



Test Lab Guide: Configure a Highly Available SharePoint Server 2013 Search Topology

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Test Lab Guide: Configure a highly available SharePoint Server 2013 search topology

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Summary: This paper contains a brief introduction to SharePoint Server 2013 and step-by-step instructions to create a test lab that demonstrates how to configure a search topology that provides high availability. This paper does not describe how to install and configure SharePoint Server in a pilot or production environment. For more information, see [Install and deploy SharePoint 2013](#).

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Introduction

Microsoft SharePoint Server 2013 makes it easy for people to work together. SharePoint Server 2013 enables you and your employees to set up web sites to share information with others, manage documents from start to finish, search for content, and publish reports to help everyone make better decisions.

SharePoint Server 2013 has the following capabilities:

- **Sites** Provides a single infrastructure for all your business web sites. Share documents with colleagues, manage projects with partners, and publish information to customers.
- **Communities** Delivers great collaboration tools—and a single platform to manage them. Make it easy for people to share ideas and work together the way they want.
- **Composites** Offers tools and components for creating do-it-yourself business solutions. Build no-code solutions to rapidly respond to business needs.
- **Content** Makes content management easy. Set up compliance measures “behind the scenes”—with features like document types, retention policies, and automatic content sorting—and then let people work naturally in Microsoft Office.
- **Insights** Gives everyone access to the information in databases, reports, and business applications. Help people locate the information to make good decisions.
- **Search** Cuts through the clutter. A unique combination of relevance, refinement, and social cues helps people find the information and contacts they need to get their jobs done.

For more information about Microsoft SharePoint Server 2013, see the [SharePoint 2013 Product Information site](#) and [SharePoint 2013 for IT pros](#).

This Test Lab Guide demonstrates how to configure a search topology that is highly available and can be scaled out in response to performance demands.

Test Lab Guides

Microsoft Test Lab Guides (TLGs) are a set of documents that step you through the configuration and demonstration of a Microsoft technology or product in a standardized test lab environment, which starts with a common base configuration that mimics a simplified intranet and the Internet. TLGs are designed to be modular, extensible, and stackable to configure complex, multi-product solutions. TLGs make learning about products, technologies, and solutions easier by providing that crucial hands-on, “I built it out myself” experience.

For more information, see [Test Lab Guides](http://microsoft.com/testlabguides) at <http://microsoft.com/testlabguides>.

A TLG stack is a set of dependent TLGs that, when configured from the bottom of the stack, create a meaningful test lab configuration. This TLG is at the top of the following TLG stack:

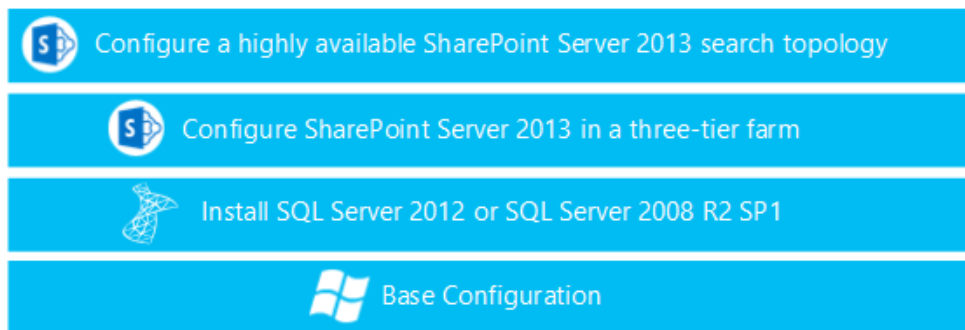


Figure 1: TLG stack for the search test lab

In this guide

This paper contains instructions that set up a test lab that is based on the following test lab guides:

- [Base Configuration test lab guide](#)
- [Install SQL Server 2012 Enterprise](#)
- [Configure SharePoint Server 2013 in a three-tier farm](#)

This paper also contains instructions to scale out the SharePoint Server 2013 farm to several servers to create a highly available search topology. The resulting test lab illustrates the search topology for a small all-purpose farm that you can view in the [Enterprise Search Architectures for SharePoint Server 2013](#) technical diagram.

**Note**

You can also download a [Visio version](#) or [PDF version](#) of this technical diagram.

**Important**

This test lab is scaled down and does not implement the level of redundancy and best practices that you would use for high availability in a pilot or production environment. For example, redundant front-end web servers, and database redundancy using SQL Server mirroring or clustering. However, search component distribution on the application servers adheres to the supported topology for a small all-purpose farm. For more information, see [Scale search for performance and availability in SharePoint Server 2013](#).

By design, test lab environments use the minimum number of computers required to support the goal of a specific test lab. Individual computers are needed to separate the services that the network provides and to clearly show the desired functionality.

