.com/whdc/system/sysperf/Perf_tun_srv-R2.mspx)).

- 
- Ensure that you have met all hardware and software requirements. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
  - Ensure that you perform a clean installation of SharePoint Foundation 2010. You cannot install the RTM version of SharePoint Foundation 2010 without first removing the beta version of SharePoint Foundation 2010.
  - Ensure that you are prepared to set up the required accounts with appropriate permissions, as described in [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).



**Note:**

As a security best practice, we recommend that you install SharePoint Foundation 2010 by using least-privilege administration.

- Ensure that you have decided which services to use for your Web application, as described in [Configure services \(SharePoint Foundation 2010\)](#).

## Install SharePoint Foundation 2010

To install and configure SharePoint Foundation 2010, follow these steps:

1. Run the Microsoft SharePoint Products Preparation Tool, which installs all required prerequisites to use SharePoint Foundation 2010.
2. Run Setup, which installs binaries, configures security permissions, and sets registry settings for Microsoft SharePoint Foundation.
3. Run SharePoint Products Configuration Wizard, which installs and configures the configuration database, the content database, and installs the SharePoint Central Administration Web site.
4. Configure browser settings.
5. Run the Farm Configuration Wizard, which configures the farm, creates the first site collection, and selects the services that you want to use in the farm.
6. Perform post-installation steps.



**Important:**

To complete the following procedures, you must be a member of the Administrators group on the local computer.

## Run the Microsoft SharePoint Products Preparation Tool

Use the following procedure to install software prerequisites for SharePoint Foundation 2010.

**To run the Microsoft SharePoint Products Preparation Tool**

- 
1. Insert your SharePoint Foundation 2010 installation disc.
  2. On the SharePoint Foundation 2010 Start page, click **Install software prerequisites**.



**Note:**

Because the preparation tool downloads components from the Microsoft Download Center, you must have Internet access on the computer on which you are installing Microsoft SharePoint Foundation.

3. On the Welcome to the Microsoft SharePoint Products Preparation Tool page, click **Next**.
4. On the License Terms for software product page, review the terms, select the **I accept the terms of the License Agreement(s)** check box, and then click **Next**.
5. On the Installation Complete page, click **Finish**.

## Run Setup

The following procedure installs binaries, configures security permissions, and sets registry settings for SharePoint Foundation 2010.

### To run Setup

1. On the SharePoint Foundation 2010 Start page, click **Install SharePoint Foundation**.
2. On the Read the Microsoft Software License Terms page, review the terms, select the **I accept the terms of this agreement** check box, and then click **Continue**.
3. On the Choose the installation you want page, click **Server farm**.
4. On the **Server Type** tab, click **Complete**.
5. Optional: To install SharePoint Foundation 2010 at a custom location, click the **Data Location** tab, and then either type the location or click **Browse** to find the location.
6. Click **Install Now**.
7. When Setup finishes, click **Close**.



**Note:**

If Setup fails, check the TEMP folder of the user who ran Setup. Ensure that you are logged in as the user who ran Setup, and then type **%temp%** in the location bar in Windows Explorer. If the path **%temp%** resolves to a location that ends in a "1" or "2", you will need to navigate up one level to view the log files. The log file name is Microsoft SharePoint Foundation 2010 Setup (<timestamp>).



**Tip:**

To access the SharePoint Products Configuration Wizard, click **Start**, point to **All Programs**, and then click **Microsoft SharePoint 2010 Products**. If the **User Account Control** dialog box appears, click **Continue**.

## Run the SharePoint Products Configuration Wizard

The following procedure installs and configures the configuration database, the content database, and installs the SharePoint Central Administration Web site.

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 **To run the SharePoint Products Configuration Wizard**

1. On the Welcome to SharePoint Products page, click **Next**.
2. In the dialog box that notifies you that some services might need to be restarted during configuration, click **Yes**.
3. On the Connect to a server farm page, click **Create a new server farm**, and then click **Next**.
4. On the Specify Configuration Database Settings page, do the following:
  - a. In the **Database server** box, type the name of the computer that is running SQL Server.
  - b. In the **Database name** box, type a name for your configuration database, or use the default database name. The default name is SharePoint\_Config.
  - c. In the **Username** box, type the user name of the server farm account. Ensure that you type the user name in the format DOMAIN\user name.

 **Important:**

The server farm account is used to create and access your configuration database. It also acts as the application pool identity account for the SharePoint Central Administration application pool, and it is the account under which the Microsoft SharePoint Foundation Workflow Timer service runs. The SharePoint Products Configuration Wizard adds this account to the SQL Server Login accounts, the SQL Server **dbcreator** server role, and the SQL Server **securityadmin** server role. The user account that you specify as the service account must be a domain user account, but it does not need to be a member of any specific security group on your front-end Web servers or your database servers. We recommend that you follow the principle of least privilege and specify a user account that is not a member of the Administrators group on your front-end Web servers or your database servers.

- d. In the **Password** box, type the user password.
5. Click **Next**.
  6. On the Specify Farm Security Settings page, type a passphrase, and then click **Next**. Ensure that the passphrase meets the following criteria:
    - Contains at least eight characters
    - Contains at least three of the following four character groups:
    - English uppercase characters (from A through Z)
    - English lowercase characters (from a through z)
    - Numerals (from 0 through 9)
    - Nonalphabetic characters (such as !, \$, #, %)

 **Note:**

Although a passphrase is similar to a password, it is usually longer to enhance security. It is used to encrypt credentials of accounts that are registered in Microsoft SharePoint Foundation; for example, the Microsoft SharePoint

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Foundation system account that you provide when you run the SharePoint Products Configuration Wizard. Ensure that you remember the passphrase, because you must use it each time you add a server to the farm.

7. On the Configure SharePoint Central Administration Web Application page, do the following:
  - a. Either select the **Specify port number** check box and type the port number you want the SharePoint Central Administration Web application to use, or leave the **Specify port number** check box cleared if you want to use the default port number.
  - b. Click either **NTLM** or **Negotiate (Kerberos)**.
8. Click **Next**.
9. On the Completing the SharePoint Products Configuration Wizard page, review your configuration settings to verify that they are correct, and then click **Next**.



**Note:**

If you want to automatically create unique accounts for users in Active Directory directory service, click **Advanced Settings**, and enable Active Directory account creation.

10. On the Configuration Successful page, click **Finish**.



**Note:**

If the SharePoint Products Configuration Wizard fails, check the PSCDiagnostics log files, which are located on the drive on which SharePoint Foundation is installed, in the %COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14\LOGS folder.



**Note:**

If you are prompted for your user name and password, you might need to add the SharePoint Central Administration Web site to the list of trusted sites and configure user authentication settings in Internet Explorer. You might also want to disable the Internet Explorer Enhanced Security settings. Instructions for how to configure or disable these settings are provided in the following section.



**Note:**

If you see a proxy server error message, you might need to configure your proxy server settings so that local addresses bypass the proxy server. Instructions for configuring proxy server settings are provided later in the following section.

## Configure browser settings

After you run the SharePoint Products Configuration Wizard, you should ensure that SharePoint Foundation 2010 works properly for local administrators in your environment by configuring additional settings in Internet Explorer.

**Note:**

If local administrators are not using Internet Explorer, you might need to configure additional settings. For information about supported browsers, see [Plan browser support \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx) ([http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316\(Office.14\).aspx](http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx)).

If you are prompted for your user name and password, perform the following procedures:

- Add the SharePoint Central Administration Web site to the list of trusted sites
- Disable Internet Explorer Enhanced Security settings

If you receive a proxy server error message, perform the following procedure:

- Configure proxy server settings to bypass the proxy server for local addresses

For more information, see [Getting Started with IEAK 8](http://go.microsoft.com/fwlink/?LinkId=151359) (<http://go.microsoft.com/fwlink/?LinkId=151359>).

**▶ To add the SharePoint Central Administration Web site to the list of trusted sites**

1. In Internet Explorer, on the **Tools** menu, click **Internet Options**.
2. On the **Security** tab, in the **Select a zone to view or change security settings** area, click **Trusted Sites**, and then click **Sites**.
3. Clear the **Require server verification (https:) for all sites in this zone** check box.
4. In the **Add this Web site to the zone** box, type the URL to your site, and then click **Add**.
5. Click **Close** to close the **Trusted Sites** dialog box.
6. Click **OK** to close the **Internet Options** dialog box.

**▶ To disable Internet Explorer Enhanced Security settings**

1. Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Server Manager**.
2. In **Server Manager**, select the root of **Server Manager**.
3. In the **Security Information** section, click **Configure IE ESC**.  
The **Internet Explorer Enhanced Security Configuration** dialog box opens.
4. In the **Administrators** section, click **Off** to disable the Internet Explorer Enhanced Security settings, and then click **OK**.

**▶ To configure proxy server settings to bypass the proxy server for local addresses**

1. In Internet Explorer, on the **Tools** menu, click **Internet Options**.
2. On the **Connections** tab, in the **Local Area Network (LAN) settings** area, click **LAN Settings**.
3. In the **Automatic configuration** area, clear the **Automatically detect settings** check box.
4. In the **Proxy Server** area, select the **Use a proxy server for your LAN** check box.
5. Type the address of the proxy server in the **Address** box.

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6. Type the port number of the proxy server in the **Port** box.
  7. Select the **Bypass proxy server for local addresses** check box.
  8. Click **OK** to close the **Local Area Network (LAN) Settings** dialog box.
  9. Click **OK** to close the **Internet Options** dialog box.

## Run the Farm Configuration Wizard

You have now completed Setup and the initial configuration of SharePoint Foundation 2010. You have created the SharePoint Central Administration Web site. You can now create your farm and sites, and you can select services by using the Farm Configuration Wizard.

### To run the Farm Configuration Wizard

1. On the SharePoint Central Administration Web site, on the Configuration Wizards page, click **Launch the Farm Configuration Wizard**.
2. On the Help Make SharePoint Better page, click one of the following options, and then click **OK**:
  - **Yes, I am willing to participate (Recommended.)**
  - **No, I don't want to participate.**
3. On the Configure your SharePoint farm page, click **Walk me through the settings using this wizard**, and then click **Next**.
4. In the **Service Account** section, click a service account that you want to use to configure your services.



#### Note

For security reasons, we recommend that you use a different account from the farm administrator account to configure services in the farm.

If you decide to use an existing managed account — that is, an account that SharePoint Foundation is aware of — ensure that you click that option before you continue.

5. Select the services that you want to use in the farm, and then click **Next**.
6. On the Create Site Collection page, do the following:
  - a. In the **Title and Description** section, in the **Title** box, type the name of your new site.
  - b. Optional: In the **Description** box, type a description of what the site contains.
  - c. In the **Web Site Address** section, select a URL path for the site.
  - d. In the **Template Selection** section, in the **Select a template** list, select the template that you want to use for the top-level site in the site collection.



#### Note:

To view a template or a description of a template, click any template in the **Select a template** list.

7. Click **OK**.

- 
8. On the Configure your SharePoint farm page, review the summary of the farm configuration, and then click **Finish**.

## Post-installation steps

After you install and configure SharePoint Foundation 2010, your browser window opens to the Central Administration Web site of your new SharePoint site. Although you can start adding content to the site or customizing the site, we recommend that you first perform the following administrative tasks by using the SharePoint Central Administration Web site.

- **Configure usage and health data collection** You can configure usage and health data collection in your server farm. The system writes usage and health data to the logging folder and to the logging database. For more information, see [Configure usage and health data collection \(SharePoint Foundation 2010\)](#).
- **Configure diagnostic logging** You can configure diagnostic logging that might be required after initial deployment or upgrade. The default settings are sufficient for most situations, but depending upon the business needs and lifecycle of the farm, you might want to change these settings. For more information, see [Configure diagnostic logging \(SharePoint Foundation 2010\)](#).
- **Configure incoming e-mail** You can configure incoming e-mail so that SharePoint sites accept and archive incoming e-mail. You can also configure incoming e-mail so that SharePoint sites can archive e-mail discussions as they happen, save e-mailed documents, and show e-mailed meetings on site calendars. In addition, you can configure the SharePoint Directory Management Service to provide support for e-mail distribution list creation and management. For more information, see [Configure incoming e-mail \(SharePoint Foundation 2010\)](#).
- **Configure outgoing e-mail** You can configure outgoing e-mail so that your Simple Mail Transfer Protocol (SMTP) server sends e-mail alerts to site users and notifications to site administrators. You can configure both the "From" e-mail address and the "Reply" e-mail address that appear in outgoing alerts. For more information, see [Configure outgoing e-mail \(SharePoint Foundation 2010\)](#).
- **Configure a mobile account** You can configure a mobile account so that SharePoint sends text message (SMS) alerts to your, or site users', mobile phones. For more information, see [Configure a mobile account \(SharePoint Foundation 2010\)](#).
- **Install and configure Remote BLOB Storage** You can install and configure Remote BLOB Storage (RBS) for an instance of SQL Server 2008 that supports a SharePoint farm. For more information, see [Install and configure Remote BLOB Storage \(RBS\) with the FILESTREAM provider\(SharePoint Foundation 2010\)](#).

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# Deploy a single server with a built-in database (SharePoint Foundation 2010)

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This article describes how to perform a clean installation of Microsoft SharePoint Foundation 2010 on a single server with a built-in database.

In this article:

- [Overview](#)
- [Before you begin](#)
- [Install SharePoint Foundation 2010](#)
- [Post-installation steps](#)
- [Configure Windows Server Backup](#)

## Overview

You can quickly publish a SharePoint site by deploying SharePoint Foundation 2010 on a single server with a built-in database. This configuration is useful if you want to evaluate SharePoint Foundation 2010 features and capabilities, such as collaboration, document management, and search. This configuration is also useful if you are deploying a small number of Web sites and you want to minimize administrative overhead. When you deploy SharePoint Foundation 2010 on a single server with a built-in database by using the default settings, Setup installs Microsoft SQL Server 2008 Express and the SharePoint product, and then the SharePoint Products Configuration Wizard creates the configuration database and content database for your SharePoint sites. Additionally, the SharePoint Products Configuration Wizard installs the SharePoint Central Administration Web site and creates your first SharePoint site collection.



### Note:

This article does not describe how to install SharePoint Foundation 2010 in a farm environment, or how to upgrade from previous releases of SharePoint Foundation. For more information about installing SharePoint Foundation 2010 on a single server farm, see [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#). For more information about installing SharePoint Foundation 2010 on a multiple server farm, see [Multiple servers for a three-tier farm \(SharePoint Foundation 2010\)](#). For more information about upgrade, see [Upgrading to SharePoint Foundation 2010](#).

Consider the following restrictions of this method of installation:

You cannot install the single server with built-in database version of SharePoint Foundation on a domain controller.

A SQL Server 2008 Express database cannot be larger than 4 GB.

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## Before you begin

Before you begin deployment, ensure that you have met all hardware and software requirements. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#). Also, ensure that you perform a clean installation of SharePoint Foundation 2010. You cannot install the RTM version of SharePoint Foundation 2010 without first removing the beta version of SharePoint Foundation 2010.

## Install SharePoint Foundation 2010

To install and configure SharePoint Foundation 2010, follow these steps:

1. Run the Microsoft SharePoint Products Preparation Tool, which installs all prerequisites to use SharePoint Foundation 2010.
2. Run Setup, which installs SQL Server 2008 Express and the SharePoint product.
3. Run SharePoint Products Configuration Wizard, which installs the SharePoint Central Administration Web site and creates your first SharePoint site collection.
4. Configure browser settings.
5. Perform post-installation steps.



### Important:

To complete the following procedures, you must be a member of the Administrators group on the local computer.

## Run the Microsoft SharePoint Products Preparation Tool

Use the following procedure to install software prerequisites for SharePoint Foundation 2010.

### ▶ To run the Microsoft SharePoint Products Preparation Tool

1. Insert your SharePoint Foundation 2010 installation disc.
2. On the SharePoint Foundation 2010 Start page, click **Install software prerequisites**.



### Note:

Because the preparation tool downloads components from the Microsoft Download Center, you must have Internet access on the computer on which you are installing SharePoint Foundation.

3. On the Welcome to the Microsoft SharePoint Products Preparation Tool page, click **Next**.
4. On the Installation Complete page, click **Finish**.

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## Run Setup

The following procedure installs SQL Server 2008 Express and the SharePoint product. At the end of Setup, you can choose to start the SharePoint Products Configuration Wizard, which is described later in this section.

### To run Setup

1. On the SharePoint Foundation 2010 Start page, click **Install SharePoint Foundation**.
2. On the Read the Microsoft Software License Terms page, review the terms, select the **I accept the terms of this agreement** check box, and then click **Continue**.
3. On the Choose the installation you want page, click **Standalone**.
4. When Setup finishes, a dialog box prompts you to complete the configuration of your server. Ensure that the **Run the SharePoint Products Configuration Wizard now** check box is selected.
5. Click **Close** to start the configuration wizard.



#### Note:

If Setup fails, check the TEMP folder of the user who ran Setup. Ensure that you are logged in as the user who ran Setup, and then type **%temp%** in the location bar in Windows Explorer. If the path **%temp%** resolves to a location that ends in a "1" or "2", you will need to navigate up one level to view the log files. The log file name is Microsoft SharePoint Foundation 2010 Setup (<timestamp>).



#### Tip:

To access the SharePoint Products Configuration Wizard, click **Start**, point to **All Programs**, and then click **Microsoft SharePoint 2010 Products**. If the **User Account Control** dialog box appears, click **Continue**.

## Run the SharePoint Products Configuration Wizard

The following procedure installs and configures the configuration database, the content database, and installs the SharePoint Central Administration Web site. It also creates your first SharePoint site collection.

### To run the SharePoint Products Configuration Wizard

1. On the Welcome to SharePoint Products page, click **Next**.
2. In the dialog box that notifies you that some services might need to be restarted during configuration, click **Yes**.
3. On the Configuration Successful page, click **Finish**.



#### Note:

If the SharePoint Products Configuration Wizard fails, check the PSCDiagnostics log files, which are located on the drive on which SharePoint Foundation is installed, in the

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%COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14\LOGS folder.



**Note:**

If you are prompted for your user name and password, you might need to add the SharePoint Central Administration Web site to the list of trusted sites and configure user authentication settings in Internet Explorer. You might also want to disable the Internet Explorer Enhanced Security settings. Instructions for how to configure or disable these settings are provided in the following section.



**Note:**

If you see a proxy server error message, you might need to configure your proxy server settings so that local addresses bypass the proxy server. Instructions for configuring proxy server settings are provided later in the following section.

## Configure browser settings

After you run the SharePoint Products Configuration Wizard, you should ensure that SharePoint Foundation works properly for local administrators in your environment by configuring additional settings in Internet Explorer.



**Note:**

If local administrators are not using Internet Explorer, you might need to configure additional settings. For information about supported browsers, see [Plan browser support \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx) ([http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316\(Office.14\).aspx](http://technet.microsoft.com/library/7dd4fd50-6ede-4d21-a5d5-87b4c4d49316(Office.14).aspx)).

If you are prompted for your user name and password, perform the following procedures:

- Add the SharePoint Central Administration Web site to the list of trusted sites
- Disable Internet Explorer Enhanced Security settings

If you receive a proxy server error message, perform the following procedure:

- Configure proxy server settings to bypass the proxy server for local addresses

For more information, see [Getting Started with IEAK 8](http://go.microsoft.com/fwlink/?LinkId=151359) (<http://go.microsoft.com/fwlink/?LinkId=151359>).

### ▶ To add the SharePoint Central Administration Web site to the list of trusted sites

1. In Internet Explorer, on the **Tools** menu, click **Internet Options**.
2. On the **Security** tab, in the **Select a zone to view or change security settings** area, click **Trusted Sites**, and then click **Sites**.
3. Clear the **Require server verification (https:) for all sites in this zone** check box.
4. In the **Add this Web site to the zone** box, type the URL to your site, and then click **Add**.
5. Click **Close** to close the **Trusted Sites** dialog box.
6. Click **OK** to close the **Internet Options** dialog box.

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If you are using a proxy server in your organization, use the following steps to configure Internet Explorer to bypass the proxy server for local addresses.

▶ **To disable Internet Explorer Enhanced Security settings**

1. Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Server Manager**.
2. In **Server Manager**, select the root of **Server Manager**.
3. In the **Security Information** section, click **Configure IE ESC**.  
The **Internet Explorer Enhanced Security Configuration** dialog box opens.
4. In the **Administrators** section, click **Off** to disable the Internet Explorer Enhanced Security settings, and then click **OK**.

▶ **To configure proxy server settings to bypass the proxy server for local addresses**

1. In Internet Explorer, on the **Tools** menu, click **Internet Options**.
2. On the **Connections** tab, in the **Local Area Network (LAN) settings** area, click **LAN Settings**.
3. In the **Automatic configuration** area, clear the **Automatically detect settings** check box.
4. In the **Proxy Server** area, select the **Use a proxy server for your LAN** check box.
5. Type the address of the proxy server in the **Address** box.
6. Type the port number of the proxy server in the **Port** box.
7. Select the **Bypass proxy server for local addresses** check box.
8. Click **OK** to close the **Local Area Network (LAN) Settings** dialog box.
9. Click **OK** to close the **Internet Options** dialog box.

## Post-installation steps

After you install SharePoint Foundation 2010, your browser window opens to the Central Administration Web site of your new SharePoint site. Although you can start adding content to the site or you can start customizing the site, we recommend that you first perform the following administrative tasks by using the SharePoint Central Administration Web site:

- **Configure usage and health data collection** You can configure usage and health data collection in your server farm. The system writes usage and health data to the logging folder and to the

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logging database. For more information, see [Configure usage and health data collection \(SharePoint Foundation 2010\)](#).

- **Configure diagnostic logging** You can configure diagnostic logging that might be required after initial deployment or upgrade. The default settings are sufficient for most situations, but depending upon the business needs and lifecycle of the farm, you might want to change these settings. For more information, see [Configure diagnostic logging \(SharePoint Foundation 2010\)](#).
- **Configure incoming e-mail** You can configure incoming e-mail so that SharePoint sites accept and archive incoming e-mail. You can also configure incoming e-mail so that SharePoint sites can archive e-mail discussions as they happen, save e-mailed documents, and show e-mailed meetings on site calendars. In addition, you can configure the SharePoint Directory Management Service to provide support for e-mail distribution list creation and management. For more information, see [Configure incoming e-mail \(SharePoint Foundation 2010\)](#).
- **Configure outgoing e-mail** You can configure outgoing e-mail so that your Simple Mail Transfer Protocol (SMTP) server sends e-mail alerts to site users and notifications to site administrators. You can configure both the "From" e-mail address and the "Reply" e-mail address that appear in outgoing alerts. For more information, see [Configure outgoing e-mail \(SharePoint Foundation 2010\)](#).
- **Configure a mobile account** You can configure a mobile account so that SharePoint sends text message (SMS) alerts to your, or site users', mobile phones. For more information, see [Configure a mobile account \(SharePoint Foundation 2010\)](#).
- **Install and configure Remote BLOB Storage** You can install and configure Remote BLOB Storage (RBS) for an instance of SQL Server 2008 that supports a SharePoint server farm. For more information, see [Install and configure Remote BLOB Storage \(RBS\) with the FILESTREAM provider\(SharePoint Foundation 2010\)](#).

## Configure Windows Server Backup

If you want to use Windows Server Backup with SharePoint Foundation 2010, you must register the SharePoint 2010 VSS Writer with Windows Server Backup by running the **stsadm -o registerwsswriter** command. For more information, see [Registerwsswriter: Stsadm operation \(Windows SharePoint Services\)](#) (<http://technet.microsoft.com/en-us/library/cc287616.aspx>).

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# Multiple servers for a three-tier farm (SharePoint Foundation 2010)

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This article describes how to install Microsoft SharePoint Foundation 2010 on multiple servers to create a Microsoft SharePoint Foundation farm deployed across three tiers. The farm consists of two front-end Web servers, an application server, and a database server. The deployment sequence and configurations that are described in this article are based on recommended best practices. The resulting farm configuration is not complex, but provides a fundamental infrastructure for implementing a SharePoint Foundation solution on similar — or more complex — farms.

The farm is provisioned with SharePoint Foundation Search; Search is configured to crawl the content that is created as part of this deployment.

In this article:

- [Overview](#)
- [Prepare the farm servers](#)
- [Install SharePoint Foundation 2010 on the farm servers](#)
- [Create and configure the farm](#)
- [Add Web servers to the farm](#)
- [Configure diagnostic logging and usage and health data collection](#)
- [Configure SharePoint Foundation Search](#) (<http://technet.microsoft.com/library/bf3631e9-e03d-4f91-80b4-d9c1eab7d3a9.aspx#FoundationSearch>)
- [Create a site](#)
- [Post-installation steps](#)

## Overview

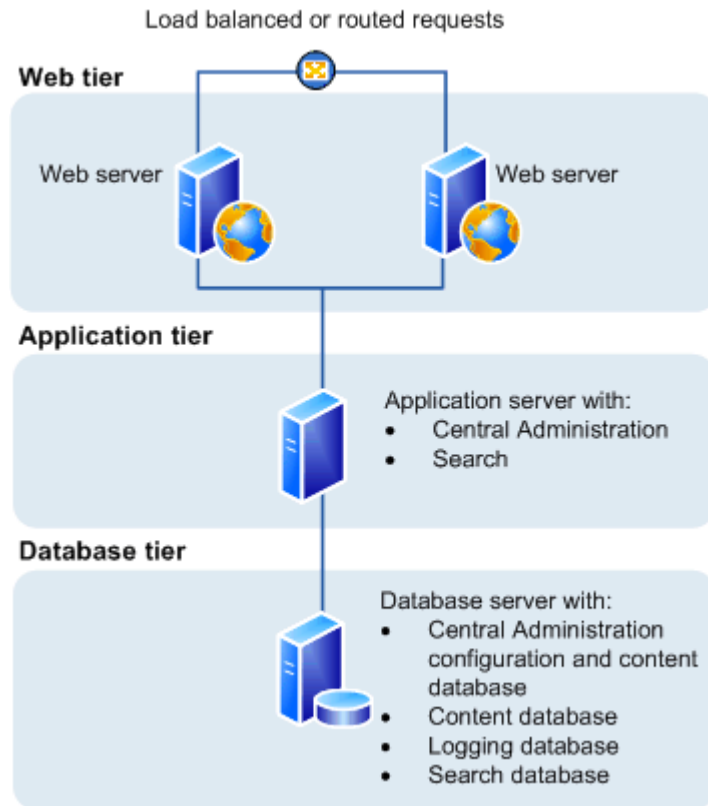
The basic steps in this deployment are as follows:

- Ensure that you are familiar with the concept of a three-tier topology.
- Ensure that you have done all the planning and preparatory work, such as verifying hardware and software requirements.
- Install the required software updates on all servers that will be part of the farm.
- Install the SharePoint Foundation prerequisites on servers in the application and Web tiers.
- Install SharePoint Foundation on the application server and the Web servers.
- Create and configure the SharePoint farm.
- Provision services.
- Complete post-deployment tasks as required.

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## Topology overview

This topology is typically used for the medium and large farms described in [Deployment overview \(SharePoint Foundation 2010\)](#). In terms of performance, capacity, and scalability, a three-tier topology is recommended over a two-tier topology. A three-tier topology provides the most efficient physical and logical layout to support scaling out or scaling up, and provides better distribution of services across the member servers of the farm. The following illustration shows the three-tier deployment that is described in this article.



Referring to the preceding illustration, note the following:

- You can add Web servers to the Web tier. These servers are be configured as conventional Web servers to handle user requests.
- You can add farm servers to the application tier and configure them as dedicated servers that will host the Central Administration Web site or other services on the farm that require dedicated resources or isolation from the Web tier — for example, timer jobs and sandbox services.
- You can add database servers to the database tier to implement a stand-alone instance, database mirroring, or a failover cluster. If you are configuring the farm for high availability, database mirroring or a failover cluster is required on the database tier.



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## Before you begin

Before you begin deployment, do the following:

- Ensure that you are familiar with the operating-system guidelines described in [Performance Tuning Guidelines for Windows Server 2008](http://www.microsoft.com/whdc/system/sysperf/Perf_tun_srv.aspx) ([http://www.microsoft.com/whdc/system/sysperf/Perf\\_tun\\_srv.aspx](http://www.microsoft.com/whdc/system/sysperf/Perf_tun_srv.aspx)) and [Performance Tuning Guidelines for Windows Server 2008 R2](http://www.microsoft.com/whdc/system/sysperf/Perf_tun_srv-R2.aspx) ([http://www.microsoft.com/whdc/system/sysperf/Perf\\_tun\\_srv-R2.aspx](http://www.microsoft.com/whdc/system/sysperf/Perf_tun_srv-R2.aspx)).
- Ensure that you have met all hardware and software requirements. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
- Ensure that you are prepared to set up the required accounts with appropriate permissions, as described in [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).



**Note:**

As a security best practice, we recommend that you install SharePoint Foundation by using least-privilege administration.

## Using the Microsoft SharePoint 2010 Products Preparation Tool

The Microsoft SharePoint Products Preparation Tool checks for the presence of prerequisites, and installs and configures any programs that are required. The Microsoft SharePoint Products Preparation Tool requires an Internet connection to download and configure SharePoint Foundation prerequisites. If you do not have an Internet connection for the farm servers, you will have to obtain installable images for the required software. For installation locations, see "Installing software prerequisites" in [Hardware and software requirements \(SharePoint Foundation 2010\)](#).

If you decide to obtain installable images, we recommend that you create an installation point that you can use for storing the images. You can use this installation point for installing future software updates.

## Database server

Ensure that SQL Server 2005 or SQL Server 2008 is updated to the required level and configured as follows:

- SQL Server 2005: Local and remote connections are enabled and are configured to use the TCP/IP protocol.
- SQL Server 2008: The TCP/IP protocol is enabled for the network configuration.

In organizations whose database administrators operate independently from SharePoint administrators, you will need to ensure that the correct version of SQL Server is available and updated to the required level. In addition, you will have to request a DBA-created database that is configured for your farm.



**Note:**

The procedures in this article do not use a DBA-created database; these procedures will be different in a DBA-created database deployment. For more information, see [Deploy by using DBA-created databases \(SharePoint Foundation 2010\)](#).

---

## Public updates and hotfix packages

Ensure that public updates and the required hotfix packages are installed for the operating system, SQL Server, and SharePoint Foundation. We recommend that all servers be updated to the same software version before you apply the public updates. The following hotfixes must be applied for this release of SharePoint Foundation:

- SQL Server 2008: Install this update before deploying the farm. [Cumulative update package 2 for SQL Server 2008 Service Pack 1](http://support.microsoft.com/kb/970315) (<http://support.microsoft.com/kb/970315>)
- After you install the prerequisites on each farm server, you will need to install [Error message when you use the "IMSAdminBase::CopyKey" method as a part of the IIS 6.0 Compatibility components in IIS 7.0: "Exception from HRESULT: 0x80070003"](http://support.microsoft.com/kb/949516) (<http://support.microsoft.com/kb/949516>) on the application server first, and then on the two Web servers.

## Prepare the farm servers

Before you install SharePoint Foundation, you must check for and install all the prerequisites on the application server and the Web servers by using the Microsoft SharePoint Products Preparation Tool.



### Tip:

If you decide to install prerequisites manually, you can still run the Microsoft SharePoint Products Preparation Tool to verify which prerequisites are required on each server.

Use the following procedure to install prerequisites on each of the farm servers.

### ▶ To run the preparation tool

1. Download [SharePoint Foundation 2010](http://go.microsoft.com/fwlink/?LinkId=168781) (<http://go.microsoft.com/fwlink/?LinkId=168781>) from the product installation location, and then double-click the appropriate executable file.
2. If you install from a bootable image, click **Install software prerequisites** on the splash screen.



### Note:

You can download all of the prerequisites and install them from a network share. For more information, see [Install prerequisites from a network share \(SharePoint Server 2010\)](http://technet.microsoft.com/library/3ede6cef-193d-4c25-8d41-cacabab95ac9(Office.14).aspx) ([http://technet.microsoft.com/library/3ede6cef-193d-4c25-8d41-cacabab95ac9\(Office.14\).aspx](http://technet.microsoft.com/library/3ede6cef-193d-4c25-8d41-cacabab95ac9(Office.14).aspx)).

3. On the Welcome to the Microsoft SharePoint Products Preparation Tool page, click **Next**.



### Note:

The preparation tool may have to restart the local server to complete the installation of some of the prerequisites. The installer will continue to run after the server is restarted, and no manual intervention is required. However, you will have to log back on to the server.

4. On the Installation Complete page, click **Finish**.



### Note:

After you complete the Microsoft SharePoint Products Preparation Tool, you must

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install [KB 949516](http://go.microsoft.com/fwlink/?LinkId=148917) (<http://go.microsoft.com/fwlink/?LinkId=148917>) and KB 971831 (<http://support.microsoft.com/kb/971831>). You might also need to restart the server after installing this hotfix.



**Note:**

If the error message "Loading this assembly would produce a different grant set from other instances. (Exception from HRESULT: 0x80131401)" is displayed when you start the IIS worker process (w3wp.exe), another service, or a managed application on a server that is also running SharePoint Foundation 2010, you must install [KB963676](http://go.microsoft.com/fwlink/?LinkId=151358) (<http://go.microsoft.com/fwlink/?LinkId=151358>). You must restart the computer after you apply this hotfix.

## Install SharePoint Foundation 2010 on the farm servers

After the prerequisites are installed, use the following procedure to install SharePoint Foundation on each of the farm servers.

### ▶ To run Setup

1. On the Start page, click **Install SharePoint Foundation**.
2. On the Read the Microsoft Software License Terms page, review the terms, select the **I accept the terms of this agreement** check box, and then click **Continue**.
3. On the Choose the installation you want page, click **Server Farm**.
4. On the **Server Type** tab, click **Complete**.
5. On the File Location tab, accept the default location or change the installation path, and then click **Install Now**.



**Note:**

As a best practice, we recommend that you install SharePoint Foundation on a non-system drive.

6. When Setup finishes, a dialog box prompts you to complete the configuration of your server. Clear the **Run the SharePoint Products and Technologies Configuration Wizard now** check box.



**Note:**

For consistency of approach, we recommend that you do not run the configuration wizard until SharePoint Foundation has been installed on all application and front-end Web servers that will participate in the server farm.

7. Click **Close** to finish Setup.

---

## Create and configure the farm

To create and configure the farm, you run the SharePoint Products Configuration Wizard. This wizard automates several configuration tasks, including creating the configuration database, installing services, and creating the Central Administration Web site. It is recommended that you run the SharePoint Products Configuration Wizard on the server that will host the Central Administration Web site before you run the wizard on the other servers in the farm.

### To run the configuration wizard and configure the farm

1. On the server that will host Central Administration (the application server), click **Start**, point to **All Programs**, and then click **Microsoft SharePoint 2010 Products**.
2. In the list of available options, click **SharePoint Products and Technologies Configuration Wizard**.
3. On the Welcome to SharePoint Products page, click **Next**.
4. In the dialog box that notifies you that some services might need to be restarted during configuration, click **Yes**.
5. On the Connect to a server farm page, click **Create a new server farm**, and then click **Next**.
6. On the Specify Configuration Database Settings page, do the following:
  - a. In the **Database server** box, type the name of the computer that is running SQL Server.
  - b. In the **Database name** box, type a name for your configuration database, or use the default database name. The default name is SharePoint\_Config.
  - c. In the **Username** box, type the user name of the server farm account in DOMAIN\username format.

#### **Important:**

The server farm account is used to create and access your configuration database. It also acts as the application pool identity account for the SharePoint Central Administration application pool, and it is the account under which the Windows SharePoint Services Timer service runs. The SharePoint Products Configuration Wizard adds this account to the SQL Server Login accounts, the SQL Server **dbcreator** server role, and the SQL Server **securityadmin** server role. The user account that you specify as the service account must be a domain user account, but it does not need to be a member of any specific security group on your Web servers or your database servers. We recommend that you follow the principle of least privilege, and specify a user account that is not a member of the Administrators group on your Web servers or your database servers.

- d. In the **Password** box, type the user password.
7. Click **Next**.
  8. On the Specify Farm Security Settings page, type a passphrase, and then click **Next**. Ensure that the passphrase meets the following criteria:

- 
- Contains at least eight characters
  - Contains at least three of the following four character groups:
  - English uppercase characters (from A through Z)
  - English lowercase characters (from a through z)
  - Numerals (from 0 through 9)
  - Nonalphabetic characters (such as !, \$, #, %)



**Note:**

Although a passphrase is similar to a password, it is usually longer to enhance security. It is used to encrypt credentials of accounts that are registered in SharePoint Foundation 2010. For example, the SharePoint Foundation 2010 system account that you provide when you run the SharePoint Products Configuration Wizard wizard. Ensure that you remember the passphrase, because you must use it each time you add a server to the farm.

9. On the Configure SharePoint Central Administration Web Application page, do the following:
  - a. Either select the **Specify port number** check box and type a port number if you want the SharePoint Central Administration Web application to use a specific port number, or leave the **Specify port number** check box cleared if you want to use the default port number.



**Note:**

If you want to access the SharePoint Central Administration Web site from a remote computer, ensure that you allow access to the port number that you configure in this step. You do this by configuring the inbound rule for **SharePoint Central Administration v4** in Windows Firewall with Advanced Security.

- b. Click either **NTLM** or **Negotiate (Kerberos)**.
10. Click **Next**.
11. On the Configuration Successful page, click **Finish**.



**Note:**

If the SharePoint Products Configuration Wizard fails, check the log files on the drive on which SharePoint Foundation 2010 is installed, which are located in the %COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14\LOGS folder.

12. The Central Administration Web site will open in a new browser window.

On the Help Make SharePoint Better page, click one of the following options and then click **OK**.

  - a. **Yes, I am willing to participate (Recommended)**.
  - b. **No, I don't wish to participate**.
13. On the Configure your SharePoint farm page, you have the option to use a wizard to configure services or you can decide to configure services manually. For the purpose of this article, we use the manual option. Click **Cancel**.

The choice you make here is a matter of personal preference. The Farm Configuration Wizard

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will configure some services automatically when it is run; however, if you configure services manually you have greater flexibility in designing your logical architecture.

For information about using the wizard to configure services, see [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#).



**Important:**

If you are using a DBA-created database you cannot use the Farm Configuration Wizard, you must use SharePoint Products Configuration Wizard.

## Add Web servers to the farm

After you create the farm on the application server, you can add the servers for the Web tier by following the same process described earlier in this topic for installing SharePoint Foundation on the server that hosts Central Administration. The only difference is that during Setup, you will be prompted to join an existing farm. Follow the wizard steps to join the farm.

For additional information about adding servers to a farm, see [Add a Web or application server to the farm \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/c027d7fb-3b13-4502-9101-391d6c161b16\(Office.14\).aspx](http://technet.microsoft.com/library/c027d7fb-3b13-4502-9101-391d6c161b16(Office.14).aspx)). This article also provides detailed information for the steps in the following procedure.

## Configure diagnostic logging and usage and health data collection

After you add the front-end Web servers, configure initial diagnostic logging and usage and health data collection for the farm.

Diagnostic logging can help identify and isolate issues as they occur in your server farm. Accept the default settings when you configure diagnostic logging on new installations. Then, when issues occur in your server farm, you can revisit these settings and adjust the levels accordingly. This will help to identify the cause and isolate the issues. Usage and health reporting can be used to show where diagnostic logging settings deviate from the default values.

For more information about diagnostic and health usage, see:

- [Configure diagnostic logging \(SharePoint Foundation 2010\)](#)
- [Configure usage and health data collection \(SharePoint Foundation 2010\)](#)

Use the following procedures to complete the initial configuration of diagnostic logging and usage and health data collection.



**Note:**

Because this is an initial farm deployment without any benchmark data, default settings are accepted unless otherwise noted.

### ▶ To configure diagnostic logging

- 
1. On the Central Administration Home page, click **Monitoring**.
  2. In the **Reporting** section, click **Configure diagnostic logging**.
  3. On the Diagnostic Logging page, verify that **Enable Event Log Flood Protection** is selected. If not, click the corresponding check box to enable this feature.
  4. The default location for the **Trace Log** is on the drive where you installed SharePoint Foundation. As a best practice, we recommend that the trace log be stored on a non-system drive.



**Important:**

If you change the trace log path to a non-system drive, this location must exist on all the servers in the farm. Existing or new servers cannot log data if the location does not exist. In addition, you will not be able to add new servers unless the path you specify exists on the new server. You cannot use a network share for logging purposes.

5. Click **OK** to save your changes.

After you finish configuring diagnostic logging, configure usage and health data collection.

 **To configure usage and health data collection**

- On the Central Administration Monitoring page, click **Configure usage and health data collection**.
- Click the check box to enable **Usage Data Collection**.
- Click the check box to enable **Health Data Collection**.
- Click **OK**.

## Configure SharePoint Foundation Search

SharePoint Foundation Search is automatically installed when you install SharePoint Foundation. However, the search service is not started and some configuration is required.

Use the following procedure to configure and start search for the SharePoint Foundation farm.

 **To configure SharePoint Foundation Search**

1. On the Central Administration home page, click **Manage services on server**.
2. On the Services on Server page, click **SharePoint Foundation Search**. This action opens the Configure Microsoft SharePoint Foundation Search Service Settings page, where you configure the following settings.
3. In the **Service Account** section, type in a **User name** and **Password**.
4. In the **Content Access Account** section, type in a **User name** and **Password** for an account that will have read-only access to all the content.

**noteDXDOC112778PADS      Security Note**

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Do not use a highly privileged account or one that can modify content.

5. Click **OK** to save your configuration changes.
6. On the Services on Server page, click **Start** to start SharePoint Foundation Search.

## Create a site

To create a site during this phase of the deployment, you must create a Web application and a site collection. Use the procedures in the following articles to create a Web application by using Central Administration, and then create a top-level Web site that is associated with the Web application.

- [Create a Web application](#)



### Important:

When creating a new Web application or extending the existing Web application into a new zone initially, ensure that the public URL is the URL that end users will use to browse to the Web application. If you are using reverse proxy servers or load balancers, you may also have to add internal URLs for alternate access mapping (AAM). We recommend that you configure AAM before creating a site collection.

- [Create a site collection \(SharePoint Foundation 2010\)](#)

## Post-installation steps

After you install and configure SharePoint Foundation 2010, your browser window opens to the Central Administration Web site of your new SharePoint site. Although you can start adding content to the site or customizing the site, we recommend that you first perform the following administrative tasks by using the SharePoint Central Administration Web site.

- **Configure outgoing e-mail** You can configure outgoing e-mail so that your Simple Mail Transfer Protocol (SMTP) server sends e-mail alerts to site users and notifications to site administrators. You can configure both the "From" e-mail address and the "Reply" e-mail address that appear in outgoing alerts. For more information, see [Configure outgoing e-mail \(SharePoint Foundation 2010\)](#).



### Note:

You can configure incoming e-mail so that SharePoint sites accept and archive incoming e-mail. However, we recommend that you undertake this task after you complete the initial farm deployment and configuration. For more information, see [Configure incoming e-mail \(SharePoint Foundation 2010\)](#).

- **Configure a mobile account** You can configure a mobile account so that SharePoint sends text message (SMS) alerts to your, or site users', mobile phones. For more information, see [Configure a mobile account \(SharePoint Foundation 2010\)](#).



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# Quick start: Deploy single server in an isolated Hyper-V environment (SharePoint Foundation 2010)

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You can use an isolated and secure Hyper-V virtual machine to test the features and behavior of SharePoint Foundation 2010. This approach uses minimal hardware resources and enables you to isolate the SharePoint Foundation 2010 test system from a production environment. This isolation is recommended in order to eliminate potential security threats to a corporate network and server environment.

By using the manual steps or the Windows PowerShell 2.0 commands that are provided in this article, you can quickly deploy SharePoint Foundation 2010 on a single server that uses one of the following databases:

- The built-in SQL Server 2008 Express and SQL Server 2008 R2 Express database that is provided with SharePoint Foundation
- Microsoft SQL Server 2005 with Service Pack 3 (SP3) and Cumulative Update 3 installed
- Microsoft SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2



## **Important:**

The single-server SharePoint Foundation deployment described in this article is only intended to be used for evaluation and testing purposes, and should not be used in a production environment.

In this article:



- [Requirements and recommendations](#)
- [Required permissions](#)
- [Pre-deployment tasks](#)
- [Deploy SharePoint Foundation 2010 manually](#)
- [Deploy SharePoint Foundation 2010 by using Windows PowerShell scripts](#)

## **Requirements and recommendations**

The following requirements and recommendations for the Hyper-V virtualization server, virtual machine, and the deployment environment only apply to the single-server deployment scenario described in this article.

## **Virtualization server and virtual machine configuration**

The following table provides the minimum and recommended configurations for the virtualization server and the virtual machines. These configurations will support the database options that are available for a single server deployment.

Resource	Minimum	Recommended
CPU	Dual processor, 2 gigahertz (GHz)	Dual processor, 2 GHz
Memory	4 gigabytes (GB)	8 GB
Hard drive	<p>Fixed-size virtual hard disk that has a capacity of 40 GB</p> <p> <b>Tip:</b> To speed up the creation of a fixed-size virtual hard disk, initially configure the hard disk as dynamically expanding. After you install all the required software (including SharePoint Foundation), convert the virtual hard disk to a fixed-size hard disk.</p>	Fixed-size virtual hard disk that has a capacity of 80 GB
Network adapter type	Synthetic	Synthetic
Network type	<p>Internal to ensure virtual machine isolation and enable virtualization server-virtual machine communications</p> <p> <b>Tip:</b> For ease of access to—and installation of—required and recommended software, use an External network. When you are ready to install SharePoint Foundation, configure the virtual machines to use an Internal network.</p>	Internal to ensure virtual machine isolation and enable virtualization server-virtual machine communications

The following configuration guidance is provided for the virtualization server:

- The logical-to-virtual processor (core) ratio should be as low as possible, with 1:1 being optimal.

- 
- Using the 1:1 logical-to-virtual processor ratio, you should configure the virtualization server so the total number of processors on the virtual machines is less than the total number of physical cores. For example, if you are using a four-core virtualization server, the best practice is to create three virtual machines that use a single processor, or one virtual machine that has two processors and one virtual machine that uses one processor. Either of these configurations would leave one core free for virtualization server processes.

In addition to the preceding requirements for the virtual environment, review the [Hardware and software requirements \(SharePoint Foundation 2010\)](#) article before you start deploying SharePoint Foundation 2010 on the virtual machine.

## Deployment environment

A domain is required to deploy SharePoint Foundation 2010.

If you do not have an isolated virtual domain available to deploy SharePoint Foundation 2010, you must create a virtual domain on a Hyper-V that is configured to use the following:

- A domain controller with Active Directory Domain Services (AD DS)
- A domain controller with a DNS server

You can deploy SharePoint Foundation on a domain controller. However, some configuration is required. Start Windows PowerShell with the Run as administrator option and run the following commands to enable deployment on a domain controller:

```
$acl = Get-Acl HKLM:\System\CurrentControlSet\Control\ComputerName
$person = [System.Security.Principal.NTAccount]"Users"
$access = [System.Security.AccessControl.RegistryRights]::FullControl
$inheritance = [System.Security.AccessControl.InheritanceFlags]"ContainerInherit,
ObjectInherit"
$propagation = [System.Security.AccessControl.PropagationFlags]::None
$type = [System.Security.AccessControl.AccessControlType]::Allow
$rule = New-Object System.Security.AccessControl.RegistryAccessRule($person, $access,
$inheritance, $propagation, $type)
$acl.AddAccessRule($rule)
Set-Acl HKLM:\System\CurrentControlSet\Control\ComputerName $acl
```

## Required permissions

In order to install SharePoint Foundation 2010, the logon account that you are using on the virtual machine must be a member of:

- The local Administrators group on the virtual machine
- The SQL Server **dbcreator** fixed server role
- The SQL Server **securityadmin** server role

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For more information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).

## Pre-deployment tasks

Complete the following tasks before you deploy SharePoint Foundation 2010:

- On the virtualization server, create an installation point that contains the SharePoint Foundation software or provide media, such as an ISO image, that can be accessed from the virtual machine.
- Create a virtual machine that meets the minimum requirements described in the “Requirements and recommendations” section earlier in this article.
- On the virtual machine:
  - Install the operating system and the mandatory and recommended security updates.
  - Install the edition of SQL Server that you want to use if you are not using the built-in version that is provided with SharePoint Foundation.
  - Install the mandatory and recommended updates for the edition of SQL Server that you install.
  - Configure the Windows Server firewall to enable SQL Server access. For more information, see [Configuring the Windows Firewall to Allow SQL Server Access](#) (<http://go.microsoft.com/fwlink/?LinkID=134724>).
  - Review the [Hardware and software requirements \(SharePoint Foundation 2010\)](#) article to determine the programs and hotfixes that must be obtained and installed before you install SharePoint Foundation 2010.

## Deploy SharePoint Foundation 2010 manually

For information about how to manually deploy SharePoint Foundation 2010 on a single server, see [Deploy a single server with a built-in database \(SharePoint Foundation 2010\)](#) or [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#).

## Deploy SharePoint Foundation 2010 by using Windows PowerShell scripts

You can use Windows PowerShell scripts to deploy SharePoint Foundation 2010 on a single server.

### **noteDXDOC112778PADS**      **Security Note**

- As a best practice, you should not run unsigned scripts.
- For more information about signing Windows PowerShell scripts, see [Windows PowerShell: Sign Here Please](#) (<http://go.microsoft.com/fwlink/?linkid=160357>) in TechNet Magazine. For more information about code signing in general, see [Introduction to Code Signing](#) (<http://go.microsoft.com/fwlink/?linkid=59273>) on MSDN. For more information about setting up your own certification authority (CA), see [Active Directory Certificate Services](#) (<http://go.microsoft.com/fwlink/?linkid=136444>) in the TechNet Library.

---

Create and use one of the following Windows PowerShell script files to deploy SharePoint Foundation on a single server.

- `simplesingleserver.ps1`: Installs SharePoint Foundation 2010 using the built-in database to store configuration information and documents.
- `simplefarm.ps1`: Installs SharePoint Foundation 2010 using either SQL Server 2005 or SQL Server 2008 to store configuration information and documents.

### **simplesingleserver.ps1**

This script deploys SharePoint Foundation 2010 on a single server that uses the built-in database.

Copy the following code to a text editor and save it as `simplesingleserver.ps1` in the directory of your choice:

```
$SetupPath          = Read-Host -Prompt "Please specify the path to the install media (D:)"

## Here is the script to install SharePoint Foundation 2010 with SQL Express and create Central
Admin ##

& $SetupPath\PrerequisiteInstaller.exe /unattended | Write-Host

if( $lastexitcode -eq 0 ) {

    & $SetupPath\setup.exe /config $SetupPath\Files\SetupSilent\config.xml | Write-Host

    if( $lastexitcode -eq 0 ) {

        Write-Host "Install successful..."

    } else { Write-Error "ERROR: $lastexitcode" }

} else { Write-Error "ERROR: $lastexitcode" }
```

### **▶ To run simplesingleserver.ps1**

1. Start Windows PowerShell 2.0 using the Run as administrator option.
2. Navigate to the directory where you saved `simplesingleserver.ps1`.
3. Run `.\simplesingleserver.ps1` from the Windows PowerShell command prompt.

### **simplefarm.ps1**

This script deploys SharePoint Foundation 2010 on a single server that uses a SQL Server database. Copy the following code to a text editor and save it as `simplefarm.ps1` in the directory of your choice:

```
## Settings you may want to change ##
```

---

```
$err = $null
$SetupPath      = Read-Host -Prompt "Please specify the path to the install media (D:)"
Write-Host "Please specify the Farm Administrator credentials"
$FarmCredential = Get-Credential "DOMAIN\
```

---

```

Write-Warning "You didn't enter a farm name, using the machine name instead"
$FarmName = $env:COMPUTERNAME
}
if ([String]::IsNullOrEmpty($CAPort))
{
Write-Warning "You didn't enter a Central Administration port number, using 5000 instead"
$CAPort = 5000
}

## Here is the script to install SharePoint Foundation 2010 and create Central Admin ##
Write-Host "[1/15] Running prerequisite installer..."
& $SetupPath\PrerequisiteInstaller.exe /unattended | Write-Host
if( $lastexitcode -eq 0 ) {
Write-Host "[2/15] Running silent farm binary installation... (this will take some time)"
& $SetupPath\setup.exe /config $SetupPath\Files\SetupFarmSilent\config.xml | Write-Host
Write-Host "[3/15] Completed silent farm binary installation."
if( $lastexitcode -eq 0 ) {
Add-PSSnapin Microsoft.SharePoint.PowerShell -erroraction SilentlyContinue
Write-Host "[4/15] Creating new configuration database..."
New-SPConfigurationDatabase -DatabaseName ("{0}_SharePoint_Configuration_DB" -f
$FarmName) -DatabaseServer $DBServer -AdministrationContentDatabaseName ("{0}_AdminContent_DB"
-f $FarmName) -FarmCredentials $FarmCredential -Passphrase $Passphrase -ErrorVariable err
Write-Host "[5/15] Verifying farm creation..."
$spfarm = get-spfarm
if ($spfarm -ne $null) {
Write-Host "[6/15] ACLing SharePoint Resources..."
Initialize-SPResourceSecurity -ErrorVariable err
if ([String]::IsNullOrEmpty($err) -eq $true) {
Write-Host "[7/15] Installing Services..."
Install-SPService -ErrorVariable err
if ([String]::IsNullOrEmpty($err) -eq $true) {
Write-Host "[8/15] Installing Features..."
Install-SPFeature -AllExistingFeatures -ErrorVariable err
if ([String]::IsNullOrEmpty($err) -eq $true) {

```

---

```

Write-Host "[9/15] Provisioning Central Administration..."
New-SPCentralAdministration -Port $CAPort -WindowsAuthProvider "NTLM" -
ErrorVariable err

if ([String]::IsNullOrEmpty($err) -eq $true) {
    Write-Host "[10/15] Installing Help..."
    Install-SPHelpCollection -All -ErrorVariable err
    if ([String]::IsNullOrEmpty($err) -eq $true) {
        Write-Host "[11/15] Installing Application Content..."
        Install-SPApplicationContent -ErrorVariable err
        if ([String]::IsNullOrEmpty($err) -eq $true) {
            Write-Host "[12/15] Basic configuration completed."
            $SPManagedAccount = Get-SPManagedAccount
$FarmCredential.UserName

            Write-Host "[13/15] Creating Web Application and
Application Pool..."

                $webApp = New-SPWebApplication -Name "SharePoint - 80" -
ApplicationPool "SharePoint - 80" -ApplicationPoolAccount $SPManagedAccount -DatabaseServer
$DBServer -DatabaseName ("{0}_Content_DB" -f $FarmName) -Url "http://localhost" -ErrorVariable
err

                    if ([String]::IsNullOrEmpty($err) -eq $true) {
                        Write-Host "[14/15] Creating site collection..."
                        $SPSite = New-SPSite -url "http://localhost" -
OwnerAlias $FarmCredential.UserName -ErrorVariable err

                            if ([String]::IsNullOrEmpty($err) -eq $true) {
                                Write-Host "[15/15] Port 80 Web application and
site collect created. Browse to http://localhost to pick a template for the Web..."

                                    } else { Write-Error "ERROR: $err" }
                                } else { Write-Error "ERROR: $err" }
                            } else { Write-Error "ERROR: $err" }
                        } else { Write-Error "ERROR: $err" }
                    } else { Write-Error "ERROR: $err" }
                } else { Write-Error "ERROR: $err" }
            } else { Write-Error "ERROR: $err" }
        } else { Write-Error "ERROR: $err" }
    } else { Write-Error "ERROR: $err" }
} else { Write-Error "ERROR: $err" }

```



---

```
    } else { Write-Error "ERROR: $lastexitcode" }  
} else { Write-Error "ERROR: $lastexitcode" }  
  
$exitprompt = Read-Host -Prompt "Press Enter to exit..."
```

### To run simplefarm.ps1

1. Start Windows PowerShell 2.0 using the Run as administrator option.
2. Navigate to the directory where you saved simplefarm.ps1.
3. Run `.\simplefarm.ps1` from the Windows PowerShell command prompt.

---

# Deploy by using DBA-created databases (SharePoint Foundation 2010)

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This article describes how to deploy Microsoft SharePoint Foundation 2010 in a farm environment that uses DBA-created databases. In organizations where database administrators (DBAs) operate independently from SharePoint administrators, the DBAs create and manage all the databases. This is typical in IT environments where security requirements and company policies require a separation of administrator roles. The farm administrator provides Microsoft SharePoint Foundation 2010 database requirements to the database administrator, who in turn, creates the necessary Microsoft SharePoint Foundation databases and sets up the logins that are required for the farm.

In this article:

- [Before you begin](#)
- [About configuring DBA-created databases](http://technet.microsoft.com/library/e87bc635-6d5d-4d76-abe1-c18ae75bc73b.aspx#about) (*http://technet.microsoft.com/library/e87bc635-6d5d-4d76-abe1-c18ae75bc73b.aspx#about*)
- [Create and configure databases for Central Administration](http://technet.microsoft.com/library/e87bc635-6d5d-4d76-abe1-c18ae75bc73b.aspx#createandconfigure) (*http://technet.microsoft.com/library/e87bc635-6d5d-4d76-abe1-c18ae75bc73b.aspx#createandconfigure*)
- [Create and configure additional databases](http://technet.microsoft.com/library/e87bc635-6d5d-4d76-abe1-c18ae75bc73b.aspx#createandconfigadditional) (*http://technet.microsoft.com/library/e87bc635-6d5d-4d76-abe1-c18ae75bc73b.aspx#createandconfigadditional*)

## Before you begin

Before you start this deployment, ensure that you have all the information that you require in order to successfully deploy and configure SharePoint Foundation on all of the farm servers. The following sections provide the information that you will need to ensure a successful SharePoint Foundation deployment.

### Farm server requirements

Ensure that all the farm servers and the database server meet the requirements that are documented in the following articles.

- Hardware and software requirements: [Hardware and software requirements \(SharePoint Foundation 2010\)](#)
- Administrative and service accounts: [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#)

---

## Database requirements

Deploying SharePoint Foundation 2010 on DBA-created databases involves working with the DBA to ensure that all the SharePoint Foundation databases that you need are created and correctly configured before you create and configure the farm.

The following list shows some, but not necessarily all, of the information that a DBA needs in order to create databases for the farm. Additional information may be required by the DBA in your organization:

- SQL Server version information as well as service pack and cumulative update level. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
- The required login accounts with associated roles and permissions. For more information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).
- The number of databases that are required as well as SharePoint configuration specifics. This information can be obtained by deploying SharePoint Foundation.
- SharePoint data storage requirements, such as data type, data volume, type of database activity (read or write) and Input/Output operations per second (IOPS).
- The DBA must configure surface area settings so that local and remote connections use TCP/IP or named pipes.
- All of the databases required by SharePoint Foundation use the Latin1\_General\_CI\_AS\_KS\_WS collation.
- All of the SharePoint Foundation databases require that the farm Setup user account is assigned to them as the database owner (**dbo**).
- SharePoint user Service Level Agreement considerations.

## About configuring DBA-created databases

Use the procedures in this article as a guide for deploying a farm that uses DBA-created databases. This deployment includes all the databases that are required for the farm.



**Note:**

This article only applies to the SQL Server database versions supported by SharePoint Foundation 2010.

For each procedure you must use Windows PowerShell 2.0 or SharePoint Foundation command-line tools to configure the farm using.

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.



**Note:**

Psconfig is located in the following folder: Program Files\Common Files\Microsoft Shared\web server extensions\14\BIN.

In order to use Windows PowerShell to configure the farm:

- 
1. Verify that the user account has access to one of the servers on which Windows PowerShell 2.0 is running, and that the user account is a Farm Administrator and is a member of the **SharePoint\_Shell\_Access** role for the SQL Server-based source content database, the administration content database, the destination content database, and the configuration database.
  2. On the **Start** menu, click **All Programs**.
  3. Click **Microsoft SharePoint 2010 Products**.
  4. Click **SharePoint 2010 Management Shell**.
  5. At the Windows PowerShell prompt, type the appropriate command, and then press ENTER.

For the purpose of illustrating the required procedures, the basic farm that needs to be configured consists of:

1. Central Administration
2. A Web portal
3. Diagnostic logging and usage and health data collection
4. Search

The following databases are required and are typically used by the farm administrator in the following sequence as the farm is created. The databases in the following list use the default names that are provided when you use the SharePoint Products Configuration Wizard to set up a farm. You can, of course, use database names that you choose.

- The configuration database (SharePoint\_Config)
- The Central Administration content database (SharePoint\_AdminContent\_GUID)
- The Web site content database, which is created automatically by the SharePoint Foundation Setup program (WSS\_Content\_GUID)
- The diagnostic logging database (WSS\_Logging\_GUID)
- The search database (WSS\_SEARCH\_localhost machine name)

## Create and configure databases for Central Administration

Use the procedures in this section to create the required databases and give the accounts membership in the database Users security group and database roles.

The procedures require action by the DBA and the Setup user account. The labels [DBA] or [Setup] respectively are used for each step to indicate which role performs the action.

The following procedure only has to be performed once for the farm, on the server that you want to run the Central Administration Web site. The farm has one configuration database and one content database for Central Administration.

▶ **To create and configure the configuration database, the Central Administration content database, and the Central Administration Web application**

- 
1. [DBA] Create the configuration database and the Central Administration content database using the LATIN1\_General\_CI\_AS\_KS\_WS collation sequence and set the database owner (**dbo**) to be the Setup user account.
  2. [Setup] Run Setup on each server computer in the farm. You must run Setup on at least one of these computers by using the **Complete** installation option. The steps for this option are described in [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#).
  3. [Setup] Do not run the SharePoint Products Configuration Wizard after Setup finishes. From the SharePoint 2010 Management Shell, use the **New-SPConfigurationDatabase** command to create a new configuration database, for example:

```
New-SPConfigurationDatabase -DatabaseName "SharePointConfigDB1" -DatabaseServer  
"SQL-01" -Passphrase (ConvertTo-SecureString "MyPassword" -AsPlainText -force) -  
FarmCredentials (Get-Credential)
```

For more information, see [New-SPConfigurationDatabase](#) ([http://technet.microsoft.com/library/b04f1577-1985-41b8-b555-2f5145a00241\(Office.14\).aspx](http://technet.microsoft.com/library/b04f1577-1985-41b8-b555-2f5145a00241(Office.14).aspx)).

4. [Setup] After the command has finished, run the SharePoint Products Configuration Wizard and complete the rest of the configuration for the server. This creates the Central Administration Web application and performs other setup and configuration tasks.
5. [DBA] After the SharePoint Products Configuration Wizard has finished, perform the following actions for both the configuration database and the Central Administration content database:
  - Add the SharePoint Foundation search account, default content access account, and the services account to the Users group.
  - Add the SharePoint Foundation search service account, default content access account, and the services account to the WSS\_Content\_Application\_Pools role.
6. [Setup] To confirm that the databases were created and configured correctly, verify that the home page of the Central Administration Web site can be accessed. However, do not configure anything by using Central Administration at this point. If the Central Administration page does not render, verify the accounts that are used in this procedure and ensure that they are properly assigned.

The rest of the farm servers will be configured after the procedures in the article are finished and the farm is established. You will run the SharePoint Products Configuration Wizard on these servers by selecting the **Yes, I want to connect to an existing server farm** option, instead of by using the commands that are used in this procedure.

The following procedure will only have to be performed once for the farm. The farm has only one SharePoint Foundation search database.

#### **Create and configure the SharePoint Foundation search database and start the search service**

1. [DBA] Create the SharePoint Foundation search database using the LATIN1\_General\_CI\_AS\_KS\_WS collation sequence and set the database owner (**dbo**) to be the Setup user account.

- 
2. [Setup] Open the command line, and then use the **Get-SPSearchService**, **Set-SPSearchService**, **Get-SPSearchServiceInstance**, and **Set-SPSearchServiceInstance** cmdlets to configure the database and start the search service. Use the following example as a guide.

```
$searchService = Get-SPSearchService  
Set-SPSearchService -MaxBackupDuration 120  
Get-SPSearchServiceInstance -Local  
Get-SPSearchServiceInstance -Local | Set-SPSearchServiceInstance -ProxyType proxy
```

For more information, see the following topics:

- [Get-SPSearchService](http://technet.microsoft.com/library/90160cc4-60c3-4983-8b4a-674cbf4c4f9c(Office.14).aspx) ([http://technet.microsoft.com/library/90160cc4-60c3-4983-8b4a-674cbf4c4f9c\(Office.14\).aspx](http://technet.microsoft.com/library/90160cc4-60c3-4983-8b4a-674cbf4c4f9c(Office.14).aspx))
- [Set-SPSearchService](http://technet.microsoft.com/library/664d55c9-c436-4096-a385-446c920f4df1(Office.14).aspx) ([http://technet.microsoft.com/library/664d55c9-c436-4096-a385-446c920f4df1\(Office.14\).aspx](http://technet.microsoft.com/library/664d55c9-c436-4096-a385-446c920f4df1(Office.14).aspx))
- [Get-SPSearchServiceInstance](http://technet.microsoft.com/library/d0fcee38-4403-4ef6-b3ed-c28cec050557(Office.14).aspx) ([http://technet.microsoft.com/library/d0fcee38-4403-4ef6-b3ed-c28cec050557\(Office.14\).aspx](http://technet.microsoft.com/library/d0fcee38-4403-4ef6-b3ed-c28cec050557(Office.14).aspx))
- [Set-SPSearchServiceInstance](http://technet.microsoft.com/library/85dce2d2-1b01-4f7f-86d0-5523c432efe6(Office.14).aspx) ([http://technet.microsoft.com/library/85dce2d2-1b01-4f7f-86d0-5523c432efe6\(Office.14\).aspx](http://technet.microsoft.com/library/85dce2d2-1b01-4f7f-86d0-5523c432efe6(Office.14).aspx))

## Create and configure additional databases

After you finish configuring the databases required for Central administration, complete your farm deployment by creating and configuring the databases that are required for Web content and any service applications that you want to use.

The following procedure will have to be performed once for each portal site in the farm.

### ▶ Create and configure the portal site Web application and content database

1. [DBA] Create the portal site Web application content database using the LATIN1\_General\_CI\_AS\_KS\_WS collation sequence and set the database owner (**dbo**) to be the Setup user account.
2. [DBA] Using Microsoft SQL ServerManagement Studio, add the application pool process account to the Users group and the **db\_owner** role for the Web application content database.
3. [Setup] Open the command line, and then run the **New-SPWebApplication** and **Get-SPWebApplication** cmdlets to configure the portal site Web application content database. Use the following example as a guide.

```
New-SPWebApplication -Name "Contoso Internet Site" -Port 80 -URL  
"https://www.contoso.com" -ApplicationPool "ContosoAppPool" -  
ApplicationPoolAccount (Get-SPManagedAccount "DOMAIN\jdoe")  
Get-SPWebApplication http://sitename | New-SPWebApplicationExtension -Name
```

---

```
"ExtranetSite" -SecureSocketsLayer -Zone "Extranet"
```

For more information, see [New-SPWebApplication](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx) ([http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5\(Office.14\).aspx](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx)) and [Get-SPWebApplication](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx)).



**Important:**

The **Get-SPWebApplication** cmdlet must be run on the computer that is running the Web application. The host name and port combination must not describe a Web application that already exists or an error results and the Web application is not created.

Use the following procedure to create and configure the portal site Web application and its content database.

▶ **To create and configure the portal site Web application**

1. [DBA] Create the portal site Web application content database using the LATIN1\_General\_CI\_AS\_KS\_WS collation sequence and set the database owner (**dbo**) to be the Setup user account.
2. [DBA] Using SQL ServerManagement Studio, add the service application service account to the Users group and then to the **db\_owner** role for the portal site Web application content database.
3. [Setup] From the SharePoint 2010 Management Shell, use the **New-SPWebApplication** and **Get-SPWebApplication** cmdlets to configure the portal site Web application content database. Use the following example as a guide.

```
New-SPWebApplication -Name "Contoso Internet Site" -Port 80 -HostHeader  
"http://sharepoint.contoso.com" -URL "https://www.contoso.com" -ApplicationPool  
"ContosoAppPool" -ApplicationPoolAccount (Get-SPManagedAccount "DOMAIN\jdoe")  
  
Get-SPWebApplication http://somesite | Set-SPWebApplication -Zone "Extranet" -  
HostHeader "http://www.contoso.com" - AllowAnonymousAccess
```

For more information, see [New-SPWebApplication](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx) ([http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5\(Office.14\).aspx](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx)) and [Get-SPWebApplication](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx)).



**Important:**

This command must be run on the same computer that is running the Web application. The host name and port combination must not describe a Web application that already exists or an error results and the Web application is not created.

4. [Setup] From a command prompt, run the following command to restart IIS: **iisreset /noforce**

---

## Deploy in a virtual environment (SharePoint Foundation 2010)

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This section contains articles that provide guidance for configuring virtual machines for Microsoft SharePoint Foundation 2010 servers in a virtual environment.

In this section:

- [Virtual machine guidance \(SharePoint Foundation 2010\)](#)



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# Virtual machine guidance (SharePoint Foundation 2010)

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This article provides guidance for configuring a virtual machine (VM) that uses Windows Server 2008 Hyper-V technology and that is used in a Microsoft SharePoint Foundation 2010 farm. This includes farm servers on the Web server tier, application server tier, and database server tier. Before you configure a virtual machine for a SharePoint farm, we recommend that you read the [Hyper-V Getting Started Guide](http://go.microsoft.com/fwlink/?LinkId=187754) (<http://go.microsoft.com/fwlink/?LinkId=187754>). Because every configuration decision you make for a virtual machine or its infrastructure has an impact on performance or functionality (SharePoint Foundation 2010 and Hyper-V)—understanding each configuration option is important.

In a Hyper-V environment, you have the option of specifying the configuration of virtual networking and the configuration for each virtual machine. Additionally, you can configure how the VM interacts with the virtualization host, as well as VM stop and restart behavior if the running state of the virtual machine is interrupted.

In this article:

- [Networking](http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#Net) (<http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#Net>)
- [Network adapters](http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#NetAdapt) (<http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#NetAdapt>)
- [Virtual machine configuration](http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#vmCfg) (<http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#vmCfg>)
- [Integration services](http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#intServ) (<http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#intServ>)
- [Using snapshots](http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#Snapshot) (<http://technet.microsoft.com/library/813b309d-a27f-42a9-a5ae-03040a28acd7.aspx#Snapshot>)

## Networking

You can configure Hyper-V networking before you create any virtual machines or after you create one or more VMs. You can also create more than one virtual network for a Hyper-V host.

Using Virtual Network Manager (accessed from Hyper-V Manager), you have three different types of virtual networks to choose from. The following table provides a summary of the network types and their characteristics.

Type	Description
External	Use this type when you want to allow VMs to communicate with externally located servers and the management operating system (sometimes

Type	Description
	referred to as the parent partition). This type also allows VMs on the same physical server to communicate with each other.
Internal	Use this type when you want to allow communication between VMs on the same physical server and VMs and the management operating system. An internal virtual network is a virtual network that is not bound to a physical network adapter. It is commonly used to build a test environment where you need to connect to the VMs from the management operating system.
Private	Use this type when you want to allow communication only between VMs on the same physical server. A private virtual network is a virtual network without a virtual network adapter in the management operating system. Private virtual networks are commonly used when you want to isolate VMs from network traffic in the management operating system and in the external networks.

Use SharePoint Foundation farm requirements to determine which of the three networking configurations that you want to use on a virtualization host. For example, in the [Quick start: Deploy single server in an isolated Hyper-V environment \(SharePoint Foundation 2010\)](#) article, we used an Internal network to isolate the test environment from a production environment.

After determining the type of network that you want to use, you can specify the range of media access control (MAC) addresses that are automatically assigned to virtual adapters. The R2 release of Microsoft Hyper-V Server 2008 enables you to provide static MAC addresses to an adapter in order to avoid collisions on a network.

From a networking performance perspective, the ability to create virtual local area networks (VLANs) can provide performance gains. Virtual machines on the same VLAN can communicate through the virtual switch, which means that network traffic is faster because it does not have to use the physical network adapter. Another benefit of a VLAN configuration is the fact that is software-based, computers can easily be moved and still maintain their network configurations.

The following links provide more information about virtual networking concepts and how to configure virtual networks.

- [How does basic networking work in Hyper-V?](http://go.microsoft.com/fwlink/?LinkId=128228) (<http://go.microsoft.com/fwlink/?LinkId=128228>)
- [Hyper-V: What are the uses for different types of virtual networks?](http://go.microsoft.com/fwlink/?LinkId=128085) (<http://go.microsoft.com/fwlink/?LinkId=128085>)

- 
- [Understanding Hyper-V VLANs](http://go.microsoft.com/fwlink/?LinkId=180709) (<http://go.microsoft.com/fwlink/?LinkId=180709>)
  - [Hyper-V VLANs Part II](http://go.microsoft.com/fwlink/?LinkId=18775) (<http://go.microsoft.com/fwlink/?LinkId=18775>)
  - [Configuring Virtual Networks](http://go.microsoft.com/fwlink/?LinkId=158767) (<http://go.microsoft.com/fwlink/?LinkId=158767>)

## Network adapters

Two types of network adapters can be attached to a virtual machine: a network adapter and a legacy adapter. A network adapter provides better performance than the legacy network adapter. The legacy adapter emulates an Intel 21140-based PCI Fast Ethernet Adapter, which results in a lower data transfer than the network adapter. A legacy network adapter also supports network-based installations because it includes the ability to boot to the Pre-Boot Execution Environment (PXE).

Unless you need to use a legacy adapter until you can install the virtual machine driver, or need to do a network boot, we recommend that you configure the VM with a network adapter.



### Note:

You can use the legacy adapter initially to do a network boot, and when that is no longer required, add a network adapter and delete the legacy adapter.

As is the case with physical servers, you can install multiple adapters on a virtual machine.

## Virtual machine configuration

Hyper-V provides numerous options for configuring a virtual machine. These options can be changed after you have started the virtual machine and installed Microsoft SharePoint Foundation. You will have to shut the virtual machine down in order to change the configuration. Configure the following for each virtual machine:

- The boot sequence (legacy network adapter, CD, IDE, or floppy disk)
- The amount of memory
- The number of virtual processors, up to a limit of four
- The type and number of controllers
- The type and number of disks
- The type and number of network adapters

In addition to the preceding configurations, you also have the option to configure COM ports and to configure a virtual floppy disk.

From a SharePoint Foundation perspective, the primary configuration considerations are memory, processor, and the type and number of controllers and hard disks.

## Memory

After factoring in a 2 GB RAM reserve for the virtualization host, you can configure a virtual machine to have any amount of the remaining memory. You will, of course have to take into account the amount of memory that you provide to other virtual machines running on the same virtualization host.

**Note:**

The 2 GB of RAM reserved for the virtualization host is used as a guide and not a required or enforced amount of memory. Typically the actual amount of RAM committed to the physical server is less.

The actual memory overhead on Hyper-V is fairly small. This is well-illustrated if you download the [Hyper-V RAM Calculator.xls](http://go.microsoft.com/fwlink/?LinkId=187756) (<http://go.microsoft.com/fwlink/?LinkId=187756>) and use it to calculate RAM use on a host of a given size with a several virtual machines.

## Processor

You can configure multiple virtual processors for a virtual machine, up to a limit of four processors. You cannot configure more processors per VM than there are logical (cores) processors on the virtualization host. For example, given a dual core physical server, you are limited to configuring two virtual processors for a VM. Although Hyper-V supports up to eight virtual processors per core, a configuration that uses this ratio (1 logical: 8 virtual) is referred to as being oversubscribed. For any virtual machine used in a SharePoint farm, we recommend a ratio of 1:1. Oversubscribing the CPU on the virtualization host will work, but performance will degrade depending on the amount of oversubscription.

## Controller and hard disk

You can select either integrated device electronics (IDE) or SCSI devices on virtual machines, as follows:

- IDE devices: Hyper-V uses emulated devices with IDE controllers. You can have up to two IDE controllers with two disks on each controller. The startup disk (sometimes referred to as the boot disk) must be attached to one of the IDE devices. The startup disk can be either a virtual hard disk or a physical disk. Although a virtual machine must use an IDE device as the startup disk to start the guest operating system, you have many options to choose from when selecting the physical device that will provide the storage for the IDE device.
- SCSI devices: Each virtual machine supports up to 256 SCSI disks (four SCSI controllers with each controller supporting up to 64 disks). SCSI controllers use a type of device developed specifically for use with virtual machines and use the virtual machine bus to communicate. The virtual machine bus must be available when the guest operating system is started. Therefore, virtual hard disks attached to SCSI controllers cannot be used as startup disks.

**Note:**

Although the I/O performance of physical SCSI and IDE devices can differ significantly, this is not true for the virtualized SCSI and IDE devices in Hyper-V. IDE and SCSI devices both offer equally fast I/O performance when integration services are installed in the guest operating system. Support for hot swappable hard drives, which is supported by the Hyper-V implementation of SCSI, is a better reason for selecting SCSI drives than performance gains.

The version of Hyper-V released with Windows Server 2008 R2 provides dramatic improvements in virtual hard disk performance. For more information, see [Virtual Hard Disk Performance: Windows](#)

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[Server 2008 / Windows Server 2008 R2 / Windows 7](http://go.microsoft.com/fwlink/?LinkId=186519) (<http://go.microsoft.com/fwlink/?LinkId=186519>).

For a summary of virtual machine drive options, see the "How to choose your Hyper-V and VHD Storage Container Format" section of this white paper. Also, heed the authors' advice: When choosing the right VHD for your environment, consider both the access performance and storage needs. When using Windows Server 2008 R2, the choice has less to do with the access speed and more to do with the amount of memory used due to advanced caching.

 **Important:**

There is not a generic storage solution for every virtual environment. Selecting the optimal virtual machine drive option for your SharePoint Foundation servers requires research and extensive testing to implement the best storage solution for your virtual environment.

## Integration services

Hyper-V includes a software package for supported guest operating systems that improves integration between the physical computer and the virtual machine. This package is referred to as integration services. You should verify that the management operating system (which runs the Hyper-V role) and virtual machines are running the same version of integration services. For more information, see [Version Compatibility for Integration Services](http://go.microsoft.com/fwlink/?LinkId=188011) (<http://go.microsoft.com/fwlink/?LinkId=188011>).

For each virtual machine you can configure the following integration items between the VM and the virtualization host:

- Operating system shutdown
- Time synchronization
- Data exchange
- Heartbeat
- Backup (volume snapshot)

 **Important:**

Disable the time synchronization for each SharePoint Foundation virtual machine. SharePoint Foundation 2010 implements timer jobs extensively and the latency during time synchronization will cause unpredictable results in the SharePoint Foundation environment.

## Automatic stop and start

For each virtual machine you can configure automatic stop and start behavior if a physical machine shuts down. The options for stop are:

- Save the virtual machine state. The current state of the virtual machine is saved and when the VM is started, Hyper-V attempts to restore the VM to the state it was in.
- Turn off the virtual machine. This is the equivalent of pulling the power plug on a server.
- Shut down the guest (virtual machine) operating system. This is the equivalent of shutting down the machine using the Windows Shut down option.

---

For a SharePoint Foundation virtual machine, do not configure the virtual machine to save state. Virtual machines that come up from saved state will be out of synchronization with the other servers in the farm. We recommend that you configure the virtual machine to use a shutdown because it provides the cleanest method to minimize virtual machine corruption. When a shutdown occurs any timer jobs that are running are allowed to finish and there will not be any synchronization issues when the VM restarts. The opposite of an automatic stop is an automatic start. Hyper-V provides the following startup options when the physical server restarts:

- Do nothing. You will have to start the VM manually regardless of its state when the physical server shut down.
- Automatically start if the machine was running when the service stopped.
- Always start this virtual machine automatically. Hyper-V will start the machine regardless of its state when the physical server shut down.

We recommend that you either of the first two options. Either option is valid, but the decision is ultimately up to the IT team that is managing and maintaining the virtual environment.

In addition to the preceding start options, you can configure a startup time delay for a virtual machine. We recommend that you do so in order to reduce resource contention on a virtualization host. However, if your start option is to do nothing, this is not an issue.

## Using snapshots

Snapshots provide a very useful tool for capturing the current state of a running, paused, or stopped virtual machine. The snapshot feature enables you to quickly and easily revert to a previous virtual machine configuration. This capability is particularly well-suited to a development or test environment.

As a best practice, we recommend that you do not use the snapshot feature on virtual machines in a production environment for the following reasons:

- Clock synchronization: When you take a snapshot of a running virtual machine, there is latency between the time the snapshot is started and the time the snapshot is finished. This latency affects SharePoint Foundation timer jobs and, as a result, time synchronization between farm servers.

 **Important:**

If you choose to take a snapshot of a virtual machine, shut down the machine to allow running jobs to finish before taking the snapshot. We recommend that you closely monitor the virtual machine and other farm servers after the virtual machine is restarted to ensure that there are no time synchronization issues.

- Performance: When you create a snapshot for a virtual machine you have, in effect, created a differencing disk. There is a continuous exchange of configuration data between the virtual machine and the snapshot, which affects performance.

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# Install SharePoint Foundation 2010 by using Windows PowerShell

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This article discusses how to do a clean installation of Microsoft SharePoint Foundation 2010 on a stand-alone server or on a server farm by using Windows PowerShell.

In this article:

- [Farm server requirements](#)
- [Prepare SPMModule](#)
- [Install SharePoint Foundation 2010 by running Install-SharePoint](#)
- [Configure the farm by using New-SharePointFarm](#)
- [Create a Web Application by using Windows PowerShell](#)
- [Deploy services by using the SharePoint 2010 Farm Configuration Wizard](#)
- [Create a site collection by using Windows PowerShell](#)
- [Perform additional configuration tasks](#)
- [Add servers to the farm by using Join-SharePointFarm](#)
- [Configure the trace log](#)

You can streamline deployment by using Windows PowerShell to install Microsoft SharePoint Foundation 2010 in combination with other administrator tools to automate unattended installations and configure the farm.

## Farm server requirements

Before you install SharePoint Foundation 2010, review the following information about permissions, hardware requirements, and software requirements and steps to perform before beginning the process:

1. Ensure that you have met all hardware and software requirements. You must have a 64-bit version of Windows Server 2008 or Windows Server 2008 R2. For server farms, you must also have a 64-bit version of SQL Server 2005 or SQL Server 2008. For more information about these requirements (such as specific updates that you must install), see [Determine hardware and software requirements \(SharePoint Foundation 2010\)](#).
2. Ensure that you are prepared to set up the required accounts by using appropriate permissions. For detailed information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).

## Prepare SPMModule

The SPMModule.zip file is a Windows PowerShell module written by members of the SharePoint Product Group that will install a SharePoint farm.

To use the SPMModule.zip file, follow the steps below:

- 
1. Download the SPMModule.zip and text file from the following [Download Center page](http://go.microsoft.com/fwlink/?LinkId=187924) (<http://go.microsoft.com/fwlink/?LinkId=187924>).
  2. Extract the files to a folder named SPMModule and then add that folder to your environment path. The `PSModulePath` environment variable is used to store paths to the locations of the modules that are installed on disk. To view paths specified in the `PSModulePath` variable, from a Windows PowerShell command prompt, type `$env:PSModulePath`. For more information, see [PSModule Environment Variable](http://go.microsoft.com/fwlink/?LinkId=187757) (<http://go.microsoft.com/fwlink/?LinkId=187757>). After extraction, the SPMModule folder should contain two files: SPMModule.misc and SPMModule.setup.

**Note:**

If the SPMModule folder is not added to the `PSModulePath` variable, you must specify a full path to load the SPMModule.

3. Decide on the type of signing to provide.

**Note:**

The downloaded files are unsigned. To provide self-signed scripts, see [AllSigned: Signing Your PowerShell Scripts](http://go.microsoft.com/fwlink/?LinkId=187758) (<http://go.microsoft.com/fwlink/?LinkId=187758>).

By default, Windows PowerShell execution policy is set to Restricted so that no scripts can be run. To change an execution policy, run the **Set-ExecutionPolicy** cmdlet. For additional information about execution policies, see [About Signing](http://go.microsoft.com/fwlink/?LinkId=187759) (<http://go.microsoft.com/fwlink/?LinkId=187759>).



1. Click **Start**, point to **All Programs**, and then click **Windows PowerShell V2**. After the Windows PowerShell Command Prompt window opens, the first thing we need to do is add the path to the module to your Windows PowerShell module path (presuming you created a folder called "SPModule" on your server):
2. Right-click **Windows PowerShell V2**, and then click **Run as administrator**.

