

System Center Service Manager 2010 SP1 Planning Guide

Microsoft Corporation

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Applies To

System Center Service Manager 2010 SP1

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Revision History

|  |  |
| --- | --- |
| Release Date | Changes |
| December 1, 2010 | Original release of this guide |
| December 16, 2010 | Added new topic, [Operations Manager 2007 and Service Manager 2010 SP1](#zf359c7dfeca64ec9b7a5ce223cd656d6). |
| March 19, 2011 | Updated system requirements to include Windows Server 2008 R2 with SP1, Windows 7 SP1, and SQL Server 2008 SP2. |

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System Center Service Manager 2010 SP1 Planning Guide

Welcome to the System Center Service Manager 2010 Planning Guide. This guide helps you understand the hardware and software requirements as well as software roles you need to prepare for Service Manager before deploying it for use in your organization. Also in this guide are general guidelines that can help you plan for the better hardware and software performance and scalability.

In This Section

[Planning Service Manager 2010 SP1 Deployment](#z96e043a204ed4ca6ad5e054372fb94c7)

|  |
| --- |
| Describes the pieces that make up Service Manager, such as the Service Manager management server, the Service Manager database, the data warehouse management server, the data warehouse databases, the Service Manager console, and the Service Manager Self-Service Portal. This section also describes the hardware and software requirements, the databases created by Service Manager, and the port numbers used by Service Manager. |

[Preparing for Service Manager 2010 SP1 Deployment](#z5ef7a8e835c145f7a9c3f8d1da5715a8)

|  |
| --- |
| Describes how to prepare a computer to host Service Manager. For example, the topics in this section describe how to uninstall a previous version of Service Manager, how to make sure SQL Server Reporting Services is installed, and they discuss the account considerations you need to think about. |

[Planning for Performance and Scalability in Service Manager 2010](#z46d73877512b4d3a8d751a595d3a7be7)

|  |
| --- |
| Describes the issues that affect performance and scalability in Service Manager and suggests best practices to achieve adequate performance using suggested hardware configurations. |

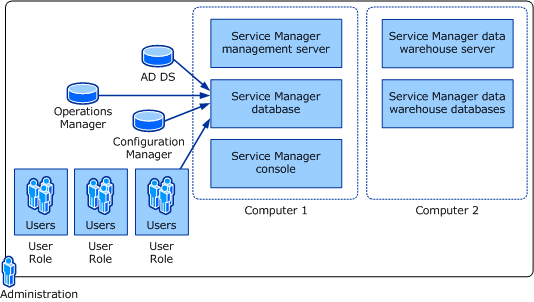
Planning Service Manager 2010 SP1 Deployment

Several deployment options are available: three scenarios are presented in this guide. The first option uses one physical computer and one virtual computer. The physical computer will host the Service Manager management server, the Service Manager database, and the data warehouse databases and will host the virtual server. The virtual computer hosts the data warehouse management server. This deployment is used primarily for lightweight or first-impression evaluation of Service Manager. No scalability or performance estimates are available for this scenario.

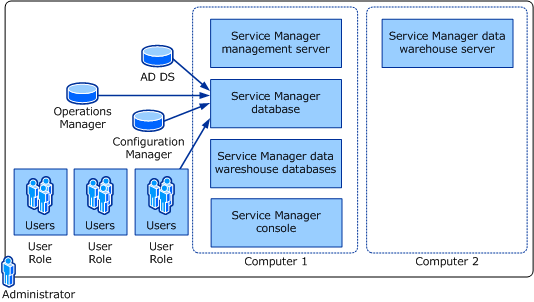
A second deployment requires the use of two computers. The first computer hosts the Service Manager management server and the Service Manager database. The second computer hosts the data warehouse management server and the data warehouse databases. If you do not need reporting services, you can, at an absolute minimum, install Service Manager on one computer that hosts both the Service Manager management server and the Service Manager database.

A third deployment option maximizes performance and scalability by using four computers. Two computers host the management servers and the remaining two computers host the databases. The computers hosting the databases are the only two computers in this scenario that require the installation of SQL Server 2008.

You might decide that for the evaluation phase, you will choose the option to install Service Manager on two computers. After installing Service Manager in the lab, you can import data from Active Directory and System Center Configuration Manager, and then import data and alerts from Operations Manager 2007 SP1 and above. You would then configure User Roles within Service Manager and if necessary, manually adds users that were not imported from Active Directory. The following diagram represents an overview of this installation and initial configuration.



You can limit the number of SQL Server licenses that you need by placing all of the Service Manager databases on the same computer as shown in the following diagram.



You continue the deployment process by creating several templates; configuring initial parameters; creating queues, lists, and groups; and then creating a management pack to save these custom objects.

After the evaluation phase is complete, you might install Service Manager in a production environment and select the deployment scenario where Service Manager is installed on four computers.

In This Section

[Service Manager 2010 Parts](#z1c2d7a8a595c49e79cd0f4d262df5a46)

|  |
| --- |
| Describes the six major parts of a Service Manager installation. |

[Service Manager 2010 Evaluation, Retail, and Select Editions](#z7f8e153f5b204421ac9ed0fd8ef5289d)

|  |
| --- |
| Describes the retail and select editions of Service Manager and what affect selecting the 180-day evaluation installation has on these two editions. |

[System Requirements for Service Manager 2010](#z651e967ba36a4aff80e02679862b44d9)

|  |
| --- |
| Describes the hardware and software requirements needed for Service Manager. Specific considerations about the software you need to install to support Service Manager are included. |

[Operations Manager 2007 and Service Manager 2010 SP1](#zf359c7dfeca64ec9b7a5ce223cd656d6)

|  |
| --- |
| Describes information you need to know if you are planning to deploy Service Manager 2010 SP1 in an environment that hosts Operations Manager 2007. |

[Language Support for Service Manager 2010 SP1](#z3f891381babf48c691831e2a955a1f52)

|  |
| --- |
| Describes the languages supported in Service Manager 2010 SP1. |

[Databases Created by Service Manager 2010](#zeb655b1b472e49c682fcaf50a6949857)

|  |
| --- |
| Describes the four databases that will be created as a result of deploying Service Manager. |

[Port Assignments for Service Manager 2010](#z3b4a521a2afa4c629739a4d5fc299f5b)

|  |
| --- |
| Describes the TCP/IP ports that will be used by Service Manager. |

Service Manager 2010 Parts

There are six major parts of a System Center Service Manager 2010 installation, as summarized in the following table.

|  |  |
| --- | --- |
| Service Manager Part | Description |
| Service Manager management server | Contains the main software part of a Service Manager installation. You can use the Service Manager management server to manage incidents, changes, users, and tasks. |
| Service Manager database | The database that contains Service Manager configuration items (CI) from the IT Enterprise, work items such as incidents, change requests, and the configuration for the product itself. This is Service Manager’s implementation of a Configuration Management Database (CMDB). |
| Data warehouse management server | The computer that hosts the server piece of the data warehouse. |
| Data warehouse database | This is the database that provides long-term storage of the business data that is generated by Service Manager. This database is also used for reporting. |
| Service Manager console | The user interface piece that is used by both the help desk analyst and the help desk administrator to perform Service Manager functions such as incidents, changes, and tasks. This piece is automatically installed when you deploy a Service Manager management server. Additionally, you can manually install the Service Manager console as a stand-alone piece on a computer. |
| Self-service portal | The self-service portal is installed on a computer that hosts Windows Server 2008 and Internet Information Services (IIS) 7. The self-service portal provides a Web-based console for both end users and analysts. The end user console allows users to submit incidents, search knowledge articles, read announcements, reset passwords (requires Identity Lifecycle Management), and self-service software provisioning (requires System Center Configuration Manager). The analyst console allows users to view change requests. |

Important

All computers hosting any part of Service Manager must be domain-joined.