A test lab configuration is neither designed to reflect best practices nor does it reflect a desired or recommended configuration for a production network. The configuration, including IP addresses and all other configuration parameters, is designed only to work on a separate test lab network. Attempting to adapt this test lab configuration to a pilot or production deployment can result in configuration or functionality issues. For information about how to deploy SharePoint Server 2013 in a pilot or production environment, see [Install and deploy SharePoint 2013](#).

Test lab overview

In this test lab, the search topology for a small all-purpose SharePoint Server 2013 farm is demonstrated in a deployment that contains the following computers:

- One computer running Windows Server 2008 R2 SP1 Enterprise Edition named DC1 that is configured as an intranet domain controller, Domain Name System (DNS) server, DHCP server, and enterprise root certification authority (CA).
- One intranet member server running Windows Server 2008 R2 SP1 Enterprise Edition named WFE1 that is configured as a front-end web server to serve content.
- One intranet member server running Windows Server 2008 R2 SP1 Enterprise Edition named SQL1 that is configured as a SQL Server database server.
- Five intranet member servers running Windows Server 2008 R2 SP1 Enterprise Edition named APP1, APP2, APP3, APP4, and APP5 that are configured as the SharePoint Server 2013 application servers.
- One member client computer, named CLIENT1, that runs Windows 7 Enterprise or Ultimate.

The SharePoint Server 2013 test lab consists of a single subnet named Corpnet (10.0.0.0/24) that simulates a private intranet. Computers on the Corpnet subnet connect by using a hub or switch.