**Note:**

If you already have Microsoft SharePoint Foundation 2010 installed, you could open the SharePoint 2010 Management Shell instead.

3. After the Command Prompt window is displayed, we need to import the module into the current Windows PowerShell session not adding it to a path by typing the following syntax from a Windows PowerShell command prompt:

```
Import-Module SPMModule.misc  
  
Import-Module SPMModule.setup
```

When you import the SPMModule.misc module, you will invoke an update check. In version 1.0, this will check a text file to see if there is a newer version available. If you are notified that there is, you can go and download the newer version. After the **Import-Module** commands have been completed successfully, you are ready to use SPMModule.

**Important:**



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The following commands should only be used in the context of the SPMModule and the process in this article:

1. Install-SharePoint: Installs all of the binary files for SharePoint Foundation 2010. For more information, see, [Scripted deployment reference \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e(Office.14).aspx) ([http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e\(Office.14\).aspx](http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e(Office.14).aspx))
2. New-SharePointFarm: Creates a SharePoint farm and performs the following related tasks:
  - Configures security
  - Creates a shared service Web application that you can populate with service applications.
  - Creates and configures the Central Administration Web site.
  - Installs all of the product Help files.
  - Installs all farm features.
3. Join-SharePointFarm: Adds servers to the farm, and then configures them. . For more information, see [Scripted deployment reference \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e(Office.14).aspx) ([http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e\(Office.14\).aspx](http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e(Office.14).aspx))

After Windows PowerShell version 2.0 is installed, you can use a new feature of Windows PowerShell called Remoting. By using the remoting feature and a couple lines of Windows PowerShell code, an administrator can remotely install multiple servers in a farm. For information about Remoting and SPMModule, see [Remote Install with SPMModule](http://go.microsoft.com/fwlink/?LinkId=187923) (<http://go.microsoft.com/fwlink/?LinkId=187923>).

## Install SharePoint Foundation 2010 by running Install-SharePoint

After you have determined the required accounts for the installation, you can install SharePoint Foundation 2010. The product DVD contains examples of configuration (Config.xml) files. These example files are stored under the \Files folder in the root directory of the DVD, in folders that correspond to different scenarios. These example files are described in the following table.

Configuration file	Description
Setup\Config.xml	Stand-alone server installation, using Microsoft SQL Server 2005 Express Edition
SetupFarm\Config.xml	Server farm installation
SetupFarmSilent\Config.xml	Server farm installation in silent mode
SetupFarmUpgrade\Config.xml	In-place upgrade of an existing farm
SetupSilent\Config.xml	Stand-alone server installation, using SQL Server 2005 Express Edition, in silent mode
SetupSingleUpgrade\Config.xml	In-place upgrade of an existing single-server installation

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## ▶ To run Install-SharePoint with a Config.xml file at a Windows PowerShell command prompt

1. On the drive on which the SharePoint Foundation 2010 product DVD is located, change to the root directory to locate the setup.exe file.
2. Run SPMModule.Setup Install-SharePoint with the selected Config.xml file, as follows:

**Install-SharePoint -SetupExePath**<path and file name>**-ConfigXmlPath**<path and file name>



### Note:

You can select one of the example files, or customize your own configuration file.

3. Press ENTER.

Setup is now finished.

The following example shows the configuration file for setting up a single server in silent mode (SetupSilent).

```
<Configuration><Package Id="sts"> <Setting Id="LAUNCHEDFROMSETUPSTS" Value="Yes"
/> </Package><Package Id="spswfe"> <Setting Id="SETUPCALLED" Value="1"
/> </Package> <Logging Type="verbose" Path="%temp%" Template="SharePoint Server Setup(*) .log"
/>- <!--<PIDKEY Value="Enter Product Key Here" /> --> <Display Level="none"
CompletionNotice="no" /> <Setting Id="SERVERROLE" Value="APPLICATION" /> <Setting
Id="USINGUIINSTALLMODE" Value="0" /> <Setting Id="SETUP_REBOOT" Value="Never" /> <Setting
Id="SETUPTYPE" Value="CLEAN_INSTALL" /> </Configuration>
```

You can also customize your own configuration file. To control the installation, first edit the Config.xml file in a text editor to include the elements that you want with the appropriate settings for those elements. Next, run **Install-SharePoint -SetupExePath -ConfigXMLPath** to specify that Setup runs and uses the options that you set in the Config.xml file.

Some typical configuration options include the following:

- Bypassing the prompt for the product key by providing the key as a value, <PIDKEY Value="Enter PID Key Here" />, in the Config.xml file.
- Adding a location for a log file, <Logging Type="off" | "standard"(default) | "verbose" Path="path" Template="file name.log"/>, which you can view if command-line installation fails.



### Important:

Use a text editor, such as Notepad, to edit Config.xml. Do not use a general-purpose XML editor, such as Microsoft Office Word 2007. To validate that your XML file is well-formed, use any supported browser.

## Run Install-SharePoint by using a PID key

To run Setup in silent mode without using a configuration XML file, type one of the following commands at a Windows PowerShell command prompt:

- **For stand-alone server:** `Install-SharePoint -SetupExePath "<drive letter>:\SharePoint 2010\Setup\setup.exe" -ServerRole "SINGLESERVER"`
- **For a farm deployment:** `Install-SharePoint -SetupExePath "<drive letter>:\SharePoint 2010\Setup\setup.exe"`

To run Setup in silent mode using a configuration XML file, type one of the following commands at a Windows PowerShell command prompt:

- **For a stand-alone server:** `Install-SharePoint -SetupExePath "G:\SharePoint 2010\Setup\setup.exe" -ConfigXMLPath "G:\SharePoint 2010\Setup\Config\singleserver_config.xml" -ServerRole "SINGLESERVER"`
- **For a farm deployment:** `Install-SharePoint -SetupExePath "G:\SharePoint 2010\Setup\setup.exe" -ConfigXMLPath "G:\SharePoint 2010\Setup\Config\appserver_config.xml"`



**Note:**

For Microsoft SharePoint Foundation 2010, the PIDKey parameter does not need to be specified.

## Configure the farm by using New-SharePointFarm

You use the New-SharePointFarm command to configure SharePoint Foundation 2010 after the Install-SharePoint command has finished. The configuration options are different depending on whether you install SharePoint Foundation 2010 on a stand-alone server or on a server farm.

### Configure SharePoint Foundation 2010 on a stand-alone server

In stand-alone server deployments, you can run New-SharePointFarm. After you have logged on by using the Setup user account that you previously created and configured, you configure SharePoint Foundation 2010.

#### ▶ To configure SharePoint Foundation 2010 on a stand-alone server by using New-SharePointFarm

- At the Windows PowerShell command prompt, type the following command:

```
New-SharePointFarm -DatabaseServer
<String>
-DatabaseAccessAccount
<PSCredential>
```

Where:

- `<String>` is the name of the database server. For example, "SQL01"
- `<PSCredential>` is the DOMAIN\password of the user account that is performing the installation.

The New-SharePointFarm command describes the configuration steps as they occur, and notes the successful completion of configuration. For a stand-alone server installation, this is the final step in

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a command-line installation.

We strongly recommend that you install and configure SharePoint Foundation 2010 on all of the farm servers before you create sites.



**Caution:**

Do not run the `New-SharePointFarm` and `Join-SharePointFarm` commands simultaneously on multiple computers because contention issues and unpredictable behavior can occur.



**Note:**

If any of these commands fail, look in the post-setup configuration log files. The log files are available at `%COMMONPROGRAMFILES%\Microsoft shared\Web server extensions\14\Logs`, and can be identified by a file name that begins with `PowerShell_ConfigurationDiagnostics` and the `.log` file name extension.

To connect to an existing configuration database and join the server to an existing server farm, the **Connect-SPConfigurationDatabase** cmdlet needs to be run along with the following Windows PowerShell cmdlets, in this order:

- **Install-SPHelpCollection**
- **Initialize-SPResourceSecurity**
- **Install-SPService**
- **Install-SPFeature -InstallAll**
- **Install-SPApplicationContent**

## Create a Web Application by using Windows PowerShell

Use the **New-SPWebApplication** cmdlet to create the Web application and a new content database.

 **To create a Web application**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
New-SPWebApplication -ApplicationPool <String> -Name  
<InternetSite>  
-ApplicationPoolAccount (Get-SPManagedAccount  
<DOMAIN\UserName>
```

Where:

- *<String>* is the name of the application pool. For example, "SharePoint -80".
- *<InternetSite>* is name of the Web application.
- *Domain\UserName* is the name of the application pool account.

For more information, see [New-SPWebApplication](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx) ([http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5\(Office.14\).aspx](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## Deploy services by using the SharePoint 2010 Farm Configuration Wizard

Use the SharePoint Products Configuration Wizard to deploy services on your installation. For information about services and service applications, see [Service application and service management \(SharePoint Foundation 2010\)](#).

## Create a site collection by using Windows PowerShell

You create the top-level site collection by using the **New-SPSite** cmdlet. The **New-SPSite** cmdlets creates a site collection at a specific URL with a specified user as a site owner.

### ▶ To create a site collection

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
New-SPSite  
  
    <SiteURL>  
  
    -OwnerAlias  
  
    <DOMAIN\UserName>
```

Where:

- *<SiteURL>* is the URL of the new site.
- *<DOMAIN\UserName>* is the user login name of the site owner.

For more information, see [New-SPSite](http://technet.microsoft.com/library/ebdad86-0cda-49b7-) (<http://technet.microsoft.com/library/ebdad86-0cda-49b7->

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*a84a-5cfc6b4506b3(Office.14).aspx).*



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

If you do not specify the site template to use, site owners can choose the site template when they first browse to the site. You can use the **Get-SPWebTemplate** cmdlet to display a list of templates.

For a complete list of common templates in SharePoint Foundation 2010, see [Scripted deployment reference \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e(Office.14).aspx) ([http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e\(Office.14\).aspx](http://technet.microsoft.com/library/1719cc0b-f68c-42a5-9ede-cc2d4a58d43e(Office.14).aspx))

If you want to create additional site collections by using Windows PowerShell, you can use the **New-SPSite** cmdlet.



**Note:**

If you want to create a new content database with the new site, use the **New-SPContentDatabase** cmdlet or the **New-SPSite** with the **ContentDatabase** parameter.

After creating sites, you might want to configure alternate access mappings. Alternate access mappings direct users to the correct URLs during their interaction with SharePoint Foundation 2010 (while browsing to the home page of a SharePoint site, for example). Alternate access mappings enable SharePoint Foundation 2010 to map Web requests to the correct Web applications and sites, and they enable SharePoint Foundation 2010 to serve the correct content back to the user. For more information, see [Set-SPAlternateUrl](http://technet.microsoft.com/library/846b5eb0-f235-4970-837b-f8f2657722a9(Office.14).aspx) ([http://technet.microsoft.com/library/846b5eb0-f235-4970-837b-f8f2657722a9\(Office.14\).aspx](http://technet.microsoft.com/library/846b5eb0-f235-4970-837b-f8f2657722a9(Office.14).aspx)).

## Perform additional configuration tasks

After you have installed SharePoint Foundation 2010, we recommend that you perform the following administrative tasks:

- Configure outgoing e-mail settings.
- Configure workflow settings.
- Configure diagnostic logging settings.
- Configure antivirus settings.

## Add servers to the farm by using Join-SharePointFarm

You must run the Join-SharePointFarm command on all servers you want to add to the farm. To connect to an existing configuration database and join the server to an existing server farm, type the following command on the server (after installing SharePoint Foundation 2010):

```
Join-SharePointFarm -DatabaseServer
```

---

```
<String>
  -ConfigurationDatabaseName
<String>
  -Passphrase
<SecureString>
```

Where:

- *<String>* is the name of the database server, for example, SQL01.
- *<SecureString>* is the password of the user account in the form DOMAIN\password.

## Configure the trace log

The trace log can be useful for analyzing problems that might occur. You can use events that are written to the trace log to determine what configuration changes were made in SharePoint Foundation 2010 before the problem occurred.

By default, SharePoint Foundation 2010 saves 14 days of events in the trace log files. This means that trace log files that contain events that are older than 14 days are deleted. You can use the **Set-SPLogLevel** cmdlet to configure all diagnostic logging.

You can use the Diagnostic Logging page in Central Administration to configure the maximum number of trace log files to maintain, and how long (in minutes) to capture events to each log file.

You can also specify where the log files are written or accept the default path by using the **Set-SPLogLevel** cmdlet.

Trace log files can help you troubleshoot issues related to configuration changes to the Microsoft SharePoint Foundation Search service. Because problems related to configuration changes are not always immediately discovered, we recommend that you save all trace log files that the system creates on any day that you make any configuration changes. Store these log files for some time in a safe location that will not be overwritten. We recommend that you store log files on a hard disk drive partition that is used to store log files only.

For additional information about diagnostic logging, see [Configure diagnostic logging \(SharePoint Foundation 2010\)](#)

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# Initial configuration (SharePoint Foundation 2010)

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After the installation of Microsoft SharePoint Foundation 2010, you must perform an initial configuration. If you are using different languages in the server farm, ensure that you install the correct language packs on your Web servers. Next, you can start to configure server farm settings. The configuration of additional settings is optional, but many key features are not available unless these settings are configured. When you have created a Web application and configured the services that you want to use for this Web application, you can start to create site collections.

The articles in this section help you perform the initial configuration of SharePoint Foundation 2010.

- [Deploy language packs \(SharePoint Foundation 2010\)](#)

Language packs enable site owners and site collection administrators to create SharePoint sites and site collections in multiple languages without requiring separate installations of SharePoint Foundation 2010. This article describes how you install language packs on Web servers.
- [Configure farm settings \(SharePoint Foundation 2010\)](#)

This article describes how to configure additional settings in the server farm, for example outgoing and incoming e-mail, mobile account, and diagnostic logging.
- [Configure services \(SharePoint Foundation 2010\)](#)

Individual services can be configured independently, and you can implement only the services that your organization needs. Services that are deployed are named service applications. A service application provides a resource that can be shared across sites within a farm or sometimes across multiple farms, and can be accessed by users through a hosting Web application. This article covers how to start, stop, and configure services, and how to manage and publish service applications.
- [Prepare to host sites \(SharePoint Foundation 2010\)](#)

After you have installed SharePoint Foundation 2010 and performed the initial configuration, you can begin to create SharePoint sites. This article describes how you create a Web application and a site collection which are the basis for creating SharePoint sites.



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# Deploy language packs (SharePoint Foundation 2010)

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In this article:

- [About language IDs and language packs](#)
- [Downloading language packs](#)
- [Preparing the Web servers for language packs](#)
- [Installing language packs on the Web servers](#)
- [Uninstalling language packs](#)

Language packs enable site owners and site collection administrators to create SharePoint sites and site collections in multiple languages without requiring separate installations of Microsoft SharePoint Foundation 2010. You install language packs, which contain language-specific site templates, on Web servers. When an administrator creates a site or a site collection that is based on a language-specific site template, the text that appears on the site or the site collection is displayed in the site template's language. Language packs are typically used in multinational deployments where a single server farm supports people in different locations, or when sites and Web pages must be duplicated in one or more languages.



**Note:**

You cannot change an existing site, site collection, or Web page from one language to another by applying different language-specific site templates. After you use a language-specific site template for a site or a site collection, the site or site collection will always display content in the language of the original site template.

Word breakers and stemmers enable you to efficiently and effectively search across content on SharePoint sites and site collections in multiple languages without requiring separate installations of SharePoint Foundation 2010. Word breakers and stemmers are automatically installed on Web servers by Setup.



**Important:**

If you are uninstalling SharePoint Foundation 2010, you must uninstall all language packs before you uninstall SharePoint Foundation 2010.

## About language IDs and language packs

When site owners or site collection administrators create sites or site collections, they can choose a language for each site or site collection.

The language that they choose has a language identifier (ID). The language ID determines the language that is used to display and interpret text that is put on the site or site collection. For example, when a site owner creates a site in French, the site's toolbars, navigation bars, lists, and column headings appear in French. Similarly, if a site owner creates a site in Arabic, the site's toolbars,

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navigation bars, lists, and column headings appear in Arabic. In addition, the default left-to-right orientation of the site changes to a right-to-left orientation to correctly display Arabic text.

The list of available languages that people can use to create a site or site collection is generated by the language packs that are installed on the Web servers. By default, sites and site collections are created in the language in which SharePoint Foundation 2010 was installed. For example, if you install the Spanish version of SharePoint Foundation 2010, the default language for sites, site collections, and Web pages is Spanish. If someone has to create sites, site collections, or Web pages in a language other than the default SharePoint Foundation 2010 language, you must install the language pack for that language on the Web servers. For example, if you are running the French version of SharePoint Foundation 2010, and a site owner wants to create sites in French, English, and Spanish, you must install the English and Spanish language packs on the Web servers.



**Note:**

By default, when a site owner creates a new Web page in a site, the site displays text in the language that is specified by the language ID.

Language packs are not bundled into multilingual installation packages. You must install a specific language pack for each language that you want to support. Also, language packs must be installed on each Web server to ensure that each Web server can render content in the specified language.



**Important:**

You cannot change an existing site, site collection, or Web page from one language to another by applying different language-specific site templates. After you use a language-specific site template for a site or a site collection, the site or site collection will always display content in the language of the original site template.

For a list of all the language packs available, see [Language packs \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/3d599354-863e-4528-9fe8-867df5f45658(Office.14).aspx) ([http://technet.microsoft.com/library/3d599354-863e-4528-9fe8-867df5f45658\(Office.14\).aspx](http://technet.microsoft.com/library/3d599354-863e-4528-9fe8-867df5f45658(Office.14).aspx)).

Although a site owner specifies a language ID for a site, some user interface elements such as error messages, notifications, and dialog boxes do not display in the language that was specified. This is because SharePoint Foundation 2010 relies on several supporting technologies — for example, the Microsoft .NET Framework, Microsoft Windows Workflow Foundation, Microsoft ASP.NET, and Microsoft SQL Server 2005 — some of which are localized into only a limited number of languages. If a user interface element is generated by any of the supporting technologies that is not localized into the language that the site owner specified for the site, the user interface element appears in English. For example, if a site owner creates a site in Hebrew, and the .NET Framework component displays a notification message, the notification message will not display in Hebrew because the .NET Framework is not localized into Hebrew. This situation can occur when sites are created in any language except the following: Chinese, French, German, Italian, Japanese, Korean, and Spanish.



**Important:**

Each language pack that you install creates a folder at %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\14\LAYOUTS\Locale\_ID that contains culture-specific data. In each locale\_ID folder, you must have only one HTML error file that contains the error information that is used

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when a file cannot be found. Anytime a file cannot be found for any site in that culture, this file will be used. You can specify which file to use by setting the `SPWebApplication.FileNotFoundPage` property for each Web application. For more information see, [SPWebApplication.FileNotFoundPage Property](#).

(<http://go.microsoft.com/fwlink/?LinkId=169319>)

In some cases, some text might originate from the original installation language, which can create a mixed-language experience. This kind of mixed-language experience is typically seen only by content creators or site owners and is not seen by site users.

## Downloading language packs

You must perform the following steps for each language that you want to support. If you decide to download more than one language, please be aware that a unique file that has a common name is downloaded for each language. Therefore, make sure that you download each language pack to a separate folder on the hard disk so that you do not overwrite a language pack of a different language.

### **Important:**

The Windows PowerShell help files are installed in English (en-us) by default. To view these files in the same language as the operating system, you must install the language pack for the same language that the operating system was installed in.

The language packs can be downloaded at [Language Packs for SharePoint Foundation 2010 Beta](#) (<http://go.microsoft.com/fwlink/?LinkId=190422&clcid=0x409>).

### **Important**

- If you are upgrading from a previous version of Microsoft SharePoint Foundation and you are using the **Group Approval (eApproval)** features, you must install all the following language packs before you run the SharePoint Products Configuration Wizard:
- After installing the language packs, run the following command in the `%COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14` folder:
- **psconfig.exe –cmd upgrade –inplace v2v**

### **Download the language pack**

1. Download the 64-bit version of the language pack by using one of the download links.
2. On the download page, select the language that you want from the **Change Language** list, and then click **Change**.
3. Click **Download** on the Web page.
4. In the dialog box that appears, click **Save** to download a copy of the file to the local computer.

### **Note:**

If you are uninstalling SharePoint Foundation 2010, you must uninstall all language packs before you uninstall SharePoint Foundation 2010.

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# Preparing the Web servers for language packs

Before you install language packs on the Web servers, you must do the following:

- Install the necessary language files on the Web servers.
- Install SharePoint Foundation 2010 on each of the Web servers.
- Run the SharePoint Products Configuration Wizard on each of the Web servers.

Language files are used by the operating system and provide support for displaying and entering text in multiple languages. Language files include the following:

- Keyboard files
- Input Method Editors (IMEs)
- TrueType font files
- Bitmap font files
- Code page conversion tables
- National Language Support (.nls) files
- Script engines for rendering complex scripts

By default, most language files are installed on the Windows Server 2008 operating system. However, you must install supplemental language files for East Asian languages and languages that use complex script or require right-to-left orientations. The East Asian languages include Chinese, Japanese, and Korean. The complex script and right-to-left oriented languages include Arabic, Armenian, Georgian, Hebrew, the Indic languages, Thai, and Vietnamese. Instructions for installing these supplemental language files are provided in the following procedure.

We recommend that you install these language files only if you must have them. The East Asian files require about 230 megabytes of hard disk space. The complex script and right-to-left languages do not use much disk space, but installing either set of files might decrease performance when you enter text.



## Note

- You will need your Windows Server 2008 product disc to perform this procedure, or you will have to know the location of a shared folder that contains the operating system installation files.
- You must restart the computer after you install supplemental language files.

## ▶ Install additional language files on Windows Server 2008

1. You must be a member of the Administrators group on the computer to install these language files. After the language files are installed, the languages are available to all users of the computer.
2. On the Web server, click **Start**, point to **Settings** and then **Control Panel**, and then click **Regional and Language Options**.
3. In the **Regional and Language Options** dialog box, on the **Keyboards and Languages** tab, in the **Display Language** section, click **Install/Uninstall languages**.
4. In the **Install or Uninstall Languages** dialog box, click **Install languages**.
5. On the Select the Languages to Install page, select the language to install from the list of

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available languages. If the language does not appear, click **Browse folder** to navigate to where you downloaded the language file. The language file is a .cab file.

6. Select all the languages that you want to install, and then click **Next**.
7. Accept the terms, and then click **Next**.
8. Click **Install**.

After you install the necessary language files on the Web servers, you have to install SharePoint Foundation 2010 and run the SharePoint Products Configuration Wizard. The wizard creates and configures the configuration database and performs other configuration tasks that must be done before you install language packs. For more information about how to install SharePoint Foundation 2010 and running the SharePoint Products Configuration Wizard, see [Deployment overview \(SharePoint Foundation 2010\)](#).

## Installing language packs on the Web servers

After you install the necessary language files on the Web servers, you can install the language packs. Language packs are available as individual downloads (one download for each supported language). If you have a server farm environment and you are installing language packs to support multiple languages, you must install the language packs on each of the Web servers.



### Important:

The language pack is installed in its native language. For example, the Russian language pack executable file is in Russian. The procedure that follows is for the English language pack.

### ▶ Install a language pack

1. Run setup.exe.
2. On the Read the Microsoft Software License Terms page, review the terms, select the **I accept the terms of this agreement** check box, and then click **Continue**.
3. The Setup wizard runs and installs the language pack.
4. Rerun the SharePoint Products Configuration Wizard, using the default settings. If you do not run the SharePoint Products Configuration Wizard after you install a language pack, the language pack will not be installed correctly.

### ▶ Rerun the SharePoint 2010 Products Configuration Wizard

1. Click **Start**, point to **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Products Configuration Wizard**.
2. On the Welcome to SharePoint Products page, click **Next**.
3. Click **Yes** in the dialog box that alerts you that some services might have to be restarted during configuration.
4. On the Modify Server Farm Settings page, click **Do not disconnect from this server farm**, and then click **Next**.

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5. If the Modify SharePoint Central Administration Web Administration Settings page appears, do not change any of the default settings, and then click **Next**.
  6. On the Completing the SharePoint Products and Technologies Configuration Wizard page, click **Next**.
  7. On the Configuration Successful page, click **Finish**.

When you install language packs, the language-specific site templates are installed in the %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\14\template\*number* directory, where *number* is the Language ID for the language that you are installing. For example, the U.S. English language pack installs to the %COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14\template\1033 directory. After you install a language pack, site owners and site collection administrators can create sites and site collections based on the language-specific site templates by specifying a language when they are creating a new SharePoint site or site collection.

## Uninstalling language packs

If you no longer have to support a language for which you have installed a language pack, you can remove the language pack by using the Control Panel. Removing a language pack removes the language-specific site templates from the computer. All sites that were created that have those language-specific site templates will no longer work (the URL will produce a HTTP 500 - Internal server error page). Reinstalling the language pack will make the site functional.



### Note:

You cannot remove the language pack for the version of SharePoint Foundation 2010 that you have installed on the server. For example, if you are running the Japanese version of SharePoint Foundation 2010, you cannot uninstall the Japanese language support for SharePoint Foundation 2010.

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# Configure farm settings (SharePoint Foundation 2010)

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After the initial installation of Microsoft SharePoint Foundation 2010, you can configure several additional settings. Some of these settings include configuring usage and health data collection to ensure that you collect relevant data to analyze, configuring several diagnostic logging settings to help with troubleshooting, and configuring a mobile account so that users can receive alerts by means of Short Message Service (SMS) when changes have been made in a SharePoint list or item. The configuration of additional settings is optional, but many key features are not available unless these settings are configured.

The articles in this section describe how you configure the server farm.

- [Configure usage and health data collection \(SharePoint Foundation 2010\)](#)  
This article describes how to configure usage and health data collection in SharePoint Foundation 2010.
- [Configure diagnostic logging \(SharePoint Foundation 2010\)](#)  
This article describes how to configure diagnostic logging that might be required after initial deployment or upgrade and possibly throughout the system's life cycle.
- [E-mail integration \(SharePoint Foundation 2010\)](#)  
This article describes how to configure incoming and outgoing e-mail in the server farm.
- [Configure a mobile account \(SharePoint Foundation 2010\)](#)  
This article discusses how to configure and manage a mobile account for SharePoint Foundation 2010 to enable users to subscribe to alerts that are sent by using Short Message Service (SMS).
- [Install and configure Remote BLOB Storage \(RBS\) with the FILESTREAM provider\(SharePoint Foundation 2010\)](#)  
This article describes how to install and configure Remote BLOB Storage (RBS) for a Microsoft SQL Server 2008 database server that supports a Microsoft SharePoint Foundation 2010 farm.

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# Configure usage and health data collection (SharePoint Foundation 2010)

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This article provides information about configuring usage and health data collection in Microsoft SharePoint Foundation 2010.

The system writes usage and health data to the logging folder and to the logging database. To configure settings for the logging database, you must use Windows PowerShell.

In this article:

- [Configure usage and health data collection by using Central Administration](#)
- [Configure usage data collection by using Windows PowerShell](#)
- [To configure usage data collection for a specific event type by using Windows PowerShell](#)
- [Log usage data in a different logging database by using Windows PowerShell](#)



**Note:**

You cannot configure health data collection settings by using Windows PowerShell.

## Configure usage and health data collection by using Central Administration

You can use only Central Administration to configure usage and health data collection.

### ▶ To configure usage and health data collection by using Central Administration

1. Verify that the user account performing this procedure is a member of the Farm Administrators group.



**Note:**

The usage and health data settings are farm-wide and cannot be set for individual servers in the farm.

2. In Central Administration, on the Home page, click **Monitoring**.
3. On the Monitoring page, in the **Reporting** section, click **Configure usage and health data collection**.
4. On the Configure usage and health data collection page, in the **Usage data collection** section, enable usage data collection by selecting the **Enable usage data collection** text box.
5. In the **Event Selection** section, select the events to log by selecting the check box next to the events in the **Events to log** list.



**Note:**

Logging uses system resources and can affect performance and disk usage. Only log



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those events for which you want regular reports. For ad hoc reports or investigations, enable logging for specific events, and then disable logging for the events after the report or investigation is complete.

6. In the **Usage data collection settings** section, type the path of the folder you want usage and health information to be written to in the **Log file location** box. The path that you specify must exist on all farm servers.



**Note:**

These settings are applied to all events. To set event collection settings for individual event types, you must use Windows PowerShell.

7. Type the maximum disk space for the logs in gigabytes (between 1 and 20 GB) in the **Maximum log file size** box.
8. In the **Health data collection** section, select the **Enable health data collection** check box. To change the collection schedules, click **Health Logging Schedule**. A list of timer jobs that collect health data is listed. Click any of the timer jobs to change its schedule, or disable that timer job.
9. In the **Logging Database Server** section, to change the authentication used, select either the **Windows authentication** or **SQL authentication** option.



**Note:**

To change the **Database Server** and **Database Name** values, you must use Windows PowerShell.

## Configure usage data collection by using Windows PowerShell



**Note:**

You can configure usage data collection by using Windows PowerShell, but you cannot configure health data collection by using Windows PowerShell.

### ▶ To configure usage data collection by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt (that is, PS C:\>), type the following command, and then press ENTER:

```
Set-SPUsageService [-LoggingEnabled {1 | 0}] [-UsageLogLocation <Path>] [-UsageLogMaxSpaceGB <1-20>] [-Verbose]
```



**Important:**

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You must specify a path for `UsageLogLocation` that exists on all farm servers.

Enable usage data logging by typing `-LoggingEnabled 1`. Specify the maximum amount of drive space used for logging with the `UsageLogMaxSpaceGB` parameter.

For more information, see [Set-SPUsageService](http://technet.microsoft.com/library/c758e682-3a57-4d47-a932-56a96b56614d(Office.14).aspx) ([http://technet.microsoft.com/library/c758e682-3a57-4d47-a932-56a96b56614d\(Office.14\).aspx](http://technet.microsoft.com/library/c758e682-3a57-4d47-a932-56a96b56614d(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The `Stsadm` command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## To configure usage data collection for a specific event type by using Windows PowerShell

The event types listed on the [Configure usage and health data collection](#) page in Central Administration are the same as Usage Definitions in Windows PowerShell. You can use only Windows PowerShell to configure usage definitions individually. Moreover, you can configure only the `DaysRetained` setting.

### ▶ To configure usage data logging for a specific event type using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt (that is, PS C:\>), type the following command, and then press ENTER:

```
Set-SPUsageDefinition -Identity <GUID> [-Enable] [-DaysRetained <1-30>] [-Verbose]
```

Use the `Enabled` switch to enable usage logging for this usage definition. Use `DaysRetained` to specify how long the usage data is retained in the log before being deleted. The range is 1 to 30 days. To view the progress of the command, use the `Verbose` parameter.

For more information, see [Set-SPUsageDefinition](http://technet.microsoft.com/library/05ff2fea-1955-4537-8cfb-1b0e3890e1be(Office.14).aspx) ([http://technet.microsoft.com/library/05ff2fea-1955-4537-8cfb-1b0e3890e1be\(Office.14\).aspx](http://technet.microsoft.com/library/05ff2fea-1955-4537-8cfb-1b0e3890e1be(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The `Stsadm` command-line tool has been deprecated, but is included to support compatibility with previous product versions.

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# Log usage data in a different logging database by using Windows PowerShell



## Note:

You can use only Windows PowerShell to change this setting.



## To log usage data in a different logging database by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt (that is, PS C:\>), type the following command, and then press ENTER:

```
Set-SPUsageApplication -DatabaseServer <Database server name> -DatabaseName <Database name> [-DatabaseUsername <User name>] [-DatabasePassword <Password>] [-Verbose]
```

You must specify the value for the `DatabaseServer` parameter, even if the new database is on the same database server as the old one. You must use both the `DatabaseUsername` and the `DatabasePassword` parameters if the database owner is a different user account than the one you with which you are logged on. To view the progress of the command, use the `Verbose` parameter.

For more information, see [Set-SPUsageApplication](#) ([http://technet.microsoft.com/library/4b918524-5af9-4265-9dcc-470f70fbaaba\(Office.14\).aspx](http://technet.microsoft.com/library/4b918524-5af9-4265-9dcc-470f70fbaaba(Office.14).aspx)).



## Note:

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The `Stsadm` command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## See Also

[Monitoring overview \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/d2e48b54-1a32-4ec6-8b9e-b884b7faca8f\(Office.14\).aspx](http://technet.microsoft.com/library/d2e48b54-1a32-4ec6-8b9e-b884b7faca8f(Office.14).aspx))

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# Configure diagnostic logging (SharePoint Foundation 2010)

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This article provides information about configuring diagnostic logging in Microsoft SharePoint Foundation 2010.

In this article:

- [Best practices](#)
- [Configure diagnostic logging by using Central Administration](#)
- [Configure diagnostic logging by using Windows PowerShell](#)

## Best practices

The SharePoint Foundation 2010 environment might require configuration of the diagnostic logging settings after initial deployment or upgrade and possibly throughout the system's life cycle. The guidelines in the following list can help you form best practices for the specific environment.

- **Change the drive that logging writes to.** By default, diagnostic logging is configured to write logs to the same drive and partition that SharePoint Foundation 2010 was installed on. Because diagnostic logging can use lots of drive space and writing to the logs can affect drive performance, you should configure logging to write to a drive that is different from the drive on which SharePoint Foundation 2010 was installed. You should also consider the connection speed to the drive that logs are written to. If verbose-level logging is configured, lots of log data is recorded. Therefore, a slow connection might result in poor log performance.
- **Restrict log disk space usage.** By default, the amount of disk space that diagnostic logging can use is not limited. Therefore, limit the disk space that logging uses to make sure that the disk does not fill up, especially if you configure logging to write verbose-level events. When the disk restriction is used up, the oldest logs are removed and new logging data information is recorded.
- **Use the Verbose setting sparingly.** You can configure diagnostic logging to record verbose-level events. This means that the system will log every action that SharePoint Foundation 2010 takes. Verbose-level logging can quickly use drive space and affect drive and server performance. You can use verbose-level logging to record a greater level of detail when you are making critical changes and then re-configure logging to record only higher-level events after you make the change.
- **Regularly back up logs.** The diagnostic logs contain important data. Therefore, back them up regularly to make sure that this data is preserved. When you restrict log drive space usage, or if you keep logs for only a few days, log files are automatically deleted, starting with the oldest files first, when the threshold is met.
- **Enable event log flooding protection.** Enabling this setting configures the system to detect repeating events in the Windows event log. When the same event is logged repeatedly, the repeating events are detected and suppressed until conditions return to a typical state.

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# Configure diagnostic logging by using Central Administration

You can use Central Administration to configure diagnostic logging.

## ▶ To configure diagnostic logging by using Central Administration

1. Verify that the user account that is performing this procedure is a member of the Farm Administrators SharePoint group.
2. In Central Administration, on the Home page, click **Monitoring**.
3. On the Monitoring page, in the **Reporting** section, click **Configure diagnostic logging**.
4. On the Diagnostic Logging page, in the **Event Throttling** section, you can configure event throttling as follows:

To configure event throttling for all categories:

- a. Select the **All Categories** check box.
- b. Select the event log level from the **Least critical event to report to the event log** list.
- c. Select the trace log level from the **Least critical event to report to the trace log** list.

To configure event throttling for one or more categories:

- a. Select the check boxes next to the categories that you want.
- b. Select the event log level from the **Least critical event to report to the event log** list.
- c. Select the trace log level from the **Least critical event to report to the trace log** list.

To configure event throttling for one or more sub-categories (you can expand one or more categories and select any sub-category):

- a. Click **(+)** next to the category to expand the category.
- b. Select the check box next to the sub-category.
- c. Select the event log level from the **Least critical event to report to the event log** list.
- d. Select the trace log level from the **Least critical event to report to the trace log** list.

To configure event throttling for all categories back to default settings:

- a. Select the **All Categories** check box.
- b. Select **Reset to default** from the **Least critical event to report to the event log** list.
- c. Select **Reset to default** from the **Least critical event to report to the trace log** list.

5. In the **Event Log Flood Protection** section, select the **Enable Event Log Flood Protection** check box.
6. In the **Trace Log** section, in the **Path** box, type the path of the folder to which you want logs to be written.
7. In the **Number of days to store log files** box, type the number of days (1-366) that you want logs to be kept. After this time, logs will automatically be deleted.
8. To restrict how much disk space the logs can use, select the **Restrict Trace Log disk space usage** check box, and then type the number gigabytes (GB) you want to restrict log files to.

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When logs reach this disk size, older logs will automatically be deleted.

9. After you have made the changes that you want on the Diagnostic Logging page, click **OK**.

## Configure diagnostic logging by using Windows PowerShell

You can use Windows PowerShell to configure diagnostic logging.

### To configure diagnostic logging by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt (that is, PS C:\>), type the following command, and then press ENTER:

```
Set-SPLogLevel -TraceSeverity {None | Unexpected | Monitorable | Medium | High |  
Verbose} -EventSeverity {None | Information | Warning | Error | Critical | Verbose} [-  
Identity <Category name...>] -Verbose
```

You can use the `Identity` parameter to specify one or more categories to change — for example, Administration. If you do not specify the value for the `Identity` parameter, all categories are changed.

To view the current settings, type `Get-SPLogLevel`, and then press ENTER.

To set all categories back to default levels, type `Clear-SPLogLevel`, and then press ENTER.

For more information, see [Set-SPLogLevel](#) ([http://technet.microsoft.com/library/c8ede92a-f685-4140-8587-96700d1a45de\(Office.14\).aspx](http://technet.microsoft.com/library/c8ede92a-f685-4140-8587-96700d1a45de(Office.14).aspx)).



#### **Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The `Stsadm` command-line tool has been deprecated, but is included to support compatibility with previous product versions.

#### **See Also**

[Monitoring overview \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/d2e48b54-1a32-4ec6-8b9e-b884b7faca8f\(Office.14\).aspx](http://technet.microsoft.com/library/d2e48b54-1a32-4ec6-8b9e-b884b7faca8f(Office.14).aspx))

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## E-mail integration (SharePoint Foundation 2010)

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After the initial installation of Microsoft SharePoint Foundation 2010, you can configure incoming and outgoing e-mail. These additional settings are optional, but might be useful if you want to work with e-mail in the server farm.

- [Configure incoming e-mail \(SharePoint Foundation 2010\)](#)

This article describes how to configure incoming e-mail so that SharePoint sites accept and archive incoming e-mail. It also describes how to configure incoming e-mail so that SharePoint sites can archive e-mail discussions as they happen, save e-mailed documents, and show e-mailed meetings on site calendars. In addition, this article describes how to configure the SharePoint Directory Management Service to provide support for e-mail distribution list creation and management.

- [Configure outgoing e-mail \(SharePoint Foundation 2010\)](#)

This article describes how to configure outgoing e-mail so that your Simple Mail Transfer Protocol (SMTP) server sends e-mail alerts to site users and notifications to site administrators.

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# Configure incoming e-mail (SharePoint Foundation 2010)

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This article describes how to configure incoming e-mail for Microsoft SharePoint Foundation 2010.

Procedures in this task:

- [Install and configure the SMTP service](#)
- [Configure incoming e-mail in a basic scenario](#)
- [Configure DNS Manager](#)
- [Add an SMTP connector in Microsoft Exchange Server 2007](#)
- [Configure AD DS to be used with Directory Management Service](#)
- [Configure permissions to the e-mail drop folder](#)
- [Configure incoming e-mail in an advanced scenario](#)
- [Are attachments missing from e-mail messages that are sent to a SharePoint document library?](#)

## Overview

When incoming e-mail is enabled, SharePoint sites can receive and store e-mail messages and attachments in lists and libraries. This article describes two scenarios, one basic scenario and one advanced scenario. The advanced scenario contains several options from which to choose.

### Basic scenario


In the basic scenario, you install the Simple Mail Transfer Protocol (SMTP) service on the server that is running SharePoint Foundation 2010. Alternatively, you can use an SMTP service that runs on another SMTP server, and then enable incoming e-mail by using the automatic settings mode with all the default settings. In this scenario, e-mail is delivered directly to the SMTP server and SharePoint Foundation 2010 periodically checks for e-mail in the default e-mail drop folder that is automatically configured by the SMTP service. The basic scenario applies to a single-server farm environment.

### Advanced scenario

In the advanced scenario, you have several options from which to select to optimize the incoming e-mail feature. One option is whether to use Microsoft SharePoint Directory Management Service. The benefit of using Directory Management Service is that contact addresses that are created for document libraries appear automatically in Active Directory Users and Computers in the organizational unit (OU) for SharePoint Foundation 2010. It also enables users to create and manage e-mail distribution groups from SharePoint sites. In addition, it creates contacts in your organization's user directory so that people can find e-mail-enabled SharePoint lists in their address books. However, using Directory Management Service requires more management because it is communicating with Active Directory



Domain Services (AD DS). An advantage of not using Directory Management Service is reduced administrative overhead. A disadvantage is that you must manually add each new contact address. If you use the advanced scenario, you can configure incoming e-mail for a single-server farm or a multiple-server farm. If you have two or more front-end Web servers in a SharePoint farm, you can use them for routing incoming e-mail to the farm. The following table describes the actions that you must take and the options from which you can select to configure incoming e-mail for a farm.

Action	Comment
Configure DNS Manager by adding a host (A) resource record.	You must add a host (A) resource record to associate DNS domain names of computers (or hosts) to their IP addresses.
Add an SMTP connector.	You must add an SMTP connector so that the Microsoft Exchange Server 2007 computer routes incoming e-mail to the correct server.
Use Directory Management Service (optional).	Use Directory Management Service so that users can create and manage e-mail distribution groups from SharePoint sites. Contact addresses that are created for document libraries appear automatically in AD DS.   <b>Note:</b> If you do not use Exchange Server, you must customize your own directory management service.
Use a specific e-mail drop folder (optional).	Use a specific e-mail drop folder to enable SharePoint Foundation 2010 to poll for incoming e-mail from the SMTP service.

For more information about Directory Management Service, see [Inside SharePoint: SharePoint Directory Integration](http://go.microsoft.com/fwlink/?LinkId=151766) (<http://go.microsoft.com/fwlink/?LinkId=151766>).

Before you configure incoming e-mail in SharePoint Foundation 2010, read the following article:

- [Plan incoming e-mail \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288433.aspx) (<http://technet.microsoft.com/en-us/library/cc288433.aspx>)

## Task Requirements

The following requirements are necessary to perform the procedures for this task:

- SharePoint Foundation 2010 must be installed.

- 
- One or more servers in your server farm must be running the SMTP service and must be using a valid SMTP server address. Alternatively, you must know the name of another server that is running the SMTP service.
  - Each SharePoint front-end Web server must be running the SMTP service and the Windows SharePoint Services Web Application service.
  - The application pool identity account for Central Administration, the logon account for the Windows SharePoint Services Timer service, and the application pool identity accounts for your Web applications must be members of the Administrators group on the local computer that contains the e-mail drop folder.

## Install and configure the SMTP service

Incoming e-mail for SharePoint Foundation 2010 uses the SMTP service. You can use the SMTP service in one of two ways. You can install the SMTP service on one or more servers in the farm, or administrators can provide an e-mail drop folder for e-mail that is forwarded from the service on another server.



### Note:

Carefully consider whether to use the e-mail drop folder option. One factor to consider is that administrators of the other server can affect the availability of incoming e-mail by changing the configuration of SMTP. A second factor is that this option requires the additional step of configuring permissions to the e-mail drop folder.

## Install the SMTP service

If you are not using a drop folder for e-mail, the SMTP service must be installed on every front-end Web server in the farm that you want to configure for incoming e-mail. To install the SMTP service, use the Add Features Wizard in Server Manager. After the procedure is complete, a default SMTP configuration has been created. You can customize this default SMTP configuration to meet the requirements of your environment.

### ▶ To install the SMTP service

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the local computer.
2. Click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
3. In Server Manager, click **Features**.
4. In **Features Summary**, click **Add Features** to open the Add Features Wizard.
5. On the Select Features page, select **SMTP Server**.
6. In the **Add Features Wizard** dialog box, click **Add Required Features**, and then click **Next**.
7. On the Confirm Installation Selections page, click **Install**.
8. On the Installation Results page, ensure that the installation finished successfully, and then

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click **Close**.

## Install IIS 6.0 Management tools

To manage the SMTP service on Windows Server 2008, you must use Internet Information Services (IIS) 6.0 Manager.

### ▶ To install IIS 6.0 Manager

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the local computer.
2. Click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
3. In Server Manager, click **Roles**.
4. In Role Services, click **Add Role Services**.
5. On the Select Role Services page, select **Management Tools** and **IIS 6 Management compatibility**, and then click **Install**.

## Configure the SMTP service

After you install the SMTP service, you configure it to accept e-mail from the mail server for the domain. You can decide to accept relayed e-mail from all servers except those that you specifically exclude. Alternatively, you can block e-mail from all servers except those that you specifically include. You can include servers individually, or in groups by subnet or domain.

After you configure the service, set it to start automatically.

### ▶ To configure the SMTP service

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the local computer.
2. Click **Start**, point to **Administrative Tools**, and then click **Internet Information Services (IIS) 6.0 Manager**.
3. In IIS Manager, expand the server name that contains the SMTP server that you want to configure.
4. Right-click the SMTP virtual server that you want to configure, and then click **Start**.
5. Right-click the SMTP virtual server that you want to configure, and then click **Properties**.
6. On the **Access** tab, in the **Access control** area, click **Authentication**.
7. In the **Authentication** dialog box, verify that **Anonymous access** is selected.
8. Click **OK**.
9. On the **Access** tab, in the **Relay restrictions** area, click **Relay**.
10. To enable relaying from any server, click **All except the list below**.
11. To accept relaying from one or more specific servers, follow these steps:

- 
- a. Click **Only the list below**.
  - b. Click **Add**, and then add servers one at a time by IP address, or in groups by using a subnet or domain.
  - c. Click **OK** to close the **Computer** dialog box.
12. Click **OK** to close the **Relay Restrictions** dialog box.
  13. Click **OK** to close the **Properties** dialog box.

▶ **To set the SMTP service to start automatically**

1. Click **Start**, point to **Administrative Tools**, and then click **Services**.
2. In Services, right-click **Simple Mail Transfer Protocol (SMTP)**, and then select **Properties**.
3. In the **Simple Mail Transfer Protocol (SMTP) Properties** dialog box, on the **General** tab, in the **Startup type** list, select **Automatic**.
4. Click **OK**.

## Configure incoming e-mail in a basic scenario

Before you can enable incoming e-mail on the server that is running SharePoint Foundation 2010, you must select the SMTP service that you want to use.

You can use the following procedure to configure incoming e-mail. When you complete the procedure, you will have configured everything that is required for a basic scenario. Users can then send e-mail to lists and libraries.

▶ **To configure incoming e-mail in a basic scenario**

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the computer that is running the SharePoint Central Administration Web site.
2. In Central Administration, click **System Settings**.
3. On the System Settings page, in the **E-Mail and Text Messages (SMS)** section, click **Configure incoming e-mail settings**.
4. If you want to enable sites on this server to receive e-mail, on the Configure Incoming E-Mail Settings page, in the **Enable Incoming E-Mail** section, click **Yes**.
5. Select the **Automatic** settings mode.
6. In the **Incoming E-Mail Server Display Address** section, in the **E-mail server display address** box, type a display name for the e-mail server (for example, mail.fabrikam.com).
7. Use the default settings for all other sections, and then click **OK**.

After you configure incoming e-mail, users who have Manage Lists permissions can configure e-mail-enabled lists and document libraries. For more information about e-mail-enabled document libraries,

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see [Enable and configure e-mail support for a list or library](http://go.microsoft.com/fwlink/?LinkId=120164)  
(<http://go.microsoft.com/fwlink/?LinkId=120164>).

## Configure DNS Manager

If you are using Exchange Server and are routing e-mail internally in your organization, you must create a host (A) resource record in DNS Manager to associate DNS domain names of computers (or hosts) to their IP addresses. Your organization might have already configured DNS Manager and created an A resource record. If not, then use the following procedure.

### ▶ To create an A resource record for a subdomain

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the local computer.
2. In DNS Manager, select the forward lookup zone for the domain that contains the subdomain for SharePoint Foundation 2010.
3. Right-click the zone, and then click **New Host (A or AAAA)**.
4. In the **New Host** dialog box, in the **Name** text box, type the host or subdomain name for SharePoint Foundation 2010.
5. In the **Fully qualified domain name (FQDN)** text box, type the FQDN for the server that is running SharePoint Foundation 2010. This is typically in the format *subdomain.domain.com*.



#### Note:

Ensure that the domains that are listed under the SMTP server in IIS match the FQDN of the server that receives e-mail. If they do not match, you must create a local domain, which is described in the following procedure.

6. In the **IP address** text box, type the IP address to which you want the FQDN to resolve.
7. Click **Add Host**.
8. In the message that confirms the creation of the host record, click **OK**.
9. In the **New Host** dialog box, click **Done**.

The A resource record now appears in DNS Manager.

### ▶ To create a local domain

1. Click **Start**, point to **Administrative Tools**, and then click **Internet Information Services (IIS) 6.0 Manager**.
2. In IIS Manager, expand the SMTP server.
3. Right-click **Domains**, and on the **Action** menu, point to **New**, and then click **Domain**.
4. In the **New SMTP Domain Wizard** dialog box, select **Alias**, and then click **Next**.
5. In the **Domain Name** area, in the **Name** box, type the address of the mail that is to be received by this domain.

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This address must be the same as the one that you specified in step 4 in the To Create an A Resource Record for the Subdomain procedure, and in step 6b in the To Configure Incoming E-Mail in an Advanced Scenario procedure.

6. Click **Finish**.
7. In the message that confirms the creation of the host record, click **OK**.



**Note:**

Restart the SMTP server so that any e-mail messages that are still in the Queue folder move to the Drop folder. The messages are then sent by the Windows SharePoint Services Timer service to their destination list or library.



**Note:**

If you are routing e-mail from outside your organization to an SMTP server, you must use an MX record. For more information, see [Add a mail exchanger \(MX\) resource record to a zone](http://go.microsoft.com/fwlink/?LinkId=150827) (<http://go.microsoft.com/fwlink/?LinkId=150827>).

## Add an SMTP connector in Microsoft Exchange Server 2007

An SMTP connector gives you more control over the message flow in your organization. Other reasons to use an SMTP connector are to set delivery restrictions or to specify a specific address space. If you use Exchange Server to route incoming e-mail to SharePoint lists and libraries, you must have an SMTP connector so that all mail that is sent to the SharePoint Foundation 2010 domain uses the SharePoint Foundation 2010 servers that are running the SMTP service.

Use the following procedure to add an SMTP connector in Exchange Server. After the procedure is complete, the SMTP connector ensures that incoming e-mail messages are sent to the correct list and library in the farm.

### To add an SMTP connector in Exchange Server

8. 0.1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the computer that is running Exchange Server.
2. In Exchange System Manager, expand the routing group, right-click **Connectors**, point to **New**, and then click **SMTP Connector**.

The **Properties** dialog box for the new connector appears.



**Note:**

If you cannot see the **Administrative Groups** folder, in the **Exchange Organization** object, right-click **Properties**, and then select the **Display Administrative Groups** and the **Display Routing Groups** check boxes. Click **OK**. You must then restart Exchange System Manager.

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3. On the **General** tab, type a name for the SMTP connector.
  4. On the **General** tab, select one of the following options:
    - To use the DNS settings that are configured on the SMTP virtual server that is hosting the connector, select **Use DNS to route to each address space on this connector**. DNS is the recommended configuration for Exchange Server.
    - To route mail to a Windows SMTP server or another server in your perimeter network (also known as a screened subnet), select **Forward all mail through this connector to the following smart hosts**. Type the host name or the IP address of the smart host in brackets to prevent Exchange Server from trying to resolve the IP address by using DNS. The SMTP connector then routes mail to the selected server, which handles DNS resolution and delivers the mail.
  5. On the **General** tab, click **Add**, and add at least one bridgehead server and one SMTP virtual server.

The servers that you add appear in the **Local bridgeheads** list on the **General** tab.
  6. Click the **Address Space** tab, and then click **Add**.
  7. In the **Add Address Space** dialog box, in the **Select an address type** list, click **SMTP**, and then click **OK**.
  8. In the **Internet Address Space Properties** dialog box, select the following options:
    - a. In the **E-mail domain** box, type an e-mail domain for the connector.



**Important:**

In the **E-mail domain** box, there is a default value of \* that represents all addresses. At least one connector in your organization must have this address space to make sure that all external domains are routed to the Internet.

- b. In the **Cost** box, assign an appropriate cost. By default, the cost is 1.
9. Click **OK** to return to the **Address Space** tab.
10. On the **Address Space** tab, in the **Connector scope** area, select one of the following options, and then click **OK**:
  - To allow all servers in the Exchange Server organization to use this connector to send Internet mail, click **Entire organization**.
  - To allow only servers in the routing group to use this connector to send Internet mail, click **Routing group**.



**Note:**

If you select **Routing group**, make sure that you have another way for servers in different routing groups to send Internet mail.

For more information, see [Managing Connectors](http://go.microsoft.com/fwlink/?LinkId=150840) (<http://go.microsoft.com/fwlink/?LinkId=150840>).

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# Configure AD DS to be used with Directory Management Service

If you plan to use Directory Management Service you should first create an organizational unit (OU) and make the necessary configurations in AD DS.

To use Directory Management Service on a SharePoint farm or on a remote server farm, you must configure the application pool identity account for the SharePoint Central Administration Web site to have the **Create, delete, and manage user accounts** user right to the container that you specify in AD DS. The preferred way to do this is by assigning the right to the application pool identity account for the SharePoint Central Administration Web site. An AD DS administrator must set up the OU and assign the **Create, delete, and manage user accounts** right to the container. The advantage of using Directory Management Service on a remote server farm is that you do not have to assign rights to the OU for multiple farm service accounts.

The following procedures are performed on a domain controller that runs Windows Server 2008 with DNS Manager. In some deployments, these applications might run on multiple servers in the same domain.

## ▶ To create an OU in AD DS

1. Verify that you have the following administrative credentials:
  - You must be a member of the Domain Administrators group or a delegated authority for domain administration on the domain controller that is running DNS Manager.
2. Click **Start**, point to **Administrative Tools**, and then click **Active Directory Users and Computers**.
3. In Active Directory Users and Computers, right-click the folder for the second-level domain that contains your server farm, point to **New**, and then click **Organizational Unit**.
4. Type the name of the OU, and then click **OK**.

After you create the OU, you must delegate the **Create, delete, and manage user accounts** right to the container of the OU to manage the user accounts.

## ▶ To delegate the right to the application pool identity account for Central Administration

1. Verify that you have the following administrative credentials:
  - You must be a member of the Domain Administrators group or the Enterprise Administrators group in AD DS, or a delegated authority for domain administration.
2. In Active Directory Users and Computers, find the OU that you created.
3. Right-click the OU, and then click **Delegate control**.
4. On the Welcome page of the Delegation of Control Wizard, click **Next**.
5. On the Users and Groups page, click **Add**, and then type the name of the application pool identity account that the Central Administration uses.
6. In the **Select Users, Computers, and Groups** dialog box, click **OK**.



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7. On the Users or Groups page of the Delegation of Control Wizard, click **Next**.
  8. On the Tasks to Delegate page of the Delegation of Control Wizard, select the **Create, delete, and manage user accounts** check box, and then click **Next**.
  9. On the last page of the Delegation of Control Wizard, click **Finish** to exit the wizard.

To create and delete child objects, you must also delegate **Create all Child Objects** and **Delete all Child Objects** control of the OU to the application pool identity account for Central Administration. After this procedure is complete, the application pool identity account for Central Administration has **Create all Child Objects** and **Delete all Child Objects** control on the OU, and you can enable incoming e-mail.

▶ **To delegate Create all Child Objects and Delete all Child Objects control of the OU to the application pool identity account for Central Administration**

1. Verify that you have the following administrative credentials:
  - You must be a member of the Domain Administrators group or the Enterprise Administrators group in AD DS, or a delegated authority for domain administration.
2. Right-click the OU, and then click **Delegate control**.
3. In the Delegation of Control Wizard, click **Next**.
4. Click **Add**, and then type the name of the application pool identity account for Central Administration.
5. Click **OK**.
6. Click **Next**.
7. On the Tasks to Delegate page of the Delegation of Control Wizard, select **Create a custom task to delegate**, and then click **Next**.
8. Select **This folder, existing objects in this folder, and creation of new objects in this folder**, and then click **Next**.
9. In the **Permissions** section, select **Create all Child Objects** and **Delete all Child Objects**.
10. Click **Next**.
11. On the last page of the Delegation of Control Wizard, click **Finish** to exit the wizard.

Delegating **Create all Child Objects** and **Delete all Child Objects** control of the OU to the application pool identity account for Central Administration enables administrators to enable e-mail for a list. After these controls have been delegated, administrators cannot disable e-mail for the list or document library because the Central Administration account tries to delete the contact from the whole OU instead of from the list.

To avoid this problem, you must add **Delete Subtree** permissions for the application pool identity account for Central Administration. Use the following procedure to add these permissions. After this procedure is complete, you can disable incoming e-mail for a list.

▶ **To add Delete Subtree permissions for the application pool identity account for Central Administration**

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1. Verify that you have the following administrative credentials:
    - You must be a member of the Domain Administrators group or the Enterprise Administrators group in AD DS, or a delegated authority for domain administration.
  2. In Active Directory Users and Computers, click the **View** menu, and then click **Advanced Features**.
  3. Right-click the OU, and then click **Properties**.
  4. In the **Properties** dialog box, click the **Security** tab, and then click **Advanced**.
  5. In the **Permission Entries** area, double-click the application pool identity account for Central Administration.
  6. In the **Permissions** area, select **Allow**, for **Delete Subtree**.
  7. Click **OK** to close the **Permissions** dialog box.
  8. Click **OK** to close the **Properties** dialog box.
  9. Click **OK** to close Active Directory Users and Computers.

After you add these permissions, you must restart Internet Information Services (IIS) for the farm.

For more information, see [Active Directory Users, Computers, and Groups](http://go.microsoft.com/fwlink/?LinkId=151331) (<http://go.microsoft.com/fwlink/?LinkId=151331>).

## Configure permissions to the e-mail drop folder

You can specify a particular e-mail drop folder, which enables SharePoint Foundation 2010 to retrieve incoming e-mail from a network share on another server. You can use this option if you do not want to use an SMTP service. However, the drawback of using this option is that SharePoint Foundation 2010 cannot detect configuration changes on the remote e-mail server that is delivering e-mail to the drop folder. The result is that SharePoint Foundation 2010 cannot retrieve e-mail if the location of the e-mail messages has changed. However, this feature is useful if the default e-mail drop folder is full or almost full.

If you specified an e-mail drop folder, you must ensure that the application pool identity accounts for Central Administration and for the Web application have the required permissions to the e-mail drop folder.


### Configure e-mail drop folder permissions for the application pool identity account for a Web application

If your deployment uses different application pool identity accounts for Central Administration and for one or more Web applications, each application pool identity account must have permissions to the e-mail drop folder. If the application pool identity account for the Web application does not have the required permissions, e-mail will not be delivered to document libraries on that Web application.

In most cases, when you configure incoming e-mail and select an e-mail drop folder, permissions are added for the following worker process groups:

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- WSS\_Admin\_WPG, which includes the application pool identity account for Central Administration and the logon account for the Windows SharePoint Services Timer service, and has Full Control permissions.
  - WSS\_WPG, which includes the application pool accounts for Web applications, and has Read & Execute, List Folder Contents, and Read permissions.

In some cases, these groups might not be configured automatically for the e-mail drop folder. For example, if Central Administration is running as the Network Service account, the groups or accounts that are needed for incoming e-mail will not be added when the e-mail drop folder is created. Check to find out whether these groups have been added automatically to the e-mail drop folder. If the groups have not been added automatically, you can add them or add the specific accounts that are required.

 **To configure e-mail drop folder permissions for the application pool identity account for a Web application**

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the computer that contains the e-mail drop folder.
2. In Windows Explorer, right-click the drop folder, click **Properties**, and then click the **Security** tab.
3. On the **Security** tab, under the **Group or user names** box, click the **Edit** button.
4. In the **Permissions for Windows Explorer** dialog box, click the **Add** button.
5. In the **Select Users, Computers, or Groups** dialog box, in the **Enter the object names to select** box, type the name of the worker process group or application pool identity account for the Web application, and then click **OK**.



**Note:**

This account is listed on the **Identity** tab of the **Properties** dialog box for the application pool in IIS.

6. In the **Permissions for User or Group** box, next to **Modify**, select **Allow**.
7. Click **OK**.

## **Configure e-mail drop folder permissions for the logon account for the Windows SharePoint Services Timer service**

Ensure that the logon account for the Windows SharePoint Services Timer service has Modify permissions on the e-mail drop folder. If the logon account for the service does not have Modify permissions, e-mail-enabled document libraries will receive duplicate e-mail messages.

 **To configure e-mail drop folder permissions for the logon account for the Windows SharePoint Services Timer service**

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the computer that contains the e-

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mail drop folder.

2. In Windows Explorer, right-click the drop folder, click **Properties**, and then click the **Security** tab.
3. On the **Security** tab, under the **Group or user names** box, click the **Edit** button.
4. In the **Permissions for Windows Explorer** dialog box, click the **Add** button.
5. In the **Select Users, Computers, or Groups** dialog box, in the **Enter the object names to select** box, type the name of the logon account for the Windows SharePoint Services Timer service, and then click **OK**.



**Note:**

This account is listed on the **Log On** tab of the **Properties** dialog box for the service in the Services console.

6. In the **Permissions for User or Group** box, next to **Modify**, select **Allow**.
7. Click **OK**.

## Configure incoming e-mail in an advanced scenario

The following procedure configures incoming e-mail. You can also select Directory Management Service, configure options for safe e-mail servers or specify an e-mail drop folder, and specify the incoming e-mail display address. After the procedure is complete, users can send e-mail to lists and libraries.

### To configure incoming e-mail in an advanced scenario

1. Verify that you have the following administrative credentials:
  - You must be a member of the Administrators group on the computer that is running the SharePoint Central Administration Web site.
2. In Central Administration, click **System Settings**.
3. On the System Settings page, in the **E-Mail and Text Messages (SMS)** section, click **Configure incoming e-mail settings**.
4. If you want to enable sites on this server to receive e-mail, on the Configure Incoming E-mail Settings page, in the **Enable Incoming E-Mail** section, click **Yes**.
5. Select either the **Automatic** or the **Advanced** settings mode.

If you select **Automatic**, you can specify whether to accept e-mail from all e-mail servers or from several specified e-mail servers.

If you select **Advanced**, you can specify a drop folder instead of using an SMTP server.
6. If you want to connect to Directory Management Service, in the **Directory Management Service** section, click **Yes**.
  - a. In the **Active Directory container where new distribution groups and contacts will be created** box, type the name of the container in the format **OU=ContainerName, DC=domain, DC=com**, where *ContainerName* is the name of the OU in AD DS, *domain* is

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the second-level domain, and *com* is the top-level domain.



**Note:**

The application pool identity account for Central Administration must be delegated the **Create, delete, and manage user accounts** task for the container. Access is configured in the properties for the OU in AD DS.

- b. In the **SMTP mail server for incoming mail** box, type the name of the SMTP mail server. The server name must match the FQDN in the A resource record entry for the mail server in DNS Manager.
  - c. To accept only messages from authenticated users, click **Yes** for **Accept messages from authenticated users only**. Otherwise, click **No**.
  - d. To enable users to create distribution groups from SharePoint sites, click **Yes** for **Allow creation of distribution groups from SharePoint sites**. Otherwise, click **No**.
  - e. Under **Distribution group request approval settings**, select the actions that will require approval. Actions include the following:
    - **Create new distribution group**
    - **Change distribution group e-mail address**
    - **Change distribution group title and description**
    - **Delete distribution group**
7. If you want to use a remote Directory Management Service, select **Use remote**.
- a. In the **Directory Management Service URL** box, type the URL of the Directory Management Service that you want to use. The URL is typically in the following format: `http://server:adminport/_vti_bin/SharePointEmailWS.asmx`.
  - b. In the **SMTP mail server for incoming mail** box, type the name of the SMTP mail server. The server name must match the FQDN in the A resource record entry for the mail server in DNS Manager on the domain server.
  - c. To accept messages from authenticated users only, click **Yes** for **Accept messages from authenticated users only**. Otherwise, click **No**.
  - d. To allow creation of distribution groups from SharePoint sites, click **Yes** for **Allow creation of distribution groups from SharePoint sites**. Otherwise, click **No**.
8. If you do not want to use Directory Management Service, click **No**.
9. In the **Incoming E-Mail Server Display Address** section, in the **E-mail server display address** box, type a display name for the e-mail server (for example, mail.fabrikam.com).



**Tip:**

You can specify the e-mail server address that is displayed when users create an incoming e-mail address for a list or group. Use this setting together with Directory Management Service to provide an e-mail server address that is easy to remember.

10. In the **E-Mail Drop Folder** section, in the **E-mail drop folder** box, type the name of the folder in which SharePoint Foundation polls for incoming e-mail from the SMTP service.

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It is useful to have a dedicated e-mail drop folder if the default e-mail drop folder is full or almost full.

Ensure that the logon account for the SharePoint Foundation Timer service has Modify permissions on the e-mail drop folder. For more information, see "To configure e-mail drop folder permissions for the logon account for the Windows SharePoint Services Timer service," earlier in this article.

 **Note:**

This option is available only if you selected advanced mode.

11. In the **Safe E-Mail Servers** section, select whether you want to accept e-mail from all e-mail servers or from several specified e-mail servers.

 **Note:**

This option is available only if you selected automatic mode.

12. Click **OK**.

After you configure incoming e-mail, site administrators can configure e-mail-enabled lists and document libraries. For more information about e-mail-enabled document libraries, see [Enable and configure e-mail support for a list or library](http://go.microsoft.com/fwlink/?LinkId=120164) (<http://go.microsoft.com/fwlink/?LinkId=120164>).

If you selected Directory Management Service, contact addresses that are created for document libraries appear automatically in Active Directory Users and Computers. The addresses are displayed in the OU of AD DS for SharePoint Foundation 2010 and must be managed by the administrator of AD DS. The AD DS administrator can add more e-mail addresses for each contact. For more information about AD DS, see [Using Active Directory Service](http://go.microsoft.com/fwlink/?LinkId=151348) (<http://go.microsoft.com/fwlink/?LinkId=151348>).

Alternatively, the Exchange Server computer can be configured by adding a new Exchange Server Global recipient policy. The policy automatically adds external addresses that use the second-level domain name and not the subdomain or host name for SharePoint Foundation 2010. For more information about how to manage Exchange Server, see [Microsoft Exchange Server 2007](http://go.microsoft.com/fwlink/?LinkID=83249) (<http://go.microsoft.com/fwlink/?LinkID=83249>).

## Are attachments missing from e-mail messages that are sent to a SharePoint document library?

If attachments are missing from e-mail messages that are sent to a SharePoint Foundation 2010 document library, it might be because you associated the document library with an e-mail address. When you do this, Directory Management Service may not add the following two attributes:

- **internet Encoding = 1310720**
- **mAPIRecipient = false**

You must use Active Directory Service Interfaces (ADSI) to manually add these two missing attributes.

 **Note:**

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On servers that are running Windows Server 2008 or Windows Server 2008 R2, ADSI Edit is installed when you install the AD DS role to make a server a domain controller. You can also install Windows Server 2008 Remote Server Administration Tools (RSAT) on domain member servers or stand-alone servers. For more information, see [Installing or Removing the Remote Server Administration Tools Pack](http://go.microsoft.com/fwlink/?LinkId=143345) (<http://go.microsoft.com/fwlink/?LinkId=143345>).

▶ **To add attributes by using the ADSI tool**

1. Click **Start**, and then click **Run**.
2. In the **Run** dialog box, type **Adsiedit.msc**, and then click **OK**.
3. In the ADSI Edit window, expand **ADSI Edit**, expand **Domain [DomainName]**, expand **DC=DomainName, DC=com**, and then expand **CN=Users**.
4. Right-click the user name to which you want to add the missing attributes, and then click **Properties**.
5. In the **Properties** dialog box, double-click **internet Encoding** on the **Attribute Editor** tab.
6. In the **Integer Attribute Editor** dialog box, type **1310720** in the **Value** box, and then click **OK**.
7. In the **Properties** dialog box, double-click **mAPIRecipient** on the **Attribute Editor** tab.
8. In the **Boolean Attribute Editor** dialog box, click **False**, and then click **OK** two times.

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# Configure outgoing e-mail (SharePoint Foundation 2010)

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This article describes how to configure outgoing e-mail for a farm and how to configure outgoing e-mail for a specific Web application for Microsoft SharePoint Foundation 2010.

Procedures in this task:

- [To install the SMTP service](#)
- [To install IIS 6.0 Management tools](#)
- [To configure the SMTP service](#)
- [To set the SMTP service to start automatically](#)
- [To configure outgoing e-mail for a farm by using Central Administration](#)
- [To configure outgoing e-mail for a farm by using the Stsadm command-line tool](#)
- [To configure outgoing e-mail for a specific Web application by using Central Administration](#)
- [To configure outgoing e-mail for a specific Web application by using the Stsadm command-line tool](#)

## Overview

Outgoing e-mail is the foundation on which site administrators can implement several useful e-mail notification features. These features help end users track changes and updates to individual site collections and enable site administrators to deliver status messages. After you configure outgoing e-mail, users can create alerts to track items in a site — for example, lists, libraries, and documents. In addition, site administrators can create alerts to receive automatic notifications about site administrator issues, such as the information that site owners have exceeded their specified storage space.

If you want to configure outgoing e-mail for a specific Web application, you must first configure the default outgoing e-mail for all Web applications in the farm. If you configure the outgoing e-mail for a specific Web application, that configuration will override the default configuration for all Web applications in the farm.

## Task requirements

The following are required to perform the procedures for this task:

- SharePoint Foundation 2010.
- One or more servers in the server farm must be running the Simple Mail Transfer Protocol (SMTP) service and have a valid SMTP server address. Alternatively, you must know the name of a server outside the farm that is running the SMTP service.

If you have not installed and configured the SMTP service, you must perform the following procedures before you configure outgoing e-mail:

- Install and configure the SMTP service.



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## Install and configure the SMTP service

Before you can enable outgoing e-mail, you must determine which SMTP server to use. This SMTP server must be configured to allow anonymous SMTP e-mail submissions. The SMTP server can be a server in the farm or outside the farm.



### Note:

If your organization does not allow anonymous SMTP e-mail messages to be sent by using Microsoft Exchange Server, you can use a local SMTP server in the SharePoint farm that accepts anonymous e-mail messages. The local SMTP server automatically authenticates the messages and then forwards them to the Exchange Server computer.

## Install the SMTP service

To install the SMTP service, use the Add Features Wizard in Server Manager. After the wizard finishes, a default SMTP configuration has been created. You can customize this default SMTP configuration to meet the requirements of your organization.



### Note:

If you already have the SMTP service installed on a server, you can skip the following procedure.



### Important:

Membership in the Administrators group on the local computer is required to complete this procedure.

### To install the SMTP service

1. Click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
2. In Server Manager, click **Features**.
3. In **Features Summary**, click **Add Features** to open the Add Features Wizard.
4. On the Select Features page, select **SMTP Server**.
5. In the **Add Features Wizard** dialog box, click **Add Required Features**, and then click **Next**.
6. On the Confirm Installation Selections page, click **Install**.
7. On the Installation Results page, ensure that the installation is complete, and then click **Close**.

## Configure the SMTP service

After you install the SMTP service, you must configure the service to accept e-mail messages from servers in the farm.

You can decide to accept relayed e-mail messages from all servers except those that you specifically exclude. Alternatively, you can block messages from all servers except those that you specifically include. You can include servers individually or in groups by subnet or domain.

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If you enable anonymous access and relayed e-mail messages, you increase the possibility that the SMTP server will be used to relay unsolicited commercial e-mail messages (spam). It is important to limit this possibility by carefully configuring mail servers to help protect against spam. One way that you can do this is by limiting relayed e-mail messages to a list of specific servers or to a domain, and by preventing relayed e-mail messages from all other servers.



**Note:**

To manage the SMTP service on Windows Server 2008, you must use Internet Information Services (IIS) 6.0 Manager. Ensure that you install IIS 6.0 Management tools in Server Manager.



**Important:**

Membership in the Administrators group on the local computer is required to complete this procedure.

**▶ To install IIS 6.0 Management tools**

1. Click **Start**, point to **Administrative Tools**, and then click **Server Manager**.
2. In Server Manager, click **Roles**.
3. In the **Role Services** section, click **Add Role Services**.
4. On the Select Role Services page, select **Management Tools** and **IIS 6 Management compatibility**, and then click **Install**.



**Important:**

Membership in the Administrators group on the local computer is required to complete this procedure.

**▶ To configure the SMTP service**

1. Click **Start**, point to **Administrative Tools**, and then click **Internet Information Services (IIS) 6.0 Manager**.
2. In IIS Manager, expand the server name that contains the SMTP server that you want to configure.
3. Right-click the SMTP virtual server that you want to configure, and then click **Start**.
4. Right-click the SMTP virtual server that you want to configure, and then click **Properties**.
5. On the **Access** tab, in the **Access control** area, click **Authentication**.
6. In the **Authentication** dialog box, verify that **Anonymous access** is selected.
7. Click **OK**.
8. On the **Access** tab, in the **Relay restrictions** area, click **Relay**.
9. To enable relayed e-mail messages from any server, click **All except the list below**.
10. To accept relayed e-mail messages from one or more specific servers, follow these steps:
  - a. Click **Only the list below**.

- 
- b. Click **Add**, and then add servers one at a time by IP address, or in groups by using a subnet or domain.
  - c. Click **OK** to close the **Computer** dialog box.
11. Click **OK** to close the **Relay Restrictions** dialog box.
  12. Click **OK** to close the **Properties** dialog box.



**Note:**

Ensure that the SMTP service is running and set to start automatically. To do this, use the following procedure.

▶ **To set the SMTP service to start automatically**

1. Click **Start**, point to **Administrative Tools**, and then click **Services**.
2. In **Services**, right-click **Simple Mail Transfer Protocol (SMTP)**, and then select **Properties**.
3. In the **Simple Mail Transfer Protocol (SMTP) Properties** dialog box, on the **General** tab, in the **Startup type** list, select **Automatic**.
4. Click **OK**.

## Configure outgoing e-mail for a farm

You can configure outgoing e-mail for a farm by using the SharePoint Central Administration Web site or by using the Stsadm command-line tool. Use the following procedures to configure outgoing e-mail. After you complete the procedures, end users can track changes and updates to individual site collections. In addition, site administrators can, for example, receive notices when users request access to a site.



**Important:**

To use the SharePoint Central Administration Web site to configure outgoing e-mail, you must be a member of the Farm Administrators group on the computer that is running the SharePoint Central Administration Web site.

▶ **To configure outgoing e-mail for a farm by using Central Administration**

1. In Central Administration, click **System Settings**.
2. On the System Settings page, in the **E-Mail and Text Messages (SMS)** section, click **Configure outgoing e-mail settings**.
3. On the Outgoing E-Mail Settings page, in the **Mail Settings** section, type the SMTP server name for outgoing e-mail (for example, mail.example.com) in the **Outbound SMTP server** box.
4. In the **From address** box, type the e-mail address as you want it to be displayed to e-mail recipients.
5. In the **Reply-to address** box, type the e-mail address to which you want e-mail recipients to reply.

- 
6. In the **Character set** list, select the character set that is appropriate for your language.
  7. Click **OK**.

 **Important:**

To run the Stsadm command-line tool, you must be a member of the Administrators group on the local computer.

 **To configure outgoing e-mail for a farm by using the Stsadm command-line tool**

1. On the drive on which SharePoint Products and Technologies is installed, change to the following directory: %COMMONPROGRAMFILES%\Microsoft shared\Web server extensions\14\Bin.
2. Type the following command, and then press ENTER:

```
stsadm -o email  
-outsmtpserver <SMTP server name>  
-fromaddress <valid e-mail address>  
-replytoaddress <valid e-mail address>  
-codepage <valid code page>
```

**Example**

```
stsadm -o email -outsmtpserver mail.example.com -fromaddress someone@example.com -replytoaddress someone@example.com -codepage 65001
```

For more information, see [Email: Stsadm operation \(Windows SharePoint Services\)](http://go.microsoft.com/fwlink/?LinkId=150046) (<http://go.microsoft.com/fwlink/?LinkId=150046>).

## Configure outgoing e-mail for a specific Web application

You can configure outgoing e-mail for a specific Web application by using the Central Administration Web site or by using the Stsadm command-line tool. Use the following procedures to configure outgoing e-mail. After you complete the procedures, end users can track changes and updates to individual site collections. In addition, site administrators can, for example, receive notices when users request access to a site.

 **Note:**

If you want to configure outgoing e-mail for a specific Web application, you must first configure the default outgoing e-mail for all Web applications in the farm. If you configure the outgoing e-mail for a specific Web application, that configuration will override the default configuration for all Web applications in the farm.

 **Important:**

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To use the SharePoint Central Administration Web site to configure outgoing e-mail, you must be a member of the Farm Administrators group on the computer that is running the SharePoint Central Administration Web site.

▶ **To configure outgoing e-mail for a specific Web application by using Central Administration**

1. In Central Administration, in the **Application Management** section, click **Manage web applications**.
2. On the Web Applications Management page, select a Web application, and then in the **General Settings** group on the Ribbon, click **Outgoing E-mail**.
3. On the Web Application Outgoing E-Mail Settings page, in the **Mail Settings** section, type the SMTP server name for outgoing e-mail (for example, mail.fabrikam.com) in the **Outbound SMTP server** box.
4. In the **From address** box, type the e-mail address (for example, the site administrator alias) as you want it to be displayed to e-mail recipients.
5. In the **Reply-to address** box, type the e-mail address (for example, a help desk alias) to which you want e-mail recipients to reply.
6. In the **Character set** list, click the character set that is appropriate for your language.
7. Click **OK**.

❗ **Important:**

To run the Stsadm command-line tool, you must be a member of the Administrators group on the local computer.

▶ **To configure outgoing e-mail for a specific Web application by using the Stsadm command-line tool**

1. On the drive on which SharePoint Products and Technologies is installed, change to the following directory: %COMMONPROGRAMFILES%\Microsoft shared\Web server extensions\14\Bin.
2. Type the following command, and then press ENTER:  
**stsadm -o email**  
**-outsmtpserver <SMTP server name>**  
**-fromaddress <valid e-mail address>**  
**-replytoaddress <valid e-mail address>**  
**-codepage <valid code page>**  
**[-url <URL name>]**

**Example**

```
stsadm -o email -outsmtpserver mail.example.com -fromaddress someone@example.com -replytoaddress someone@example.com -codepage 65001 -url http://server_name
```

---

For more information, see [Email: Stsadm operation \(Windows SharePoint Services\)](http://go.microsoft.com/fwlink/?LinkId=150046)  
(<http://go.microsoft.com/fwlink/?LinkId=150046>).

**See Also**

[Plan outgoing e-mail \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287948.aspx) (<http://technet.microsoft.com/en-us/library/cc287948.aspx>)

[Configure alert settings for a Web application \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/23592105-696d-4f71-bbf3-40a15e5f9d29(Office.14).aspx)  
([http://technet.microsoft.com/library/23592105-696d-4f71-bbf3-40a15e5f9d29\(Office.14\).aspx](http://technet.microsoft.com/library/23592105-696d-4f71-bbf3-40a15e5f9d29(Office.14).aspx))

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# Configure a mobile account (SharePoint Foundation 2010)

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This article discusses how to configure and manage a mobile account for Microsoft SharePoint Foundation 2010 to enable users to subscribe to alerts that are sent by using Short Message Service (SMS). The alerts are sent to users' mobile phones when changes are made to a SharePoint list or item.

The mobile alert feature resembles a feature that already exists in SharePoint Foundation 2010 that enables outgoing e-mail alerts. However, instead of receiving alerts via e-mail when changes are made in a SharePoint list or item, users receive the alerts on their mobile phones. For more information about e-mail alerts, see [Configure outgoing e-mail \(SharePoint Foundation 2010\)](#).

A SharePoint site is usually located on an intranet. As a result, access to the SharePoint site can be difficult when users are away from the office — for example, when they are traveling or attending a business dinner. The mobile alert feature enables users to react quickly when they receive an SMS alert that an item in a SharePoint list has changed.

You can configure one mobile account for all Web applications in a server farm, or you can configure the mobile account for a specific Web application; however, you can only configure one mobile account in the farm. The scale of your implementation might determine whether you configure the mobile account for the farm or for a specific Web application. If you configure the mobile account for a server farm, everyone in the organization can subscribe to alerts. This is useful, for example, in a small organization in which management wants all users to receive certain alerts. If you have several Web applications that divide your organization into groups, you might want to configure a mobile account for only one of those groups; for example, you want to configure a mobile account to enable everyone in the sales group to subscribe to alerts.

Before you perform these procedures, confirm that:

- The Server farm account has permission to access the Internet for sending alerts.
- You have obtained the root certificate for the service provider's HTTPS Web address. You can obtain the root certificate from your service provider or by using your Web browser.

Procedures in this article:

- [Import a root certificate and create a trusted root authority](#)
- [Configure a mobile account](#)
- [Retrieve mobile account information](#)
- [Delete a mobile account](#)

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# Import a root certificate and create a trusted root authority

Before you configure a mobile account, you must import the root certificate of the service provider's HTTPS Web address, and then create a trusted root authority. This step can only be performed manually by using Windows PowerShell.

## To import a root certificate and create a trusted root authority by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). Additionally, you must be a member of the Farm Administrators group and a member of the local Administrators group on the computer running Windows PowerShell.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. To get the root certificate, at the Windows PowerShell command prompt, type the following command:

```
$cert = Get-PfxCertificate <ObtainedCertificatePath>
```

To create a trusted root authority, at the Windows PowerShell command prompt, type the following command:

```
New-SPTrustedRootAuthority -Name <Name> -Certificate $cert
```

Where:

- *<Name>* is the name of the trusted root authority that you want to create.
- *<ObtainedCertificatePath>* is the location of the root certificate file.



### Note:

In the Certificate window, on the **Certification Path** tab, ensure that you use only the root certificate, and not the other certificates listed. The SharePoint Trusted Root Authorities list should only list root certificates.

For more information, see [New-SPTrustedRootAuthority](#)  
([http://technet.microsoft.com/library/25458530-4f0d-491c-80d3-61b8f1f0dd7e\(Office.14\).aspx](http://technet.microsoft.com/library/25458530-4f0d-491c-80d3-61b8f1f0dd7e(Office.14).aspx)).

## Configure a mobile account

You can configure a mobile account for a server farm or for a specific Web application, either by using Central Administration or Windows PowerShell.



### Note:

If you cannot configure a mobile account, you may have the wrong certificate file. In that case, contact your service provider.



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▶ **To configure or edit a mobile account for a server farm by using Central Administration**

1. Verify that you have the following administrative credentials:
  - To configure a mobile account for a server farm, you must be a member of the Farm Administrators group on the computer that is running the SharePoint Central Administration Web site.
2. On the Central Administration Home page, click **System Settings**.
3. On the System Settings page, in the **E-Mail and Text Messages (SMS)** section, click **Configure mobile account**.
4. On the Mobile Account Settings page, in the **Text Message (SMS) Service Settings** section, click the **Microsoft Office Online** link to access a list of service providers.
5. On the Find an Office 2010 Mobile Service Provider page, in the **Choose your wireless service provider's country/region** list, select the country or region in which your wireless service provider is located.
6. On the Find an Office 2010 Mobile Service Provider page, in the **Choose your current wireless service provider** list, select the wireless service provider that you want to use.  
After you make this selection, you are directed to the Web site of the service provider that you selected. On the Web site, you apply for the SMS service. When you receive the required information from the service provider, return to the Mobile Accounts Settings page.
7. In the **The URL of Text Message (SMS) Service** box, type the URL of the SMS service.



**Note:**

Ensure that the service URL you enter is an HTTPS URL.

8. In the **User Name** box and **Password** box, type the user name and password that you received from the SMS service provider.
9. To confirm that the URL and user credentials are correct, click **Test Service**.
10. Click **OK**.