Service Manager 2010 Evaluation, Retail, and Select Editions

System Center Service Manager 2010 is available as both a retail and select edition. Both editions offer the same functionality. The retail edition is purchased separately and includes a product key that you enter during setup. The select edition is delivered as part of a Microsoft Volume Licensing plan and a product key is not required.

During setup of the retail edition, you have the option of performing the installation without a product key and instead install Service Manager as an evaluation edition. The evaluation edition times out 180 days after installation. If you start with an evaluation version of Service Manager and rerun setup and install the retail or select edition, and you decide to use the existing databases that you originally created, your installation will time out after the original expiration date. The following table describes the interactions between the various installations of Service Manager.

|  |  |  |
| --- | --- | --- |
| If you started with an: | And then rerun setup to install a | Will the new installation time out? |
| Evaluation Edition | Retail Edition | Yes |
| Evaluation Edition | Select Edition | Yes |
| Retail Edition | Evaluation Edition | No |
| Retail Edition | Select Edition | No |
| Select Edition | Retail Edition | No |

System Requirements for Service Manager 2010

The following sections include information about the hardware and software requirements for Service Manager and are based on the following environment. System Center Service Manager 2010 has been tested up to the following workload based on the recommended hardware requirements listed in this guide and is using one Service Manager management server supporting 80 to 100 concurrent Service Manager consoles. High-performance storage using 15,000 RPM SCSI drives were used on the database servers.

 Up to 20,000 users with up to 40 – 50 IT analysts providing concurrent support.

 Up to 50,000 users and up to 80 – 100 IT analysts can be supported if 32 GB of memory is installed on the servers running Microsoft SQL Server.

 Up to 20,000 supported computers, assuming up to 10 to 12 configuration items (installed software, software updates, and hardware components) per computer.

 Up to 50,000 computers can be supported if 32 GB of memory is installed on the servers running SQL Server.

 5,000 incidents per week with 3 months of retention for a total of 60,000 incidents in the Service Manager database for the 20,000 computer configuration, and 2.5 times that for the 50,000 computer configuration

 1,000 change requests a week with 3 months of retention for a total 12,000 change requests in the Service Manager database for the 20,000 computer configuration, and 2.5 times that for 50,000 computer configuration

Using a slow storage subsystem or insufficient memory can significantly reduce Service Manager performance.

Hardware Requirements

The following table outlines the recommended hardware requirements for the individual parts of Service Manager. These computers can be physical or virtual servers.

Hardware Requirements

|  |  |
| --- | --- |
| Service Manager database | Dual Quad-Core 2.66 GHz CPU  8 GB of RAM (see the [Hardware Performance](#zeec884c17dbe43d0a8eb2eb3557f31ef) section in this guide.)  80 GB of available disk space  RAID Level 1 or Level 10 drive\* |
| Service Manager management server | Dual Quad-Core 2.66 GHz CPU  8 GB of RAM  10 GB of available disk space |
| Service Manager console | Dual-Core 2.0 GHz CPU  2 GB of RAM  10 GB of available disk space |
| Data warehouse management server | Dual-Core 2.66 GHz CPU  8 GB of RAM  10 GB of available disk space |
| Data warehouse databases | Dual Quad-core 2.66 GHz CPU  8 GB of RAM  400 GB of available disk space |
| Self-Service Portal | Dual-core 2.66 GHz CPU  8 GB of RAM  10 GB of available disk space |

\*For more information about RAID levels and Microsoft SQL Server, see <http://go.microsoft.com/fwlink/?LinkId=134073>.

Software Requirements

This section describes the software requirements for Service Manager. The following table lists the software requirements for each part of Service Manager.

Note

The Service Manager management server and database warehouse management server must be installed on the 64-bit edition of the Windows operating system. The Service Manager console can be installed on both 32- and 64-bit editions of the Windows operating system.