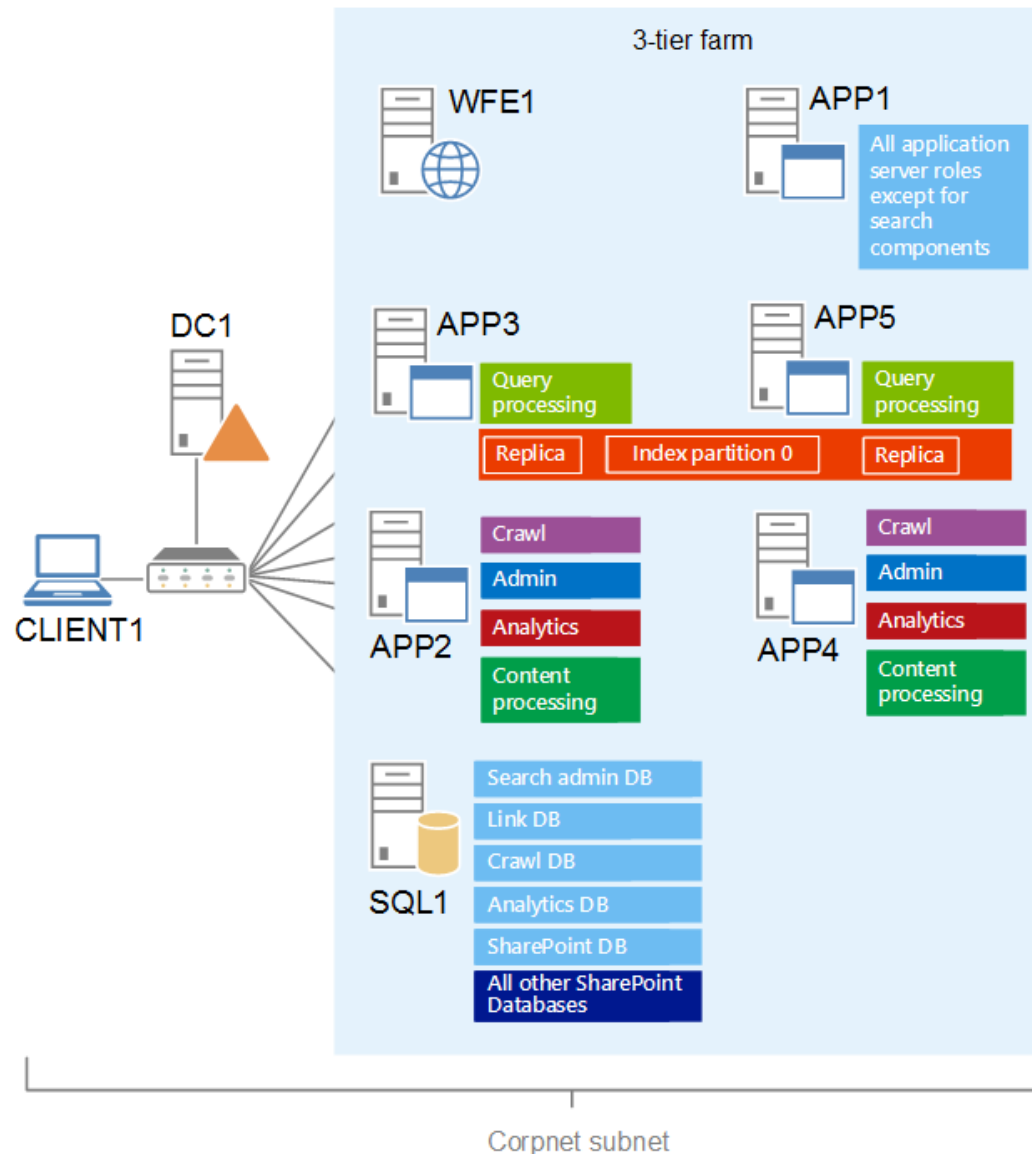


Figure 2: Architecture of the Corpnet subnet for the search test lab

Hardware and software requirements

The following are required components of the search test lab:

- The product disc or files for Windows Server 2008 R2 Service Pack 1
- The product disc or files for Microsoft SQL Server 2012 or Microsoft SQL Server 2008 R2 SP1
- The product disc or files for SharePoint Server 2013
- Eight computers that meet the minimum hardware requirements for Windows Server 2008 R2 SP1 Enterprise Edition

- The product disc or files for Windows 7

If the computers are being hosted in a Hyper-V-based virtualized environment, see the following topics for more information:

- [Hyper-V virtualization requirements for SharePoint 2013](#)
- [Use best practice configurations for the SharePoint 2013 virtual machines and Hyper-V environment](#)

Search test lab accounts and permissions

You must be logged on as a member of the Domain Admins group or a member of the Administrators group on each computer to complete the tasks in this guide. If you cannot complete a task while you are logged on with an account that is a member of the Administrators group, try to perform the task while you are logged on with an account that is a member of the Domain Admins group.

The account that you use to complete these tasks should also be a member of the Farm Administrators group. Most tasks in this test lab guide use the CORP\User1 account.

Steps to configure the search test lab

There are six steps to follow to set up and test the SharePoint Server 2013 search test lab.

- **Step 1:** Set up the three-tier farm
- **Step 2:** Add four application servers to the farm.
- **Error! Reference source not found.**Create and configure the Search service application.
- **Step 4:** Change the default search topology.
- **Step 5:** Create a Search Center site.
- **Step 5:** Create a Search Center site

This step describes how to create a Search Center site, or Search Center, that users will use to submit search queries and view search results. This involves the following tasks:

- Create a Search Center
- Provide access to the Search Center

Create a Search Center

In this procedure you create and configure a site collection for the Search Center.

 **To create a new site collection:**

1. On APP1, log on using the CORP\User1 user account.
2. On the home page of the Central Administration website, in the **Application Management** section, click **Create site collections**.

The remaining steps in this procedure are done on the **Create Site Collection** page.

3. In the **Web Application** section, select the **http://WFE1** web application for the new site collection.
4. In the **Title and Description** section, in the **Title** box, type **TLGSearch** as the name for the new Search Center site
5. In the **Web Site Address** section, type **TLGSearchCenter** as the URL name for the **http://WFE1/sites/** path.
6. In the **Template** section, select 2013 from the **Select experience version** dropdown list.
7. In the **Template** section, under **Select a template**, click the **Enterprise** tab
8. Pick the **Enterprise Search Center** template.
9. In the **Primary Site Collection Administrator** section, in the **User name** box, type **CORP\User1** as the user name of the primary site collection administrator.

**Note**

Keep the default value for the **Quota** template, which is No Quota.

10. Click **OK**.

In this procedure you verify that the Search Center exists on WFE1.

▶ **To verify the that the Search Center site exists:**

1. On CLIENT1, logon using the CORP\User1 account.

**Note**

Until you provide access to other accounts, User1 is the only account that will be able to view the Search Center page.

2. Open Internet Explorer and type in **http://WFE1/sites/TLGSearchCenter/** as the URL for the Search Center site.

Provide access to the Search Center

In this procedure you grant access to the Search Center site to users so they can perform search queries and view results.

▶ **To grant access to the Search Center:**

1. Log on to APP1 as CORP\User1.
2. Open Internet Explorer and type in the URL for the Search Center site.

3. Open the **Site** menu by clicking the gear icon in the upper-right portion of the page, and then click **Site with**.
4. In the **Shared with** dialog box, click **Invite people**.
5. In the **Share TLGSearch** dialog box, type the names of Windows users, separated by semicolons, in the **Invite people to 'Contribute'** text box.
If you want to grant access to a group, click **SHOW OPTIONS**. Select the name of the group from the **Select group or permission level** dropdown list.
6. Click **Share** to finish granting access to the users you identify.

You will not be able to test search functionality until you add and crawl content.

- Step 6: Test SharePoint Server searchTest SharePoint Server search.