▶ **To configure or edit a mobile account for a server farm by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). Additionally, you must be a member of the Farm Administrators group and a member of the local Administrators group on the computer running Windows PowerShell.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Set-SPMobileMessagingAccount -Identity sms -WebApplication <WebApplicationUrl> [-ServiceUrl <ServiceUrl>] [-UserId <UserId>] [-Password <Password>]
```

Where:

- `<WebApplicationUrl>` is the Central Administration URL.
- `<ServiceUrl>` is the URL to server where the SMS service is located.
- `<UserId>` is the user name that you received from the SMS service provider.
- `<Password>` is the user password that you received from the SMS service provider.

**Example:**

```
Set-SPMobileMessagingAccount -Identity sms -WebApplication http://myserver:8080 -
ServiceUrl https://www.example.com/omsservice.asmx -UserId someone@example.com -
Password password1
```

Or, if you use the pipeline operator, type the following command:

```
Get-SPWebApplication -Identity http://myserver:8080 | Set-SPMobileMessagingAccount
-Identity sms -ServiceUrl https://www.example.com/omsservice.asmx -UserId
someone@example.com -Password password1
```



**Note:**

Ensure that the service URL you enter is an HTTPS URL.

For more information, see [Set-SPMobileMessagingAccount](http://technet.microsoft.com/library/ca94def6-f55a-4878-bb64-ee6f62373c8f(Office.14).aspx) ([http://technet.microsoft.com/library/ca94def6-f55a-4878-bb64-ee6f62373c8f\(Office.14\).aspx](http://technet.microsoft.com/library/ca94def6-f55a-4878-bb64-ee6f62373c8f(Office.14).aspx)) and [Get-SPWebApplication](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx)).

**▶ To configure or edit a mobile account for a Web application by using Central Administration**

1. Verify that you have the following administrative credentials:
  - To configure a mobile account for a server farm, you must be a member of the Farm Administrators group on the computer that is running the SharePoint Central Administration Web site.
2. On the Central Administration Home page, in the **Application Management** section, click **Manage web applications**.
3. On the Web Applications page, select the Web application for which you want to configure a mobile account. In **General Settings** on the ribbon, click **Mobile Account**.
4. On the Web Application Text Message (SMS) Service Settings page, in the **Text Message (SMS) Service Settings** section, click the **Microsoft Office Online** link to access a list of service providers.
5. On the Find an Office 2010 Mobile Service Provider page, in the **Choose your wireless service provider's country/region** list, select the country or region in which your wireless service provider is located.
6. On the Find an Office 2010 Mobile Service Provider page, in the **Choose your current wireless service provider** list, select the wireless service provider that you want to use. After you make this selection, you are directed to the Web site of the service provider that you selected. On the Web site, you apply for the SMS service. When you receive the required

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information from the service provider, return to the Mobile Accounts Settings page and type in the information.

7. In the **The URL of Text Message (SMS) Service** box, type the URL of the SMS service.



**Note:**

Ensure that the service URL you enter is an HTTPS URL.

8. In the **User Name** box and **Password** box, type the user name and password that you received from the SMS service provider.
9. To confirm that the URL and user credentials are correct, click **Test Service**.
10. Click **OK**.

▶ **To configure or edit a mobile account for a Web application by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). Additionally, you must be a member of the Farm Administrators group and a member of the local Administrators group on the computer running Windows PowerShell.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command:

```
Set-SPMobileMessagingAccount -Identity sms -WebApplication <WebApplicationUrl> [-ServiceUrl <ServiceUrl>] [-UserId <UserId>] [-Password <Password>]
```

Where:

- *<WebApplicationUrl>* is the Web application URL.
- *<ServiceUrl>* is the URL to server where the SMS service is located.
- *<UserId>* is the user name that you received from the SMS service provider.
- *<Password>* is the user password that you received from the SMS service provider.

**Example:**

```
Set-SPMobileMessagingAccount -Identity sms -WebApplication http://localhost -ServiceUrl https://www.example.com/omsservice.asmx -UserId someone@example.com -Password password1
```

Or, if you use the pipeline operator, type the following command:

```
Get-SPWebapplication -Identity http://localhost | Set-SPMobileMessagingAccount -Identity sms -ServiceUrl https://www.example.com/omsservice.asmx -UserId someone@example.com -Password password1
```



**Note:**

Ensure that the service URL you enter is an HTTPS URL.

For more information, see [Set-SPMobileMessagingAccount](#)

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([http://technet.microsoft.com/library/ca94def6-f55a-4878-bb64-ee6f62373c8f\(Office.14\).aspx](http://technet.microsoft.com/library/ca94def6-f55a-4878-bb64-ee6f62373c8f(Office.14).aspx)) and [Get-SPWebApplication](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx)).

## Retrieve mobile account information

You can retrieve mobile account information for a server farm or for a Web application by using Windows PowerShell. You might want to do this to view the mobile account information or, for example, verify that the **set** cmdlet works correctly.

### ▶ To retrieve mobile account information for a server farm by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). Additionally, you must be a member of the Farm Administrators group and a member of the local Administrators group on the computer running Windows PowerShell.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Get-SPMobileMessagingAccount -WebApplication <WebApplicationUrl>
```

Where *<WebApplicationUrl>* is the Central Administration URL.

#### Example

```
Get-SPMobileMessagingAccount -WebApplication http://myserver
```

Or, if you use the pipeline operator, type the following command:

```
Get-SPWebApplication -Identity http://myserver | Get-SPMobileMessagingAccount -  
AccountType sms
```

For more information, see [Get-SPMobileMessagingAccount](#) ([http://technet.microsoft.com/library/03b69f50-07ec-4feb-bc9c-567237d200ea\(Office.14\).aspx](http://technet.microsoft.com/library/03b69f50-07ec-4feb-bc9c-567237d200ea(Office.14).aspx)) and [Get-SPWebApplication](#) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx)).

### ▶ To retrieve mobile account information for a Web application by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). Additionally, you must be a member of the Farm Administrators group and a member of the local Administrators group on the computer running Windows PowerShell.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

---

```
Get-SPMobileMessagingAccount -WebApplication <WebApplicationUrl>
```

Where *<WebApplicationUrl>* is the Web application URL.

### Example

```
Get-SPMobileMessagingAccount -WebApplication http://localhost
```

Or, if you use the pipeline operator, type the following command:

```
Get-SPWebApplication -Identity http://localhost | Get-SPMobileMessagingAccount -  
AccountType sms
```

For more information, see [Get-SPMobileMessagingAccount](http://technet.microsoft.com/library/03b69f50-07ec-4feb-bc9c-567237d200ea(Office.14).aspx) ([http://technet.microsoft.com/library/03b69f50-07ec-4feb-bc9c-567237d200ea\(Office.14\).aspx](http://technet.microsoft.com/library/03b69f50-07ec-4feb-bc9c-567237d200ea(Office.14).aspx)) and [Get-SPWebApplication](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx)).

## Delete a mobile account

You can delete a mobile account for a server farm or for a Web application. This makes the account unavailable so users can no longer subscribe to SMS alerts, but it does not delete the account that you set up with the service provider. You might want to delete a mobile account if, for example, the organization decides that there is no business value in sending out SMS alerts to users.



### Note:

There is no equivalent Windows PowerShell functionality.

### ▶ To delete a mobile account for a server farm

1. Verify that you have the following administrative credentials:
  - To delete a mobile account for a server farm, you must be a member of the Farm Administrators group on the computer that is running the SharePoint Central Administration Web site.
2. On the Central Administration Home page, click **System Settings**.
3. On the System Settings page, in the **E-mail and Text Messages (SMS)** section, click **Configure mobile account**.
4. On the Mobile Account Settings page, clear entries from all the boxes, and then click **OK**.

### ▶ To delete a mobile account for a Web application

1. Verify that you have the following administrative credentials:
  - To delete a mobile account for a server farm, you must be a member of the Farm Administrators group on the computer that is running the SharePoint Central Administration Web site.
2. On the Central Administration Home page, in the **Application Management** section, click **Manage web applications**.

- 
3. In **General Settings** on the ribbon, click **Mobile Account**.
  4. On the Web application Text Message (SMS) Service Settings page, delete entries from all the boxes, and then click **OK**.

**See Also**

[Configure outgoing e-mail \(SharePoint Foundation 2010\)](#)

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# Install and configure Remote BLOB Storage (RBS) with the FILESTREAM provider(SharePoint Foundation 2010)

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This article describes how to install and configure Remote BLOB Storage (RBS) with the FILESTREAM provider on a Microsoft SQL Server 2008 database server that supports a Microsoft SharePoint Foundation 2010 system. RBS is typically recommended in the case where the content databases are 4 gigabytes (GB) or larger.

In SharePoint Foundation 2010, the content databases are stored in Microsoft SQL Server 2008 Express and have a maximum size of 4 GB per database. Because Microsoft SQL Server 2008 R2 Express supports content databases that are up to 10 GB, we recommend that you install SQL Server 2008 R2 Express to support the content databases. For more information, see [Microsoft SQL Server 2008 R2 Express Edition](http://go.microsoft.com/fwlink/?LinkID=189418) (<http://go.microsoft.com/fwlink/?LinkID=189418>).

RBS is a library API set that is incorporated as an add-on feature pack for Microsoft SQL Server 2008 and Microsoft SQL Server 2008 Express. RBS is designed to move the storage of binary large objects (BLOBs) from database servers to commodity storage solutions. RBS ships with the RBS FILESTREAM provider, which uses the RBS APIs to store BLOBs. Before installing and implementing RBS, we highly recommend that you read the articles [Plan for remote BLOB storage \(RBS\) \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx) ([http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94\(Office.14\).aspx](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx)) and [Overview of Remote BLOB Storage \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx) ([http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be\(Office.14\).aspx](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx)).

If you want to implement RBS with a provider other than FILESTREAM, read the article [Install and configure Remote BLOB Storage \(RBS\) without the FILESTREAM provider \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/fb5b364c-fe16-40bc-90d9-e1c8d7720717(Office.14).aspx) ([http://technet.microsoft.com/library/fb5b364c-fe16-40bc-90d9-e1c8d7720717\(Office.14\).aspx](http://technet.microsoft.com/library/fb5b364c-fe16-40bc-90d9-e1c8d7720717(Office.14).aspx)).

In this article:

- [Enable FILESTREAM and provision the RBS data store](#)
- [Install RBS](#)
- [Enable and test RBS](#)

The user account that you use to perform the procedures that are described in this article must have the following memberships:

- Administrators group on the Web servers and application servers.
- Farm Administrators group for the SharePoint Foundation 2010 farm.
- SQL Server **dbcreator** and **securityadmin** fixed server roles on the computer that is running SQL Server 2008 Express or SQL Server 2008.

---

# Enable FILESTREAM and provision the RBS data store

You must enable and configure FILESTREAM on the computer that is running SQL Server 2008 that hosts the SharePoint Foundation 2010 databases. To enable and configure FILESTREAM, follow the instructions in [How to: Enable FILESTREAM](http://go.microsoft.com/fwlink/?LinkID=166110&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=166110&clcid=0x409>). After you have enabled and configured FILESTREAM, provision a BLOB store as described in the following procedure.

## ▶ To provision a BLOB Store with the FILESTREAM provider

1. Click **Start**, click **All Programs**, click **Microsoft SQL Server 2008**, and then click **SQL Server Management Studio**.
2. Expand **Databases**.
3. Select the content database for which you want to create a BLOB store, and then click **New Query**.
4. In the Query pane, copy and execute each of the following SQL queries in the sequence provided here.



### Tip:

For best performance, simplified troubleshooting, and as a general best practice, we recommend that you create the BLOB store on a volume that does not contain the operating system, paging files, database data, log files, or the tempdb file.

```
use [ContentDbName]

if not exists (select * from sys.symmetric_keys where name =
N'##MS_DatabaseMasterKey##')create master key encryption by password = N'Admin Key
Password !2#4'

use [ContentDbName]

if not exists (select groupname from sysfilegroups where
groupname=N'RBSFilestreamProvider')alter database [ContentDbName]

    add filegroup RBSFilestreamProvider contains filestream

use [ContentDbName]

alter database [ContentDbName] add file (name = RBSFilestreamFile, filename =
'c:\Blobstore') to filegroup RBSFilestreamProvider
```

Where *[ContentDbName]* is the content database name, and *c:\BLOBStore* is the volume\directory in which you want the BLOB store created. Be aware that you can provision a BLOB store only one time. If you attempt to provision the same BLOB store more than one time, you will receive an error.



---

# Install RBS

You must install RBS on the database server and on all Web servers and application servers in the SharePoint farm. You must configure RBS separately for each associated content database.

## **Warning:**

We do not recommend that you install RBS by running the RBS\_X64.msi file and launching the Install SQL Remote BLOB Storage wizard. The wizard configures the RBS Maintainer to run a scheduled task every 30 days. This setting might not be optimal for your environment. For more information about the RBS Maintainer, see the SQL Server Help documentation that is included with the SQL Server Remote BLOB Store installation package from the Feature Pack for Microsoft SQL Server 2008 R2.

## **To install RBS on a Web server**

1. On any Web server, go to <http://go.microsoft.com/fwlink/?LinkID=177388> (<http://go.microsoft.com/fwlink/?LinkID=177388>) to download the RBS\_X64.msi file.

### **Important:**

You must install the version of RBS that is included in the SQL Server Remote BLOB Store installation package from the Feature Pack for Microsoft SQL Server 2008 R2. The version of RBS must be **10.50.xxx**. No earlier version of RBS is supported for SharePoint Foundation 2010.

2. Click **Start** and then type **cmd** in the text box. In the list of results, right-click **cmd**, and then click **Run as administrator**. Click **OK**.
3. Copy and paste the following command at the command prompt:

```
msiexec /qn /lvx* rbs_install_log.txt /i RBS_X64.msi TRUSTSERVERCERTIFICATE=true  
FILEGROUP=PRIMARY DBNAME="<ContentDbName>" DBINSTANCE="<DBInstanceName>"  
FILESTREAMFILEGROUP=RBSFilestreamProvider FILESTREAMSTORENAME=FilestreamProvider_1
```

Where:

- **<ContentDbName>** is the database name.
- **<DBInstanceName>** is the SQL Server instance name.

The operation should complete in approximately one minute.

## **To install RBS on all additional Web and application servers**

1. On a Web server, go to <http://go.microsoft.com/fwlink/?LinkID=177388> (<http://go.microsoft.com/fwlink/?LinkID=177388>) and download the RBS\_X64.msi file.

### **Important:**

You must install the version of RBS that is included in the SQL Server Remote BLOB Store installation package from the SQL Server Remote BLOB Store installation package from the Feature Pack for SQL Server 2008 R2. The version of RBS must be 10.50.xxx. No earlier version of RBS is supported for SharePoint Foundation 2010.

- 
2. Click **Start** and then type **cmd** in the text box. In the list of results, right-click **cmd**, and then click **Run as administrator**. Click **OK**.
  3. Copy and paste the following command at the command prompt:

```
msiexec /qn /lvx* rbs_install_log.txt /i RBS_X64.msi DBNAME="ContentDbName"  
DBINSTANCE="DBInstanceName"  
ADDLOCAL="Client,Docs,Maintainer,ServerScript,FilestreamClient,FilestreamServer"
```

Where:

- *ContentDbName* is the database name
- *DBInstanceName* is the name of the SQL Server instance.

The operation should finish within approximately one minute.

4. Repeat this procedure on all Web servers and application servers. If you do not install RBS on every Web and application server, users will encounter errors when they try to write to the content databases.

#### ▶ To confirm the RBS installation

1. The `rbs_install_log.txt` log file is created in the same location as the `RBS_X64.msi` file. Open the `rbs_install_log.txt` log file with a text editor and scroll toward the bottom of the file. Within the last 20 lines of the end of the file, an entry should read as follows: "Product: SQL Remote Blob Storage – Installation completed successfully".
2. On the computer that is running SQL Server 2008, verify that the RBS tables were created in the content database. Several tables should reside under the content database with names that are preceded by the letters "mssqlrbs".

## Enable and test RBS

You must enable RBS on one Web server in the SharePoint farm. It does not matter which Web server you choose for this activity, as long as RBS was installed on it by using the previous procedure.

#### ▶ To enable RBS

1. On the **Start** menu, click **Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Management Shell**.
2. At the Windows PowerShell command prompt, type each of the following commands.

```
$cdb = Get-SPContentDatabase -WebApplication <http://SiteName>
```

Where `<http://SiteName>` is the URL of the Web application that is connected to the content database.

```
$rbss = $cdb.RemoteBlobStorageSettings  
$rbss.Installed()
```

---

```
$rbss.Enable()  
  
$rbss.SetActiveProviderName($rbss.GetProviderNames()[0])  
  
$rbss
```

### ▶ To test the RBS data store

1. Connect to a document library on any Web server.
2. Upload a file that is at least 100 kilobytes (KB) to the document library.
3. On the computer that contains the RBS data store, click **Start**, and then click **Computer**.
4. Browse to the RBS data store directory.
5. Browse to the file list and open the folder that has the most recent modified date (other than \$FSLOG). In that folder, open the file that has the most recent modified date. Verify that this file has the same size and contents as the file that you uploaded. If it does not, ensure that RBS is installed and enabled correctly.

To enable additional databases to use RBS, see [Set a content database to use Remote Blob Storage \(RBS\) \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/64c80191-b6bd-44a8-a044-830f60d9191a(Office.14).aspx) ([http://technet.microsoft.com/library/64c80191-b6bd-44a8-a044-830f60d9191a\(Office.14\).aspx](http://technet.microsoft.com/library/64c80191-b6bd-44a8-a044-830f60d9191a(Office.14).aspx)).

### See Also

[Migrate content into or out of Remote BLOB Storage \(RBS\) \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/8a5f834b-cac3-4bdc-b7cb-2247f5f3b2eb(Office.14).aspx)  
([http://technet.microsoft.com/library/8a5f834b-cac3-4bdc-b7cb-2247f5f3b2eb\(Office.14\).aspx](http://technet.microsoft.com/library/8a5f834b-cac3-4bdc-b7cb-2247f5f3b2eb(Office.14).aspx))

[Disable Remote BLOB Storage \(RBS\) on a content database \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/f9f562cd-0974-4a89-a23f-c34b1ff3412e(Office.14).aspx)  
([http://technet.microsoft.com/library/f9f562cd-0974-4a89-a23f-c34b1ff3412e\(Office.14\).aspx](http://technet.microsoft.com/library/f9f562cd-0974-4a89-a23f-c34b1ff3412e(Office.14).aspx))

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# Configure services (SharePoint Foundation 2010)

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In Microsoft SharePoint Foundation 2010, individual services can be configured independently, and you can implement only the services that your organization needs. For information about how to start, stop, and configure services, see [Manage services on the server \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005(Office.14).aspx) ([http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005\(Office.14\).aspx](http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005(Office.14).aspx)).

Services that are deployed are named *service applications*. A service application provides a resource that can be shared across sites within a farm or sometimes across multiple farms, and can be accessed by users through a hosting Web application. Service applications are associated to Web applications by *service application connections*. For more information about managing and publishing service applications, see [Service application and service management \(SharePoint Foundation 2010\)](#).

For more information about service applications and services, see [Technical diagrams \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf\(Office.14\).aspx](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx)).



**Note:**

If you plan to use Office Web Apps, you must install and configure them to work with SharePoint 2010 Products. For more information, see [Office Web Apps \(Installed on SharePoint 2010 Products\)](#) ([http://technet.microsoft.com/library/8a58e6c2-9a0e-4355-ae41-4df25e5e6eee\(Office.14\).aspx](http://technet.microsoft.com/library/8a58e6c2-9a0e-4355-ae41-4df25e5e6eee(Office.14).aspx)).

This section contains the following articles:

- [Service application and service management \(SharePoint Foundation 2010\)](#)  
This article discusses the structures of service applications and services in Microsoft SharePoint Foundation 2010, and explains how service applications and services can be managed.
- [Configure the security token service \(SharePoint Foundation 2010\)](#)  
This article provides guidance to help you to configure the Microsoft SharePoint Foundation 2010 security token service (STS). An STS is a specialized Web service that is designed to respond to requests for security tokens and provide identity management.

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# Service application and service management (SharePoint Foundation 2010)

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Articles in this section discuss the structures of service applications and services in Microsoft SharePoint Foundation 2010, and explain how service applications and services can be managed. These articles are for farm administrators and service application administrators who will operate SharePoint Foundation 2010.

## In This Section

- [About service applications and services \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/ca716344-6ed1-4b7c-9a0a-e633c6db272e(Office.14).aspx)  
([http://technet.microsoft.com/library/ca716344-6ed1-4b7c-9a0a-e633c6db272e\(Office.14\).aspx](http://technet.microsoft.com/library/ca716344-6ed1-4b7c-9a0a-e633c6db272e(Office.14).aspx))  
Provides an introduction to the logical infrastructure of service applications and services.
- [Service application and service management \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005(Office.14).aspx)  
Describes how to manage, create, configure, and share service applications.
- [Manage services on the server \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005(Office.14).aspx)  
([http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005\(Office.14\).aspx](http://technet.microsoft.com/library/8e0b7a53-6741-4b19-897e-4b42e5b8e005(Office.14).aspx))  
Describes how services can be started, stopped, and configured.

## See Also

[Web applications management \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/5b82a45b-f871-49e3-8926-47972acde573(Office.14).aspx)

([http://technet.microsoft.com/library/5b82a45b-f871-49e3-8926-47972acde573\(Office.14\).aspx](http://technet.microsoft.com/library/5b82a45b-f871-49e3-8926-47972acde573(Office.14).aspx))

[Technical diagrams \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx) ([http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf\(Office.14\).aspx](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx))

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# Configure the security token service (SharePoint Foundation 2010)

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This article provides guidance to enable you to configure the Microsoft SharePoint Foundation 2010 security token service (STS). An STS is a specialized Web service that is designed to respond to requests for security tokens and provide identity management. The core functionality of every STS is the same, but the nature of the tasks that each STS performs depends on the role the STS plays in relation to the other STS Web services in your design.

In this article:

- [How Web applications that use an STS work](#)
- [Configure a SharePoint claims-based Web application by using Windows PowerShell](#)
- [Edit bindings and configure the Web.Config file](#)
- [Configure a Web application that uses an STS](#)

## How Web applications that use an STS work

Web applications that use a security token service handle requests to issue, manage, and validate security tokens. Security tokens consist of a collection of identity claims (such as a user's name, role, or an anonymous identifier). Tokens can be issued in different formats, such as Security Assertion Markup Language (SAML) tokens. Security tokens can be protected with an X.509 certificate to protect the token's contents in transit and to enable validation of trusted issuers. For additional information about the Security Token Service, see [Plan authentication methods \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0\(Office.14\).aspx](http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0(Office.14).aspx)).

An Identity Provider-STS (IP-STS) is a Web service that handles requests for trusted identity claims. An IP-STS uses a database called an identity store to store and manage identities and their associated attributes. The identity store for an identity provider may be a simple, such as a SQL database table. An IP-STS may also use a complex identity store, such as Active Directory Domain Services (AD DS) or Active Directory Lightweight Directory Service (AD LDS).

An IP-STS is available to clients who want to create and manage identities, and to relying party applications that must validate identities presented to them by clients. Each IP-STS has a federated trust relationship with, and issues tokens to, federation partner Relying Party STS Web applications, each of which are referred to as an RP-STS. Clients can create or provision managed Information Cards (using a card selector such as CardSpace) that represent identities registered with the IP-STS. Clients interact with the IP-STS when they request security tokens that represent an identity that is contained in the identity store of the IP-STS. After authentication, the IP-STS issues a trusted security token that the client can present to a relying party application. Relying party applications can establish trust relationships with an IP-STS. This enables them to validate the security tokens issued by an IP-STS. After the trust relationship is established, relying party applications can examine security tokens presented by clients and determine the validity of the identity claims they contain.

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A relying party STS (RP-STS) is an STS that receives security tokens from a trusted federation partner IP-STS. In turn, the RP-STS issues new security tokens to be consumed by a local relying party application. The use of RP-STS Web applications in federation with IP-STS Web applications enables organizations to offer Web single-sign-on (SSO) to users from partner organizations. Each organization continues to manage its own identity stores.

## Configure a SharePoint claims-based Web application by using Windows PowerShell

Perform the following procedures to use Windows PowerShell to configure a SharePoint claims-based Web application.

### ▶ To configure a SharePoint claims-based Web application by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt (that is, PS C:\>), create an x509Certificate2 object, as shown in the following example:

```
$cert = New-Object
System.Security.Cryptography.X509Certificates.X509Certificate2("path to cert
file")
```

6. Create a claim type mapping to use in your trusted authentication provider, as shown in the following example:

```
New-SPClaimTypeMapping
"http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailaddress"
-IncomingClaimTypeDisplayName "EmailAddress" -SameAsIncoming
```

7. Create a trusted login provider by first creating a value for the realm parameter, as shown in the following example:

```
$realm = "urn:" + $env:ComputerName + ":domain-int"
```

8. Create a value for the `signinurl` parameter that points to the Security Token Service Web application, as shown in the following example:

```
$signinurl = "https://test-2/FederationPassive/"
```

9. Create the trusted login provider, using the same `IdentifierClaim` value as in a claim mapping (`$map1.InputClaimType`), as shown in the following example:

```
$sap = New-SPTrustedIdentityTokenIssuer -Name
"WIF" -Description "Windows® Identity Foundation" -Realm
$realm -ImportTrustCertificate $cert
```

---

```
-ClaimsMappings $map1[, $map2..] -SignInUrl  
$signinurl -IdentifierClaim $map1.InputClaimType
```

10. Create a Web application by first creating a value for the application pool account (for the current user), as shown in the following example:

```
$account = "DOMAIN\" + $env:UserName
```

**Note:**

The application pool account must be a managed account. To create a managed account, use `New-SPManagedAccount`.

11. Create a value for the Web application URL (`$webappurl = "https://" + $env:ComputerName`), as shown in the following example:

```
$wa = New-SPWebApplication -name "Claims WIF"  
-SecureSocketsLayer -ApplicationPool "SharePoint SSL"  
-ApplicationPoolAccount $account -Url $webappurl -Port 443  
-AuthenticationProvider $ap
```

12. Create a site by first creating a claim object, as shown in the following example:

```
$claim = New-SPClaimsPrincipal  
-TrustedIdentityTokenIssuer $ap -Identity  
$env:UserName
```

13. Create a site, as shown in the following example:

```
$site = New-SPSite $webappurl -OwnerAlias  
$claim.ToEncodedString() -template "STS#0"
```

## Edit bindings and configure the Web.Config file

After you have configured a SharePoint claims-based Web application, edit bindings and configure the Web.Config file.

### To edit bindings and configure the Web.Config file

1. Start IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **Claims Web Application** site in IIS.
3. In the left pane, right-click **Claims Web Application**, and select **Edit Bindings**.
4. Select **https** and click **Edit**.
5. Under **SSL Certificate**, select any listed certificate.
6. In the left pane, go to the **/\_trust/** site in IIS.
7. Right-click **/\_trust/** and select **Explore**.



- 
8. Open the Web.Config file.
  9. Find the **<AudienceUri>** section and add the following entry:

`https://webappname/`



**Important:**

After you have added the preceding entry, save and close the Web.Config file.

## Configure a Web application that uses an STS

After you have configured a SharePoint Foundation 2010 claims-based Web application, edited the bindings and configured the Web.Config file, you can use the procedure in this section to configure a Security Token Service Web application.

### To configure a Web application that uses an STS

1. Open the Active Directory Federation Services (AD FS) s2.0Management console.
2. In the left pane, expand **Policy**, and select **Relying Parties**.
3. In the right pane, click **Add Relying Party**. This opens the Active Directory Federation Services (AD FS) 2.0 configuration wizard.
4. On the first page of the wizard, click **Start**.
5. Select **Enter relying party configuration manually**, and click **Next**.
6. Type a relying party name and click **Next**.
7. Make sure **Active Directory Federation Services (AD FS) 2.0 Server Profile** is selected, and click **Next**.
8. If you are not planning to use an encryption certificate, click **Next**.
9. Select **Enable support for Web-browser-based identity federation**.
10. Type the name of the Web application URL, and append **/\_trust/** (for example: **https://servername/\_trust/**). Click **Next**.
11. Type an identifier, and click **Add**. Click **Next**.
12. On the Summary page, click **Next** and then click **Close**. This opens the Rules Editor Management console. Use this console to configure the mapping of claims from an LDAP Web application to SharePoint.
13. In the left pane, expand **New Rule**, and select **Predefined Rule**.
14. Select **Create Claims from LDAP Attribute Store**.
15. In the right pane, from the **Attribute Store** drop-down list, select **Enterprise Active Directory User Account Store**.
16. Under **LDAP Attribute**, select **sAMAccountName**.
17. Under **Outgoing Claim Type**, select **E-Mail Address**.
18. In the left pane, click **Save**.

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# Prepare to host sites (SharePoint Foundation 2010)

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After you have installed Microsoft SharePoint Foundation 2010 and performed the initial configuration, you can begin to create SharePoint sites. Before you create a site collection, you must first create a Web application in which to create the site collection. If you want to use Kerberos authentication or claims-based authentication, you must also configure Web application authentication.

The articles in this section help you determine the hierarchy of your SharePoint sites.

- [Create a Web application \(SharePoint Foundation 2010\)](#)

SharePoint sites are hosted by Web applications, so you must create one or more Web applications before you can create any sites. This article covers how to create a Web application from the Central Administration Web site or by using Windows PowerShell 2.0.

- [Configure claims authentication \(SharePoint Foundation 2010\)](#)

This article describes how to configure a SharePoint Foundation 2010 claims-based Web application that will provide a claims-based sign-in and services infrastructure for your farm. The article also describes how to configure anonymous access for your claims-based Web application and how to configure your Web application zones for forms-based authentication or Web SSO authentication, as appropriate.

- [Configure Kerberos authentication \(SharePoint Foundation 2010\)](#)

To deploy a server farm running SharePoint Foundation 2010 using Kerberos authentication, you must install and configure a variety of applications on your computers. This article describes an example server farm running SharePoint Foundation 2010 and provides guidance for deploying and configuring the farm to use Kerberos authentication to work in a SharePoint server farm.

- [Create a site collection \(SharePoint Foundation 2010\)](#)

After you have created a Web application, you can create a site collection. This article helps you create a site collection from the Central Administration Web site or by using Windows PowerShell 2.0. If you want to enable users to create their own sites, you need to configure self-service site management for the Web application.

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# Create a Web application (SharePoint Foundation 2010)

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A Web application is composed of an Internet Information Services (IIS) Web site (but can have up to five IIS Web sites with which it is associated) that acts as a logical unit for the site collections that you create. Before you can create a site collection, you must first create a Web application.

Each Web application is represented by a different IIS Web site with a unique or shared application pool. You can assign each Web application a unique domain name, which helps to prevent cross-site scripting attacks.

You use Web applications to isolate content. When you create a new Web application, you also create a new content database and define the authentication method used to connect to the database. In addition, you define an authentication method to be used by the IIS Web site in SharePoint Foundation 2010.

SharePoint Foundation 2010 offers two ways of authenticating users, follows:

- Classic mode authentication, through which users log on to a Web application by using Windows authentication.
- Claims-based authentication, through which users log on to a Web application by using Windows authentication, forms-based authentication (FBA), or Trusted Identity provider (SAML). If you use FBA or SAML, you must perform additional configuration steps. For more information about claims-based authentication, see [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#).

For more information about both types of authentication, see [Plan authentication methods \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0\(Office.14\).aspx](http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0(Office.14).aspx)).

SharePoint Foundation 2010 provides a set of services applications that are available for each Web application. You can select which service applications you want to use for each Web application that you create. For more information, see [Technical diagrams \(SharePoint Foundation 2010\)](#), [Define managed paths \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf\(Office.14\).aspx](http://technet.microsoft.com/library/99462701-d16a-4477-af4e-36c8f5083dbf(Office.14).aspx)), and [Service application and service management \(SharePoint Foundation 2010\)](#).

Before you perform these procedures, confirm that:

- Your system is running Microsoft SharePoint Foundation 2010.
- You have your logical architecture design in place.
- You have planned authentication for your Web application. For more information, see [Plan authentication methods \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0\(Office.14\).aspx](http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0(Office.14).aspx)), and [Choose security groups \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e\(Office.14\).aspx](http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e(Office.14).aspx)).

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- You have selected the service applications that you want to use for your Web application. For more information, see [Service application and service management \(SharePoint Foundation 2010\)](#).
  - If you use Secure Sockets Layer (SSL), you must associate the SSL certificate with the Web application's IIS Web site after the IIS Web site has been created. For more information about setting up SSL, see [How to Setup SSL on IIS 7.0 \(http://go.microsoft.com/fwlink/?LinkId=187887\)](http://go.microsoft.com/fwlink/?LinkId=187887).
  - You have read about alternate access mappings.
  - If you have User Account Control (UAC) turned on in Windows, and you use Windows PowerShell 2.0 to create a Web application, you must right-click the SharePoint 2010 Management Shell and select **Run as administrator**.

## Create a Web application

You can create a Web application by using the SharePoint Central Administration Web site or Windows PowerShell. You typically use Central Administration to create a Web application. If you want to automate the task of creating a Web application, which is common in enterprises, use Windows PowerShell. After the procedure is complete, you can create one or several site collections on the Web application that you have created.

▶ **To create a Web application that uses Windows-classic authentication by using Central Administration**

- 
1. Verify that you have the following administrative credentials:
    - To create a Web application, you must be a member of the Farm Administrators SharePoint group and member of the local Administrator group on the computer running Central Administration.
  2. On the Central Administration Home page, in the **Application Management** section, click **Manage web applications**.
  3. On the ribbon, click **New**.
  4. On the Create New Web Application page, in the **Authentication** section, click **Classic Mode Authentication**.
  5. In the **IIS Web Site** section, you can configure the settings for your new Web application by selecting one of the following two options:
    - Click **Use an existing web site**, and then select the Web site on which to install your new Web application.
    - Click **Create a new IIS web site**, and then type the name of the Web site in the **Name** box.
  6. In the **IIS Web Site** section, in the **Port** box, type the port number you want to use to access the Web application. If you are creating a new Web site, this field is populated with a random port number. If you are using an existing Web site, this field is populated with the current port number.

**Note:**

The default port number for HTTP access is 80, and the default port number for HTTPS access is 443. If you want users to access the Web application without typing in a port number, they should use the appropriate default port number.

7. Optional: In the **IIS Web Site** section, in the **Host Header** box, type the host name (for example, www.contoso.com) you want to use to access the Web application.

**Note:**

In general, this field is not set unless you want to configure two or more IIS Web sites that share the same port number on the same server, and DNS has been configured to route requests to the same server.

8. In the **IIS Web Site** section, in the **Path** box, type the path to the IIS Web site home directory on the server. If you are creating a new Web site, this field is populated with a suggested path. If you are using an existing Web site, this field is populated with the current path of that Web site.
9. In the **Security Configuration** section, configure authentication and encryption for your Web application.
  - a. In the **Authentication Provider** section, click **Negotiate (Kerberos)** or **NTLM**.

**Note:**

To enable Kerberos authentication, you must perform additional configuration.

- b. In the **Allow Anonymous** section, click **Yes** or **No**. If you choose to allow anonymous

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access, this enables anonymous access to the Web site by using the computer-specific anonymous access account (that is, IIS\_IUSRS).



**Note:**

If you want users to be able to access any site content anonymously, you must enable anonymous access for the entire Web application zone before you enable anonymous access at the SharePoint site level; later, site owners can configure how anonymous access is used within their sites. If you do not enable anonymous access at the Web application level, you cannot enable anonymous access later, at the site level. For more information, see [Choose security groups \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e(Office.14).aspx) ([http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e\(Office.14\).aspx](http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e(Office.14).aspx)).

- c. In the **Use Secure Sockets Layer (SSL)** section, click **Yes** or **No**. If you choose to enable SSL for the Web site, you must configure SSL by requesting and installing an SSL certificate. For more information about setting up SSL, see [How to Setup SSL on IIS 7.0](http://go.microsoft.com/fwlink/?LinkId=187887) (<http://go.microsoft.com/fwlink/?LinkId=187887>).
10. In the **Public URL** section, type the URL for the domain name for all sites that users will access in this Web application. This URL will be used as the base URL in links shown on pages within the Web application. The default URL is the current server name and port, and is automatically updated to reflect the current SSL, host header, and port number settings on the page. If you are deploying SharePoint Foundation 2010 behind a load balancer or proxy server, then this URL may need to be different than the SSL, host header, and port settings on this page. The **Zone** value is automatically set to **Default** for a new Web application.



**Note:**

You can change the zone when you extend a Web application. For more information, see [Extend a Web application \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8(Office.14).aspx) ([http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8\(Office.14\).aspx](http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8(Office.14).aspx)).


11. In the **Application Pool** section, do one of the following:
  - Click **Use existing application pool**, and then select the application pool you want to use from the drop-down menu.
  - Click **Create a new application pool**, and then type the name of the new application pool or keep the default name.
12. Under **Select a security account for this application pool**, do one of the following:
  - Click **Predefined** to use a predefined security account, and then select the security account from the drop-down menu.
  - Click **Configurable** to specify a new security account to be used for an existing application pool.



**Note:**

You can create a new account by clicking the **Register new managed account** link.

13. In the **Database Name and Authentication** section, choose the database server, database name, and authentication method for your new Web application, as described in the following table.

Item	Action
<b>Database Server</b>	Type the name of the database server and Microsoft SQL Server instance you want to use in the format <code>&lt;SERVERNAME\instance&gt;</code> . You can also use the default entry.
<b>Database Name</b>	Type the name of the database, or use the default entry.
<b>Database Authentication</b>	<p>Select the database authentication to use by doing one of the following:</p> <ul style="list-style-type: none"> <li>• If you want to use Windows authentication, leave this option selected. We recommend this option because Windows authentication automatically encrypts the password when it connects to SQL Server.</li> <li>• If you want to use SQL authentication, click <b>SQL authentication</b>. In the <b>Account</b> box, type the name of the account you want the Web application to use to authenticate to the SQL Server database, and then type the password in the <b>Password</b> box.</li> </ul> <p> <b>Note:</b> SQL authentication sends the SQL authentication password to the SQL Server unencrypted. We recommend that you only use SQL authentication if you force protocol encryption to the SQL Server or encrypt your network traffic by using IPsec.</p>

14. If you use database mirroring, in the **Failover Server** section, in the **Failover Database Server** box, type the name of a specific failover database server that you want to associate with a

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content database.

15. In the **Search Server** section, under **Select Microsoft SharePoint Foundation search server**, you associate a content database with a server that is running the Microsoft SharePoint Foundation Search service.
16. In the **Service Application Connections** section, select the service application connections that will be available to the Web application. In the drop-down menu, click **default** or **custom**. You use the **custom** option to choose the services application connections that you want to use for the Web application.
17. In the **Customer Experience Improvement Program** section, click **Yes** or **No**.
18. Click **OK** to create the new Web application.



---

▶ **To create a Web application with Windows-claims authentication by using Central Administration**

1. Verify that you have the following administrative credentials:
  - To create a Web application, you must be a member of the Farm Administrators SharePoint group and a member of the local Administrators group on the computer running Central Administration.
2. On the Central Administration Home page, in the **Application Management** section, click **Manage web applications**.
3. On the ribbon, click **New**.
4. On the Create New Web Application page, in the **Authentication** section, click **Claims Based Authentication**.
5. In the **IIS Web Site** section, you can configure the settings for your new Web application by selecting one of the following two options:
  - Click **Use an existing web site**, and then select the Web site on which to install your new Web application.
  - Click **Create a new IIS web site**, and then type the name of the Web site in the **Name** box.
6. In the **IIS Web Site** section, in the **Port** box, type the port number you want to use to access the Web application. If you are creating a new Web site, this field is populated with a random port number. If you are using an existing Web site, this field is populated with the current port number.



**Note:**

The default port number for HTTP access is 80, and the default port number for HTTPS access is 443. If you want users to access the Web application without typing in a port number, they should use the appropriate default port number.

7. Optional: In the **IIS Web Site** section, in the **Host Header** box, type the host name (for example, www.contoso.com) you want to use to access the Web application.



**Note:**

In general, this field is not set unless you want to configure two or more IIS Web sites that share the same port number on the same server, and DNS has been configured to route requests to the same server.

8. In the **IIS Web Site** section, in the **Path** box, type the path to the IIS Web site home directory on the server. If you are creating a new Web site, this field is populated with a suggested path. If you are using an existing Web site, this field is populated with the current path of that Web site.
9. In the **Security Configuration** section, choose whether or not to use allow anonymous access and whether or not to use Secure Sockets Layer (SSL).
  - a. Under **Allow Anonymous**, click **Yes** or **No**. If you choose to allow anonymous access, this enables anonymous access to the Web site by using the computer-specific anonymous

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access account (that is, IIS\_IUSRS).



**Note:**

If you want users to be able to access any site content anonymously, you must enable anonymous access for the entire Web application zone before you enable anonymous access at the SharePoint site level; later, site owners can configure how anonymous access is used within their sites. If you do not enable anonymous access at the Web application level, you cannot enable anonymous access later, at the site level. For more information, see [Choose security groups \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e(Office.14).aspx) ([http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e\(Office.14\).aspx](http://technet.microsoft.com/library/f27effc6-5e57-42c1-8f31-15a9f50e794e(Office.14).aspx)).

- b. Under **Use Secure Sockets Layer (SSL)**, click **Yes** or **No**. If you choose to enable SSL for the Web site, you must configure SSL by requesting and installing an SSL certificate. For more information about setting up SSL, see [How to Setup SSL on IIS 7.0](http://go.microsoft.com/fwlink/?LinkId=187887) (<http://go.microsoft.com/fwlink/?LinkId=187887>).
10. In the **Claims Authentication Types** section, select the authentication that you want to use for the Web application.
- a. If you want to enable Windows authentication, select **Enable Windows Authentication** and, in the drop-down menu, select **Negotiate (Kerberos)** or **NTLM**.  
If you do not want to use Integrated Windows authentication, clear **Integrated Windows authentication**.  
If you want users' credentials to be sent over a network in a nonencrypted form, select **Basic authentication (password is sent in clear text)**.



**Note:**

You can select basic authentication or integrated Windows authentication, or both. If you select both, SharePoint Foundation 2010 will offer both authentication types to the client Web browser. The client Web browser then determines which type of authentication to use. If you only select basic authentication, ensure that SSL is enabled; otherwise, the credentials can be intercepted by a malicious user.

- b. If you want to enable forms-based authentication, select **Enable Forms Based Authentication (FBA)**, and then enter the membership provider name and the role manager name in the boxes.



**Note:**

If you select this option, ensure that SSL is enabled; otherwise, the credentials can be intercepted by a malicious user.

- c. If you have set up Trusted Identity Provider authentication in Windows PowerShell, the **Trusted Identity provider** check box is selected.

You can use one or more claims authentication types. For more information, see [Plan authentication methods \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0(Office.14).aspx)

([http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0\(Office.14\).aspx](http://technet.microsoft.com/library/b6bc8fec-c11c-4ed7-a78d-3ad61c7ef6c0(Office.14).aspx)).

11. In the **Sign In Page URL** section, choose one of the following options to sign into SharePoint Foundation 2010:
  - Select **Default Sign In Page URL** if you want users to be redirected to a default sign-in Web site for claims-based authentication.
  - Select **Custom Sign In page URL** and then type the sign-in URL if you want users to be redirected to a customized sign-in Web site for claims-based authentication.
12. In the **Public URL** section, type the URL for the domain name for all sites that users will access in this Web application. This URL will be used as the base URL in links shown on pages within the Web application. The default URL is the current server name and port, and is automatically updated to reflect the current SSL, host header, and port number settings on the page. If you are deploying SharePoint Foundation 2010 behind a load balancer or proxy server, then this URL may need to be different than the SSL, host header, and port settings on this page. The **Zone** value is automatically set to **Default** for a new Web application.



**Note:**

You can change the zone when you extend a Web application. For more information, see [Extend a Web application \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8(Office.14).aspx) ([http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8\(Office.14\).aspx](http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8(Office.14).aspx)).

13. In the **Application Pool** section, do one of the following:
  - Click **Use existing application pool**, and then select the application pool you want to use from the drop-down menu.
  - Click **Create a new application pool**, and then type the name of the new application pool or keep the default name.
14. Under **Select a security account for this application pool**, do one of the following:
  - Click **Predefined** to use a predefined security account, and then select the security account from the drop-down menu.
  - Click **Configurable** to specify a new security account to be used for an existing application pool.




**Note:**

You can create a new account by clicking the **Register new managed account** link.

15. In the **Database Name and Authentication** section, choose the database server, database name, and authentication method for your new Web application as described in the following table.

Item	Action
<b>Database Server</b>	Type the name of the database server and Microsoft SQL Server instance you want to use in the format <code>&lt;SERVERNAME\instance&gt;</code> .

	You can also use the default entry.
<b>Database Name</b>	Type the name of the database, or use the default entry.
<b>Database Authentication</b>	<p>Select the database authentication to use by doing one of the following:</p> <ul style="list-style-type: none"> <li>• If you want to use Windows authentication, leave this option selected. We recommend this option because Windows authentication automatically encrypts the password when it connects to SQL Server.</li> <li>• If you want to use SQL authentication, click <b>SQL authentication</b>. In the <b>Account</b> box, type the name of the account you want the Web application to use to authenticate to the SQL Server database, and then type the password in the <b>Password</b> box.</li> </ul> <p> <b>Note:</b> SQL authentication sends the SQL authentication password to the SQL Server unencrypted. We recommend that you only use SQL authentication if you force protocol encryption to the SQL Server or encrypt your network traffic by using IPsec.</p>

16. If you use database mirroring, in the **Failover Server** section, in the **Failover Database Server** box, type the name of a specific failover database server that you want to associate with a content database.
17. In the **Search Server** section, under **Select SharePoint Foundation search server**, you associate a content database with a server that is running the Microsoft SharePoint Foundation Search service.
18. In the **Service Application Connections** section, select the service application connections that will be available to the Web application. In the drop-down menu, click **default** or **custom**. You use the **custom** option to choose the services application connections that you want to use for the Web application.
19. In the **Customer Experience Improvement Program** section, click **Yes** or **No**.

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20. Click **OK** to create the new Web application.

▶ **To create a Web application that uses Windows-classic authentication by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). You also need to be a member of the local Administrators group on the computer running Windows PowerShell. In addition, some procedures require membership in the SQL Server fixed server roles **dbcreator** and **securityadmin**.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
New-SPWebApplication -Name <Name> -ApplicationPool <ApplicationPool> -  
ApplicationPoolAccount <ApplicationPoolAccount> -Port <Port> -URL <URL>
```

Where:

- *<Name>* is the name of the new Web application.
- *<ApplicationPool>* is the name of the application pool.
- *<ApplicationPoolAccount>* is the user account that this application pool will run as.
- *<Port>* is the port on which the Web application will be created in IIS.
- *<URL>* is the public URL for the Web application.

**Example**

```
New-SPWebApplication -Name "Contoso Internet Site" -ApplicationPool "ContosoAppPool"  
-ApplicationPoolAccount (Get-SPManagedAccount "DOMAIN\jdoe") -Port 80 -URL  
"http://www.contoso.com"
```

For more information, see [New-SPWebApplication](#) ([http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5\(Office.14\).aspx](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

▶ **To create a Web application that uses Windows-claims authentication by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#). You also need to be a member of the local Administrators group on the computer running Windows PowerShell. In addition, some procedures require membership in the SQL Server fixed server roles **dbcreator** and **securityadmin**.
2. On the **Start** menu, click **All Programs**.

- 
3. Click **Microsoft SharePoint 2010 Products**.
  4. Click **SharePoint 2010 Management Shell**.
  5. To create a Windows-claims authentication provider, at the Windows PowerShell command prompt, type the following command:

```
$ap = New-SPAuthenticationProvider
```

To create a Web application that uses Windows-claims authentication, at the Windows PowerShell command prompt, type the following command:

```
$wa = New-SPWebApplication -Name <ClaimsWindowsWebApplication> -ApplicationPool  
<ClaimsApplicationPool> -ApplicationPoolAccount <ClaimsApplicationPoolAccount> -  
URL <URL> -Port <Port> -AuthenticationProvider $ap
```

**Note:**

We recommend that the application pool account is a managed account on the server farm.

Where:

- <Name> is the name of the new Web application that uses Windows claims authentication.
- <ApplicationPool> is the name of the application pool.
- <ApplicationPoolAccount> is the user account that this application pool will run as.
- <URL> is the public URL for the Web application.
- <Port> is the port on which the Web application will be created in IIS.

**Example**

```
$ap = New-SPAuthenticationProvider  
  
$wa = New-SPWebApplication -Name "Contoso Internet Site" -ApplicationPool  
"ContosoAppPool" -ApplicationPoolAccount (Get-SPManagedAccount "DOMAIN\jdoe") -URL  
"http://www.contoso.com" -Port 80 -AuthenticationProvider $ap
```

For more information, see [New-SPWebApplication \(http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5\(Office.14\).aspx\)](http://technet.microsoft.com/library/eaeb5bed-81e7-4275-b005-aa7fc465e6d5(Office.14).aspx) and [New-SPAuthenticationProvider \(http://technet.microsoft.com/library/c1056674-30b6-4c9c-bfc7-a2d336064b62\(Office.14\).aspx\)](http://technet.microsoft.com/library/c1056674-30b6-4c9c-bfc7-a2d336064b62(Office.14).aspx).

**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

**See Also**

[Extend a Web application \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8(Office.14).aspx)

([http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8\(Office.14\).aspx](http://technet.microsoft.com/library/83ce9db7-7922-4a58-a39c-8a578f8671c8(Office.14).aspx))

[Create a site collection \(SharePoint Foundation 2010\)](#)

[Configure a claims-based Web application \(SharePoint Foundation 2010\)](#)

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[Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#)

[Configure Web Server Security \(IIS 7\)](http://go.microsoft.com/fwlink/?LinkId=188002) (*http://go.microsoft.com/fwlink/?LinkId=188002*)

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# Configure claims authentication (SharePoint Foundation 2010)

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In this section:

- [Configure a claims-based Web application \(SharePoint Foundation 2010\)](#)
- [Configure anonymous access for a claims-based Web application \(SharePoint Foundation 2010\)](#)
- [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#)
- [Configure Kerberos authentication for the claims to Windows token service \(SharePoint Foundation 2010\)](#)
- [Configure authentication using a SAML security token \(SharePoint Foundation 2010\)](#)



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# Configure a claims-based Web application (SharePoint Foundation 2010)

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The procedure in this article enables you to configure a Microsoft SharePoint Foundation 2010 claims-based Web application that will provide a claims-based sign-in and services infrastructure for your farm. Before you can configure a claims-based Web application, make sure you have successfully performed the following SharePoint Foundation 2010 installation processes:

- Run the post-setup configuration wizard.
- Run the farm configuration wizard (or configure farm services individually).
- Configure a SharePoint Foundation 2010 Web application. For the Application Pool account, use the Farm Administrator account.
- Configure a SharePoint Foundation 2010 site collection.

## Configure a claims-based Web application

The following procedure describes how to use Central Administration to configure a claims-based Web application.

### To configure a claims-based Web application

1. Verify that the user account that is performing this procedure is a member of the Farm Administrators SharePoint group.
2. In Central Administration, under **Application Management**, select **Manage Web Applications**.
3. On the ribbon, select **New**.
4. In the **Authentication** section of the **New Web Application** dialog box, select **Claims Based Authentication** and click **OK**.
5. Confirm that the Web application is successfully created.
6. After you have configured a claims-based Web application, create a site collection.

---

# Configure anonymous access for a claims-based Web application (SharePoint Foundation 2010)

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After you have configured a Microsoft SharePoint Foundation 2010 claims-based Web application, you can use the procedure in this article to configure anonymous access for your claims-based Web application. For more information, see [Configure a claims-based Web application \(SharePoint Foundation 2010\)](#).

## Configure anonymous access for a claims-based Web application

### To configure anonymous access for a claims-based Web application

1. Verify that the user account that is performing this procedure is a site collection administrator.
2. In Central Administration, go to the **Security** section.
3. Under **Anonymous Access**, select **Enable Anonymous**.
4. Click **Save**.
5. Go to the site for the appropriate Web application.
6. Select **Site Actions**.
7. Select **Site Permissions**.
8. On the ribbon, select **Anonymous Access**.
9. Select either **Entire Web Site** or **Lists and Libraries**, depending on how you want to scope anonymous access for this site.

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# Configure forms-based authentication for a claims-based Web application (SharePoint Foundation 2010)

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The procedures in this article provide guidance to:

- Enable you to configure forms-based authentication for a Microsoft SharePoint Foundation 2010 claims-based Web application.
- Help you upgrade existing Windows SharePoint Services 3.0 Web applications that were configured to use forms-based authentication to work with SharePoint Foundation 2010.

After upgrading to SharePoint Foundation 2010, your Windows SharePoint Services 3.0 Web applications will be configured for legacy login. For your Windows SharePoint Services 3.0 Web applications that were configured to use Windows authentication, there are no additional steps required for upgrade. However, for Windows SharePoint Services 3.0 Web applications that were configured to use forms-based authentication, or Web SSO authentication, you must first convert to claims-based authentication before the Windows SharePoint Services 3.0 Web applications can be used in SharePoint Foundation 2010. After you convert you Windows SharePoint Services 3.0 Web applications to claims-based authentication, configure your Web application zones for forms-based authentication (or Web SSO authentication, as appropriate). Note that the membership provider and role provider names that you use in SharePoint Foundation 2010 must match the membership provider and role provider names that you used in Windows SharePoint Services 3.0. The final step is to migrate users and permissions to SharePoint Foundation 2010.

In this article:

- [Convert Web applications to claims-based authentication](#)
- [Configure a forms-based Web application to use an LDAP provider by using Central Administration](#)
- [Configure the LDAP Web.Config files](#)
- [Configure a forms-based Web application to use an LDAP provider by using Windows PowerShell](#)
- [Migrate users and permissions from Windows SharePoint Services 3.0 to SharePoint Foundation 2010](#)

## Convert Web applications to claims-based authentication

Perform the steps in the following procedure to use Windows PowerShell to convert existing Web applications to claims-based authentication.

### To convert Web applications to claims-based authentication

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).

- 
2. On the **Start** menu, click **All Programs**.
  3. Click **Microsoft SharePoint 2010 Products**.
  4. Click **SharePoint 2010 Management Shell**.
  5. From the Windows PowerShell command prompt, type the following:

```
$w = Get-SPWebApplication "http://<server>/"  
  
$w.UseClaimsAuthentication = "True";  
  
$w.Update()  
  
$w.ProvisionGlobally()
```



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## Configure a forms-based Web application to use an LDAP provider by using Central Administration

Perform the steps in the following procedure to use Central Administration to configure forms-based authentication for a claims-based Web application.

▶ **To configure forms-based authentication for a claims-based Web application by using Central Administration**

1. Verify that the user account that is performing this procedure is a site collection administrator.
2. In Central Administration, under **Application Management**, select **Manage Web Applications**.
3. On the ribbon, select **New**.
4. In the **Authentication** section of the **New Web Application** dialog box, select **Claims Based Authentication**.
5. In the **Authentication Type** section, select **Enable ASP.NET Membership and Role Provider**.
6. Type a membership provider name and a role manager name. In the example Web.Config file depicted in this article, the name of the membership provider is **membership**, and the name of the role manager is **rolemanager**.
7. Click **OK** to create the Web application.

---

## Configure the LDAP Web.Config files

After you have successfully created the Web application (described in the preceding procedure), modify the following Web.Config files:

- The Central Administration Web application Web.Config file
- The Security Token Service Web.Config file
- The forms-based authentication claims-based Web application Web.Config file

### ▶ To configure the Central Administration Web.Config file

1. Open IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **SharePoint Central Administration** site in IIS.
3. Right-click **SharePoint Central Administration** and select **Explore**.
4. Open the Web.Config file.
5. Find the <Configuration> <system.web> section and add the following entry:

```
<membership defaultProvider="AspNetSqlMembershipProvider">
  <providers>
    <add name="membership"
      type="Microsoft.Office.Server.Security.LdapMembershipProvider,
Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
      server="yourserver.com"
      port="389"
      useSSL="false"
      userDNAttribute="distinguishedName"
      userNameAttribute="sAMAccountName"
      userContainer="OU=UserAccounts,DC=internal,DC=yourcompany,DC= distinguishedName
(of your userContainer)"
      userObjectClass="person"
      userFilter="(ObjectClass=person)"
      scope="Subtree"
      otherRequiredUserAttributes="sn,givenname,cn" />
  </providers>
</membership>
<roleManager enabled="true" defaultProvider="AspNetWindowsTokenRoleProvider" >
  <providers>
    <add name="roleManager"
```

```

        type="Microsoft.Office.Server.Security.LdapRoleProvider, Microsoft.Office.Server,
Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
        server="yourserver.com"
        port="389"
        useSSL="false"
        groupContainer="DC=internal,DC=yourcompany,DC= distinguishedName (of your
groupContainer) "
        groupNameAttribute="cn"
        groupNameAlternateSearchAttribute="samAccountName"
        groupMemberAttribute="member"
        userNameAttribute="sAMAccountName"
        dnAttribute="distinguishedName"
        groupFilter="(ObjectClass=group) "
        userFilter="(ObjectClass=person) "
        scope="Subtree" />
    </providers>
</roleManager>

```



### Important:

After you have added the preceding entry, save and close the Web.Config file.



### To configure the Security Token Service Web.Config file

1. Open IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **SharePoint Web Services** site.
3. Go to the **SecurityTokenServiceAppliction** sub-site.
4. Right-click **SharePoint Central Administration** and select **Explore**.
5. Open the Web.Config file.
6. Find the <Configuration> <system.web> section and add the following entry:

```

<membership>
    <providers>
        <add name="membership"
            type="Microsoft.Office.Server.Security.LdapMembershipProvider,
Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
            server="yourserver.com"
            port="389"
            useSSL="false"

```

```

        userDNAttribute="distinguishedName"
        userNameAttribute="sAMAccountName"
        userContainer="OU=UserAccounts,DC=internal,DC=yourcompany,DC=com"
        userObjectClass="person"
        userFilter="( & (ObjectClass=person) )"
        scope="Subtree"
        otherRequiredUserAttributes="sn,givenname,cn" />
    </providers>
</membership>
<roleManager enabled="true" >
    <providers>
        <add name="rolemanager"
            type="Microsoft.Office.Server.Security.LdapRoleProvider, Microsoft.Office.Server,
Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
            server="yourserver.com"
            port="389"
            useSSL="false"
            groupContainer="DC=internal,DC=yourcompany,DC=com"
            groupNameAttribute="cn"
            groupNameAlternateSearchAttribute="samAccountName"
            groupMemberAttribute="member"
            userNameAttribute="sAMAccountName"
            dnAttribute="distinguishedName"
            groupFilter="( & (ObjectClass=group) )"
            userFilter="( & (ObjectClass=person) )"
            scope="Subtree" />
    </providers>
</roleManager>

```



**Important:**

After you have added the preceding entry, save and close the Web.Config file.



**To configure the forms-based authentication claims-based Web application Web.Config file**

1. Open IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **Claims Forms** site.

- 
3. Right-click **Claims Forms** and select **Explore**.
  4. Open the Web.Config file.
  5. Find the <Configuration> <system.web> section.
  6. Find the <membership defaultProvider="i"> section and add the following entry:

```
<add name="membership"
      type="Microsoft.Office.Server.Security.LdapMembershipProvider,
Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
      server="yourserver.com"
      port="389"
      useSSL="false"
      userDNAttribute="distinguishedName"
      userNameAttribute="sAMAccountName"
      userContainer="OU=UserAccounts,DC=internal,DC=yourcompany,DC=com"
      userObjectClass="person"
      userFilter="( & (ObjectClass=person)) "
      scope="Subtree"
      otherRequiredUserAttributes="sn,givenname,cn" />
```

Find the <roleManager defaultProvider="c" enabled="true" cacheRolesInCookie="false"> section and add the following entry:

```
<add name="roleManager"
      type="Microsoft.Office.Server.Security.LdapRoleProvider, Microsoft.Office.Server,
Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
      server="yourserver.com"
      port="389"
      useSSL="false"
      groupContainer="DC=internal,DC=yourcompany,DC=com"
      groupNameAttribute="cn"
      groupNameAlternateSearchAttribute="samAccountName"
      groupMemberAttribute="member"
      userNameAttribute="sAMAccountName"
      dnAttribute="distinguishedName"
      groupFilter="( & (ObjectClass=group)) "
      userFilter="( & (ObjectClass=person)) "
      scope="Subtree" />
```



**Important:**

After you have added the preceding entry, save and close the Web.Config file.

**Warning:**

Do not overwrite any existing entries in this Web.Config file.

## Configure a forms-based Web application to use an LDAP provider by using Windows PowerShell

Perform the steps in the following procedure to use Windows PowerShell to configure forms-based authentication for a claims-based Web application.

### ▶ To configure a forms-based Web application to use an LDAP provider by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, type the following:

```
$ap = New-SPAuthenticationProvider -Name "ClaimsForms" -ASPNETMembershipProvider  
"membership" -ASPNETRoleProviderName "rolemanager"  
  
$wa = New-SPWebApplication -Name "Claims Windows Web App" -ApplicationPool "Claims  
App Pool" -ApplicationPoolAccount "internal\appool"  
  
-Url http://servername -Port 80 -AuthenticationProvider $ap
```

**Note:**

The value of the **ApplicationPoolAccount** parameter must be a managed account on the farm.

6. After you have successfully created an authentication provider and a Web application, modify the following Web.Config files using the sample entries provided in the "Configure the LDAP Web.Config files" section of this article:
  - The Central Administration Web application Web.Config file
  - The Security Token Service Web.Config file
  - The forms-based authentication claims-based Web application Web.Config file
7. After you have modified the Web.Config files, create a SPClaimsPrincipal and a site collection, as shown in the following example:

```
$cp = New-SPClaimsPrincipal -Identity "membership:SiteOwner" -IdentityType  
FormsUser  
  
$sp = New-SPSite http://servername:port -OwnerAlias $cp.Encode() -Template "STS#0"
```

**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## Migrate users and permissions from Windows SharePoint Services 3.0 to SharePoint Foundation 2010

Perform the steps in the following procedure to use Windows PowerShell to migrate users and permissions.

### ▶ To migrate users and permissions from Windows SharePoint Services 3.0 to SharePoint Foundation 2010

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, type the following:

```
$w = Get-SPWebApplication "http://<server>/"  
  
$w.MigrateUsers (True)
```

**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

---

# Configure Kerberos authentication for the claims to Windows token service (SharePoint Foundation 2010)

---

This article provides an example three-computer server farm environment to demonstrate how to configure Kerberos authentication for the claims to Windows token service in Microsoft SharePoint Foundation 2010.

In this article:

- [Before you begin](#)
- [Configure an external data source](#)
- [Configure constrained delegation for the shared service application pool account](#)
- [Configure constrained delegation for the claims to Windows token service account](#)
- [Configure the claims to Windows token service on the application server](#)

## Before you begin

Before adding any service principal name (SPN) entries to an Active Directory domain, make sure of the following:

- You will not be duplicating any existing SPN entries in the domain.
- No SPN entries that you add are currently being used by any other computer accounts or services.

For information about searching for computer accounts with duplicate SPN entries, see Knowledge Base article 321044, [Event ID 11 in the System log of domain controllers](#) (<http://go.microsoft.com/fwlink/?LinkId=166609>).



### **Important:**

To create SPNs in an Active Directory domain, you must have domain administrative-level permissions.

## Server farm topology

This article targets the following SharePoint Foundation 2010 server farm topology:

- One computer that is running Windows Server 2008, and acting as a front-end Web server.
- One computer (Claims1) that is running Windows Server 2008, and acting as an application server.
- One computer (Claims2) that is running Windows Server 2008 and SQL Server for the farm that is running SharePoint Foundation 2010.
- One computer (Claims3) that is acting as an external SQL data source.

---

## Configure an external data source

To configure an external data source, install SQL server on Claims3. Make sure the SQL Server service is running as the peopletest\osspool9.

Create an SPN by running the SETSPN.EXE tool on the domain controller, as shown in the following example:

```
setspn -A MSSQLSvc/claims3:1433
peopletest\osspool9

setspn -A
MSSQLSvc/claims3.peopletest.extest.mydomain.net:1433 peopletest\osspool9
```

## Configure constrained delegation for the shared service application pool account

Perform the following steps to configure constrained delegation for the Shared service application pool account:

1. Log on to the domain controller, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
2. Expand the domain node, and then click **Users**.
3. Right-click the application pool identity user account (peopletest\osspool8), and select **Properties**.
4. On the **Delegation** tab, verify that the **Trust this user for Delegation to specified Services only** option is selected.
5. Click **Use any authentication protocol**.
6. Click **Add** and then click **Users or Computers**.
7. Type the domain and user name of the account that is running the service you want to accept Kerberos credentials. In this example, type the name of the SQL service account on Claims3: **peopletest\osspool9**, and then click **OK**.
8. The available services values for the account that you selected will appear. Select **MSSQLSvc** on Claims3 and click **OK**.
9. Click **OK** to close the account properties dialog box.



### Note:

The **Delegation** tab will not be displayed unless there is a registered SPN for this account. Because of this, you might want to create an SPN that you do not intend to use, just to force the display of the **Delegation** tab.

You can create an SPN by running the SETSPN.EXE tool on the domain controller, as shown in the following example:

```
setspn -A http/uniquestpnl
```

---

## Configure constrained delegation for the claims to Windows token service account

Perform the following steps to configure constrained delegation for the claims to Windows token service account:

1. Log on to the domain controller, click **Start**, click **Administrative Tools**, and then click **Active Directory Users and Computers**.
2. Expand the domain node, and then click **Computers**.
3. Right-click the application pool identity account. By default the claims to Windows token service runs under the local system account, which is Claims1 in this example. Then click **Properties**.
4. On the Delegation tab, verify that the **Trust this user for Delegation to specified Services only** option is selected.
5. Click **Use any authentication protocol**.
6. Click **Add** and then click **Users or Computers**.
7. Type the domain and user name of the account that is running the service you want to accept Kerberos credentials. In this example, type the name of the SQL service account on Claims3, **peopletest\osspool9**, and then click **OK**.
8. The available services values for the account that you selected will appear. Select **MSSQLSvc** on Claims3 and click **OK**.
9. Click **OK** to close the account properties dialog box.

## Configure the claims to Windows token service on the application server

Grant WSS\_SPG group permissions to convert claims to windows identity and perform the following steps to configure the claims to Windows token service on Claims1:

1. In Notepad, open wtshost.exe.config.
2. Add `<add value="WSS_WPG" />` to the `<allowedCallers>` element of the `<windowsTokenService>` section.

The file should be similar to the following example:

```
<?xml version="1.0"?>
<configuration>
  <configSections>
    <section name="windowsTokenService"
type="yourcompany.IdentityModel.WindowsTokenService.Configuration.WindowsTokenServiceSection,
```

---

```
yourcompany.IdentityModel.WindowsTokenService, Version=1.0.0.0, Culture=neutral,  
PublicKeyToken=31bf3856ad364e35"/>  
  
</configSections>  
  
<windowsTokenService>  
  <allowedCallers>  
    <clear/>  
    <add value="WSS_WPG" />  
  </allowedCallers>  
</windowsTokenService>  
</configuration>
```

**Start the claims to Windows token service from the command line, as shown in the following example:**

```
net start c2wts  
sc config c2wts start= auto
```

---

# Configure authentication using a SAML security token (SharePoint Foundation 2010)

---

The procedures in this article provide explain how to configure authentication using a Security Assertion Markup Language (SAML) security token for a Microsoft SharePoint Foundation 2010 claims-based Web application.

SAML sign-in is typically used in enterprise federation scenarios, for example, to provide access to a business partner. SAML sign-in is also deployed to provide access to internal users whose accounts reside in a domain that is not part of the forest that contains SharePoint Foundation 2010.

Before you configure authentication using a SAML security token for a SharePoint Foundation 2010 claims-based Web application, you must configure a server running Active Directory Federation Services (AD FS) 2.0. For information about configuring a server to run AD FS 2.0, see the [AD FS 2.0 Deployment Guide](http://go.microsoft.com/fwlink/?LinkId=191723) (<http://go.microsoft.com/fwlink/?LinkId=191723>).

In this article:

- [Configure an Identity Provider STS \(IP-STS\) Web application by using Windows PowerShell](#)
- [Configure a Relying Party STS \(RP-STS\) Web application](#)
- [Establish a trust relationship with an Identity Provider STS \(IP-STS\) by using Windows PowerShell](#)
- [Export the trusted IP-STS certificate by using Windows PowerShell](#)
- [Define a unique identifier for claims mapping by using Windows PowerShell](#)
- [Create a new SharePoint Web application and configure it to use SAML sign-in](#)

## Configure an Identity Provider STS (IP-STS) Web application by using Windows PowerShell

Perform the following procedures to use Windows PowerShell to configure a SharePoint claims-based Web application.

### To configure an Identity Provider STS (IP-STS) Web application by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, create an x509Certificate2 object, as shown in the following example:

```
$cert = New-Object  
System.Security.Cryptography.X509Certificates.X509Certificate2("path to cert
```

---

```
file")
```

6. Create a claim type mapping to use in your trusted authentication provider, as shown in the following example:

```
New-SPClaimTypeMapping  
"http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailaddress"  
-IncomingClaimTypeDisplayName "EmailAddress" -SameAsIncoming
```

7. Create a trusted login provider by first creating a value for the `realm` parameter, as shown in the following example:

```
$realm = "urn:" + $env:ComputerName + ":domain-int"
```

8. Create a value for the `signinurl` parameter that points to the Security Token Service Web application, as shown in the following example:

```
$signinurl = "https://test-2/FederationPassive/"
```

9. Create the trusted login provider, using the same `IdentifierClaim` value as in a claim mapping (`$map1.InputClaimType`), as shown in the following example:

```
$ap = New-SPTrustedIdentityTokenIssuer -Name  
"WIF" -Description "Windows® Identity Foundation" -Realm  
$realm -ImportTrustCertificate $cert  
-ClaimsMappings $map1[, $map2..] -SignInUrl  
$signinurl -IdentifierClaim $map1.InputClaimType
```

10. Create a Web application by first creating a value for the application pool account (for the current user), as shown in the following example:

```
$account = "DOMAIN\" + $env:UserName
```



**Note:**

The application pool account must be a managed account. To create a managed account, use `New-SPManagedAccount`.

11. Create a value for the Web application URL (`$webappurl = "https://" + $env:ComputerName`), as shown in the following example:

```
$wa = New-SPWebApplication -name "Claims WIF"  
-SecureSocketsLayer -ApplicationPool "SharePoint SSL"  
-ApplicationPoolAccount $account -Url $webappurl -Port 443  
-AuthenticationProvider $ap
```

12. Create a site by first creating a claim object, as shown in the following example:

```
$claim = New-SPClaimsPrincipal  
-TrustedIdentityTokenIssuerr $ap -Identity  
$env:UserName
```



---

13. Create a site, as shown in the following example:

```
$site = New-SPSite $webappurl -OwnerAlias  
$claim.ToEncodedString() -template "STS#0"
```

## Configure a Relying Party STS (RP-STS) Web application

Use the procedure in this section to configure a relying-party STS Web application.

### ▶ To configure a Relying Party STS (RP-STS) Web application

1. Open the Active Directory Federation Services (AD FS) 2.0 Management console.
2. In the left pane, expand **Policy**, and select **Relying Parties**.
3. In the right pane, click **Add Relying Party**. This opens the Active Directory Federation Services (AD FS) 2.0 configuration wizard.
4. On the first page of the wizard, click **Start**.
5. Select **Enter relying party configuration manually**, and click **Next**.
6. Type a relying party name and click **Next**.
7. Make sure **Active Directory Federation Services (AD FS) 2.0 Server Profile** is selected, and click **Next**.
8. Do not use an encryption certificate. Click **Next**.
9. Select **Enable support for Web-browser-based identity federation**.
10. Type the name of the Web application URL, and append **/\_trust/** (for example: **https://servername/\_trust/**). Click **Next**.
11. Type the name of an identifier (for example: **urn:COMPUTERNAME:Geneva**), and click **Add**. Click **Next**.
12. On the Summary page, click **Next** and then click **Close**. This opens the Rules Editor Management console. Use this console to configure the mapping of claims from an LDAP Web application to SharePoint.
13. In the left pane, expand **New Rule**, and select **Predefined Rule**.
14. Select **Create Claims from LDAP Attribute Store**.
15. In the right pane, from the **Attribute Store** drop-down list, select **Enterprise Active Directory User Account Store**.
16. Under **LDAP Attribute**, select **sAMAccountName**.
17. Under **Outgoing Claim Type**, select **E-Mail Address**.
18. In the left pane, click **Save**.

---

# Establish a trust relationship with an Identity Provider STS (IP-STS) by using Windows PowerShell

Use the procedure in this section to establish a trust relationship with an IP-STS.

## ▶ To establish a trust relationship with an IP-STS by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, establish a trust relationship, as shown in the following example:

```
$waur1 = "https://" + $env:ComputerName  
$title = "SAML-Claims"
```

# Export the trusted IP-STS certificate by using Windows PowerShell

Use the procedure in this section to export the certificate of the IP-STS with which you want to establish a trust relationship, and then copy the certificate to a location that Microsoft SharePoint Foundation 2010 can access.

## ▶ To export the trusted IP-STS certificate by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, export the trusted IP-STS certificate, as shown in the following example:

```
$cert = New-Object  
System.Security.Cryptography.X509Certificates.X509Certificate2("c:\geneva.cer")
```

# Define a unique identifier for claims mapping by using Windows PowerShell

Use the procedure in this section to define an e-mail address that will serve as a unique identifier for claims mapping. Typically, the administrator of the trusted STS will have to provide this information

---

because only the owner of the STS knows which value in the token will be always unique for each user. Note that the administrator of the trusted STS can create a URI to represent the e-mail address.

▶ **To define a unique identifier for claims mapping by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, create a mapping, as shown in the following example:

```
$map = New-SPClaimTypeMapping -IncomingClaimType  
"http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailaddress" -  
IncomingClaimTypeDisplayName "EmailAddress" -SameAsIncoming
```

## Create a new authentication provider

Use the procedure in this section to create a new authentication provider that the Web application will use.

▶ **To create a new authentication provider by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, create a new authentication provider, as shown in the following example. Note that the realm is the parameter used by the trusted STS to identify a specific SharePoint farm.

```
$realm = "urn:" + $env:ComputerName + ":Geneva"  
  
$ap = New-SPTrustedIdentityTokenIssuer -Name "Geneva" -Description "Geneva" -Realm  
$realm -ImportTrustCertificate $cert -ClaimsMappings $map -SignInUrl  
"https://test-2/FederationPassive/" -IdentifierClaim  
"http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailaddress"
```

## Create a new SharePoint Web application and configure it to use SAML sign-in

In this step, you create and configure the Web application.

---

▶ **To create a new SharePoint Web application and configure it to use SAML sign-in by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, create a new SharePoint Web application and configure it to use SAML sign-in. Note that you must replace "*WebAppUrl*" and "*domain\admin*" with the valid values.