Software Requirements for Service Manager

|  |  |
| --- | --- |
| Service Manager management server or data warehouse management server | One of the following operating systems:  ****** The 64-bit edition of Windows Server 2008 Standard or the 64-bit edition of Windows Server 2008 Enterprise  ****** The 64-bit edition of Windows Server 2008 Standard with SP2 or the 64-bit edition of Windows Server 2008 Enterprise with SP2  ****** The 64-bit edition of Windows Server 2008 R2 Standard or the 64-bit edition of Windows Server 2008 R2 Enterprise  ****** The 64-bit edition of Windows Server 2008 R2 with SP1 Standard for the 64-bit edition of Windows Server 2008 R2 with SP1 Enterprise  Note  Installation on a computer running Windows Server 2003 is not supported.  Microsoft .NET Framework 3.5 with SP1\* |
| Service Manager or Data warehouse databases | One of the following versions of SQL Server:  ****** The 64-bit version of SQL Server 2008 with SP1  ****** The 64-bit version of SQL Server 2008 with SP2  ****** The 64-bit version of SQL Server 2008 R2  SQL Server Reporting Services (SSRS) in SQL Server 2008 with SP1, SQL Server 2008 with SP2, or SQL Server 2008 R2  Microsoft .NET Framework 3.5 with SP1 is required on the computer hosting the data warehouse databases when installing Service Manager in a four-computer scenario. \*  The SQL Server collation settings must be the same for the computers hosting the Service Manager database, data warehouse database, and Reporting Services database.  For this release, Turkish language collations are not supported. |
| Service Manager console | One of the following operating systems:  ****** The 32- or 64-bit edition of Windows Server 2008 Standard or the 32- or 64-bit edition of Windows Server 2008 Enterprise  ****** The 32- or 64-bit edition of Windows Server 2008 Standard with SP2 or the 64-bit edition of Windows Server 2008 Enterprise with SP2  ****** The 32- or 64-bit edition of Windows Server 2008 R2 Standard or Windows Server 2008 R2 Enterprise  ****** The 32- or 64-bit edition of Windows Server 2008 R2 with SP1 Standard for the 64-bit edition of Windows Server 2008 R2 with SP1 Enterprise  ****** The 32- or 64-bit edition of Windows Server 2003 Standard with SP1 or the 32- or 64-bit edition of Windows Server 2003 Enterprise with SP1  ****** Windows 7 Professional and Windows 7 Ultimate  ****** Windows 7 with SP1 Professional and Windows 7 Ultimate with SP1  ******  Windows Vista Ultimate or Windows Vista Enterprise  ******  Windows XP Professional with SP 3  Microsoft .NET Framework 3.5 with SP1\* |
| Self-Service Portal | One of the following operating systems:  ****** The 64-bit edition of Windows Server 2008 Standard or the 64-bit edition of Windows Server 2008 Enterprise  ****** The 64-bit edition of Windows Server 2008 Standard with SP2 or the 64-bit edition of Windows Server 2008 Enterprise with SP2  ****** The 64-bit edition of Windows Server 2008 R2 Standard or the 64-bit edition of Windows Server 2008 R2 Enterprise  ****** The 64-bit edition of Windows Server 2008 R2 with SP1 Standard for the 64-bit edition of Windows Server 2008 R2 with SP1 Enterprise  Microsoft Internet Information Services 7 with IIS 6 metabase compatibility installed  ASP.NET 2.0  A Secure Sockets Layer (SSL) certificate will be required on the IIS server that hosts the Self-Service Portal.  The following software is optional and provided for additional functionality:  ****** Microsoft Identity Lifecycle Manager (allows for password reset)  ****** System Center Configuration Manager 2007 (allows for self-service software provisioning) |
| SQL Server Reporting Services | In a deployment topology where the computer hosting SSRS is not on the same computer that hosts the data warehouse management server, you have to add Microsoft.EnterpriseManagement.Reporting.Code to the global assembly cache. For more information, see Manual Steps to Configure the Remote SQL Server Reporting Services in the [System Center Service Manager 2010 SP1 Deployment Guide](http://go.microsoft.com/fwlink/?LinkId=198071) (http://go.microsoft.com/fwlink/?LinkId=198071) |

\* Microsoft .NET Framework 3.5 with SP1 is included with the System Center Service Manager 2010 installation media.

Microsoft SQL Server 2008

To download trial software of the English versions of either Microsoft SQL Server 2008 Standard Edition or SQL Server 2008 Enterprise Edition, see [SQL Server 2008](http://go.microsoft.com/fwlink/?LinkId=51646) (http://go.microsoft.com/fwlink/?LinkId=51646).

To download Service Pack 1 for SQL Server 2008, see [SQL Server 2008 Service Pack 1](http://go.microsoft.com/fwlink/?LinkId=148449) (http://go.microsoft.com/fwlink/?LinkId=148449).

To download the trial software for the English version of SQL Server 2008 R2, see [SQL Server 2008 R2](http://go.microsoft.com/fwlink/?LinkId=208018) (http://go.microsoft.com/fwlink/?LinkId=208018).

Use the following configuration with SQL Server 2008 SP1:

 SQL Server FTS: Full-text search must be installed. For more information about full-text search, see the [SQL Server 2008 Full-Text Search: Internals and Enhancements](http://go.microsoft.com/fwlink/?LinkID=129544) white paper (http://go.microsoft.com/fwlink/?LinkID=129544).

 You must configure SQL Server to use case-insensitive databases.

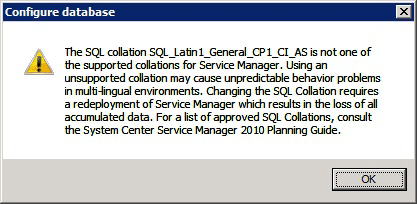
 Service Account configured per your company’s requirements.

 SQL Server Reporting Services (MSSQLSERVER) service configured and running. For more information about how to configure the MSSQLSERVER service, see [How to: Verify a Reporting Services Installation](http://go.microsoft.com/fwlink/?LinkId=91847) on the Microsoft MSDN Web site. (http://go.microsoft.com/fwlink/?LinkId=91847).

 For this release, make sure you use the same collation in SQL Server on the computers that host the Service Manager database, the data warehouse database, and Reporting Services database. For more information about SQL Server collations, see [Using SQL Server Collations](http://go.microsoft.com/fwlink/?LinkId=146998) (http://go.microsoft.com/fwlink/?LinkId=146998).

 Turkish collations are not supported in this release of Service Manager 2010 SP1.

If your SQL Server is using the default collation (SQL\_Latin1\_General\_CP1\_CI\_AS), a warning dialog box appears as shown in the following illustration.



Caution

Support for multiple languages in Service Manager is not possible when you are using the default collation (SQL\_Latin1\_General\_CP1\_CI\_AS). If later you decide to support multiple languages using a different collation, you have to re-install SQL Server. There are no issues using the default collation with the English-only installations of Service Manager. For more information about language support, see [Language Support for Service Manager 2010 SP1](#z3f891381babf48c691831e2a955a1f52).

You can define the collation when you install SQL Server 2008. During setup, on the Server Configuration page, click the Collation tab, and then click Customize for both the Database Engine and Analysis Services entries.

SQL Server Reporting Services

When you install SQL Server Reporting Services (SSRS), select the option to install the native mode default configuration. For more information, see [Considerations for Installing Reporting Services](http://go.microsoft.com/fwlink/?LinkId=163942) (http://go.microsoft.com/fwlink/?LinkId=163942).

Microsoft .NET Framework 3.5

Microsoft .NET Framework 3.5 is required to run Service Manager. It is included with the Service Manager installation media.

Windows PowerShell 1.0 and 2.0

Windows PowerShell 1.0 or 2.0 is required to run Windows PowerShell cmdlets when deploying the data warehouse. Windows PowerShell 1.0 is a Windows Server 2008 feature that you can enable in Control Panel. For more information, see [Scripting with Windows PowerShell](http://go.microsoft.com/fwlink/?LinkId=87566) (http://go.microsoft.com/fwlink/?LinkId=87566).

Self-Service Portal Security Requirements

We recommend that you add the Self-Service Portal Web site to the Trusted sites or Local intranet zones in Internet Explorer. By default, Web sites in the Trusted sites and Local intranet zones have Active Scripting enabled. If you choose not to add Self-Service Portal Web site to the Trusted sites or Local intranet zones, you must enable Active Scripting for Web browsers that access the Self-Service Portal.

Operations Manager 2007

Service Manager 2010 SP1 has the capability to import alerts and configuration items from your Operations Manager 2007 environment. You must have Operations Manager 2007 with SP1 or Operations Manager 2007 R2 installed to work with Service Manager.You cannot use Operations Manager 2007 SP1 to monitor

Note

Service Manager management servers. You must use Operations Manager 2007 R2.