Step 1: Set up the three-tier farm

Use the instructions in the [Test Lab Guide: Configure SharePoint Server 2013 in a Three-Tier Farm](#) to set up the SharePoint Server 2013 three-tier farm test lab. You can choose to install either SQL Server 2008 R2 SP1 or SQL Server 2012. The procedures in this test lab guide were written for SQL Server 2012.

The test lab environment for the three tier farm test lab has the following topology and configurations:

- One front-end web server named WFE1
- One application server named APP1
- One database server named SQL1

Step 2: Add four application servers to the farm

In this step you set up the application servers (APP2, APP3, APP4, APP5) that you need for the search topology in this test lab. Use the following instructions in the [Base Configuration test lab guide as guidance](#) to prepare each server so you can install the SharePoint Server 2013 prerequisites and the SharePoint Server 2013 software.

Set up a new computer as the APP2 application server

To install and configure Windows on APP2

1. Start the installation of Windows Server 2008 R2 SP1.

2. Follow the instructions to complete the installation, specifying Windows Server 2008 R2 SP1 Enterprise Edition (full installation), and a strong password for the local Administrator account. Log on using the local Administrator account.
3. Connect the new computer to a network that has Internet access and run Windows Update to install the latest updates for Windows Server 2008 R2 SP1.
4. Connect the new computer to the Corpnet subnet.

► **To configure networking for the new server**

1. In **Initial Configuration Tasks**, click **Configure networking**.
2. In **Network Connections**, right-click **Local Area Connection**, and then click **Properties**.
3. Click **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.
4. Select **Use the following IP address**. In **IP address**, type **10.0.0.6**. In **Subnet mask**, type **255.255.255.0**. Select **Use the following DNS server addresses**. In **Preferred DNS server**, type **10.0.0.1**.
5. Click **Advanced**, and then click the **DNS** tab.
6. In **DNS suffix for this connection**, type **corp.contoso.com**, click **OK** twice, and then click **Close**.
7. Close the **Network Connections** window and leave the **Initial Configuration Tasks** window open.
8. To check name resolution and network communication between APP2 and DC1, click **Start**, click **All Programs**, click **Accessories**, and then click **Command Prompt**.
9. In the Command Prompt window, type **ping dc1.corp.contoso.com**.
10. Verify that there are four replies from 10.0.0.1.
11. Close the Command Prompt window.

► **To join APP2 to the corp.contoso.com domain**

1. In **Initial Configuration Tasks**, click **Provide Computer Name and Domain**.
2. In the **System Properties** dialog box, on the **Computer Name** tab, click **Change**.
3. In **Computer Name**, type **APP2**. In **Member of**, click **Domain**, and then type **corp.contoso.com**.
4. Click **OK**.
5. When you are prompted for a user name and password, type **User1** and its password, and then click **OK**.
6. When you see a dialog box welcoming you to the corp.contoso.com domain, click **OK**.
7. When you are prompted that you must restart the computer, click **OK**.
8. On the **System Properties** dialog box, click **Close**.
9. When you are prompted to restart the computer, click **Restart Now**.
10. After the computer restarts, click **Switch User**, and then click **Other User** and log on to the CORP domain with the User1 account.
11. In **Initial Configuration Tasks**, click **Do not show this window at logon**, and then click **Close**.

Install the SharePoint Server prerequisites on the APP2 server

In this procedure, you install the prerequisite software components for SharePoint Server 2013 on APP2.

► To install the SharePoint Server 2013 prerequisite software

1. On APP2, log on using the User1 user account.
2. Connect APP2 to a network that has Internet access and configure the TCP/IP protocol on the Local Area Connection as needed.
The SharePoint Server 2013 prerequisite installer must download and install components from the Microsoft Download Center. For example, if the network that has access to the Internet uses DHCP, configure the Internet Protocol version 4 (TCP/IPv4) component from the properties of the Local Area Connection in the Network Connections folder to use automatic addressing and to automatically configure a DNS server.
3. On APP2, navigate to the location that contains the SharePoint Server 2013 installation files and double-click **default.hta**.
4. On the **SharePoint 2013** page, click **Install software prerequisites**.
5. On the **Welcome to the Microsoft SharePoint Products Preparation Tool** page, click **Next**.
6. 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**.
7. On the **Installation Complete** page, click **Finish**.

Note

The computer might restart to install some of the prerequisites. After it does, the Products Preparation Tool will run again and install the remaining prerequisites. The computer must be restarted again to install these prerequisites.

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

Install and configure SharePoint Server on the APP2 server

In this procedure, you install SharePoint Server 2013 on the APP2 server and add it to the farm.

► To install SharePoint Server 2013

1. Connect APP2 to the Corpnet subnet and configure the TCP/IP protocol on the Local Area Connection as needed.
For example, configure the Internet Protocol version 4 (TCP/IPv4) component from the properties of the Local Area Connection in the Network Connections folder to use the

address 10.0.0.6 with a subnet mask of 255.255.255.0 and the preferred DNS server of 10.0.0.1.