```
$wa = New-SPWebApplication -Name "SAML Sign-In" -SecureSocketsLayer -  
ApplicationPool "SAML Sign-In" -ApplicationPoolAccount "domain\admin" -  
Url "WebAppUrl" -Port 443 -AuthenticationProvider $ap
```



**Note:**

You are enabling SSL, because with SAML sign-in, cookies are used as the single sign-on ticket for the user. This allows administrators to grant access to the SharePoint resources for the duration of the token without the need of re-authenticate the user. Without SSL, these cookies can be easily hijacked by a malicious user and be used to impersonate the original user.

When you have completed these procedures, create a SharePoint site and assign an owner. For information about creating a SharePoint site, see [Create a site collection \(SharePoint Foundation 2010\)](#).

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# Configure Kerberos authentication (SharePoint Foundation 2010)

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In this article:

- [About Kerberos authentication](#)
- [Before you begin](#)
- [Configure Kerberos authentication for SQL communications](#)
- [Create Service Principal Names for your Web applications using Kerberos authentication](#)
- [Deploy the server farm](#)
- [Configure services on servers in your farm](#)
- [Create Web applications using Kerberos authentication](#)
- [Create a site collection using the Collaboration Portal template in the portal site Web application](#)
- [Confirm successful access to the Web applications using Kerberos authentication](#)
- [Confirm correct Search Indexing functionality](#)
- [Confirm correct Search Query functionality](#)
- [Configuration limitations](#)
- [Additional resources and troubleshooting guidance](#)

## About Kerberos authentication

Kerberos is a secure protocol that supports ticketing authentication. A Kerberos authentication server grants a ticket in response to a client computer authentication request, if the request contains valid user credentials and a valid service principal name (SPN). The client computer then uses the ticket to access network resources. To enable Kerberos authentication, the client and server computers must have a trusted connection to the domain Key Distribution Center (KDC). The KDC distributes shared secret keys to enable encryption. The client and server computers must also be able to access Active Directory Domain Services (AD DS). For AD DS, the forest root domain is the center of Kerberos authentication referrals.

To deploy a server farm running Microsoft SharePoint Foundation 2010 using Kerberos authentication, you must install and configure a variety of applications on your computers. This article describes an example server farm running SharePoint Foundation 2010 and provides guidance for deploying and configuring the farm to use Kerberos authentication to support the following functionality:

- Communication between SharePoint Foundation 2010 and Microsoft SQL Server database software.
- Access to the SharePoint Central Administration Web application.
- Access to other Web applications, including a portal site Web application and a My Site Web application.

---

## Before you begin

This article is intended for administrative-level personnel who have an understanding of the following:

- Windows Server 2008
- Active Directory
- Internet Information Services (IIS) 6.0 (or IIS 7.0)
- SharePoint Foundation 2010
- Windows Internet Explorer
- Kerberos authentication, as implemented in Active Directory Domain Services (AD DS) for Windows Server 2008
- Network Load Balancing (NLB) in Windows Server 2008
- Computer accounts in an Active Directory domain
- User accounts in an Active Directory domain
- IIS Web sites and their bindings and authentication settings
- IIS application pool identities for IIS Web sites
- The SharePoint Products Configuration Wizard
- SharePoint Foundation 2010 Web applications
- Central Administration pages
- Service principal names (SPNs) and how to configure them in an Active Directory domain



### **Important:**

To create SPNs in an Active Directory domain, you must have domain administrative-level permissions.

This article does not provide an in-depth examination of Kerberos authentication. Kerberos is an industry-standard authentication method that is implemented in AD DS.

This article does not provide detailed, step-by-step instructions for installing SharePoint Foundation 2010 or using the SharePoint Products Configuration Wizard.

This article does not provide detailed, step-by-step instructions for using Central Administration to create SharePoint Foundation 2010 Web applications.

## Software version requirements

The guidance provided in this article, and the testing performed to confirm this guidance, are based on results using systems running Windows Server 2008 and Internet Explorer with the latest updates applied from the [Windows Update](http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409) site (<http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409>).

The following software versions were installed:

- Windows Server 2008, with the latest updates from the [Windows Update](http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409) site (<http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409>)
- Internet Explorer
- The released version of SharePoint Foundation 2010

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You should also make sure that your Active Directory domain controllers are running Windows Server 2008, with the latest updates applied from the [Windows Update](http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409) site (<http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409>).

## Known issues

SharePoint Foundation 2010 can crawl Web applications configured to use Kerberos authentication if those Web applications are hosted on IIS virtual servers that are bound to default ports (TCP port 80 and Secure Sockets Layer (SSL) port 443). However, SharePoint Foundation 2010 Search cannot crawl SharePoint Foundation 2010 Web applications that are configured to use Kerberos authentication if the Web applications are hosted on IIS virtual servers that are bound to non-default ports (ports other than TCP port 80 and SSL port 443). Currently, SharePoint Foundation 2010 Search can only crawl SharePoint Foundation 2010 Web applications hosted on IIS virtual servers bound to non-default ports that are configured to use either NTLM authentication or Basic authentication.

For end-user access using Kerberos authentication, if you need to deploy Web applications that can only be hosted on IIS virtual servers that are bound to non-default ports, and if you want end users to get search query results, then:

- The same Web applications must be hosted on other IIS virtual servers on non-default ports.
- The Web applications must be configured to use either NTLM or Basic authentication.
- Search Indexing must crawl the Web applications using NTLM or Basic authentication.

This article provides guidance for:

- Configuring the Central Administration Web application using Kerberos authentication hosted on an IIS virtual server bound to non-default ports.
- Configuring portal and My Site applications, using Kerberos authentication hosted on IIS virtual servers bound to default ports and with an IIS host header binding.
- Ensuring that Search Indexing successfully crawls SharePoint Foundation 2010 Web applications using Kerberos authentication.
- Ensuring that users accessing Kerberos-authenticated Web applications can successfully get search query results for those Web applications.

## Additional background

It is important to understand that when you use Kerberos authentication, accurate authentication functionality is dependant in part on the behavior of the client that is attempting to authenticate using Kerberos. In a SharePoint Foundation 2010 farm deployment using Kerberos authentication, SharePoint Foundation 2010 is not the client. Before you deploy a server farm running SharePoint Foundation 2010 using Kerberos authentication, you must understand the behavior of the following clients:

- The browser (in the context of this article, the browser is always Internet Explorer)
- The Microsoft .NET Framework

---

The browser is the client used when browsing to a Web page in a SharePoint Foundation 2010 Web application. When SharePoint Foundation 2010 performs tasks such as crawling the local SharePoint Foundation 2010 content sources, the .NET Framework is functioning as the client.

For Kerberos authentication to work correctly, you must create SPNs in AD DS. If the services to which these SPNs correspond are listening on non-default ports, the SPNs should include port numbers. This is to ensure that the SPNs are meaningful. It is also required to prevent the creation of duplicate SPNs.

When a client attempts to access a resource using Kerberos authentication, the client must construct an SPN to be used as part of the Kerberos authentication process. If the client does not construct an SPN that matches the SPN that is configured in AD DS, Kerberos authentication will fail, usually with an "Access denied" error.

There are versions of Internet Explorer that do not construct SPNs with port numbers. If you are using SharePoint Foundation 2010 Web applications that are bound to non-default port numbers in IIS, you might have to direct Internet Explorer to include port numbers in the SPNs that it constructs. In a farm running SharePoint Foundation 2010, the Central Administration Web application is hosted, by default, in an IIS virtual server that is bound to a non-default port. Therefore, this article addresses both IIS Web sites that are port-bound and IIS Web sites that are bound to host-headers.

By default, in a farm running SharePoint Foundation 2010, the .NET Framework does not construct SPNs that contain port numbers. This is the reason why Search cannot crawl Web applications using Kerberos authentication if those Web applications are hosted on IIS virtual servers that are bound to non-default ports.

## Server farm topology

This article targets the following SharePoint Foundation 2010 server farm topology:

- Two computers running Windows Server 2008 that are acting as front-end Web servers, with Windows NLB configured.
- Three computers running Windows Server 2008 that are acting as application servers. One of the application servers hosts the Central Administration Web application. The second application server is running Search Query, and the third application server is running Search Indexing.
- One computer running Windows Server 2008 that is used as the SQL host for the farm running SharePoint Foundation 2010. For the scenario described in this article, you can use either Microsoft SQL Server 2008.

## Active Directory Domain Services, computer naming, and NLB conventions

The scenario described in this article uses the following Active Directory, computer-naming, and NLB conventions:

Server role	Domain name
Active Directory Domain Services	mydomain.net



Server role	Domain name
A front-end Web server running SharePoint Foundation 2010	wssfes1.mydomain.net
A front-end Web server running SharePoint Foundation 2010	wssfes2.mydomain.net
SharePoint Foundation 2010 Central Administration	wssadmin.mydomain.net
Search Indexing running SharePoint Foundation 2010	wsscrawl.mydomain.net
Search Query running SharePoint Foundation 2010	wssquery.mydomain.net
SQL Server host running SharePoint Foundation 2010	wssql.mydomain.net

An NLB VIP is assigned to wssfes1.mydomain.net and wssfes2.mydomain.net as a result of configuring NLB on these systems. A set of DNS host names that point to this address is registered in your DNS system. For example, if your NLB VIP is 192.168.100.200, you have a set of DNS records that resolve the following DNS names to this IP address (192.168.100.200):

- kerbportal.mydomain.net
- kerbmysite.mydomain.net

## Active Directory domain account conventions

The example in this article uses the naming conventions listed in the following table for service accounts and application pool identities used in the farm running SharePoint Foundation 2010.

Domain account or application pool identity	Name
Local administrator account <ul style="list-style-type: none"> <li>• On all servers running SharePoint Foundation 2010 (but not on the host computer running SQL Server)</li> <li>• For SharePoint Foundation 2010 setup and for the SharePoint Products Configuration Wizard run-as user</li> </ul>	mydomain\pscexec
Local administrator account on the SQL Server host computer	mydomain\sqladmin

Domain account or application pool identity	Name
SQL Server service account used to run the SQL Server service	mydomain\wsssqsvc
SharePoint Foundation 2010 farm administrator account	mydomain\wssfarmadmin This is used as the application pool identity for Central Administration and as the service account for the SharePoint Timer Service.
SharePoint Foundation 2010 application pool identity for the portal site Web application	mydomain\portalpool
SharePoint Foundation 2010 application pool identity for the My Site Web application	mydomain\mysitepool
SharePoint Foundation 2010 search service account	mydomain\wssssearch
SharePoint Foundation 2010 search content access account	mydomain\wsscrawl
SharePoint Foundation 2010 search service account	mydomain\wssssearch
SharePoint Foundation 2010 content access account	mydomain\wsscrawl

## Preliminary configuration requirements

Before you install SharePoint Foundation 2010 on the computers in your server farm, make sure you have performed the following procedures:

- All servers used in the farm, including the SQL host, are set up with Windows Server 2008, including the latest updates applied from the [Windows Update](http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409) site (<http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409>).
- All servers in the farm have Internet Explorer (and the latest updates for it) installed from the [Windows Update](http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409) site (<http://go.microsoft.com/fwlink/?LinkID=101614&clcid=0x409>).
- SQL Server 2008 is installed and running on the SQL host computer, and the SQL Server service is running as the account, mydomain\sqlsvc. A default instance of SQL Server is installed and is listening on TCP port 1433.
- The SharePoint Products Configuration Wizard run-as user has been added:
  - As a SQL Login on your SQL host.
  - To the SQL Server DBCreators role on your SQL host.
  - To the SQL Server Security Administrators role on your SQL host.

---

# Configure Kerberos authentication for SQL communications

Configure Kerberos authentication for SQL communications before installing and configuring SharePoint Foundation 2010 on your servers running SharePoint Foundation 2010. This is necessary because Kerberos authentication for SQL communications has to be configured, and confirmed to be working, before your computers running SharePoint Foundation 2010 can connect to your SQL Server.

The process of configuring Kerberos authentication for any service installed on a host computer running Windows Server 2008 includes creating an SPN for the domain account used to run the service on the host. SPNs are made up of the following parts:

- A Service Name (for example, MSSQLSvc or HTTP)
- A host name (either real or virtual)
- A port number

The following list contains examples of SPNs for a default instance of SQL Server running on a computer named wssql and listening on port 1433:

- MSSQLSvc/wssql:1433
- MSSQLSvc/wssql.mydomain.com:1433

These are the SPNs that you will create for the instance of SQL Server on the SQL host that will be used by the farm described in this article. You should always create SPNs that have both a NetBIOS name and a full DNS name for a host on your network.

There are different methods that you can use to set an SPN for an account in an Active Directory domain. One method is to use the SETSPN.EXE utility that is part of the resource kit tools for Windows Server 2008. Another method is to use the ADSIEDIT.MSC snap-in on your Active Directory domain controller. This article addresses using the ADSIEDIT.MSC snap-in.

There are two core steps for configuring Kerberos authentication for SQL Server:

- Create SPNs for your SQL Server service account.
- Confirm Kerberos authentication is used to connect servers running SharePoint Foundation 2010 to servers running SQL Server.

## Create the SPNs for your SQL Server service account

1. Log on to your Active Directory domain controller using the credentials of a user that has domain administrative permissions.
2. In the **Run** dialog box, type **ADSIEDIT.MSC**.
3. In the management console dialog box, expand the domain container folder.
4. Expand the container folder containing user accounts, for example CN=Users.
5. Locate the container for the SQL Server Service account, for example CN=wssqlsvc.
6. Right-click this account, and then click **Properties**.
7. Scroll down the list of properties in the **SQL Server Service account** dialog box until you find **servicePrincipalName**.

8. Select the **servicePrincipalName** property and click **Edit**.
9. In the **Value to Add** field, in the **Multi-Valued String Editor** dialog box, type the SPN **MSSQLSvc/wssql:1433** and click **Add**. Next, type the SPN **MSSQLSvc/wssql.mydomain.com:1433** in this field and click **Add**.
10. Click **OK** on the **Multi-Valued String Editor** dialog box, and then click **OK** on the properties dialog box for the SQL Server service account.

## Confirm Kerberos authentication is used to connect servers running SharePoint Foundation 2010 to SQL Server

Install the SQL Client Tools on one of your servers running SharePoint Foundation 2010, and use the tools to connect from your server running SharePoint Foundation 2010 to those running SQL Server. This article does not address the steps for installing the SQL Client Tools on one of your servers running SharePoint Foundation 2010. The confirmation procedures are based on the following assumptions:

- You are using SQL Server 2008 on your SQL host.
  - You have logged on to one of your servers running SharePoint Foundation 2010, using the account mydomain\pscexec, and have installed the SQL 2005 Client Tools on the server running SharePoint Foundation 2010.
1. Run the SQL Server 2005 Management Studio.
  2. When the **Connect to Server** dialog box appears, type the name of the SQL host computer (in this example, the SQL host computer is wssql), and click **Connect** to connect to the SQL host computer.
  3. To confirm that Kerberos authentication was used for this connection, run the event viewer on the SQL host computer and examine the Security event log. You should see a Success Audit record for a Logon/Logoff category event that is similar to the data shown in the following tables:

Event Type	Success Audit
Event Source	Security
Event Category	Logon/Logoff
Event ID	540
Date	10/31/2007
Time	4:12:24 PM
User	MYDOMAIN\pscexec
Computer	WSSQL
Description	

---

An example of a successful network logon is depicted in the following table.

User Name	psccexec
Domain	MYDOMAIN
Logon ID	(0x0,0x6F1AC9)
Logon Type	3
Logon Process	Kerberos
Workstation Name	
Logon GUID	{36d6fbe0-2cb8-916c-4fee-4b02b0d3f0fb}
Caller User Name	
Caller Domain	
Caller Logon ID	
Caller Process ID	
Transited Services	
Source Network Address	192.168.100.100
Source Port	2465

Examine the log entry to confirm that:

1. The user name is correct. The mydomain\psccexec account logged on over the network to the SQL host.
2. The logon type is 3. A type 3 logon is a network logon.
3. The logon process and authentication package both use Kerberos authentication. This confirms that your server running SharePoint Foundation 2010 is using Kerberos authentication to communicate with the SQL host.
4. The Source Network Address matches the IP address of the computer from which the connection was made.

If your connection to the SQL host fails with an error message similar to **Cannot generate SSPI context**, it is likely that there is an issue with the SPN being used for your instance of SQL Server. To troubleshoot and correct this, please refer to the article [How to troubleshoot the "Cannot generate SSPI context" error message](http://go.microsoft.com/fwlink/?LinkId=76621) (<http://go.microsoft.com/fwlink/?LinkId=76621>) from the Microsoft Knowledge Base.

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# Create Service Principal Names for your Web applications using Kerberos authentication

As far as Kerberos authentication is concerned, there is nothing special about IIS-based SharePoint Foundation 2010 Web applications—Kerberos authentication treats them as just another IIS Web site.

This process requires knowledge of the following items:

- The Service Class for the SPN (in the context of this article, for SharePoint Foundation 2010 Web applications, this is always HTTP).
- The URL for all of your SharePoint Foundation 2010 Web applications using Kerberos authentication.
- The host name portion of the SPN (either real or virtual; this article addresses both).
- The port number portion of the SPN (in the scenario described in this article, both IIS port-based and IIS host-header-based SharePoint Foundation 2010 Web applications are used).
- The Windows Active Directory accounts for which your SPNs must be created.

The following table lists the information for the scenario described in this article:

URL	Active Directory account	SPN
http://wssadmin.mydomain.net:10000	wssfarmadmin	<ul style="list-style-type: none"><li>• HTTP/wssadmin.mydomain.net:10000</li><li>• HTTP/wssadmin.mydomain.net:10000</li></ul>
http://kerbportal.mydomain.net	portalpool	<ul style="list-style-type: none"><li>• HTTP/kerbportal.mydomain.net</li><li>• HTTP/kerbportal</li></ul>
http://kerbmysite.mydomain.net	mysitepool	<ul style="list-style-type: none"><li>• HTTP/kerbmysite.mydomain.net</li><li>• HTTP/kerbmysite</li></ul>

Notes for this table:

- The first URL listed above is for Central Administration, and uses a port number. You don't have to use port 10000. This is just an example used for consistency throughout this article.
- The next two URLs are for the portal site and My Site, respectively.

Use the guidance provided above to create the SPNs you need in AD DS to support Kerberos authentication for your SharePoint Foundation 2010 Web applications. You need to log on to a domain controller in your environment using an account that has domain administrative permissions. To create the SPNs, you can use either the SETSPN.EXE utility mentioned previously, or you can use the

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ADSIEDIT.MSC snap-in mentioned previously. If using the ADSIEDIT.MSC snap-in, please refer to the instructions provided earlier in this article for creating the SPNs. Be sure to create the correct SPNs for the correct accounts in AD DS.

## Deploy the server farm

Deploying the server farm includes the following steps:

1. Set up SharePoint Foundation 2010 on all of your servers running SharePoint Foundation 2010.
2. Run the SharePoint Products Configuration Wizard and create a new farm. This step includes creating a SharePoint Foundation 2010 Central Administration Web application that will be hosted on an IIS virtual server bound to a non-default port and use Kerberos authentication.
3. Run the SharePoint Products Configuration Wizard and join the other servers to the farm.
4. Configure Services on Servers in your farm for:
  - SharePoint Foundation 2010 Search service
  - SharePoint Foundation 2010 Search Indexing
  - SharePoint Foundation 2010 Search Query
5. Create Web applications that are used for the portal site and My Site, using Kerberos authentication.
6. Create a site collection using the Collaboration Portal template in the portal site Web application.
7. Confirm successful access to the Web applications using Kerberos authentication.
8. Confirm correct Search Indexing functionality.
9. Confirm correct Search Query functionality.

## Install SharePoint Foundation 2010 on all of your servers

This is the straightforward process of running SharePoint Foundation 2010 setup to install the SharePoint Foundation 2010 binaries on your servers running SharePoint Foundation 2010. Log on to each of your computers running SharePoint Foundation 2010 using the account mydomain\psceexec. No step-by-step instructions are provided for this. For the scenario described in this article, do a **Complete** installation of SharePoint Foundation 2010 on all servers that require SharePoint Foundation 2010.

## Create a new farm

For the scenario described in this article, run the SharePoint Products Configuration Wizard from the WSSADMIN Search Indexing server first, so that WSSADMIN hosts the SharePoint Foundation 2010 Central Administration Web application.

On the server named WSSCRAWL, when setup completes, a **Setup Complete** dialog box appears with a check box selected to run the SharePoint Products Configuration Wizard. Leave this check box selected and close the setup dialog box to run the SharePoint Products Configuration Wizard.

When running the SharePoint Products Configuration Wizard on this computer, create a new farm using the following settings:

- Provide the database server name (in this article, it is the server named WSSSQL).
- Provide a configuration database name (you can use the default, or stipulate a name of your choice).
- Provide the database access (farm administrator) account information. Using the scenario in this article, that account is mydomain\wssfarmadmin.
- Provide the information required for the SharePoint Foundation 2010 Central Administration Web application. Using the scenario in this article, that information is:
  - Central Administration Web application port number: 10000
  - Authentication Method: Negotiate

When you have provided all the required information, the SharePoint Products Configuration Wizard should finish successfully. If it completes successfully, confirm that you can access the SharePoint Foundation 2010 Central Administration Web application home page using Kerberos authentication. To do this, perform the following steps:

1. Log on to a different server running SharePoint Foundation 2010 or another computer in the domain mydomain as mydomain\pscexec. You should not verify correct Kerberos authentication behavior directly on the computer hosting the SharePoint Foundation 2010 Central Administration Web application. This should be done from a separate computer in the domain.
2. Start Internet Explorer on this server and attempt to go to the following URL: <http://wssadmin.mydomain.net:10000>. The home page of Central Administration should render.
3. To confirm that Kerberos authentication was used to access Central Administration, go back to the computer named WSSADMIN and run the event viewer and look in the security log. You should see a Success Audit record that looks similar to the following table:

Event Type	Success Audit
Event Source	Security
Event Category	Logon/Logoff
Event ID	540
Date	11/1/2007
Time	2:22:20 PM
User	MYDOMAIN\pscexec
Computer	WSSADMIN
Description	

An example of a successful network logon is depicted in the following table.



User Name	pscexec
Domain	MYDOMAIN
Logon ID	(0x0,0x1D339D3)
Logon Type	3
Logon Process	Kerberos
Authentication Package	Kerberos
Workstation Name	
Logon GUID	{fad7cb69-21f8-171b-851b-3e0dbf1bdc79}
Caller User Name	
Caller Domain	
Caller Logon ID	
Caller Process ID	
Transited Services	
Source Network Address	192.168.100.100
Source Port	2505

Examination of this log record shows the same type of information as in the previous log entry:

- Confirm that the user name is correct; it is the mydomain\pscexec account that logged on over the network to the server running SharePoint Foundation 2010 that is hosting Central Administration.
- Confirm that the logon type is 3; a logon type 3 is a network logon.
- Confirm that the logon process and authentication package both use Kerberos authentication. This confirms that Kerberos authentication is being used to access your Central Administration Web application.
- Confirm that the Source Network Address matches the IP address of the computer from which the connection was made.

If the Central Administration home page fails to render and instead an **unauthorized** error message is displayed, Kerberos authentication is failing. There are usually only two causes for this failure:

- The SPN in AD DS was not registered for the correct account. It should have been registered for mydomain\wssfarmadmin.
- The SPN in AD DS does not match the SPN being constructed by Internet Explorer or is otherwise invalid. You might have omitted the port number from the SPN that you registered in AD DS. Ensure that this is corrected and that Central Administration is working, using Kerberos authentication, before proceeding.

**Note:**

A diagnostic aid you could use to see what is going on over the network is a network sniffer, such as Microsoft Network Monitor, to take a trace during browsing to Central Administration. After the failure, examine the trace and look for KerberosV5 Protocol packets. Find a packet with an SPN constructed by Internet Explorer. If the SPN in the trace looks correct, either the SPN in AD DS is invalid, or it has been registered for the wrong account.

## Join the other servers to the farm

Now that your farm has been created and you can successfully access Central Administration using Kerberos authentication, you need to run the SharePoint Products Configuration Wizard and join the other servers to the farm.

On each of the other four servers running SharePoint Foundation 2010 (wssf1, wssf2, wssquery, and wsscrawl), SharePoint Foundation 2010 installation should have completed, and the setup completion dialog box should appear with the SharePoint Products Configuration Wizard check box selected. Leave this check box selected and close the setup completion dialog box to run the SharePoint Products Configuration Wizard. Perform the procedure to join each of these servers to the farm.

Upon completion of the SharePoint Products Configuration Wizard on each server you add to the farm, verify that each of these servers can render Central Administration, which is running on the server, WSSADMIN. If any of these servers fail to render Central Administration, take the appropriate steps to solve the problem before you proceed.

## Configure services on servers in your farm

Configure specific SharePoint Foundation 2010 services to run on specific servers running SharePoint Foundation 2010 in the farm, using the accounts indicated in the following sections.

**Note:**

This section does not provide an in-depth description of the user interface. Only high-level instructions are provided. You should be familiar with Central Administration and how to perform the required steps before you proceed.

Access Central Administration and perform the following steps to configure the services on the servers indicated, using the accounts indicated.

## Windows SharePoint Services Search

On the Services on Server page in Central Administration:

1. Select the server WSSQUERY.
2. In the list of services that appears, close to the middle of the page, locate the SharePoint Foundation 2010 Search service, and then click **Start** in the **Action** column.
3. On the subsequent page, provide the credentials for the SharePoint Foundation 2010 search service account and for the SharePoint Foundation 2010 Content Access account. In the scenario in this article, the SharePoint Foundation 2010 search service account is mydomain\wsssearch,

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and the SharePoint Foundation 2010 content access account is mydomain\wsscrawl. Type the account names and passwords in the appropriate locations on the page, and then click **Start**.

## Index server

On the Services on Server page in Central Administration:

1. Select the server WSSCRAWL.
2. In the list of services that appears close to the middle of the page, locate the SharePoint Foundation 2010 Search service, and then click **Start** in the **Action** column.

On the subsequent page, check the **Use this server for indexing content** check box and then provide the credentials for the SharePoint Foundation 2010 search service account. In the scenario in this article, the SharePoint Foundation 2010 search service account is mydomain\wsssearch. Type the account names and passwords in the appropriate locations on the page, and then click **Start**.

## Query server

On the Services on Server page in Central Administration:

1. Select the server WSSQUERY.
2. In the list of services that appears close to the middle of the page, locate the SharePoint Foundation 2010 Search service, and then click the service name in the Service column.

On the subsequent page, check the **Use this server for serving search queries** check box and click **OK**.

# Create Web applications using Kerberos authentication

In this section, create Web applications that are used for the portal site and a My Site in your farm.



### Note:

This section does not provide an in-depth description of the user interface. Only high-level instructions are provided. You should be familiar with Central Administration and how to perform the required steps before you proceed.

## Create the portal site Web application

1. On the Application Management page in Central Administration, click **Create or extend Web application**.
2. On the subsequent page, click **Create a new Web application**.
3. On the subsequent page, make sure **Create a new IIS Web site** is selected.
  - In the **Description** field, type **PortalSite**.
  - In the **Port** field, type **80**.
  - In the **Host Header** field, type **kerbportal.mydomain.net**.

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4. Make sure **Negotiate** is selected as the authentication provider for this Web application.
  5. Create this Web application in the Default zone. Do not modify the zone for this Web application.
  6. Make sure **Create new application pool** is selected.
    - In the **Application Pool Name** field, type **PortalAppPool**.
    - Make sure **Configurable** is selected. In the **User name** field, type the account **mydomain\portalpool**.
  7. Click **OK**.
  8. Confirm that the Web application is successfully created.



**Note:**

If you want to use an SSL connection and bind the Web application to port 443, type **443** in the **Port** field and select **Use SSL** on the Create New Web Application page. In addition, you must install an SSL wildcard certificate. When using an IIS host header binding on an IIS Web site configured for SSL, you must use an SSL wildcard certificate. For more information about SSL host headers in IIS, see [Configuring SSL Host Headers \(IIS 6.0\)](http://go.microsoft.com/fwlink/?LinkId=111285&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkId=111285&clcid=0x409>).

## Create the My Site Web application

1. On the Application Management page in Central Administration, click **Create or extend Web application**.
2. On the subsequent page, click **Create a new Web application**.
3. On the subsequent page, make sure **Create a new IIS Web site** is selected.
  - In the **Description** field, type **MySite**.
  - In the **Port** field, type **80**.
  - In the **Host Header** field, type **kerbmysite.mydomain.net**.
4. Make sure **Negotiate** is selected as the authentication provider for this Web application.
5. Create this Web application in the Default zone. Do not modify the zone for this Web application.
6. Make sure **Create new application pool** is selected.
  - In the **Application Pool Name** field, type **MySiteAppPool**.
  - Make sure **Configurable** is selected. In the **User name** field, type the account **mydomain\mysitepool**.
7. Click **OK**.
8. Confirm that the Web application is successfully created.



**Note:**

If you want to use an SSL connection and bind the Web application to port 443, type **443** in the **Port** field and select **Use SSL** on the Create New Web Application page. In addition, you must install an SSL wildcard certificate. When using an IIS host header binding on an IIS Web site configured for SSL, you must use an SSL wildcard certificate. For more information about SSL

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host headers in IIS, see [Configuring SSL Host Headers \(IIS 6.0\)](http://go.microsoft.com/fwlink/?LinkId=111285&clcid=0x409)  
(<http://go.microsoft.com/fwlink/?LinkId=111285&clcid=0x409>).

## Create a site collection using the Collaboration Portal template in the portal site Web application

In this section, you create a site collection on the portal site in the Web application that you created for this purpose.



### Note:

This section does not provide an in-depth description of the user interface. Only high-level instructions are provided. You should be familiar with Central Administration and how to perform the required steps before you proceed.

1. On the Application Management page in Central Administration, click **Create site collection**.
2. On the subsequent page, make sure you select the correct Web application. For the example in this article, select **http://kerbportal.mydomain.net**.
3. Provide the title and description you want to use for this site collection.
4. Leave the Web site address unchanged.
5. In the **Template Selection** section under **Select a Template**, click the **Publishing** tab and select the **Collaboration Portal** template.
6. In the **Primary Site Collection Administrator** section, type **mydomain\pscexec**.
7. Specify the Secondary Site Collection Administrator you want to use.
8. Click **OK**.
9. Confirm that the portal site collection is successfully created.

## Confirm successful access to the Web applications using Kerberos authentication

Confirm that Kerberos authentication is working for the recently created Web applications. Start with the portal site.

To do this, perform the following steps:

1. Log on to a server running SharePoint Foundation 2010 rather than either of the two front-end Web servers that are configured for NLB as mydomain\pscexec. You should not verify correct Kerberos authentication behavior directly on one of the computers hosting the load-balanced Web sites using Kerberos authentication. This should be done from a separate computer in the domain.
2. Start Internet Explorer on this other system and attempt to go to the following URL:  
**http://kerbportal.mydomain.net**.

The home page of the Kerberos-authenticated portal site should render.

To confirm that Kerberos authentication was used to access the portal site, go to one of the load-balanced front-end Web servers and run the event viewer and look in the security log. You should see a

Success Audit record, similar to the following table, on one of the front-end Web servers. Note that you may have to look on both front-end Web servers before you find this, depending on which system handled the load-balanced request.

Event Type	Success Audit
Event Source	Security
Event Category	Logon/Logoff
Event ID	540
Date	11/1/2007
Time	5:08:20 PM
User	MYDOMAIN\pscexec
Computer	wssf1
Description	

An example of a successful network logon is depicted in the following table.

User Name	pscexec
Domain	MYDOMAIN
Logon ID	(0x0,0x1D339D3)
Logon Type	3
Logon Process	Kerberos authentication
Workstation Name	
Logon GUID	{fad7cb69-21f8-171b-851b-3e0dbf1bdc79}
Caller User Name	
Caller Domain	
Caller Logon ID	
Caller Process ID	
Transited Services	
Source Network Address	192.168.100.100
Source Port	2505

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Examination of this log record shows the same type of information as in the previous log entry:

- Confirm that the user name is correct; it is the mydomain\psceexec account that logged on over the network to the front-end Web server running SharePoint Foundation 2010 that is hosting the portal site.
- Confirm that the logon type is 3; a logon type 3 is a network logon.
- Confirm that the logon process and authentication package both use Kerberos authentication. This confirms that Kerberos authentication is being used to access your portal site.
- Confirm that the Source Network Address matches the IP address of the computer from which the connection was made.

If the home page of the portal site fails to render, and displays an “unauthorized” error message, then Kerberos authentication is failing. There are usually only a couple of causes for this:

- The SPN in AD DS was not registered for the correct account. It should have been registered for mydomain\portalpool, for the Web application of the portal site.
- The SPN in AD DS does not match the SPN being constructed by Internet Explorer or is invalid for another reason. In this case, because you are using IIS host headers without explicit port numbers, the SPN registered in AD DS differs from the IIS host header specified when you extended the Web application. You need to correct this to get Kerberos authentication working.



**Note:**

A diagnostic aid you could use to see what is going on over the network is a network sniffer such as Microsoft Network Monitor to take a trace during browsing to Central Administration. After the failure, examine the trace and look for KerberosV5 Protocol packets. You should find a packet with an SPN constructed by Internet Explorer. If the SPN in the trace looks correct, then either the SPN in AD DS is invalid or the SPN has been registered for the wrong account.

After you have Kerberos authentication working for your portal site, go to your Kerberos-authenticated My Site, using the following URL:

- <http://kerbmysite.mydomain.net>



**Note:**

The first time you access the My Site URL, it will take some time for SharePoint Foundation 2010 to create a My Site for the logged-on user. However, it should succeed, and the My Site page for that user should render.

This should work correctly. If it does not work, refer to the preceding troubleshooting steps.

## Confirm correct Search Indexing functionality

Confirm that Search Indexing is successfully crawling the content hosted on this farm. This is the step you must take prior to confirming the Search Query results for users accessing the sites using Kerberos authentication.



**Note**

- This section does not provide an in-depth description of the user interface. Only high-level instructions are provided. You should be familiar with Central Administration and how to perform the required steps before you proceed.
- To confirm Search Indexing functionality, access a Web application and start a full crawl. Wait for the crawl to complete. If the crawl fails, you must investigate and correct the failure, and then run a full crawl. If the crawl fails with "access denied" errors, it is either because the crawling account does not have access to the content sources, or because Kerberos authentication has failed. Whatever the cause, this error must be corrected before proceeding to subsequent steps.

You must complete a full crawl of the Kerberos-authenticated Web applications before proceeding.

## Confirm correct Search Query functionality

To confirm that Search Query returns results for users accessing the portal site that uses Kerberos authentication:

1. Start Internet Explorer on a system in mydomain.net and go to <http://kerbportal.mydomain.net>.
2. When the home page of the portal site renders, type a search keyword in the **Search** field and press **ENTER**.
3. Confirm that Search Query results are returned. If they are not, confirm that the keyword you have entered is valid in your deployment, that Search Indexing is running correctly, that the Search service is running on your Search Indexing and Search Query servers, and that there are no problems with search propagation from your Search Index server to your Search Query server.

## Configuration limitations

The host name portion of the new-format SPNs that are created will be the NetBIOS name of the host running the service, for example: MSSP/kerbtest4:56738/SSP1. This is because the host names are fetched from the SharePoint Foundation 2010 configuration database, and only NetBIOS computer names are stored in the SharePoint Foundation 2010 configuration database. This might be ambiguous in certain scenarios.

## Additional resources and troubleshooting guidance

Product/technology	Resource
SQL Server	<a href="http://go.microsoft.com/fwlink/?LinkId=85942&amp;clcid=0x409">How to make sure that you are using Kerberos authentication when you create a remote connection to an instance of SQL Server 2005</a> ( <a href="http://go.microsoft.com/fwlink/?LinkId=85942&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=85942&amp;clcid=0x409</a> )
SQL Server	<a href="#">How to troubleshoot the "Cannot generate SSPI context" error message</a>



Product/technology	Resource
	<a href="http://go.microsoft.com/fwlink/?LinkId=82932&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=82932&amp;clcid=0x409</a>
.NET Framework	<a href="#">AuthenticationManager.CustomTargetNameDictionary Property</a> <a href="http://go.microsoft.com/fwlink/?LinkId=120460&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=120460&amp;clcid=0x409</a>
Internet Explorer	<a href="#">Error message in Internet Explorer when you try to access a Web site that requires Kerberos authentication on a Windows XP-based computer: "HTTP Error 401 - Unauthorized: Access is denied due to invalid credentials"</a> <a href="http://go.microsoft.com/fwlink/?LinkId=120462&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=120462&amp;clcid=0x409</a>
Kerberos authentication	<a href="#">Kerberos Authentication Technical Reference</a> <a href="http://go.microsoft.com/fwlink/?LinkId=78646&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=78646&amp;clcid=0x409</a>
Kerberos authentication	<a href="#">Troubleshooting Kerberos Errors</a> <a href="http://go.microsoft.com/fwlink/?LinkId=93730&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=93730&amp;clcid=0x409</a>
Kerberos authentication	<a href="#">Kerberos Protocol Transition and Constrained Delegation</a> <a href="http://go.microsoft.com/fwlink/?LinkId=100941&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=100941&amp;clcid=0x409</a>
IIS	<a href="#">Configuring SSL Host Headers (IIS 6.0)</a> <a href="http://go.microsoft.com/fwlink/?LinkId=120463&amp;clcid=0x409">http://go.microsoft.com/fwlink/?LinkId=120463&amp;clcid=0x409</a>

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# Configure automatic password change (SharePoint Foundation 2010)

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Automatic password change enables Microsoft SharePoint Foundation 2010 to automatically generate long, cryptographically-strong passwords on a schedule that you can determine.

In this article:

- [Configure managed accounts](#)
- [Configure automatic password change settings](#)
- [Troubleshooting automatic password change](#)

## Configure managed accounts

You need to register managed accounts with the farm to make the accounts available to multiple services. You can register a managed account by using the Register Managed Account page in Central Administration. There are no options on the Register Managed Account page to create an account in Active Directory Domain Services, or on the local computer. The options can be used to register an existing account on the SharePoint Foundation 2010 farm. Perform the steps in the following procedure to use Central Administration to configure managed account settings.

### To configure managed account settings by using Central Administration

1. Verify that the user account that is performing this procedure is a site collection administrator.
2. On the Central Administration Web site, select **Security**.
3. Under **General Security**, click **Configure managed accounts**.
4. On the Managed Accounts page, click **Register Managed Account**.
5. In the **Account Registration** section of the Register Managed Account page, enter the service account credentials.
6. In the **Automatic Password Change** section, select the **Enable automatic password change** check box to allow SharePoint Foundation 2010 to manage the password for the selected account. Next, enter a numeric value that indicates the number of days prior to password expiration that the automatic password change process will be initiated.
7. In the **Automatic Password Change** section, select the **Start notifying by e-mail** check box, and then enter a numeric value that indicates the number of days prior to the initiation of the automatic password change process that an e-mail notification will be sent. You can then configure a weekly or monthly e-mail notification schedule.
8. Click **OK**.

---

## Configure automatic password change settings

Use the Password Management Settings page of Central Administration to configure farm-level settings for automatic password changes. Farm administrators can configure the notification e-mail address that will be used to send all password change notification e-mails, as well as monitoring and scheduling options. Perform the steps in the following procedure to use Central Administration to configure automatic password change settings.

### ▶ To configure automatic password change settings by using Central Administration

1. Verify that the user account that is performing this procedure is a site collection administrator.
2. On the Central Administration Web site, click **Security**.
3. Under **General Security**, click **Configure password change settings**.
4. In the **Notification E-Mail Address** section of the Password Management Settings page, enter the e-mail address of an individual or group to be notified of any imminent password change or expiration events.
5. If automatic password change is not configured for a managed account, enter a numeric value in the **Account Monitoring Process Settings** section that indicates the number of days prior to password expiration that a notification will be sent to the e-mail address configured in the **Notification E-Mail Address** section.
6. In the **Automatic Password Change Settings** section, enter a numeric value that indicates the number of seconds that automatic password change will wait (after notifying services of a pending password change) before initiating the change. Enter a numeric value that indicates the number of times a password change will be attempted before the process stops.
7. Click **OK**.

## Troubleshooting automatic password change

Use the following guidance to avoid the most common issues that can occur when you configure automatic password change.

### Password mismatch

If the automatic password change process fails because there is a password mismatch between Active Directory Domain Services (AD DS) and SharePoint Foundation 2010, the password change process can result in access denial at login, an account lockout, or AD DS read errors. If any of these issues occur, make sure your AD DS passwords are configured correctly and that the AD DS account has read access for setup. Use Windows PowerShell to fix any password mismatch issues that might occur, and then resume the password change process.

### ▶ To correct for a password mismatch

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).

- 
2. On the **Start** menu, click **All Programs**. Click **Microsoft SharePoint 2010 Products**.
  3. Click **SharePoint 2010 Management Shell**.
  4. From the Windows PowerShell command prompt, type the following ENTER:

```
Set-SPManagedAccount [-Identity] <SPManagedAccountPipeBind> -ExistingPassword  
<SecureString> -UseExistingPassword $true
```

For more information, see [Set-SPManagedAccount](http://technet.microsoft.com/library/320204fe-f72f-40c6-9b1f-e7a3ddb0aca3(Office.14).aspx)  
([http://technet.microsoft.com/library/320204fe-f72f-40c6-9b1f-e7a3ddb0aca3\(Office.14\).aspx](http://technet.microsoft.com/library/320204fe-f72f-40c6-9b1f-e7a3ddb0aca3(Office.14).aspx)).

## Service account provisioning failure

If service account provisioning or re-provisioning fails on one or more servers in the farm, check the status of the Timer Service. If the Timer Service has stopped, restart it. Consider using the following Stsadm command to immediately start Timer Service administration jobs: `stsadm -o execadmsvcjobs`

If restarting the Timer Service does not resolve the issue, use Windows PowerShell to repair the managed account on each server in the farm that has experienced a provisioning failure.

### ▶ To resolve a service account provisioning failure

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**. Click **Microsoft SharePoint 2010 Products**.
3. Click **SharePoint 2010 Management Shell**.
4. From the Windows PowerShell command prompt, type the following:

```
Repair-SPManagedAccountDeployment
```

For more information, see [Repair-SPManagedAccountDeployment](http://technet.microsoft.com/library/42ea7573-8b34-49da-9d7f-ec7b8211a138(Office.14).aspx)  
([http://technet.microsoft.com/library/42ea7573-8b34-49da-9d7f-ec7b8211a138\(Office.14\).aspx](http://technet.microsoft.com/library/42ea7573-8b34-49da-9d7f-ec7b8211a138(Office.14).aspx)).

If the preceding procedure does not resolve a service account provisioning failure, it is likely because the farm encryption key cannot be decrypted. If this is the issue, use Windows PowerShell to update the local server pass phrase to match the pass phrase for the farm.

### ▶ To update the local server pass phrase

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**. Click **Microsoft SharePoint 2010 Products**.
3. Click **SharePoint 2010 Management Shell**.
4. From the Windows PowerShell command prompt, type the following:

```
Set-SPPassPhrase -PassPhrase <SecureString> -ConfirmPassPhrase <SecureString> -  
LocalServerOnly $true
```

For more information, see [Set-SPPassPhrase](http://technet.microsoft.com/library/13a76a78-fed5-4148-9fcb-df81d1514be8(Office.14).aspx) ([http://technet.microsoft.com/library/13a76a78-fed5-4148-9fcb-df81d1514be8\(Office.14\).aspx](http://technet.microsoft.com/library/13a76a78-fed5-4148-9fcb-df81d1514be8(Office.14).aspx)).

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## Imminent password expiration

If the password is about to expire, but automatic password change has not been configured for this account, use Windows PowerShell to update the account password to a new value that can be chosen by the administrator or automatically generated. After you have updated the account password, make sure the Timer Service is started and the Administrator Service is enabled on all servers in the farm. Then, the password change can be propagated to all of the servers in the farm.

### ▶ To update the account password

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**. Click **Microsoft SharePoint 2010 Products**.
3. Click **SharePoint 2010 Management Shell**.
4. To update the account password to a new value chosen by the administrator, from the Windows PowerShell command prompt, type the following:

```
Set-SPManagedAccount [-Identity] <SPManagedAccountPipeBind> -Password  
<SecureString>
```

5. To update the account password to a new automatically generated value, from the Windows PowerShell command prompt, type the following:

```
Set-SPManagedAccount [-Identity] <SPManagedAccountPipeBind> -AutoGeneratePassword  
$true
```

For more information, see [Set-SPManagedAccount](#)

([http://technet.microsoft.com/library/320204fe-f72f-40c6-9b1f-e7a3ddb0aca3\(Office.14\).aspx](http://technet.microsoft.com/library/320204fe-f72f-40c6-9b1f-e7a3ddb0aca3(Office.14).aspx)).

## Requirement to change the farm account to a different account

If you need to change the farm account to a different account, use the following Stsadm command:

```
stsadm.exe -o updatefarmcredentials -userlogin DOMAIN\username -password password
```

---

# Create a site collection (SharePoint Foundation 2010)

---

A site collection is a group of Web sites that have the same owner and share administration settings, for example, permissions. When you create a site collection, a top-level site is automatically created in the site collection. You can then create one or more subsites below the top-level site.

A site collection must exist within a Web application. You can create a site collection based on an existing Web application, or you can create a Web application and then create a site collection within that application. For more information, see [Create a Web application \(SharePoint Foundation 2010\)](#).

If your Web application is for a single project or for use by a single team, you should use a single site collection to avoid the overhead of managing multiple sites. However, complex solutions benefit from multiple site collections because it is easier to organize content and manage permissions for each site collection. For example, because there is no built-in navigation from one site collection to another, having multiple site collections can provide an additional layer of security for site content.

SharePoint provides site templates in the following categories: collaboration, meetings, and custom. When you create a site collection, you select the template that matches what you want the site to do. For example, choose the Document Workspace template if you want to collaboratively author documents.

Before you create a site collection, ensure that the following prerequisites are available:

- A Web application in which to create the site collection.
- A quota template, if you plan to define values that specify how much data can be stored in a site collection and the storage size that triggers an e-mail alert to the site collection administrator. For more information, see [Create, edit, and delete quota templates \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/6d984258-158b-40d5-b4a5-cdb2cfe8e5f3\(Office.14\).aspx](http://technet.microsoft.com/library/6d984258-158b-40d5-b4a5-cdb2cfe8e5f3(Office.14).aspx)).
- A custom managed wildcard path, if you plan to create the site collection somewhere other than under the root (/) directory or the /sites/ directory. For more information, see [Define managed paths \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/e325f0a3-02c3-4d39-b468-a51b2fe7d3a2\(Office.14\).aspx](http://technet.microsoft.com/library/e325f0a3-02c3-4d39-b468-a51b2fe7d3a2(Office.14).aspx)).

In this article:

[Create a site collection by using Central Administration](#)

[Create a site collection by using Windows PowerShell](#)

## Create a site collection by using Central Administration

You typically use the Central Administration Web site to create a site collection in a stand-alone deployment.

---

▶ **To create a site collection by using Central Administration**

1. Verify that you have the following administrative credentials:
  - To create a site collection, you must be a member of the Farm Administrators SharePoint group on the computer running the SharePoint Central Administration Web site.
2. On the Central Administration Web site, in the **Application Management** section, click **Create site collections**.
3. On the Create Site Collection page, in the **Web Application** section, if the Web application in which you want to create the site collection is not selected, on the **Web Application** menu click **Change Web Application**, and then click the Web application in which you want to create the site collection.
4. In the **Title and Description** section, type the title and description for the site collection.
5. In the **Web Site Address** section, select the path to use for your URL (for example, a wildcard inclusion path such as /sites/, or the root directory (/).  
If you select a wildcard inclusion path, you must also type the site name to use in your site's URL.
6. In the **Template Selection** section, in the **Select a template** list, select the template that you want to use for the top-level site in the site collection, or click the Custom tab to create an empty site and apply a template later.
7. In the **Primary Site Collection Administrator** section, type the user name (in the form DOMAIN\username) for the user who will be the site collection administrator.
8. In the **Secondary Site Collection Administrator** section, type the user name for the secondary administrator of the site collection.  
Designating a secondary site collection administrator is a best practice to ensure that someone can manage the site collection when a primary site collection administrator is not present.
9. If you are using quotas to manage storage for site collections, in the **Quota Template** section, click a template in the **Select a quota template** list.
10. Click **OK**.

## Create a site collection by using Windows PowerShell

You typically use Windows PowerShell to create a site collection when you want to automate the task, which is common in enterprises.

▶ **To create a site collection by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.

- 
4. Click **SharePoint 2010 Management Shell**.
  5. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command and press ENTER:

```
Get-SPWebTemplate

$template = Get-SPWebTemplate "STS#0"

New-SPSite -Url "<URL for the new site collection>" -OwnerAlias "<domain\user>" -
Template $template
```

This example retrieves a list of all available site templates and then creates a site collection using the Team Site template. For more information, see [New-SPSite](http://technet.microsoft.com/library/ebdad86-0cda-49b7-a84a-5cfc6b4506b3(Office.14).aspx) ([http://technet.microsoft.com/library/ebdad86-0cda-49b7-a84a-5cfc6b4506b3\(Office.14\).aspx](http://technet.microsoft.com/library/ebdad86-0cda-49b7-a84a-5cfc6b4506b3(Office.14).aspx)) and [Get-SPWebTemplate](http://technet.microsoft.com/library/dfd10bac-c304-4f3f-bea9-eb0af5f96df5(Office.14).aspx) ([http://technet.microsoft.com/library/dfd10bac-c304-4f3f-bea9-eb0af5f96df5\(Office.14\).aspx](http://technet.microsoft.com/library/dfd10bac-c304-4f3f-bea9-eb0af5f96df5(Office.14).aspx)).

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.



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# Deploy customizations - overview (SharePoint Foundation 2010)

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The articles in this chapter describe how to deploy site elements that have been customized by developers or Web designers in a Microsoft SharePoint Foundation 2010 environment.

In this article:

- [Process overview](#)
- [Before you begin](#)
- [About the two kinds of customizable site elements](#)
- [Deploying developed site elements](#)
- [Deploying authored site elements](#)

## Process overview

Deploying customizations can be quite complex, particularly because there are many deployment methods available in SharePoint Foundation 2010, and the advantages of using one method over another are not always obvious.

You deploy these different types of site elements, or *artifacts*, by using different methods. You cannot deploy the full range of customizable site elements by using a single deployment method. There are other unique deployment considerations that apply to each type of element because they are likely to originate from different groups of designers, and because they are subject to different upgrade considerations. The different kinds of site elements are described in [About the two kinds of customizable site elements](#), later in this article.

For specific deployment tasks and related considerations, see the following articles:

- [Deploy solution packages \(SharePoint Foundation 2010\)](#)
- [Deploy authored site elements \(SharePoint Foundation 2010\)](#)
- [Deploy site elements by using Features \(SharePoint Foundation 2010\)](#)
- [Deploy templates \(SharePoint Foundation 2010\)](#)
- [Workflow deployment process \(SharePoint Foundation 2010\)](#)

## Before you begin

Before you deploy any custom code to the environment, you should establish a baseline of the environment's performance so that you can analyze how customizations affect performance. After you have established a performance baseline, test the custom code thoroughly in a test or integration environment and compare the results with the baseline. Make sure that you thoroughly test all customizations before you deploy them to the production environment.

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You should also test any code that you acquire from third parties before you deploy it to the production environment, even if you acquire it from a trusted source.

The descriptions and guidance in these articles apply to a SharePoint Foundation environment that has been deployed and configured to meet the requirements in [Server farm and environment planning \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/a8e97903-c472-4c13-a1e1-2c075b2f8585(Office.14).aspx) ([http://technet.microsoft.com/library/a8e97903-c472-4c13-a1e1-2c075b2f8585\(Office.14\).aspx](http://technet.microsoft.com/library/a8e97903-c472-4c13-a1e1-2c075b2f8585(Office.14).aspx)).

## About the two kinds of customizable site elements

*Developed site elements* are solution artifacts and are typically created by developers. A solution can include assemblies, which are SharePoint components that are written in Microsoft .NET Framework–based languages and compiled before being deployed. Developed site elements, except timer jobs assemblies and site definitions, are typically grouped into Features and deployed as part of a solution package. Developed site elements include:

- Web Parts
- Workflows
- Site and list definitions
- Document converters
- Event receivers
- Timer jobs
- Assemblies

*Authored site elements*, which are typically created by Web designers, are not explicitly compiled and reside in a content database. Authored site elements include:

- Master pages
- Cascading style sheets
- Forms
- Layout pages

These two kinds of customizable site elements are differentiated by:

- Where the files are stored in a SharePoint Foundation 2010 farm.
- Which team in the organization is responsible for administering the site element.
- What deployment mechanism the site element requires.

Some elements can be either solution artifacts or authored artifacts. For example, a content type can be defined in an XML file as a developed solution artifact, or created through a browser as an authored artifact. Site elements that can be solution artifacts or authored artifacts include site columns and list instances. Also, solution artifacts can be used to provision files into Web sites and set to be cached in memory on the front-end Web server.

---

## Deploying developed site elements

Developed site elements can be generally defined as site elements that are created in a code-development environment and are deployed directly to front-end Web servers and application servers. These site elements are customized typically by developers by using Microsoft Visual Studio 2010 Tools for SharePoint 2010, Microsoft Office SharePoint Designer, or XML editing tools. For more information, see [SharePoint Foundation Development Tools](http://go.microsoft.com/fwlink/?LinkId=183360) (<http://go.microsoft.com/fwlink/?LinkId=183360>).



### Note:

This article does not discuss the deployment of developed site elements that are deployed as sandboxed solutions. Sandboxed solutions are solutions that can access a subset of the server object model and a subset of feature elements that site collection administrators can deploy. For more information, see [Sandboxed solutions overview \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/9a833f4c-9e5f-4e5b-83f1-d1b34149335a(Office.14).aspx) ([http://technet.microsoft.com/library/9a833f4c-9e5f-4e5b-83f1-d1b34149335a\(Office.14\).aspx](http://technet.microsoft.com/library/9a833f4c-9e5f-4e5b-83f1-d1b34149335a(Office.14).aspx)).

A best practice is to use solution packages and Windows PowerShell to deploy developed site elements. The SharePoint Foundation Solution Framework simplifies and standardizes the process of deploying new and upgrade site elements across the farm and synchronizing a front-end Web server so that its state is consistent with the state of other servers in the farm. For example, solution packages simplify the process of rebuilding a farm. Deploying site elements by manually handling code and files can lead to inconsistencies in the upgrade process and can result in servers that are not synchronized with other servers. You can use solution packages to deploy developed site elements from developer environments to integration farms and then to staging, pilot, and production farms.

You can use Windows PowerShell cmdlets to create, import, export and provision solution packages, which leverage the Solution Framework to distribute developed site element customizations. Windows PowerShell cmdlets are useful for deployment of site customizations in most environments because they are included with SharePoint Foundation 2010, and you can use them alone or in conjunction with other methods. You can use Windows PowerShell cmdlets to deploy both artifacts and developed site elements. You can also use cmdlets to activate Features that are deployed in a solution package.

## Deploying authored site elements

Authored site elements differ from developed site elements in that they are stored in the content database, although they can depend on resources that exist in the file system of Web servers or — less typically — application servers. In some cases, authored site elements do not function because they require that developed site elements be deployed first.

In environments where customization deployments are entirely automated, the required deployment order can be enforced by the system to eliminate synchronization issues. However, if customization deployment is partially or wholly manual, you must ensure that all required resources are in place on the Web servers and application servers before you deploy any content that relies on those resources.

You deploy authored site elements from authoring environments to staging, pilot, and production farms by using one or more of several different systems. The following table describes these systems and their associated interfaces and usage scenarios.

Deployment system	Usage scenario
SharePoint Central Administration Web site	<p>In environments where source and destination farms are connected by a network, you can use the content deployment features in Central Administration to create a content deployment package on the source farm and export the package to another farm.</p> <p>This method is easy to configure and use, and can be used to automate deployment of authored site elements with very little setup time and maintenance.</p>
Content Migration object model	<p>Depending on the method you use (programming by using the deployment namespace APIs, using Simple Object Access Protocol (SOAP) calls to a Web service, or moving a whole site by using Windows PowerShell cmdlets), you can control what content is migrated and how. Using the API to import and export content is the only supported method that retains globally unique identifiers (GUIDs).</p> <p>For more information, see <a href="http://go.microsoft.com/fwlink/?LinkId=183372">Content Migration</a> (<a href="http://go.microsoft.com/fwlink/?LinkId=183372">http://go.microsoft.com/fwlink/?LinkId=183372</a>).</p>
Windows PowerShell	<p>You can use Windows PowerShell cmdlets to perform import and export operations against the whole site, preserving time stamps, security information, and user information. Windows PowerShell cmdlets are most useful when you want to move basic content from a whole Web site.</p> <p>Windows PowerShell is useful for deployment of site customizations in most environments because it is included with SharePoint 2010 Products, and you can use it alone or with other methods. You can use Windows PowerShell cmdlets to deploy both artifacts and developed site elements.</p> <p>For more information, see <a href="http://technet.microsoft.com/library/ae4901b4-">SharePoint 2010 Products administration by using Windows PowerShell</a> (<a href="http://technet.microsoft.com/library/ae4901b4-">http://technet.microsoft.com/library/ae4901b4-</a></p>

Deployment system	Usage scenario
	505a-42a9-b8d4-fca778abc12e(Office.14).aspx).
Custom Web service	<p>You can create a custom Web service that automates content migration and deployment. You can write custom scripts and Windows applications to execute specific tasks within this process.</p> <p>For more information about programmatic methods for writing a custom Web service, see the following resources in the Microsoft SharePoint 2010 Software Development Kit (SDK):</p> <ul style="list-style-type: none"> <li>• <a href="http://go.microsoft.com/fwlink/?LinkID=183373">Sites Methods</a> (<a href="http://go.microsoft.com/fwlink/?LinkID=183373">http://go.microsoft.com/fwlink/?LinkID=183373</a>)</li> <li>• <a href="http://go.microsoft.com/fwlink/?LinkID=183377">Sites.ExportWeb Method</a> (<a href="http://go.microsoft.com/fwlink/?LinkID=183377">http://go.microsoft.com/fwlink/?LinkID=183377</a>)</li> <li>• <a href="http://go.microsoft.com/fwlink/?LinkID=183378">Sites.ImportWeb Method</a> (<a href="http://go.microsoft.com/fwlink/?LinkID=183378">http://go.microsoft.com/fwlink/?LinkID=183378</a>)</li> </ul>
Manual code handling	<p>In smaller, disconnected environments, or in environments in which authored site elements are not continually customized, you can manually deploy site elements and related resources. In smaller connected environments, consider using the content deployment features in Central Administration to deploy authored site element customizations.</p>
Solution packages and Features	<p>Elements such as page layouts, master pages, forms, and style sheets, can be grouped and deployed in Features as part of a solution package. Features deployed from a solution package can be activated on the scopes where authored elements need to be provisioned.</p> <p>For more information, see <a href="#">Deploy site elements by using Features (SharePoint Foundation 2010)</a>.</p>
Custom templates	<p>A user can save an existing site, with or without its specific content, as a custom template. This provides a means for reusing customized sites. A custom site template is stored as a .wsp file. Site</p>

---

Deployment system	Usage scenario
	templates are saved in the Solution Gallery of the top-level site in a site collection, where they become available for subsite creation on all Web sites in the site collection. Site templates can be downloaded and moved to other site collection galleries.

**See Also**

[Deploy solution packages \(SharePoint Foundation 2010\)](#)

[Deploy authored site elements \(SharePoint Foundation 2010\)](#)

[Deploy site elements by using Features \(SharePoint Foundation 2010\)](#)

[Deploy templates \(SharePoint Foundation 2010\)](#)

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# Deploy solution packages (SharePoint Foundation 2010)

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This article describes solution packages and the role they play in deploying authored and developed customizations in Microsoft SharePoint Foundation 2010. It includes procedures for importing and deploying solution packages, and an example for building and deploying a solution package by using Microsoft Visual Studio 2010.

In this article:

- [What is a solution package?](#)
- [Deploying site elements by using solution packages](#)
- [Creating and deploying a custom Web Part solution package by using Visual Studio 2010](#)

## What is a solution package?

A *solution package* is a distribution package that delivers your custom SharePoint Foundation 2010 development work to the Web servers or the application servers in your server farm. Use solutions to package and deploy custom Features, site definitions, templates, layout pages, Web Parts, cascading style sheets, and assemblies.

This article does not discuss the deployment of sandboxed solutions. You can deploy a Microsoft SharePoint Foundation 2010 solution directly onto your SharePoint Foundation farm, or you can deploy the solution into a *sandbox*. A sandbox is a restricted execution environment that enables programs to access only certain resources, and that keeps problems that occur in the sandbox from affecting the rest of the server environment. For more information, see [Sandboxed solutions overview \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/9a833f4c-9e5f-4e5b-83f1-d1b34149335a(Office.14).aspx) ([http://technet.microsoft.com/library/9a833f4c-9e5f-4e5b-83f1-d1b34149335a\(Office.14\).aspx](http://technet.microsoft.com/library/9a833f4c-9e5f-4e5b-83f1-d1b34149335a(Office.14).aspx)).

A solution package is a CAB file with a .wsp file name extension and a manifest file. It is recommended that you use Visual Studio 2010 Tools for SharePoint 2010 to develop and package SharePoint solutions. You can also create solution packages manually by using tools such as Makecab.exe and SharePoint Packman.

Components that can be packaged in a solution include:

- .NET Framework assemblies, typically Web part assemblies and event receiver assemblies.
- Deployment files such as resource files, pages, or other helper files.
- Features, which allow you to activate and deactivate code in a Web site and provide functionality that include elements such as custom lists, libraries, fields, and content types.
- New templates and site definitions.
- Configurations that must be performed at the Web-server level — for example, deploying customizations to the Web.config files for the registration of Web Parts. You can also modify these configurations with a Feature that is distributed with a Feature.

- 
- Web content such as Web pages and images that are called by Web pages. If you must deploy Web content in a disconnected environment, you should use a content deployment package.

## Deploying site elements by using solution packages

In this section:

- [When to use solution packages](#)
- [Deploying farm solutions](#)
- [Adding a solution package](#)
- [Deploying a solution package](#)
- [About creating a solution package](#)

### When to use solution packages

A best practice for deploying customizations is to use solution packages as part of a straightforward, safe, and consistent application lifecycle management process. Solution packages make it simpler to change the Features and functionality of the Web sites after the sites are created.

You can use solution packages to deploy new solutions and upgrade existing solutions across the farm. You can package all your SharePoint Foundation entities as one file, add the file to the solution store, and deploy it to the front-end Web servers in the farm. Use solution packages to synchronize a front-end Web server so that its state is consistent with the state of other Web servers in the farm.

You can use solution packages to deploy authored site element customizations from an integration farm to authoring, pilot, or production farm. In SharePoint Foundation, users can save a customized site as a template. This creates a solution package with a .wsp file name extension that can be deployed on another farm.

You can use solution packages to deploy customizations between these environments:

- From developer workstations, to an integration farm or a software configuration management system
- From an integration farm and authoring client workstations, to pilot or production farms

### Deploying farm solutions

Farm solutions are deployed either locally or by using a timer service. Both local and timer-based deployments can be triggered either by using command-line instructions or programmatically by using the object model.

#### Local deployment

In a local deployment, solution files are deployed only to the computer from which the deployment operation was initiated. The solution is not marked as "deployed" in the configuration database until the solution files are deployed to all applicable servers in the server farm. Then solution features are installed, and schema and definition files are committed to the configuration store.

#### Timer Service deployments



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In deployments that use the timer service, the deployment creates a timer job. This timer job is picked up by the timer service on each Web server in the server farm. Initially, manifest and feature manifests are parsed to find assembly and \_layouts files, which are copied to the appropriate locations. All other files contained within a feature directory are copied to the feature directory. After solution files are copied to the target computers, a configuration reset is scheduled for all front-end Web servers; the reset then deploys the files and restarts Microsoft Internet Information Services (IIS). Solution features are then registered, and schema and definition files are committed to the configuration store.

For more information about the solution store, deployment, and synchronization, see [Deploying a Solution](http://go.microsoft.com/fwlink/?LinkId=186995) (<http://go.microsoft.com/fwlink/?LinkId=186995>) in the Microsoft SharePoint 2010 Software Development Kit (SDK)

## Adding a solution package

Before you can deploy a solution package, you must add it to the solution database of a SharePoint Foundation farm.



### Important:

You must be a member of the Administrators group on any computer on which you run Windows PowerShell.



### To import a solution package by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin..](#)
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Add-SPSolution -LiteralPath <SolutionPath>
```

The solution is added to the farm's solution store. To use the solution, follow the procedure in the next section in this article. For more information, see [Add-SPSolution](#) ([http://technet.microsoft.com/library/0c64c1ac-39c0-4d5e-923f-27d0c48b006a\(Office.14\).aspx](http://technet.microsoft.com/library/0c64c1ac-39c0-4d5e-923f-27d0c48b006a(Office.14).aspx)).

## Deploying a solution package

You can deploy imported solutions by using the Central Administration Web site or by using Windows PowerShell. After a solution has been added to the solution store by using the Windows PowerShell **Add-SPSolution** cmdlet, it must be deployed to a site before it can be accessed.



### Note:

You cannot add a solution to the solution store by using the Solution Management page in Central Administration.

---

The following procedures show how to deploy an imported solution to a site in the farm by using either the Central Administration Web site or Windows PowerShell.

▶ **To deploy a solution by using Central Administration**

1. On the Central Administration Home page, click **System Settings**.
2. In the **Farm Management** section, click **Manage farm solutions**.
3. On the Solution Management page, click the solution that you want to deploy.
4. On the Solution Properties page, click **Deploy Solution**.
5. On the Deploy Solution page, in the **Deploy When** section, select one of the following:
  - **Now**
  - **At a specified time**. If you select this option, specify a time by using the date and time boxes. We recommend that you select a time when the load on the destination servers is low.
6. In the **Deploy To?** section, in the **A specific web application** list, click either **All web applications** or select a specific Web application.
7. Click **OK**.

▶ **To deploy a solution package to a single Web application by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Install-SPSolution -Identity <SolutionName> -WebApplication <URLName>
```

Where:

- *<SolutionName>* is the name of the solution.
- *<URLName>* is the URL of the Web application to which you want to deploy the imported solution.

By default, the solution is immediately deployed. You can also schedule the deployment by using the **time** parameter. For more information, see [Install-SPSolution](#) ([http://technet.microsoft.com/library/0133c53b-70c4-4dff-a2ae-3c94759ed25d\(Office.14\).aspx](http://technet.microsoft.com/library/0133c53b-70c4-4dff-a2ae-3c94759ed25d(Office.14).aspx)).

▶ **To deploy a solution package to all Web applications by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.

- 
5. At the Windows PowerShell command prompt, type the following command:

```
Install-SPSolution -Identity <SolutionName> -AllWebApplications -time  
<TimeToDeploy> -GACDeployment -CASPolicies
```

Where:

- **GACDeployment** is the parameter that enables SharePoint Foundation 2010 to deploy the assemblies in the global assembly cache.
- **CASPolicies** enables the creation of a custom code access security (CAS) policy file and the activation of it in the Web.config file of the targeted site collection.

The solution is immediately deployed by default. You can also schedule the deployment by using the **time** parameter.

## About creating a solution package

SharePoint Foundation 2010 does not include a tool for creating solution packages. This section describes ways to create solution packages that contain developed site elements and artifacts.

### Visual Studio 2010

You can use Visual Studio 2010 to group related SharePoint elements into a Feature, and then bundle multiple Features, site definitions, assemblies, and other files into a single package (.wsp file) to deploy to servers running SharePoint Foundation 2010. You can use Visual Studio 2010 to debug and test the .wsp on the server running SharePoint Foundation 2010 on the development computer. You can also customize the deployment steps on the development computer.

Developers can build their SharePoint solutions in Visual Studio 2010 and produce .wsp files by using the automated build process. Source code of the Visual Studio SharePoint project that is used to generate the .wsp file can also be added to the source code control system by using Visual Studio 2010 integration. Visual Studio 2010 can import .wsp files and create projects to further extend them and to create new .wsp files. The primary source of .wsp files that are imported into Visual Studio 2010 is templates saved from sites by using the Save As Template command on SharePoint Foundation 2010 sites. These templates can be used to save all of site customizations to a SharePoint solution.

For more information, see [SharePoint Development in Visual Studio](http://go.microsoft.com/fwlink/?LinkId=187000) (<http://go.microsoft.com/fwlink/?LinkId=187000>).

### Makecab

Solution packages can be created manually by using tools such as Makecab.exe. The Makecab.exe tool takes a pointer to a .ddf file, which describes the structure of the CAB file. The format of a .ddf file is similar to that of an .inf file — that is, you declare a standard header and then enumerate, one file per line, the set of files by where they are located on disk and where they should be located in the CAB file.

The Makecab.exe tool is available for download in the [Microsoft Cabinet Software Development Kit](http://go.microsoft.com/fwlink/?LinkId=107292) (<http://go.microsoft.com/fwlink/?LinkId=107292>).

### SharePoint PackMan

SharePoint PackMan is a tool that simplifies the process of packaging and managing SharePoint solutions. Drag and drop your files into the tool, and it will create a .ddf file, a manifest.xml file and run

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Makecab.exe from a command prompt. SharePoint PackMan also simplifies adding, deploying, retracting, and deleting one or more solutions to the farm, Web applications, or site collections.

The SharePoint PackMan tool is available for download from CodeBox: [SharePoint Packman](http://go.microsoft.com/fwlink/?LinkId=189633) (<http://go.microsoft.com/fwlink/?LinkId=189633>).

## About customizing solution packages

If you need to make any of the following customizations in SharePoint Foundation 2010 solutions, it is recommended that you use Visual Studio 2010 to customize solution packages. You can also make these customizations by manually creating SharePoint solution packages.

- Deploy .NET Framework assemblies in the private application folder instead of the global assembly cache.
- Add code access security permissions to the solution that must be applied during the deployment.
- Deviate from the names used by default for the Feature folders.
- Localize the solution.
- Associate Feature event handlers to certain types of SharePoint Foundation 2010 solutions, such as Web Part solutions.
- Add resources (XML files, pictures, .dll files, and assemblies) to the solution package.

## Manually create a solution file

In most SharePoint Foundation 2010 development scenarios, we recommend that you use Visual Studio 2010 Tools for SharePoint 2010 to develop and package SharePoint solutions. In Visual Studio 2010, the deployment process copies the .wsp file to the server running SharePoint Foundation 2010, installs the solution, and then activates the Features.

You can also manually create a solution file. The following are the basic steps of creating a solution file:

1. Collect all individual solution files in a folder. There are no concrete guidelines about how you should do this, but a best practice is to separate the different types of solution files into their own subfolders.
2. Create a manifest.xml file that lists the components of the solution.
3. Create a .ddf file that defines the structure of the solution file. This file contains the list of individual solution files that determine the output .wsp file.
4. Execute Makecab.exe with the .ddf file as input and the .wsp file as output.

## About the solution manifest file

The solution manifest (always called manifest.xml) is stored at the root of a solution file. This file defines the list of Features, site definitions, resource files, Web Part files, and assemblies to process. It does not define the file structure — if files are included in a solution but not listed in the manifest.xml file, they are not processed in any way.

Following is an example of the structure of a manifest.xml file, shown in XML.

```
<?xml version="1.0" encoding="utf-8" ?>
```

---

```

<Solution xmlns="http://schemas.microsoft.com/sharepoint/"
SolutionId="{79d1a62e-3627-11db-963e-00e08161165f}"
ResetWebServer="TRUE">

  <Assemblies>
    <Assembly DeploymentTarget="GlobalAssemblyCache"
Location="Example.Sharepoint.Webparts\
Example.SharePoint.WebParts.dll">
      <SafeControls>
        <SafeControl Assembly="Example.Sharepoint.Webparts,
Version=1.0.0.0, Culture=Neutral, PublicKeyToken=63cce650e8605f5d"
Namespace="Example.Sharepoint.Webparts" TypeName="*" />
      </SafeControls>
    </Assembly>
    <Assembly DeploymentTarget="GlobalAssemblyCache"
Location="Example.Sharepoint.Timer/Example.Sharepoint.Timer.dll"/>
  </Assemblies>

  <FeatureManifests>
    <FeatureManifest Location="Example.Sharepoint.Timer\Feature.xml"/>
    <FeatureManifest Location="Example.CustomType\Feature.xml"/>
    <FeatureManifest Location="Example.ExampleLibrary\Feature.xml"/>
    <FeatureManifest Location="Example.Columns\Feature.xml"/>
    <FeatureManifest Location="Example.Workflow.ProcessExample\Feature.xml"/>
    <FeatureManifest Location="Example.Workflow.ProvisionExample\Feature.xml"/>
  </FeatureManifests>

  <SiteDefinitionManifests>
    <SiteDefinitionManifest Location="EXAMPLE">
      <WebTempFile Location="1033\XML\WEBTEMPEXAMPLE.XML"/>
    </SiteDefinitionManifest>
  </SiteDefinitionManifests>
</Solution>

```

In addition, you can add a **DwpFiles** element to specify .webpart or .dwp files, or a **ResourceFiles** element to specify resource files, site definitions, application resources, and code access security policies.

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Optionally, annotate your Feature.xml files by using **<ElementFile>** tags.

If your solution contains Features, in the **<ElementManifests>** tag in your Feature.xml file, add `<ElementFile Location="..." />` for all the extra files in your feature, such as ASP.NET pages (for example, allitems.aspx) or master pages, and so on.

For more information about solution manifest files that define the constituent parts of a solution, see [Solution Schema](http://go.microsoft.com/fwlink/?LinkID=183466) (<http://go.microsoft.com/fwlink/?LinkID=183466>).

## Creating and deploying a custom Web Part solution package by using Visual Studio 2010

For an example walkthrough that shows you how to use Visual Studio 2010 to create, customize, debug, and deploy a SharePoint list definition to track project tasks, see [Walkthrough: Deploying a Project Task List Definition](http://go.microsoft.com/fwlink/?LinkID=189612) (<http://go.microsoft.com/fwlink/?LinkID=189612>) in the MSDN Library.

This walkthrough illustrates the following tasks:

- Creating a SharePoint list definition project that contains tasks.
- Adding the list definition to a SharePoint Feature.
- Adding an event receiver to the list.
- Creating and customizing a SharePoint package to deploy your Feature.
- Building and deploying your SharePoint solution.

When you build the sample project in this walkthrough, Visual Studio 2010 automatically deploys the solution to the server running SharePoint Foundation 2010 on your development computer for testing and debugging. You can also create a solution package file that you can add and deploy on another computer. For more information, see [How to: Deploy a SharePoint Solution](http://go.microsoft.com/fwlink/?LinkID=187004) (<http://go.microsoft.com/fwlink/?LinkID=187004>). You can use the **Add-SPSolutionWindows** PowerShell cmdlet to import the solution to another computer.

You can use the **Solution Management** page in Central Administration to deploy the solution package. Alternatively, you can use the **Install-SPSolutionWindows** PowerShell cmdlet to deploy the solution package.

In the walkthrough, the scope of the project list feature is Web. To activate the Feature, on the Web site, expand the **Site Actions** menu, and then click **Site Settings**. Under **Site Actions**, click **Manage site features**. On the Features page, next to the Feature name, click **Activate**.

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# Deploy authored site elements (SharePoint Foundation 2010)

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This article discusses the deployment of authored site element customizations in Microsoft SharePoint Foundation 2010, including deployment procedures, general considerations, and best practices related to deploying custom content.

In this article:

- [About deploying authored site elements](#)
- [Before you begin](#)
- [Deploy content by using the Content Migration API](#)
- [Create a content deployment package by using Windows PowerShell](#)

## About deploying authored site elements

Authored site elements can be thought of as the "content" in your sites. They are the Web pages, images, layout pages, cascading style sheets, and other resources that compose your SharePoint Foundation 2010 Web site. Authored site elements include:

- **Artifacts** These are site elements — typically authored by using a design tool such as Microsoft SharePoint Designer 2010 — that compose the framework in which your site's content appears. Examples of artifacts include master pages and layouts.
- **Web content** These are site elements — typically authored directly in the Web browser or in a client authoring program such as Word 2010 — that supply the content of your site. Examples of Web content include Web pages and images.

This article does not discuss deployment of developed site elements such as Web Parts and other code. For more information, see [Deploy solution packages \(SharePoint Foundation 2010\)](#) and [Deploy site elements by using Features \(SharePoint Foundation 2010\)](#).

Authored site elements can be deployed by various methods:

- Use the object model to handle scenarios such as writing scripts to automate common tasks and setting custom properties for export and import that tailor the deployment. The object model provides the most control over your data migration scenarios.
- Content deployment packages are intended for a one-time move or migration of content to a destination site collection. Content deployment packages are CAB files that can contain part or all of the authored site elements in a Web site, and can be deployed in a disconnected environment. Windows PowerShell cmdlets are used to create content deployment packages.



### Note:

This article does not discuss using solution packages to deliver your custom SharePoint Foundation 2010 development work to the front-end Web servers or the application servers in your server farm. By using solution packages, you can deploy artifacts in a disconnected

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environment, and you can deploy artifacts and developed site elements in the same package. For more information, see [Deploy solution packages \(SharePoint Foundation 2010\)](#).

## When to use a content deployment package

You can use content deployment packages to deploy authored site elements in one or more of the following scenarios:

- **One-time content migration** Use a content deployment package to move content to a destination site collection only once. If you plan to update content regularly on a destination site collection, use the content deployment feature or the Content Migration API.
- **Disconnected environments** If the farms are disconnected, you can create a content deployment package for asynchronous transfer to the integration farm.
- **Sample content** If authored site element customizations need to be deployed from the authoring environment to the integration environment to be used as samples for development purposes, you can use a content deployment package to simplify this process.

## Before you begin

To eliminate potential synchronization issues, you must often deploy developed site elements before you deploy authored site elements. Farm solutions and Web application solutions must be installed and deployed to the destination farm prior to content deployment. Also be aware that you must install on the destination server any language packs that are in use on the source server; if you fail to install the required language packs, content deployment will fail.

Before performing the procedures in this article, familiarize yourself with the concepts related to the deployment of site element customizations. For more information about planning and designing sites and site collections, see [Fundamental site planning \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/aa456629-8de8-4328-873b-2e2db9671401\(Office.14\).aspx](http://technet.microsoft.com/library/aa456629-8de8-4328-873b-2e2db9671401(Office.14).aspx)). Also, download an Excel version of the [Content deployment planning worksheet](#) (<http://go.microsoft.com/fwlink/?LinkID=16783>).

## Deploy content by using the Content Migration API

Most deployment scenarios can be accomplished by using Central Administration without the need for scripts. However, you can use the object model to handle other scenarios, such as writing scripts to automate common tasks and setting custom properties for export and import that you cannot configure you set up a deployment by using the SharePoint Central Administration site. You can also create code that exports and imports a content package in situations where connectivity between a source farm and a destination farm may be limited or unavailable.

For more information about content migration and the content migration APIs, see [Content Migration Overview](#) (<http://go.microsoft.com/fwlink/?LinkId=187033>). For an overview of the content deployment feature and the background and resources necessary to build and implement custom deployment



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solutions, see [Deploying Content Between Servers](http://go.microsoft.com/fwlink/?LinkID=181466) (<http://go.microsoft.com/fwlink/?LinkID=181466>). For a code example that shows how to use the object model to create paths and jobs that deploy content between site collections, see [How to: Deploy Content Between Servers](http://go.microsoft.com/fwlink/?LinkID=187034) (<http://go.microsoft.com/fwlink/?LinkID=187034>). For a code sample and information about how to export and import a content package by using the Content Migration API, see [How to: Customize Deployment for Disconnected Scenarios](http://go.microsoft.com/fwlink/?LinkID=181076) (<http://go.microsoft.com/fwlink/?LinkID=181076>).

## Create a content deployment package by using Windows PowerShell

You can use Windows PowerShell to create a content deployment package that contains the authored site elements for a whole site (including all the content in the site) or a list or a document library.



### Note:

Use content deployment packages for a one-time migration of content to a destination site collection. Use the content deployment feature or the Content Migration API to periodically move content from a source site collection to a destination site collection.

Content deployment packages are implemented as CMP (Content Migration Package) files. You export this package from the source server, and then import it into the destination server. You can use this method of content deployment in both connected and disconnected environments.

If you are using a software configuration management system, follow the steps for exporting the content deployment package, and then use the procedure appropriate to your software configuration management system to save the exported file.

### ▶ To create a content deployment package by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Export-SPWeb -Identity <URLname> -path <ExportFileName> -IncludeUserSecurity -  
IncludeVersions 4 -NoFileCompression
```

Where:

- **<URLname>** is the site to export. This site is written to the content deployment package together with all the subsites beneath it.
- **IncludeUserSecurity** causes the new site to have the same permissions as the original site.
- **IncludeVersions** is set to 4 to specify that all versions should be included.
- **NoFileCompression** causes the content deployment package to be output to an uncompressed folder instead of a single CAB file. This makes it more complicated to

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deploy the deployment package to a different server, but makes it easier to edit the individual files.

For more information, see [Export-SPWeb](http://technet.microsoft.com/library/cd85bf19-6f24-4f13-bd9c-37bbf279ea2b(Office.14).aspx) ([http://technet.microsoft.com/library/cd85bf19-6f24-4f13-bd9c-37bbf279ea2b\(Office.14\).aspx](http://technet.microsoft.com/library/cd85bf19-6f24-4f13-bd9c-37bbf279ea2b(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

**▶ To import a content deployment package by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Import-SPWeb -Identity <URLname> -path <ImportFileName> -IncludeUserSecurity
```

Where:

- *<URLname>* is the site that will be imported, together with all the subsites beneath it.

For more information, see [Import-SPWeb](http://technet.microsoft.com/library/2ecc5b6e-1b23-4367-a966-b7bd3377db3a(Office.14).aspx) ([http://technet.microsoft.com/library/2ecc5b6e-1b23-4367-a966-b7bd3377db3a\(Office.14\).aspx](http://technet.microsoft.com/library/2ecc5b6e-1b23-4367-a966-b7bd3377db3a(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

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# Deploy site elements by using Features (SharePoint Foundation 2010)

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This article describes how to deploy developed site element customizations by using Features. By using Features, you can control the scope within which the site customization can be activated and deactivated, and easily deploy the customizations across multiple server farms.

In this section:

- [What is a Feature?](#)
- [When to use Features](#)
- [Create a Feature](#)
- [Install and activate a Feature by using Windows PowerShell](#)

## What is a Feature?

A *Feature* is a container of various defined extensions for SharePoint Foundation 2010, and is composed of a set of XML files that are deployed to front-end Web servers and application servers. You can deploy a Feature as part of a solution package, and you can individually activate a Feature in SharePoint Foundation sites.

Features reduce the complexity involved in making simple site customizations. Features eliminate the need to copy large chunks of code to change simple functionality, and therefore they reduce versioning and inconsistency issues that can arise among front-end Web servers.

Features make it easier to activate or deactivate functionality in the course of a deployment, and administrators can easily transform the template or definition of a site by turning on or turning off a particular Feature in the user interface.

An element is an atomic unit within a Feature. The **Feature** element is used in a Feature.xml file to define a Feature and to specify the location of assemblies, files, dependencies, or properties that support the Feature. A Feature includes a Feature.xml file and any number of files describing individual elements. Another Feature element from a different schema is used in an Onet.xml file to specify that a Feature be activated when a site is created from the site definition.

A Feature.xml file typically points to one or more XML files whose top-level **<Elements>** tag contains definitions for elements that support the Feature. Elements in SharePoint Foundation 2010 often correspond to what were discrete nodes in the Onet.xml or Schema.xml file of Microsoft Office SharePoint Portal Server 2003. There are several types of elements—for example, a custom menu item or an event handler.

- For more information about the capabilities of Features, see [Using Features](#) (<http://go.microsoft.com/fwlink/?LinkId=183450>).
- For specific information about the file format and XML elements used in the Feature.xml file, see [Feature.xml Files](#) (<http://go.microsoft.com/fwlink/?LinkId=183451>).

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- For information about how features affect the file format of the Onet.xml file in a site definition, see [Site Definition \(Onet.xml\) Files](http://go.microsoft.com/fwlink/?LinkId=183454) (<http://go.microsoft.com/fwlink/?LinkId=183454>).
  - For more information about Feature element types, see [Element Types](http://go.microsoft.com/fwlink/?LinkId=183455) (<http://go.microsoft.com/fwlink/?LinkId=183455>).

## When to use Features

Features are the recommended method for deploying pieces of functionality, customizations, or configuration changes to front-end Web servers. Features are a flexible way to manage functionality through its lifecycle, including activation, upgrade, and eventually deactivation.

You can use Features to deploy developed site elements in one or more of the following scenarios:

- **Need for activation and deactivation** When you deploy site element customizations in a Feature, you can install, activate, and deactivate the Feature by using Windows PowerShell or by using the object model. You can also activate and deactivate a Feature by using the Central Administration Web site.
- **Flexibility of scope** You can activate a Feature for a single scope, including farm, Web application, site collection, or Web site.
- **Ease of distributed deployment** A Feature is easy to deploy to multiple server farms as part of a solution.
- **Control through the Feature object model** The Feature object model enables you to specify the list of installed features within a given scope and to control whether features are enabled at the farm and site levels.

Use solution packages to package Features to deploy to different environments. For example, use a solution package to deploy customizations between developer workstations and an integration farm, and also between either an integration farm or authoring client workstations, and pilot or production farms.

## Create a Feature

When you create a custom Web page in SharePoint Foundation 2010 by using the browser or SharePoint Designer, the ASPX page can belong only to the root site collection of the server that is running SharePoint Foundation 2010. To create a page under a site collection that is available to the whole farm and in all site collections, use a solution to deploy the page under the \14\Template\Layouts folder (by using the **TemplateFiles** element in the solution manifest file).

A best practice on a farm is to deploy Features by using a solutions package. If a server must be rebuilt or another server is added to the farm, the Feature will not have to be manually added to each front-end Web server. By using solutions packages, you can deploy new and upgraded Features across the farm and synchronize a front-end Web server so that its state is consistent with the state of other servers in the farm.

To control the availability of a custom page in a site collection or a Web site, deploy the custom Web page as a SharePoint Feature as part of a solution. Use the module element in the Feature.xml file to

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deploy a Web page by using a scope of site collection and Web site. Modules are frequently used to implement a Web Part Page in the site.

A Feature that is deployed as part of a solution is installed automatically. If you manually deploy a Feature, you must install and activate it. See [Install and activate a Feature by using Windows PowerShell](http://technet.microsoft.com/library/b0f3e532-48e3-4429-aacd-20750cb9f0df.aspx#InstallAndActivate) (<http://technet.microsoft.com/library/b0f3e532-48e3-4429-aacd-20750cb9f0df.aspx#InstallAndActivate>), later in this article.

### To create and deploy a custom Feature

1. Create a Feature.xml file. The following is an example Feature.xml file, which is necessary for giving the feature a unique ID and pointing to the Module.xml file.

```
<?xml version="1.0"?>
<Feature Id="8C4DD0CB-5A94-44da-9B7F-E9ED49C2B2DC" Title=
"Custom Web page"
Description="This simple example feature adds an ASPX page
with a hosted XmlFormView control"
Version="1.0.0.0" Scope="Web"
xmlns="http://schemas.microsoft.com/sharepoint/">
<ElementManifests>
  <ElementManifest Location="Module.xml"/>
</ElementManifests>
</Feature>
```

2. Create a Module.xml file. The following is an example Module.xml file, which contains information about the page or pages that are part of the solution.

```
<?xml version="1.0"?>
<Elements xmlns="http://schemas.microsoft.com/sharepoint/">
  <module name="file" url="" path="">
    <file url="XmlFormViewPage.aspx" type="ghostable"> </file>
  </module>
</Elements>
```

3. Change the file **url** value to the name of your ASPX page.
4. Add a subfolder for the Feature definition within the Features setup directory on the server computer, typically located at %COMMONPROGRAMFILES%\Microsoft shared\Web server extensions\14\TEMPLATE\FEATURES.



#### **Important:**

A best practice is to use detailed, qualified names for the subfolders that you create for Feature definitions. This practice minimizes the likelihood that you will add multiple

---

Features that have the same names and overwrite the Feature.xml file for another Feature. For example, use **HR\_Contract** and **Finance\_Contract** rather than **Contract**.

5. Add your custom .aspx page to this subfolder for the Feature definition.
6. Add Feature.xml and Module.xml files to the same location.
7. Add the Feature to a solution package.

You can use Visual Studio 2010 to add the Feature to a solution, or you can manually add a **FeatureManifests** element to the solution Manifest.xml file.

8. Create the solution package.

You can use Visual Studio 2010 to build the solution package. You can also use the Makecab.exe tool to create the solution package.

9. Import and deploy the solution package.

Add the solution to the solution store by using the Windows PowerShell **Add-SPSolution** cmdlet, and then deploy the solution from the solution store by using the Central Administration Web site or by using Windows PowerShell.

For more information about using Visual Studio 2010 to add Features to a solution packages, see [Creating SharePoint Solution Packages](http://go.microsoft.com/fwlink/?LinkId=187035) (<http://go.microsoft.com/fwlink/?LinkId=187035>). For more information about manually creating a solution package or using the Makecab.exe tool to make the package, see [Creating a Solution](http://go.microsoft.com/fwlink/?LinkId=187036) (<http://go.microsoft.com/fwlink/?LinkId=187036>). For more information about deploying solutions, see [Deploy solution packages \(SharePoint Foundation 2010\)](#).

## Install and activate a Feature by using Windows PowerShell

You can install and activate a Feature by using Windows PowerShell or by using the object model. You can also activate a Feature by using the Manage Web Applications Features page or the Features page of the site collection or site on which you want to activate the Feature. Installing a Feature makes its definition and elements known throughout a server farm, and activating the Feature makes the Feature available at a particular scope.



### Note:

Features that are deployed as part of a solution package are installed by the deployment and manual installation is not required.

You install Features in the 14\Template\Features folder, with each Feature in its own subfolder. At the root of this folder, a Feature.xml file defines the contents of the Feature. You must install individual Features before you can use them, and —unless the Feature is scoped to the farm — you must activate them after you install them. If a Feature is scoped to the farm or Web application, it is activated automatically.

To uninstall a Feature so that its definition is no longer available within a server farm, you first must deactivate the feature by using the Windows PowerShell [Disable-SPFeature](#) ([http://technet.microsoft.com/library/c10fbc69-088c-4e49-9005-fde54c035f23\(Office.14\).aspx](http://technet.microsoft.com/library/c10fbc69-088c-4e49-9005-fde54c035f23(Office.14).aspx)) cmdlet,

---

unless the Feature is scoped for Web applications or farms. After you deactivate the Feature, you can use the **Uninstall-SPFeature** cmdlet to uninstall it. For more information, see [Uninstall-SPFeature](http://technet.microsoft.com/library/2f3831e4-b964-4e0e-bcc5-02659fdc0bb7(Office.14).aspx) ([http://technet.microsoft.com/library/2f3831e4-b964-4e0e-bcc5-02659fdc0bb7\(Office.14\).aspx](http://technet.microsoft.com/library/2f3831e4-b964-4e0e-bcc5-02659fdc0bb7(Office.14).aspx)). After uninstalling a Feature, reset Internet Information Services (IIS) so that the changes can take effect.

To deactivate a Feature so that it becomes inactive at its originally assigned scope without uninstalling it, you can use the **Disable-SPFeature** cmdlet. For more information, see [Disable-SPFeature](http://technet.microsoft.com/library/c10fbc69-088c-4e49-9005-fde54c035f23(Office.14).aspx) ([http://technet.microsoft.com/library/c10fbc69-088c-4e49-9005-fde54c035f23\(Office.14\).aspx](http://technet.microsoft.com/library/c10fbc69-088c-4e49-9005-fde54c035f23(Office.14).aspx)).

Use the following procedures to install and activate a Feature.

### ▶ To install a Feature by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Install-SPFeature -path <Path> [-force]
```

Where:

- *<Path>* is a valid file path; for example, MyFeature. The path to the feature must be a literal path to the 14\Template\Features folder name. The Feature.xml file name is implied and does not need to be provided.

For more information, see [Install-SPFeature](http://technet.microsoft.com/library/a1093d30-68a1-4c84-8454-967bda8d68b9(Office.14).aspx) ([http://technet.microsoft.com/library/a1093d30-68a1-4c84-8454-967bda8d68b9\(Office.14\).aspx](http://technet.microsoft.com/library/a1093d30-68a1-4c84-8454-967bda8d68b9(Office.14).aspx)).