If you plan to install both Service Manager 2010 SP1 and Operations Manager 2007 in the same environment, see the topic [Operations Manager 2007 and Service Manager 2010 SP1](#zf359c7dfeca64ec9b7a5ce223cd656d6).

Configuration Manager 2007

Service Manager has the capability to import configuration items from your Configuration Manager 2007 environment. You must have Configuration Manager 2007 SP1 or Configuration Manager 2007 R2 installed to work with Service Manager.

Network Requirements

In Service Manager, you have the ability to view external content from within knowledge articles. In order to view external content, computers that host the Service Manager console must have Internet Web access, either directly or through a proxy server.

SMTP Server

You must have access to an SMTP server to use the Notification feature and for incident creation through e-mail.

Windows Safe Mode

Service Manager does not operate and the services used by Service Manager do not start if Windows Server 2008 is running in safe mode. If you attempt to manually start the Service Manager services while in safe mode, the services fail to start and an error is written into the event log.

Operations Manager 2007 and Service Manager 2010 SP1

At this time, we recommend against hosting an Operations Manager 2007 management server on a computer that is also hosting a Service Manager management server or a data warehouse management server.

Management Group Names Must be Unique

When you deploy both a Service Manager and data warehouse management server, you will be asked to provide a management group name. You were also asked to provide a management group name when you deployed Operations Manager. The management group names you use for the Service Manager management group, the data warehouse management group, and the Operations Manager management group must be unique.

Warning

If you install an Operations Manager 2007 R2 agent on a Service Manager 2010 SP1 installation that has the same management group name as the Operations Manager management group name you will have to reinstall the Service Manager 2010 SP1 management server. Because it is not possible to rename a management group, you will either have to completely reinstall Service Manager 2010 SP1 with a different management group name or choose not to manage your Service Manager 2010 SP1 installation with Operations Manager 2007 R2.

Language Support for Service Manager 2010 SP1

It is assumed in this guide that you are installing Service Manager SP1 on a computer where no previous version of Service Manager is installed. For information about upgrading System Center Service Manager 2010, see the [System Center Service Manager 2010 SP1 Upgrade Guide](http://go.microsoft.com/fwlink/?LinkId=198070) (http://go.microsoft.com/fwlink/?LinkId=198070).

Including English, System Center Service Manager 2010 SP1 supports a total of 21 languages. There are some search-related issues with the following six languages: Czech, Danish, Finnish, Greek, Polish, and Turkish. For more information about these issues, see the following section "Search Considerations".

Setting your Windows locale on a computer that hosts a Service Manager console to one of the supported languages results in Service Manager SP1 being displayed in that language. In addition to the languages supported by Service Manager SP1, you must also consider the ability to search and sort data in the Service Manager SP1 databases. The ability to search and sort data in a specific language is defined by the collation settings in SQL Server. For more information about SQL Server collations, see the section "Microsoft SQL Server 2008 with SP1" in [System Requirements for Service Manager 2010](#z651e967ba36a4aff80e02679862b44d9) in this guide.

The information in the following table represents the approved collations and the locale identifiers that were tested for Service Manager SP1. In the list of collations in this table, CI indicates case-insensitive, and AS indicates accent-sensitive.

|  |  |  |
| --- | --- | --- |
| Windows Locale | LCID | Collation |
| English | 0x409 | Latin1\_General\_100\_CI\_AS |
| Chinese\_PRC | 0x804 | Chinese\_Simplified\_Pinyin\_100\_CI\_AS |
| Chinese\_Taiwan | 0x404 | Chinese\_Traditional\_Stroke\_Count\_100\_CI\_AS |
| Czech (Czech Republic) | 0x405 | Czech\_100\_CI\_AS |
| Danish (Denmark) | 0x406 | Danish\_Norwegian\_CI\_AS |
| Dutch (Netherlands) | 0x413 | Latin1\_General\_100\_CI\_AS |
| Finnish (Finland) | 0x40B | Finnish\_Swedish\_100\_CI\_AS |
| French | 0x40C | French\_100\_CI\_AS |
| German\_Standard | 0x407 | Latin1\_General\_100\_CI\_AS |
| Greek (Greece) | 0x408 | Greek\_100\_CI\_AS |
| Italian\_Standard | 0x410 | Latin1\_General\_100\_CI\_AS |
| Japanese | 0x411 | Japanese\_XJIS\_100\_CI\_AS |
| Korean | 0x412 | Korean\_100\_CI\_AS |
| Norwegian (Bokmål, Norway) | 0x414 | Norwegian\_100\_CI\_AS |
| Polish (Poland) | 0x415 | Polish\_100\_CI\_AS |
| Portuguese (Portugal) | 0x816 | Latin1\_100\_CI\_AS |
| Portuguese (Brazil) | 0x416 | Latin1\_General\_100\_CI\_AS |
| Russian | 0x419 | Cyrillic\_General\_100\_CI\_AS |
| Spanish\_Modern\_Sort | 0xC0A | Modern\_Spanish\_100\_CI\_AS |
| Swedish (Sweden) | 0x41D | Finnish\_Swedish\_100\_CI\_AS |
| Turkish (Turkey) | 0x41F | Latin1\_General\_100\_CI\_AS |

Search Considerations

This section describes search, sort, and word-break issues with some of the languages supported in Service Manager SP1.

Greek, Czech and Finnish Languages

For these languages, full-text search is not supported in SQL Server 2008. Therefore, sorting and searching in these languages do not function correctly.

Danish, Polish, and Turkish Languages

Full-text search does not function on SQL Server 2008 for these languages. You can load a licensed non-Microsoft word breaker that enables full-text search to function correctly. For more information, see the following links for the version of SQL Server that you are using:

 [SQL Server 2008](http://go.microsoft.com/fwlink/?LinkId=205800) (http://go.microsoft.com/fwlink/?LinkId=205800)

 [SQL Server 2008 R2](http://go.microsoft.com/fwlink/?LinkId=205557) (http://go.microsoft.com/fwlink/?LinkId=205557).

Turkish Language

None of the Turkish collations is supported in Service Manager SP1. The Latin1\_General\_100\_CI\_AS collation was used for testing with the Turkish language. As a result, some search and sort operations in Service Manager SP1 will be impacted with some Turkish characters.

Databases Created by Service Manager 2010

Before starting the installation of Service Manager, you might want to meet with your SQL Server Administration team and discuss the impact Service Manager will have on your SQL Servers, specifically the databases that will be created. Databases that are created are listed in the following table:

|  |  |  |
| --- | --- | --- |
| Service Manager Parts | DB Name | Contents |
| Service Manager database | ServiceManager | Configuration Items, Work Items, Incidents |
| Service Manager data warehouse | DWStagingAndConfig  DWRepository  DWDataMart | These three databases comprise the data warehouse. The extract process populates the DWStagingAndConfig database, which is transformed into a proper format in the DWRepository database, which, through the load process, becomes the content for the DWDataMart database. |

Important

For this release, Service Manager does not support case-sensitive instances. Setup will fail if you attempt to install Service Manager on a case-sensitive SQL instance.