2. Click the **Server Manager** icon. In **Security Information**, click **Configure IE ESC**.
3. In the **Internet Explorer Enhanced Security Configuration** dialog box, click **Off** in **Administrators**, click **Off** in **Users**, and then click **OK**.
4. Close **Server Manager**.
5. Navigate to the location that contains the SharePoint Server 2013 installation files and double-click **default.hta**.
6. On the **SharePoint 2013** page, click **Install SharePoint Server**.
7. On the **Enter Your Product Key** page, enter your product key as needed, and then click **Continue**.

For the 180-day trial version of SharePoint Server 2013, use the product key NQTMW-K63MQ-39G6H-B2CH9-FRDWJ.

8. 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**.
9. On the **Server Type** tab, click **Complete**, and then click **Install Now**.
10. When Setup finishes, a dialog box prompts you to complete the configuration of your server.
Ensure that the **Run the SharePoint Products and Technologies Configuration Wizard now** check box is selected, and then click **Close** to start the configuration wizard.
11. In the dialog box that notifies you that some services might need to be restarted during configuration, click **Yes**.
12. On the **Connect to a server farm** page, click **Connect to an existing server farm**, and then click **Next**.
13. On the **Specify Configuration Database Settings** page, type SQL1 in **Database server**, type CORP\SPFarmAdmin in **User name**, type P@ssword1 in **Password**, and then click **Next**.
14. On the **Specify Farm Security Settings** page, type P@ssphrase in both **Passphrase** and **Confirm passphrase**, and then click **Next**.
15. On the **Configure SharePoint Central Administration Web Application** page, click **Next**.
16. On the **Completing the SharePoint Products Configuration Wizard** page, click **Next**.
17. On the **Configuration Successful** page, click **Finish**.
Internet Explorer starts with a tab named Initial Farm Configuration Wizard.
18. Exit Internet Explorer.

Configure distributed cache on the APP2 server

The SharePoint 2013 Products Configuration Wizard installs and enables the distributed cache service on the server that you configure. Because distributed caching should only be run on a dedicated server, you must disable or remove this service on servers that run other farm

components. For more information, see [Manage the Distributed Cache service in SharePoint Server 2013](#).

**Note**

You can use the **Services on Server** page in Central Administration to remove or disable distributed caching. However, as a best practice we recommend that use Windows PowerShell cmdlets to manage the cache service.

In this procedure you remove the distributed cache service on APP2.

**To remove the distributed cache service:**

1. On APP2, on the **Start** menu, click **All Programs**, click **Microsoft SharePoint 2013 Products**, right-click **SharePoint 2013 Management Shell**, and then click **Run as administrator**.
2. At the Windows PowerShell command prompt, use the following command to remove the service:

```
Remove-SPDistributedCacheServiceInstance
```

**Important**

After you remove the distributed cache service you must restart Web Server (IIS) on the front-end web server (WFE1). However you can do this after all the new application servers are joined to the farm and the distributed cache service is removed. For more information, see [Restart Web Server \(IIS\) on the WFE1 server](#) in this article.

Set up three more application servers and add them to the farm

Follow the steps used for the APP2 server to set up the APP3 (using the IP address 10.0.0.7), APP4 (using the IP address 10.0.0.8), and APP5 (using the IP address 10.0.0.9) application servers.

Restart Web Server (IIS) on the WFE1 server

In this procedure you restart Web Server (IIS) on the front-end web server.

**To restart Web Server (IIS):**

1. On WFE1, log on using the CORP\User1 account.
2. Click **Start**, click **All Programs**, click **Accessories**, and then click **Command Prompt**.
3. At the Command Prompt window, type **iisreset**.
4. Close the Command Prompt window.

Step 3: Create and configure the Search service application

This step describes how to create and configure the Search service application for the test lab farm.

Create the Search service application

In this procedure you create the Search service application.

 **To create the Search service application:**

1. On APP1, log on using the CORP\User1 user account.
2. In the Internet Explorer window for SharePoint Central Administration, in **Application Management**, click **Manage service applications**.

3. On the Manage Service Applications page, on the ribbon, click **New**, and then click **Search Service Application**.
4. On the Create New Search Service Application page, do the following:
 - a. In the **Service Application name** text box, type **Search Service Application TLG**.
 - b. In the **Search Service Account** list, select CORP\User1 as the managed account that you registered when you set up the three-tier farm (or if you used a different account, select it.)
 - c. In the **Application Pool for Search Admin Web Service** section, do the following:
 - i. Select the **Create new application pool** option, and then type **SearchTLG** for the application pool in the **Application pool name** text box.
 - ii. In the **Select a security account for this application pool** section, select the **Configurable** option, and then from the list select the account that you registered to run the application pool for the Search Admin Web Service.
 - d. In the **Application Pool for Search Query and Site Settings Web Service** section, do the following:
 - i. Choose the **Create new application pool** option, and then type **SearchQueryTLG** as the name for the application pool in the **Application pool name** text box.
 - ii. In the **Select a security account for this application pool** section, select the **Configurable** option, and then from the list select the account that you registered to run the application pool for the Search Query and Site Settings Web Service.
5. Click **OK**.