#### **Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

### ▶ To activate a feature by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Enable-SPFeature -Identity <FeatureID> [-url] <URLname> [-force]
```

Where:

- *<FeatureID>* is the name of the Feature folder located in the 14\Template\Features folder.

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It must be a valid file path; for example, MyCustom.

- `<URLname>` is the Feature parent URL of the Web application, site collection, or Web site for which the Feature is being activated; for example, `http://somesite`.

For more information, see [Enable-SPFeature](http://technet.microsoft.com/library/9b68c192-b640-4cb8-8a92-a98008169b27(Office.14).aspx) ([http://technet.microsoft.com/library/9b68c192-b640-4cb8-8a92-a98008169b27\(Office.14\).aspx](http://technet.microsoft.com/library/9b68c192-b640-4cb8-8a92-a98008169b27(Office.14).aspx)).



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.



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# Deploy templates (SharePoint Foundation 2010)

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This article describes how to create a custom site definition and deploy it by using a solution package.

In this article:

- [What are site definitions?](#)
- [Site definitions and configurations](#)
- [Create a custom site definition and configuration](#)
- [Deploy a site definition by using a solution package](#)

## What are site definitions?

In Microsoft SharePoint Foundation 2010, a user creates a site through the user interface (UI) by selecting a site definition configuration or custom site template that defines how to instantiate the site. A site definition is a template that determines, for example, the lists, files, Web Parts, Features, or settings with which to provision a new SharePoint site.

A site definition is a family of site definition configurations. Each site definition specifies a name and contains a list of the site definition configurations. In SharePoint Foundation 2010, a site definition consists of a set of XML files that can be applied to provision new sites. The files are located on Web servers.

Site definitions consist primarily of multiple XML and ASPX files stored on a front-end Web server in folders under the %ProgramFiles%\Common Files\Microsoft Shared\web server extensions\14\TEMPLATE\SiteTemplates folder.

A site created from a site definition adds to, but does not repeat, the structural and content information from the original site definition. Throughout their lifecycle, sites continue to depend on the site definition that is their ultimate foundation. For this reason, Microsoft does not support changing or removing a site definition after sites have been created from it. Such changes may cause sites created from the definition to stop working properly or may prevent the creation of new sites based directly, or indirectly, on the site definition. To customize a site definition, developers can add a Feature that includes the changes to the site definition. The site definition itself is not modified.

For more information about what kinds of customizations of site definitions are supported by Microsoft, see [Supported and unsupported scenarios for working with custom site definitions and custom area definitions in Windows SharePoint Services, in SharePoint Portal Server 2003, and in Office SharePoint Server 2007](http://go.microsoft.com/fwlink/?LinkID=187678) (<http://go.microsoft.com/fwlink/?LinkID=187678>).

In the object model, an SPWebTemplate represents a site definition (and configuration). For more information about site templates and site definitions, see [Site Templates and Definitions](http://go.microsoft.com/fwlink/?LinkID=184756) (<http://go.microsoft.com/fwlink/?LinkID=184756>).



**Note:**

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The STP format of a custom site template (.stp file) is deprecated in SharePoint Foundation 2010 and replaced with WSP format site templates. In Windows SharePoint Services 3.0, users can save an existing site as a custom site template. The site template is stored in the database as a model, and users can select the site template as a foundation that defines how to instantiate the site. In SharePoint Foundation 2010, users can save an existing site as a template. The template is saved as a .wsp file in the Solution Gallery of the top-level site in a site collection, where it becomes available for subsite creation on all Web sites in the site collection..

For more information about site definitions, see [Site Definitions and Configurations](http://go.microsoft.com/fwlink/?LinkId=183458) (<http://go.microsoft.com/fwlink/?LinkId=183458>).

## Site definitions and configurations

A site definition defines a specific SharePoint site. There are five site definitions natively installed in SharePoint Foundation 2010. A site definition can include more than one site definition configuration. SharePoint Web sites are based on specific site definition configurations that include the following:

- STS includes the site definition configurations for Team Site, Blank Site, and Document Workspace.
- MPS includes the site definition configurations for Basic Meeting Workspace, Blank Meeting Workspace, Decision Meeting Workspace, Social Meeting Workspace, and Multipage Meeting Workspace.
- CENTRALADMIN provides a site definition configuration for Central Administration Web sites.
- WIKI provides a site definition configuration for Web sites that support community content by using wiki technology.
- BLOG provides a site definition configuration for blogs.

Each site definition consists of files that are placed in the \\Program Files\Common Files\Microsoft Shared\web server extensions\14\TEMPLATE\SiteTemplates subfolders of front-end Web servers during installation of SharePoint Foundation 2010. Site definition files include .xml, .aspx, .ascx, and .master page files, in addition to document template files — such as .dot and .htm — and content files, such as .gif and .doc.

## Uncustomized pages and page customization

Site definition files are cached in memory on the server at process startup of Microsoft Internet Information Services (IIS). This allows uncustomized pages to be reused across sites. The information contained in these files is pulled from the cache at run time. Pages and list schemas are read from the site definition files but appear to be actual files within a site. New Web Part pages are also considered to be uncustomized.

When site pages are customized — excluding browser-based customizations such as modifications to Web Parts — their contents are stored in the content database, and the customized site page is used instead of the original page from the site definition. Uploaded .aspx files are automatically considered to be customized.

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For more information about ghosting and page customization, see [Site Definitions and Configurations](http://go.microsoft.com/fwlink/?LinkId=183458) (<http://go.microsoft.com/fwlink/?LinkId=183458>).

## Core schema files

The following table lists the core XML files that can be modified for a site definition and shows their locations in the file system.

WebTemp.xml	Identifies the site definitions and provides information about their configurations. Located in: \\TEMPLATE\1033\XML
Onet.xml	Defines the navigation areas, specifies the list definitions available, specifies document templates and their files, defines the base types for lists, and defines configurations and modules for site definitions. Located in: \\TEMPLATE\SiteDefinitions\site_type\XML
Schema.xml	Defines the views, forms, toolbar, and special fields in a list definition. Each definition has its own Schema.xml file. Located in: \\TEMPLATE\FEATURES\List_Definition_Name
Doclcon.xml	Each front-end Web server in a SharePoint Foundation deployment contains a Doclcon.xml file that maps file programmatic identifiers (ProgIDs) and file name extensions of document types to specific icons and to controls for opening each type. Changes to Doclcon.xml are global to a SharePoint Foundation deployment and affect all site definitions on the front-end Web server. Located in: \\TEMPLATE\XML

These XML files use [Collaborative Application Markup Language \(CAML\)](http://go.microsoft.com/fwlink/?LinkID=183464) (<http://go.microsoft.com/fwlink/?LinkID=183464>) for defining aspects of a site. For more information about these core XML files that you can use to customize site definitions, see [Site Definitions and Configurations](http://go.microsoft.com/fwlink/?LinkID=183458) (<http://go.microsoft.com/fwlink/?LinkID=183458>).

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# Create a custom site definition and configuration

You can create custom site definitions by manually copying an existing site definition or by importing a .wsp file into Visual Studio 2010.

## Import items from an existing SharePoint site

This method requires saving a site as a template from SharePoint Foundation to generate a .wsp file, and then importing the .wsp file into Visual Studio 2010 by using the solution import project template. The Import SharePoint Solution Package project template lets you reuse elements such as content types, list definitions, and fields from existing SharePoint sites in a new Visual Studio SharePoint solution. For more information about importing items from an existing SharePoint site into a Visual Studio SharePoint project, see [Importing Items from an Existing SharePoint Site](http://go.microsoft.com/fwlink/?LinkID=187040) (<http://go.microsoft.com/fwlink/?LinkID=187040>). This chapter includes a walkthrough that demonstrates the following tasks:

1. Customizing a SharePoint site by adding a custom site column.
2. Exporting a SharePoint site to a .wsp file.
3. Importing the .wsp file into Visual Studio SharePoint project by using the .wsp Import project.

## Copy an existing SharePoint site

This method involves copying an existing site definition, modifying the copy, and changing two schema files: the copy of a WebTemp.xml file, and the copy of an Onet.xml file.



### Warning:

Do not modify the originally installed WebTemp.xml file.

1. Copy an existing site definition folder located in the Local\_Drive:\Program Files\Common Files\Microsoft Shared\web server extensions\14\TEMPLATE\SiteTemplates\ directory. Your copy should be a peer of the original, and you can give it any name that contains no spaces.

For example, to create a custom site definition that derives from the team site definition for Microsoft SharePoint Foundation, copy the \sts folder.

2. Make a copy of the WebTemp.xml file. This file is located in Local\_Drive:\Program Files\Common Files\Microsoft Shared\web server extensions\14\TEMPLATE\1033\XML.

Give the file a unique name by appending a string to the name of the original file; for example, WebTempAction.xml. At run time, the compiler merges information contained in this file with the information contained in the original file to specify which site definition configurations are available for creating new sites.

3. Customize the contents of the new WebTemp file.

Each WebTemp.xml file contains a collection of **Template** elements and **Configuration** subelements, which identify to the compiler all the site definition configurations that can be instantiated. The **Configuration** element defines, for example, a title, a description, the URL for the image displayed in the user interface (UI), and a display category that specifies the tab on which to display the template in the **Template Selection** section of the Create Site Collection page.



### Important:

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In each **Template** element defined in the WebTemp file, the **Name** attribute must contain the same name that is assigned to the new folder. To avoid conflict with IDs already used in SharePoint Foundation 2010, use unique values greater than 10,000 for the ID attribute.

The following example uses two **Configuration** elements in the WebTemp.xml file to define different site definition configurations for instantiating a site, one for a Research Collaboration site and the other for a Research Document Workspace site. This example uses only two configurations within a single site definition, but you can include multiple site definitions, each with multiple configurations, within a single WebTemp.xml file. Each site definition references a different site definition folder and its Onet.xml file.

```
<?xml version="1.0" encoding="utf-8" ?>
<Templates xmlns:ows="Microsoft SharePoint">
  <Template Name="RESEARCH" ID="10001">
    <Configuration ID="0" Title="Research Collaboration site"
      Hidden="FALSE" ImageUrl="_layouts/images/stsprev.jpg"
      Description="This definition creates a site for the Research
        team to create, organize, and share general information."
      DisplayCategory="Collaboration">
    </Configuration>
    <Configuration ID="1" Title="Research Workspace" Hidden="FALSE"
      ImageUrl="_layouts/images/dwsprev.jpg" Description="This
        definition creates a site for Research team colleagues to
        work together on specific documents."
      DisplayCategory="Collaboration">
    </Configuration>
  </Template>
</Templates>
```

As indicated by the value of the **Name** attribute in the **Template** element, this example assumes that a site definition directory named "RESEARCH" exists. If a WebTemp\*.xml file specifies more than one site definition, the definitions are distinguished by their unique **ID** values.

Each **Configuration** element also contains an **ID** attribute. The combination of this **ID** and the value of the **Name** attribute in the **Template** element provides a reference to the contents of a specific **Configuration** element in a specific Onet.xml file. In the example, the **Name** attribute contains RESEARCH and the **ID** attributes contain 0 and 1, which reference the RESEARCH site definition and configurations with IDs of 0 or 1 in Onet.xml.

You may need to reset IIS to cause the new definition configuration to appear as an option in the UI. To do this, enter iisreset at a command prompt.

---

For more information about defining each site definition configuration in Onet.xml, see [How to: Use Site Definition Configurations](http://go.microsoft.com/fwlink/?LinkId=183465) (<http://go.microsoft.com/fwlink/?LinkId=183465>).

## Deploy a site definition by using a solution package

To deploy a custom site definition by using a solution package, add a **SiteDefinitionManifest** element to the manifest file of the solution package. Add the **TemplateFiles** element to define the template files that must be deployed in a subfolder of the \14\Template folder

### Add a SiteDefinitionManifest element

The **SiteDefinitionManifest** element has a **Location** attribute that picks up all the files in the specified folder and creates the required folder in the \14\Template\SiteTemplates folder. The **WebTempFile** child element deploys the **webtemp\*.xml** file to make the template known to SharePoint 2010 Products, as shown in the following example:

```
<SiteDefinitionManifests>
  <SiteDefinitionManifest Location="LitwareSiteTemplate">
    <WebTempFile Location="1033\xml\webtempLitware.xml" />
  </SiteDefinitionManifest>
</SiteDefinitionManifests>
```

### Add a TemplateFile element

The **TemplateFile** element in a solution manifest file is used to define the template files that must be deployed in a subfolder of the \14\Template folder. An example of the kind of file you can deploy in this way is the fldtypes\*.xml file, which defines the details of a custom field type. Use the **Location** attribute to specify the relative path to the file, which is indicated by the string "Text" in the following example:

```
<TemplateFiles
  <TemplateFile
    Location="Text"/>
  ...
</TemplateFiles>
```

For more information about how to deploy solutions, see [Deploy solution packages \(SharePoint Foundation 2010\)](#).

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# Workflow deployment process (SharePoint Foundation 2010)

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After you prepare a workflow for use in Microsoft SharePoint Foundation 2010, deployment of the workflow varies depending on whether you use a predefined workflow, a Microsoft Office SharePoint Designer workflow, or a Microsoft Visual Studio custom workflow.

This article contains information and procedures about how to deploy workflows in SharePoint Foundation 2010.

In this article:

- [Overview](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_overview) ([http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK\\_overview](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_overview))
- [Before you begin](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_begin) ([http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK\\_begin](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_begin))
- [Deploying workflows](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_Deployingworkflows) ([http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK\\_Deployingworkflows](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_Deployingworkflows))
- [Verification](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_Verification) ([http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK\\_Verification](http://technet.microsoft.com/library/95bb79c2-c155-4f1f-aa30-e6ad40f9a763.aspx#BKMK_Verification))

## Overview

SharePoint Foundation 2010 provides a single predefined workflow template, for the Three-state workflow. You can use the Three-state workflow template to create individual workflows to run in SharePoint sites. You can also use Office SharePoint Designer to define your own workflows, or you can use Visual Studio to create code-based custom workflows. Workflows are built on Windows Workflow Foundation and run in SharePoint sites, as follows:

- SharePoint Foundation 2010: Used to host workflows. After a workflow is deployed to the host, you can activate, configure, start, participate in, and track the workflow.
- SharePoint Designer 2010: Used to create user-defined workflows.
- Microsoft Visio 2010: Used together with SharePoint Designer 2010 to create user-defined workflows.
- Visual Studio: Used by developers to create workflows.

## Before you begin

Before you perform the deployment procedures in this article, confirm that the server is running SharePoint Foundation 2010.

---

# Deploying workflows

The predefined Three-state workflow is already installed as a SharePoint Feature in SharePoint Foundation 2010.

Workflows on a SharePoint Web site are stored as workflow templates. As an alternative to using the predefined workflow, you can create SharePoint workflow templates in Office SharePoint Designer and Visual Studio, and then deploy them to a SharePoint Foundation 2010 Web site. Use SharePoint administration tools as needed to add the template to libraries or lists on a SharePoint Foundation 2010 Web site.

To deploy a predefined workflow, you activate it for the site, associate it with a list, library, content type, or site, and then start the workflow.

To deploy workflows in SharePoint Foundation 2010, use the appropriate procedure from the following:

- [Deploy predefined workflows](#)
- [Deploy SharePoint Designer workflows](#)
- [Deploy Visual Studio workflows](#)

## Deploy predefined workflows

### Activate the workflow

As described earlier in this article, before you can use a predefined workflow, it must be active in the site or site collection. Only active workflows can be associated with the lists and libraries on the site or site collection.

The predefined Three-state workflow is active by default when a site or site collection is created. Because the workflow can be deactivated, you can check the site or site collection to determine whether the Three-state workflow is active. Use the following procedure to determine whether the Three-state defined workflow is active, and then activate it as necessary.

To activate a workflow that is deployed as a feature, such as the predefined Three-state workflow, see [Activate or deactivate a workflow \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/94e0d62a-1e6d-4daa-922c-c30da7275e8c\(Office.14\).aspx](http://technet.microsoft.com/library/94e0d62a-1e6d-4daa-922c-c30da7275e8c(Office.14).aspx)).

### Add the workflow association to a list, library, content type, or site

When you add a workflow, you associate the workflow with a list, library, content type, or site. You configure the workflow by specifying parameters such as the workflow name, start options, participants, and completion options.

To add a workflow association, see [Add a workflow association \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/19872b79-f5ac-4b56-a24b-75af33c89763\(Office.14\).aspx](http://technet.microsoft.com/library/19872b79-f5ac-4b56-a24b-75af33c89763(Office.14).aspx)).

### Start the workflow

After you activate a workflow and add it to a list, library, content type, or site, an authenticated user can run the workflow on an item in the list, on a document in the library, or on a site in the case of a site workflow. When you add the workflow, you specify whether you want the workflow to run automatically or manually. If the workflow is configured to start automatically, the default settings are always used



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when the workflow begins. If the workflow is configured to start manually, a user can modify the default settings, such as specifying workflow participants and specifying a due date. The workflow runs on items in the list or documents in the library with which the workflow is associated.

The procedure for starting a workflow depends on whether it was configured to start manually or automatically.

For more information, see [Start a workflow instance \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951(Office.14).aspx) ([http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951\(Office.14\).aspx](http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951(Office.14).aspx)).

## Deploy SharePoint Designer workflows

When user-defined workflows are enabled, users can deploy Office SharePoint Designer workflows on their sites.

### Enable user-defined workflows

To allow users to create and run SharePoint Designer 2010 workflows, you must ensure that user-defined workflows are enabled for the site collection. By default, this setting is enabled. When this setting is enabled, users can define workflows in a declarative workflow editor such as the SharePoint Designer 2010 workflow editor. A *declarative* workflow is a workflow that is built from conditions and actions that are assembled into rules and steps, and that sets the parameters for the workflow without writing code. Unlike code-centric workflows such as those that are created by using Visual Studio, declarative workflows are not deployed to SharePoint Foundation 2010 as compiled code. Instead they are compiled at runtime.

Because the capability to use declarative workflows on the Web application can be turned off, you can check the Web application to determine whether declarative workflows are active.

For information, see [Enable or disable declarative workflows \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/e7720cba-93cd-45f2-9e5d-7f285f09d0c1(Office.14).aspx) ([http://technet.microsoft.com/library/e7720cba-93cd-45f2-9e5d-7f285f09d0c1\(Office.14\).aspx](http://technet.microsoft.com/library/e7720cba-93cd-45f2-9e5d-7f285f09d0c1(Office.14).aspx)).

### Create a SharePoint Designer workflow

By using the Workflow Designer wizard in SharePoint Designer 2010, you can create workflows that add application logic to the site or site collection without writing custom code. The Workflow Designer incorporates the tasks of creating the workflow, activating the workflow, and adding it to the list, library, or site. You do not have to perform any manual configuration tasks outside the designer to deploy the workflow. However, if you publish a workflow template to a SharePoint site collection, you can download that template as a WSP file and then deploy it to other site collections. For more information, see [Deploy a workflow as a WSP file \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/bc5cc76a-68e8-4acc-bcec-bf79e72d426f(Office.14).aspx)

([http://technet.microsoft.com/library/bc5cc76a-68e8-4acc-bcec-bf79e72d426f\(Office.14\).aspx](http://technet.microsoft.com/library/bc5cc76a-68e8-4acc-bcec-bf79e72d426f(Office.14).aspx)).

### Start the workflow

Because SharePoint Designer 2010 can automatically activate the workflow and add it to a list, library, or site, an authenticated user can then run the workflow on an item in the list, on a document in the library, or on a site in the case of a site workflow. When you create the workflow in SharePoint Designer 2010, you specify whether you want the workflow to run automatically or manually. If the workflow is configured to start automatically, the default settings are always used when the workflow begins. If the

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workflow is configured to start manually, a user can modify the default settings, such as specifying workflow participants and specifying a due date, as allowed by the workflow template. When started, the workflow runs on items in the list, on documents in the library, or on the site with which the workflow is associated.

For more information, see [Start a workflow instance \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951(Office.14).aspx) ([http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951\(Office.14\).aspx](http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951(Office.14).aspx)).

## Deploy Visual Studio workflows

After a Visual Studio custom workflow is created and installed, the processing to deploy it resembles that of a predefined workflow.

### Create a custom workflow

When a custom workflow is created by using Visual Studio, it is packaged as a SharePoint Feature. Feature packaging is a way of encapsulating SharePoint solutions and functionality for ease of deployment. After the development team has created a workflow and packaged it as a Feature, deploy the workflow using the **Install-SPFeature** Windows PowerShell command as described in the following section.

### Install the custom workflow

You install Features in the \Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\Template\Features directory. Each Feature in its own subdirectory. At the root of this folder, a Feature.xml file defines the contents of the Feature. Use the Windows PowerShell **Install-SPFeature** cmdlet to install the Feature. For details, see [Install-SPFeature](http://technet.microsoft.com/library/a1093d30-68a1-4c84-8454-967bda8d68b9(Office.14).aspx) ([http://technet.microsoft.com/library/a1093d30-68a1-4c84-8454-967bda8d68b9\(Office.14\).aspx](http://technet.microsoft.com/library/a1093d30-68a1-4c84-8454-967bda8d68b9(Office.14).aspx)).



#### Important:

To run Windows PowerShell, you must be a member of the Administrators group on the local computer. Also, Windows PowerShell must be enabled as a feature on the server on which you are installing a workflow.

### Activate the workflow

Before you can use a Visual Studio workflow that was deployed as a feature, you must activate it for the site collection. Only active workflows can be associated with the lists, libraries, content types, and sites. To activate a workflow that is deployed as a feature, see [Activate or deactivate a workflow \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/94e0d62a-1e6d-4daa-922c-c30da7275e8c(Office.14).aspx) ([http://technet.microsoft.com/library/94e0d62a-1e6d-4daa-922c-c30da7275e8c\(Office.14\).aspx](http://technet.microsoft.com/library/94e0d62a-1e6d-4daa-922c-c30da7275e8c(Office.14).aspx)).

### Add the workflow to a list, library, content type, or site

When you add a workflow, you associate the workflow with a list, library, content type, or site, and you configure the workflow by specifying parameters such as the workflow name, start options, participants, and completion options.

To add a workflow association, see [Add a workflow association \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/19872b79-f5ac-4b56-a24b-75af33c89763(Office.14).aspx) ([http://technet.microsoft.com/library/19872b79-f5ac-4b56-a24b-75af33c89763\(Office.14\).aspx](http://technet.microsoft.com/library/19872b79-f5ac-4b56-a24b-75af33c89763(Office.14).aspx)).

### Start the workflow

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After you activate a workflow and add it to a list, library, content type, or site, an authenticated user can run the workflow on an item in the list or a document in the library or in the case of a site workflow, on a site. When you add the workflow, you specify whether you want the workflow to run automatically or manually. If the workflow is configured to start automatically, the default settings are always used when the workflow begins. If the workflow is configured to start manually, the user can modify the default settings, such as specifying workflow participants and specifying a due date. The workflow runs on items in the list or documents in the library with which the workflow is associated.

The procedure for starting a workflow depends on whether it was configured to start manually or automatically. For more information, see [Start a workflow instance \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951(Office.14).aspx) ([http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951\(Office.14\).aspx](http://technet.microsoft.com/library/5e8d749f-f715-4dd6-9054-5e907a1aa951(Office.14).aspx)).

## Verification

After you deploy a workflow, we recommend that you test the workflow to ensure that it is functioning correctly, sending e-mail notifications to the correct workflow participants at the correct stages in the workflow, and delivering the expected results.

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# Upgrading to SharePoint Foundation 2010

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Welcome to the upgrade guide for Microsoft SharePoint Foundation 2010. The articles in this guide help you plan for and perform an upgrade from Windows SharePoint Services 3.0 to SharePoint Foundation 2010.

For a graphical overview of the upgrade process, and information about how to plan and test upgrade, see the following upgrade models:

- [Upgrade planning](http://go.microsoft.com/fwlink/?LinkId=178376) (<http://go.microsoft.com/fwlink/?LinkId=178376>)
- [Upgrade approaches](http://go.microsoft.com/fwlink/?LinkId=178377) (<http://go.microsoft.com/fwlink/?LinkId=178377>)
- [Test your upgrade process](http://go.microsoft.com/fwlink/?LinkId=178378) (<http://go.microsoft.com/fwlink/?LinkId=178378>)

In this guide:

- [About the upgrade process \(SharePoint Foundation 2010\)](#)  
Learn about what's new in upgrade and how the upgrade process works.
- [Plan and prepare for upgrade \(SharePoint Foundation 2010\)](#)  
Determine which approach you should take to upgrade to SharePoint Foundation 2010 and plan your upgrade process.
- [Testing and troubleshooting upgrade \(SharePoint Foundation 2010\)](#)  
Learn how to test your upgrade process ahead of time to understand what issues you might face in your actual upgrade, and determine the time and space you will need for upgrade. Also, learn how to troubleshoot issues that come up during the actual upgrade.
- [Perform pre-upgrade steps \(SharePoint Foundation 2010\)](#)  
Find out what steps you need to take before upgrading, including information about how to run the pre-upgrade checker.
- [Perform an in-place upgrade \(SharePoint Foundation 2010\)](#)  
Follow the steps in this section if you are upgrading in-place to SharePoint Foundation 2010. When you upgrade in-place, you install SharePoint Foundation 2010 on the same hardware, and then upgrade the content and settings on the server or server farm as part of a single process.
- [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#)  
Follow the steps in this section if you have a standalone installation with content databases that are approaching 4 GB.
- [Perform a database attach upgrade to SharePoint Foundation 2010](#)  
Follow the steps in this section if you are using the database attach upgrade method to upgrade to SharePoint Foundation 2010. When you use the database attach upgrade method, you upgrade the content for the environment on a separate farm.
- [Perform post-upgrade steps \(SharePoint Foundation 2010\)](#)

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Find out how to tell whether upgrade was completed successfully and what steps you need to perform after the upgrade to get your environment ready for users again.

**See Also**

[Using AAM URL redirection as part of the upgrade process \(SharePoint Foundation 2010\) \(white paper\)](#)

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# About the upgrade process (SharePoint Foundation 2010)

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The first step in any upgrade process is to learn about the process itself so that you can plan and prepare appropriately. This section of the upgrade guide contains articles that help you understand how upgrade works.

In this section:

- [What's new in upgrade \(SharePoint Foundation 2010\)](#)  
Find out about new requirements, approaches, and features that are available for upgrade to Microsoft SharePoint Foundation 2010.
- [Upgrade process overview \(SharePoint Foundation 2010\)](#)  
Get a visual overview of the steps involved in each upgrade approach.
- [Upgrading from Windows SharePoint Services 2.0 to SharePoint Foundation 2010](#)  
Understand using database attach upgrades to upgrade your content from Windows SharePoint Services 2.0 to Microsoft SharePoint Foundation 2010.

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# What's new in upgrade (SharePoint Foundation 2010)

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Microsoft SharePoint Foundation 2010 has been designed for scale and performance and as such requires new hardware and software requirements that are described in this article. These requirements apply to both the in-place and the database attach upgrade approaches. For more information, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#).

In order to facilitate a predictable upgrade and minimize the impact of customization and environmental issues that may prevent a successful upgrade, you can use the Windows PowerShell **test-spcontentdatabase** cmdlet, the new Visual Upgrade option, or the **preupgradecheck** Stsadm operation.

In this article:

- [Upgrade requirements](#)
- [Pre-upgrade checker](#)
- [Windows PowerShell command to check databases before attaching](#)
- [Visual Upgrade](#)
- [Feature Upgrade](#)
- [New options for reducing downtime during upgrade](#)
- [Changes in key features between versions](#)

## Upgrade requirements

Before you can perform an in-place upgrade or database attach upgrade to SharePoint Foundation 2010, your existing Windows SharePoint Services 3.0 environment or new SharePoint Foundation 2010 environment must meet the following minimum requirements.



### Note:

For more information about general system requirements for SharePoint Foundation 2010, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#). For more information about upgrade requirements, see [Review system requirements for upgrade \(SharePoint Foundation 2010\)](#).

### Hardware requirement: 64-bit

SharePoint Foundation 2010 can only run on a 64-bit edition of the Windows Server 2008 R2 or Windows Server 2008 with SP2 operating system. If you plan an in-place upgrade, your Windows SharePoint Services 3.0 installation must be running in a 64-bit Windows Server 2008 environment. If your Windows SharePoint Services 3.0 installation is currently in a 32-bit environment, you cannot perform an in-place upgrade on the existing server or server farm. You must install SharePoint

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Foundation 2010 on a different server or farm that supports 64-bit applications, and then move your data to that server or farm by using database attach upgrade.

To more easily discover and address any issues in the migration and upgrade processes, we recommend that you do not combine the actions of migrating to a 64-bit environment and upgrading in-place to SharePoint Foundation 2010. Because you must have a 64-bit environment to be able to upgrade in place to SharePoint Foundation 2010, you must migrate to a 64-bit operating system before you perform an in-place upgrade. If you are using a database attach upgrade, you can migrate to 64-bit as part of your upgrade process.

Before you migrate to a 64-bit environment:

- Update Windows SharePoint Services 3.0 to the same service pack or software update level on all computers in the source farm.
- Find out whether you have to recompile existing 32-bit applications and custom assemblies — for example, Web Parts and event receivers — to run in the 64-bit environment. (Some applications can run in both environments and do not have to be recompiled.) If the existing applications are third-party applications, check with the third-party vendor about 64-bit versions and compatibility.

For more information about how to plan and perform a migration to a 64-bit environment, see the article [Migrate an existing server farm to a 64-bit environment \(Windows SharePoint Services 3.0\)](http://go.microsoft.com/fwlink/?LinkId=161120) on TechNet (<http://go.microsoft.com/fwlink/?LinkId=161120>).

## **Operating system requirement: Windows Server 2008 or Windows Server 2008 R2**

SharePoint Foundation 2010 must be run on a 64-bit edition of Windows Server 2008 R2 or Windows Server 2008 with Service Pack 2 (SP2). If you are currently running Windows SharePoint Services 3.0 on Windows Server 2003 and intend to upgrade to SharePoint Foundation 2010, you must plan to have a sufficient number of Windows Server licenses for the deployment on the newer operating system.

To more easily discover and address any issues in the migration and upgrade processes, we recommend that you do not combine the actions of upgrading or migrating to Windows Server 2008 or Windows Server 2008 R2 with the process of upgrading to SharePoint Foundation 2010. You can combine migration to 64-bit hardware with migration to Windows Server 2008 or Windows Server 2008 R2.

- If you are already running 64-bit hardware, you can upgrade from Windows Server 2003 to Windows Server 2008 or Windows Server 2008 R2. For more information about how to perform an in-place upgrade to Windows Server 2008, see the article [Upgrading to Windows Server 2008 for Windows SharePoint Services 3.0 with SP1](http://go.microsoft.com/fwlink/?LinkId=155575) on TechNet (<http://go.microsoft.com/fwlink/?LinkId=155575>).
- If you are migrating to 64-bit hardware, take the opportunity to also migrate to Windows Server 2008 or Windows Server 2008 R2 at the same time. For more information about how to install Windows SharePoint Services 3.0 on Windows Server 2008, see the article [Deploy a simple farm on the Windows Server 2008 operating system \(Windows SharePoint Services\)](http://go.microsoft.com/fwlink/?LinkId=95859) on TechNet (<http://go.microsoft.com/fwlink/?LinkId=95859>).



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## Database requirement: 64-bit SQL Server 2005 SP3 or SQL Server 2008 SP1

SharePoint Foundation 2010 requires that its database server must be a 64-bit version of one of the following: Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, or SQL Server 2005 with SP3 and Cumulative Update 3. If your current Windows SharePoint Services 3.0 installation uses SQL Server 2000, you must upgrade to one of these versions before you can upgrade to SharePoint Foundation 2010.

To more easily discover and address any issues in the migration and upgrade processes, we recommend that you do not combine the actions of migrating to 64-bit SQL Server with the process of upgrading to SharePoint Foundation 2010. You can combine the migration to 64-bit SQL Server with the overall process of migration to 64-bit hardware.

- If you are combining the migration to SQL Server 2005 SP3 or SQL Server 2008 on 64-bit hardware with an overall migration to a 64-bit environment, follow the guidance about how to migrate to a 64-bit environment earlier in this article.

For more information about how to migrate all databases, see the article [Move all databases \(Windows SharePoint Services 3.0\)](http://go.microsoft.com/fwlink/?LinkId=161208) on TechNet (<http://go.microsoft.com/fwlink/?LinkId=161208>).

- If you already have 64-bit hardware, but have to upgrade to SQL Server 2005 SP3 or SQL Server 2008, follow the guidance in the SQL Server documentation.

## Pre-upgrade checker

The pre-upgrade checker is a command-line tool that you run in a Windows SharePoint Services 3.0 environment to find any potential issues for upgrade and to review recommendations and best practices.

### **STSADM.exe -o preupgradecheck**

By using the pre-upgrade checker, you can find information such as the following:

- A list of all servers and components in the farm, and whether the servers meet the following requirements for upgrading: 64-bit hardware and the Windows Server 2008 operating system.
- The alternate access mapping URLs that are being used in the farm.
- A list of all site definitions, site templates, features, and language packs that are installed in the farm.
- Whether there are customizations in the farm that are not supported (such as database schema modifications).
- Whether there are any database or site orphans in the farm.
- Whether there are missing or invalid configuration settings in the farm (such as a missing Web.config file, invalid host names, or invalid service accounts).
- Whether the databases meet the requirements for upgrade — for example, databases are set to read/write, and any databases and site collections that are stored in Windows Internal Database are not larger than 4 GB.

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The pre-upgrade checker is available with Windows SharePoint Services 3.0 Service Pack 2 and has been updated in the October 2009 Cumulative Update for Windows SharePoint Services 3.0. You can download and install the October 2009 Cumulative Update from [October 2009 Cumulative Update Packages for SharePoint Server 2007 and Windows SharePoint Services 3.0 are published](#) (<http://go.microsoft.com/fwlink/?LinkID=169179>). For more information about how to use the pre-upgrade checker, see the following articles on TechNet:

- [Preupgradecheck: Stsadm operation \(Windows SharePoint Services\)](#) (<http://go.microsoft.com/fwlink/?LinkID=161232>)
- [Pre-upgrade scanning and reporting for future releases \(Windows SharePoint Services\)](#) (<http://go.microsoft.com/fwlink/?LinkID=152468>)
- [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#)

## Windows PowerShell command to check databases before attaching

You can use the Windows PowerShell cmdlet **test-spcontentdatabase** before you attach a content database to SharePoint Foundation 2010 to determine whether any server-side customizations are missing from the environment. For more information, see [Attach databases and upgrade to SharePoint Foundation 2010](#) and [Test-SPContentDatabase](#) ([http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d\(Office.14\).aspx](http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d(Office.14).aspx)).

## Visual Upgrade

A new feature that is available with upgrade allows the server administrator or site owner to determine when and if the new look for SharePoint Foundation 2010 is used for a particular site collection. Server administrators can choose to adopt the new look and feel for all sites during upgrade, let site owners make the choice after upgrade, or keep the old look and feel for all sites.

If the server administrator lets the site owners decide, after a site is upgraded by using an in-place upgrade, a preview option is available in the site user interface. This option provides a preview of the SharePoint Foundation 2010 look for the site:

- If the owner likes how the site looks and functions, the owner can accept the visual upgrade.
- If the owner wants the site to keep the old look and feel, the owner can revert to the Windows SharePoint Services 3.0 look.

By default, the Windows SharePoint Services 3.0 look is retained. For more information, see [Plan visual upgrade \(SharePoint Foundation 2010\)](#).

## Feature Upgrade

SharePoint Foundation 2010 provides new members and types that make it possible for you to upgrade custom Features through versioning and declarative upgrade actions. You can update any Features you created for Windows SharePoint Services 3.0 to work with SharePoint Foundation 2010 by using

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these members. For more information, see [Upgrading Features](http://msdn.microsoft.com/en-us/library/aa544511(office.14).aspx) ([http://msdn.microsoft.com/en-us/library/aa544511\(office.14\).aspx](http://msdn.microsoft.com/en-us/library/aa544511(office.14).aspx)).

## New options for reducing downtime during upgrade

Depending on the environment and the complexity and number of SharePoint sites, the upgrade process can take a long time. To reduce downtime during this process, SharePoint Foundation 2010 supports the following options:

- **Upgrade multiple databases at the same time (parallel upgrade)** When you upgrade to SharePoint Foundation 2010, you can manually initiate upgrade for multiple databases at the same time by using the detach databases hybrid approach for upgrade. In Windows SharePoint Services 3.0, only one upgrade process could run at a time, so that each database needed to be processed sequentially. There is a performance impact when you run the upgrade on multiple databases instead of on a single database, but it may be faster to upgrade multiple databases at the same time than to upgrade them sequentially. The number of databases that can be upgraded in parallel will depend on the hardware in your environment and on the structure of the content within the databases. For more information, see [Roadmap for in-place upgrade with detached databases \(SharePoint Foundation 2010\)](#).
- **Use read-only databases to provide continuous access to data** If you perform a database attach upgrade — and if you set the original databases to read-only mode — the old farm can continue to serve content to users while you upgrade a copy of the databases on a new farm. If you do this, users can continue to access the data, although they cannot add new data or update the data. When the new farm is ready and all content has been successfully upgraded, users can be switched over to the new live farm.

For more information about read-only databases, see the article [Run a farm that uses read-only databases \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/ee845027(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/ee845027\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/ee845027(Office.12).aspx)).

For more information about these techniques to reduce downtime, see the article [Determine upgrade approach \(SharePoint Foundation 2010\)](#).

## Changes in key features between versions

SharePoint Foundation 2010 has a new architecture and includes many new capabilities. The following tables list some of the key changes to terminology and features that immediately affect the administration and site management process after upgrading.

Concept, term, or feature	New or changed	Comments
Pre-upgrade checker	New	The pre-upgrade checker is an Stsadm command-line operation that you run in an Windows SharePoint Services 3.0 environment to find any potential issues for

Concept, term, or feature	New or changed	Comments
		<p>upgrade and to review recommendations and best practices.</p> <p>Unlike the pre-upgrade scan tool (Prescan.exe) that was used when upgrading to Windows SharePoint Services 3.0, the pre-upgrade checker does not make any changes to your environment. For more information, see <a href="#">Run the pre-upgrade checker (SharePoint Foundation 2010)</a>.</p>
SharePoint Central Administration Web site	Changed	<p>The Central Administration Web site has been redesigned with such new available options and functionality as the following:</p> <ul style="list-style-type: none"> <li>• The ribbon makes it easier for you to view or change details about a Web application by supplying all the options on the same page. For more information about Web applications, see <a href="#">Web applications management (SharePoint Foundation 2010)</a> (<a href="http://technet.microsoft.com/library/5b82a45b-f871-49e3-8926-47972acde573(Office.14).aspx">http://technet.microsoft.com/library/5b82a45b-f871-49e3-8926-47972acde573(Office.14).aspx</a>).</li> <li>• Configuration Wizards have been added to make the configuration process easier by guiding you through the steps to configure the server farm. For more information, see <a href="#">Deploy a single server with SQL Server (SharePoint Foundation 2010)</a>.</li> <li>• You can now perform a backup from the Backup and Restore page. For more information, see <a href="#">Backup (SharePoint Foundation 2010)</a> (<a href="http://technet.microsoft.com/library/d01c3931-3069-4267-a1f0-1e6ebaf43fcd(Office.14).aspx">http://technet.microsoft.com/library/d01c3931-3069-4267-a1f0-1e6ebaf43fcd(Office.14).aspx</a>).</li> </ul>
Ribbon	New	<p>The ribbon user interface has been introduced to ensure a consistent user experience and to make it easier for you to work with SharePoint sites. The ribbon is contextual so that you only</p>

Concept, term, or feature	New or changed	Comments
		see the options that are relevant to the tasks that you want to perform. The ribbon is also customizable.
Service applications	New	New services architecture that allows you to effectively manage and centralize services. Individual services can be configured independently and third-party companies can add services to the platform. For more information, see <a href="#">Configure services (SharePoint Foundation 2010)</a> .
Master pages	Changed	A site owner can now apply branding to their site, independent of other sites, and administrators can specify whether the system pages in the _Layouts folder are rendered by using the site master pages provided by site owners or by default master pages available across the system. Also, it is possible to use Windows PowerShell to specify a customer master page to system error pages, login pages, confirmation pages, and other non-site-specific pages.
Themes	Changed	SharePoint Foundation 2010 has changed the way themes work, making them easier to customize. You can import Microsoft PowerPoint 2010 themes directly into SharePoint Foundation 2010. Additionally, themes can now be applied to all subsites from this interface. For more information, see <a href="#">Plan for using themes (SharePoint Foundation 2010)</a> ( <a href="http://technet.microsoft.com/library/683790b5-800b-4b13-83d6-348088c75d10(Office.14).aspx">http://technet.microsoft.com/library/683790b5-800b-4b13-83d6-348088c75d10(Office.14).aspx</a> ).
Business Connectivity Services (BCS)	New	Business Connectivity Services (BCS) builds on the Business Data Catalog functionality available in the previous product version to provide access to external systems from SharePoint-based solutions. BCS supports interacting with external systems using SharePoint lists and Web Parts, and also

Concept, term, or feature	New or changed	Comments
		<p>supports interacting with data from rich Office clients. For more information, see <a href="#">Business Connectivity Services overview (SharePoint Foundation 2010)</a> (<a href="http://technet.microsoft.com/library/ed9bb457-0ecb-48de-9076-06e61aac38d9(Office.14).aspx">http://technet.microsoft.com/library/ed9bb457-0ecb-48de-9076-06e61aac38d9(Office.14).aspx</a>).</p>
Claims-based authentication	New	<p>Claims-based authentication is a new, more powerful and flexible authentication model that works with any corporate identity system, including Active Directory Domain Services (AD DS), LDAP-based directories, application-specific databases, and new user-centric identity models such as LiveID. For more information, see <a href="#">Configure forms-based authentication for a claims-based Web application (SharePoint Foundation 2010)</a>.</p>
Throttling and list controls	New	<p>Throttling and list controls are two new performance controls. Throttling provides a way to control server resources and is designed so that the server can be protected from overload during peak business hours. SharePoint Foundation 2010 also provides several different settings that will restrict the queries that can be run against a large list. These settings can be configured for each Web application.</p>
SharePoint Designer	Changed	<p>SharePoint Foundation 2010 gives administrators added control over how SharePoint Designer is used in each Web application; for example, administrators control whether site administrators are allowed to customize master pages and layout pages, and whether site administrators can manage the URL structure of their site.</p>
Developer dashboard	New	<p>This is a new addition to server diagnostics and displays detailed information for each page load and therefore helps troubleshoot performance issues.</p>

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Concept, term, or feature	New or changed	Comments
Sandboxed solutions	New	You can now enable site administrators to upload custom user code by using sandboxed solutions. For more information, see <a href="http://technet.microsoft.com/library/832414b2-4b58-4e6c-9d08-c287e30e85a6(Office.14).aspx">Sandboxed solutions planning (SharePoint Foundation 2010)</a> ( <a href="http://technet.microsoft.com/library/832414b2-4b58-4e6c-9d08-c287e30e85a6(Office.14).aspx">http://technet.microsoft.com/library/832414b2-4b58-4e6c-9d08-c287e30e85a6(Office.14).aspx</a> ).

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# Upgrade process overview (SharePoint Foundation 2010)

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You can choose between two basic upgrade approaches when you upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010: in-place upgrade and database attach upgrade. An in-place upgrade is used to upgrade all Microsoft SharePoint sites on the same hardware. A database attach upgrade enables you to move your content to a new farm or new hardware. You can also combine these two types of upgrade in hybrid approaches that reduce downtime during an upgrade.

For more information about these approaches, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#).

This article helps you understand the steps that are involved in performing upgrades by using these approaches so that you can plan your upgrade process. For detailed information about how to use one of these upgrade processes, see the following topics:

- [Upgrade in place to SharePoint Foundation 2010](#)
- [Attach databases and upgrade to SharePoint Foundation 2010](#)

In this article:

- [In-place upgrade](#)
- [Database attach upgrade](#)
- [Hybrid approach 1: Read-only databases](#)
- [Hybrid approach 2: Detach databases](#)



## Important:

It is important that the server administrator communicate with site owners and users about what to expect during an upgrade. The administrator should inform them about downtime and the risk that the upgrade may take longer than expected or that some sites may need some rework after upgrade. For more information, see [Create a communication plan \(SharePoint Foundation 2010\)](#).

## In-place upgrade

An in-place upgrade takes place on the same hardware as your previous version installation. When you run an in-place upgrade, the process upgrades the complete installation in a fixed order.

The following steps explain what happens as the in-place upgrade process runs:

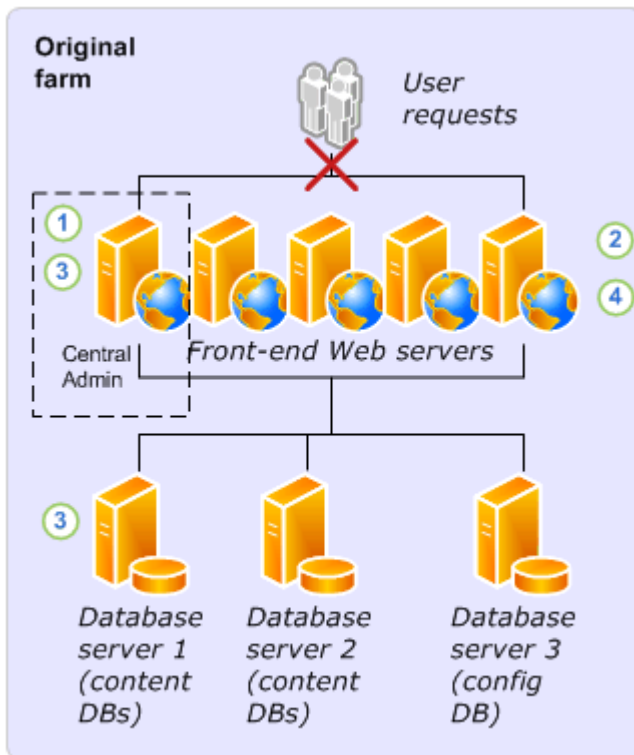
1. After the server administrator performs all pre-upgrade steps, the administrator runs Setup for SharePoint Foundation 2010 on the server that runs the SharePoint Central Administration Web site. Because the previous version was installed, an in-place upgrade is automatically selected.



2. After Setup runs on the server that hosts the Central Administration Web site, the server administrator runs Setup on the remaining front-end Web servers and application servers in the farm.
3. The server administrator runs the SharePoint Products Configuration Wizard on the server that hosts the Central Administration Web site. This server, the configuration database, the services, and the content databases are upgraded sequentially.

When the configuration wizard finishes, the Central Administration Web site opens. A timer job schedules the upgrade process to run for each site collection. The upgrade process timer job upgrades each site collection. After all sites are upgraded, the upgrade process ends.

4. The server administrator runs the SharePoint Products Configuration Wizard on all the other servers in the farm.



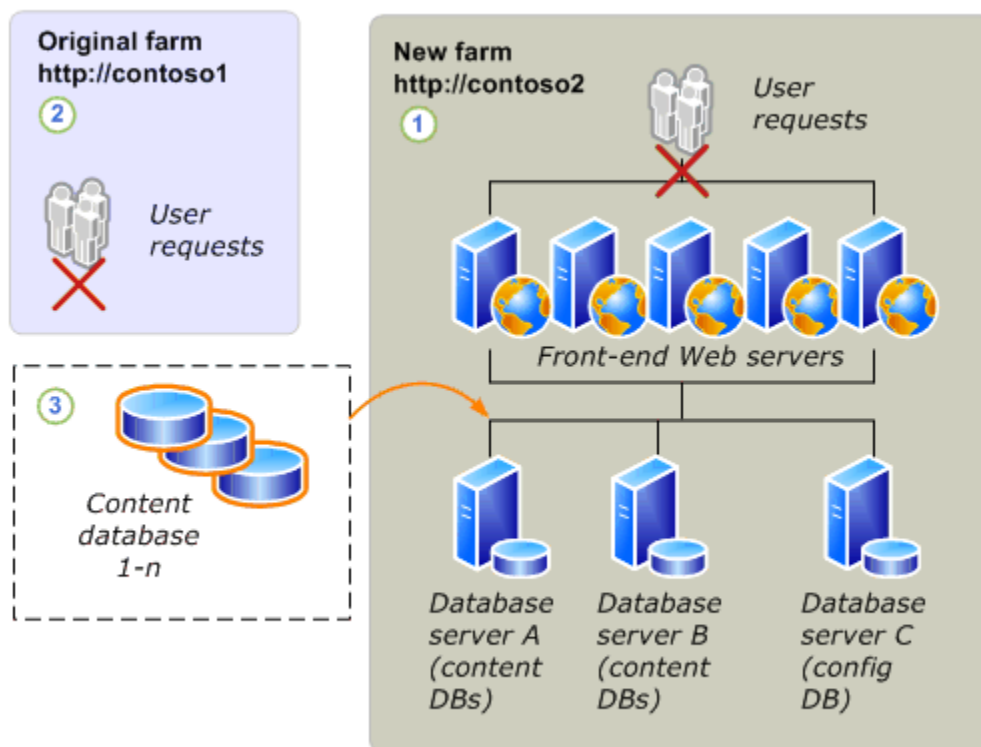
5. The server administrator confirms that the upgrade has finished successfully.
6. If Visual Upgrade is being used, the server administrator or site owner previews sites in the Microsoft SharePoint Foundation 2010 look. When the administrator or site owner is ready, he or she completes the change to the SharePoint Foundation 2010 look.

## Database attach upgrade

A database attach upgrade enables you to move to new hardware or a new farm. During a database attach upgrade, you detach all the content databases from an existing farm and then attach the databases to a new server farm installation. When you attach the databases to the new server farm, the upgrade process runs and upgrades the data in place.

The following steps explain what happens during a database attach upgrade:

1. The server administrator sets up and configures a new SharePoint Foundation 2010 farm. The administrator transfers all customizations to the new farm and tests the environment.  
For more information about how to configure the new environment, see [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#).
2. The server administrator detaches the content databases from the old Windows SharePoint Services 3.0 farm and takes the old farm offline (for example, by changing the load balancer or IIS Web applications to stop service requests, or by turning off all the components and services on each server computer in the farm).
3. The server administrator attaches the content databases to the new farm and upgrades the content.



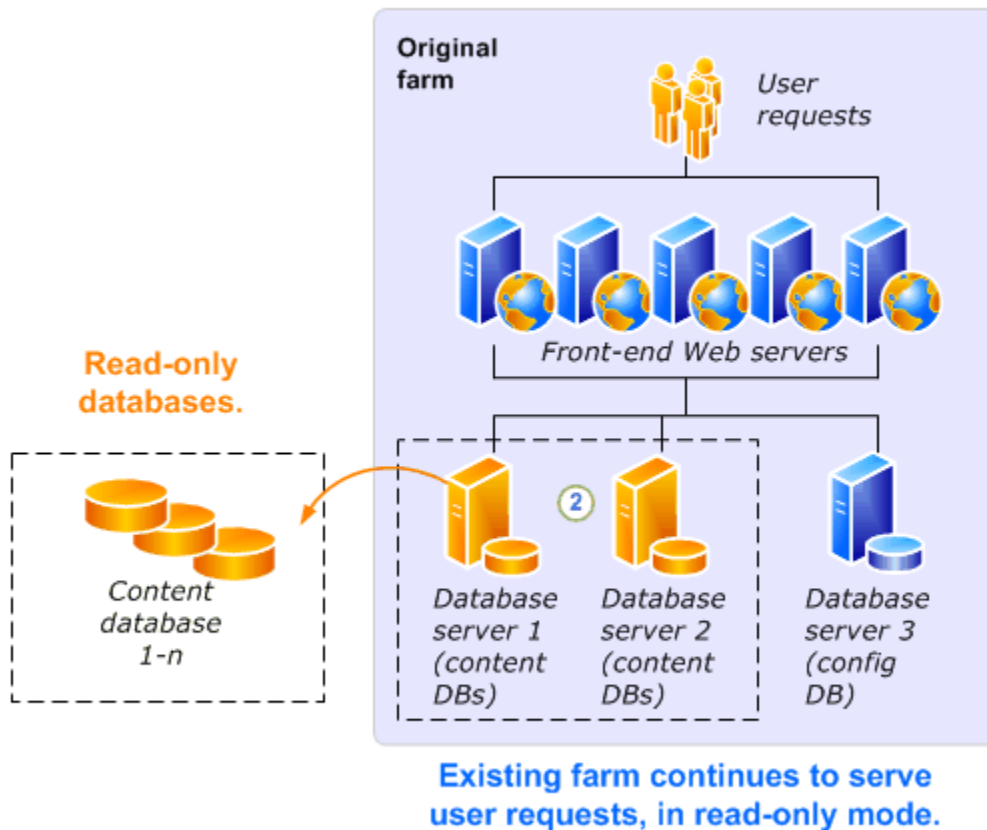
4. The server administrator confirms that the upgrade has finished successfully and then configures the new farm to start serving requests at the new URL.

## Hybrid approach 1: Read-only databases

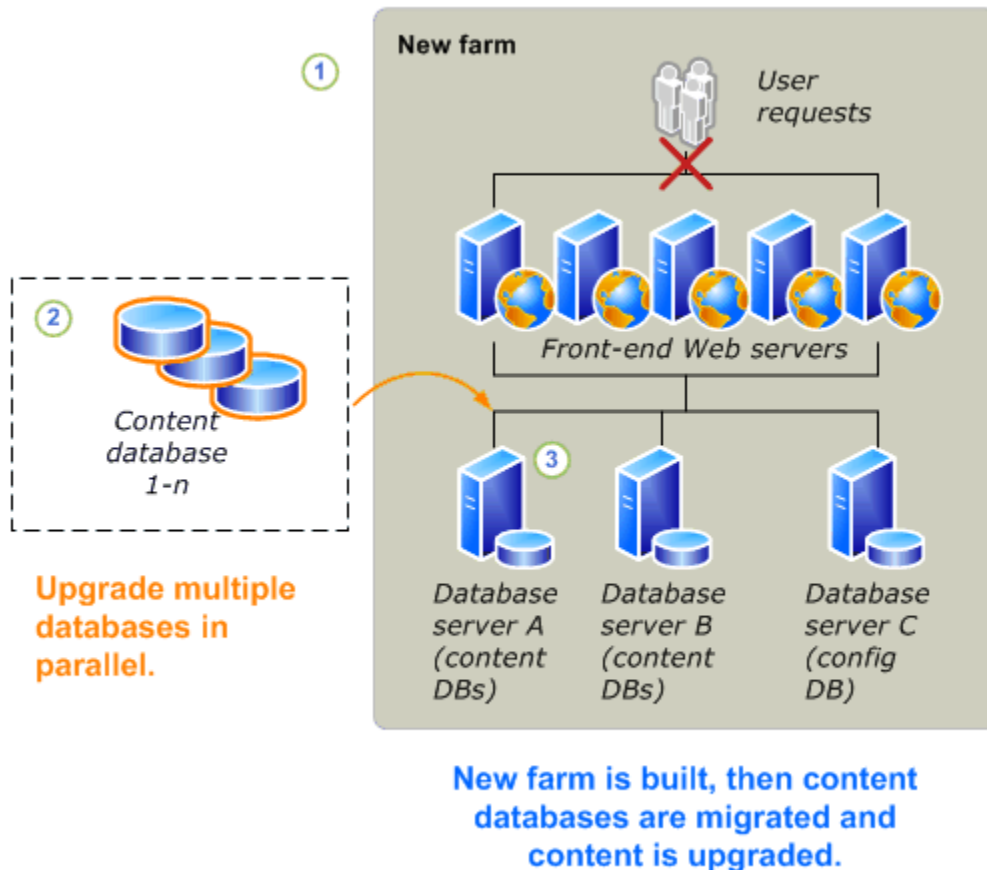
This approach gives users continuous read-only access to their data while you upgrade. The content databases in the original farm are set to read-only, and copies of the databases are upgraded on a new farm.

The following steps explain what happens during a database attach upgrade with read-only databases:

1. The server administrator sets up and configures a new SharePoint Foundation 2010 farm. The administrator transfers all customizations to the new farm and tests the environment.
2. The server administrator changes the content databases to read-only. The administrator then uses SQL Server to back up the content databases on the Windows SharePoint Services 3.0 farm and restore them to the new farm.



3. The server administrator attaches the new copies of the content databases, and the upgrade process runs and upgrades the content.



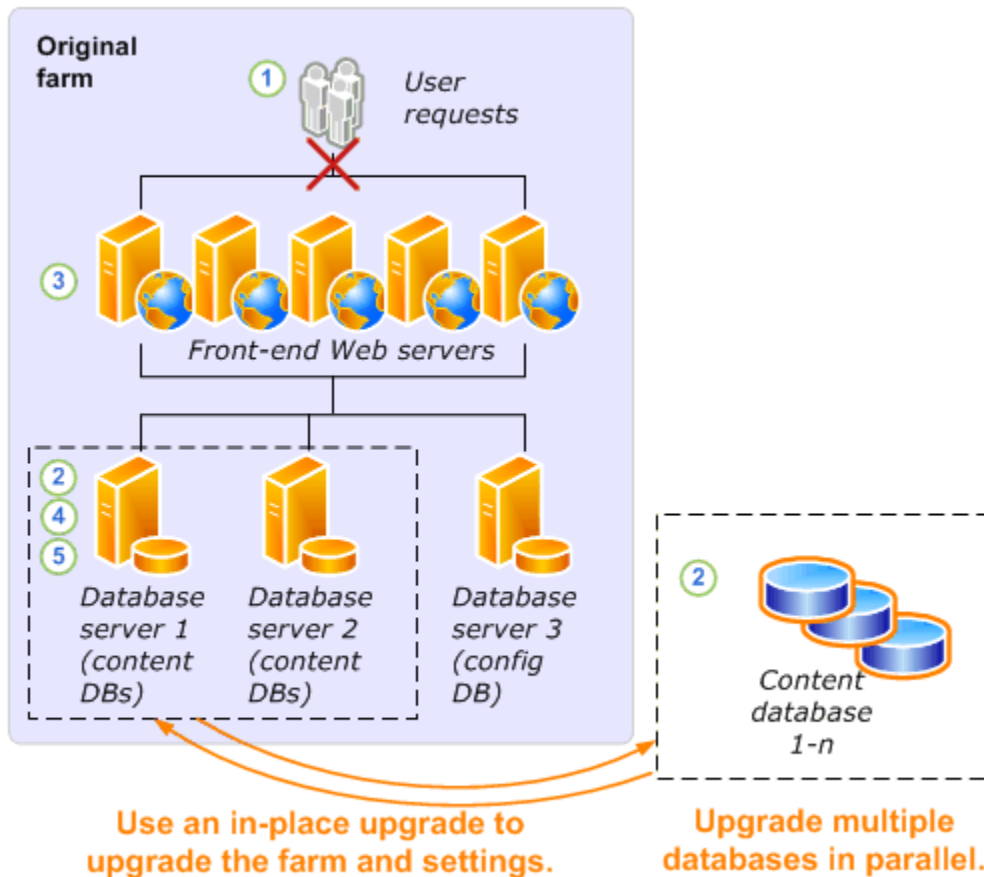
4. After the upgrade process runs, the server administrator confirms that the upgrade has finished successfully. The administrator then configures the new farm to start serving requests at the new URL and takes the original farm offline (for example, by changing the load balancer or IIS Web applications to stop service requests, or by turning off all the components and services on each server computer in the farm).

## Hybrid approach 2: Detach databases

This approach enables you to speed up the upgrade process by detaching and attaching databases to upgrade multiple databases at the same time. It is an in-place upgrade because you are upgrading the original farm; however, you can also use another farm to perform the upgrade and then attach the upgraded databases to your original farm. Note that the original farm cannot serve requests during the upgrade process. As in a standard in-place upgrade, users cannot access their content while the upgrade is in progress.

The following steps explain what happens during an in-place upgrade with detached databases:

1. The server administrator takes the original farm offline (for example, by changing the load balancer or IIS Web applications to stop service requests, or by turning off all of the components and services on each server computer in the farm).
2. The server administrator detaches the content databases from the original farm.
3. The server administrator runs an in-place upgrade on the original farm servers, services, and configuration database.
4. The server administrator attaches the content databases to the original farm and upgrades the content.

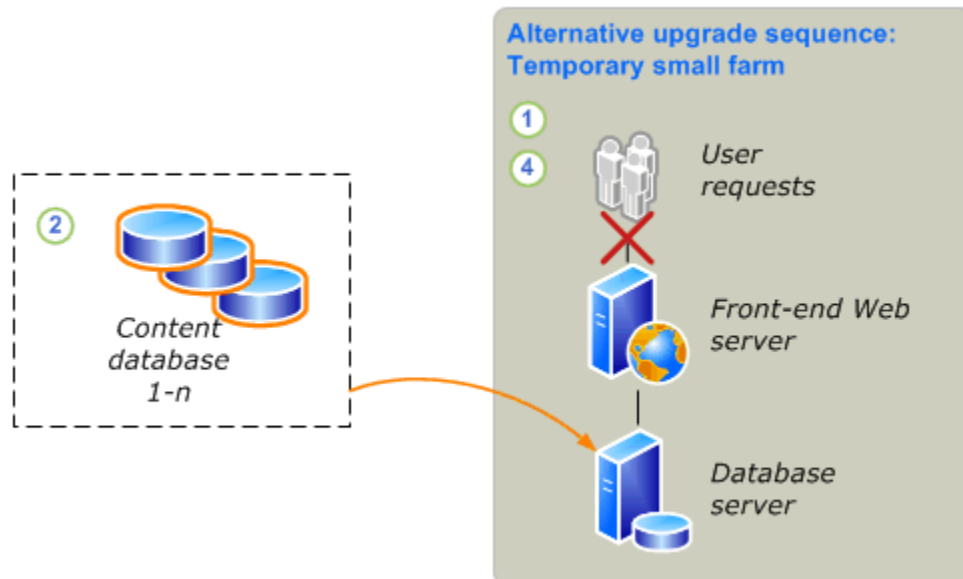


Alternatively, you can use a separate, temporary small farm to perform the upgrade. In this approach, you attach the databases to the original farm after they have been upgraded.

The following steps explain what happens during an in-place upgrade with detached databases and a temporary small farm to upgrade the content databases:

1. The server administrator sets up a temporary small farm that is running the new version. Then the administrator takes the original farm offline (for example, by changing the load balancer or IIS Web applications to stop service requests, or by turning off all the components and services on each server computer in the farm).

2. The server administrator detaches the content databases from the original farm.
3. The server administrator runs an in-place upgrade on the original farm to upgrade the servers, services, and configuration database.
4. The server administrator attaches the content databases to the temporary small farm and upgrades them in parallel.
5. The server administrator reattaches the content databases to the original farm.



6. The server administrator confirms that the upgrade has finished successfully.
7. If Visual Upgrade is being used, the server administrator or site owner previews sites in the Microsoft SharePoint Foundation 2010 look. When the administrator or site owner is ready, he or she completes the change to the Microsoft SharePoint Foundation 2010 look.

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# Upgrading from Windows SharePoint Services 2.0 to SharePoint Foundation 2010

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You cannot upgrade directly from Windows SharePoint Services 2.0 to Microsoft SharePoint Foundation 2010.

The changes between versions are too great, and the hardware requirements differ so much between versions that a direct, in-place upgrade is not possible or supported. You can, however, perform a series of database attach upgrades to first upgrade your content to Windows SharePoint Services 3.0 and then to SharePoint Foundation 2010. This article describes the process of performing this double-database attach upgrade.



## Note:

During this entire process, your old environment should be offline, to prevent users from making changes in the old environment while you are upgrading. After you have finished and validated the upgrade, you can grant access to your users again in the SharePoint Foundation 2010 environment.

In this article:

- [Process overview](#)
- [Before you begin](#)
- [Prepare to upgrade](#)
- [Prepare your farms](#)
- [Perform the first upgrade](#)
- [Perform the second upgrade](#)

## Process overview

Because this upgrade approach combines two upgrade processes that have already been documented, this article describes how the steps from each process fit together into the overall process. It does not provide details for every step, because those steps are available in the following articles:

- [Deploy a new server farm, then migrate content databases](#) ([http://technet.microsoft.com/en-us/library/cc303311\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc303311(Office.12).aspx))
- [Attach databases and upgrade to SharePoint Foundation 2010](#)

These articles, combined with this roadmap, give you the information you need to perform the double-database attach upgrade.



## Important

- Make sure that you try out this entire process in a test environment before you attempt to upgrade your actual live content. For more information about how to test your upgrade processes, see the following content:

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## Upgrade sequence

To upgrade your content across the two versions, follow these steps.

### 1. Prepare to upgrade

- a. Prepare your original farm by running the pre-upgrade scan tool and making an inventory of all of your customizations.
- b. Set up a small, temporary farm that is running Windows SharePoint Services 3.0.
- c. Set up your full SharePoint Foundation 2010 farm, and verify that it is configured and running correctly.

### 2. First upgrade: Upgrade the content to Windows SharePoint Services 3.0

- a. Detach the content databases from the old farm, and then take that farm offline.  
Alternatively, you can leave the databases attached and make a copy of the databases if you want to ensure that your original farm can be restored to use quickly.
- b. Attach the content databases to the Windows SharePoint Services 3.0 farm and upgrade them.
- c. Verify that the content has been upgraded and that the Windows SharePoint Services 3.0 farm is working correctly.

### 3. Second upgrade: Upgrade the content to SharePoint Foundation 2010

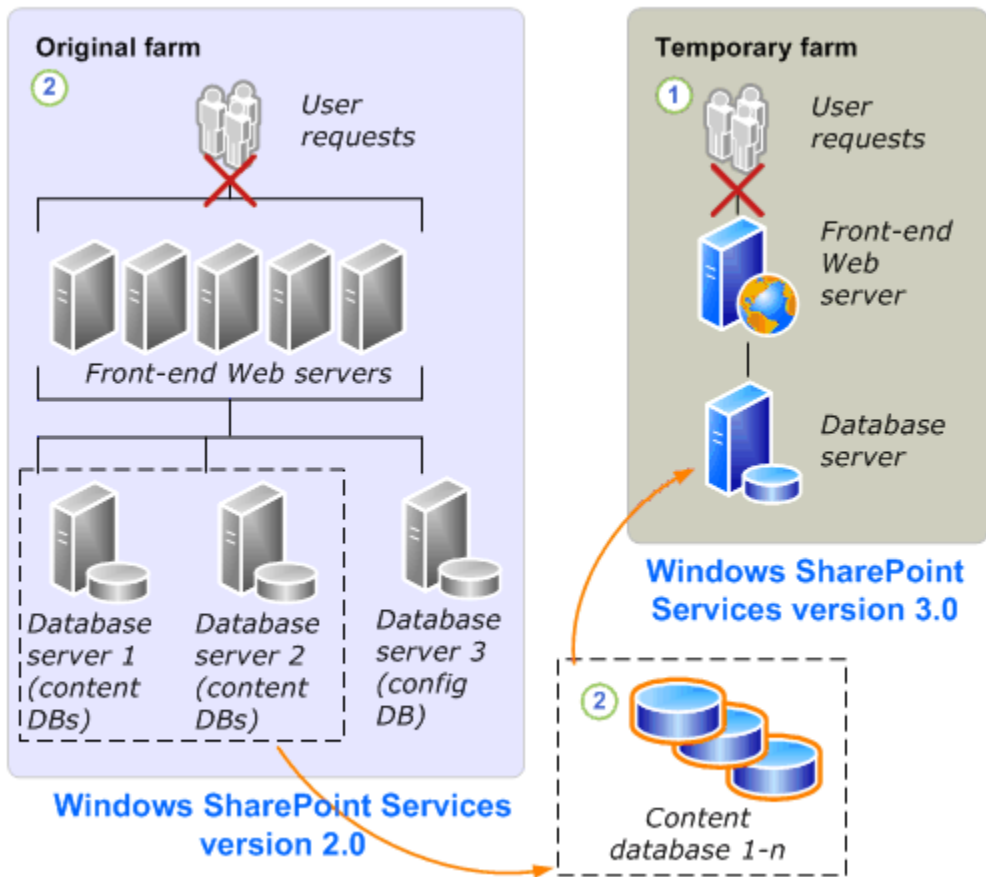
- a. Detach the content databases from the Windows SharePoint Services 3.0 farm.
- b. Attach the content databases to the SharePoint Foundation 2010 farm and upgrade them (optionally, you can upgrade them in parallel).
- c. Verify that the content has been upgraded and that the SharePoint Foundation 2010 farm is working correctly.

### 4. Start serving requests on the SharePoint Foundation 2010 farm.

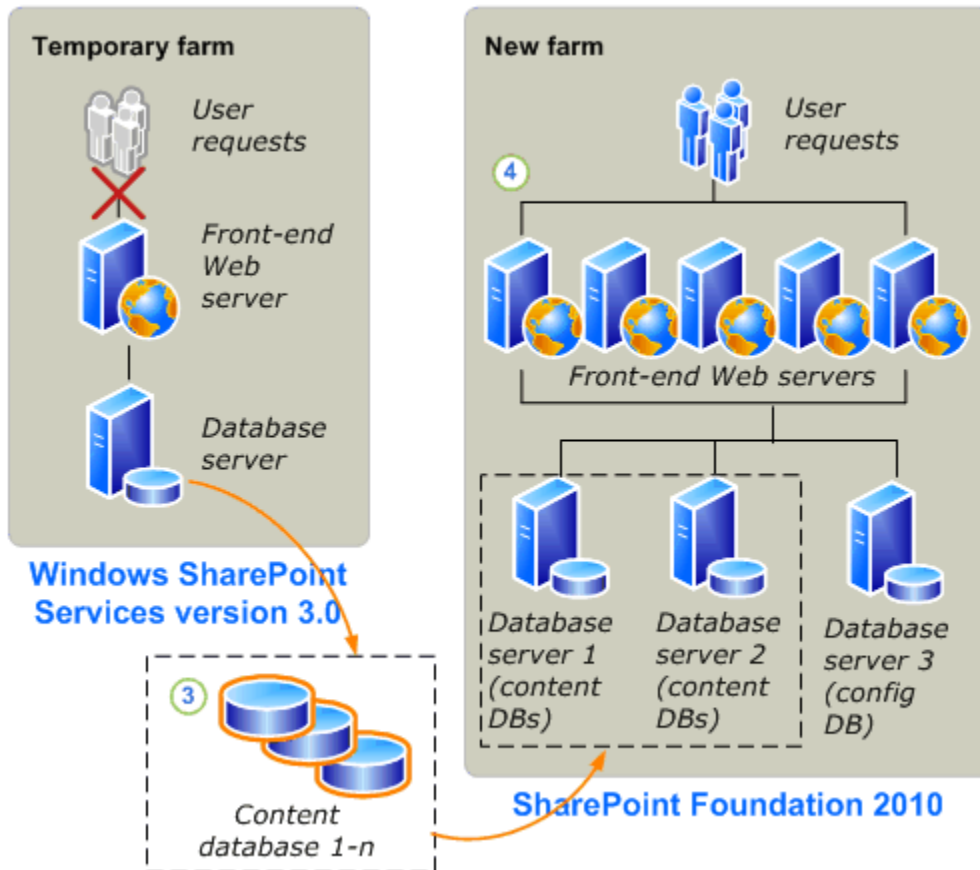
The following diagrams illustrate this process:

The database attach upgrade to Windows SharePoint Services 3.0.





The database attach upgrade to SharePoint Foundation 2010.



## Before you begin

Before you begin your upgrade, review the following information about permissions, hardware requirements, and software requirements. Follow the specified steps to install or configure prerequisite software or to modify settings.

### Review required permissions

- When you create your temporary environment for Windows SharePoint Services 3.0, you must have the appropriate permissions. For more information, see [Plan for administrative and service accounts \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288210(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288210\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288210(Office.12).aspx)).
- When you create and configure your destination SharePoint Foundation 2010 farm, you must have the appropriate permissions. For more information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).

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## Review required hardware and software

- When you create your temporary environment for Windows SharePoint Services 3.0, you must meet specific hardware and software requirements. For more information, see [Determine hardware and software requirements \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288751(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288751\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288751(Office.12).aspx)).
- When you create and configure your destination SharePoint Foundation 2010 farm, you must meet different hardware and software requirements. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).

In some environments, you must coordinate the procedures for moving databases to a separate farm with the database administrator. Make sure that you follow any applicable policies and guidelines for handling databases.

## Prepare to upgrade

Because you are performing two upgrades, you need to understand all of the steps involved both in upgrading to Windows SharePoint Services 3.0 and to SharePoint Foundation 2010. The following content is available to help you understand these upgrade processes:

Preparing to upgrade to Windows SharePoint Services 3.0

- Read the [Plan and prepare for upgrade](http://technet.microsoft.com/en-us/library/cc303312(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc303312\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc303312(Office.12).aspx)) chapter on TechNet. In particular, read the following articles:
  - [How the upgrade process works \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288775(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288775\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288775(Office.12).aspx))
  - [Determine how to handle customizations \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287878(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287878\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287878(Office.12).aspx))
  - [Develop new custom site definitions and create upgrade definition files \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287930(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287930\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287930(Office.12).aspx))
- Read the [Perform pre-upgrade steps \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc303302(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc303302\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc303302(Office.12).aspx)) chapter on TechNet. You must perform the following steps for a database attach upgrade (called *database migration* in this version):
  - [Install Service Pack 2 for Windows SharePoint Services 2.0](http://technet.microsoft.com/en-us/library/cc288052(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288052\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288052(Office.12).aspx))
  - [Run the pre-upgrade scan tool \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287628(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287628\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287628(Office.12).aspx))



### Important:

You follow these steps on your existing Windows SharePoint Services 2.0 farm.

Preparing to upgrade to SharePoint Foundation 2010

- Plan and prepare for upgrade. Read the following article on TechNet:
  - [Upgrade process overview \(SharePoint Foundation 2010\)](#)

- 
- Perform pre-upgrade steps. Read the following article on TechNet:
    - [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#)



**Important:**

You perform these steps on your temporary Windows SharePoint Services 3.0 farm.

## Prepare your farms

In this step, you follow the pre-upgrade steps on your existing farm, create your temporary farm for the upgrade to Windows SharePoint Services 3.0, and create your destination SharePoint Foundation 2010 farm. Use the following steps and related content when preparing your farm for the upgrades.

### Create the temporary Windows SharePoint Services 3.0 farm

In a virtual or physical environment, create a temporary small farm that is running Windows SharePoint Services 3.0 with Service Pack 2 (SP2) and the October 2009 Cumulative Update. You will use this farm to upgrade your content to Windows SharePoint Services 3.0 on the way to SharePoint Foundation 2010.



**Tip:**

For best results, it is recommended that you apply the latest updates to the environment. The October 2009 Cumulative Update includes changes to the pre-upgrade checker that can help identify issues before upgrade. For a list of available updates, see [Update Center for Microsoft Office, Office Servers, and Related Products](http://go.microsoft.com/fwlink/?LinkID=181115) (<http://go.microsoft.com/fwlink/?LinkID=181115>). For more information about applying updates, see [Updates Resource Center for SharePoint Products and Technologies](http://go.microsoft.com/fwlink/?LinkID=181116) (<http://go.microsoft.com/fwlink/?LinkID=181116>).

1. Download the software for the temporary farm.  
Download Windows SharePoint Services 3.0 with SP2 at one of the following links:
  - x86 version: [Windows SharePoint Services 3.0 with Service Pack 2](http://go.microsoft.com/fwlink/?LinkID=148403) (<http://go.microsoft.com/fwlink/?LinkID=148403>)
  - x64 version: [Windows SharePoint Services 3.0 x64 with Service Pack 2](http://go.microsoft.com/fwlink/?LinkID=181113) (<http://go.microsoft.com/fwlink/?LinkID=181113>)
2. Install any language template packs needed for your sites. For more information, see [Install available language template packs \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287870(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287870\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287870(Office.12).aspx)).
3. Configure the farm by using the appropriate farm settings for your environment and reapplying all of the customizations needed by your content. Make sure that you deploy the customizations and the upgrade definition files needed for any custom site definitions that might exist in your environment. You must create Web applications on the temporary farm for every virtual server that you had in your original farm. The URL for the new Web applications should match either the source farm URLs or the destination farm URLs, otherwise you risk adding references to additional temporary URLs to the content. Ideally, you should use the same URLs for the source farm and destination farm, so that the temporary farm URLs are exactly the same as well, including the port numbers used.

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For more information about configuring the farm, see [Prepare the new Windows SharePoint Services 3.0 environment](http://technet.microsoft.com/en-us/library/cc287900(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287900\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287900(Office.12).aspx)). For more information about deploying custom site definitions and upgrade definitions, see [Deploy upgrade definition files and new site definitions \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288457(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288457\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288457(Office.12).aspx)).

### Set up your full SharePoint Foundation 2010 farm

This is the farm you will use for your production environment eventually, so make sure that you plan your infrastructure appropriately to support the solution you are hosting. For more information about how to plan your server farm, see [Server farm and environment planning \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/a8e97903-c472-4c13-a1e1-2c075b2f8585(Office.14).aspx) ([http://technet.microsoft.com/library/a8e97903-c472-4c13-a1e1-2c075b2f8585\(Office.14\).aspx](http://technet.microsoft.com/library/a8e97903-c472-4c13-a1e1-2c075b2f8585(Office.14).aspx)).

1. Create your farm on 64-bit hardware with database servers that are running a 64-bit version of Microsoft SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2. For more information, see [Multiple servers for a three-tier farm \(SharePoint Foundation 2010\)](#).
2. Install any language template packs needed for your sites. For more information, see [Install available language template packs \(SharePoint Foundation 2010\)](#).
3. Configure the farm by using the appropriate farm settings for your environment and reapplying all of the customizations needed by your content. Again, you must create Web applications on the destination farm for every virtual server that you had in your original farm.

For more information about how to create and configure a server farm for a database attach upgrade, see [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#).

## Perform the first upgrade

With your farms set up and configured, you are ready to upgrade your content databases to Windows SharePoint Services 3.0.

### Important:

Make sure that you have run the pre-upgrade scan tool on your original farm before you detach the databases. The upgrade process will not run if you have not scanned the databases. For more information, see [Run the pre-upgrade scan tool \(Windows SharePoint Services\)](#) ([http://technet.microsoft.com/en-us/library/cc287628\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287628(Office.12).aspx)).

To perform a database attach upgrade (called database migration for this version), follow these steps:

1. Back up the content databases.
2. Restore the backed-up copies to your temporary farm.
3. Add the databases to the Web applications to start the upgrade process.

For complete information and steps to follow, see [Migrate content databases](#) ([http://technet.microsoft.com/en-us/library/cc287634\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287634(Office.12).aspx)).

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## Verify the first upgrade

To verify the upgrade, do the following:

- Review the upgrade log file. For more information, see [Migrate content databases \(http://technet.microsoft.com/en-us/library/cc287634\(Office.12\).aspx\)](http://technet.microsoft.com/en-us/library/cc287634(Office.12).aspx).
- Review the upgraded sites to make sure that they still work as expected and that your Web Parts and other custom elements work correctly.

## Perform the second upgrade

After you have verified that your sites work correctly, you can begin the upgrade to SharePoint Foundation 2010.

### Important:

Run the pre-upgrade checker and review the report so that you can address any potential issues on your temporary farm before you upgrade the content. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).

To perform the database attach upgrade, follow these steps:

1. Back up the content databases.
2. Restore the backed-up copies to your destination farm.
3. Add the databases to the Web applications to start the upgrade process. In SharePoint Foundation 2010, you can attach databases in parallel to speed up the upgrade process.

For complete information and steps to follow, see [Attach databases and upgrade to SharePoint Foundation 2010](#).

## Verify the second upgrade

To verify the upgrade, do the following:

- Review the upgrade log file.
- Review the upgraded sites to make sure that they still work as expected and that your Web Parts and other custom elements work correctly.

For more information, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

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# Plan and prepare for upgrade (SharePoint Foundation 2010)

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Now that you have learned how the upgrade process works by reading the articles in [About the upgrade process \(SharePoint Foundation 2010\)](#), you can begin your upgrade planning. This section contains articles that help you plan and prepare for upgrading from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010.

In this section:

- [Determine upgrade approach \(SharePoint Foundation 2010\)](#)  
Learn about the different upgrade approaches and choose the one that is best suited to your environment.
- [Review upgrade best practices \(SharePoint Foundation 2010\)](#)  
Avoid problems during the upgrade process by following these best practices.
- [Review supported and unsupported upgrade paths \(SharePoint Foundation 2010\)](#)  
Understand which installation types and topologies can be upgraded to SharePoint Foundation 2010.
- [Review system requirements for upgrade \(SharePoint Foundation 2010\)](#)  
Review the requirements to help ensure that your environment can be upgraded to SharePoint Foundation 2010.
- [Determine how to handle customizations \(SharePoint Foundation 2010\)](#)  
Learn how to identify and evaluate the customizations in your environment, and determine whether you will upgrade them, and how.
- [Create a communication plan \(SharePoint Foundation 2010\)](#)  
Create a plan to coordinate and communicate with the upgrade team, site owners and users, and stakeholders.
- [Plan visual upgrade \(SharePoint Foundation 2010\)](#)  
Learn about the different visual upgrade options and how to choose the option that best suits your business needs.

A worksheet is available so you can record information about your environment while you prepare for upgrade. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928>.

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# Determine upgrade approach (SharePoint Foundation 2010)

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Before you run any process to upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, you have to determine which upgrade approach to take. Use the information in this article to help compare the pros and cons for each approach and to review information about special cases that might influence your approach. In addition to the information in this article, be sure to read [Review supported and unsupported upgrade paths \(SharePoint Foundation 2010\)](#) to understand exactly which upgrade situations are valid and lead to successful upgrades.



**Note:**

To perform an upgrade, you must have installed Windows SharePoint Services 3.0 with Service Pack 2 (SP2).

In this article:

- [Choose an upgrade approach](#)
- [Special cases](#)

## Choose an upgrade approach

There are two basic approaches to upgrade: in-place and database attach. In addition, there are various techniques you can use to combine aspects of these basic approaches to mitigate downtime or potentially improve performance.

The following table compares the in-place and database attach approaches.

Approach	Description	Pros	Cons
In-place upgrade	You can install SharePoint Foundation 2010 on the same hardware. You can also upgrade the content and settings in the server farm as part of a single process.	Farm-wide settings are preserved and upgraded. Customizations are available in the environment after the upgrade, although manual steps may be required to upgrade or rework them.	Servers and farms are offline while the upgrade is in progress. The upgrade proceeds continuously. Consequently, you must allocate enough time for all content to be upgraded in sequence.
Database attach upgrade	You can upgrade the content for the environment on a separate farm. The	You can upgrade multiple content databases at the same time, which results in faster upgrade times	The server and farm settings are not upgraded. You must manually transfer



Approach	Description	Pros	Cons
	result is that you do not upgrade any of the services or farm settings. You can upgrade the databases in any order and upgrade several databases at the same time. While each database is being upgraded, the content in that database is not available to users.	overall than an in-place upgrade. You can use a database attach upgrade to combine multiple farms into one farm.	settings that you want to preserve from the old farm to the new farm. Any customizations must also be transferred to the new farm manually. Any missing customizations may cause unintended losses of functionality or user experience issues. Copying databases over a network takes time and bandwidth. You must plan for that. You need direct access to the database servers.

For more information about how in-place and database attach upgrades work, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).

The following table lists the downtime mitigation techniques that you can use during upgrade to reduce the amount of time that users cannot access their content or to potentially increase upgrade performance.

Technique	Description	Pros	Cons
Parallel upgrade	You can attach and upgrade multiple databases at a time to speed up the upgrade process overall. The maximum number of parallel upgrades depends on your hardware. This technique works for either in-place or database attach upgrades.	Faster upgrade times for your overall environment.	This is a manual process that requires additional steps and monitoring.
Hybrid approach 1: Database attach with	Lets you continue to provide read-only	The existing farm can continue to host non-	The server and farm settings are not

Technique	Description	Pros	Cons
read-only databases	access to content during the upgrade process. For this approach, you set the databases to read-only while the upgrade is in progress on another farm. This method reduces perceived downtime for your users.	<p>upgraded sites (in read-only mode) while you upgrade the content. As a result, there is minimal downtime for users.</p> <p>You can upgrade multiple content databases at the same time, which results in faster upgrade times overall than an in-place upgrade.</p> <p>You can upgrade hardware in addition to software.</p>	<p>upgraded. You must manually transfer settings that you want to preserve from the old farm to the new farm.</p> <p>Any customizations must also be transferred and upgraded manually. Any missing customizations may cause unintended losses of functionality or user experience issues.</p> <p>Copying databases over a network takes time and bandwidth. You must plan for that.</p> <p>You need direct access to the database servers.</p>
Hybrid approach 2: In-place upgrade with detached databases	Lets you take advantage of an in-place upgrade's ability to upgrade content and settings, while adding the speed of a database attach upgrade. For this approach, you use an in-place upgrade to upgrade the farm and settings, and to detach and upgrade multiple databases in parallel (on the same farm or a separate farm).	<p>Farmwide settings can be preserved and upgraded.</p> <p>Customizations are available in the environment after upgrade, although manual steps may be required to upgrade or rework them.</p> <p>You can upgrade multiple content databases at the same time, which results in faster upgrade times overall than an in-place upgrade.</p>	<p>Copying databases over a network takes time and bandwidth. You must plan for that.</p> <p>You need direct access to the database servers.</p>


Be aware that you can also combine these techniques. For example, you can set your original farm to read-only mode, create a copy of the farm and upgrade it without the content databases, use parallel upgrade to rapidly upgrade all the user content, and then finally switch users to the new farm after upgrade is completed. For more information about these downtime mitigation techniques work, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).

Another option to consider if you are facing an overly long outage window is to use Alternate Access Mapping URL Redirection with a database attach approach, so that you temporarily redirect users to an existing farm while you upgrade the content on a new farm. This is an advanced method and should not be used unless other downtime mitigation techniques are not sufficient. For more information, see [Using AAM URL redirection as part of the upgrade process \(SharePoint Foundation 2010\) \(white paper\)](#).

## Special cases

You might have other requirements or additional goals that you want to achieve when you perform an upgrade. The following table lists special cases and describes which upgrade approach is appropriate for each case.

Case	Upgrade approach
Upgrading a stand-alone installation with Windows Internal Database?	<p>If you are running Windows SharePoint Services 3.0 on a stand-alone server with Windows Internal Database, your database will be migrated to SQL Server Express as part of the in-place upgrade process. If your database is larger than 4 GB, you must configure Remote BLOB Storage to store some of the data. For more information, see <a href="#">Upgrade a stand-alone installation by using remote BLOB storage (in-place)</a>.</p>
Upgrading from a 32-bit to a 64-bit edition of SQL Server?	<p>If you are running a 32-bit edition of SQL Server, you must migrate to a 64-bit edition. We recommend that you perform this migration before you upgrade to SharePoint Foundation 2010 to ensure best performance benefits. Ensure that you perform only one kind of upgrade or migration at a time to avoid upgrade failure. For more information, see <a href="#">Migrate an existing server farm to a 64-bit environment (Windows SharePoint Services 3.0)</a> (<a href="http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx">http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx</a>).</p> <p>The following are two options for upgrading from a 32-bit to a 64-bit edition of SQL Server:</p> <ul style="list-style-type: none"> <li>You can back up the whole set of databases for the farm, perform the upgrade, and then restore the databases. (This option is supported and recommended because you will have a full backup, and after you restore the</li> </ul>

Case	Upgrade approach
	<p>databases, you do not have to change anything within SharePoint Foundation 2010).</p> <ul style="list-style-type: none"> <li>You can move the SQL Server databases that you want to upgrade to a different 64-bit edition of SQL Server. You must add the different 64-bit edition, and then run a command to the computers running SharePoint Foundation 2010 to point them to the new 64-bit edition of SQL Server. (This option is supported but not recommended because it requires more work in SharePoint Foundation 2010 when, for example, the databases change location).</li> </ul> <p> <b>Note:</b> If you upgrade a SQL Server version — for example, from SQL Server 2005 SP2 to SQL Server 2008 — you can perform this upgrade before, during, or after you upgrade from a 32-bit to a 64-bit edition of SQL Server.</p>
Upgrading from Windows Server 2003 to Windows Server 2008?	<p>Upgrade the operating system before you attempt to upgrade to SharePoint Foundation 2010.</p> <p>If you are running Windows SharePoint Services 3.0, you must perform specific steps to upgrade to Windows Server 2008. For more information, see <a href="http://technet.microsoft.com/en-us/library/cc288690(Office.12).aspx">Upgrading to Windows Server 2008 for Windows SharePoint Services 3.0 with SP1</a> (<a href="http://technet.microsoft.com/en-us/library/cc288690(Office.12).aspx">http://technet.microsoft.com/en-us/library/cc288690(Office.12).aspx</a>).</p>
Upgrading from a 32-bit operating system to a 64-bit operating system?	<p>If you are using a 32-bit operating system, you must migrate to a 64-bit operating system before you upgrade. For more information, see <a href="http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx">Migrate an existing server farm to a 64-bit environment (Windows SharePoint Services 3.0)</a> (<a href="http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx">http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx</a>).</p>
Upgrading an environment that uses forms-based authentication?	<p>Additional steps are required to upgrade when you are using forms-based authentication. For more information, see <a href="#">Configure forms-based</a></p>

Case	Upgrade approach
	<a href="#">authentication for a claims-based Web application (SharePoint Foundation 2010)</a> .
Upgrading very large databases?	<p>In general, very large databases — particularly databases that have a large number or large size of document versions inside them — take longer to upgrade than smaller databases. However, the complexity of the data determines how long it takes to upgrade, not the size of the database itself. If the upgrade process times out, it is usually because of connection issues. In Windows SharePoint Services 3.0, the upgrade process often timed out because of the time needed to execute a process, but this is rarely the case with SharePoint Foundation 2010. For more information about how long upgrade might take for your environment, see <a href="#">Estimate how long the upgrade process will take and the space that you need (SharePoint Foundation 2010)</a>.</p>
Upgrading from Windows SharePoint Services 2.0?	<p>Use a database attach upgrade method to upgrade to Windows SharePoint Services 3.0, and then upgrade to SharePoint Foundation 2010. For more information about this upgrade process, see <a href="#">Upgrading from Windows SharePoint Services 2.0 to SharePoint Foundation 2010</a>.</p>
Using internationalized domain names?	<p>Although Windows SharePoint Services 3.0 supported internationalized domain names (IDNs), SharePoint Foundation 2010 does not. If you currently use IDNs with Windows SharePoint Services 3.0 and you plan to upgrade or migrate to SharePoint Foundation 2010, you must stop using IDNs, delete any IDN settings, and set up a non-IDN environment before doing so. For more information, see <a href="#">Plan for multilingual sites (SharePoint Foundation 2010)</a> (<a href="http://technet.microsoft.com/library/95dc3f61-13da-4447-926a-ddae0326393e(Office.14).aspx">http://technet.microsoft.com/library/95dc3f61-13da-4447-926a-ddae0326393e(Office.14).aspx</a>).</p>

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# Review upgrade best practices (SharePoint Foundation 2010)

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To ensure a smooth upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, follow these best practices:

1. Update your servers to Service Pack 2 (SP2) of Windows SharePoint Services 3.0 or later.

Your environment must be updated to Service Pack 2 of Windows SharePoint Services 3.0 to run the upgrade process, either for an in-place or database attach upgrade. We recommend that you install the October 2009 Cumulative Update because it includes improvements to the pre-upgrade checker tool. For more information about how to install service packs and updates, see the [Updates Resource Center for SharePoint Products and Technologies](http://technet.microsoft.com/en-us/office/sharepointserver/bb735839.aspx) (<http://technet.microsoft.com/en-us/office/sharepointserver/bb735839.aspx>). For a list of all available updates, see [Update Center for Microsoft Office, Office Servers, and Related Products](http://technet.microsoft.com/en-us/office/sharepointserver/ee748587.aspx) (<http://technet.microsoft.com/en-us/office/sharepointserver/ee748587.aspx>).

2. Ensure that the environment is fully functioning before you perform an upgrade.

An upgrade does not solve any problems that might already exist in your environment. Therefore, ensure that the environment is fully functioning before you perform an upgrade. For example, if you have Web applications that are no longer being used, unextend them before you upgrade. If you want to delete a Web application in Internet Information Services (IIS), unextend the Web application before you delete it; otherwise, SharePoint Foundation 2010 will try to upgrade the Web application even though it does not exist, and the upgrade will fail. If you find and solve problems beforehand, you are more likely to meet the upgrade schedule that you have estimated.

3. Before you try an in-place upgrade, migrate to 64-bit servers. Upgrade your operating system to a 64-bit version of Windows Server 2008 R2 or Windows Server 2008 with Service Pack 2 (SP2). If you are using SQL Server, upgrade or migrate to a 64-bit version of Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, or SQL Server 2005 with SP3 and Cumulative Update 3.

Do not try to combine these operations with your upgrade process. You cannot perform an in-place upgrade unless your system already runs on a supported operating system and platform. For more information, see [What's new in upgrade \(SharePoint Foundation 2010\)](#).

4. Run the pre-upgrade checker to look for potential issues.

The pre-upgrade checker reports missing customizations and issues with orphaned sites, and more, so that you can address these issues before you perform your upgrade. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).

5. Perform a trial upgrade on a test farm first.

Back up the live farm, restore to test servers, and then perform the upgrade. Examine the results to set expectations for what the live upgraded sites will look like, to determine how much post-upgrade customization will have to be done, and to estimate how long the upgrade will take. Try a full search

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indexing crawl. For more information, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#).

6. Plan for capacity.

Ensure that you have disk, processor, and memory capacity sufficient to handle upgrade requirements. For more information about system requirements, see [Review system requirements for upgrade \(SharePoint Foundation 2010\)](#). For more information about how to plan the disk space that is required for upgrade, see [Estimate how long the upgrade process will take and the space that you need \(SharePoint Foundation 2010\)](#).

7. Back up your environment.

Perform a full backup of your environment before upgrading. That way, you can recover your environment if you must roll back from an upgrade. For more information, see [Back up the entire environment before an in-place upgrade \(SharePoint Foundation 2010\)](#).

8. (Optional) If you are using the database attach upgrade method, set the original databases to read-only.

If you expect a long outage window while you perform a database attach upgrade, you can set the databases in the original environment to be read-only so that users can continue to access their data without changing it. For more information, [Attach databases and upgrade to SharePoint Foundation 2010](#).

9. Do not add any servers to your server farm after you begin the upgrade process.

Running the SharePoint Products Configuration Wizard upgrades the configuration database. The configuration database contains the list of servers in the farm. Servers added to the farm after the configuration wizard has been run are not included in the database. Therefore, servers added after the wizard runs do not appear in the upgraded version topology. If you need to add servers to your farm, do so either before you start the upgrade or after you have completed the upgrade process.

10. After upgrade, review the Upgrade Status page and upgrade logs to determine whether there are issues that must be addressed. Then review the upgraded sites.

The Upgrade Status page reports on the upgrade progress, and the upgrade logs list any errors or warnings that occurred during the upgrade process. You should verify all of the sites and test them before you consider the upgrade complete. For more information, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

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# Review supported and unsupported upgrade paths (SharePoint Foundation 2010)

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When you plan your upgrade process, make sure that you verify that the upgrade path you want to pursue is supported. This article describes supported and unsupported upgrade paths for an in-place upgrade, and covers which specific topologies can be upgraded in place to Microsoft SharePoint Foundation 2010.

## Review supported topologies for upgrade

When you upgrade, you must upgrade to the same kind of installation: stand-alone to stand-alone, or server farm to server farm. You cannot migrate from stand-alone to farm or vice versa during an in-place upgrade process. However, either before or after you upgrade, you can change the size and scale of a server farm to suit your requirements. Or, if you perform a database attach upgrade, you can attach the databases to a different installation type.

## Physical topology guidance

The Microsoft SQL Server topology — in addition to your network, physical storage, and caching — can significantly affect system performance. In planning your hardware, remember that for in-place upgrade, the server or server farm that you upgrade must be running a 64-bit version of Windows Server 2008 R2 or Windows Server 2008 with Service Pack 2 (SP2). For server farms, you must also be running a 64-bit version of Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, or SQL Server 2005 with SP3 and Cumulative Update 3. For more information about upgrade requirements, see [Review system requirements for upgrade \(SharePoint Foundation 2010\)](#).

## Supported topologies

The following table lists the supported starting topologies in Windows SharePoint Services 3.0, and the supported and unsupported ending topologies when you upgrade in place to SharePoint Foundation 2010.

Starting topology (Windows SharePoint Services 3.0)	Supported ending topology (SharePoint Foundation 2010)	Unsupported ending topology (SharePoint Foundation 2010)
Stand-alone server with Windows Internal Database	Stand-alone server with Microsoft SQL Server 2008 Express	Any farm
Single server with SQL Server	Single server with SQL Server	Stand-alone server with Microsoft



Starting topology (Windows SharePoint Services 3.0)	Supported ending topology (SharePoint Foundation 2010)	Unsupported ending topology (SharePoint Foundation 2010)
		SQL Server 2008 Express
Any size farm	Any size farm	Stand-alone server with Microsoft SQL Server 2008 Express

## Migrating from a stand-alone server to a server farm

If you want to change from a stand-alone server to a server farm, you can do so before you upgrade. To migrate from a stand-alone server to a server farm configuration, you must first create a new farm, and then move the databases from the stand-alone server to the server farm. For more information, see [Migrate content databases from Windows Internal Database to an instance of SQL Server \(Windows SharePoint Services 3.0\)](http://technet.microsoft.com/en-us/library/cc287738(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287738\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287738(Office.12).aspx)). After you have migrated, you can perform your upgrade to SharePoint Foundation 2010.

## Migrating from 32-bit hardware

You cannot upgrade in-place from Windows SharePoint Services 3.0 to SharePoint Foundation 2010 if you are on 32-bit hardware. If you start in 32-bit, you must first migrate to 64-bit hardware. For more information, see [Migrate an existing server farm to a 64-bit environment \(Windows SharePoint Services 3.0\)](http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/dd637753\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd637753(Office.12).aspx)).

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# Review system requirements for upgrade (SharePoint Foundation 2010)

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Before you can upgrade your environment from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, your servers must meet the following minimum requirements:

- The hardware and software must meet or exceed the minimum system requirements to run the new version.

This includes the requirement for 64-bit hardware and 64-bit versions of the operating system and Microsoft SQL Server. Before you begin the upgrade process, make sure that your system meets or exceeds the minimum requirements in [Hardware and software requirements \(SharePoint Foundation 2010\)](#). Before upgrading, determine how much production capacity you have to have in your upgraded environment and identify the hardware that you must have for your upgrade based on that information.

- Windows SharePoint Services 3.0 must be updated to Service Pack 2

Your environment must be updated to at least Service Pack 2 of Windows SharePoint Services 3.0 to run the upgrade process, either for an in-place or database attach upgrade. We recommend that you install the October 2009 Cumulative Update because it includes improvements to the pre-upgrade checker tool. For more information about how to install service packs and updates, see the [Updates Resource Center for SharePoint Products and Technologies](#)

(<http://technet.microsoft.com/en-us/office/sharepointserver/bb735839.aspx>). For a list of all available updates, see [Update Center for Microsoft Office, Office Servers, and Related Products](#) (<http://technet.microsoft.com/en-us/office/sharepointserver/ee748587.aspx>).

## About these requirements

It is important that your hardware meet at least the minimum requirements that are listed in the article [Hardware and software requirements \(SharePoint Foundation 2010\)](#); otherwise, you might encounter issues during the upgrade process. For example, if your database server has insufficient memory or processor power, it may be unable to keep up with the number of transactions that occur during the upgrade process, and the upgrade may fail.

We recommend that you use a trial upgrade to determine exactly what hardware capacity you must have for an acceptable upgrade experience. For more information, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#). If you experience capacity problems with your hardware during the trial upgrade, you can increase the capacity and repeat the upgrade until you are satisfied that you have found the optimal level of upgrade performance.

### Important:

It is important to track the following three resource components for a server that is running SQL Server: CPU, memory, and I/O subsystem. When one or more of these components seems to have reached capacity, analyze the appropriate strategy based on the current and projected

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work load, and determine whether to add more resources or to scale out to a new server that is running SQL Server. In general, we recommend that you consider scaling out, in addition to adding more resources.

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# Determine how to handle customizations (SharePoint Foundation 2010)

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If you have extensively customized your sites based on Windows SharePoint Services 3.0, you must determine how you want to handle your customized sites when you upgrade to Microsoft SharePoint Foundation 2010. Your approach will vary based on the extent of the customizations, the kind of customization, the complexity of your site, and your goals for upgrading. Before you upgrade, you must identify and then evaluate the customizations in your environment and determine whether you will upgrade them, and how.

In this article:

- [Identify customizations in your environment](#)
- [Evaluate the customizations](#)
- [Considerations for specific customizations](#)
- [Ensure that future customizations follow best practices](#)

## Identify customizations in your environment

As part of your upgrade testing process, you should create an inventory of the server-side customizations in your environment (solutions, features, Web Parts, event handlers, master pages, page layouts, CSS files, and so on). For more information about how to identify customizations, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#). You can use the Upgrade Planning worksheet to list specific customizations and then record the results of your evaluation in the next section. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928>.

## Evaluate the customizations

After you have identified the customizations, you can decide what to do about them. The following questions can help you evaluate the customizations:

- Is the customization still valuable?
  - Does it serve a useful business need?
  - Is it widely deployed and used?
- Is the customization well-designed?
  - Is it built on supported, predefined site definitions?
  - Does it follow best practices for customizations?
  - Is it a supported kind of customization, or does it introduce risk into your environment?

As you evaluate each individual customization, you can also think about your overall approach for customizations. You can choose from among these options:

1. **Keep the customizations** Use Visual Upgrade to continue to use the previous version's user experience for specific sites. Although you can use this approach to keep the same functionality, you will not be able to take advantage of the new visuals — such as the Fluent user interface (UI), also called the ribbon — and capabilities that are available in the new version.
2. **Replace or redo the customizations** If you want to use new functionality, plan to redesign your sites, or are significantly changing the information architecture, the upgrade is your opportunity to start over with new features, a new look, or a new organization. When you replace or redo customizations, you can take advantage of the new capabilities, modify your design slightly if you want, or move to a more manageable design.

For more information about redoing and redeploying solutions, see [Redeploying Customizations and Solutions in SharePoint Foundation 2010 and SharePoint Server 2010](#) (<http://go.microsoft.com/fwlink/?LinkId=182335>).

3. **Discard the customizations** Replace the customizations by using default functionality. You can reset pages to the default site definitions and remove any Web Parts or features that you no longer want to support. If you decide to discard any customizations, you must fix any issues that result from removing the customizations in the sites that used them. You can use your customizations inventory to determine which sites require this kind of attention before or after upgrade.

## Considerations for specific customizations

In addition to your overall decision about how to treat customizations in your environment during upgrade, you must examine specific types of customizations to determine whether you must perform any additional actions to make them work in the upgraded environment.

The following table lists some common customizations and a recommendation for addressing that kind of customization.

Customization type	Recommendation
Site templates (STP files)	<p>STP files are a deprecated feature in SharePoint Foundation 2010. New site templates in SharePoint Foundation 2010 are saved as WSP files (solution packages).</p> <p>A site that was provisioned by using a site template will be upgraded, but you will be unable to create new sites based on that template. If you want to be able to create new sites, you can create and deploy a solution package instead.</p>
Site definition	<p>Migrate sites to a supported, predefined site definition, then apply custom features by using solution deployment.</p> <p>You can also continue to use a custom site</p>

Customization type	Recommendation
	definition. You do not have to create a new site definition based on SharePoint Foundation 2010. However, if you must perform custom upgrade actions for the definition, you might have to create an upgrade definition file for that site definition. For more information, see <a href="http://go.microsoft.com/fwlink/?LinkId=182339">Upgrade Definition Files</a> ( <a href="http://go.microsoft.com/fwlink/?LinkId=182339">http://go.microsoft.com/fwlink/?LinkId=182339</a> ) on MSDN.
Feature	Evaluate, then redesign or redeploy if necessary.
Workflows and server controls	Depends on the solution. Contact the vendor to find out whether there is an updated solution. If a workflow is compatible with the new version, redeploy.
Event handler	Rewrite and redeploy as a feature.
Managed paths (inclusions/exclusions)	Re-create inclusions for a database attach upgrade. Exclusions are assumed and do not have to be re-created.
Themes	Because of the extensive changes to the UI, custom themes based on Windows SharePoint Services 3.0 will not work in SharePoint Foundation 2010. Use Visual Upgrade to continue to use the sites in the old user experience until you can create a and apply a new theme based on SharePoint Foundation 2010.
Toolbar actions	Move to the ribbon (Fluent UI).
Master pages and CSS files	Rework to accommodate the new user experience.
JavaScript	Test to determine whether any actions are required. In some cases, you might have to adjust the scripts to work with the new page model. Verify that it works on an upgraded site, and in both Visual Upgrade modes.
Search provider or security trimmer	Test to determine whether any actions are required.
Web Parts	Test to determine whether any actions are required. You might have to adjust the Web Parts

Customization type	Recommendation
	to work with strict XHTML mode. If a Web Part is located on a page but not in a Web Part Zone (so that it is, basically, HTML code embedded directly in a page), it will not work if you revert the page to the default template.
Services	Test to determine whether any actions are required. Redesign or adjust code, as needed.
Authentication providers	Test to determine whether any actions are required. Redeploy the provider on a test farm and ensure that it works correctly with claims authentication.

The following kinds of customizations are not supported. If you have any of these customizations in your environment, you must replace them by using a supported kind of customization before you can upgrade. Otherwise, you might experience upgrade issues that cannot be fixed:

- Predefined files, features, or site definitions that have been modified.

 **Warning:**

Some predefined file types — such as document icons or actions — can be modified and although they will not be upgraded, their changes can be carried forward in a supportable way. Modifications to other predefined files, such as server-side ASPX pages, will be lost during upgrade if you revert to the site template. Depending on the files that have been changed and the extent of these changes, the upgrade experience can vary significantly. The best practice is to revert all changes in all files on the disk.

- SharePoint databases that have been modified, either by directly changing data or changing the schema, including adding or removing triggers, tables, views, or indexes.

If you have any of these kinds of customizations, remove them and replace them with supported customizations before you attempt to upgrade. This is a best practice for helping to ensure that not only your current upgrade will work, but any future upgrades will go more smoothly. Changing predefined files and databases will remain unsupported.

## Ensure that future customizations follow best practices

Ensure that your environment performs well and follows best practices. Deploy only those customizations that follow the best practices described in the following articles on MSDN and TechNet:

- [Best Practices: Using Disposable Windows SharePoint Services Objects](http://go.microsoft.com/fwlink/?LinkId=105945&clcid=0x409)  
(<http://go.microsoft.com/fwlink/?LinkId=105945&clcid=0x409>).

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- [Development Tools and Techniques for Working with Code in Windows SharePoint Services 3.0 \(Part 1 of 2\)](http://go.microsoft.com/fwlink/?LinkID=101494&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=101494&clcid=0x409>).
  - [Best Practices: Common Coding Issues When Using the SharePoint Object Model](http://go.microsoft.com/fwlink/?LinkId=105946&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkId=105946&clcid=0x409>).
  - [SharePoint Products and Technologies customization policy](http://go.microsoft.com/fwlink/?LinkId=105947&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkId=105947&clcid=0x409>).



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# Create a communication plan (SharePoint Foundation 2010)

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It is important that you communicate with your users during the upgrade process from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010. Site users need to know what to expect when they visit their sites again after upgrade, and site owners need to know how they can help prepare for upgrade and what they will have to do after upgrade. Both site users and site owners need to know when the upgrade will occur. As part of the planning process, determine the following:

- Who are the members of your upgrade team, what other stakeholders are involved, and who will be affected by the upgrade.
- What information must the upgrade team have, and when.
- What information must site users and other stakeholders have, and when.

This article describes how to create your communication plan so that your upgrade team, your stakeholders, and your users know what to expect before, during, and after the upgrade.

In this article:

- [Who is on the upgrade team?](#)
- [When and what to communicate to the upgrade team](#)
- [When and what to communicate to site users](#)

## Who is on the upgrade team?

For small deployments in which sites have not been customized to any great degree, the upgrade team might consist of only one person. For larger deployments, on the other hand, several people with different roles can be required, as described in the following list:

- **Server administrators** The server administrator performs most of the upgrade tasks. There must be at least one server administrator on the upgrade team because running the Setup wizard requires someone who is a member of the local Administrators group on each front-end Web server.



**Note:**

Farm administrators might not be local administrators for the server.

- **Database administrators** If you have a separate database administration team, you must coordinate with them to schedule the upgrade and perform the upgrade, especially if you plan to use the database attach upgrade method.
- **Server security teams** You must coordinate with your security teams, such as the Active Directory directory services team, to verify accounts and permissions or to take advantage of the new policy settings you can apply for SharePoint Foundation 2010.

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- **Client deployment team** Communicate with client deployment teams to coordinate deployments of new client and server applications. Client deployment might have to occur before you upgrade, or it could be an option available to users after their sites have been upgraded.
  - **Site collection owners** You must notify site collection owners when the upgrade process is about to occur, and warn them about any issues that you find when you run the pre-upgrade checker or when you upgrade their sites. If you are using Visual Upgrade, you must also communicate with site collection owners about the change to the new user interface and whether the farm administrators or site collection administrators will be completing that change.
  - **Site designers and developers** If you have custom templates, Web Parts, Web services, or other custom elements associated with your sites, you must work with the people responsible for developing or customizing those elements to ensure that you can create new versions of these custom elements or verify that these elements have been upgraded correctly. For more information about potential issues with custom elements, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#).
  - **Site users** Although you do not have to include site users in making decisions about the upgrade process, you must tell site users when it will happen and what they should expect.
  - **Sponsors and other stakeholders** You might have other people in your organization involved in the upgrade planning process. Make sure that you include them in your communication plan appropriately.



**Note:**

An upgrade team can include one or more members in each role, depending on your organization.

## When and what to communicate to the upgrade team

In general, the server administrators and shared services administrators set the timeline for upgrade, and site owners are notified only when the process is about to begin. However, because team members have their own tasks to perform at particular points in the overall upgrade process, it is critical that you have a solid plan to communicate the progress of the upgrade to all team members so that everyone knows when it is time to perform their particular tasks.

The whole upgrade team needs to work together to determine the following:

- **The upgrade approach to use** The [Determine upgrade approach \(SharePoint Foundation 2010\)](#) article contains information to help you decide which kind of upgrade to perform. The report generated by the pre-upgrade checker is also important to consider when you make this decision.
- **Dates and times to perform the upgrade** We recommend (especially for an in-place upgrade) that you upgrade when site usage is low. For small single-server deployments, upgrade may be completed in less than a day. For larger deployments, such as server farms with large amounts of data, the database attach upgrade method or the in-place upgrade with detached databases method can be used to distribute the upgrade process over several outage windows. There is no way to determine the precise length of time that will be required to upgrade any particular site collection. Because of this, it is very important to communicate with other team members involved

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in the upgrade process in addition to end users. The day or days that you choose for upgrading should be far enough in the future that the upgrade team has enough time to complete all of the preliminary steps. When you plan the timeline, make sure that you schedule time to validate the upgraded sites and time to implement any changes or do any work to re-brand sites.

It is important to communicate with site owners, designers, and developers at the following points during the upgrade process:

- Before the process begins, so that they know the general timeline and what their roles in the process will be.
- After the pre-upgrade checker has been run, so that they can address any issues that have been identified by the checker. For more information about the pre-upgrade checker, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#). For example, issues such as customized site templates or custom Web Parts should be reported to the appropriate site owner, designer, or developer before you schedule the upgrade, to give them time to investigate the issues and take preliminary steps. Or a developer might decide that it would be prudent to rebuild a Web Part before the upgrade occurs. And site owners might want to note any customizations that have been done to their sites, including site templates and changes to core Active Server Page Extension (ASPX) files.
- After their sites have been upgraded, so that they can review the sites and make any changes that are needed.

## When and what to communicate to site users

It is equally important to communicate with the users of the sites to tell them about the following issues:

- **When their sites will be upgraded** In the case of an in-place upgrade, they must also be informed that their sites will be unavailable during the upgrade.
- **When to expect their upgraded sites to be ready** This means that the upgrade team has not only upgraded, but also verified the functionality of, the upgraded sites.
- **How the upgrade might affect them and what they should know about the new environment** For example, the site will look different and function slightly differently in the new user interface. If you are using Visual Upgrade, inform your users whether they will see the new or old user experience and what to expect. You can also point them to available content, such as What's New articles or training materials, to learn about the new version. For more information about feature changes and visual upgrade, see [Plan visual upgrade \(SharePoint Foundation 2010\)](#) and [Changes in key features between versions](#) in the article "What's New in Upgrade".
- **How to get help** If they find an issue with their site after upgrade, where can they go to address it?

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# Plan visual upgrade (SharePoint Foundation 2010)

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This article discusses the new visual upgrade feature in Microsoft SharePoint Foundation 2010. If your organization plans to perform an upgrade of Windows SharePoint Services 3.0, you can take advantage of this new feature. By default, the look and feel of sites is preserved during an upgrade from Windows SharePoint Services 3.0. Site owners can switch to the new user interface permanently, or they can choose to preview the new user interface for their SharePoint sites. By using the visual upgrade feature, you can choose to move all sites to the new user interface. If you select the latter option, you override the user interface for site collection owners and site owners. You can also choose to either preserve customized pages or you can choose to reset all customized pages. Both choices will update the look and feel of template pages, but the latter option deletes modifications from customized pages and cannot be undone.



## Note:

The visual upgrade feature is not available if you are performing an upgrade on a single server with built-in database through the SharePoint Products Configuration Wizard. However, the visual upgrade feature is still available if you use the PSConfig command-line tool for upgrade.

This article lists key considerations for planning to use visual upgrade, and it also discusses known issues. For more information, see [Manage visual upgrade \(SharePoint Foundation 2010\)](#).

In this article:

- [Key planning phase of visual upgrade](#)
- [Training site collection owners and site owners](#)
- [Known issues](#)

## Key planning phase of visual upgrade

Visual upgrade is a feature that is part of the upgrade process. Before you perform the upgrade, ensure that you know about the effects of choosing between the two different options visual upgrade has to offer.

### Preserving the existing user interface

If you choose to preserve the look and feel of existing SharePoint sites, you give site collection owners control over their site collections and site owners control over their sites. All the data and settings from the original sites are preserved, and layout, command organization, and styles preserve the previous user interface. Regardless of the type of farm upgrade that you select, you receive all the infrastructure benefits of Microsoft SharePoint Foundation 2010 including improved reliability, scalability, and manageability. Preserving the previous user interface reduces the likelihood that customized content

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will cease to function. This ensures that you and the users can continue to use existing SharePoint sites until all upgrade work, including troubleshooting and updating customizations, has been completed.

## Upgrading to the new user interface

If you choose to change all the existing SharePoint sites to the new user interface, site collection owners and site owners have no control over the upgrade. All the data and settings from the existing SharePoint sites are upgraded to the new user interface. You might want to choose this option if there are no customizations or if you have tested any customizations that you need before the upgrade. Even if you choose this option, you still have the option of either preserving customized pages or resetting customized pages. If you need to keep customizations, or if you are unsure whether to keep customizations, you should choose to preserve customized pages. Resetting the customized pages removes customizations and cannot be undone. Choose this option if you do not need the customizations any longer and if you know that no important data will be lost. For more information, see [Determine how to handle customizations \(SharePoint Foundation 2010\)](#), [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#), and [Redeploying Customizations and Solutions in SharePoint Foundation 2010 and SharePoint Server 2010](#) (<http://go.microsoft.com/fwlink/?LinkId=186372>).

## Training site collection owners and site owners

It is important that you train users about the effects of either preserving the look and feel of existing SharePoint sites or upgrading all sites to the new user interface. Educated users are prepared and know what to expect, which will minimize helpdesk support and frustrations.

If you upgrade all sites to the new user interface, inform users about changes and new features, such as the ribbon, the new page editing interface, and interactive calendars. Also, let them know about possible issues that they can expect. For instance, they might have issues with customizations, such as pages not displaying correctly. For information about general upgrade issues, see [Troubleshoot upgrade issues \(SharePoint Foundation\)](#).

If you choose to preserve the look and feel of existing SharePoint sites, explain to site collection owners and site owners that the user interface will not change during upgrade, and tell them about the choices they can make.

By default, site owners have control over their sites. They can use the **Preview New Visuals** option (under **Site Settings**) to preview the new user interface and then switch between the previous and new user interface. This gives them time to ensure that everything works correctly, and they can fix any issues with their pages that appeared after upgrade. When site owners are ready, they can update their sites to the new user interface. However, site collection owners can choose to finalize the new user interface, which overrides the control that site owners have over visual upgrade for their sites. If site collection owners want to keep the previous user interface for their site collection, they also have an option to hide visual upgrade settings from site owners.

Site owners also need to know that if they make changes in the new user interface while they are in preview mode and then switch back to the previous user interface, this information may not display correctly.

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We recommend that you have a plan and set a time limit for how long the previous user interface should be used in your SharePoint deployment. For example, each site collection administrator may be given 90 days to work with his or her site owners to transition from the previous to the new user interface. Ensure that you communicate the time limit to the users. This time limit ensures that users are given a reasonable time to become familiar with the new user interface and to resolve any issues that might have occurred during the upgrade. If you set a time limit for the users, also inform them that, after this time limit, you can force through an upgrade of all sites. For more information, see [Manage visual upgrade \(SharePoint Foundation 2010\)](#).

If site collection owners decide to use the new user interface for all sites within their site collection, they cannot change their minds. However, as a farm administrator, you can change these settings by reverting sites to the previous user interface with Windows PowerShell or SharePoint Object Model. For more information, see [Manage visual upgrade \(SharePoint Foundation 2010\)](#).

It is important to tell site collection owners and site owners that as long as sites use the previous user interface, new features—such as the ribbon, in-place editing for Wiki pages, interactive calendars, and list relationships—will not be available. However, once sites switch to the new user interface, application features automatically appear. Also, it is important to note that all new sites created after the upgrade use the new user interface by default.

## Known issues

There are a few known issues to consider:

- If you use SharePoint Foundation 2010, ensure that you use the same version and service pack of SharePoint Designer.

### See Also

[Upgrade in place to SharePoint Foundation 2010](#)

[Attach databases and upgrade to SharePoint Foundation 2010](#)

[Upgrading to SharePoint Foundation 2010](#)

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# Testing and troubleshooting upgrade (SharePoint Foundation 2010)

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Before you upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, you should take time to test your upgrade process and understand what issues you might face in your actual upgrade. This section includes information about how to test upgrade and use the information from that test to predict how much time and how much space you will need for upgrade, and what steps you can take to clean up your environment before you perform your actual upgrade.

During and after upgrade, use the articles in this section to address any issues and resume the upgrade process.

In this section:

- [Best practices for testing upgrade \(SharePoint Foundation 2010\)](#)  
Follow these best practices to get the most out of your upgrade testing.
- [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#)  
Find out how to plan for success by testing upgrade by using your actual data in either a physical or virtual environment.
- [Estimate how long the upgrade process will take and the space that you need \(SharePoint Foundation 2010\)](#)  
Use your test information to understand how long your upgrade will take.
- [Cleaning up your environment before upgrade \(SharePoint Foundation 2010\)](#)  
Upgrade runs more smoothly when you prepare your environment by cleaning up extra sites or data. This article lists common things that you should consider cleaning up before you start the upgrade process.
- [Troubleshoot upgrade issues \(SharePoint Foundation\)](#)  
Follow these recommendations to troubleshoot any issues that occur during upgrade. You can also look up common issues and find out how to address them.
- [Recovering after a failed upgrade \(SharePoint Foundation 2010\)](#)  
If you created a backup of your environment and databases before you began an in-place upgrade, or if you set your environment to read-only before you began a database attach upgrade, you can recover your environment if the upgrade process fails.
- [Resume upgrade \(SharePoint Foundation 2010\)](#)  
If you encounter errors during upgrade, you can address them by using the troubleshooting article, and then use this article to restart or resume upgrade.

In addition, the following resources can be helpful when you test your upgrade process:

- SharePoint Products 2010 Upgrade Worksheet  
Use this worksheet to record information about your environment while you test your upgrade. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928>.

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- Microsoft SharePoint 2010 Products - Test Your Upgrade Process model

This poster has a visual display of information about testing your upgrade process. Download the poster from <http://go.microsoft.com/fwlink/?LinkId=166303>.



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# Best practices for testing upgrade (SharePoint Foundation 2010)

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To understand your environment before you try to perform an upgrade, and to plan accurately for the time that an upgrade will require, you should perform one or more trial upgrades. The goal of testing upgrade is to find issues early and address them so that you can have confidence in your process and the outcome when you perform the real upgrade. To perform an accurate and useful test of the upgrade process from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, follow these best practices:

1. Make your test environment as similar as possible to your real environment.

If possible, use the same kind of hardware and configure it by using the same settings, the same URLs, and so on. The more you can minimize the differences between your test environment and your real environment, the better. The more differences you introduce, the more time that you are likely to spend time tracking down unrelated issues to make sure that they will not occur during the actual upgrade.

2. Know what is in your environment. Do a full survey first.

Take the time to document the hardware and software that is present in your environment, what server-side customizations are installed and used, and where, and what settings you need. This will help you plan more fully, and also help you recover if upgrade fails. A worksheet is available so that you can record information about your environment while you prepare for upgrade. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928>.

3. Use real data.

Use copies of your actual databases to run the tests. When you test by using real data, you can identify any trouble areas and also determine your upgrade performance. It also gives you the opportunity to measure how long different upgrade sequences and actions take on different kinds of data. If you cannot test all the data, test a representative subset of the data to make sure that you have uncovered any issues with the different kinds and sizes of sites, lists, libraries, and customizations that are present in your environment.

4. Run multiple tests.

A single test can tell you whether you will encounter big problems, but multiple tests will help ensure that you have uncovered all the issues that you might face and can also give you a more accurate timeline for the process. By running multiple tests, you can determine which upgrade approaches will work best for your environment, which downtime mitigation techniques you should plan to use, and how the process or performance may change after you address the issues that you uncovered in your first tests. Your final test pass can help you validate whether you have addressed all of the errors and are ready to upgrade your production environment.

5. Do not ignore warnings.

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Even though it is not an error, a warning can lead to problems later in the upgrade process. Work through errors, yes, but also investigate any warnings to make sure that you know what the effect of that warning might be.

6. Test the upgraded environment, not just the upgrade process.

Check your service applications and services. Run a search crawl and review the log files. Verify that the My Site Web sites are working.

7. Verify sites in both Visual Upgrade modes.

Do not assume that because the site can be previewed well in one mode that it will work correctly in the other mode. Check both the previous version and new version user experience.

8. Consider a preview environment.

You can create a preview environment in which your users can verify their sites after a test upgrade, so that they can help you verify the upgrade and find issues. You can use a read-only environment, or you can let your users make changes but warn them that any changes they make will not be saved. Consider limiting this preview environment to a small set of representative sites, and limiting access to interested parties only, to reduce the time that you will need to host the preview environment and the amount of feedback you receive.

For more information about how to test upgrade, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#) and the "Test your upgrade process" poster available at <http://go.microsoft.com/fwlink/?LinkId=166303>.

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## Use a trial upgrade to find potential issues (SharePoint Foundation 2010)

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Before you begin the process of upgrading from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, you will want to test the upgrade process to make sure that you know exactly what you have to do to have a successful upgrade. By using a trial upgrade to test the process, you can find out:

- What customizations you have in your environment, so that you can plan for how to deal with them during upgrade.
- Whether you should upgrade your hardware to make your upgrade run more efficiently and more quickly.
- The timing for your upgrade, or how long upgrade will take for your environment.
- What you need to plan for, operationally — for example, resources to have available.

In addition, you can use the trial upgrade to become familiar with the upgrade tools and the process itself, so that you know what to expect when you go through the actual process. Through testing, you can find out:

- Which special cases apply to your environment and which upgrade approach will be most efficient for you?
- What does the upgrade user interface look like? How do you know when you have finished one phase and are moving through another?
- Where are the log files, and how do you read them? What information do they provide?
- Which techniques can you use to mitigate downtime?

This article provides basic steps for testing upgrade, and it gives recommendations for reviewing the results and adjusting your upgrade plans based on what you learn during the tests.

In this article:

- [Set up a test environment](#)
- [Identify and install customizations](#)
- [Copy real data to the test environment and try the upgrade](#)
- [Review your results](#)
- [Adjust your plans and test again](#)

In addition, the following resources can be helpful when you test your upgrade process:

- SharePoint Products 2010 Upgrade Worksheet  
Use this worksheet to record information about your environment while you test your upgrade. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928>.
- Microsoft SharePoint 2010 Products - Test Your Upgrade Process model

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This poster has a visual display of information about testing your upgrade process. Download the poster from <http://go.microsoft.com/fwlink/?LinkId=166303>.

## Set up a test environment

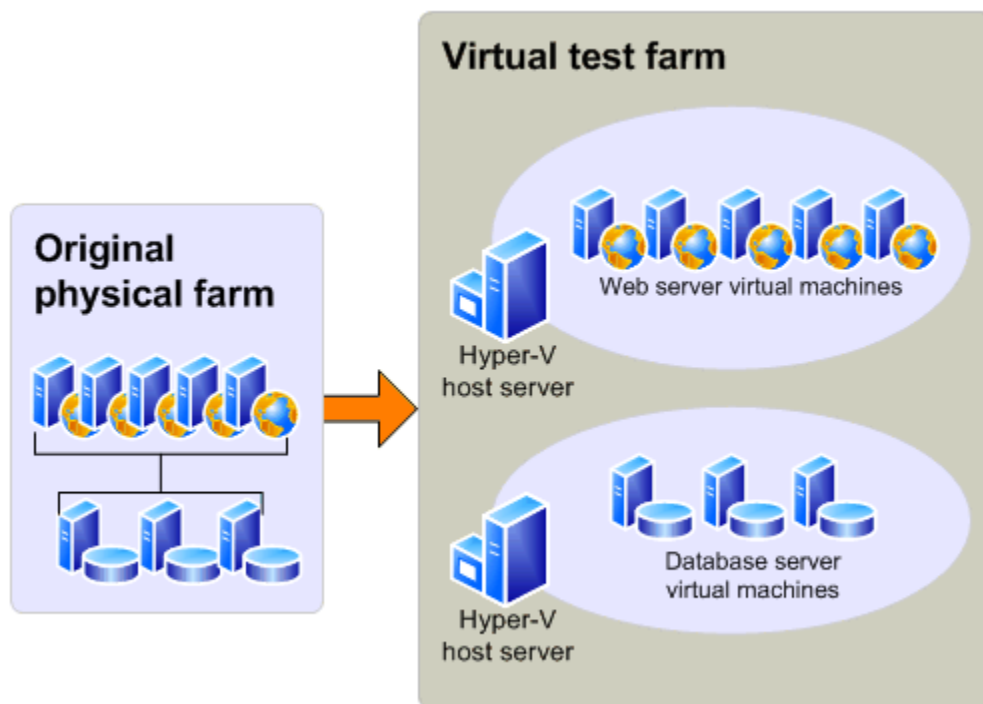
You can use either virtual or physical hardware to test the upgrade process. Every environment is unique, so there are no general guidelines for how long upgrade will take or how difficult a particular customization will be to upgrade. The best way to gauge how your upgrade will go is to perform a series of trial upgrades.

When you create your test environment:

- Make your test farm as similar as possible to your real farm — for example, hardware, software, and space available.
- Use the same URLs in your test farm as in your real farm. (Otherwise, you will waste time diagnosing issues relating to the URLs that will not come up in the real upgrade.)
- Be sure that you transfer all of your settings and customizations to the test environment. The section [Identify and install customizations](#) provides information about gathering this information.

## Using a virtual test environment

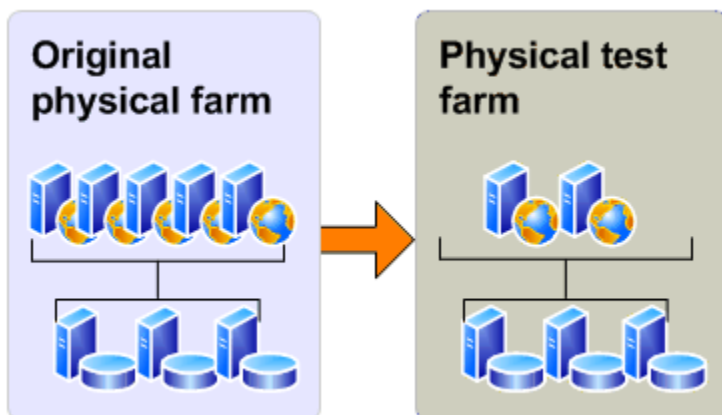
When you test by using a virtualized environment, you do not need a lot of hardware. You can replicate your environment by using just two servers that are running Hyper-V. One server has images for the front-end Web servers and application servers, and the other server has images for the database servers.



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## Using a physical test environment

When you test by using a physical environment, you need to replicate your entire server farm environment as closely as possible. If you simplify the number of front-end Web servers, application servers, or database servers too much, you will not have an accurate estimate of how long the upgrade process will take and you may not account for complications that arise from interactions between servers in the same role (such as SQL Server transactions). If you have multiple servers in a role in your original farm, use at least two servers for that role in the test farm to test for such issues.



## Additional test environments for database attach upgrade

If you are using the database attach upgrade approach, you might need to create one additional test environment: a single server farm that is running Windows SharePoint Services 3.0 that you can use to run the pre-upgrade checker before you attempt to upgrade the data.

You can avoid this step by running the pre-upgrade checker on your existing production farm.

## Identify and install customizations

To have an accurate test process, you must find all the customizations in your current environment and copy them to the test environment. For more information about the types of customizations you need to identify, see [Determine how to handle customizations \(SharePoint Foundation 2010\)](#).

- Use the pre-upgrade checker to identify site definitions, site templates, and features in your environment.

The pre-upgrade checker steps through each site collection and generates a report about the state of each site. It also saves list definition information for each list. You can review the reports to find issues and address them before you start the upgrade process. Unlike the pre-upgrade scan tool for Windows SharePoint Services 3.0, the pre-upgrade checker is a read-only tool and does not change your sites. For more information about this tool and steps for running it, see [Pre-upgrade](#)

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[scanning and reporting for future releases \(Windows SharePoint Services\)](#)

([http://technet.microsoft.com/en-us/library/dd793607\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd793607(Office.12).aspx)) and [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).

- Use the **Stsadm -o enumallwebs** operation on all content databases in your Windows SharePoint Services 3.0 environment to identify specific customizations in subsites. This operation lists an ID for each site collection and subsite in your environment and the templates that the site relies on. This operation was first introduced in Windows SharePoint Services 3.0 with Service Pack 2 (SP2). For more information, see [Enumallwebs: Stsadm operation \(Windows SharePoint Services\)](#) ([http://technet.microsoft.com/en-us/library/dd793606\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd793606(Office.12).aspx)).
- Use a tool such as WinDiff (a tool that is provided with most Microsoft operating systems) to compare your production environment servers with your test farm servers. You can use this tool to see which files exist on your servers and the differences between them.
- Check the web.config files for any changes, and look in the SafeControls element to find any custom controls.
- Use the SharePoint Diagnostics Tool (SPDiag) to find deployed solutions. For more information, see [SharePoint Diagnostics Tool \(SPDiag\)](#) ([http://technet.microsoft.com/en-us/library/dd745013\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd745013(Office.12).aspx)).
- Create a list of all customizations that you find. Identify the source of the customizations, if possible. For example, are there third-party add-ins or templates that were customized in-house? After you identify the source, you can then check for updated or upgraded versions of the customizations. A worksheet is available that you can use to fill in information about your environment, based on the data you find in the results from the pre-upgrade checker and in your research on your customizations. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928> and customize it to suit your needs.



#### Tip

- Whom do you contact about customizations that you did not create?

After you identify all the customizations, copy them to the appropriate servers in your test farm. You can use the Windows PowerShell cmdlet **test-spcontentdatabase** before you attach a database to SharePoint Foundation 2010 to determine whether any customizations are missing from the environment. Run this command for each database after you restore the databases to your database server, but before you run the upgrade. Note that this cmdlet runs silently — it will not return any output unless there is an error.

## Copy real data to the test environment and try the upgrade

You cannot achieve your testing goals unless you use your actual data. You can use the following methods to create a copy of your data:

- For in-place upgrade, create a farm backup and then restore it to the test environment. For more information, see [Back up and restore the entire farm \(Windows SharePoint Services 3.0 technology\)](#) ([http://technet.microsoft.com/en-us/library/cc288019\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288019(Office.12).aspx)).

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- For database attach upgrade, you need to use the Microsoft SQL Server backup and restore tools to create a copy of your content databases and any other databases that you want to upgrade. For more information, see [Back up and restore content databases \(Windows SharePoint Services 3.0\)](http://technet.microsoft.com/en-us/library/cc719751(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc719751\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc719751(Office.12).aspx)).

There is no better way to tell what may come up during upgrade than to perform the test on a copy of all of your data; however, this might not always be a realistic option for initial testing. You can phase the testing by testing one database at a time (if the databases are large) so that you can make sure you test whatever is unique about that data set, or you can assemble a subset of data from representative sites in your environment. If you want to first test by using a subset of your data, be sure that the subset has the following characteristics:

- The data subset contains sites that are typical of the sites you support in your environment.
- The size and complexity of the data subset is very similar to the actual size and complexity of your environment.



**Important:**

Testing a subset of your data does not produce a valid benchmark for how long it will take to process the entire volume of data for your environment.

After copying the data, take a first pass through the upgrade process to see what happens. This is just the preliminary round.

## Try in-place upgrade

If you want to try an in-place upgrade approach, use the following steps to try out the upgrade process:

1. Create a backup of your farm.
2. Restore the backup to your test farm.  
For more information, see [Back up and restore the entire farm \(Windows SharePoint Services 3.0 technology\)](http://technet.microsoft.com/en-us/library/cc288019(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288019\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288019(Office.12).aspx)).
3. Run the pre-upgrade checker. Make note of any issues it finds. You will want to address these issues in your original environment before you run the actual upgrade on your product farm. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).
4. Follow the steps in [Perform an in-place upgrade \(SharePoint Foundation 2010\)](#) to try the in-place upgrade.
5. Review the results.

## Try a database attach upgrade

1. Create a SQL Server backup of your content databases.
2. Use SQL Server to restore the backups into your single-server test farm and attach the content databases to that environment.

For more information, see [Back up and restore content databases \(Windows SharePoint Services 3.0\)](http://technet.microsoft.com/en-us/library/cc719751(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc719751\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc719751(Office.12).aspx)).

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3. Run the pre-upgrade checker. Make note of any issues it finds and any changes it makes. You will want to address these issues and make these changes in your original environment before you run the actual upgrade on your product farm. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).
  4. Follow the steps in [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#) to configure the test environment for a database attach upgrade.
  5. Follow the steps in [Attach databases and upgrade to SharePoint Foundation 2010](#) to try the database attach upgrade process.

## Review your results

After your test upgrade has been completed, you can review the results and revisit your plans. Look at the log files, look at the upgraded sites, and check out your customizations. How did upgrade work for your environment? What did you find out? What do you need to rethink about your upgrade plan?

### Review the log files

Review the following log files:

- The pre-upgrade checker log file.  
The log files for the pre-upgrade checker (**stsadm -o preupgradecheck**) are located at %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\12\LOGS. The log files are named in the following format: PreUpgradeCheck\_YYYYMMDD-HHMMSS-SSS-random-number.log, where YYYYMMDD is the date and HHMMSS-SSS is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds) and the random number is used to differentiate between possible simultaneous attempts to run the pre-upgrade checker.
- The SharePoint Products Configuration Wizard (Psconfig.exe) log file (generated when you run this wizard as part of your trial in-place upgrade).  
The PSCDiagnostics log files are located at %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\14\LOGS.
- The upgrade log file and the upgrade error log file (generated when you run the upgrade).  
The upgrade log file (.log) and the upgrade error log file (.err) are located at %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\14\LOGS. The log files are named in the following format: Upgrade-YYYYMMDD-HHMMSS-SSS.log, where YYYYMMDD is the date and HHMMSS-SSS is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds).

To review the log files to find and troubleshoot issues, start at the top of the files. Errors or warnings may be repeated if they occur for several site collections in the environment, or if they block the upgrade process altogether. For example, if you cannot connect to the configuration database, the upgrade process will try (and fail) several times and these attempts will be listed in the log file.

Search, or visually scan, for the following entries:

- **Finished upgrading SPFarm Name=<Name of Configuration Database>**



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- **In-place upgrade session finishes. Root object = SPFarm=<Name of Configuration Database>, recursive = True. 0 errors and 0 warnings encountered.**

If you find these entries, the installation was successful.

If you do not find the entries from the previous step, you can identify specific issues that may have contributed to the failure by searching, or visually scanning, through the Upgrade.log file for the following terms:

- Search for **ERROR** in the log files to find any failures (such as failing components or faulty database connections).
- Search for **WARNING** to find issues such as missing features or components.

To find upgrade issues, you may find it useful to use a log parser to run queries against the log files.

## Restart upgrade, if necessary

During a database attach upgrade, any sites that cannot be upgraded will be skipped. During an in-place upgrade, if the server restarts or the upgrade fails, you will need to restart the upgrade process to upgrade the remaining sites.

To see whether any sites were missed or skipped during upgrade, run the following Stsadm operation **stsadm -o localupgradestatus** on every front-end Web server in your SharePoint Foundation 2010 server farm. For more information about this operation, see [Localupgradestatus: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc289007.aspx) (<http://technet.microsoft.com/en-us/library/cc289007.aspx>).

If the upgrade skipped any site collections, you can restart the upgrade process for the database that contains that site collection by using the following PowerShell\_1st\_NoVer cmdlet: **upgrade-spcontentdatabase -id <GUID>**. For more information about this cmdlet, see [Upgrade-SPContentDatabase](http://technet.microsoft.com/library/9c7f1a52-02a7-452d-9746-a4e89aa54874(Office.14).aspx) ([http://technet.microsoft.com/library/9c7f1a52-02a7-452d-9746-a4e89aa54874\(Office.14\).aspx](http://technet.microsoft.com/library/9c7f1a52-02a7-452d-9746-a4e89aa54874(Office.14).aspx)).

For more information, see [Resume upgrade \(SharePoint Foundation 2010\)](#).

## Review upgraded sites

Review your upgraded sites to identify any issues that need to be addressed before you run the upgrade process on your production environment. For more information about specific things to look for, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

## Adjust your plans and test again

Repeat the testing process until you are sure that you have found all the issues that you may face and that you know how to deal with them. Your goal is to know what your plan is if it is 4:00 P.M. on Sunday, you have to be back online Monday morning, and it is not going well. Is there a point of no return? Test your rollback plan and make sure that it works before you begin your real upgrade.

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# Estimate how long the upgrade process will take and the space that you need (SharePoint Foundation 2010)

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An important part of planning your upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010 is determining how long the upgrade process will take and how much storage space will be required. Every environment is unique and includes different hardware capabilities and different site characteristics. The space and the length of time that you need to run an upgrade will vary greatly depending on your environment. The best way to estimate these factors is to perform a trial upgrade, and then review the space and time that it took. For more information about how to perform a trial upgrade, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#).

In this article:

- [Estimate the space that you need for the upgrade](#)
- [Estimate how long the upgrade will take](#)

## Estimate the space that you need for the upgrade

During both the in-place upgrade and database attach upgrade approaches, the databases might expand during upgrade. Also, many transactions take place while the upgrade process runs, so you must make sure that the log files have room to expand to accommodate the changes that are occurring. You have to plan for growth in both the databases and the log files.

When planning your upgrade, make sure that your current environment follows the best practices for storage for Windows SharePoint Services 3.0 so that you have the best experience and performance during upgrade. For more information, see [Physical storage recommendations \(Office SharePoint Server\)](#) (<http://technet.microsoft.com/en-us/library/cc298801.aspx>). You should also review the best practices for SharePoint Foundation 2010 and make any adjustments needed to your upgraded environment.

Because of the changes in table structures in the new version, the databases grow temporarily while the data is reorganized. This space can be recovered after upgrade, but you should ensure that there is room for the databases to grow up to 50 percent larger than their current sizes during either an in-place or database attach upgrade (be aware that after upgrade, you can reduce the database again to recover much of this space). You should also make sure that there is room on your database servers for your databases to grow over time with typical use. To find out how large your databases currently are, use Enterprise Manager in Microsoft SQL Server. In addition to database space, you also must have room for the following items:

- The temporary databases. Ensure that you have enough database space to enable quick growth of the temporary databases. If you have insufficient space, the upgrade process might time out and the upgrade will fail.

- The upgrade log files.
- The transaction log files for the databases. These log files must grow quickly to accommodate the number of changes occurring in the databases.



**Note:**

In very large environments, there is a possibility that the default growth rate for the transaction log files (10 percent) is not enough to keep up with the upgrade process; this can cause a time-out. Again, a trial upgrade is the best way to determine whether the transaction log files can keep up with the upgrade process. If your environment is very large, or if the process timed out during a trial upgrade, consider expanding the SQL Server transaction log files beforehand to make sure you have room for the number of transactions that must be processed. For more information about how to expand the SQL Server transaction logs, see [Expanding a Database \(SQL Server 2005\)](http://go.microsoft.com/fwlink/?LinkId=182619) (<http://go.microsoft.com/fwlink/?LinkId=182619>) or [Expanding a Database \(SQL Server 2008\)](http://go.microsoft.com/fwlink/?LinkId=182620) (<http://go.microsoft.com/fwlink/?LinkId=182620>).

## Estimate how long the upgrade will take

With your disk space estimates in hand, and some testing under your belt, you can now calculate a rough estimate of how long the actual upgrade process will take. Upgrade times vary widely among environments. The performance for an upgrade depends greatly on the hardware being used, the complexity of the sites, and the particular characteristics of your implementation. For example, if you have many large document libraries, these may take longer to upgrade than a simpler site.

Factors that influence performance are described in the following table.

Content factors	Hardware factors
The number of: <ul style="list-style-type: none"> <li>• Site collections</li> <li>• Subwebs</li> <li>• Lists</li> <li>• Document versions (number and size)</li> <li>• Documents</li> <li>• Links</li> </ul> Plus the overall database size itself.	<ul style="list-style-type: none"> <li>• SQL Server disk input/output per second</li> <li>• SQL Server database to disk layout</li> <li>• SQL Server temporary database optimizations</li> <li>• SQL Server CPU and memory characteristics</li> <li>• Web server CPU and memory characteristics</li> <li>• Network bandwidth and latency</li> </ul>

How your data is structured can affect how long it takes to upgrade it. For example, 10,000 lists with 10 items each will have a longer upgrade time than 10 lists with 10,000 items. The actions required to upgrade the list infrastructure must be performed for each list, regardless of the number of items; therefore, more lists equals more actions. The same goes for most of the items in the "content factors" column in the table above.

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The structure of your hardware can also have a big effect on performance. Generally, the database server performance is more important than Web server performance, but underpowered hardware or connectivity issues at either tier can significantly affect upgrade performance.

The upgrade approach you have chosen will also make a big difference in how long the process will take. Performing a database attach upgrade is the quickest method (however, the pre-upgrade and post-upgrade steps for this approach take longer than for in-place upgrade). An in-place upgrade takes a little more time because you are upgrading the environment in addition to the sites, but you do not have as many pre-upgrade and post-upgrade steps when you use this approach.

The best way to estimate overall time is to do a trial upgrade of a small part or all of the data, and then review the upgrade log files. The log files contain the duration for your upgrade — look for Total Elapsed Time at the bottom of the upgrade log file. Use this time to project a duration for your full set of content. You can also use the log files to check your progress during the upgrade process. The upgrade.log file is located at %COMMONPROGRAMFILES%\Microsoft Shared\web server extensions\14\LOGS.

The estimate you arrive at based on your trial upgrade is for the actual upgrade process for the data; it does not include all of the steps that you have to perform before and after this step, which can take more time than the upgrade of the data itself. When estimating how long the upgrade will take, in addition to the time that is required for data to be processed, you must also estimate how long the activities during the pre-upgrade and post-upgrade phases will take.

For pre-upgrade steps, consider the following factors:

- **Creating custom elements** Upgrading Web Parts or re-doing custom templates to take advantage of new features will take some time. The process of creating custom elements should begin early, during the evaluation phase of your project.
- **Backing up the databases** For in-place upgrade, you must perform a full backup — not a differential backup — of your entire environment to make sure that you can recover in the remote possibility that the upgrade fails and you must rebuild your server farm. For large environments, this step can take a significant amount of time. In particular, if you are backing up to a network location, network latency issues can slow this process down.

For post-upgrade steps, consider the following factors:

- **Verifying sites and making changes** Allow enough time for users to validate their sites after the upgrade. This may take several days. For more information, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

Additional factors in your environment can also contribute to longer upgrade times, including the following:

- **Very large document libraries** A document library with more than 250,000 documents all in the root of the document library (instead of in folders) will take a long time to upgrade, and the upgrade might not be successful. Following the Windows SharePoint Services 3.0 guidelines for using folders to break up large document libraries can help you manage the library size. For example, if you rearrange the same document library so that the 250,000 documents are divided into 125 folders, it should upgrade more easily.
- **Very large databases** Databases larger than 100 GB can take a long time to upgrade.



### Note

- If you have content databases that are larger than 100 GB you might want to divide them up into smaller databases before you run the upgrade. Larger databases not only take longer to upgrade, but they can make it harder to recover if the upgrade is not completed successfully.
- You can use the **mergecontentdbs** or the **backup** and **restore** operations in Stsadm.exe to move sites between databases. For more information, see [Mergecontentdbs: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288557(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288557\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288557(Office.12).aspx)) and [Backup and restore: Stsadm operations \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288090(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288090\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288090(Office.12).aspx)).

If you have a very large database (more than 100 GB) that you cannot break up because most of the content is in a single site collection, you may want to reconsider your upgrade approach. A database attach upgrade approach is more difficult with very large databases, because backing up and restoring such large databases is problematic.



### Caution:

Be sure that you are following the capacity planning guidelines from the previous and new versions before you attempt the upgrade. If you have exceeded the guidelines for best performance, the upgrade process might take longer, or it might not succeed (for example, the process might time out repeatedly on the same large document library). If your deployment does not meet the recommended capacity guidelines, consider whether you need to do some work to meet those guidelines before you try the upgrade. Again, a trial upgrade can help you with that decision.

- **Communications requirements**

You need to notify your users and your team of the upgrade schedule, and give them time to do their tasks. For more information, see [Create a communication plan \(SharePoint Foundation 2010\)](#).

- **Managing system center alerts and alarms**

You need to monitor system performance during upgrade, but you will not need to monitor specific features. Pause any unnecessary alarms and alerts from Microsoft Systems Center Operations Manager or Microsoft Operations Manager, and then turn them on again after upgrade.

- **Turning SQL mirroring and log shipping on/off**

You should turn off mirroring and log shipping before you upgrade, and then turn them on again after you are sure that your environment is running correctly after the upgrade. We recommend that you do not run mirroring or log shipping during upgrade, because this creates additional load on the servers running SQL Server and also wastes resources mirroring or shipping temporary data.

Test your upgrade process to find out how long it may take, then create a schedule for your upgrade operations and test that to determine your timeline. You should include the time that you need to do the pre-upgrade and post-upgrade steps in your operations timeline: If it takes 5 hours to back up your environment before you start, you need to include that time in your outage window. Also include buffer time in case you need to restore or recover — you should determine both your planned outage (realistic case) and your emergency outage (worst case) timelines.

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# Cleaning up your environment before upgrade (SharePoint Foundation 2010)

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Before you begin upgrading from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, you should make sure that your environment is functioning in a healthy state and that you clean up any content that you do not have to upgrade. You can also take the time to remove or rearrange content so that you will have the structure that you want after you perform the upgrade.

In this article:

- [Items to clean up](#)
- [Making structural changes](#)

## Items to clean up

Many of these items can be removed or repaired by using Stsadm.exe commands.



### Important:

To run the Stsadm command-line tool, you must be a member of the Administrators group on the local computer.

## Delete unused or underused site collections and subwebs

You do not want to upgrade content that you do not have to keep. If it has been unused for a long time and will not be needed in the future, back it up, and then delete it to free storage and administrative resources, improve upgrade performance, and reduce upgrade risk. Be sure to communicate with site owners or organizational contacts regarding the site status — you want to make sure that the site is not needed before you delete it (for example, you do not want to delete sites that are required for compliance, such as emergency procedures, even though they may not be updated frequently).

For more information about how to delete site collections and subwebs, see:

- [Deletesite: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288016(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288016\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288016(Office.12).aspx))
- [Deleteweb: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287710(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287710\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287710(Office.12).aspx))

## Address large lists

By default, large list query throttling is applied after an upgrade to SharePoint Foundation 2010. If a list is very large, and users use a view or perform a query that exceeds the limit or throttling threshold, the view or query will not be permitted. Check any large lists in your environment and have the site owner or list owner address the issue before upgrade. For example, they can create indexed columns by using filtered views, organize items into folders, set an item limit on the page for a large view, or use an

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external list. For more information about how to address issues with large lists, see [Manage lists and libraries with many items](http://go.microsoft.com/fwlink/?LinkId=182370) (<http://go.microsoft.com/fwlink/?LinkId=182370>) on Office Online.

## Address large ACLs

Using item-level permissions frequently can result in large access control list (ACL) entries, which can in turn create performance problems on your servers. For information about this issue and for tips on how to handle lots of users, see [Knowledge Base Article 953132: How to add lots of users to a site, to a list, or to a document library in Windows SharePoint Services 3.0 and in SharePoint Server 2007](http://go.microsoft.com/fwlink/?LinkId=182327) (<http://go.microsoft.com/fwlink/?LinkId=182327>).

## Remove extraneous document versions

Large numbers of document versions can slow down an upgrade significantly. If you do not have to keep multiple versions, you can have users delete them manually or use the object model to find and remove them. For more information about how to programmatically remove extraneous versions, see [Versions Web Service](http://go.microsoft.com/fwlink/?LinkId=182330) (<http://go.microsoft.com/fwlink/?LinkId=182330>) on MSDN.

## Remove unused templates, features, and Web Parts

First, verify that no sites are using the template, feature, or Web Part. You can use the pre-upgrade checker (**Stsadm -o preupgradecheck**) and the **Stsadm -o EnumAllWebs** operation to identify these customizations in your environment. Both of these operations were updated in the October 2009 Cumulative Update (CU) and now identify Web Parts, features, event handlers, and setup files that are being used in your environment. The pre-upgrade checker specifies which server-side files exist in your environment and how many times they are used. The **EnumAllWebs** command specifies which files are used by which sites.

For more information about how to identify customizations in your environment, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](http://go.microsoft.com/fwlink/?LinkId=182338). If customizations are not being used, delete them. For more information about how to manage these kinds of customizations, see [Features and Templates](http://go.microsoft.com/fwlink/?LinkId=182332) (<http://go.microsoft.com/fwlink/?LinkId=182338>) and [Solutions and Web Part Packages](http://go.microsoft.com/fwlink/?LinkId=182332) (<http://go.microsoft.com/fwlink/?LinkId=182332>) on MSDN.

## Repair data issues

Clean up your databases to remove any orphaned sites or other corrupted data, such as a corrupted list. Consider defragmenting if you have removed sites or subsites from the database. For more information, see:

- [Databaserepair: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288636.aspx) (<http://technet.microsoft.com/en-us/library/cc288636.aspx>)
- [Forcedeletelist: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287949(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287949\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287949(Office.12).aspx))

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## Making structural changes

If you want to make structural changes to your environment, such as moving site collections around or changing how your databases are allocated, you can use the following methods:

- **Stsadm -o mergecontentdbs** Use this to move site collections between databases. Upgrade is most efficient when databases contain similar data. Therefore, it is best if any site collections that share a content database are similar types. You can also use this operation to divide large databases if they contain multiple site collections. This can also help increase upgrade efficiency.

For more information, see [Mergecontentdbs: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288557(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288557\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288557(Office.12).aspx)).

- **Export and import sites** Use this method to move subwebs or site collections within a farm or between farms. For more information, see [Import and export: Stsadm operations \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc288191(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc288191\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288191(Office.12).aspx)).



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# Troubleshoot upgrade issues (SharePoint Foundation)

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Even after you test the upgrade process to identify potential issues, you might experience unexpected issues during an upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010. If you experience issues after upgrade, the sooner you detect and fix them, the better the end-user experience will be.

This article describes general principles for identifying and addressing upgrade issues, and includes a list of common issues. After you have identified and addressed the issues, you can resume upgrade. For more information about how to resume upgrade, see [Resume upgrade \(SharePoint Foundation 2010\)](#).

In this article:

- [General principles for identifying issues](#)
- [Common issues](#)

## General principles for identifying issues

Start by checking the upgrade status to see where upgrade stopped (if it did stop), and check log files to find any errors or warnings. Next, address the issues that you find before you resume the upgrade.

### First, check upgrade status and log files

Upgrade status indicators and log files should give you an indication of what went wrong during the upgrade process. We recommend that you carefully review all the errors that were logged in the upgrade log files. Warnings might not always indicate an issue, but you should review them all to determine whether any of them are likely to cause even more issues.

1. Check upgrade status by doing one or both of the following:
  - Review the Upgrade Status page in the SharePoint Central Administration Web site.
  - Use the Stsadm.exe operation **localupgradestatus** to check upgrade status.

For more information about how to check upgrade status, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).
2. Review the following log files:
  - The Setup.exe log file.
  - The SharePoint Products Configuration Wizard (Psconfig.exe) log file.
  - The upgrade error log file and the upgrade log file (which contains more detailed information than the upgrade error log file).
  - ULS or trace log files.

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These files are stored in the %COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14\LOGS folder and are named *Servername\_YYYYMMDD-MMSS.log*.

- The application event log file.

This file can be viewed by using the Event Viewer.

For more information about the Setup.exe, PSconfig.exe, and upgrade log files, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#). For more information about the trace log file, see [Trace Logs](#) (<http://go.microsoft.com/fwlink/?LinkId=182380>) on MSDN.

## Then, address issues in order

Some issues have more effect than others. For example, a missing server-side file can cause many seemingly unrelated errors at the site level.

Address issues in the following order:

1. Missing server-side files or customizations, such as features or Web Parts.
2. Configuration issues in the server farm, Web application, or services, such as managed paths or services that are not started.
3. Additional issues that you discover on a site-by-site basis, starting with high-impact, high-profile sites.

As you identify and fix the top-level issues, you can try running upgrade again to see whether any issues further along in the upgrade process have also been fixed.

## Common issues

Check to see whether any of the following issues are causing an upgrade error or warning.

### Missing or deprecated server-side files or customizations

One common error during upgrade is missing server-side files — either files that were installed with Windows SharePoint Services 3.0 or customized files. When you prepared for upgrade, you should have created an inventory of the server-side customizations (such as site definitions, templates, features, Web Parts, assemblies) that your sites required. (The pre-upgrade checker can help identify these items.) Check this inventory to make sure that all the files that are needed for your customizations are installed in your upgrade environment.

If you are performing a database attach upgrade, you can use the test-**spcontentdatabase** Windows PowerShell cmdlet before you upgrade the database to identify any missing files. You can also use the **enumallwebs** operation in Stsadm.exe to identify server-side customizations that are being used.

In the upgrade log files, you may see errors such as the following:

- ERROR Found Reference Count web(s) using missing web template Site Template Identifier (Icid: Site Template Language Code) in ContentDatabase Content Database Name.
- ERROR Found a missing feature Id = *[Feature Identifier]*

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- ERROR File *[Relative File Path]* is referenced *[Reference Count]* times in the database, but is not installed on the current farm.
  - WARNING WebPart class *[Web Part Identifier]* is referenced *[Reference Count]* times in the database, but is not installed on the current farm.
  - WARNING Assembly *[Assembly Path]* is referenced in the database, but is not installed on the current farm.
  - WARNING Feature could not be upgraded. Exception: Feature definition id '*Feature Identifier*' could not be found.

If you can obtain a missing server-side file or dependency, install it and then run upgrade again for the affected sites. If the file or dependency (such as a Web Part) has been deprecated, you have to investigate whether you want to rebuild the site, page, or Web Part to use a different template, feature, or Web Part. If you can redo the customization by using dependencies that have not been deprecated, you can run upgrade again for the affected sites. If you cannot remove the dependency, you cannot upgrade the site.

After you install the missing file or dependency, use the **test-SPContentDatabaseWindows** PowerShell cmdlet on a test server to determine whether any other files for that database are missing. If you only run the pre-upgrade checker or run upgrade again, the error might not appear in the log files, even though it might still be occurring.

## **Incorrectly configured or missing settings for server farm, Web application, or services**

Verify your farm and Web application settings, and create and start any missing services.

Verify that any managed paths (included or excluded paths) are configured correctly for each Web application.

In the upgrade log files, you may see errors such as the following:

- ERROR Template *Template Id*: SPSite Id=*Site Id* could not be accessed due to exception. Skipping SPWeb Id=*Web Id* for template upgrade. Exception: System.IO.FileNotFoundException: The site with the id *Site Id* could not be found.

This error indicates that a managed path is missing. Add the managed path for the site collection into the Web application and restart upgrade for the content database that contains this site collection.

## **Inconsistent or incorrect update levels**

You must be running Windows SharePoint Services 3.0 with Service Pack 2 to run upgrade. If you do not meet this minimum requirement, you will see an error and upgrade will not run.

## **Data issues**

The following data issues can cause errors or warnings during upgrade:

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- Connectivity to data sources. If your servers cannot connect to the databases, they cannot be upgraded.
  - Orphaned sites or lists, or other database corruptions. For more information, see [Cleaning up your environment before upgrade \(SharePoint Foundation 2010\)](#).
  - Hidden column data. If the upgrade process adds a column to a list, and a custom column that has that same name already exists in the list, the custom column is renamed. After upgrade, you might have to readjust your views to include the renamed column.

In the upgrade log files, you may see errors such as the following:

- WARNING The orphaned sites could cause upgrade failures.
- ERROR Database *[Content Database Name]* contains a site (Id = *[Site Collection Identifier]*, Url = *[Site Collection URL]*) that is not found in the site map.

Fix any orphaned items or database corruptions, and then run upgrade again.

## UI changes

Changes to the user interface (UI), such as the addition of the Fluent UI (also known as the ribbon) or adherence to XHTML standards, can cause problems in sites. Occasionally, custom elements (such as a content type) may have a name that conflicts with a name in the new version. You may also have pages that must be reverted to the standard site definition, or large lists for which you have to create new views.

For more information about how to review UI issues in sites, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

In the upgrade log files, you may see errors such as the following:

- Failed to activate site collection features on site Site Url. Exception: A duplicate content type name "name" was found.

This error indicates that a 3rd party "Summary Info" content type was added to the specified site in o12 and during upgrade to o14 it name conflicts with our out of the box "Summary Info" content type. Delete or rename the 3rd party content type in the specified site to something other than "Summary Info" and re-run upgrade.

## Lack of space

If you run out of space (for example, for transaction log files on your database servers), upgrade cannot continue. Free some space, or increase the size of the transaction log file before you resume upgrade.

For more information, see [Managing the Size of the Transaction Log File \(http://go.microsoft.com/fwlink/?LinkID=124882\)](#).

## Forms-based authentication

Additional steps are necessary if you are upgrading an environment that uses forms-based authentication. Follow the steps in [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#) to upgrade forms-based authentication providers.

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## Security and permissions

If you receive an error about an unknown account, or if a database is not upgraded, verify the following:

- For an in-place upgrade, make sure that the account that you use to run the SharePoint Products Configuration Wizard is a member of the **db\_owner** fixed database role for all the databases that you want to upgrade. If it is not a member of this role, you might see an error about an unknown user account when the wizard starts to upgrade the databases.
- For a database attach upgrade, if you are moving databases between instances of SQL Server, make sure that you verify that security is configured correctly. Check that the accounts that you are using have the appropriate fixed roles and permissions on the databases, and that they will still be valid accounts if you are upgrading across domains.

### See Also

[Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#)

[Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#)

[Resume upgrade \(SharePoint Foundation 2010\)](#)

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# Recovering after a failed upgrade (SharePoint Foundation 2010)

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If the upgrade to Microsoft SharePoint Foundation 2010 has failed and you do not have time to continue to troubleshoot the issues or resume the upgrade process, you have to recover your Windows SharePoint Services 3.0 environment. The steps differ depending on the type of backup you have. If you were performing a database attach upgrade and you kept your original environment available — either by using read-only databases or by taking the environment offline — you can recover your environment easily. If you were performing an in-place upgrade, you must recover your entire environment and restore the data.

If you do have time, you should troubleshoot the issues and resume upgrade. For more information, see [Troubleshoot upgrade issues \(SharePoint Foundation\)](#) and [Resume upgrade \(SharePoint Foundation 2010\)](#).

In this article:

- [Recovering when you have read-only databases on a standby environment \(database attach upgrade\)](http://technet.microsoft.com/library/3d682920-39bb-4555-afde-bea38ad7001c.aspx#Readonly) (<http://technet.microsoft.com/library/3d682920-39bb-4555-afde-bea38ad7001c.aspx#Readonly>)
- [Recovering when you have a full environment backup \(in-place upgrade\)](http://technet.microsoft.com/library/3d682920-39bb-4555-afde-bea38ad7001c.aspx#FullEnv) (<http://technet.microsoft.com/library/3d682920-39bb-4555-afde-bea38ad7001c.aspx#FullEnv>)
- [Recovering when you have database backups \(in-place upgrade\)](http://technet.microsoft.com/library/3d682920-39bb-4555-afde-bea38ad7001c.aspx#DBOnly) (<http://technet.microsoft.com/library/3d682920-39bb-4555-afde-bea38ad7001c.aspx#DBOnly>)

## Recovering when you have read-only databases in a standby environment (database attach upgrade)

When you perform a database attach upgrade, you can choose to leave your existing environment available, but with the databases set to read-only. Recovering when you are in this state is the simplest recovery path, because your original environment is still available, it is merely set to read-only. If you have to recover your environment, you can merely switch the databases to read/write again and resume serving requests. The article [Run a farm that uses read-only databases \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/ee845027(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/ee845027\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/ee845027(Office.12).aspx)) describes the steps you take to set a farm to use read-only databases. To return the read-only farm to full operations, you set the Database Read-Only entry back to False, and then re-enable the timer jobs listed in the article.

## Recovering when you have a full environment backup (in-place upgrade)

If you created a full backup of your environment before you started the upgrade process, you can restore that full backup to recover your environment. For more information about how to restore from a

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full backup, see [Restore a farm by using built-in tools \(Windows SharePoint Services 3.0\)](http://technet.microsoft.com/en-us/library/cc288668(Office.12).aspx)  
([http://technet.microsoft.com/en-us/library/cc288668\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288668(Office.12).aspx)).

## **Recovering when you have database backups (in-place upgrade)**

If you only created backups of your content databases, you can still recover your environment, but it will take longer and involve more steps. You basically have to build out your environment again and then restore the database backups. For more information about how to recover an environment and restore backed up content databases, see [Restore a farm after a configuration database problem \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc512814(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc512814\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc512814(Office.12).aspx)).

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# Resume upgrade (SharePoint Foundation 2010)

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In some cases, you might have to restart upgrade to finish upgrading your sites from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010. For example:

- During an in-place upgrade, if the server restarts or the upgrade fails, you must restart the upgrade process by using Psconfig.exe to upgrade the remaining sites.
- During a database attach upgrade, any sites that cannot be upgraded will be skipped. After you have corrected any issues in the sites (such as a missing template or language pack, or the site being set to read-only or having exceeded its quota), you can restart upgrade by using a Windows PowerShell command to upgrade just the skipped sites.



## Note:

One frequent cause of failures during upgrade is that the environment is missing customized features, solutions, or other elements. Be sure that any custom elements that you need are installed on your front-end Web servers before you begin the upgrade process. You can use the pre-upgrade checker — and, for a database attach upgrade, the **test-spcontentdatabase** Windows PowerShell cmdlet — to identify any custom elements that your sites might be using. For more information, see [Identify and install customizations](#) in the article "Use a trial upgrade to find potential issues."

In this article:

- [Restart upgrade for a server farm by using Psconfig.exe](#)
- [Restart upgrade for a database by using Windows PowerShell](#)

## Restart upgrade for a server farm by using Psconfig.exe

If you determine that upgrade stopped or failed before the SharePoint Products Configuration Wizard was completed, you can restart the upgrade from that point by running the SharePoint Products Configuration Wizard again or by using a command line operation. This process is also known as *forcing* a software upgrade. Be sure to research and address the problem that caused the failure or stoppage before you restart upgrade.

### ▶ To restart upgrade for the server farm

1. Verify that you have the following administrative credentials:
  - To use Psconfig.exe, you must be a member of the local Administrators group on the server.
2. Open a Command Prompt window and navigate to the following directory:  
`%COMMONPROGRAMFILES%\Microsoft shared\Web server extensions\14\Bin\`



- 
3. Type the following command:

```
psconfig -cmd upgrade -inplace v2v -passphrase <passphrase> -wait
```

There is an optional parameter, **-force**, that can force the upgrade to continue if the command does not work. Add **-force** to the end of the command string to force the upgrade process to continue.



**Note:**

You can enable Windows Installer logging before you start the software upgrade installation again. To enable logging for Windows Installer, see [Microsoft Knowledge Base article 99206: How to enable Windows Installer logging](http://go.microsoft.com/fwlink/?LinkID=99206) (<http://go.microsoft.com/fwlink/?LinkID=99206>).

## Restart upgrade for a database by using Windows PowerShell

If the upgrade skipped any site collections during in-place upgrade or database attach upgrade, you can restart the upgrade process for the database that contains that site collection by using a Windows PowerShell cmdlet.

### ▶ To restart upgrade for a database by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt (PS C:\>), type the following command:

```
upgrade-spcontentdatabase -id <GUID>
```

Where *GUID* is the identifier for the database. You can run the following cmdlet to find the GUID for a content database:

```
Get-SPContentDatabase -Identity<content_database_name>
```

For more information, see [Upgrade-SPContentDatabase](#)

([http://technet.microsoft.com/library/9c7f1a52-02a7-452d-9746-a4e89aa54874\(Office.14\).aspx](http://technet.microsoft.com/library/9c7f1a52-02a7-452d-9746-a4e89aa54874(Office.14).aspx)).

---

# Perform pre-upgrade steps (SharePoint Foundation 2010)

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After you have planned your upgrade process to Microsoft SharePoint Foundation 2010, you can start the upgrade process by following the required pre-upgrade steps.

In this section:

- [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#)  
The pre-upgrade checker identifies potential upgrade issues in your environment. Run this as you plan your upgrade and before you start the upgrade process, so that you can address these issues.
- [Back up the entire environment before an in-place upgrade \(SharePoint Foundation 2010\)](#)  
Create a full backup of your environment to ensure that you can recover if upgrade does not go as planned.

---

# Run the pre-upgrade checker (SharePoint Foundation 2010)

---

You can use the pre-upgrade checker to report on the status of your environment and SharePoint sites before you upgrade to Microsoft SharePoint Foundation 2010. We highly recommend that the server administrator run the pre-upgrade checker and resolve as many problems as possible before scheduling the upgrade.

The pre-upgrade checker is an Stsadm operation that you run in a Windows SharePoint Services 3.0 environment to find any potential issues for upgrade and to review recommendations and best practices. The operation is available with Windows SharePoint Services 3.0 Service Pack 2 and has been updated in the October 2009 Cumulative Update for Windows SharePoint Services 3.0. You can download and install the October 2009 Cumulative Update from [October 2009 Cumulative Update Packages for SharePoint Server 2007 and Windows SharePoint Services 3.0 are published](http://go.microsoft.com/fwlink/?LinkID=169179) (<http://go.microsoft.com/fwlink/?LinkID=169179>).



## Note:

You might need to run the pre-upgrade checker more than once. For example, if you run the tool to evaluate your server farm but do not perform the upgrade for a few weeks, you can run the tool again just before you perform the upgrade to scan any new sites and to ensure that no additional issues have appeared in the meantime.

In this article:

- [About the pre-upgrade checker report](#)
- [Run the pre-upgrade checker](#)



## Note:

One frequent cause of failures during upgrade is that the environment is missing customized features, solutions, or other elements. Be sure that any custom elements you need are installed on your front-end Web servers before you begin the upgrade process. You can use the pre-upgrade checker — and, for a database attach upgrade, the `test-spcontentdatabase` Windows PowerShell cmdlet — to identify any custom elements that your sites might be using. For more information, see [Identify and install customizations](#) in the article "Use a trial upgrade to find potential issues."

## About the pre-upgrade checker report

The pre-upgrade checker reports information about the status of your environment and the SharePoint sites in that environment, including:

- **Upgrade readiness and supported paths** Returns a list of all servers and components in the farm and information about whether the servers meet requirements for upgrading.

- 
- **Alternate access mapping settings** Returns a list of the alternate access mapping URLs that are being used in the farm.
  - **Installed elements** Returns a list of all site definitions, site templates, features, and language packs that are installed in the farm. You need to know which site templates have been installed or used so that you can verify that they are available after an upgrade or database attach. You also need to know which elements have been customized so you can verify the customizations again after the upgrade. For example, you need to know whether a site depends on a language pack for Windows SharePoint Services 3.0 that does not exist yet for SharePoint Foundation 2010, so you can plan how to handle that site during upgrade.
  - **Unsupported customizations** Reports whether any server-side customizations that are not supported (such as database schema modifications) exist in the farm.
  - **Orphaned objects** Lists any database or site orphans in the farm. Objects such as list items, lists, documents, Web sites, and site collections can become orphaned — that is, the objects exist but are not associated with a particular site. Because orphaned objects do not work in the previous version, they won't work after the upgrade. If you perform an in-place upgrade, the orphaned items will still exist, but will not work. We recommend that you repair any orphaned objects before upgrading.



**Tip:**

Members of the Administrators group on the front-end Web servers can repair orphaned items before the upgrade by following the steps in Knowledge Base article 918744, [Description of a new command-line operation that you can use to repair content databases in Windows SharePoint Services](http://go.microsoft.com/fwlink/?linkid=69958&clcid=0x409) (<http://go.microsoft.com/fwlink/?linkid=69958&clcid=0x409>).

- **Valid configuration settings** Reports any missing or invalid configuration settings (such as a missing Web.config file, invalid host names, or invalid service accounts) that exist in the farm.
- **Database requirements** Reports whether the databases meet the requirements for upgrade — for example, databases are set to read/write, and any databases and site collections that are stored in the Windows Internal Database are not larger than 4 GB.

Use the information gathered from the pre-upgrade checker to determine:

- Whether to perform an in-place upgrade or a database attach upgrade. [Determine upgrade approach \(SharePoint Foundation 2010\)](#) provides information to help you decide which type of upgrade to perform. It is important to consider the report generated by the pre-upgrade checker when you make this decision. If your servers do not meet the requirements for in-place upgrade, you need to consider performing a database attach upgrade.
- Whether to upgrade some or all site collections that contain customized sites.
- Which sites need to have customizations reapplied or redone after upgrade and therefore might take longer than others in the review stage.

A worksheet is available so you can record information about your environment while you prepare for upgrade. Download the worksheet from <http://go.microsoft.com/fwlink/?LinkId=179928>.

---

# Run the pre-upgrade checker

Before you perform this procedure, confirm that:

- Your system is running Windows SharePoint Services 3.0 with Service Pack 2

## ▶ To run the pre-upgrade checker

1. Verify that you have the following administrative credentials:
  - To use Stsadm, you must be a member of the local Administrators group on the server.
2. Click **Start**, right-click **Command Prompt**, and then click **Run as administrator**.
3. In the Command Prompt window, navigate to the following directory:  
%COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\12\bin
4. Type the following command and press ENTER:

### **STSADM.EXE -o preupgradecheck**

This command checks both the local server and your farm-level settings. For a list of other parameters you can use with this operation, see [Preupgradecheck: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/dd793605(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/dd793605\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd793605(Office.12).aspx)). For a list of rules included in the pre-upgrade checker, see [Pre-upgrade scanning and reporting for future releases \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/dd793607(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/dd793607\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd793607(Office.12).aspx)).

After you run the pre-upgrade checker, the report automatically opens in your default browser. You can also view the report by opening it from its location in the %COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\12\LOGS directory. The report is named in the following format: PreUpgradeCheck\_YYYYMMDD-HHMMSS-SSS-random-number.htm, where YYYYMMDD is the date and HHMMSS-SSS is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds), and the random number is used to differentiate between possible simultaneous attempts to run the pre-upgrade checker. There are also TXT and XML versions of the report in the same location.

Use the report to find and troubleshoot issues. You can also share the relevant results with other members of the upgrade team. For example, you can report issues such as customized site templates or custom Web Parts to the appropriate site owner, Web designer, or developer before scheduling the upgrade, to give them time to resolve the issues.

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# Back up the entire environment before an in-place upgrade (SharePoint Foundation 2010)

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To ensure that you can recover the existing environment in case something goes wrong during the upgrade process, you must back up the Windows SharePoint Services 3.0 environment before you run the upgrade process.

If you are running Windows SharePoint Services 3.0 in a Hyper-V virtual environment, see [Using SharePoint Products and Technologies in a Hyper-V virtual environment](http://go.microsoft.com/fwlink/?LinkID=125834&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=125834&clcid=0x409>).

## Back up the environment

You can do a full backup of the Windows SharePoint Services 3.0 environment. We recommend that you perform a full backup of the farm before upgrading.

To back up the Windows SharePoint Services 3.0 environment, use the procedures described in [Back up a farm by using built-in tools \(Windows SharePoint Services 3.0\)](http://go.microsoft.com/fwlink/?LinkID=105988&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=105988&clcid=0x409>).

If you have deployed customizations, you must also back up the customizations. For more information, see [Back up and restore customizations \(Windows SharePoint Services\)](http://go.microsoft.com/fwlink/?LinkID=186627) (<http://go.microsoft.com/fwlink/?LinkID=186627>).

## Test the backups

You have to be sure that these backups are valid so that you can recover if there is a hardware failure or data corruption during the upgrade process. To test the backups, set up a non-production Windows SharePoint Services 3.0 farm, restore the backups and install any customizations (such as site definitions, Web Parts, and so on), and then verify that the restored backup is functional.

To do this, use the procedures described in [Restore a farm by using built-in tools \(Windows SharePoint Services 3.0\)](http://go.microsoft.com/fwlink/?LinkID=105989&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=105989&clcid=0x409>).

### See Also

[Back up and restore the farm \(Windows SharePoint Services 3.0\)](http://go.microsoft.com/fwlink/?LinkID=186630&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=186630&clcid=0x409>)

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# Perform an in-place upgrade (SharePoint Foundation 2010)

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Now that you have learned about the upgrade process by reading the articles in [About the upgrade process \(SharePoint Foundation 2010\)](#), and planned for your upgrade by following the steps in the articles in [Plan and prepare for upgrade \(SharePoint Foundation 2010\)](#), you are ready to perform the in-place upgrade to Microsoft SharePoint Foundation 2010. You can use the steps in this section for both a trial upgrade and your actual in-place upgrade on your production farm.

In this section:

- [Checklist for in-place upgrade \(SharePoint Foundation 2010\)](#)  
Use this checklist to make sure that you follow all necessary steps as you prepare for upgrade, perform the upgrade, and perform post-upgrade steps.
- [Upgrade in place to SharePoint Foundation 2010](#)  
Get all the steps that you need to perform an in-place upgrade, from installing prerequisites to upgrading sites.
- [Upgrade a stand-alone installation by using remote BLOB storage \(in-place\)](#)  
Get the steps to upgrade to SharePoint Foundation 2010 from a stand-alone Windows SharePoint Services 3.0 system that has content databases that are larger than 4 gigabytes (GB).
- [Roadmap for in-place upgrade with detached databases \(SharePoint Foundation 2010\)](#)  
Understand the process for using the detach databases hybrid approach to upgrade. This approach combines an in-place upgrade with the efficiency and speed of upgrading multiple databases at the same time.
- [Install available language template packs \(SharePoint Foundation 2010\)](#)  
Install any language packs that you need for your environment, after you run Setup and before you run the SharePoint Products Configuration Wizard.

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# Checklist for in-place upgrade (SharePoint Foundation 2010)

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This article contains a checklist you can use to make sure that you followed all necessary steps as you prepare for upgrade, perform the upgrade, and perform post-upgrade steps.

In this article:

- [Prepare for upgrade](#)
- [Perform the upgrade](#)
- [Perform post-upgrade steps](#)

Some of the steps include notes about the amount of time the steps might take. These are rough estimates only, to give you a relative idea of the duration of the step. To find out how much time each step will take for your environment, we recommend that you perform trial upgrades in a test environment. For more information, see [Estimate how long the upgrade process will take and the space that you need \(SharePoint Foundation 2010\)](#) and [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#).

## Prepare for upgrade

Follow these steps in order before you begin an in-place upgrade:

Pre-upgrade steps for an in-place upgrade		Notes
[ ]	<b>Run the pre-upgrade checker</b> Run the pre-upgrade checker and address any issues. Use the report that is generated by the tool to fill out the Upgrade planning worksheet.  Detailed steps: <a href="#">Run the pre-upgrade checker (SharePoint Foundation 2010)</a> .	Perform this step multiple times as you clean up your environment and test your upgrade process.  Running the checker takes only a few minutes, but addressing any issues might take days or weeks.
[ ]	<b>Clean up your environment</b> Before you begin the upgrade, make sure that your environment functions in a healthy state and that you clean up any content that you do not have to keep. Remove or repair any orphaned sites or	Perform this step once for the whole environment.  This process might take days or weeks to complete.



Pre-upgrade steps for an in-place upgrade		Notes
	<p>data, address any large lists or large access control lists (ACLs), remove extraneous document versions, and remove any unused templates, features, or Web Parts.</p> <p>Detailed steps: <a href="#">Cleaning up your environment before upgrade (SharePoint Foundation 2010)</a>.</p>	
[ ]	<p><b>Record blocked file types</b></p> <p>Blocked file types are not preserved during upgrade. Copy the list of blocked file types and save the list in the upgrade worksheet so you can reapply the settings after upgrade.</p>	Perform this step once for the whole environment.
[ ]	<p><b>Back up your environment</b></p> <p>Back up your entire environment to ensure that you can recover the existing environment in case something goes wrong during the upgrade process.</p> <p>Detailed steps: <a href="#">Back up the entire environment before an in-place upgrade (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step once for the whole environment.</p> <p>This step can take an hour, several hours, or longer, depending on your data set and your environment.</p>

## Perform the upgrade


Follow these steps in order during an in-place upgrade. Steps required for in-place upgrade with detached databases are also included.



### Warning:

When you upgrade in-place from an installation of Windows SharePoint Services 3.0 that uses Windows Internal Database and the database size approaches 4 GB, you must perform additional steps. For more information about these steps, see [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#).

Perform the in-place upgrade		Notes
[ ]	<p><b>Run the pre-upgrade checker</b></p> <p>Run the pre-upgrade checker again to identify any new or remaining issues before you start the upgrade.</p> <p>Detailed steps: <a href="#">Run the pre-upgrade checker (SharePoint Foundation 2010)</a>.</p>	Running the checker takes only a few minutes, but addressing any issues might take longer.
[ ]	<p><b>Install prerequisites on all servers</b></p> <p>Before you can upgrade, you must run the prerequisite installer successfully on each Web server that has Windows SharePoint Services 3.0 installed.</p> <p>Detailed steps: <a href="#">Install prerequisites</a> in the "Upgrade in place to SharePoint Foundation 2010" article.</p>	Perform this step for each Web server in your environment.
[ ]	<p><b>Detach databases (in-place upgrade with detached databases only)</b></p> <p>If you are performing an in-place upgrade with detached databases, detach the databases before you run Setup.</p> <p>Detailed steps: <a href="#">Roadmap for in-place upgrade with detached databases (SharePoint Foundation 2010)</a>.</p>	Perform this step for each content database in your environment.
[ ]	<p><b>Disconnect users</b></p> <p>If you are upgrading a server farm, disconnect all the users from the server farm by stopping the World Wide Web Publishing Service (W3SVC) on all Web servers.</p>	Perform this step on each Web server in your environment.
[ ]	<p><b>Run Setup on all servers</b></p> <p>Run Setup on all servers to upgrade the software.</p> <p>Detailed steps: <a href="#">Run Setup on all servers</a> in the "Upgrade in place to</p>	Perform this step for each Web server in your environment. This step might take a few minutes or more than an hour, depending on how many servers are in your environment.

Perform the in-place upgrade		Notes
	SharePoint Foundation 2010" article.	
[ ]	<p><b>Install language packs</b></p> <p>Install any language packs you need before you run the SharePoint Products Configuration Wizard.</p> <p>Detailed steps: <a href="#">Install available language template packs (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step on each Web server in your environment.</p> <p>This step should take only a few minutes per Web server.</p>
[ ]	<p><b>Run the SharePoint Products Configuration Wizard</b></p> <p>If you are upgrading a server farm, first run the SharePoint Products Configuration Wizard on the server that is running SharePoint Central Administration, pause and run the wizard on the other servers in the farm, and then return to the first server to complete the wizard.</p> <p> <b>Important:</b></p> <p>You must upgrade SharePoint Central Administration before you attempt to upgrade any other content in the farm. Completing the wizard on the server running SharePoint Central Administration allows you to do so.</p> <p>Detailed steps: <a href="#">Run the SharePoint Products Configuration Wizard</a> in the "Upgrade in place to SharePoint Foundation 2010" article.</p>	<p>Perform this step for each Web server in your environment.</p> <p>This step might take an hour or more.</p>
[ ]	<p><b>Configure forms-based authentication for a claims-based Web application (in-place upgrade with detached databases only)</b></p> <p>For Web applications that were</p>	<p>Perform this step now if you are following the in-place upgrade with detached databases approach. If you are following a standard in-place upgrade approach, perform this step after</p>

Perform the in-place upgrade		Notes
	<p>configured to use forms-based authentication or Web single sign-on (Web SSO) authentication, you must perform additional steps before you attach and upgrade the databases. First, you convert the Windows SharePoint Services 3.0 Web applications to claims authentication. After you convert the Web applications to claims authentication, you configure your Web application zones for forms-based authentication (or Web SSO authentication, as appropriate). Then, you can migrate users and permissions to SharePoint Foundation 2010.</p> <p>Detailed steps: <a href="#">Configure forms-based authentication for a claims-based Web application (SharePoint Foundation 2010)</a>.</p>	<p>upgrade is completed.</p> <p>Perform this step for any Web applications that used forms-based authentication in Windows SharePoint Services 3.0.</p>
[ ]	<p><b>Attach databases (in-place upgrade with detached databases only)</b></p> <p>If you are performing an in-place upgrade with detached databases, attach the databases and then upgrade the data.</p> <p>Detailed steps: <a href="#">Roadmap for in-place upgrade with detached databases (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step for each content database in your environment.</p> <p>This step might take an hour, several hours, or days, depending on your data set, whether you are upgrading multiple databases in parallel, and the hardware on the Web servers, database servers, and storage subsystem.</p>
[ ]	<p><b>Monitor upgrade progress</b></p> <p>Use the Upgrade Status page in SharePoint Central Administration to monitor progress as your sites are upgraded.</p> <p>Detailed steps: <a href="#">Verify upgrade and review upgraded sites (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step once for the whole environment.</p> <p>This step might take an hour, several hours, or days, depending on your data set.</p>

## Perform post-upgrade steps

Perform the following steps in order after you perform an in-place upgrade.

Post-upgrade steps for an in-place upgrade		Notes
[ ]	<p><b>Configure forms-based authentication for a claims-based Web application</b></p> <p>For Web applications that were configured to use forms-based authentication or Web single sign-on (Web SSO) authentication, you must perform additional steps after upgrading. First, you convert the Windows SharePoint Services 3.0 Web applications to claims authentication. After you convert the Web applications to claims authentication, you configure your Web application zones for forms-based authentication (or Web SSO authentication, as appropriate). Then, you can migrate users and permissions to SharePoint Foundation 2010.</p> <p>Detailed steps: <a href="#">Configure forms-based authentication for a claims-based Web application (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step for any Web applications that used forms-based authentication in Windows SharePoint Services 3.0.</p>
[ ]	<p><b>Verify upgrade and review upgraded sites</b></p> <p>Review sites to be sure that they have been upgraded successfully and are ready for users to view.</p> <p>Detailed steps: <a href="#">Verify upgrade and review upgraded sites (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step for every upgraded Web application and site collection in your environment. This step might take an hour, several hours, or days, depending on your content.</p> <p>You should also have site owners review their sites and report any issues.</p>

### See Also

[Upgrade Worksheet for SharePoint 2010 Products](http://go.microsoft.com/fwlink/?LinkId=179928) (<http://go.microsoft.com/fwlink/?LinkId=179928>)

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# Upgrade in place to SharePoint Foundation 2010

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When you run an in-place upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, the configuration data for the farm and all the content in the farm is upgraded on the existing hardware, in a fixed order. When you start the in-place upgrade process, Setup takes the Web server offline and the Web sites are unavailable until the upgrade is finished, and then Setup restarts the Web server. After you begin an in-place upgrade, you cannot pause the upgrade or roll back to the previous version.

**Note:**

One frequent cause of failures during upgrade is that the environment is missing customized features, solutions, or other elements. Be sure that any custom elements you have to have are installed on your front-end Web servers before you begin the upgrade process. You can use the pre-upgrade checker to identify any custom elements that your sites might be using. For more information, see [Identify and install customizations](#) in the article "Use a trial upgrade to find potential issues."

Upgrading in place from an installation of Windows SharePoint Services 3.0 that uses Windows Internal Database requires additional steps if your database size has exceeded 4 GB. For more information, see [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#).

You can also use many of the procedures in this article to perform a detach databases hybrid approach to upgrade, where you upgrade the server and infrastructure in place but upgrade the content databases by detaching and attaching them in parallel. For information about the detach databases process, see [Roadmap for in-place upgrade with detached databases \(SharePoint Foundation 2010\)](#). For more information about how to choose an upgrade approach, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#) and [Upgrade process overview \(SharePoint Foundation 2010\)](#).

**Important:**

You must be running Service Pack 2 (SP2) of Windows SharePoint Services 3.0 in a 64-bit Windows Server 2008 environment to perform an in-place upgrade to SharePoint Foundation 2010. If you are in a server farm environment, you must also be running a 64-bit version of Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, or SQL Server 2005 with SP3 and Cumulative Update 3.

In this article:

- [Process overview](#)
- [Before you begin](#)
- [Install prerequisites](#)
- [Run Setup on all servers](#)
- [Run the SharePoint Products Configuration Wizard](#)

- 
- [Check upgrade status for sites](#)
  - [Verification](#)

## Process overview

By using the procedures in this article, you install SharePoint Foundation 2010 and upgrade all of the SharePoint sites in the environment. We recommend that you try out the upgrade process on a test environment before you attempt to upgrade your production environment. For more information, see [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#).

When you upgrade a server farm, install and configure the new version to the servers in the following order:

1. Install SharePoint Foundation 2010 on all servers in the server farm.
2. Install any language packs for SharePoint Foundation 2010 that you need. For more information, see [Install available language template packs \(SharePoint Foundation 2010\)](#).
3. Run the SharePoint Products Configuration Wizard on the front-end Web server that contains the SharePoint Central Administration Web site.

To determine which server is running SharePoint Central Administration, open the Servers in Farm page ([http://server\\_name:adminport/\\_admin/farmservers.aspx](http://server_name:adminport/_admin/farmservers.aspx)) and note which server or servers have **Central Administration services** running. Perform this step before you install SharePoint Foundation 2010, while SharePoint Central Administration for Windows SharePoint Services 3.0 is still available.



**Note:**

If you have multiple servers that are running SharePoint Central Administration, pick one and use that as the initial server on which to run upgrade. After you have completed the process on that one, you can continue with any other servers that are running SharePoint Central Administration.

4. Run the SharePoint Products Configuration Wizard on the remaining front-end Web servers and application servers in the farm in any order.

For an overview and diagrams of the each upgrade approach, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).



**Note:**

If you are using the detach databases hybrid approach for upgrading, the process you follow is similar, but you detach all content databases before you run Setup, and then attach them again after you run the SharePoint Products Configuration Wizard. For more information about the detach databases upgrade approach, see [Roadmap for in-place upgrade with detached databases \(SharePoint Foundation 2010\)](#).

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## Before you begin

Before you begin the in-place upgrade, review the following information about permissions, hardware requirements, and software requirements and steps to perform before beginning the process.

- Make sure that you have run the pre-upgrade checker tool (**stsadm -o preupgradecheck**, available in Windows SharePoint Services 3.0 Service Pack 2 and updated in the October 2009 Cumulative Update) and addressed any issues before you begin the upgrade process. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).
- We recommend that you back up your environment before you begin the upgrade process. For more information, see [Back up the entire environment before an in-place upgrade \(SharePoint Foundation 2010\)](#).
- Ensure that you have met all hardware and software requirements. You must have a 64-bit version of Windows Server 2008 or Windows Server 2008 R2. For server farms, you must also have a 64-bit version of SQL Server 2005 or SQL Server 2008. For more information about these requirements (such as specific updates that you must install), see [Determine hardware and software requirements \(SharePoint Foundation 2010\)](#).
- Ensure that you are prepared to set up the required accounts by using appropriate permissions. For detailed information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).
- Ensure that the account that you use to run the SharePoint Products Configuration Wizard is a member of the **db\_owner** fixed database role for all the databases that you want to upgrade.

## Install prerequisites

Before you can upgrade, you must run the prerequisite installer successfully on each Web server that has Windows SharePoint Services 3.0 installed. A prerequisite installer is available to install software needed to support SharePoint Foundation 2010.

### To run the prerequisite installer

1. From the product disc, open the installation folder and run PrerequisiteInstaller.exe.  
The Microsoft SharePoint Products Preparation Tool opens.
2. Click **Next**.
3. On the License Terms page, select the **I accept the terms of the License Agreement(s)** check box, and then click **Next**.  
The tool runs, installing and configuring required software.
4. Click **Next**.
5. On the Installation Complete screen, verify that each prerequisite is listed as successfully installed or already installed.
6. Click **Finish** to close the wizard.



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## Run Setup on all servers

After all of the prerequisites are installed, you can run Setup.exe on all Web servers in your server farm.



### Note:

If you are using the detach databases hybrid approach for upgrading, you should detach your content databases before you run Setup. For more information about how to detach databases, see [Roadmap for in-place upgrade with detached databases \(SharePoint Foundation 2010\)](#).



### Important:

If you are running an in-place upgrade on a server farm, disconnect all the users from the server farm by stopping the World Wide Web Publishing Service (W3SVC) on all front-end Web servers. If you allow users in a server farm to connect after the files and databases have been updated on one Web server, but before the other Web servers have been updated, users will not be able to browse the Web sites.



### To install the new version

1. Run Setup.exe.
2. On the Read the Microsoft Software License Terms page, review the terms, select the **I accept the terms of this agreement** check box, and then click **Continue**.
3. On the Upgrade earlier versions page, click **Install Now**.
4. Setup runs and installs SharePoint Foundation 2010.

On the completion page, clear the **Run the SharePoint Products Configuration Wizard now** check box, and then click **Close**.

Before you run the SharePoint Products Configuration Wizard, install any language template packs for SharePoint Foundation 2010. For more information, see [Install available language template packs \(SharePoint Foundation 2010\)](#).

## Run the SharePoint Products Configuration Wizard

If you are upgrading a single server, you can run the SharePoint Products Configuration Wizard on only that server and start to upgrade content. If you are upgrading a server farm, first run the SharePoint Products Configuration Wizard on the server that is running SharePoint Central Administration, pause and run the wizard on the other servers in the farm, and then return to the first server to complete the wizard. It is important to upgrade SharePoint Central Administration before you attempt to upgrade any other content in the farm, and completing the wizard on the server that is running SharePoint Central Administration allows you to do so.



### Important:

Ensure that the account you use to run the SharePoint Products Configuration Wizard is a member of the **db\_owner** fixed database role for all the databases that you want to upgrade. If it is not, you might see an error about an unknown user account when the wizard starts to upgrade the databases.

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Be sure that you have installed any language template packs before you run the SharePoint Products Configuration Wizard.

 **Caution:**

After you run the SharePoint Products Configuration Wizard, Windows SharePoint Services 3.0 will no longer be available. You cannot pause or roll back the setup and upgrade process. Be sure that you have a current and valid backup of your environment before you proceed with installing SharePoint Foundation 2010.

 **To run the SharePoint Products Configuration Wizard**

1. Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **SharePoint Products Configuration Wizard**.

2. In the SharePoint Products Configuration Wizard, on the Welcome to SharePoint Products page, click **Next**.

A message appears, notifying you that Internet Information Services (IIS), the SharePoint Administration Services v4, and the SharePoint Timer Service v4 may need to be restarted or reset during configuration.

3. Click **Yes** to continue with the wizard.

4. On the Specify Farm Settings page, in the **Passphrase** box, type a passphrase and in the **Confirm passphrase** box, type the same passphrase.

The passphrase should consist of at least eight characters and should contain characters from at least three of the following four groups:

- English uppercase characters (from A through Z)
- English lowercase characters (from a through z)
- Numerals (from 0 through 9)
- Nonalphabetic characters (such as !, \$, #, %)

5. On the Visual Upgrade page, select one of the following options:

- **Change existing SharePoint sites to use the new user experience. Administrators control the user experience for end users.**

This option allows you to change all sites over to the new user experience without previewing that experience first. If you select this option, you can also choose between the following two options:

- **Preserve customized pages, but update template and application pages to use the new UI.**
- **Reset all customized pages to their original templates. This option will delete modifications from customized pages and cannot be undone.**
- **Preserve the look and feel of existing SharePoint sites, and allow end users to update their sites' user experience.**

This is the default option. This option allows the site owners to preview their sites in the new user experience and determine when they are ready to switch the sites over to the

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new user experience permanently.

6. On the Completing the SharePoint Products Configuration Wizard page, verify the settings, and then click **Next**.

The SharePoint Products Configuration Wizard runs and configures the configuration database and SharePoint Central Administration for SharePoint Foundation 2010.

7. A message appears, notifying you that if you have a server farm with multiple servers, you must run Setup on each server to install new binary files before you continue the SharePoint Products Configuration Wizard.

- If this is the only server in your farm, or if you have already run Setup on all the servers in your farm, click **OK** to continue with the wizard.
- If you have not yet run Setup on all the servers in your farm, run Setup on the remaining servers now, and then return to this server and click **OK** to continue with the wizard.

The SharePoint Products Configuration Wizard continues the upgrade process by setting up the configuration database and installing SharePoint Central Administration.

8. On the Configuration Successful, Upgrade in Progress page, review the settings that have been configured, and then click **Finish**.

The SharePoint Products Configuration Wizard closes and the Upgrade Status page opens. You might be prompted to enter your user name and password before the Upgrade Status page will open. The upgrade process might take awhile to complete, depending on how much data you have in your farm.



**Note:**

If you are following the detach databases hybrid approach for upgrade, you can now begin to attach content databases to upgrade them. For more information, see [Roadmap for in-place upgrade with detached databases \(SharePoint Foundation 2010\)](#).

9. If you are upgrading a server farm, you can now complete the SharePoint Products Configuration Wizard on the other servers in the farm.

## Check upgrade status for sites

After the SharePoint Products Configuration Wizard has finished, you can monitor the upgrade process for each site from the Upgrade Status page in SharePoint Central Administration or by using the **localupgradestatus** operation in Stsadm.exe. For more information, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

After upgrade is completed successfully for all sites, if you stopped the World Wide Web Publishing Service (W3SVC) on all front-end Web servers before the upgrade, manually start the World Wide Web Publishing Service on the front-end Web servers to make the Web servers available to users.



**Note:**

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Search results might be incomplete or might not be returned for a few minutes after upgrade. This is because the Search Synchronization Timer job must run after upgrade, and search results are not available until the job has finished.

## Verification

If upgrade fails or reports issues, you can refer to the log and error files for more information. For more information about how to review the log files and how to restart upgrade after a failure, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#). If you are using Visual Upgrade, for more information about previewing sites and changing to the new user interface, see [Manage visual upgrade \(SharePoint Foundation 2010\)](#).

### See Also

[Troubleshoot upgrade issues \(SharePoint Foundation\)](#)

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# Roadmap for in-place upgrade with detached databases (SharePoint Foundation 2010)

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When you upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, you can perform an in-place upgrade or a database attach upgrade, or you can combine certain aspects of both approaches to increase availability or throughput during the upgrade process. This article describes how to perform a hybrid approach that combines in-place upgrade with detaching and attaching databases so that you can upgrade multiple databases at the same time, possibly even on separate hardware. You can use this approach to upgrade two or more content databases at a time, and therefore upgrade more quickly than if you used a standard in-place upgrade (which upgrades individual content databases and site collections serially). This approach uses the following hybrid techniques:

- Use an in-place upgrade to upgrade the farm and settings.
- Detach and upgrade multiple databases in parallel.
- Alternative upgrade sequence: Upgrade databases on a temporary small farm.

Note that if you decide to use a temporary small farm to perform the actual upgrade, you must have direct access to the database servers to copy the databases from. Copying databases over the network takes time and bandwidth — make sure you test this process to determine whether you have the resources you need to use a temporary small farm.

For more information about the pros and cons of the different upgrade approaches, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#). For a brief overview and graphical description of the steps you take for each approach, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).



## Note:

One frequent cause of failures during upgrade is that the environment is missing customized features, solutions, or other elements. Be sure that any custom elements you need are installed on your front-end Web servers before you begin the upgrade process. You can use the pre-upgrade checker — and, for a database attach upgrade, the `test-spcontentdatabase` Windows PowerShell cmdlet — to identify any custom elements that your sites might be using. For more information, see [Identify and install customizations](#) in the article "Use a trial upgrade to find potential issues."

In this article:

- [Process overview](#)
- [Before you begin](#)
- [To detach databases and upgrade them in parallel on the same farm](#)
- [To detach databases and upgrade them in parallel on a temporary small farm](#)
- [Verification](#)



## Important:

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You must be running Service Pack 2 (SP2) of Windows SharePoint Services 3.0 in a 64-bit Windows Server 2008 environment to perform an in-place upgrade to SharePoint Foundation 2010. If you are in a server farm environment, you must also be running a 64-bit version of one of the following: Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, and SQL Server 2005 with SP3 and Cumulative Update 3.

## Process overview

Because this upgrade approach is a hybrid of the techniques used for in-place upgrade and database attach upgrade, this article describes how the steps from each approach fit together into the hybrid process. It does not provide details for every step in the process, because those steps are available in the following articles:

- [Upgrade in place to SharePoint Foundation 2010](#)
- [Attach databases and upgrade to SharePoint Foundation 2010](#)

These articles, combined with this roadmap, give you the information you need to perform this hybrid upgrade.

There are two ways in which you can perform this type of hybrid upgrade: using one farm throughout or using a temporary small farm to perform the actual upgrade. The sections below provide the steps you need to take to perform the upgrade by using each of these methods.

## Before you begin

Before you begin the in-place upgrade, review the following information about permissions, hardware requirements, and software requirements and steps to perform before beginning the process.

- Be sure you have run the pre-upgrade checker tool (**stsadm -o preupgradecheck**, available in Windows SharePoint Services 3.0 Service Pack 2 and updated in the October 2009 Cumulative Update) and addressed any issues before you begin the upgrade process. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).
- We recommend that you back up your environment before you begin the upgrade process. For more information, see [Back up the entire environment before an in-place upgrade \(SharePoint Foundation 2010\)](#).
- Ensure that you have met all hardware and software requirements. You must have a 64-bit version of Windows Server 2008 or Windows Server 2008 R2. For server farms, you must also have a 64-bit version of SQL Server 2005 or SQL Server 2008. For more information about these requirements (such as specific updates that you must install), see [Determine hardware and software requirements \(SharePoint Foundation 2010\)](#).
- Ensure that you are prepared to set up the required accounts by using appropriate permissions. For detailed information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).

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## To detach databases and upgrade them in parallel on the same farm

This section describes the steps to take to use the detach databases upgrade approach on a single farm.

### Process for upgrading in-place with detached databases (same farm)

#### Detach databases

1. Use the following operation to detach the content databases:

**Stsadm.exe -o deletecontentdb -url http://servername-databasenameContentDatabaseName**

For more information about this operation, see [Deletecontentdb: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287664(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287664\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287664(Office.12).aspx)).

#### Upgrade the farm in place

1. Install all prerequisites to all servers in the farm.
2. Run Setup on all servers in the farm.
3. Run the SharePoint Products Configuration Wizard on all servers in the farm.

For detailed procedures that describe these steps, see [Upgrade in place to SharePoint Foundation 2010](#).

#### Attach the databases and upgrade the content

1. Add the content databases to the Web applications.

Use the following Windows PowerShell cmdlet to add and upgrade the content databases:

```
Mount-SPContentDatabase -Name <DatabaseName> -DatabaseServer <ServerName> -  
WebApplication <URL> [-Updateuserexperience]
```

2. Verify upgrade for the first database.
3. Repeat the restore-and-add-database procedures for remaining databases in parallel.

For detailed procedures that describe these steps, see [Perform a database attach upgrade to SharePoint Foundation 2010](#).

## To detach databases and upgrade them in parallel on a temporary small farm

This section describes the steps to take to use the detach databases upgrade approach on two farms: the original farm and a temporary small farm.

## Process for upgrading in-place with detached databases (temporary small farm)

### Set up a temporary small farm to use in upgrading the databases

For detailed procedures that describe these steps, see [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#).

### 2 - Detach databases from the original farm

1. Back up the previous version databases by using SQL Server tools.

For detailed procedures about backing up the databases, see [Perform a database attach upgrade to SharePoint Foundation 2010](#).

2. Use the following operation to detach the content databases:

**Stsadm.exe -o deletecontentdb -url** `http://servername-databasenameContentDatabaseName`

For more information about this operation, see [Deletecontentdb: Stsadm operation \(Windows SharePoint Services\)](#) ([http://technet.microsoft.com/en-us/library/cc287664\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287664(Office.12).aspx)).

### Upgrade the original farm in place

1. Install all prerequisites to all servers in the farm.
2. Run Setup on all servers in the farm.
3. Run the SharePoint Products Configuration Wizard on all servers in the farm.

For detailed procedures that describe these steps, see [Perform an in-place upgrade \(SharePoint Foundation 2010\)](#).

### Attach the databases to the temporary small farm and upgrade the content

1. Restore the backup copy to the new farm.
2. Add the content databases to the Web applications.

Use the following Windows PowerShell cmdlet to add and upgrade the content databases:

```
Mount-SPContentDatabase -Name <DatabaseName> -DatabaseServer <ServerName> -  
WebApplication <URL> [-Updateuserexperience]
```

3. Verify upgrade for the first database.
4. Repeat the restore-and-add-database procedures for remaining databases in parallel.

For detailed procedures that describe these steps, see [Perform a database attach upgrade to SharePoint Foundation 2010](#).

### Back up the databases from the temporary small farm and attach them to the original farm

1. Back up the upgraded databases by using SQL Server tools.
2. Restore the backup copy to the original farm.
3. Add the upgraded content databases to the original Web applications.

This is basically the same process as the previous step; however, you are moving the databases from the temporary small farm back to the original farm. The same procedures apply as in the previous steps.



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## Verification

If upgrade fails or reports issues, you can refer to the log and error files for more information. For more information about reviewing the log files, and about restarting upgrade after a failure, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

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# Install available language template packs (SharePoint Foundation 2010)

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Before you can upgrade any sites that are based on a language pack for the previous version, you have to install the language pack for the new version.

In this article:

- [About installing language packs and upgrading sites](#)
- [About changing languages](#)
- [Moving from a fully localized product to a language pack](#)
- [Changing languages to a new language pack](#)

## About installing language packs and upgrading sites

If you want to install a language pack for Microsoft SharePoint Foundation 2010, do so after running Setup and before running the SharePoint Products Configuration Wizard. This way, you can upgrade any sites based on a language pack for a previous version along with the other sites during the upgrade process. For more information about installing language packs, see [Deploy language packs \(SharePoint Foundation 2010\)](#) in the Deployment Guide.

You can also install a language pack after you have run the SharePoint Products Configuration Wizard, and after you have upgraded the sites in your environment that are not based on a language pack. If you choose this option, you must then use the PSConfig command-line tool to upgrade the sites based on the newly installed language pack.

## About changing languages

Generally, a cross-language upgrade is not supported. You must upgrade from and to the same language. For example, if you are running U.S. English in the previous version, you need to upgrade to U.S. English in the new version. If you want to change languages, you must first perform the upgrade and then change the language for the site.

However, this process is complicated in some cases — for example, when the previous version had a fully localized product for a particular language but the new version only has a language pack, or when the new version has a language pack for a new language that was not available in the previous version.

## Moving from a fully localized product to a language pack

Use the following procedure on each Web server to upgrade from a language that was supported with a fully localized product in the previous version, but that is only supported by a language pack in the new version:

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### ▶ To move from a fully localized product to a language pack

1. Verify that the user account performing this procedure is a member of the Farm Administrators SharePoint group. .
2. Choose a language to install for the new version (for example, English). This is the language that the SharePoint Central Administration Web site will use.
3. In the SharePoint Products Configuration Wizard, when you are prompted to install language packs, stop the wizard and install the appropriate language pack.

If you had additional previous-version language packs installed, install the corresponding SharePoint Foundation 2010 language packs now by canceling the wizard, and then running the appropriate Setup programs to install the language packs.



#### **Note:**

You must be a member of the Administrators group on the local computer to perform this step.

For more information about installing language packs, see [Deploy language packs \(SharePoint Foundation 2010\)](#) in the Deployment Guide.

4. Start the configuration wizard again to complete the upgrade process.

## Changing languages to a new language pack

Use the following process to upgrade from a language in the previous version to a different language in the new version (for example, if the language you want was not available in the previous version, but is now available as a language pack in the new version).

### ▶ To change languages to a new language pack

1. Verify that the user account performing the next two steps is a member of the Administrators group on the local computer.
2. Upgrade to the new version in the same language that you used for the previous version.
3. After the upgrade is complete, install the new language pack.
4. Verify that the user account performing the next two steps is a member of the Farm Administrators SharePoint group.
5. Create new sites based on the new language pack.
6. Manually move your content to the new sites.

#### **See Also**

[Deploy language packs \(SharePoint Foundation 2010\)](#)

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# Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB (Remote BLOB Storage)

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This article describes the circumstances in which you might want to upgrade from a stand-alone Windows SharePoint Services 3.0 system to SharePoint Foundation 2010 with Remote BLOB Storage (RBS).

When you upgrade from a stand-alone installation of Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, the upgrade process differs depending on the size of the content databases.

In a stand-alone installation of Windows SharePoint Services 3.0, content databases are stored in Windows Internal Database and have no size limitations. Conversely, in SharePoint Foundation 2010, the content databases are stored in Microsoft SQL Server 2008 Express and have a maximum size of 4 gigabytes (GB) per database. If you have databases that are larger than 4 GB, you must either use Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, or SQL Server 2005 with SP3 and Cumulative Update 3, or install Remote BLOB Storage (RBS).



## Note:

Microsoft SQL Server 2008 R2 Express supports databases up to 10 GB. If the installation includes databases that are larger than 4 GB but smaller than 10 GB, you can upgrade to SQL Server 2008 R2 Express for your content database storage solution instead of implementing RBS. SQL Server 2008 R2 Express is available for download and installation at [Microsoft SQL Server 2008 R2 Express Edition](http://go.microsoft.com/fwlink/?LinkID=189418) (<http://go.microsoft.com/fwlink/?LinkID=189418>).

RBS is designed to move the storage of binary large objects (BLOBs) from database servers to commodity storage solutions. RBS is an add-on that can be applied to SQL Server 2008 Express and to SQL Server 2008. For more information about RBS, see [Overview of Remote BLOB Storage \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx) ([http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be\(Office.14\).aspx](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx)).

If you are upgrading from Windows SharePoint Services 3.0 and all databases are smaller than 4 GB, you can follow the standard in-place upgrade process. For details, see [Upgrade in place to SharePoint Foundation 2010](#).

If you are upgrading from Windows SharePoint Services 3.0 and the search database is larger than 4 GB, you cannot migrate that database. To upgrade, you must remove the existing instance of search before migrating and upgrading. After upgrading, you can create a new instance of search. The search database is limited to 4 GB if the new installation is hosted on SQL Server 2008 Express.

If you are upgrading from Windows SharePoint Services 3.0 and the configuration database is larger than 4 GB, you cannot migrate the configuration database. Instead, you must either create a new

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SharePoint Foundation system that uses SQL Server 2008 Express (if the configuration database is not expected to grow larger than 4 GB), or create a new installation that uses SQL Server 2008 Standard or SQL Server 2008 Enterprise. You can also migrate the existing system to SQL Server 2008 Standard or SQL Server 2008 Enterprise and then upgrade it.

If you are not upgrading an existing Windows SharePoint Services 3.0 system and you want to install and configure RBS in SharePoint Foundation 2010, see [Install and configure Remote BLOB Storage \(RBS\) with the FILESTREAM provider\(SharePoint Foundation 2010\)](#).



**Note**

- If after you move content into RBS, a content database remains that is larger than 4 GB, the migration operation will fail. This failure typically occurs only with very large databases (20 GB or larger), but it can also occur if there is a smaller database that contains too much metadata.
- If the configuration includes SharePoint databases that are larger than 16 GB, RBS is unlikely to provide a full solution to the limitations of SQL Server 2008 Express and SQL Server 2008 R2 Express. In this case, you should be prepared to use SQL Server 2008 Standard or SQL Server 2008 Enterprise to support the SharePoint databases.

Before beginning the upgrade process, confirm that the hardware configuration supports SharePoint Foundation 2010. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).

## In This Section

- [Upgrade a stand-alone installation by using remote BLOB storage \(in-place\)](#)

This article describes how to upgrade from a stand-alone Windows SharePoint Services 3.0 system that has content databases that are larger than 4 GB to SharePoint Foundation 2010.

- [Upgrade a stand-alone installation on a domain controller by using Remote BLOB Storage \(RBS\) \(database attach\)](#)

This article describes how to upgrade from a stand-alone Windows SharePoint Services 3.0 system that has content databases that are larger than 4 GB to a SharePoint Foundation 2010 system that is running on a domain controller.

- [Upgrade a stand-alone installation to new hardware by using Remote BLOB Storage \(database attach\)](#)

This article describes how to upgrade from a stand-alone Windows SharePoint Services 3.0 system that has content databases that are larger than 4 GB to SharePoint Foundation 2010 that is installed on new hardware.

### See Also

[Plan for remote BLOB storage \(RBS\) \(SharePoint Foundation 2010\)](#)

([http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94\(Office.14\).aspx](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx))

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# Upgrade a stand-alone installation by using remote BLOB storage (in-place)

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This article describes how to upgrade from a stand-alone Windows SharePoint Services 3.0 system that has content databases that range in size from 4 gigabytes (GB) to 16 GB to Microsoft SharePoint Foundation 2010 with Remote BLOB Storage (RBS).



## Note:

Microsoft SQL Server 2008 R2 Express supports databases up to 10 GB. If the installation includes content databases that are larger than 4 GB but smaller than 10 GB, you can upgrade to SQL Server 2008 R2 Express for your content database storage solution instead of implementing RBS. For more information, see [Microsoft SQL Server 2008 R2 Express Edition \(http://go.microsoft.com/fwlink/?LinkID=189418\)](http://go.microsoft.com/fwlink/?LinkID=189418).

Before performing the operations described in this article, we strongly recommend that you read the following articles to ensure that you are following the best upgrade path:

- [Plan for remote BLOB storage \(RBS\) \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx)  
([http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94\(Office.14\).aspx](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx))
- [Overview of Remote BLOB Storage \(SharePoint Foundation 2010\)](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx)  
([http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be\(Office.14\).aspx](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx))
- [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#)

## ▶ To upgrade from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 with RBS

1. Verify that the user account that is used to perform the upgrade and installation is a member of the Administrators group on the computer running Windows SharePoint Services 3.0 on which the upgrade is being performed and on which RBS is being installed.
2. Confirm that the hardware configuration supports SharePoint Foundation 2010. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
3. Verify that the available disk space meets the following requirements:
  - Available disk space is at least twice the size of the largest content database.
  - Available disk space is equal to or greater than the sum of the sizes of all content databases.
4. Download the SharePoint Foundation 2010 software updates from the upgrade site.
5. Open the local folder that contains the software download, and then double-click **PrerequisiteInstaller**. Accept the default values, and then complete the Prerequisite Installer Wizard.

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6. Double-click **Setup**, accept the default values, and then complete the Setup Wizard.  
When Setup completes, the SharePoint Products Configuration Wizard automatically runs. If the wizard detects a SharePoint database that is larger than 4 GB, a message appears that notifies you that you must migrate the databases to RBS.



**Note:**

If any SharePoint database is larger than 4 GB, all SharePoint databases must be migrated to RBS, even if some databases are smaller than 4 GB.

7. If you have not previously installed RBS on the server, the SharePoint Products Configuration Wizard fails, and then displays an error message that explains that databases larger than 4 GB were detected and that RBS must be installed. If you must install RBS, continue with the following steps. If you have already installed RBS on the server, the wizard completes successfully without displaying the error message.
8. Go to <http://go.microsoft.com/fwlink/?LinkID=177388> to download the RBS\_X64.msi file.



**Important:**

You must install the version of RBS that is included in the SQL Server Remote BLOB Store installation package from the SQL Server Remote BLOB Store installation package from the Feature Pack for Microsoft SQL Server 2008 R2. The version of RBS must be **10.50.xxx**. No earlier version of RBS is supported for SharePoint Foundation 2010.

9. Open the folder that contains the file, and then double-click **RBS\_X64.msi** to start the Install SQL Remote BLOB Storage Wizard.
10. In the Install SQL Remote BLOB Storage Wizard, on the Feature Selection page, expand **Server**, click the down arrow next to **Execute scripts**, and then click **Entire feature will be unavailable**.
11. Expand **FILESTREAM Provider**, expand **Server**, click the down arrow next to **Execute scripts**, and then click **Entire feature will be unavailable**.
12. Complete the wizard by using the default values.
13. Click **Start**, click **All Programs**, click **Microsoft SharePoint 2010 Products**, and then click **SharePoint 2010 Products Configuration Wizard**.
14. The wizard completes the upgrade.

**See Also**

[What's new in upgrade \(SharePoint Foundation 2010\)](#)

[Upgrade process overview \(SharePoint Foundation 2010\)](#)

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# Upgrade a stand-alone installation on a domain controller by using Remote BLOB Storage (RBS) (database attach)

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This article discusses the upgrade procedures that are required to upgrade from a stand-alone Windows SharePoint Services 3.0 system that is running on a domain controller to Microsoft SharePoint Foundation 2010 with Remote BLOB Storage (RBS). We typically recommend that you use RBS if the content databases are 4 gigabytes (GB) or larger.



## Important:

We strongly recommend that you read the article [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#) for important information and recommendations about how to upgrade from Windows SharePoint Services 3.0 to SharePoint Foundation 2010 with RBS.

You can use RBS to move the storage of binary large objects (BLOBs) from database servers to commodity storage solutions. RBS is an add-on that can be applied to SQL Server 2008 Express and to SQL Server 2008.

The implementation of RBS that is discussed in this article uses the SQL Server FILESTREAM provider. For more information about RBS and the FILESTREAM provider, see [Overview of Remote BLOB Storage \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be\(Office.14\).aspx](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx)).

In SharePoint Foundation 2010, the content databases are stored in SQL Server 2008 Express and have a maximum size of 4 GB per database. Because Microsoft SQL Server 2008 R2 Express supports content databases that are up to 10 GB, we recommend that you install SQL Server 2008 R2 Express to support the content databases.

This article is not a comprehensive guide to upgrading to SharePoint Foundation 2010. Instead, it refers you to the articles you should read to perform the upgrade. This article contains the additional steps that are required to install and implement RBS on a domain controller installation of SharePoint Foundation 2010.

Before beginning the upgrade process, read the following articles and create an upgrade plan:

- [About the upgrade process \(SharePoint Foundation 2010\)](#)
- [Plan and prepare for upgrade \(SharePoint Foundation 2010\)](#)
- [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#)

Procedures in this article:

- [To prepare for the upgrade to SharePoint Foundation 2010 with RBS on a domain controller](#)
- [To install SQL Server 2008 Express R2](#)



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- [To install RBS](#)
  - [To install SharePoint Foundation 2010](#)
  - [To install SharePoint Foundation 2010](#)

▶ **To prepare for the upgrade to SharePoint Foundation 2010 with RBS on a domain controller**

1. Verify that the user account that is used to perform the upgrade and installation meets the requirements listed in [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).
2. Verify that the user account is a member of the Administrators group on the local computer.
3. Confirm that the hardware configuration supports SharePoint Foundation 2010. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
4. Verify that the available disk space meets the following requirements:
  - Available disk space is at least two times the size of the largest content database.
  - Available disk space is equal to or greater than the sum of the sizes of all content databases.
5. Perform the pre-upgrade tasks that are discussed in the article [Perform pre-upgrade steps \(SharePoint Foundation 2010\)](#). These are as follows:
  - [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#)

The pre-upgrade checker report includes the names of all content databases. You will need this list to enable RBS for the content databases.

If you have multiple Web applications, you should compile a list of which content databases are attached to which Web applications. You will need this information after the upgrade.
  - [Back up the entire environment before an in-place upgrade \(SharePoint Foundation 2010\)](#)

▶ **To install SQL Server 2008 Express R2**

1. Download SQL Server 2008 R2 Express from [Microsoft SQL Server 2008 R2 Express Edition \(http://go.microsoft.com/fwlink/?LinkID=189418\)](#).
2. Follow the on-screen instructions to install SQL Server 2008 R2 Express on the domain controller.

For more information about how to install SQL Server 2008 R2 Express, see [How to: Install SQL Server 2008 \(Setup\) \(http://go.microsoft.com/fwlink/?LinkID=186119&clcid=0x409\)](#).

Accept the default settings for most of the installation options. You should specifically accept the following options:

- a. On the Feature Selection page, you can select the components for the installation. Be sure to select **SQL Server Management Studio** as a feature to install.
- b. On the Instance Configuration page, specify whether to install a default instance or a named instance. If you create a named instance, note the instance name because you will

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need this name in a later procedure in this article.

- c. On the Server Configuration — Service Accounts page, you must specify login accounts for SQL Server services. You can assign the same login account to all SQL Server services, or you can configure each service account individually. You must use a domain account as the login account for the SQL Server Database Engine.
- d. On the Database Engine Configuration page, make sure that the domain account that is used for this installation is listed as a SQL Server administrator.

### To install RBS

1. Go to <http://go.microsoft.com/fwlink/?LinkID=177388> (<http://go.microsoft.com/fwlink/?LinkID=177388>) to download the RBS\_X64.msi file.



#### **Important:**

You must install the version of RBS that is included in the SQL Server Remote BLOB Store installation package from the Feature Pack for Microsoft SQL Server 2008 R2. The version of RBS must be **10.50.xxx**. No earlier version of RBS is supported for SharePoint Foundation 2010.

2. Open the folder that contains the file, and then double-click **RBS\_X64.msi** to start the Install SQL Remote BLOB Storage Wizard.
3. In the Install SQL Remote BLOB Storage Wizard, on the Feature Selection page, expand **Server**, click the down arrow next to **Execute scripts**, and then click **Entire feature will be unavailable**.
4. Expand **FILESTREAM Provider**, expand **Server**, click the down arrow next to **Execute scripts**, and then click **Entire feature will be unavailable**.



#### **Note:**

The database that will host the scripts does not yet exist because it will be created during the database upgrade process. The Execute scripts option will be installed automatically during the installation of SharePoint Foundation 2010.

5. Complete the wizard by using the default values.  
During the installation, a dialog box appears that describes an RBS Maintainer task. Click **OK** in that dialog box to continue with the installation.

### To install SharePoint Foundation 2010

1. Uninstall all previous versions of SharePoint Products and Technologies that exist on the domain controller by using Control Panel.
2. Install SharePoint Foundation 2010 by following the instructions in [Install SharePoint Foundation 2010 on the farm servers](#). During the installation, you must use the database instance name that you created in Step 2 of the procedure [To install SQL Server 2008 Express R2](#). If you used the default named instance in that step, you must enter it in this step as **"SQLEXPRESS"**. If you used the default instance, you must type " " here instead of using the

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default SQLExpress named instance.

Note that you are creating a new installation of SharePoint Foundation 2010. You are performing a database attach upgrade, not an in-place upgrade.



**Note:**

After you install SharePoint Foundation 2010, do not create any Web applications until instructed to do this later in this article.

▶ **To migrate the content database to RBS and complete the installation**

1. Verify that the user account that is performing this procedure is the same user account that was used to install the farm running SharePoint Foundation 2010 and RBS.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command to migrate the content database to RBS:

```
Move-SPBlobStorageLocation -SourceDatabase "<ContentDbName>" -  
DestinationDataSourceInstance "<InstanceName>"
```

Where:

- *<ContentDbName>* is the name of the content database.
- *<InstanceName>* is the name of the SQL Server database instance name that you created in Step 2 of the procedure [To install SQL Server 2008 Express R2](#). If you used the default named instance in that step, you must enter it here as **"SQLExpress"**. If you used the default instance, you must type " " here instead of using the default "SQLExpress" named instance.

You must repeat this command for each content database. Refer to the list of content databases that was generated by the Pre-upgrade checker in Step 5 of the [To prepare for the upgrade to SharePoint Foundation 2010 with RBS on a domain controller](#) procedure earlier in this article.

6. Create the Web applications to which the content databases will be attached. For information about how to create a Web application in SharePoint Foundation 2010, see [Create a Web application \(SharePoint Foundation 2010\)](#) or [Configure a claims-based Web application \(SharePoint Foundation 2010\)](#).
7. To attach and upgrade the content database to a SharePoint Foundation 2010 Web application, type the following command:

```
Mount-SPContentDatabase "<ContentDbName>" -DatabaseServer "<DbServer>" -  
WebApplication <http://SiteName>
```

---

Where:

- `<ContentDbName>` is the name of the database.
- `<DbServer>` is the name of the database server.
- `<http://SiteName>` is the URL of the Web application.

For more information, see [Move-SPBlobStorageLocation](http://technet.microsoft.com/library/5b66feac-c365-4dfd-9ccb-a66a4faa617f(Office.14).aspx)

([http://technet.microsoft.com/library/5b66feac-c365-4dfd-9ccb-a66a4faa617f\(Office.14\).aspx](http://technet.microsoft.com/library/5b66feac-c365-4dfd-9ccb-a66a4faa617f(Office.14).aspx))

and [Mount-SPContentDatabase](http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237(Office.14).aspx) ([http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237\(Office.14\).aspx](http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237(Office.14).aspx)).

8. Create or restore needed customizations onto the new system. For recommended post-upgrade steps, see [Perform post-upgrade steps \(SharePoint Foundation 2010\)](#).

### **See Also**

[Plan for remote BLOB storage \(RBS\) \(SharePoint Foundation 2010\)](#)

([http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94\(Office.14\).aspx](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx))

[What's new in upgrade \(SharePoint Foundation 2010\)](#)

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# Upgrade a stand-alone installation to new hardware by using Remote BLOB Storage (database attach)

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This article discusses the upgrade procedures that are required to upgrade from a stand-alone Windows SharePoint Services 3.0 system to an installation of SharePoint Foundation 2010 with Remote BLOB Storage (RBS) onto a new hardware platform.

## Important:

We strongly recommend that you read the article [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#) for important information and recommendations about how to upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010 together with RBS.

RBS is designed to move the storage of binary large objects (BLOBs) from database servers to commodity storage solutions. RBS is an add-on that can be applied to Microsoft SQL Server 2008 Express and Microsoft SQL Server 2008 R2 Express. This implementation of RBS uses the SQL FILESTREAM provider. For more information about RBS and the FILESTREAM provider, see [Overview of Remote BLOB Storage \(SharePoint Foundation 2010\)](#)

([http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be\(Office.14\).aspx](http://technet.microsoft.com/library/7522114b-7de5-434e-b028-8b99654a43be(Office.14).aspx)).

Because of the database size limitations in SQL Server 2008 Express, install Windows Internal Database and restore the Windows SharePoint Services 3.0 databases into Windows Internal Database. You then install RBS, move the content database from Windows Internal Database into SQL Server, and then move the BLOBs into a content database that is set to use RBS.

By default, content databases in SharePoint Foundation 2010 are stored in SQL Server 2008 Express, which has a maximum size of 4 gigabytes (GB) per content database. Because SQL Server 2008 R2 Express supports content databases that are up to 10 GB, we recommend you install SQL Server 2008 R2 Express to support content databases. SQL Server 2008 R2 Express is a free upgrade that you can download and install from [Microsoft SQL Server 2008 R2 Express Edition](#)

(<http://go.microsoft.com/fwlink/?LinkID=189418>).

## Note:

This article assumes that you have installed SQL Server Management Studio on the database server in the Windows SharePoint Services 3.0 farm. If you do not have this software installed, you can download and install it from [Microsoft® SQL Server® 2008 Management Studio Express](#) (<http://go.microsoft.com/fwlink/?LinkID=186132&clcid=0x409>).

This article is not a comprehensive guide to upgrading to SharePoint Foundation 2010. Before you begin the upgrade process, read the following articles and create an upgrade plan:

- [About the upgrade process \(SharePoint Foundation 2010\)](#)

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- [Plan and prepare for upgrade \(SharePoint Foundation 2010\)](#)
  - [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#)

In this article:

- [To prepare for the upgrade to SharePoint Foundation 2010 on the original server](#)
- [To prepare for the upgrade to SharePoint Foundation 2010 on the new server](#)
- [To install and configure Windows Internal Database on the new server](#)
- [To move the content databases to the new server](#)
- [To install SQL Server Express 2008 R2 on the new server](#)
- [To install RBS on the new server](#)
- [To install SharePoint Foundation 2010 on the new server](#)
- [To migrate the content database to RBS and complete the installation](#)

#### ▶ **To prepare for the upgrade to SharePoint Foundation 2010 on the original server**

1. Verify that the user account that is used to perform this procedure meets the requirements listed in [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#), and that the user account is a member of the Administrators group on the local computer.
2. Verify that Management Studio is installed on the original server.
3. Back up the content databases by using the procedure described in [How to: Back Up a Database \(SQL Server Management Studio\)](#) (<http://go.microsoft.com/fwlink/?LinkID=187768&clcid=0x409>). You can use the default settings for most options, but you must use the following settings:
  - In step 1, you must set the instance name for Windows Internal Database as `\\.\pipe\MSSQL$MICROSOFT##SSEE\sql\query`.
  - In Step 12, select the option **Destination**. Make sure that the destination media has sufficient free space for the backup.
4. Run the pre-upgrade checker that is discussed in the article [Perform pre-upgrade steps \(SharePoint Foundation 2010\)](#).

The pre-upgrade checker report includes the names of all content databases. You have to have this list to migrate content databases to RBS. If you have multiple Web applications, you should also note which content databases are attached to which Web applications.

#### ▶ **To prepare for the upgrade to SharePoint Foundation 2010 on the new server**

1. Verify that the user account that is used to perform the upgrade and installation meets the requirements listed in [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#), and that the user account is a member of the Administrators

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group on the local computer.

2. Confirm that the hardware configuration supports SharePoint Foundation 2010. For more information, see [Hardware and software requirements \(SharePoint Foundation 2010\)](#).
3. Verify that the available disk space meets the following requirements:
  - Available disk space is at least twice the size of the largest content database.
  - Available disk space is equal to or greater than the sum of the sizes of all content databases.

▶ **To install and configure Windows Internal Database on the new server**

1. Click **Start**, and click **Server Manager**.
2. In Server Manager, click **Features** and then click **Add Features**.
3. In the Add Features wizard, scroll down the list of features, and then select **Windows Internal Database**.
4. Click **Install**.
5. Exit Server Manager.
6. Click **Start**, click **Administrative Tools**, and then click **Computer Management**.
7. Expand **Services and Applications**.
8. Click **Services**.
9. In the **Services** pane, right-click **Windows Internal Database**, and then click **Properties**.
10. Use the drop-down menu to change the **Startup type** to **Automatic**.
11. Click **Start** to start the service.
12. Click **OK**, and then exit Computer Management.

▶ **To move the content databases to the new server**

1. Copy the content database backup files that you created in the procedure [To prepare for the upgrade to SharePoint Foundation 2010 on the original server](#) to the new server.
2. On the new server, download and install Management Studio from [Microsoft® SQL Server® 2008 Management Studio Express](#) (<http://go.microsoft.com/fwlink/?LinkID=186132&clcid=0x409>).
3. Use the instructions at [How to: Restore a Database Backup \(SQL Server Management Studio\)](#) (<http://go.microsoft.com/fwlink/?LinkID=187769&clcid=0x409>) to restore the databases by using Management Studio. Use the following settings for the restore procedure:
  - In Step 1, use the following name for the Windows Internal Database instance:  
`\\.\pipe\MSSQL$MICROSOFT##SSEE\sqlquery.`
  - In Step 5, enter the correct database name to be restored. We recommend that you use the same name that was used when the database was backed up.
  - In Step 7, select the database file that you copied in Step 1.

- Accept all other default options and complete the restore.

### ▶ To install SQL Server Express 2008 R2 on the new server

1. Download SQL Server 2008 R2 Express from [Microsoft SQL Server 2008 R2 Express Edition](http://go.microsoft.com/fwlink/?LinkID=189418) (<http://go.microsoft.com/fwlink/?LinkID=189418>).
2. Follow the onscreen instructions to install SQL Server 2008 R2 Express.

For additional information, see [How to: Install SQL Server 2008 \(Setup\)](http://go.microsoft.com/fwlink/?LinkID=187771&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=187771&clcid=0x409>).

Especially note the following settings:

- On the Instance Configuration page, specify whether to install a **Default instance** or a **Named instance**. If you create a named instance, note the instance name. You have to supply this name in a later procedure.
- On the Server Configuration — Service Accounts page, you must specify login accounts for SQL Server services. You can assign the same login account to all SQL Server services, or you can configure each service account individually.
- On the Database Engine Configuration page, make sure that the domain account that is being used for this installation is listed as a SQL Server administrator.

### ▶ To install RBS on the new server

1. Go to <http://go.microsoft.com/fwlink/?LinkID=177388> (<http://go.microsoft.com/fwlink/?LinkID=177388>) to download the RBS\_X64.msi file.



#### Important:

You must install the version of RBS that is included in the SQL Server Remote BLOB Store installation package from the Feature Pack for Microsoft SQL Server 2008 R2. The version of RBS must be **10.50.xxx**. No earlier version of RBS is supported for SharePoint Foundation 2010.

2. Open the folder that contains the .msi file, and double-click **RBS\_X64.msi** to start the Install SQL Remote BLOB Storage Wizard.
3. In the Install SQL Remote BLOB Storage Wizard, on the Feature Selection page, expand **Server**, click the down arrow next to **Execute scripts**, and then click **Entire feature will be unavailable**.
4. Expand **FILESTREAM Provider**, expand **Server**, click the down arrow next to **Execute scripts**, and then click **Entire feature will be unavailable**.



#### Note:

The database that will host the scripts does not yet exist. It is created during the database upgrade process. The Execute scripts option will be installed automatically during the installation of SharePoint Foundation 2010.

5. Complete the wizard by using the default values.

During the installation, a dialog box appears about an RBS Maintainer task. Click **OK** in that



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dialog box to proceed with the installation.

### ▶ To install SharePoint Foundation 2010 on the new server

1. Install SharePoint Foundation 2010 by following the instructions in [Install SharePoint Foundation 2010 on the farm servers](#). You must use the database instance name that you created in Step 2 of the procedure [To install SQL Server Express 2008 R2 on the new server](#) that you performed earlier in this article. If you used the default named instance in that step, you must enter it here as “**SQLExpress**”. If you used the default instance, then you must enter “ ” here instead of using the default SQLExpress named instance.

Note that you are creating a new installation of SharePoint Foundation 2010. You are performing a database attach upgrade, not an in-place upgrade.



#### Note:

After you install SharePoint Foundation 2010, do not create any Web applications until instructed to do this later in this article.

### ▶ To migrate the content database to RBS and complete the installation

1. Verify that the same user account that was used to install SharePoint Foundation 2010 and RBS is the user account that is performing this procedure.
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command to migrate the content database to RBS. You must repeat this command for each content database. Refer to the list of content databases that was generated by the Pre-upgrade checker in Step 4 of the procedure [To prepare for the upgrade to SharePoint Foundation 2010 on the original server](#) earlier in this article.

```
Move-SPBlobStorageLocation -SourceDatabase "<DbName>" -  
DestinationDataSourceInstance "<InstanceName>"
```

Where:

- *<DbName>* is the name of the content database that you restored into Windows Internal Database.
  - *<InstanceName>* is the name of the SQL Server database instance that you created in the procedure [To install SQL Server Express 2008 R2 on the new server](#) earlier in this article. If you used the default named instance in that step, you must enter it here as “**SQLExpress**”. If you used the default instance, then you must enter “ ” here instead of using the default SQLExpress named instance.
6. Create the Web applications that attach to the content database. For information about how to create a Web application in SharePoint Foundation 2010, see [Create a Web application](#)

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[\(SharePoint Foundation 2010\)](#) or [Configure a claims-based Web application \(SharePoint Foundation 2010\)](#).

7. Type the following command to attach and upgrade a content database to a Web application:

```
Mount-SPContentDatabase "<DbName>" -WebApplication <http://SiteName>
```

Where:

- <DbName> is the name of the database.
- <http://SiteName> is the name of the Web application.

Repeat this command for each content database.

For more information, see [Move-SPBlobStorageLocation](#)

([http://technet.microsoft.com/library/5b66feac-c365-4dfd-9ccb-a66a4faa617f\(Office.14\).aspx](http://technet.microsoft.com/library/5b66feac-c365-4dfd-9ccb-a66a4faa617f(Office.14).aspx))

and [Mount-SPContentDatabase](#) ([http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237\(Office.14\).aspx](http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237(Office.14).aspx)).

8. Create or restore needed customizations onto the new system. For recommended post-upgrade steps, see [Perform post-upgrade steps \(SharePoint Foundation 2010\)](#).

### See Also

[Plan for remote BLOB storage \(RBS\) \(SharePoint Foundation 2010\)](#)

([http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94\(Office.14\).aspx](http://technet.microsoft.com/library/da8cf825-2f79-49dd-bd4c-4ad0aad83f94(Office.14).aspx))

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# Perform a database attach upgrade to SharePoint Foundation 2010

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Now that you have learned about the upgrade process by reading the articles in [About the upgrade process \(SharePoint Foundation 2010\)](#), and planned for your upgrade by following the steps in the articles in [Plan and prepare for upgrade \(SharePoint Foundation 2010\)](#), you are ready to perform database attach upgrade to Microsoft SharePoint Foundation 2010. You can follow the steps in this section for both a trial upgrade and your actual in-place upgrade on your production farm.

In this section:

- [Checklist for database attach upgrade \(SharePoint Foundation 2010\)](#)  
Use this checklist to make sure that you follow all necessary steps as you prepare for upgrade, perform the upgrade, and perform post-upgrade steps.
- [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#)  
Before you can attach and upgrade your databases, you must fully configure your new environment.
- [Attach databases and upgrade to SharePoint Foundation 2010](#)  
After your new environment is fully configured, follow these steps to attach the databases and upgrade your SharePoint sites.

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# Checklist for database attach upgrade (SharePoint Foundation 2010)

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This article contains a checklist you can use to make sure that you followed all necessary steps as you prepare for upgrade, perform the upgrade, and perform post-upgrade steps.

In this article:


- [Prepare for upgrade](#)
- [Perform the upgrade](#)
- [Perform post-upgrade steps](#)

Some of the steps include notes about the amount of time the steps might take. These are rough estimates only, to give you a relative idea of the duration of the step. To find out how much time each step will take for your environment, we recommend that you perform trial upgrades in a test environment. For more information, see [Estimate how long the upgrade process will take and the space that you need \(SharePoint Foundation 2010\)](#) and [Use a trial upgrade to find potential issues \(SharePoint Foundation 2010\)](#).

## Prepare for upgrade

Follow these steps in order before you begin a database attach upgrade:

Pre-upgrade steps for a database attach upgrade		Notes
<b>Prepare for upgrade</b>		
[ ]	<b>Run the pre-upgrade checker</b> Run the pre-upgrade checker and address any issues. Use the report that is generated by the tool to fill out the Upgrade planning worksheet.  Detailed steps: <a href="#">Run the pre-upgrade checker (SharePoint Foundation 2010)</a> .	Perform this step multiple times as you clean up your environment and test your upgrade process.  Running the checker takes only a few minutes, but addressing any issues might take days or weeks.
[ ]	<b>Create an inventory of server-side customizations in the environment</b> Create an inventory of the server-side customizations in your environment (solutions, features, Web Parts, event handlers, master pages, page layouts, CSS	Perform this step for the whole environment. Check each Web server to make sure that you don't miss any

Pre-upgrade steps for a database attach upgrade		Notes
	<p>files, and so on). Much of this information is reported when you run the pre-upgrade checker. Record all customizations needed for your environment in the upgrade worksheet.</p> <p>Detailed steps: <a href="#">Identify and install customizations</a> in the "Use a trial upgrade to find potential issues" article.</p>	<p>customizations. Keep the inventory up to date as you prepare for the upgrade.</p>
[ ]	<p><b>Clean up your environment</b></p> <p>Before you begin upgrading, you should make sure that your environment is functioning in a healthy state and that you clean up any content that you do not have to upgrade. Clean up any orphaned sites or data, address any large lists and large ACLs, remove extraneous document versions, and remove any unused templates, features and Web Parts.</p> <p>Detailed steps: <a href="#">Cleaning up your environment before upgrade (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step once for the whole environment.</p> <p>This process might take days or weeks to complete.</p>
<p><b>Prepare the new environment</b></p> <p>Also see <a href="#">Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade</a>.</p>		
[ ]	<p><b>Install and configure SharePoint Foundation 2010 and any language packs</b></p> <p>Install the prerequisite software, and then install and configure SharePoint Foundation 2010.</p>	<p>Perform these steps on each server in your farm.</p> <p>This step might take one or more hours, depending on how many servers are in your environment.</p>
[ ]	<p><b>Configure general farm settings</b></p> <p>Reapply any general farm settings that you must have from your previous farm — such as blocked file types and e-mail and quota settings — and add users or groups to the Farm Administrators group. Configure new settings such as usage and health data collection, diagnostic logging, and mobile accounts.</p> <p> <b>Important:</b> If you had disabled the Workflow Auto Cleanup timer job in your Windows SharePoint Services 3.0 environment, make sure that you disable this timer job in your new environment also. If this timer job is enabled in the new</p>	<p>Perform this step once for the whole environment.</p>

Pre-upgrade steps for a database attach upgrade		Notes
	<p>environment and disabled in the previous version environment, you might lose workflow associations when you upgrade. For more information about this timer job, see <a href="http://technet.microsoft.com/library/29e71181-0653-43ae-ab92-e6d109ac011b(Office.14).aspx">Disable preservation of workflow history (SharePoint Foundation 2010)</a> (<a href="http://technet.microsoft.com/library/29e71181-0653-43ae-ab92-e6d109ac011b(Office.14).aspx">http://technet.microsoft.com/library/29e71181-0653-43ae-ab92-e6d109ac011b(Office.14).aspx</a>).</p>	
[ ]	<p><b>Create and configure Web applications</b></p> <p>Create a Web application for each Web application that existed in the old environment.</p>	Perform this step once for the whole environment.
[ ]	<p><b>Reapply server-side customizations</b></p> <p>Manually transfer all server-side customizations into your new farm. Refer to the inventory you created in the upgrade worksheet to make sure that you install any components that your sites depend on to work correctly.</p>	Make sure that you reapply customizations to all Web servers in the farm.
[ ]	<p><b>Verify the new environment</b></p> <p>After you set up the new environment, you can perform tests to make sure it contains all the components you have to have before you upgrade your data.</p>	Perform this step once for the whole environment.

## Perform the upgrade

Follow these steps in order during a database attach upgrade. Steps required for database attach with read-only databases are also included.

Detailed steps: [Attach databases and upgrade to SharePoint Foundation 2010](#).

### Warning:

When you upgrade from an installation of Windows SharePoint Services 3.0 that uses Windows Internal Database and the database size exceeds 4 GB, you must perform additional steps. For more information about these steps, see [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#).

Perform the database attach upgrade		Notes
[ ]	<p><b>Run the pre-upgrade checker</b></p> <p>Run the pre-upgrade checker again to identify any new or remaining issues before you set the databases to read-only or back up the databases.</p> <p>Detailed steps: <a href="#">Run the pre-upgrade checker (SharePoint Foundation 2010)</a>.</p>	<p>Running the checker takes only a few minutes, but addressing any issues might take longer.</p>
[ ]	<p><b>Set the previous version databases to be read-only (database attach with read-only databases)</b></p> <p>If you want your original environment to remain available to users in a read-only state, set the databases to read-only before you back them up.</p>	<p>Perform this step for each content database in your environment.</p> <p>Depending on your organization, you might need a database administrator to perform this task.</p>
[ ]	<p><b>Back up databases</b></p> <p>Back up all of your content databases before you begin the database attach upgrade process.</p>	<p>Perform this step for each content database in your environment.</p> <p>This step can take an hour, several hours, or longer, depending on your data set and your environment.</p> <p>Depending on your organization, you might need a database administrator to perform this task.</p>
[ ]	<p><b>Detach the previous version databases (standard database attach)</b></p> <p>If you are going to upgrade the original databases (rather than a backup copy), detach the original databases from the instance of Microsoft SQL Server so that you can move them to the new environment.</p>	<p>Perform this step for each content database in your environment.</p> <p>Depending on your organization, you might need a database administrator to perform this task.</p>
[ ]	<p><b>Restore a backup copy of the database (database attach with read-only databases)</b></p> <p>If you are going to upgrade a copy of</p>	<p>Perform this step for each content database in your environment.</p> <p>This step can take an hour or</p>

Perform the database attach upgrade		Notes
	the databases, restore the databases from the backup.	longer, depending on your data set and your environment. Depending on your organization, you might need a database administrator to perform this task.
[ ]	<b>Verify custom components</b> Use the <b>Test-SPContentDatabaseWindows</b> PowerShell cmdlet to verify that you have all the custom components that you need for that database.	Perform this step for each content database in your environment.  Running the cmdlet takes only a few minutes, but addressing any issues might take longer.
[ ]	<b>Verify permissions</b> Ensure that the account that you use to attach the databases is a member of the <b>db_owner</b> fixed database role for the content databases that you want to upgrade.	
[ ]	<b>Attach a content database to a Web application</b> Attach the first content database that you want to upgrade. You must perform this action from the command line. You can use the <b>Mount-SPContentDatabaseWindows</b> PowerShell cmdlet or the <b>AddContentDB</b> Stsadm operation.	Perform this step for one content database in your environment.  This step might take an hour, several hours, or longer, depending on your data set and hardware on the Web servers, database servers, and storage subsystem.
[ ]	<b>Verify upgrade for the first database</b> Verify that upgrade succeeded for the first database, and review the site to see if there are any issues.  Detailed steps: <a href="#">Verify upgrade and review upgraded sites (SharePoint Foundation 2010)</a> .	Perform this step for the content database you just attached.
[ ]	<b>Attach remaining databases</b> Attach and upgrade the remaining content databases in your environment. You must perform this action from the	Perform this step for each of the remaining content databases in your environment.  This step might take an hour,



Perform the database attach upgrade		Notes
	command line.	several hours, or longer, depending on your data set, whether you are upgrading multiple databases in parallel, and the hardware on the Web servers, database servers, and storage subsystem.
[ ]	<p><b>Monitor upgrade progress</b></p> <p>Use the Upgrade Status page in SharePoint Central Administration to monitor progress as your sites are upgraded.</p> <p>Detailed steps: <a href="#">Verify upgrade and review upgraded sites (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step for each content database that you upgrade.</p> <p>This step might take an hour, several hours, or days, depending on your data set.</p>
[ ]	<p><b>Verify upgrade for the remaining database</b></p> <p>Verify that upgrade succeeded for the remaining databases, and review the sites to see if there are any issues.</p> <p>Detailed steps: <a href="#">Verify upgrade and review upgraded sites (SharePoint Foundation 2010)</a>.</p>	<p>Perform this step for each of the remaining content databases in your environment.</p> <p>This step might take an hour, several hours, or days, depending on your content.</p>

## Perform post-upgrade steps

Follow these steps in order after you perform a database attach upgrade.

Post upgrade steps for database attach upgrade		Notes
[ ]	<p><b>Verify upgrade and review upgraded sites</b></p> <p>Review sites to be sure that they have been upgraded successfully and are ready for users to view.</p> <p>Detailed steps: <a href="#">Verify upgrade and review upgraded sites</a></p>	<p>Perform this step for every upgraded database and site collection in your environment.</p> <p>This step might take an hour, several hours, or days, depending on your content.</p> <p>You should also have site owners review their sites and report any</p>

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Post upgrade steps for database attach upgrade	Notes
	<a href="#">(SharePoint Foundation 2010)</a> . issues.

**See Also**

[Upgrade Worksheet for SharePoint 2010 Products](http://go.microsoft.com/fwlink/?LinkId=179928) (<http://go.microsoft.com/fwlink/?LinkId=179928>)

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# Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade

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When you upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010 by using the database attach approach, you upgrade only the content for your environment and not the configuration settings. Using a database attach upgrade is useful when you are changing hardware or want to reconfigure your server farm topology as part of the upgrade process. For more information about how to choose an upgrade approach, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#).

Before you can upgrade the data, you must configure a new server or server farm by using SharePoint Foundation 2010. This article explains the elements you need to configure to create that new environment. For more information about the general process of upgrading by using the database attach upgrade approach, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).



## Important:

To perform the steps in this article, you must have administrator rights on the local server computer. For more information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).

In this article:

- [Before you begin](#)
- [Create and configure the new environment](#)
- [Verify the new environment](#)
- [Perform the upgrade](#)

## Before you begin

Before you begin to create the new environment for a database attach upgrade, review the following information about permissions, hardware requirements, and software requirements.

- Ensure that you have met all hardware and software requirements. You must have a 64-bit version of Windows Server 2008 or Windows Server 2008 R2. For server farms, you must also have a 64-bit version of SQL Server 2005 or SQL Server 2008. For more information about these requirements (such as specific updates that you must install), see [Determine hardware and software requirements \(SharePoint Foundation 2010\)](#).
- Ensure that you are prepared to set up the required accounts by using appropriate permissions. For detailed information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).
- Run the pre-upgrade checker on your original environment. The pre-upgrade checker identifies potential upgrade issues in your environment so that you can address them before you upgrade. It

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can also help you identify settings that you need in your new environment. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).

## Create and configure the new environment

The process of creating and configuring the new environment contains several steps, which must be performed in the correct sequence. These steps are:

1. Install SharePoint Foundation 2010 on the server or servers.
2. Configure service applications.
3. Configure general farm settings.
4. Create and configure Web applications.
5. Reapply customizations.

The remainder of this section describes these steps and provides links to other articles that contain step-by-step instructions for performing them. After you have performed these steps, you can verify the environment and then perform the upgrade.

### Install

The first step in creating your new environment is to install SharePoint Foundation 2010 and configure your new server or server farm. You must do the following:

1. Run the Microsoft SharePoint Products Preparation Tool to install all required software.
2. Run Setup to install the product.
3. Install any language packs that you need in your environment.
4. Run the SharePoint Products Configuration Wizard to configure your server or servers.

The following articles provide step-by-step instructions for performing these tasks.

- **Install and configure the product**

Follow the steps in one of the following articles to install and configure SharePoint Foundation 2010 on a single server or server farm:

- [Deploy a single server with SQL Server \(SharePoint Foundation 2010\)](#)
- [Multiple servers for a three-tier farm \(SharePoint Foundation 2010\)](#)

For more deployment scenarios (such as installing in a stand-alone environment with SQL Express), see [Deployment scenarios \(SharePoint Foundation 2010\)](#).

- **Install and configure language packs**

Follow the steps in [Deploy language packs \(SharePoint Foundation 2010\)](#) to install and configure any language packs that are needed for the sites in your environment.

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## Configure service applications

You must configure any services you want to use in your new environment, such as the Business Data Connectivity service. The steps included in the deployment scenarios articles listed above describe how to use the Initial Farm Configuration Wizard to enable all services. However, you can also configure services manually. For more information about how to configure services manually, see [Configure services \(SharePoint Foundation 2010\)](#).

## Configure general farm settings

The next step in creating the new environment is to apply general farm settings. You must manually reapply configuration settings from your previous version farm, including the following:

- Incoming and outgoing e-mail settings
- Any farm-level security and permission settings, such as adding user or group accounts to the Farm Administrators group.
- Blocked file types
- Quota templates

And you must configure any new farm-level settings that you want to use, such as the following:

- Usage and health data collection
- Diagnostic logging
- Mobile accounts

For more information about how to configure these settings, see [Configure farm settings \(SharePoint Foundation 2010\)](#).



### Important:

If you had disabled the Workflow Auto Cleanup timer job in your Windows SharePoint Services 3.0 environment, make sure that you disable this timer job in your new environment also. If this timer job is enabled in the new environment and disabled in the previous version environment, you might lose workflow associations when you upgrade. For more information about this timer job, see [Disable preservation of workflow history \(SharePoint Foundation 2010\)](#) ([http://technet.microsoft.com/library/29e71181-0653-43ae-ab92-e6d109ac011b\(Office.14\).aspx](http://technet.microsoft.com/library/29e71181-0653-43ae-ab92-e6d109ac011b(Office.14).aspx)).

## Create and configure Web applications

Create a Web application for each Web application that existed in the original environment. For each Web application, do the following:

- Use the same URL and configure any alternate-access mapping settings.



### Note:

If you use a different URL, Microsoft Office applications might not be redirected correctly to the new URLs and any bookmarks to the old URLs will not work.

- Use the same authentication method.

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 **Important**

- If you were using forms-based authentication, you will need to configure claims-based authentication instead. You must also create a Web application policy to grant Full Control to the user account that will be performing the database attach upgrade.
- For more information, see [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#).
- Re-create included paths (such as /Sites).
- Enable self-service site creation for any Web application that used it in the previous environment.

For more information about how to configure Web applications and authentication, see the following articles:

- For classic authentication: [Create a Web application \(SharePoint Foundation 2010\)](#)
- For claims-based authentication: [Configure a claims-based Web application \(SharePoint Foundation 2010\)](#) and [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#)

## Reapply customizations

One frequent cause of failures during upgrade is that the environment is missing customized features, solutions, or other elements. Make sure that any custom elements you have to have are installed on your front-end Web servers before you begin the upgrade process. You can use the pre-upgrade checker to compile a list of server-side customizations in your environment. For more information, see [Identify and install customizations](#) in the article "Use a trial upgrade to find potential issues."

In this step, you manually transfer all customizations into your new farm. Make sure to install any components that your sites depend on to work correctly, including the following:

- Custom site definitions

 **Note:**

If the site definition was created in Windows SharePoint Services 3.0, you can copy it over to the new environment as-is. If, however, it was created in Windows SharePoint Services version 2.0, you might have to create an upgrade definition file to map the site definition to the new features in Windows SharePoint Services 3.0. For more information, see [Develop new custom site definitions and create upgrade definition files \(Windows SharePoint Services\)](#) ([http://technet.microsoft.com/en-us/library/cc287930\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287930(Office.12).aspx)) and [Deploy upgrade definition files and new site definitions \(Windows SharePoint Services\)](#) ([http://technet.microsoft.com/en-us/library/cc288457\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288457(Office.12).aspx)).

- Custom style sheets, including cascading style sheets, and images
- Custom Web Parts
- Custom Web services
- Custom features and solutions
- Custom assemblies

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- Web.config changes (such as security)  
Ensure that you transfer any unique settings from the Web.config files for each Web application to the new servers.
  - Any other components or files on which your sites depend.

For more information about how to update customizations for use in SharePoint Foundation 2010, see: [Redeploying Customizations and Solutions in SharePoint Foundation 2010 and SharePoint Server 2010](http://msdn.microsoft.com/en-us/library/ee662217(office.14).aspx) ([http://msdn.microsoft.com/en-us/library/ee662217\(office.14\).aspx](http://msdn.microsoft.com/en-us/library/ee662217(office.14).aspx)). For more information about how to deploy customizations to your environment, see [Deploy customizations - overview \(SharePoint Foundation 2010\)](#).

## Verify the new environment

After you have set up the new environment, you can perform tests to make sure it contains all the components you need before you upgrade your data. To test your new environment, you can use the following methods:

- Create a new Web application and then use the Windows PowerShell **Test-SPContentDatabase** cmdlet to verify that all the server-side customizations that are needed for that content database are present in the new environment. Do not attach or upgrade the database. For more information, see [Test-SPContentDatabase](http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d(Office.14).aspx) ([http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d\(Office.14\).aspx](http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d(Office.14).aspx)).



### Note:

You can also run this command on the original content database, but the database should not be in active use at the time.

- Use the **enumallwebs** Stsadm operation in your Windows SharePoint Services 3.0 environment to see which template each site is associated with and then verify whether the template is installed in your SharePoint Foundation 2010 environment. The October Cumulative Update includes improvements to the **enumallwebs** operation that can help you find customizations in use. For more information about this operation, see [Enumallwebs: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/dd793606(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/dd793606\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/dd793606(Office.12).aspx)).

## Perform the upgrade

After you finish preparing the new environment, you can attach and upgrade the databases.

Follow the steps in [Attach databases and upgrade to SharePoint Foundation 2010](#) to attach and upgrade the databases from the Windows SharePoint Services 3.0 server or server farm to the new SharePoint Foundation 2010 server or server farm.



### Important:

When you upgrade from an installation of Windows SharePoint Services 3.0 that uses Windows Internal Database and the database size exceeds 4 GB, you must perform additional steps. For more information, see [Upgrading from a stand-alone installation of Windows SharePoint Services 3.0 to SharePoint Foundation 2010 when content databases exceed 4 GB \(Remote BLOB Storage\)](#).

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# Attach databases and upgrade to SharePoint Foundation 2010

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When you upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010 by using the database attach upgrade approach, you upgrade only the content for your environment and not the configuration settings. Using a database attach upgrade approach is useful when you are changing hardware or want to reconfigure your server farm topology as part of the upgrade process. For more information about how to choose an upgrade approach, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#).

The first step in the process is to set up a new environment to host the upgraded content. If you have not yet set up and configured the new environment, follow the steps in [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#) to do so.

After you set up the new environment, you can use the procedures in this article to detach and then reconnect the databases to perform the actual upgrade. This article contains the steps required to perform a standard database attach upgrade and a database attach upgrade with read-only databases.

In this article:

- [Process overview](#)
- [Before you begin](#)
- [Set the previous version databases to be read-only \(database attach with read-only databases\)](#)
- [Back up the previous version databases by using SQL Server tools](#)
- [Detach the previous version databases \(standard database attach\)](#)  
(<http://technet.microsoft.com/library/38ef5fbb-181b-49bf-aa7a-2d5c47b3811c.aspx#Detach>)
- [Restore a backup copy of the database \(database attach with read-only databases\)](#)
- [Verify custom components](#) (<http://technet.microsoft.com/library/38ef5fbb-181b-49bf-aa7a-2d5c47b3811c.aspx#VerifyCustom>)
- [Attach a content database to a Web application](#)
- [Verification: Verify upgrade for the first database](#)
- [Attach the remaining databases](#)
- [Verification: Verify upgrade for additional databases](#)



## Note:

One frequent cause of failures during upgrade is that the environment is missing customized features, solutions, or other elements. Be sure that any custom elements you have to have are installed on your front-end Web servers before you begin the upgrade process. Use the pre-upgrade checker — and, for a database attach upgrade, also use the **test-spcontentdatabase** Windows PowerShell cmdlet — to identify any custom elements that your sites might be using. For more information, see [Identify and install customizations](#) in the article "Use a trial upgrade to find potential issues."



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For more information about the general process of upgrading by using the database attach upgrade approach, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).

## Process overview

When you upgrade by using database attach upgrade, you detach the databases in the old farm and then attach them to the new farm. When you attach a database to the new farm, the upgrade process runs and upgrades the whole database. The database attach upgrade process is similar to the in-place upgrade process. The difference is that the database attach upgrade process is performed manually, and is performed in a separate environment.

If you want to preserve your original farm and allow users to continue to access their data, you must set the databases to read-only and then attach a backup copy of the databases.



### Note:

The part of the process in this article that is specific to moving a database from one computer that is running Microsoft SQL Server to a different computer that is running SQL Server is known as *planned relocation*. For more information about planned relocation, see [Moving User Databases](#) (<http://go.microsoft.com/fwlink/?LinkId=148425>).

For a general overview of the upgrade process, see [Upgrade process overview \(SharePoint Foundation 2010\)](#).

## Before you begin

Before you begin the database attach upgrade, review the following information about permissions, hardware requirements, and software requirements. Follow the specified steps to install or configure prerequisite software or to modify settings.

- Ensure that you have met all hardware and software requirements. You must have a 64-bit version of Windows Server 2008 or Windows Server 2008 R2. For server farms, you must also have a 64-bit version of SQL Server 2005 or SQL Server 2008. For more information about these requirements (such as specific updates that you must install), see [Determine hardware and software requirements \(SharePoint Foundation 2010\)](#).
- Ensure that you are prepared to set up the required accounts by using appropriate permissions. For detailed information, see [Administrative and service accounts required for initial deployment \(SharePoint Foundation 2010\)](#).
- Ensure that the account you use to attach the databases is a member of the **db\_owner** fixed database role for the content databases that you want to upgrade.
- Run the pre-upgrade checker tool on the sites that are stored in the databases. The pre-upgrade checker identifies potential upgrade issues in your environment so that you can address them before you upgrade. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).
- Create a new server farm environment. For information about how to create the new environment, see [Prepare the new SharePoint Foundation 2010 environment for a database attach upgrade](#).

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- Check for and repair any database consistency errors. For more information, see [Database maintenance for Windows SharePoint Services 3.0 \(white paper\)](http://technet.microsoft.com/en-us/library/cc307161(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc307161\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc307161(Office.12).aspx)).

## Set the previous version databases to be read-only (database attach with read-only databases)

If you are using the read-only databases hybrid approach to upgrade, set the previous version databases to read-only before you back up the databases. In any type of database attach upgrade, you can also set the databases to read-only temporarily to ensure that you capture all the data in the backup so that you are restoring and upgrading the current state of the environment. If the databases are set to read-only, users can continue to view content, but they will be unable to add or change content.

### **Important:**

You cannot upgrade a database that is set to read-only. If you are using a database attach with read-only databases, you restore a copy of the database and perform the upgrade on the copy. If you are not using this method, but want to set content databases to read-only temporarily while you back up the current data, make sure that you set the databases to read-write before you attach and upgrade the databases.

### **Important:**

Be sure you have run the pre-upgrade checker before you perform this procedure. For more information, see [Run the pre-upgrade checker \(SharePoint Foundation 2010\)](#).

### **To set a database to read-only in SQL Server 2000**

1. In SQL Server Enterprise Manager, right-click the name of the database that you want to set to read-only, and then click **Properties**.
2. In the **Properties** dialog box, click the **Options** tab.
3. Under **Access**, select the **Read-only** check box, and then click **OK**.

### **To set a database to read-only in SQL Server 2005**

1. In SQL Server Management Studio, right-click the name of the database that you want to set to read-only, and then click **Properties**.
2. In the **Select a page** section, click **Options**.
3. In the right pane, under **Other options**, in the **State** section, next to **Database Read-Only**, click the arrow, and then select **True**.

### **To set a database to read-only in SQL Server 2008**

1. In SQL Server Management Studio, in Object Explorer, connect to an instance of the Database Engine, expand the server, and then expand **Databases**.

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2. Select the database that you want to configure to be read-only, right-click the database, and then click **Properties**.
  3. In the **Database Properties** dialog box, in the **Select a page** section, click **Options**.
  4. In the right pane, under **Other options**, in the **State** section, next to **Database Read-Only**, click the arrow, and then select **True**.

You can configure the **READ\_ONLY** database availability option by using Transact-SQL. For more information about how to use the **SET** clause of the **ALTER DATABASE** statement, see [Setting Database Options](http://go.microsoft.com/fwlink/?LinkId=148362) (<http://go.microsoft.com/fwlink/?LinkId=148362>).

## Back up the previous version databases by using SQL Server tools

Follow the appropriate procedure to back up databases in SQL Server 2000, SQL Server 2005, or SQL Server 2008. Repeat these steps for each content database in your server farm.

You do not have to back up the configuration or admin content databases, because you will re-create these databases in the new server farm. For more information about the kinds of databases that you might have in a Windows SharePoint Services 3.0 server farm, see [Database types and descriptions \(Windows SharePoint Services 3.0\)](http://technet.microsoft.com/en-us/library/cc974471(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc974471\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc974471(Office.12).aspx)).

At the end of this procedure, you will have created duplicates of the read-only content databases.

### To back up a database in SQL Server 2000

1. On the database server, click **Start**, point to **All Programs**, point to **Microsoft SQL Server**, and then click **Enterprise Manager**.
2. In SQL Server Enterprise Manager, expand **Microsoft SQL Servers**.
3. Expand **SQL Server Group**.
4. Expand **(local) (Windows NT)**.
5. Expand **Databases**.
6. Right-click the database that you want to back up, point to **All Tasks**, and then click **Backup Database**.
7. In the **SQL Server Backup** dialog box, in the **Name** box, specify a name for the backup, and then in the **Backup** area, select **Database - complete**.
8. In the **Destination** area, either select an existing destination or do the following:
  - a. Click **Add**.
  - b. In the **Select Backup Destination** box, select **File Name**, and then next to the **File Name** box, click **Browse**.
  - c. In the **Backup Device Location - (local)** dialog box, in the **File name** box, type a file name, and then click **OK**.
  - d. Click **OK** again to close the **Select Backup Destination** dialog box.

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9. Click **OK** to start the backup process.
  10. Click **OK** to acknowledge that the backup process is complete.

Repeat the previous procedure to back up all the other content databases that are used by Windows SharePoint Services 3.0 in your environment.

 **To back up a database in SQL Server 2005**

1. On the database server, click **Start**, point to **All Programs**, point to **Microsoft SQL Server 2005**, and then click **SQL Server Management Studio**.
2. In the **Connect to Server** box, fill in the connection information, and then click **Connect**.
3. After you connect to the appropriate instance of the SQL Server 2005 Database Engine, in Object Explorer, expand the server tree by expanding the server name.
4. Expand **Databases**, right-click the database that you want to back up, point to **Tasks**, and then click **Back Up**. The **Back Up Database** dialog box appears.
5. In the **Source** area, in the **Database** box, verify the database name.
6. In the **Backup type** box, select **Full**.
7. Under **Backup component**, select **Database**.
8. In the **Backup set** area, in the **Name** text box, either accept the default backup set name that is suggested or type a different name for the backup set.
9. In the **Destination** area, specify the type of backup destination by selecting **Disk** or **Tape**, and then specify a destination. To create a different destination, click **Add**.
10. Click **OK** to start the backup process.

Repeat the previous procedure to back up all the other content databases that are used by Windows SharePoint Services 3.0 in your environment.

 **To back up a database in SQL Server 2008**

1. On the database server, click **Start**, point to **All Programs**, point to **Microsoft SQL Server 2008**, and then click **SQL Server Management Studio**.
2. In the **Connect to Server** box, fill in the connection information, and then click **Connect**.
3. After you connect to the appropriate instance of the SQL Server 2008 Database Engine, in Object Explorer, expand the server name.
4. Expand **Databases**, right-click the database that you want to back up, point to **Tasks**, and then click **Back Up**. The **Back Up Database** dialog box appears.
5. In the **Source** area, in the **Database** box, verify the database name.
6. In the **Backup type** box, select **Full**.
7. Under **Backup component**, select **Database**.
8. In the **Backup set** area, in the **Name** text box, either accept the default backup set name or type a new name.
9. In the **Destination** area, specify the type of backup destination by selecting **Disk** or **Tape**, and

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then specify a destination. To create a different destination, click **Add**.

10. Click **OK** to start the backup process.

Repeat the previous procedure to back up all the other content databases that are used by Windows SharePoint Services 3.0 in your environment.

## Detach the previous version databases (standard database attach)

Before you can attach your databases to the new environment and upgrade the data, you need to detach them from the current environment. After you have detached the databases, you can move them to a new database server or leave them on the existing database server and attach them to the Web applications.



### Important:

Do not use the following procedure if you are performing a database attach upgrade with read-only databases. To continue to provide your users with access to their content, you need to leave the databases attached, and follow the steps in the [Restore a backup copy of the database \(database attach with read-only databases\)](http://technet.microsoft.com/library/38ef5fbb-181b-49bf-aa7a-2d5c47b3811c.aspx#restore) (<http://technet.microsoft.com/library/38ef5fbb-181b-49bf-aa7a-2d5c47b3811c.aspx#restore>) section later in this article to make a copy of the databases instead.

### ▶ To detach a content database from a Web application

1. In Central Administration, on the Application Management page, in the **SharePoint Web Application Management** section, click **Content databases**.
2. On the Manage Content Databases page, click the content database you want to detach.



### Note:

If the content database does not appear, it might be associated with another Web application. To select another Web application, on the **Web Application** menu, click **Change Web Application**.

3. On the Manage Content Database Settings page, in the **Remove Content Database** section, select the **Remove content database** check box, and then click **OK**.



### Note:

Removing the content database does not delete the database; it only removes the association of the database with the Web application.

4. Repeat steps 2 and 3 for each content database that you want to detach.


You can also use the **deletecontentdb** Stsadm operation to detach a content database from a Web application. For more information, see [Deletecontentdb: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc287664(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc287664\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc287664(Office.12).aspx)).

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If you are moving the databases to a different database server, you must also detach the databases from the instance of SQL Server before you move them and attach them to the new instance of SQL Server after you move them.

 **Important:**

If you move your databases to a different instance of SQL Server, make sure to verify that security is configured correctly. Check that the accounts you use have the appropriate fixed roles and permissions on the databases, and that they will still be valid accounts if you are moving across domains.

 **To detach a database from an instance of SQL Server and move it to another instance of SQL Server**

1. In SQL Server 2005 Management Studio, open the source instance of SQL Server, and then expand the **Databases** node.
2. Right-click the content database, point to **Tasks**, and then click **Detach**. Repeat this step for each content database that you want to detach and move.

 **Note:**

Use this procedure to move only content databases. Do not detach any other databases.

3. In Windows Explorer, browse to the location of the .mdf and .ldf files for the content databases.
4. Select the .mdf and .ldf files for the database you want to move and either copy or move them to the destination directory.
5. In SQL Server 2005 Management Studio, open the source instance of SQL Server.
6. Right-click the **Databases** node, point to **Tasks**, and then click **Attach**.
7. In the **Attach Database** dialog box, browse to the location to which you transferred the .mdf and .ldf files, select the .mdf file for the database you want to attach, and then click **OK**.
8. Repeat steps 6 and 7 for each content database that you are moving.

## Restore a backup copy of the database (database attach with read-only databases)

After you configure the new server farm, you can restore the backup copies of the databases on one of the following: Microsoft SQL Server 2008 R2, SQL Server 2008 with Service Pack 1 (SP1) and Cumulative Update 2, and SQL Server 2005 with SP3 and Cumulative Update 3. Note that you must restore to a 64-bit version of SQL Server 2008 R2, SQL Server 2008 with SP1 and Cumulative Update 2, and SQL Server 2005 with SP3 and Cumulative Update 3. Start with one database, and then verify that the restoration has worked before you restore the other databases.

The following section provides procedures for restoring the backups.

 **To restore a backup copy of a database in SQL Server 2005 Enterprise Edition**

- 
1. In SQL Server Management Studio, right-click **Databases**, and then click **Restore Database**. The **Restore Database** dialog box appears.
  2. In the **Restore Database** dialog box, on the **General** page, in the **To database** box, type the name of the database you are restoring.
  3. In the **To a point in time** text box, keep the default (**Most recent possible**).
  4. To specify the source and location of the backup sets to restore, click **From device**, and then click **Browse** to select the backup file.
  5. In the **Specify Backup** dialog box, in the **Backup media** box, make sure that **File** is selected.
  6. In the **Backup location** area, click **Add**.
  7. In the **Locate Backup File** dialog box, select the file that you want to restore, and then click **OK**.
  8. In the **Select the backup sets to restore** grid, select the **Restore** check box next to the most recent full backup.
  9. In the **Restore Database** dialog box, on the **Options** page, under **Restore options**, select the **Overwrite the existing database** check box.
  10. Click **OK** to start the restore process.

▶ **To restore a backup copy of a database in SQL Server 2008 Enterprise**

1. After you connect to the appropriate instance of the SQL Server 2008 Database Engine, in Object Explorer, expand the server name.
2. Right-click **Databases**, and then click **Restore Database**. The **Restore Database** dialog box appears.
3. In the **Restore Database** dialog box, on the **General** page, type the name of the database to be restored in the **To database** list.
4. In the **To a point in time** text box, retain the default (**Most recent possible**).
5. To specify the source and location of the backup sets to restore, click **From device**, and then click **Browse** to select the backup file.
6. In the **Specify Backup** dialog box, in the **Backup media** box, be sure that **File** is selected.
7. In the **Backup location** area, click **Add**.
8. In the **Locate Backup File** dialog box, select the file that you want to restore, click **OK**, and then, in the **Specify Backup** dialog box, click **OK**.
9. In the **Restore Database** dialog box, under **Select the backup sets to restore** grid, select the **Restore** check box next to the most recent full backup.
10. In the **Restore Database** dialog box, on the **Options** page, under **Restore options**, select the **Overwrite the existing database** check box.
11. Click **OK** to start the restore process.

---

## Verify custom components

Before you attach the content databases to the Web applications, use the **Test-SPContentDatabase** Windows PowerShell cmdlet to verify that you have all the custom components that you need for that database.

### To verify custom components are available by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Test-SPContentDatabase -Name <DatabaseName> -WebApplication <URL>
```