Port Assignments for Service Manager 2010

As part of your security infrastructure, you might want to keep track of port numbers used throughout your environment. And while in this release, these port numbers are not configurable, you can review the following table that lists port numbers that are used between the parts of Service Manager. You will want to ensure that these firewall ports are opened on computers that host Service Manager.

Port Assignments

|  |  |  |
| --- | --- | --- |
| Service Manager Piece A | Port Number and Direction | Service Manager Piece B |
| Service Manager console | 5724 ---> | Service Manager management server\* |
| Service Manager console | 5724 ---> | Data warehouse management server |
| Service Manager management server | 1433 ---> | Remote Service Manager database |
| Service Manager management server | 5724 ---> | Data warehouse server |
| Service Manager management server | 5724 ---> | Operations Manager 2007 Alert and CI connectors |
| Service Manager management server | 389 ---> | Active Directory Connector |
| Data warehouse server | 1433 ---> | Remote data warehouse database server |
| SQL reporting service server | 1433 ---> | Remote data warehouse database server |
| Data warehouse server | 1433 ---> | Remote Service Manager database server |
| Web browser | 443 ---> | Self-Service Portal |
| Self-Service Portal | 1433 ---> | Service Manager database |
| Web browser | 80 ---> | SQL Server Reporting Services |

\* Includes initial Service Manager management server and subsequent Service Manager management servers

Preparing for Service Manager 2010 SP1 Deployment

Before you start the deployment of Service Manager, you will create a group of users in Active Directory and creates or identifies a domain account that he will use during setup. Make sure that the domain account is a member of the appropriate groups needed for proper operation of Service Manager. Keep the following in mind when installing Service Manager and Operations Manager on the same server:

1. Operations Manager and Service Manager can share the database server.

2. An Operations Manager agent and the Service Manager management server can coexist on the same server if you install the Service Manager management server first and then manually install the Operations Manager agent.

3. You can install both the Operations Manager console and the Service Manager console on the same computer. The order in which you install the consoles does not matter.

4. Do not attempt to use the same SQL Server Reporting Services (SSRS) instance for both Operations Manager and Service Manager.

In This Section

[Account Considerations for Running Setup](#z510f4a6c144246789c32ea0b8b12728c)

|  |
| --- |
| Provides information about the accounts that are required to run setup and about the accounts you will be required to provide during the setup of Service Manager. |

[How to Prepare Computers for Service Manager Deployment](#zdd029107579e4713a72442fc80ed0adc)

|  |
| --- |
| Describes the step you would take to prepare a computer before running setup. |

[Account Considerations for the Self-Service Portal](#z0fed8323ee8041aa858496e807d23f1f)

|  |
| --- |
| Provides information about how to configure permissions for the Service Manager services and workflow accounts in System Center Configuration Manager 2007. |

Account Considerations for Running Setup

Before running Setup, review the [Account Used for Running Setup](#z77ac12a8315a4ed68bf4468005256cf6) topic in this guide to make sure that the necessary requirements that are needed to install Service Manager have been met. During Setup, you will be prompted to provide domain users or groups for various Service Manager functions. Review [Accounts Required During Setup](#zad20b00101ee4ddc9bb564a9686a50f6) to make sure you are ready for the Setup process.

Account Used for Running Setup

This topic describes the permissions a user needs when installing a Service Manager management server, Service Manager console, databases for Service Manager, and when registering the Service Manager management group with the data warehouse management group.

Note

The account you use to run Setup is automatically made an administrator in Service Manager.

Service Manager Management Server

You will need the following permissions when installing a Service Manager management server:

 Local administrator on the computer that you run Setup on

 Local administrator on the computer that will host the Service Manager database if it is on a remote computer

 Logged-on user must be a domain account

 Sysadmin SQL Server role on the SQL Server instance where the Service Manager database is being created

Service Manager Console

You will need the following permissions when installing the Service Manager console:

 Local administrator on the computer that you run Setup on

Data Warehouse Management Server

You will need the following permissions when installing the data warehouse management server:

 Local administrator on the computer that you run Setup on

 Local administrator on the computer that will host the data warehouse database if on a remote computer

 Logged-in user must be a domain account

 Content Manager role in SQL Server Reporting Services at the site level (root)

 Sysadmin SQL Server role on the SQL Server instance where the data warehouse database is being created

SQL Server Reporting Services

You will need the following permissions when installing SQL Server Reporting Services:

 Permissions to place a binary file into the \Program Files\Microsoft SQL Server\<Instance Name>\Reporting Services\ReportServer\Bin folder on the computer hosting the data warehouse management server.

Registering Service Manager with the Data Warehouse

You will need the following permissions when registering Service Manager with the data warehouse:

 Sysadmin or security admin SQL Server role on the instance that is hosting the Service Manager database

 Sysadmin or security admin SQL Server role on the instance that is hosting the data warehouse database

 Member of the Service Manager Administrators user role on the Service Manager management server

 Member of the Service Manager Administrators user role on the data warehouse management server

Self-Service Portal

The account you use when installing the Self-Service Portal must meet the following conditions:

 Must be a local administrator on the computers hosting the Self-Service Portal, the Service Manager management server, and SQL Server 2008.

 Must be a SQL Server system administrator (sa) account.

 Must be the account you specified for Service Manager services during setup of the Service Manager management server.

Accounts Required During Setup

You will need to provide credentials for the following accounts during the installation of the Service Manager and data warehouse management servers.

Note

The user and group accounts required for the installation of Service Manager must reside in the Users OU in Active Directory.

Accounts Used During the Installation of a Service Manager Management Server

|  |  |  |
| --- | --- | --- |
| Account | Permissions | How It Is Used In Service Manager |
| Management group administrators | **** Must be a domain user or group.  Important  The user account that is logged into the computer during installation of an initial Service Manager management server is automatically added to this group. | **** Added to the Service Manager Administrators user role. |
| Service Manager services account | **** Must be a domain user or group.  **** Must be member of local administrators. | **** Becomes the Operational System Account.  **** Assigned to the log on account for the System Center Data Access Service.  **** Assigned to the log on account for System Center Management Configuration service.  **** Becomes a member of the sdk\_users and configsvc\_users database roles for the Service Manager database.  **** If you change the credentials for these two services, you need to make sure that the new account has a SQL Login in the ServiceManager database and that this account is a member of the Builtin\Administrators group. |
| Workflow account | **** Must be a domain user or group.  **** Must have permissions to send e-mail and must have a mailbox on the SMTP server (required for the E-mail Incident feature).  **** Must be member of Users local security group.  **** Must be made a member of the Service Manager Administrators user role in order for e-mail notifications for function properly. | **** This account is used for all workflows and is made a member of the Service Manager Workflows user role. |

Security Best Practices for Accounts

When assigning Active Directory accounts for use with Service Manager Run As Accounts, it is a best practice to use service accounts. We strongly recommend against using Active Directory user accounts associated with individual people.