Configure the Search service application

In this procedure you configure the following Search service application settings:

1. The default content access account
2. The contact email address
3. Create content sources (optional)



Note

The account performing these procedures must be an administrator for the **Search Service Application TLG** that you created.

 **To specify the default content access account**

1. On the Central Administration home page, click **Application Management**, and then click **Manage service applications**.
2. In the list of service application names, click **Search Service Application TLG**.
3. On the Search Administration page, in the **System Status** section, click the CORP\User1 link in the **Default content access account** row.
4. In the **Default Content Access Account** dialog box, in the **Account** box, type the account that you created for content access in the form *domain\user name*.
5. Type the password for this account in the **Password** and **Confirm Password** boxes.
6. Click **OK**.

 **To specify the contact email address**

1. On the Search Administration page, in the **System Status** section, click the link for the **Contact e-mail address**.
2. In the **Search E-mail Setting** dialog box, in the **E-mail Address** box, type the email address that you want to appear in the logs of servers that are crawled by the search system.
3. Click **OK**.

Create content sources

Crawling requires at least one content source. A content source is a set of options that you use to specify the type of content to crawl, the starting URLs to crawl, and when and how deep to crawl. When a Search service application is created, a content source named "Local SharePoint sites" is automatically created and configured to crawl all SharePoint sites in the local server farm. For this test lab you will use the default content source that was created when you created the Search service application.

**Note**

You can create content sources to specify other content to crawl and how the system will crawl that content. However, you do not have to create other content sources if you do not want to crawl content other than the SharePoint sites in the local farm. For more information, see [Add, edit, or delete a content source in SharePoint Server 2013](#).

Step 4: Change the default search topology

This step describes how to deploy search components to the application servers that you added to this test lab. For more information about managing search components in SharePoint Server 2013, see [Manage the search topology in SharePoint Server 2013](#).

When you create a Search service application, a default search topology that consists of all the search components is created on the server that hosts Central Administration. For this test lab guide, this is APP1. Because the goal is to test a highly available topology, you need to change the default search topology to a topology where search components are distributed on four

application servers. The following table describes search component distribution on the four application servers that you added to the test lab farm.

Server: APP2	Server: APP3	Server: APP4	Server: APP5
Admin component 1	Query processing component 1	Admin component 2	Query processing component 2
Crawl component 1	Index component 1 (that belongs to index partition 0)	Crawl component 2	Index component 2 (that belongs to index partition 0)
Content processing component 1		Content processing component 2	
Analytics processing component 1		Analytics processing component 2	

The following tasks are involved to change from the default search topology to a new search topology:

- Verify crawl activity and index state.
- Start a search service instance on the application servers that will host search components (APP2, APP3, APP4, and APP5.)
- Create a new empty search topology.
- Add search components to the new search topology.
- Activate the new search topology.
- Verify that the search topology is active.



Note

All the tasks in Step 4 are done on the SharePoint Central Administration web site or by using the SharePoint 2013 Management Shell on the APP1 server.

In this procedure you ensure that no crawls are running and that the index is empty to prepare to change the search topology.

► To verify crawl activity and index state:

1. Log on to APP1 as CORP\User1.
2. On the SharePoint Central Administration web site, in the **Application Management** section, click **Manage Service Applications**.
3. On the **Manage Service Applications** page, in the list of service applications, click **the Search Service Application TLG** link.
4. Verify that the search index is empty. On the **Search Administration** page, under **System Status**, verify that **Searchable items** displays "0".



Warning

If items are in the search index, do not continue with this procedure. If items are in the search index, use the procedure in [Reset the search index in SharePoint Server 2013](#) to reset the index to "0".

5. Verify that no crawls have been started. On the **Search Administration** page, under **Crawling**, click **Content Sources**. On the **Manage Content Sources** page, verify that the **Status** column for any existing content source displays **Idle**.

In this procedure you create a search service instance on the servers that will host search components and create references to these instances.