Where:

- *<DatabaseName>* is the name of the database you want to test.
- *<URL>* is the URL for the Web application that will host the sites.

For more information, see [Test-SPContentDatabase](#)

([http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d\(Office.14\).aspx](http://technet.microsoft.com/library/ed095a0a-fa1a-4323-8503-624f0e09707d(Office.14).aspx)).

## Attach a content database to a Web application

When you attach a content database, make sure that the root site for the Web application is included in the first content database that you attach. In other words, before you continue, examine the root of the Web application in the original server farm to determine the first site collection. After you attach the database that contains the root site, you can attach the other content databases for the Web application in any order. You do not have to create any site collections to store the content before you attach the database; this process creates the site collections for you. Make sure that you do not add any new site collections until you have restored all the content databases.

### **Important:**

If you are moving the content databases across domains or forests or into another environment that has different service accounts, ensure that the permissions for the service accounts are still correct before you attach the databases.

You can use either the **Mount-SPContentDatabase** cmdlet in Windows PowerShell or the **addcontentdb** Stsadm command to attach a content database to a Web application. Using the SharePoint Central Administration pages to attach a content database is not supported for upgrading. Ensure that the account you use to attach the databases is a member of the **db\_owner** fixed database role for the content databases that you want to upgrade.

### **Important**



- 
- If you were using forms-based authentication, you will need to configure claims-based authentication for your Web application before you attach any databases. You must also create a policy to grant Full Control to the Web application to the user account that will be performing the database attach upgrade.
  - For more information, see [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#).



#### Tip

- You cannot attach the same content database more than once to a farm, even on different Web applications. Each site collection in a content database has a GUID that is associated with it, which is registered in the configuration database. Therefore, you cannot add the same site collection twice to the farm, even in separate Web applications. Although you can successfully attach the database in this situation, you will be unable to start the site collection.
- If you need a duplicate copy of a site collection in the same farm, first attach the database that contains the site collection to a separate farm, and then use the Stsadm backup and restore operations to copy the site collection over to the other farm. The Stsadm backup and restore process creates a new GUID for the site collection.

#### ▶ To attach a content database to a Web application by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
Mount-SPContentDatabase -Name <DatabaseName> -DatabaseServer <ServerName> -  
WebApplication <URL> [-Updateuserexperience]
```

Where:

- *<DatabaseName>* is the name of the database you want to upgrade.
- *<ServerName>* is server on which the database is stored.
- *<URL>* is the URL for the Web application that will host the sites.
- *Updateuserexperience* is the choice to update to the new user experience or stay in the old user experience (part of Visual Upgrade). When you include this parameter, the site is set to preview the new user experience. Omit this parameter if you want the site to remain in the old user experience after upgrade. For more information, see [Plan visual upgrade \(SharePoint Foundation 2010\)](#).

For more information, see [Mount-SPContentDatabase](#)  
([http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237\(Office.14\).aspx](http://technet.microsoft.com/library/20d1bc07-805c-44d3-a278-e2793370e237(Office.14).aspx)).



#### Note:

We recommend that you use Windows PowerShell when performing command-line

---

administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

▶ **To attach a content database to a Web application by using the Stsadm command-line tool**

1. On the drive on which SharePoint Products and Technologies is installed, change to the following directory: %COMMONPROGRAMFILES%\Microsoft shared\Web server extensions\12\Bin.

2. Type the following command, and then press ENTER:

```
stsadm -o addcontentdb -url<URL> -databasename<DatabaseName>  
[-databaseserver<ServerName>] [-databaseuser<UserName>]  
[-databasepassword<Password>] [-sitewarning<SiteWarningCount>]  
[-preserveolduserexperience<true/false>]  
[-sitemax<SiteMaxCount>]  
[-assignnewdatabaseid][--clearchangelog]
```



**Note**

When you set the **preserveolduserexperience** parameter to *true*, the sites in the content database keep the look of the previous version after upgrade. When you set this parameter to *false*, the sites are upgraded to the new look and feel. The default for this parameter is *true*, which preserves the old look and feel.

This parameter is part of the Visual Upgrade feature. For more information, see [Plan visual upgrade \(SharePoint Foundation 2010\)](#).

For more information, see [Addcontentdb: Stsadm operation \(Windows SharePoint Services\)](#) ([http://technet.microsoft.com/en-us/library/cc288692\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc288692(Office.12).aspx)).

## Verification: Verify upgrade for the first database

After you have attached a database, you can use the Upgrade Status page in Central Administration to check the status of upgrade on your site collections. After the upgrade process is complete, you can review the upgrade log file to see whether there were any issues during upgrade. Also, you can review each upgraded site to find and address any issues with how the content is displayed. For more information, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#).

▶ **To view the Upgrade Status page**

- In Central Administration, click **Upgrade and Migration**, and then click **Check upgrade status**.

▶ **To open the upgrade log file**

- The upgrade error log file and the upgrade log file are located at %COMMONPROGRAMFILES%\Microsoft Shared\web server extensions\14\LOGS. The logs

---

are named in the following format: *Upgrade-YYYYMMDD-HHMMSS-SSS-error.log* and *Upgrade-YYYYMMDD-HHMMSS-SSS.log*, where *YYYYMMDD* is the date and *HHMMSS-SSS* is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds). An example for an upgrade error log is *Upgrade-20090415-132126-374-error.log*, and an example for an upgrade log is *Upgrade-20090415-132126-374.log*.



**Note:**

The upgrade log file includes the name of the content database being upgraded.

## Attach the remaining databases

After you restore the first content database and verify the upgrade by reviewing the upgrade log file, you can continue by restoring and upgrading the next database or databases. You can attach multiple databases at the same time in separate Command Prompt windows to run multiple upgrades at one time. After you successfully restore and upgrade all the content databases, you can review the sites to make sure that they were upgraded correctly.

## Verification: Verify upgrade for additional databases

After upgrading any additional databases, view the Upgrade Status page to monitor progress and verify that the upgrade process is complete. Review the log file to identify any other issues, and then review each upgraded site to find and address any issues with how the content is displayed. For more information, see [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#) and [Manage visual upgrade \(SharePoint Foundation 2010\)](#).

### See Also

[Troubleshoot upgrade issues \(SharePoint Foundation\)](#)

---

# Perform post-upgrade steps (SharePoint Foundation 2010)

---

After you have performed an in-place upgrade or a database attach upgrade to Microsoft SharePoint Foundation 2010, you can verify your upgrade and follow the necessary configuration steps to get your environment ready for your users again.

In this section:

- [Configure forms-based authentication for a claims-based Web application \(SharePoint Foundation 2010\)](#)

Upgrade existing Windows SharePoint Services 3.0 Web applications that were configured to use forms-based authentication to work with SharePoint Foundation 2010.

- [Verify upgrade and review upgraded sites \(SharePoint Foundation 2010\)](#)

Find out how to tell whether upgrade was completed successfully (both from the software standpoint and from a visual review of your sites) or any issues remain to address. If you must restart upgrade after a failure, you will find the steps to do so in this article.

- [Recovering after a failed upgrade \(SharePoint Foundation 2010\)](#)

Follow these steps if the upgrade to Microsoft SharePoint Foundation 2010 has failed and you do not have time to continue to troubleshoot the issues or resume the upgrade process.

---

# Configure forms-based authentication for a claims-based Web application (SharePoint Foundation 2010)

---

The procedures in this article provide guidance to:

- Enable you to configure forms-based authentication for a Microsoft SharePoint Foundation 2010 claims-based Web application.
- Help you upgrade existing Windows SharePoint Services 3.0 Web applications that were configured to use forms-based authentication to work with SharePoint Foundation 2010.

After upgrading to SharePoint Foundation 2010, your Windows SharePoint Services 3.0 Web applications will be configured for legacy login. For your Windows SharePoint Services 3.0 Web applications that were configured to use Windows authentication, there are no additional steps required for upgrade. However, for Windows SharePoint Services 3.0 Web applications that were configured to use forms-based authentication, or Web SSO authentication, you must first convert to claims-based authentication before the Windows SharePoint Services 3.0 Web applications can be used in SharePoint Foundation 2010. After you convert you Windows SharePoint Services 3.0 Web applications to claims-based authentication, configure your Web application zones for forms-based authentication (or Web SSO authentication, as appropriate). Note that the membership provider and role provider names that you use in SharePoint Foundation 2010 must match the membership provider and role provider names that you used in Windows SharePoint Services 3.0. The final step is to migrate users and permissions to SharePoint Foundation 2010.

In this article:

- [Convert Web applications to claims-based authentication](#)
- [Configure a forms-based Web application to use an LDAP provider by using Central Administration](#)
- [Configure the LDAP Web.Config files](#)
- [Configure a forms-based Web application to use an LDAP provider by using Windows PowerShell](#)
- [Migrate users and permissions from Windows SharePoint Services 3.0 to SharePoint Foundation 2010](#)

## Convert Web applications to claims-based authentication

Perform the steps in the following procedure to use Windows PowerShell to convert existing Web applications to claims-based authentication.

### To convert Web applications to claims-based authentication

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).

- 
2. On the **Start** menu, click **All Programs**.
  3. Click **Microsoft SharePoint 2010 Products**.
  4. Click **SharePoint 2010 Management Shell**.
  5. From the Windows PowerShell command prompt, type the following:

```
$w = Get-SPWebApplication "http://<server>/"  
  
$w.UseClaimsAuthentication = "True";  
  
$w.Update()  
  
$w.ProvisionGlobally()
```



**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## Configure a forms-based Web application to use an LDAP provider by using Central Administration

Perform the steps in the following procedure to use Central Administration to configure forms-based authentication for a claims-based Web application.

▶ **To configure forms-based authentication for a claims-based Web application by using Central Administration**

1. Verify that the user account that is performing this procedure is a site collection administrator.
2. In Central Administration, under **Application Management**, select **Manage Web Applications**.
3. On the ribbon, select **New**.
4. In the **Authentication** section of the **New Web Application** dialog box, select **Claims Based Authentication**.
5. In the **Authentication Type** section, select **Enable ASP.NET Membership and Role Provider**.
6. Type a membership provider name and a role manager name. In the example Web.Config file depicted in this article, the name of the membership provider is **membership**, and the name of the role manager is **rolemanager**.
7. Click **OK** to create the Web application.

---

## Configure the LDAP Web.Config files

After you have successfully created the Web application (described in the preceding procedure), modify the following Web.Config files:

- The Central Administration Web application Web.Config file
- The Security Token Service Web.Config file
- The forms-based authentication claims-based Web application Web.Config file

### ▶ To configure the Central Administration Web.Config file

1. Open IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **SharePoint Central Administration** site in IIS.
3. Right-click **SharePoint Central Administration** and select **Explore**.
4. Open the Web.Config file.
5. Find the <Configuration> <system.web> section and add the following entry:

```
<membership defaultProvider="AspNetSqlMembershipProvider">
  <providers>
    <add name="membership"
      type="Microsoft.Office.Server.Security.LdapMembershipProvider,
Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
      server="yourserver.com"
      port="389"
      useSSL="false"
      userDNAttribute="distinguishedName"
      userNameAttribute="sAMAccountName"
      userContainer="OU=UserAccounts,DC=internal,DC=yourcompany,DC= distinguishedName
(of your userContainer)"
      userObjectClass="person"
      userFilter="(ObjectClass=person)"
      scope="Subtree"
      otherRequiredUserAttributes="sn,givenname,cn" />
  </providers>
</membership>
<roleManager enabled="true" defaultProvider="AspNetWindowsTokenRoleProvider" >
  <providers>
    <add name="roleManager"
```

```

        type="Microsoft.Office.Server.Security.LdapRoleProvider, Microsoft.Office.Server,
Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
        server="yourserver.com"
        port="389"
        useSSL="false"
        groupContainer="DC=internal,DC=yourcompany,DC= distinguishedName (of your
groupContainer) "
        groupNameAttribute="cn"
        groupNameAlternateSearchAttribute="samAccountName"
        groupMemberAttribute="member"
        userNameAttribute="sAMAccountName"
        dnAttribute="distinguishedName"
        groupFilter="(ObjectClass=group) "
        userFilter="(ObjectClass=person) "
        scope="Subtree" />
    </providers>
</roleManager>

```



### Important:

After you have added the preceding entry, save and close the Web.Config file.



### To configure the Security Token Service Web.Config file

1. Open IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **SharePoint Web Services** site.
3. Go to the **SecurityTokenServiceAppliction** sub-site.
4. Right-click **SharePoint Central Administration** and select **Explore**.
5. Open the Web.Config file.
6. Find the <Configuration> <system.web> section and add the following entry:

```

<membership>
    <providers>
        <add name="membership"
            type="Microsoft.Office.Server.Security.LdapMembershipProvider,
Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
            server="yourserver.com"
            port="389"
            useSSL="false"

```



```

        userDNAttribute="distinguishedName"
        userNameAttribute="sAMAccountName"
        userContainer="OU=UserAccounts,DC=internal,DC=yourcompany,DC=com"
        userObjectClass="person"
        userFilter="( & (ObjectClass=person) )"
        scope="Subtree"
        otherRequiredUserAttributes="sn,givenname,cn" />
    </providers>
</membership>
<roleManager enabled="true" >
    <providers>
        <add name="rolemanager"
            type="Microsoft.Office.Server.Security.LdapRoleProvider, Microsoft.Office.Server,
Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
            server="yourserver.com"
            port="389"
            useSSL="false"
            groupContainer="DC=internal,DC=yourcompany,DC=com"
            groupNameAttribute="cn"
            groupNameAlternateSearchAttribute="samAccountName"
            groupMemberAttribute="member"
            userNameAttribute="sAMAccountName"
            dnAttribute="distinguishedName"
            groupFilter="( & (ObjectClass=group) )"
            userFilter="( & (ObjectClass=person) )"
            scope="Subtree" />
    </providers>
</roleManager>

```



### Important:

After you have added the preceding entry, save and close the Web.Config file.



### To configure the forms-based authentication claims-based Web application Web.Config file

1. Open IIS Manager by typing **INETMGR** at a command prompt.
2. Go to the **Claims Forms** site.

- 
3. Right-click **Claims Forms** and select **Explore**.
  4. Open the Web.Config file.
  5. Find the <Configuration> <system.web> section.
  6. Find the <membership defaultProvider="i"> section and add the following entry:

```
<add name="membership"
      type="Microsoft.Office.Server.Security.LdapMembershipProvider,
Microsoft.Office.Server, Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
      server="yourserver.com"
      port="389"
      useSSL="false"
      userDNAttribute="distinguishedName"
      userNameAttribute="sAMAccountName"
      userContainer="OU=UserAccounts,DC=internal,DC=yourcompany,DC=com"
      userObjectClass="person"
      userFilter="( & (ObjectClass=person) )"
      scope="Subtree"
      otherRequiredUserAttributes="sn,givenname,cn" />
```

Find the <roleManager defaultProvider="c" enabled="true" cacheRolesInCookie="false"> section and add the following entry:

```
<add name="roleManager"
      type="Microsoft.Office.Server.Security.LdapRoleProvider, Microsoft.Office.Server,
Version=14.0.0.0, Culture=neutral, PublicKeyToken=71e9bce111e9429c"
      server="yourserver.com"
      port="389"
      useSSL="false"
      groupContainer="DC=internal,DC=yourcompany,DC=com"
      groupNameAttribute="cn"
      groupNameAlternateSearchAttribute="samAccountName"
      groupMemberAttribute="member"
      userNameAttribute="sAMAccountName"
      dnAttribute="distinguishedName"
      groupFilter="( & (ObjectClass=group) )"
      userFilter="( & (ObjectClass=person) )"
      scope="Subtree" />
```

**Important:**

After you have added the preceding entry, save and close the Web.Config file.

**Warning:**

Do not overwrite any existing entries in this Web.Config file.

## Configure a forms-based Web application to use an LDAP provider by using Windows PowerShell

Perform the steps in the following procedure to use Windows PowerShell to configure forms-based authentication for a claims-based Web application.

### ▶ To configure a forms-based Web application to use an LDAP provider by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, type the following:

```
$ap = New-SPAuthenticationProvider -Name "ClaimsForms" -ASPNETMembershipProvider  
"membership" -ASPNETRoleProviderName "rolemanager"  
  
$wa = New-SPWebApplication -Name "Claims Windows Web App" -ApplicationPool "Claims  
App Pool" -ApplicationPoolAccount "internal\appool"  
  
-Url http://servername -Port 80 -AuthenticationProvider $ap
```

**Note:**

The value of the **ApplicationPoolAccount** parameter must be a managed account on the farm.

6. After you have successfully created an authentication provider and a Web application, modify the following Web.Config files using the sample entries provided in the "Configure the LDAP Web.Config files" section of this article:
  - The Central Administration Web application Web.Config file
  - The Security Token Service Web.Config file
  - The forms-based authentication claims-based Web application Web.Config file
7. After you have modified the Web.Config files, create a SPClaimsPrincipal and a site collection, as shown in the following example:

```
$cp = New-SPClaimsPrincipal -Identity "membership:SiteOwner" -IdentityType  
FormsUser  
  
$sp = New-SPSite http://servername:port -OwnerAlias $cp.Encode() -Template "STS#0"
```

**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

## Migrate users and permissions from Windows SharePoint Services 3.0 to SharePoint Foundation 2010

Perform the steps in the following procedure to use Windows PowerShell to migrate users and permissions.

### ▶ To migrate users and permissions from Windows SharePoint Services 3.0 to SharePoint Foundation 2010

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. From the Windows PowerShell command prompt, type the following:

```
$w = Get-SPWebApplication "http://<server>/"  
  
$w.MigrateUsers (True)
```

**Note:**

We recommend that you use Windows PowerShell when performing command-line administrative tasks. The Stsadm command-line tool has been deprecated, but is included to support compatibility with previous product versions.

---

# Verify upgrade and review upgraded sites (SharePoint Foundation 2010)

---

After you have performed either an in-place upgrade or a database attach upgrade to Microsoft SharePoint Foundation 2010, you must verify that the content was successfully upgraded to the new version. You can verify the status of the upgrade (is it still in progress, or has it been completed successfully or with errors or failures?) and then also review the upgraded sites to see whether any issues remain for you to address. When you follow these steps as part of a trial upgrade, you can use them to identify customizations that have to be reworked before you attempt to upgrade your production environment. When you upgrade your production environment, it is even more critical that you know when the upgrade was completed, which sites have been upgraded successfully, and which sites require additional work before you allow users access to them again.

In some cases, you might have to restart upgrade to finish upgrading your sites. For more information about how to restart upgrade, see [Resume upgrade \(SharePoint Foundation 2010\)](#).

In this article:

- [Verify upgrade status](#)
- [Review upgraded sites](#)

## Verify upgrade status

The upgrade process has several phases. For in-place upgrade, you run Setup.exe to install the new software, and then run the SharePoint Products Configuration Wizard to upgrade the configuration database and the admin content database, and then the SharePoint Central Administration Web site opens. At this point, the content upgrade process starts. There are different ways to check the status of the upgrade process during each of these phases: You can review log files for Setup.exe, for the SharePoint Products Configuration Wizard, and for the content upgrade. In SharePoint Central Administration, you can view the version number to make sure that it is correct for the version that you upgraded to. Also, you can use the Upgrade Status page in SharePoint Central Administration or the **localupgradestatus** operation in Stsadm to find out which sites have been — or are currently being — upgraded. If upgrade was not successfully completed, you can view the log files to find the issues, address them, and then restart the upgrade process.

## Review the log files

To verify that upgrade has succeeded, you can review the following log and error files:

- The Setup.exe log file for SharePoint Foundation 2010.

The Setup log file is stored in the temp directory for the user account that is running Setup (%USERTEMP% or %WINDIR%\Users\user account\AppData\Local\Temp). It is named SharePoint Foundation Setup(YYYYMMDD-HHMMSS-SSS).log, where YYYYMMDD is the date and HHMMSS-SSS is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds).

- 
- The SharePoint Products Configuration Wizard (Psconfig.exe) log file.

The Psconfig.exe log files are located at %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\14\LOGS. The logs are named in the following format:

PSCDiagnostics\_MM\_DD\_YYYY\_HH\_MM\_SS\_SSS\_randomnumber.log, where MM\_DD\_YY is the date and HH\_MM\_SS\_SSS is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds), and the random number is used to differentiate between possible simultaneous attempts to run the Psconfig.exe program.

- The upgrade log file and the upgrade error log file.

The upgrade log file and the upgrade error log file are located at %COMMONPROGRAMFILES%\Microsoft Shared\Web server extensions\14\LOGS. The logs are named in the following format: Upgrade-YYYYMMDD-HHMMSS-SSS.log, where YYYYMMDD is the date and HHMMSS-SSS is the time (hours in 24-hour clock format, minutes, seconds, and milliseconds). The upgrade error log file combines all errors and warnings into a shorter file and is named Upgrade-YYYYMMDD-HHMMSS-SSS-error.log.

To review the log files to find and troubleshoot issues, start at the top of the files. Errors or warnings may be repeated if they occur for several site collections in the environment, or if they block the upgrade process completely. For example, if you cannot connect to the configuration database, the upgrade process will try (and fail) several times and these attempts will be listed in the log file.

#### To review the log files

1. Verify that you have the following administrative credentials:
  - To view the log files, you must be a member of the local Administrators group on the server.
2. In Windows Explorer, change to the directory that contains the log file that you want to view.
3. Use a text editor to open the log file.
4. In the upgrade log file, search, or visually scan, for the following entry:

#### **Upgrade session finished successfully!**

If you find this entry, the installation was successful.

5. If you do not find the entries from the previous step in the upgrade log file, or if you are reviewing one of the other log files, you can identify specific issues that may have contributed to a failure by searching, or visually scanning, through the file for the following terms:
  - Search for **ERROR** in the log files to find any failures (such as failing components and faulty database connections).
  - Search for **WARNING** to find issues such as missing features or components.

To find issues, you may find it useful to use a log parser to run queries against the log files.

If you find blocking issues in the log file, you can resolve the issues and then restart upgrade to continue with the process.

---

## Verify the version number

In addition to viewing the upgrade log file, you can verify that the upgrade was successful by using the SharePoint Central Administration Web site to view the version number on the Servers in Farm page.

### ▶ To verify the version number on the Servers in Farm page

1. Verify that you have the following administrative credentials:
  - To use SharePoint Central Administration, you must be a member of the Farm Administrators group.
2. On the Central Administration Home page, under **System Settings**, click **Manage servers in this farm**.
3. Under **Farm Information**, next to **Configuration database version**, verify that the number starts with "14".

## Check upgrade status for sites

To find out which sites have been upgraded or are currently being upgraded, you can use either the Upgrade Status page in SharePoint Central Administration or the **localupgradestatus** operation in Stsadm.exe.

The Upgrade Status page lists the upgrade sessions and gives details about the state of each session — whether it succeeded or failed, and how many errors or warnings occurred for each server. The Upgrade Status page also includes information about the log and error files for the upgrade process and suggests remedies for issues that might have occurred.

To see which sites were missed or skipped during upgrade, you can use the **localupgradestatus** operation in Stsadm.exe. You must run the command on every front-end Web server in a server farm.

### ▶ To view upgrade status in SharePoint Central Administration

1. Verify that you have the following administrative credentials:
  - To use SharePoint Central Administration, you must be a member of the Farm Administrators group.
2. On the Central Administration Home page, under **Upgrade and Migration**, click **Check upgrade status**.

### ▶ To view upgrade status from the command line

1. Verify that you have the following administrative credentials:
  - To use Stsadm, you must be a member of the local Administrators group on the server.
2. Click **Start**, right-click **Command Prompt**, and then click **Run as administrator**.
3. In the Command Prompt window, navigate to the following directory:  
%COMMONPROGRAMFILES%\Microsoft Shared\Web Server Extensions\14\bin

- 
4. Type the following command and press ENTER:

**Stsadm -o localupgradestatus**

For more information about the **localupgradestatus** operation, see [Localupgradestatus: Stsadm operation \(Windows SharePoint Services\)](http://technet.microsoft.com/en-us/library/cc289007(Office.12).aspx) ([http://technet.microsoft.com/en-us/library/cc289007\(Office.12\).aspx](http://technet.microsoft.com/en-us/library/cc289007(Office.12).aspx)).

## Review upgraded sites

Review your upgraded sites to identify any issues that must be addressed before you run the upgrade process on your production environment. If you performed an in-place upgrade and chose to use Visual Upgrade, you can use the Visual Upgrade feature to preview the sites in the new user interface. For more information about previewing sites using Visual Upgrade, see [Manage visual upgrade \(SharePoint Foundation 2010\)](#).

If you want to verify basic functionality, you can create a new site collection by using a representative set of lists, libraries, Web Parts, and so on. Review the new site to make sure that the common, basic elements of your sites are working.

If pages are not rendered, you can check the Site Settings page by going directly to the URL ([http://siteurl/\\_layouts/settings.aspx](http://siteurl/_layouts/settings.aspx)). If the Site Settings page works and the upgrade has succeeded, there might be issues with the master page or home page. If the Site Settings page does not work, go to the log file to see whether you can get more information about the problem.

Begin by validating high-impact or high-profile sites, and then move on to lower-priority sites. As part of the planning process, you should have identified which sites are high-impact and high-profile and require immediate attention, and which can wait a bit longer.

Use the following checklists to review your upgraded sites and look for issues.

## Web Parts

The following table lists issues with Web Parts that can occur after upgrade and how to address them.



### Tip:

To test your Web Parts quickly, you can build a new Web Part page that contains all of your custom Web Parts before you test your upgrade, and then review the page for any missing or broken Web Parts after the trial upgrade.

What to check	What to do if there is a problem
Do all the Web Parts from your original site appear in your upgraded site?	If a Web Part zone exists in a customized ( <i>unhosted</i> ) page, but not in the site definition, the Web Parts from that Web Part zone may have been moved into the bottom zone on the page during the upgrade.  Either in Edit Mode for the page in the browser or



What to check	What to do if there is a problem
	<p>in Microsoft SharePoint Designer 2010, look for missing Web Parts in the bottom zone or other zones, or check to see whether the Web Parts have been closed. For more information about how to work with Web Parts and Web Part zones in SharePoint Designer 2010, see the SharePoint Designer Help system.</p>
<p>Are the Web Parts displayed correctly (in the correct zone, location, and size)?</p>	<p>Either in Edit Mode for the page in the browser or in SharePoint Designer 2010, drag the Web Part into the correct zone or modify the Web Part properties to correct any sizing or positioning problems.</p>
<p>Are there any extra or missing Web Parts?</p>	<p>Open the page either in Edit Mode for the page in the browser or in SharePoint Designer 2010. If you see extra Web Parts on your page, look for closed or inactive Web Parts on the original version of the page. Were the closed or inactive Web Parts opened by the upgrade process? If so, you can modify the Web Part properties to close these Web Parts.</p> <p>If Web Parts are missing, look for errors in SharePoint Designer 2010 such as "Error Rendering Control" or "Missing Assembly." These errors indicate that the Web Part was not installed or was configured incorrectly for the new environment and must be reinstalled or reconfigured.</p>
<p>Do the Web Parts work correctly?</p>	<p>Open the page either in Edit Mode for the page in the browser or in SharePoint Designer 2010, and look for errors that indicate that a component or service is missing. Make sure that any components or services that the Web Parts rely on exist in the upgraded site. Particularly for the database attach upgrade approach, you must make sure that you have installed all the components or services that you must have for your Web Parts, and that you have configured them correctly (for example, you have configured the Web.config Safe Controls list).</p> <p>Update and redeploy any Web Parts that exist but</p>

What to check	What to do if there is a problem
	no longer function correctly.



**Tip:**

If you have problems with a Web Part, append **contents=1** to the end of the URL syntax (<http://siteurl/default.aspx?contents=1>), and then press ENTER. This opens the Web Part Maintenance page where you can remove and repair the broken Web Part.

## Large lists

By default, large list query throttling is applied after an upgrade to SharePoint Foundation 2010. If a list is very large, and users use a view or perform a query that exceeds the limit or throttling threshold, the view or query will not be permitted. Check any large lists in your environment and have the site owner or list owner address the issue. For example, they can create indexed columns with filtered views, organize items into folders, set an item limit on the page for a large view, or use an external list.

## Styles and appearance

The following table lists common issues with the style and appearance of your Web site after upgrade and how to address them.



**Tip:**

Most of the issues in this section can be solved by correcting the links to an item.

What to check	What to do if there is a problem
Are all the images on your pages displayed correctly?	Verify or fix the links to the images.
Are the appropriate cascading style sheet colors and styles used in the appropriate locations?	Verify or fix the links to the cascading style sheet file. Verify the link on the master page.
Does the theme that you applied to your site still look the same?	Your site's home page, or other pages on your site, may look different after the site is upgraded. You may have to re-create or revise a theme and reapply it.
Do you have any scripted controls that are not working?	Verify or fix the links to the controls.
Are your pages displayed correctly in Windows Internet Explorer 8?	Verify that any HTML on the page is in strict XHTML mode.
Are any script errors displayed on any pages?	Verify the scripts and links, and verify that any HTML is in strict XHTML mode.

---

## Permissions

Do the appropriate people and groups still have the correct level of permissions to sites, pages, lists, and items?

You can use the **Check Permissions** button in the Permission Tools section of the ribbon to see who has permissions to which items in a site or subsite.

## Customized (unghosted) pages

Customized (unghosted) pages are pages that have been edited and are now unique versions of the pages, instead of the default template pages. The following table lists issues with customized pages that can occur after upgrade and how to address them.

What to check	What to do if there is a problem
Are your customizations still in the correct locations?	<p>Determine whether you have only one issue or a larger problem with the whole page.</p> <p>If you added a brand new page to your original site (for example, if you replaced Default.aspx with a different file instead of changing the existing Default.aspx file), the new page has no association with the site definition. Therefore, it might not resemble the other pages on the upgraded site — nor can it be reset to resemble them. If you want your customized page to have the same look and feel as the other pages on your site, consider creating a brand-new page that is based on the site definition and then transferring your customizations to that new page.</p>
Can you still access the editing controls on the pages?	<p>If you customized the editing controls (for example, the Site Actions link or the Edit Page link), check whether they still appear. If they don't appear, you can replace them with the editing controls of the new version by resetting the page to the default version.</p> <p>Use the <b>Reset to Template</b> command in SharePoint Designer to reset the page to the default version (also known as <i>reghosting</i>). After you have restored the default page, you can then reapply your customizations in the browser by applying a different master page, or by reapplying</p>

What to check	What to do if there is a problem
	the customizations in SharePoint Designer.
Are your customizations still appropriate in the new environment, or do you want to update to the new functionality and look?	<p>If you want the new functionality and features, you must reset any customized pages to use the template. Resetting the page basically discards the customizations and attaches your page to the appropriate master page. Any customizations you want can then be transferred to the master page instead of being stored in individual pages.</p> <p>Use the <b>Reset to Template</b> command in SharePoint Designer to reset the page to the default version (that is, reghost it). After you have restored the default page, you can then reapply your customizations in the browser by applying a different master page, or by reapplying the customizations in SharePoint Designer.</p>
Are any pages still checked out?	If you check out a page to make changes, make sure that you check in the page again.

**See Also**

[Resume upgrade \(SharePoint Foundation 2010\)](#)

[Troubleshoot upgrade issues \(SharePoint Foundation\)](#)

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# Manage visual upgrade (SharePoint Foundation 2010)

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This article provides procedures related to the Visual Upgrade feature. When you upgrade from Windows SharePoint Services 3.0 to Microsoft SharePoint Foundation 2010, you can choose to use the Visual Upgrade feature to give site collection owners and site owners the opportunity to preserve the previous user interface temporarily. This allows them to update customizations to work in the new user interface. For a full description of Visual Upgrade and related choices, see [Plan visual upgrade \(SharePoint Foundation 2010\)](#).

In this article:

- [About using Visual Upgrade](#)
- [View status of current user interface](#)
- [Revert sites to previous user interface](#)
- [Force an upgrade to the new user interface](#)
- [Site owner options for visual upgrade](#)

## About using Visual Upgrade

When you upgrade, either by using in-place upgrade or by using the database attach upgrade method, you can choose to use Visual Upgrade.

During an in-place upgrade, you make the choice to use Visual Upgrade as a step in the SharePoint Products Configuration Wizard. The visual upgrade feature is not available in the SharePoint Products Configuration Wizard if you are performing an upgrade on a stand-alone server with built-in database. However, the Visual Upgrade feature is available in this case from the Psconfig command-line tool. You can then use the syntax: `psconfig.exe -cmd upgrade [-preserveolduserexperience <true|false>]`.

During a database attach upgrade, the choice to update to the new user experience or stay in the old user experience is accomplished by using either:

- The **Updateuserexperience** parameter of the **Mount-SPContentDatabase** Windows PowerShell cmdlet.
- The **preserveolduserexperience** parameter of the **addcontentdatabase** stsadm operation.

For additional information about using these parameters during an upgrade, see [Attach databases and upgrade to SharePoint Foundation 2010](#).

## View status of current user interface

You can view the current user interface status by generating a list of all Web sites in a site collection and their corresponding visual upgrade data. The following procedure shows you how to view the current user interface status.

---

▶ **To view status of current user interface by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
$sc = Get-SPSite http://machinename/sites/collectionname | $sc.GetVisualReport() |  
Format-Table
```

For more information, see [Get-SPSite](#) ([http://technet.microsoft.com/library/f3422bf4-0f9b-4f22-94c8-2a0606a31b16\(Office.14\).aspx](http://technet.microsoft.com/library/f3422bf4-0f9b-4f22-94c8-2a0606a31b16(Office.14).aspx)).

## Revert sites to previous user interface

If a site collection owner or site owner finalizes the new user interface by mistake, or if they have a problem that they cannot solve, you can revert back to the previous user interface by using Windows PowerShell. This procedure shows you how to revert one or all sites in a site collection to the previous user interface.

▶ **To revert sites to the previous user interface by using Windows PowerShell**

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. To revert a specific site in a site collection to the previous UI, at the Windows PowerShell command prompt, type the following command:

```
Get-SPSite http://machinename/sites/V3UI | Get-SPWeb "webname" |  
Foreach{$_ .UIVersionConfigurationEnabled=1; $_.UIVersion=3; $_.Update(); }
```

To revert all sites in a site collection to the previous user interface, at the Windows PowerShell command prompt, type the following command:

```
Get-SPSite http://machinename/sites/V3UI | Foreach{$_.  
UIVersionConfigurationEnabled=1; $_.UIVersion=3; $_.Update(); }
```

For more information, see [Get-SPSite](#) ([http://technet.microsoft.com/library/f3422bf4-0f9b-4f22-94c8-2a0606a31b16\(Office.14\).aspx](http://technet.microsoft.com/library/f3422bf4-0f9b-4f22-94c8-2a0606a31b16(Office.14).aspx)).

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## Force an upgrade to the new user interface

If you want to forcibly apply the new user interface after an upgrade has taken place, you might first want to give site collection owners and site owners a specified time during which they can preview the new user interface and fix any issues they might have. When you force an upgrade to the new user interface, you can use a script or use the SharePoint Products Configuration Wizard during the initial upgrade. For information about upgrade and the SharePoint Products Configuration Wizard, see [Run the SharePoint Products Configuration Wizard](#). The following procedure shows you how to programmatically upgrade all site collections and all sites to the new user interface.

### ▶ To force through an upgrade to the new user interface by using Windows PowerShell

1. Verify that you meet the following minimum requirements: See [Add-SPShellAdmin](#).
2. On the **Start** menu, click **All Programs**.
3. Click **Microsoft SharePoint 2010 Products**.
4. Click **SharePoint 2010 Management Shell**.
5. At the Windows PowerShell command prompt, type the following command:

```
$webapp = Get-SPWebApplication http://sitename  
  
foreach ($s in $webapp.sites)  
  
    {$s.VisualUpgradeWebs() }
```

For more information, see [Get-SPWebApplication](#) ([http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a\(Office.14\).aspx](http://technet.microsoft.com/library/11d6521f-f99c-433e-9ab5-7cf9e953457a(Office.14).aspx))

To upgrade a single site collection to the new user interface, type the following commands at the Windows PowerShell command prompt:

```
$site = Get-SPSite http://server  
  
$site.VisualUpgradeWebs()
```

To upgrade a single site to the new user interface, type the following commands at the Windows PowerShell command prompt:

```
$web = Get-SPWeb http://server/site  
  
$web.UIVersion = 4  
  
$web.UIVersionConfigurationEnabled = 0  
  
$web.Update()
```

## Site owner options for visual upgrade

The site owner can use the Site Setting user interface to toggle between the **Use the previous user interface** and **Preview the updated user interface** options. Once the site owner is satisfied with how the site looks, the new UI can be finalized by selecting the **Update the user interface** option.

---

The following table describes the different upgrade options that are available for the site owner to choose for their sites. The upgrade modes are available from the Site Settings page in the **Title, Description, and Icon** section.

Mode type	Description
<b>Use the previous user interface</b>	Site owners use this mode to have all their sites use the interface from Windows SharePoint Services 3.0.
<b>Preview the updated user interface</b>	Site owners use this mode to evaluate how their sites will look and functionality in the new interface. When this mode is chosen, features from the previous version interface will not be available.
<b>Update the user interface</b>	Site owners use this option when they are satisfied with the changes and are ready to switch to the new user interface. If needed, an administrator can restore the user interface to the previous version interface.

**See Also**

[Plan visual upgrade \(SharePoint Foundation 2010\)](#)



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# Using AAM URL redirection as part of the upgrade process (SharePoint Foundation 2010) (white paper)

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This white paper describes the planning activities that you need to successfully deploy and use the alternate access mapping (AAM) URL redirection feature in Microsoft SharePoint Foundation 2010 to help mitigate downtime during a server computer or server farm upgrade. It also describes the procedures necessary to successfully complete the configuration of this feature by modifying existing Windows SharePoint Services 3.0 server computers.



**Important:**

The process described in this white paper is an advanced technique for avoiding downtime during upgrade. It should only be used if other techniques, such as read-only databases and upgrade in-place with detached databases, would cause an unacceptably long period of downtime for your users. Do not consider using this technique unless you know your upgrade process will take more than a long weekend. If your upgrade is not likely to take that long, you won't save any time by performing the procedures in this paper. For more information about other approaches to upgrade, see [Determine upgrade approach \(SharePoint Foundation 2010\)](#).

[Download this white paper as a Microsoft Word document \(.doc\).](#)

(<http://go.microsoft.com/fwlink/?LinkId=168857>)

[Download this white paper as a PDF file.](#) (<http://go.microsoft.com/fwlink/?LinkId=168858>)

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# Deploy Office Web Apps (Installed on SharePoint 2010 Products)

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This article discusses how to deploy Microsoft Office Web Apps. Office Web Apps is the online companion to Office Word, Excel, PowerPoint and OneNote applications that enables users to access documents from anywhere. Users can view, share, and work on documents with other users online across personal computers, mobile telephones, and the Web. Office Web Apps is available to users through Windows Live and to business customers with Microsoft Office 2010 volume licensing and document management solutions that are based on Microsoft SharePoint 2010 Products.



## Note:

An appropriate device, Internet connection, and supported Internet Explorer, Firefox, or Safari browser are required. Some mobile functionality requires Office Mobile 2010, which is not included in Office 2010 applications, suites, or Office Web Apps. There are some differences between the features of Office Web Apps, Office Mobile 2010 and the Office 2010 applications.

Information provided in this article is intended for IT Pros planning to deploy Office Web Apps on SharePoint 2010 Products on-premises in their organizations. SharePoint 2010 Products in this article refers to Microsoft SharePoint Server 2010 and Microsoft SharePoint Foundation 2010 unless otherwise noted. This article does not provide guidance or instructions about how to deploy SharePoint 2010 Products. New and updated content will be published on a regular basis.

It is recommended you read [Understanding Office Web Apps \(Installed on SharePoint 2010 Products\)](http://technet.microsoft.com/library/8480064e-14a4-4b46-ad6b-0c836b192af2(Office.14).aspx) ([http://technet.microsoft.com/library/8480064e-14a4-4b46-ad6b-0c836b192af2\(Office.14\).aspx](http://technet.microsoft.com/library/8480064e-14a4-4b46-ad6b-0c836b192af2(Office.14).aspx)) and [Planning Office Web Apps \(Installed on SharePoint 2010 Products\)](http://technet.microsoft.com/library/3bd0a617-5f12-4a7e-bb75-b15c86c7e504(Office.14).aspx) ([http://technet.microsoft.com/library/3bd0a617-5f12-4a7e-bb75-b15c86c7e504\(Office.14\).aspx](http://technet.microsoft.com/library/3bd0a617-5f12-4a7e-bb75-b15c86c7e504(Office.14).aspx)) available on [Microsoft TechNet](http://go.microsoft.com/fwlink/?LinkID=78003&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=78003&clcid=0x409>) before deploying Office Web Apps in your organization.

Office Web Apps can be downloaded from the [Microsoft Volume Licensing Service Center](http://go.microsoft.com/fwlink/?LinkID=191841&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkID=191841&clcid=0x409>).

In this article:

- [Understanding Office Web Apps deployment](#)
- [Additional configuration \(optional\)](#)
- [Troubleshooting](#)

In addition to the previous sections, one of the following sections will apply to your specific Office Web Apps deployment:

- [Install and configure Office Web Apps on an existing stand-alone SharePoint server](#)
- [Install and configure Office Web Apps on a new stand-alone SharePoint server](#)
- [Install and configure Office Web Apps on an existing SharePoint server farm](#)
- [Install and configure Office Web Apps on a new SharePoint server farm](#)

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# Understanding Office Web Apps deployment

For both stand-alone SharePoint servers and SharePoint server farms, deploying Office Web Apps involves three primary phases:

**Running setup and PSConfig** Tasks include running Setup.exe and SharePoint Products and Technologies Post Setup and Configuration Wizard (PSConfig) on a stand-alone SharePoint server or each server in a SharePoint server farm. Running Setup.exe installs Office Web Apps files and components on a server. Running PSConfig is required as part of Office Web Apps setup in order to register the Office Web Apps services and, depending on the SharePoint installation type, start the service instances, create the service applications and service application proxies, and activate the Office Web Apps Feature.

**Activating the Office Web Apps services** Includes starting the service instances, and creating the service applications and service application proxies. Whether you must activate the services will depend on the state of SharePoint and whether PSconfig and the SharePoint Farm Configuration Wizard have previously been run.

**Activating the Office Web Apps Feature** Includes activating the Office Web Apps Feature on all existing SharePoint site collections where the Office Web Apps should be available. If PSconfig or the SharePoint Farm Configuration Wizard have been run before installing Office Web Apps, at least one site collection will exist. The feature will be activated automatically for new site collections created after Office Web Apps is installed.



## Note:

Some procedures in this article require using Windows PowerShell or SharePoint 2010 Management Shell to run cmdlets. To run SharePoint 2010 cmdlets in Windows PowerShell, you must add the Microsoft.SharePoint.PowerShell snap-in by using the **Add-PSSnapin** cmdlet, or you can run the SharePoint 2010 cmdlets by using SharePoint 2010 Management Shell. By default, the Microsoft.SharePoint.PowerShell snap-in is already registered, and the snap-in is added to the SharePoint 2010 Management Shell. To run SharePoint 2010 cmdlets, you must be a member of the SharePoint\_Shell\_Access role on the configuration database and a member of the WSS\_ADMIN\_WPG local group on the computer where SharePoint 2010 Products is installed. To run scripts in Windows PowerShell or SharePoint 2010 Management Shell, you must set the execution policy by using the **set-executionpolicy** cmdlet, using the **unrestricted** parameter. For more information about the **Add-PSSnapin** cmdlet, see [Add-PSSnapin](http://go.microsoft.com/fwlink/?LinkId=188450&clcid=0x409) (<http://go.microsoft.com/fwlink/?LinkId=188450&clcid=0x409>). For more information about how to use Windows PowerShell with SharePoint 2010 Products, see [SharePoint 2010 Products administration by using Windows PowerShell](http://technet.microsoft.com/library/ae4901b4-505a-42a9-b8d4-fca778abc12e(Office.14).aspx) ([http://technet.microsoft.com/library/ae4901b4-505a-42a9-b8d4-fca778abc12e\(Office.14\).aspx](http://technet.microsoft.com/library/ae4901b4-505a-42a9-b8d4-fca778abc12e(Office.14).aspx)).

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# Install and configure Office Web Apps on an existing stand-alone SharePoint server

This section applies only if you are installing Office Web Apps on an existing SharePoint server and PSConfig was previously run as part of SharePoint setup.

## **Caution:**

When you run Setup.exe, Office Web Apps setup configures the default open behavior for browser-enabled documents in SharePoint to open documents in the browser. If Office Web Apps setup was run, but the Office Web Apps Services and Feature has not yet been activated, a user may get a broken link when opening a document in the browser. When deploying Office Web Apps on a live production server farm, to prevent broken links to documents while completing additional deployment tasks after running setup, we recommend you enable the OpenInClient feature on existing site collections before running setup. For more information, see [Additional configuration \(optional\)](#).

## Run Office Web Apps setup

Complete this task to install Office Web Apps components and files on a server.

### **To run Office Web Apps setup**

1. From the root folder, run **Setup.exe**.
2. On the **Enter your Product Key** page, enter your product key, and then click **Continue**.
3. On the **Choose a file location** page, click **Install Now** to install to the default location. To install to a different location, specify the location that you want to install to and then click **Install Now**.
4. When Setup finishes, a dialog box prompts you to complete the configuration of your server. Be sure that the **Run the SharePoint Products and Technologies Configuration Wizard now** check box is selected and then click **Close** to start PSConfig.

## Run PSConfig to register the services

Complete this task to register the Office Web Apps services on the SharePoint server.

### **To run PSConfig to register the services**

1. If you left the **Run the SharePoint Products and Technologies Configuration Wizard now** check box selected in the previous step, on the PSconfig **Welcome to SharePoint Products** page, click **Next**.
2. In the dialog box that notifies you that some services might have to be restarted or reset during configuration, click **Yes**.
3. On the **Configuration Successful** page, click **Finish**. Your new SharePoint site opens.

---

## Start the service instances

A service instance provides the physical location for a service application. You must start the service instances before you create the service applications and the service application proxies. You can start the service instances by using SharePoint Central Administration or by using Windows PowerShell.

Procedures in this task start the service instances on the server specified.

### ▶ To start the service instances by using Central Administration

1. Click **Start**, point to **All Programs, Microsoft SharePoint 2010 Products**, and then **SharePoint 2010 Central Administration**.
2. On the SharePoint Central Administration home page, in **System Settings**, click **Manage services on this server**.
3. On the Services on server:<servername>page, start **Excel Calculation Services**, **Word Viewing Service**, and **PowerPoint Service**. The OneNote Web App does not use a SharePoint service.

### ▶ To start the service instances by using Windows PowerShell

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$machinesToActivate = @"<servername>"

$serviceInstanceNames = @"Word Viewing Service", "PowerPoint Service", "Excel
Calculation Services"

foreach ($machine in $machinesToActivate)
{
    foreach ($serviceInstance in $serviceInstanceNames)
    {
        $serviceID = $(Get-SPServiceInstance | where {$_.TypeName -match
$serviceInstance} | where {$_.Server -match "SPServer Name="+$machine}).ID
        Start-SPServiceInstance -Identity $serviceID
    }
}
```

2. Specify the following parameters:

Parameter	Value
\$machinesToActivate	Server name

3. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically

---

C:\scripts).

4. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

## **Create the service applications and the service application proxies**

After the service instances have been started, the service applications and the service application proxies which connect the SharePoint Web front-ends to the service applications must be created. You can create the service applications and the service application proxies for the Word, PowerPoint, and Excel Web apps by using Central Administration or by using Windows PowerShell. The OneNote Web App does not require a service application. After created, the service applications will run on started service instances automatically.

Procedures in this task will create the Office Web Apps service applications and service application proxies for the Word, PowerPoint, and Excel Web apps. This task can only be completed after you have started the service instances.

### **▶ To create the service applications and the service application proxies by using Central Administration**

1. Click **Start**, point to **All Programs, Microsoft SharePoint 2010 Products**, and then **SharePoint 2010 Central Administration**.
2. On the SharePoint Central Administration home page, in **Application Management**, click **Manage service applications**.
3. On the Service Applications page, click **New**, and then click **Word Viewing Service**.
4. In the Word Viewing Service Application dialog box, in **Name**, type **Word Viewing Service Application**. In **Application Pool**, select **Use existing application pool**, and then in the listbox, select **SharePoint Web Services Default**. In **Add to default proxy list**, verify **Add this service application's proxy to the farm's default proxy list** is selected (default), and then click **OK**.
5. On the Service Applications page, click **New**, and then click **PowerPoint Service Application**.
6. In the PowerPoint Service Application dialog box, in **Name**, type **PowerPoint Service Application**. In **Application Pool**, select **Use existing application pool**, and then in the listbox, select **SharePoint Web Services Default**. In **Add to default proxy list**, verify **Add this service application's proxy to the farm's default proxy list** is selected (default), and then click **OK**.
7. On the Service Applications page, click **New**, and then click **Excel Services Application**.
8. In the Excel Services Application dialog box, in **Name**, type **Excel Services Application**. In **Application Pool**, select **Use existing application pool**, and then in the listbox, select **SharePoint Web Services Default**. In **Add to default proxy list**, verify **Add this service application's proxy to the farm's default proxy list** is selected (default), and then click **OK**.

**Note:**

You can choose to create a new application pool to be used with a service application. When creating a new application pool, you can specify the security account used by the application pool to be a predefined Network Service account, or you can specify a managed account. The account must have read/write privileges for the SPContent database and SPConfig database.

**▶ To create the service applications and the service application proxies by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$appPool = Get-SPServiceApplicationPool -Name "SharePoint Web Services Default"
New-SPWordViewingServiceApplication -Name "WdView" -ApplicationPool $appPool |
New-SPWordViewingServiceApplicationProxy -Name "WdProxy"

New-SPPowerPointServiceApplication -Name "PPT" -ApplicationPool $appPool | New-
SPPowerPointServiceApplicationProxy -Name "PPTProxy"

New-SPExcelServiceApplication -Name "Excel" -ApplicationPool $appPool
```

2. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
3. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

## Activate the Office Web Apps Feature

After the service instances have been started, and the service applications and service application proxies have been created, to use Office Web Apps require the Office Web Apps Feature be activated on existing site collections. You can activate the feature on a single site collection in a browser on the Site collection features page or by using Windows PowerShell. If you have a large number of site collections, you can activate the feature on all site collections at the same time by using Windows PowerShell.

Procedures in this task will activate the Office Web Apps Feature on one or more existing site collections. This task must be completed only once after the service applications and the service application proxies have been created. If you have more than one existing site collection, and you are activating the feature on one site collection at a time, you may have to perform the procedure for each site collection.

**Note:**

This task does not need to be completed for new site collections created after Office Web Apps has been installed.

---

▶ **To activate the Office Web Apps Feature on a site collection on the Site collection features page**

1. In a browser, in the SharePoint site, click **Site Actions**, and then click **Site Settings**.
2. On the Site Settings page, in **Site Collection Administration**, click **Site Collection Features**.
3. On the Features page, for **Office Web Apps**, click **Activate**.

▶ **To activate the Office Web Apps Feature on a site collection by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$webAppsFeatureId = $(Get-SPFeature -limit all | where {$_.displayname -eq "OfficeWebApps"}).Id

$singleSiteCollection = Get-SPSite -Identity http://<site_name> Enable-SPFeature $webAppsFeatureId -Url $singleSiteCollection.URL
```

2. Specify the following parameters:

Parameter	Value
-Identity	URL

3. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
4. In the Windows PowerShell console, at the command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

▶ **To activate the Office Web Apps Feature on all site collections by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$webAppsFeatureId = $(Get-SPFeature -limit all | where {$_.displayname -eq "OfficeWebApps"}).Id

Get-SPSite -limit ALL |foreach{Enable-SPFeature $webAppsFeatureId -url $_.URL }
```

2. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
3. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**



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# Install and configure Office Web Apps on a new stand-alone SharePoint server

This section applies only if you are installing Office Web Apps on a new SharePoint installation where PSConfig has not previously been run as part of SharePoint setup.

## Run Office Web Apps setup

Complete this task to install Office Web Apps components and files on a server.

### ▶ To run Office Web Apps setup

1. From the root folder, run **Setup.exe**.
2. On the **Enter your Product Key** page, enter your product key, and then click **Continue**.
3. On the **Choose a file location** page, click **Install Now** to install to the default location. To install to a different location, specify the location that you want to install to, and then click **Install Now**.
4. When Setup finishes, a dialog box prompts you to complete the configuration of your server. Be sure that the **Run the SharePoint Products and Technologies Configuration Wizard now** check box is selected, and then click **Close** to start PSConfig.

## Run PSConfig to register the services, start the service instances, create the service applications and proxies, and activate the Office Web Apps Feature

Complete this task to register the services, start the service instances, create the service applications and service application proxies, and activate the Office Web Apps Feature.

### ▶ To run PSConfig to register the services, start the service instances, create the service applications and proxies, and activate the Office Web Apps Feature

1. If you left the **Run the SharePoint Products and Technologies Configuration Wizard now** check box selected in the previous task, on the PSConfig **Welcome to SharePoint Products** page, click **Next**.
2. In the dialog box that notifies you that some services might need to be restarted or reset during configuration, click **Yes**.
3. On the **Configuration Successful** page, click **Finish**. Your new SharePoint site opens.

## Install and configure Office Web Apps on an existing SharePoint server farm

Perform the tasks in this section only if you are installing Office Web Apps on an existing SharePoint server farm where the Farm Configuration Wizard has previously been run.

---

 **Caution:**

When you run Setup.exe, Office Web Apps setup configures the default open behavior for browser-enabled documents in SharePoint to open documents in the browser. If Office Web Apps setup has been run, but the Office Web Apps Services and Feature has not yet been activated, a user may get a broken link when opening a document in the browser. When deploying Office Web Apps on a live production server farm, to prevent broken links to documents while completing additional deployment tasks after running setup, it is recommended you enable the OpenInClient feature on existing site collections prior to running setup. For more information, see [Additional configuration \(optional\)](#).

## Run Office Web Apps setup

Complete this task to install Office Web Apps on a single SharePoint server. This task must be performed on each server in the server farm.

### To run Office Web Apps Setup

1. From the root folder, run **Setup.exe**.
2. On the **Enter your Product Key** page, enter your product key, and then click **Continue**.
3. On the **Choose a file location** page, click **Install Now** to install to the default location. To install to a different location, specify the location that you want to install to, and then click **Install Now**.
4. When Setup finishes, a dialog box prompts you to complete the configuration of your server. Be sure that the **Run the SharePoint Products and Technologies Configuration Wizard now** check box is selected.
5. Click **Close** to start the configuration wizard.

## Run PSConfig to register services

Complete this task to register the Office Web Apps services on a single SharePoint server. This task must be performed on each server in the server farm.

### To run PSConfig to register the services

1. On the **Welcome to SharePoint Products** page, click **Next**.
2. In the dialog box that notifies you that some services might need to be restarted or reset during configuration, click **Yes**.
3. On the **Modify server farm settings** page, select **Do not disconnect from this server farm**, and then click **Next**.
4. On the **Configuration Successful** page, click **Finish**. Your new SharePoint site opens.

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## Start the service instances

A service instance provides the physical location for a service application. For each server that you want to run the Office Web Apps service applications; you must start the service instances. You can start the service instances by using SharePoint Central Administration or by using Windows PowerShell.

Procedures in this task will start the service instances on those servers specified. This task must be completed after you have run WCSetup and PSConfig on each server in the farm.

### ▶ To start the service instances by using Central Administration

1. Click **Start**, point to **All Programs, Microsoft SharePoint 2010 Products**, and then **SharePoint 2010 Central Administration**.
2. On the SharePoint Central Administration home page, in **System Settings**, click **Manage services on this server**.
3. On the Services on server:<servername>page, in **Server**, select a server, and then start **Excel Calculation Services**, **Word Viewing Service**, and **PowerPoint Service**. Repeat this step for each server in the farm you want to run Office Web Apps services. The OneNote Web App does not use a SharePoint service.

### ▶ To start the service instances by using Windows PowerShell

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$machinesToActivate = @("<servername1>", "<servername2>")

$serviceInstanceNames = @("Word Viewing Service","PowerPoint Service","Excel
Calculation Services")

foreach ($machine in $machinesToActivate)
{
    foreach ($serviceInstance in $serviceInstanceNames)
    {
        $serviceID = $(Get-SPServiceInstance | where {$_.TypeName -match
$serviceInstance} | where {$_.Server -match "SPServer Name="+$machine}).ID
        Start-SPServiceInstance -Identity $serviceID
    }
}
```

2. Specify the following parameters:

Parameter	Value
-----------	-------

---

\$machinesToActivate	Server name
----------------------	-------------

3. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
4. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command and press ENTER:  
**C:\<path>\<filename>.ps1**

## Create the service applications and the service application proxies

After the service instances have been started, the service applications and the service application proxies that connect the SharePoint Web front-ends to the service applications must be created. You can create the service applications and the service application proxies for the Word, PowerPoint, and Excel Web apps by using Central Administration or by using Windows PowerShell. The OneNote Web app does not require a service application. After created, the service applications will run on started service instances automatically.

In this task you will create the Office Web Apps service applications and service application proxies for the Word, PowerPoint, and Excel Web apps. This task can be completed only after you have started the service instances.

### To create the service applications and the service application proxies by using Central Administration

1. Click **Start**, point to **All Programs, Microsoft SharePoint 2010 Products**, and then **SharePoint 2010 Central Administration**.
2. On the SharePoint Central Administration home page, in **Application Management**, click **Manage service applications**.
3. On the Service Applications page, click **New**, and then click **Word Viewing Service**.
4. In the Word Viewing Service Application dialog box, in **Name**, type **Word Viewing Service Application**. In **Application Pool**, select **Use existing application pool**, and then in the listbox, select **SharePoint Web Services Default**. In **Add to default proxy list**, verify **Add this service application's proxy to the farm's default proxy list** is selected (default), and then click **OK**.
5. On the Service Applications page, click **New**, and then click **PowerPoint Service Application**.
6. In the PowerPoint Service Application dialog box, in **Name**, type **PowerPoint Service Application**. In **Application Pool**, select **Use existing application pool**, and then in the listbox, select **SharePoint Web Services Default**. In **Add to default proxy list**, verify **Add this service application's proxy to the farm's default proxy list** is selected (default) and then click **OK**.
7. On the Service Applications page, click **New** and then click **Excel Services Application**.
8. In the Excel Services Application dialog box, in **Name**, type **Excel Services Application**. In

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**Application Pool**, select **Use existing application pool**, and then in the listbox, select **SharePoint Web Services Default**. In **Add to default proxy list**, verify **Add this service application's proxy to the farm's default proxy list** is selected (default) and then click **OK**.



**Note:**

You can choose to create a new application pool to be used with a service application. When creating a new application pool, you can specify the security account used by the application pool to be a predefined Network Service account, or you can specify a managed account. The account must have read/write privileges for the SPContent database and SPConfig database.

▶ **To create the service applications and the service application proxies by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$appPool = Get-SPServiceApplicationPool -Name "SharePoint Web Services Default"
New-SPWordViewingServiceApplication -Name "WdView" -ApplicationPool $appPool |
New-SPWordViewingServiceApplicationProxy -Name "WdProxy"

New-SPPowerPointServiceApplication -Name "PPT" -ApplicationPool $appPool | New-
SPPowerPointServiceApplicationProxy -Name "PPTProxy"

New-SPExcelServiceApplication -Name "Excel" -ApplicationPool $appPool
```

2. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
3. From the Windows PowerShell command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

## Activate the Office Web Apps Feature

After the service instances have been started, and the service applications and service application proxies have been created, to use Office Web Apps require the Office Web Apps Feature be activated on existing site collections. You can activate the feature on a single site collection in a browser on the Site collection features page or by using Windows PowerShell. If you have a large number of site collections, you can activate the feature on all site collections at the same time by using Windows PowerShell.

Procedures in this task will activate the Office Web Apps Feature on one or more existing site collections. This task must be completed only once after the service applications and the service application proxies have been created. If you have more than one existing site collection, and you are activating the feature on one site collection at a time, you may have to perform the procedure for each site collection.



**Note:**

This task does not need to be completed for new site collections created after Office Web Apps has been installed.

▶ **To activate the Office Web Apps Feature on a site collection on the Site collection features page**

1. In a browser, in the SharePoint site, click **Site Actions**, and then click **Site Settings**.
2. On the Site Settings page, in **Site Collection Administration**, click **Site Collection Features**.
3. On the Features page, for **Office Web Apps**, click **Activate**.

▶ **To activate Office Web Apps Feature on a site collection by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$webAppsFeatureId = $(Get-SPFeature -limit all | where {$_.displayname -eq
"OfficeWebApps"}).Id

$singleSiteCollection = Get-SPSite -Identity http://<site_name> Enable-SPFeature
$webAppsFeatureId -Url $singleSiteCollection.URL
```

2. Specify the following parameters:

Parameter	Value
-Identity	URL

3. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
4. In the Windows PowerShell console, at the command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

▶ **To activate the Office Web Apps Feature on all site collections by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file.

```
$webAppsFeatureId = $(Get-SPFeature -limit all | where {$_.displayname -eq
"OfficeWebApps"}).Id

Get-SPSite -limit ALL |foreach{Enable-SPFeature $webAppsFeatureId -url $_.URL }
```

2. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
3. From the Windows PowerShell command prompt (that is, PS C:\>), type the following

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command and press ENTER:

C:\<path>\<filename>.ps1

## Install and configure Office Web Apps on a new SharePoint server farm

Perform the tasks in this section only if you are installing Office Web Apps on a new SharePoint server farm where the Farm Configuration Wizard has not previously been run.

### Run Office Web Apps setup

In this task you will install Office Web Apps files and components on a single SharePoint server in a new server farm where the Farm Configuration Wizard has not previously been run. This task must be completed on each server in the server farm.

#### ▶ To run Office Web Apps Setup

1. From the root folder, run **Setup.exe**.
2. On the **Enter your Product Key** page, enter your product key, and then click **Continue**.
3. On the **Choose a file location** page, click **Install Now** to install to the default location. To install to a different location, specify the location that you want to install to, and then click **Install Now**.
4. When Setup finishes, a dialog box prompts you to complete the configuration of your server. Be sure that the **Run the SharePoint Products and Technologies Configuration Wizard now** check box is selected.
5. Click **Close** to start the Farm Configuration Wizard.

### Run PSConfig to register services

In this task you will register the Office Web Apps services on a single SharePoint server. This task must be completed on each server in the server farm.

#### ▶ To run PSConfig to register the services

1. On the **Welcome to SharePoint Products** page, click **Next**.
2. In the dialog box that notifies you that some services might need to be restarted or reset during configuration, click **Yes**.
3. On the **Modify server farm settings** page, select **Do not disconnect from this server farm**, and then click **Next**.
4. On the **Configuration Successful** page, click **Finish**. Your new SharePoint site opens.

---

## Run the SharePoint Farm Configuration Wizard to start the service instances, create the service applications and proxies, and activate the Office Web Apps Feature

In this task you will start the service instances on all servers in the farm, create the service applications and service application proxies, and activate the Office Web Apps Feature on all existing site collections. This task must be completed after Setup.exe and PSConfig has been run on each server in the server farm.

### ▶ To run the SharePoint Farm Configuration Wizard to start the service instances, create the service applications and proxies, and activate the Office Web Apps Feature

1. Click **Start**, point to **All Programs, Microsoft SharePoint 2010 Products**, and then **SharePoint 2010 Central Administration**.
2. On the **SharePoint Central Administration** home page, click **Configuration Wizards**.
3. On the **Configuration Wizards** page, click **Launch the Farm Configuration Wizard**.
4. In the **Farm Configuration Wizard** welcome page, choose **Walk me through the settings using this wizard**, and then click **Next**.
5. On the **Configure your SharePoint Farm** page, in **Service Account**, type a name for the Farm admin account.
6. In **Services**, select the Office Web Apps services that you want to activate, and then click **Next**.
7. Create an optional new top-level site. On the **Create Site Collection** page, follow the wizard steps to create a new top-level site.
8. On the **Configure your SharePoint Farm** page, click **Finish**.

## Additional configuration (optional)

This section discusses additional configurations that are optional.

### Configure the SharePoint default open behavior for browser-enabled documents

In SharePoint, you can configure whether browser-enabled documents are opened in a client application or in the browser. By default, when Office Web Apps is installed, Office documents will then open in the browser. You can override this setting using the SharePoint OpenInClient feature. The OpenInClient feature can be configured in Central Administration or by using the SPFeature cmdlet in Windows PowerShell.

How documents open in SharePoint varies depending on whether or not the OpenInClient feature is present, and either enabled or disabled:

- If the OpenInClient feature is not present and Office Web Apps is not installed, documents will open in the client application (SharePoint default).



- If the OpenInClient feature is not present, Office Web Apps is installed and Office Web Apps service applications are activated, documents will open in the browser (Office Web Apps default).
- If the OpenInClient feature is present and enabled, and Office Web Apps service applications are activated, documents will open in the client application.
- If the OpenInClient feature is present and disabled, and Office Web Apps service applications are activated, documents in will open in the browser.

 **Caution:**

When you run Setup.exe to install Office Web Apps, setup will take control of the default open behavior in SharePoint to register Word, PowerPoint, Excel, and OneNote documents to be opened in their associated Web app. If a user clicks on a document in SharePoint after Setup.exe has been run, but before the Office Web Apps Services and Feature have been activated, the user can get a broken link in the browser. When installing Office Web Apps in a live production environment, it is strongly recommended that you enable the OpenInClient Feature prior to running Office Web Apps setup.

 **To set the default open behavior for site collections by using Central Administration**

1. In SharePoint Central Administration, click **Site Actions**, and then click **Site Settings**.
2. On the Site Settings page, under **Site Collection Administration**, click **Site Collection Features**.
3. On the Features page, for the **Open Documents in Client Applications by Default** feature, click **Activate** (OpenInClient Feature is enabled) to open documents in the client application. Click **Deactivate** (OpenInClient Feature is disabled) to open documents in the browser.

 **To set the SharePoint Default open behavior for browser-enabled documents to open in the browser by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file. This example disables the default open behavior in SharePoint.

```
$defaultOpenBehaviorFeatureId = $(Get-SPFeature -limit all | where {$_.displayname -eq "OpenInClient"}).Id

Get-SPSite -limit ALL |foreach{ Disable-SPFeature $defaultOpenBehaviorFeatureId -url $_.URL }
```

2. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
3. In the Windows PowerShell console, at the command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

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▶ **To set the SharePoint Default open behavior for browser-enabled documents to open in the client application by using Windows PowerShell**

1. Using Notepad, open a new text file, and then copy and paste the following script into the file. This example sets the default open behavior for all documents in all sites to open in the client application (if available).

```
$defaultOpenBehaviorFeatureId = $(Get-SPFeature -limit all | where {$_.displayname -eq "OpenInClient"}).Id

Get-SPSite -limit ALL |foreach{ Enable-SPFeature $defaultOpenBehaviorFeatureId -url $_.URL }
```

2. Save the file with a **.ps1** file name extension to a folder where you run scripts (typically C:\scripts).
3. In the Windows PowerShell console, at the command prompt (that is, PS C:\>), type the following command and press ENTER:

**C:\<path>\<filename>.ps1**

## Troubleshooting

**Problem** Office Web Apps is installed, but documents do not open in their associated Web app in the browser.

**Solution** Verify the Office Web Apps Feature has been activated for the site collection in which the document resides. For more information, see [Activate the Office Web Apps Feature](#).

**Solution** Verify the service instances have been started. For more information, see [Start the service instances](#).

**Solution** Verify the service applications and proxies have been created. In SharePoint Central Administration, in **Application Management**, click **Manage service applications**. Verify the Word Viewing service application, PowerPoint service application, and Excel Services Application are started. If they are not started, verify the service instances have been started.

**Solution** Verify the SharePoint OpenInClient Feature is not enabled. For more information, see [Additional configuration \(optional\)](#).

**Problem** The Office Web Apps opens fine in view mode, but when a user clicks the Edit in Word, Edit in PowerPoint, or Edit in Excel button on the toolbar, an error is displayed.

**Solution** Verify that the Office Web Apps Feature is activated and the Word Viewing Service, PowerPoint Service, and Excel Calculation Services are started.

**Problem** When running setup, the product key will not validate.

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**Solution** Verify you are installing an Office Web Apps version compatible with your version of SharePoint 2010 Products. Office Web Apps Trial Edition cannot be installed on a server with licensed SharePoint 2010 products.

**Solution** Verify you have a valid Microsoft Office 2010 volume license.