For more information about security best practices, download a copy of the Windows Server 2008 Security Guide which in now part of the [Windows Server 2008 Security Compliance Management Toolkit](http://go.microsoft.com/fwlink/?LinkId=167160) at http://go.microsoft.com/fwlink/?LinkId=167160 and [The Services and Serivce Accounts Security Planning Guide](http://go.microsoft.com/fwlink/?LinkID=58270) at http://go.microsoft.com/fwlink/?LinkID=58270.

Accounts Used During the Installation of the Data Warehouse Management Server

|  |  |  |
| --- | --- | --- |
| Account | Permissions | How It Is Used In Service Manager |
| Management group administrators | **** Must be a domain user or group. | **** Added to the data warehouse administrators user role. |
| Service Manager account | **** Must be a domain user or group.  **** Must be member of local administrators on the data warehouse management server. | **** Becomes the data warehouse system Run As account.  **** Assigned to ServiceManager SDK Service account.  **** Assigned to ServiceManager Config account.  **** Becomes a member of the sdk\_users and configsvc\_users database roles for the DWDataMart database.  **** Becomes a member of the db\_datareader database role for the DWRepository database.  **** Becomes a member of the configsvc\_users database role for the Service Manager database. |
| Reporting account | **** Must be a domain account. | **** Used by SQL Server Reporting Services to access the DWDataMart database to get data for reporting.  **** Becomes a member of the db\_datareader database role for the DWDataMart database.  **** Becomes a member of the reportuser database role for the DWDatamart database. |

Registering the Service Manager Management Group with Data Warehouse Management Group

As part of the installation process, you will register the Service Manager management group with the data warehouse management group. During this process, you will be prompted to provide credentials. The account credentials you provide must be a domain account. Furthermore, you will need to provide an account with the following permissions.

 Must be a member of the Administrator user role in both the Service Manager and data warehouse management groups.

 Must be a member of the users local administrator group on the data warehouse management server.

Accounts Required for Creating Connectors

When creating connectors, you will be asked for credentials that the connector will use to perform its function. The following table outlines the permissions that this account will need and describes best practices for high security.

Operations Manager 2007 Alert Connector

|  |  |
| --- | --- |
| Permissions | Best Practices |
| **** Must be a domain account.  **** Must be a member of the Users local security group on the Service Manager management server.  **** Must be an Operations Manager 2007 Administrator. | Domain account specifically created for this purpose that is only in the Users local security group and in an Administrator user role in Operations Manager and in an Advanced Operator user role in Service Manager. |

Operations Manager 2007 CI Connector

|  |  |
| --- | --- |
| Permissions | Best Practices |
| **** Must be a domain account.  **** Must be a member of the Users local security group on the management server.  **** Must be an Operations Manager 2007 Operator. | Domain account specifically created for this purpose that is only in the Users local security group and in an Operator user role in Operations Manager and in an Advanced Operator user role in Service Manager. |

Active Directory Connector

|  |  |
| --- | --- |
| Permissions | Best Practices |
| **** Must be a domain account.  **** Must be a member of the Users local security group on the Service Manager management server.  **** Must have permissions to bind to the domain controller that the connector will read data from.  **** Needs generic read rights on the objects that are being synchronized into the Service Manager database from Active Directory. | Domain account specifically created for this purpose that is only in the Users local security group and in an Advanced Operator user role in Service Manager and has read-only permissions in Active Directory. |

Configuration Manager 2007 Connector

|  |  |
| --- | --- |
| Permissions | Best Practices |
| **** Must be a domain account.  **** Must be a member of the Users local security group on the Service Manager management server. | Domain account specifically created for this purpose that is only in the Users local security group, db\_datareader on the System Center Configuration Manager database, and in an Advanced Operator user role in Service Manager. |

How to Prepare Computers for Service Manager Deployment

Before you start the deployment of Service Manager, you will create a group of users in Active Directory and create or identify a domain account that you will use during setup. Make sure that the domain account is a member of the appropriate groups needed for proper operation of Service Manager.

Keep the following in mind when installing Service Manager and Operations Manager on the same server:

 Operations Manager and Service Manager can share the database server.

 An Operations Manager agent and the Service Manager management server can coexist on the same server if you install the Service Manager management server first and then manually install the Operations Manager agent.

 You can install both the Operations Manager console and the Service Manager console on the same computer. The order in which you install the consoles does not matter.

To Prepare Computers for Service Manager Deployment

|  |
| --- |
| 1. Make sure that no Operations Manager 2007 parts are installed on the computers that will host either Service Manager or the data warehouse.  2. Create an Active Directory group of users that will be assigned to the role of Service Manager administrators of both the data warehouse and Service Manager management groups. For example, create the group SM\_Admins.  Note  This group of users must be in the same domain that Service Manager is in. Users from any other domain, even child domains, are not supported.  3. Create the accounts necessary for Service Manager. For information about the account used to run Setup and for the accounts you will need to provide during the setup of Service Manager, see [Account Considerations for Running Setup](#z510f4a6c144246789c32ea0b8b12728c)  Note  Service Manager accounts must be in the same domain that Service Manager is in. Accounts from any other domain, even child domains, are not supported.  4. Make sure that the SQL instances used for Service Manager databases are using port number 1433.  5. If you are installing the databases on a remote computer running SQL Server, the user running Setup must be a domain user with local administrator permissions on the SQL Server computer.  6. On computers that will host the Service Manager console, under Internet Options, Local Area Network (LAN) Settings, select Bypass proxy server for local addresses.  7. Open a browser, and then enter the following two URLs:   http://<computer hosting SSRS>/reports   http://<computer hosting SSRS>/reportserver  If either connection attempt fails or returns an error, for example HTTP Error 404.0 Not Found, follow the “To configure the reporting server” procedure. Otherwise, follow the “To install a data warehouse” procedure. |

To Configure the Reporting Server

|  |
| --- |
| 1. By using an account that has administrator rights, log on to the computer that will host SQL Server Reporting Services.  2. Click Start, point to Programs, point to Microsoft SQL Server 2008, point to Configuration Tools, and then click Reporting Services Configuration Manager.  3. In the Reporting Services Configuration Connection dialog box, make sure that the Server Name and Report Server Instance fields are correct, and then click Connect.  4. In the Connect pane, click Web Service URL.  5. In the Report Server Web Service Virtual Directory area, in the Virtual Directory text box, make sure that the entry reads ReportServer, and then click Apply.  6. In the Connect pane, click Report Manager URL.  7. In the Report Manager Site Identification area, in the Virtual Directory text box, make sure that the entry reads Reports, and then click Apply.  8. In the Connect pane, click the top entry (server\instance).  9. In the Current Report Server area, click Stop, and then click Start. |

Account Considerations for the Self-Service Portal

In order for the Request Software feature in the Service Manager Self-Service Portal to function correctly, you must configure permissions for the Service Manager services and workflow accounts in System Center Configuration Manager 2007.