► **To start a search service instance on the application servers:**

1. On APP1, on the **Start** menu, click **All Programs**, click **Microsoft SharePoint 2013 Products**, right-click **SharePoint 2013 Management Shell**, and then click **Run as administrator**.
2. At the Windows PowerShell command prompt, type the following commands to specify the application servers that you want to add search components to:

```
$hostA = Get-SPEnterpriseSearchServiceInstance -Identity "APP2"
$hostB = Get-SPEnterpriseSearchServiceInstance -Identity "APP3"
$hostC = Get-SPEnterpriseSearchServiceInstance -Identity "APP4"
$hostD = Get-SPEnterpriseSearchServiceInstance -Identity "APP5"
```

3. Type the following commands to start the search service instances:

```
Start-SPEnterpriseSearchServiceInstance -Identity $hostA
Start-SPEnterpriseSearchServiceInstance -Identity $hostB
Start-SPEnterpriseSearchServiceInstance -Identity $hostC
Start-SPEnterpriseSearchServiceInstance -Identity $hostD
```

4. Verify that all the search service instances are running on the application servers. Type the following commands until the state "Online" is returned for each instance:

```
Get-SPEnterpriseSearchServiceInstance -Identity $hostA
Get-SPEnterpriseSearchServiceInstance -Identity $hostB
Get-SPEnterpriseSearchServiceInstance -Identity $hostC
Get-SPEnterpriseSearchServiceInstance -Identity $hostD
```

In this procedure you create a new search topology and create a reference to the new topology.

► **To create a new search topology:**

1. At the Windows PowerShell command prompt, type the following commands:

```
$ssa = Get-SPEnterpriseSearchServiceApplication
$newTopology = New-SPEnterpriseSearchTopology -SearchApplication $ssa
```

In this procedure you add all the search components to new topology and assign them to specific servers.

► **To add search components:**

1. At the Windows PowerShell command prompt, type the following commands:.

```
New-SPEnterpriseSearchAdminComponent -SearchTopology $newTopology -
SearchServiceInstance $hostA
New-SPEnterpriseSearchCrawlComponent -SearchTopology $newTopology -
SearchServiceInstance $hostA
New-SPEnterpriseSearchContentProcessingComponent -SearchTopology
```

```
$newTopology -SearchServiceInstance $hostA
New-SPEnterpriseSearchAnalyticsProcessingComponent -SearchTopology
$newTopology -SearchServiceInstance $hostA
New-SPEnterpriseSearchQueryProcessingComponent -SearchTopology $newTopology
-SearchServiceInstance $hostB
New-SPEnterpriseSearchIndexComponent -SearchTopology $newTopology -
SearchServiceInstance $hostB -IndexPartition 0
New-SPEnterpriseSearchAdminComponent -SearchTopology $newTopology -
SearchServiceInstance $hostC
New-SPEnterpriseSearchCrawlComponent -SearchTopology $newTopology -
SearchServiceInstance $hostC
New-SPEnterpriseSearchContentProcessingComponent -SearchTopology
$newTopology -SearchServiceInstance $hostC
New-SPEnterpriseSearchAnalyticsProcessingComponent -SearchTopology
$newTopology -SearchServiceInstance $hostC
New-SPEnterpriseSearchQueryProcessingComponent -SearchTopology $newTopology
-SearchServiceInstance $hostD
New-SPEnterpriseSearchIndexComponent -SearchTopology $newTopology -
SearchServiceInstance $hostD -IndexPartition 0
```

2. Activate the new search topology. Type the following command:

```
Set-SPEnterpriseSearchTopology -Identity $newTopology
```

 **To verify that the new search topology is active and that the search components are running:**

1. To obtain an overview of active and inactive topologies, type the following command at the Windows PowerShell command prompt:

```
Get-SPEnterpriseSearchTopology -SearchApplication $ssa
```

2. Verify that all components of the new search topology are running correctly. At the Windows PowerShell command prompt, type the following command:

```
Get-SPEnterpriseSearchStatus -SearchApplication $ssa -Text
```

This command will return a list of search components that shows a state of **Active** for active search components.

 **Note**

When you activate a new search topology, the previous topology is deactivated, but not deleted.

Step 5: Create a Search Center site

This step describes how to create a Search Center site, or Search Center, that users will use to submit search queries and view search results. This involves the following tasks:

- Create a Search Center
- Provide access to the Search Center

Create a Search Center

In this procedure you create and configure a site collection for the Search Center.

 **To create a new site collection:**

11. On APP1, log on using the CORP\User1 user account.
12. On the home page of the Central Administration website, in the **Application Management** section, click **Create site collections**.

The remaining steps in this procedure are done on the **Create Site Collection** page.

13. In the **Web Application** section, select the **http://WFE1** web application for the new site collection.
14. In the **Title and Description** section, in the **Title** box, type **TLGSearch** as the name for the new Search Center site
15. In the **Web Site Address** section, type **TLGSearchCenter** as the URL name for the **http://WFE1/sites/** path.
16. In the **Template** section, select 2013 from the **Select experience version** dropdown list.
17. In the **Template** section, under **Select a template**, click the **Enterprise** tab
18. Pick the **Enterprise Search Center** template.
19. In the **Primary Site Collection Administrator** section, in the **User name** box, type **CORP\User1** as the user name of the primary site collection administrator.

 **Note**

Keep the default value for the **Quota** template, which is No Quota.

20. Click **OK**.

In this procedure you verify that the Search Center exists on WFE1.

 **To verify the that the Search Center site exists:**

2. On CLIENT1, logon using the CORP\User1 account.

 **Note**

Until you provide access to other accounts, User1 is the only account that will be able to view the Search Center page.

3. Open Internet Explorer and type in **http://WFE1/sites/TLGSearchCenter/** as the URL for the Search Center site.

Provide access to the Search Center

In this procedure you grant access to the Search Center site to users so they can perform search queries and view results.

► **To grant access to the Search Center:**

7. Log on to APP1 as CORP\User1.
8. Open Internet Explorer and type in the URL for the Search Center site.
9. Open the **Site** menu by clicking the gear icon in the upper-right portion of the page, and then click **Site with**.
10. In the **Shared with** dialog box, click **Invite people**.
11. In the **Share TLGSearch** dialog box, type the names of Windows users, separated by semicolons, in the **Invite people to 'Contribute'** text box.
If you want to grant access to a group, click **SHOW OPTIONS**. Select the name of the group from the **Select group or permission level** dropdown list.
12. Click **Share** to finish granting access to the users you identify.

You will not be able to test search functionality until you add and crawl content.

Step 6: Test SharePoint Server search

In this step, you test SharePoint Server search, which involves the following tasks:

- Add test documents to the Contoso farm.
- Crawl the farm content.
- Test search functionality using the test documents.



Note

The default content access account must have read access as a minimum permission for the site to which you add test documents.

In this procedure you add content to the Contoso farm.

► **To add content to the farm:**

1. Log on to WFE1 as CORP\User1.
2. Copy the documents that you want to add to My Documents or Public Documents folder.
3. Open Internet Explorer and connect to the Contoso Corporation home page.
4. In the **Documents** section, click **new document**.
5. In the **Add a document** dialog, type the name of the file that you want to add, or click **Browse...** to navigate to the location where you put the test documents.
6. Select the document you want to add and then click **Open**.
7. In the **Add a document** dialog, click **OK**.

In this procedure you start a full crawl of the farm content.

▶ **To start a full crawl of the content:**

1. Log on to APP1 as CORP\User1.
2. On the SharePoint Central Administration web site, in the **Application Management** section, click **Manage Service Applications**.
3. On the Manage Service Applications page, click the **Search Service Application TLG** link.
4. On the Search Administration page, click **Content Sources** in the **Crawling** section.
5. On the Manage Content Sources page, click **Start all crawls** on the page ribbon.
6. Refresh the page to see the status of the crawl. When the crawl is finished the status will be Idle.
7. Verify that your test content is indexed. On the Search Administration page, under **System Status**, verify that **Searchable items** displays a number greater than "0".

▶ **To test search:**

1. Use Internet Explorer to connect to the Search Center site.
2. Use search to find and view the test content that you added to the Contoso web site.

Snapshot the Configuration

This completes the search test lab. To save this configuration to use in subsequent tests and experimentation, do the following:

On all physical computers or virtual machines in the test lab, close all windows and then perform a graceful shutdown.

If your lab is based on virtual machines, save a snapshot of each virtual machine and name the snapshots **searchtlgvm_name**, where **name** is the name of the virtual machine. If your lab uses physical computers, create disk images to save the search test lab configuration.

Additional Resources

For more information about SharePoint Server 2013, see the [SharePoint 2013 product information web page](#) and [SharePoint 2013 for IT pros](#).

To provide the authors of this guide with feedback or suggestions for improvement, send an email message to itspdocs@microsoft.com.

To submit your questions about this test lab or SharePoint Server 2013, see the [SharePoint 2013 for IT Professionals Forum](#).

For a list of TLGs related to this test lab or extensions to demonstrate additional functionality, see [SharePoint Server 2013 Test Lab](#) in the TechNet Wiki.

Microsoft strongly encourages you to develop and publish your own TLG content for SharePoint Server 2013, either in the TechNet Wiki (example: [Test Lab Guide: Demonstrate Remote Access VPNs](#)) or in your own publishing forum (example: [Test Lab Guide \(Part 1\) - Demonstrate TMG PPTP, L2TP/IPsec and SSTP Remote Access VPN Server](#)). If you want to publish your own TLG content, see [Wiki: Creating and Publishing Test Lab Guide Content](#) for information about the types of content you can create and for links to guidance and templates.

For a list of additional Microsoft TLGs, see [Test Lab Guides](#) in the TechNet Wiki.