Workflow Account

|  |  |
| --- | --- |
| Site configuration items | ****** Read  ****** Modify  ****** Administer  ****** Create  ****** Network access |
| Collections | ****** Read  ****** Modify  ****** Delete  ****** Modify resource  ****** Administer  ****** Delete resource  ****** Create  ****** Read resource  ****** Modify collection setting  ****** View management controllers |
| Advertisements | ****** Read  ****** Modify  ****** Delete  ****** Administer  ****** Create  ****** Manage folders |
| Packages | ****** Read  ****** Modify  ****** Administer |

Service Manager Services Account

|  |  |
| --- | --- |
| Site configuration items | ****** Read  ****** Modify  ****** Administer  ****** Create  ****** Network access |
| Collections | ****** Read  ****** Read resource |
| Advertisements | ****** Read  ****** Administer  ****** Manage folders |
| Packages | ****** Read |

Planning for Performance and Scalability in Service Manager 2010

This section describes general performance and scalability planning guidance for System Center Service Manager 2010. While Service Manager is built to meet a performance standard on minimum recommended hardware, the hardware requirements for your specific scenario may be higher or lower than the generalized guidelines presented here. Also presented here are considerations for both hardware and Service Manager software.

Service Manager is a 3-tiered application consisting of a database, a data access module, and a console.

 Every deployment topology from the largest to smallest includes all three tiers, whether physically or virtually.

 The smallest deployment topology supported requires 2 servers, either physical or virtual, and the largest will contain more than 4 servers.

 Hosted on the servers are the Service Manager console and Service Manager database on the management server, the Self-Service Portal is usually hosted on another server, and the data warehouse management server hosts the Service Manager data warehouse.

Service Manager Sizing Helper Tool

The Service Manager Sizing Helper tool can help you size the hardware and software pieces that you will later deploy with more detail contained this guide. The tool is included in the [Service Manager job aids](http://go.microsoft.com/fwlink/?LinkId=186291) documentation set. (http://go.microsoft.com/fwlink/?LinkId=186291). Specifically, the sizing tool:

1. Helps to give you an idea of the type of hardware such as individual computers, CPU, free and used hard drive space, and RAID level that is needed for different usage and deployment scenarios. Usage is indicated by the number of configuration items in the Service Manager database, work items per month, and days of data in the data warehouse.

2. Provides topology diagrams for each scenario, which map the hardware to scenarios such as single physical server, 2 server, 4 server, and more than 4 servers.

3. Helps you to calculate free and used hard drive space needed for a scenario, based on what you input. The calculation is an estimate, not a fixed value that you must meet.

Hardware Performance

An important part of Service Manager performance depends on a hardware configuration and deployment topology that is planned to handle the needs of your organization. The following sections provide general guidelines to consider when planning for adequate hardware performance.

Hardware Performance

The following are hardware bottlenecks most noticeable in Service Manager with significant load and amount of data in the Service Manager database:

1. The most common bottleneck will be memory and I/O on the SQL Server. If you have the resources, investing in more memory and a faster IO sub system to improve SQL Server I/O will achieve better performance.

2. If you expect to have many consoles connecting to a management server, you can improve performance to handle peak load by investing in additional CPUs and memory for the management server, or planning to install a secondary Service Manager management server.

3. Be aware of recommended minimum hardware for each role, as described in this document.

The Role of Virtual Machines

Many organizations use virtual machines to host Windows Server applications and Service Manager server roles such as the management server, data warehouse server, and the Self-Service Portal are no exceptions. Such use might range from all server roles being virtualized or some other combination of virtual and physical computers. We do not recommend any specific virtual to physical computer ratio because the needs of your organization are inherently unique. However, the minimum hardware requirements for each software role apply to physical computers—if you decide to virtualize a software role you should plan to ensure that you have additional hardware resources for each virtual computer.

Database servers are vulnerable to poor performance on virtual machines if the following planning guidance is not followed.

 Refer to the [Running SQL Server 2008 in a Hyper-V Environment](http://go.microsoft.com/fwlink/?LinkId=144622) (http://go.microsoft.com/fwlink/?LinkId=144622) document on the Download Center.

 You should never use dynamic disks on virtual machines intended to host SQL Server—use fixed-size virtual hard drives or pass through.

 Hyper-V only allows 4 virtual CPUs per guest, which might constrain the Service Manager server if you have many consoles.

Service Manager Baseline Test Results

Service Manager has been baseline tested for performance and scalability using various deployment scenarios using the minimum hardware recommended with physical computers. More specifically, the scenarios were tested with databases pre-populated and Service Manager consoles creating and updating incidents and change requests in a loop. The database was pre-populated with information for two tests.

Test 1 consisted of 20,000 computers, 20,000 users and all necessary configuration items, which was about 250,000 configuration items totaling about 2.5 million rows in the database, and the test included 40 active Service Manager consoles.

Test 2 consisted of 50,000 computers, 50,000 users and related configuration items, which was about 700,000 configuration items totaling 6 million rows in the database, and the test included 80 active Service Manager consoles.

In order to meet the response time goals for 50,000 configuration, the SQL Server memory had to be increased from 8GB to 32GB.

 During testing, 200 incidents and 50 change requests for 20,000 configuration, and 500 Incidents and 125 Change Requests for 50,000 configuration, were generated each hour with 3 to 4 notification subscriptions and templates being processed for each incident and change request.

 Typically in the baseline, workflows such as notification subscription processing and template application ran within 1 minute of each work item being generated. However, a small number of workflows could take 5 minutes or longer to complete.

If your organization plans to have fewer than 20,000 supported computers and consoles and fewer workflows, then your Service Manager performance should normally be acceptable, even if some of the Service Manager roles are hosted on virtual computers.

However, if you plan to add additional supported computers in the Service Manager database then you should plan to increase the amount of RAM for the Service Manager database server beyond the minimum requirements listed in this document. For example, in the baseline test 8 GB of RAM was installed in the Service Manager database server that contained records for 20,000 computers. Afterward, you should add 8 GB of RAM for each increment of 10,000 of computers that you plan to support. For example, for 50,000 computers plan for 32 GB of RAM. While testing the 50,000 computer configuration with 32 GB of RAM installed on the SQL server, performance was improved to a state where there was no longer any decreased effect, compared to before additional computers were added.

Network latency was also tested in the baseline. Network latency was introduced between the Service Manager console and the Service Manager management server.

Note

The Service Manager database server and Service Manager management servers should be on a low-latency LAN; network latency between the Service Manager database server and the Service Manager management server may lead to significant degradation of Service Manager performance.

 Where network latency is less than 100 milliseconds, overall Service Manager console response times were found good.

 Where network latency was 150-200 milliseconds, performance was noted as usable with up to a 40% degradation in response time in some scenarios. With latency between 150-200 milliseconds, you should plan to evaluate the key scenarios for your organization and determine if Remote Desktop Connection is a better option.

Note

Expanding service maps in the Service Manager console was slow with any amount of latency.

 When network latency exceeded 200 milliseconds, overall Service Manager console response times were observed as poor. If your latency exceeds 200 milliseconds, you should plan to use Remote Desktop Connection or another similar remote access solution for operational tasks. However, because occasional administrative tasks are less common you might not need remote access for them.

Service Manager Performance

Performance for Service Manager server roles and features are affected by different factors. Generally, there are three areas where positive and negative performance is most noticeable in Service Manager:

 Service Manager console responsiveness. This is the length of time it takes from the moment you take some sort of action in the console until it completes.

 Data insertion time for connectors. This is how long it takes for Service Manager to import data when a connector synchronizes.

 Workflow completion time. This is the length of time it takes for workflows to automatically apply some kind of action.

Connector Performance

Connector initial synchronization can take a significant amount of time, for example 8-12 hours for a large initial synchronization with System Center Configuration Manager. As a connector synchronizes initially, you can expect performance to suffer for all Service Manager server roles and processes during this time. This occurs because of the way that data is inserted sequentially into the Service Manager database, which is a SQL Server database. Although you cannot hasten the connector’s initial synchronization process, you can plan for the initial synchronization and to ensure that the synchronization process completes well before Service Manager is put into production.

Once the initial synchronization is complete, Service Manager continues synchronizing the differences, which does not have a measurable impact on performance.

Workflow Performance

Workflows are automatic processes that occur and include sending e-mail notifications, the next step of a change request activating, and automatically applying a template.

 Normally, workflows start and finish within 1 minute. When Service Manager server roles are under a heavy workload, workflows do not complete as quickly as normal.

 Additionally, when you create new workflows, such as a new notification subscription, additional load is placed on the system. As the number of new workflows that you create increases, the time it takes for each one to run also increases.

When the system is under a heavy load, if for example a large number of new incidents are being created and each incident generates many workflows, then performance might be negatively affected.

If you plan to create a large number of workflows, one possible solution to help improve performance is to use the ManagmentHostKeepAlive management pack that is included in the Service Manager release media.

 You need to manually copy the two files from the source directory into the Service Manager installation directory, and then import the management pack files.

 Importing these management pack files can greatly increase workflow processing responsiveness where almost all workflows process within 1 minute.

 However, importing this management pack gives higher priority to workflow processing and can lead to slower Service Manager console response in some cases so you should test its impact before deployment in a production environment.

Groups, Queues, and User Roles Impact on performance

You should plan for groups and user roles early. Often, people create groups to make sure users have access to specified groups only. For example, in one scenario you might want to create a subset of incidents such as incidents that affect computers used by human resource personnel. In this scenario, you might want only specific personnel to be able to view or modify the group of sensitive servers. Then, to enable this type for access you would need to create a group for all users and a group for sensitive computers, and then ensure that a security role has access to both the All Users and the Sensitive Servers groups. Inevitably, creating a group containing all users results in performance impact because Service Manager frequently checks to determine if there are changes to the group. This check occurs once every 30 seconds, by default. For a very large group, checking for the changes creates a heavy load on the system and may slow down response time considerably.

Solution 1: You can manually specify how often Service Manager checks for group changes by modifying a registry key. For example, if you change the group check frequency from 30 seconds to 10 minutes, you will significantly increase performance.

Caution

Incorrectly editing the registry may severely damage your system. Before making changes to the registry, you should back up any valued data on the computer.

To manually specify the group change check interval

|  |
| --- |
| 1. Run regedit and navigate to HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\System Center\2010\Common\.  2. Create a new DWORD value named GroupCalcPollingIntervalMilliseconds.  3. For its value, specify the interval in milliseconds. The result is multiplied by 6. For example, to set the interval to 10 minutes, type 1000000.  4. Restart the System Center Management service. |

Solution 2: You can use a Windows PowerShell script to add objects of a type, such as “Users”, to a user role. Essentially, an analyst logged on in this role can access all objects that have a type equal to “User”. If you use this method, you eliminate the need for a very large group (“All Users”) and the expensive check that Service Manager performs to determine this group membership. On the Service Manager management server, you can run the following Windows PowerShell script to set add “user” type to a role “RoleName”. You will need to modify this example script for your environment.

To run a Windows PowerShell script to add objects to a user role

|  |
| --- |
|  Modify as needed and then run the following script. |

#

# Insert a "type" scope in a role

# Syntax:

#   AddTypeToRoleScope -server "put\_server\_name\_here" -RoleName "put display name of the role here" -TypeToAdd "put display name of the type to add to scope here"

#

# Note:  This is a simple demonstration script without error checking.

#

# set script parameter defaults

param ([String]$Server = "localhost", [String]$RoleName="My Analyst Role", [String]$TypeToAdd="User")

$a = [reflection.assembly]::LoadWithPartialName("Microsoft.EnterpriseManagement.Core")

$m = new-object Microsoft.EnterpriseManagement.EnterpriseManagementGroup $Server

# Get Type object

#   Note:  If you need to get a list of all available classes related to (for example) “User”,   use this command:

#               $m.EntityTypes.GetClasses() | ?{ $\_.Name -like '\*user\*'} | %{ $\_.Name}

#

$type = $m.EntityTypes.GetClasses() | ?{ $\_.DisplayName -eq $TypeToAdd}

# Get role object, and insert the type GUID into scope

$role = $m.Security.GetUserRoles()  | ?{ $\_.DisplayName -eq $RoleName}

$role.Scope.Objects.Add($type.Id)

$role.Update()

#

# Get the value from the database again and validate it is there

if ( $role.scope.objects.Contains($type.Id) ) {

    write-host \*\*\* Successfully set the scope for role `" $role.DisplayName`" and it now contains all instances of $type.DisplayName `( $type.Name `)

} else {

    write-host "There was an error trying to insert the scope into the role."

}

View Performance

When creating views, plan on using “typical” classes in the system whenever possible. Most object classes, for example Incident Management, have two types: “typical” and “advanced”. The typical object type contains simple references to a small subset of data related to an item. The advanced type contains many complex references to data related to an item. Typical types are simple projections, advanced types are complex projections. Most advanced object types are used to populate different fields in forms that you would not normally want to see displayed in a view. Whenever you create a view based on an advanced object type and when you open the view, Service Manager queries the database and a large amount of data is read. However, very little of the retrieved data is actually displayed or used.

If you have performance problems with the views you’ve defined and you’ve used advanced object types in views, you should switch to using typical types. Or alternatively, you can create your own projection types that contain only the data you need to base a view upon. Refer to the [Creating Views That Use Related Property Criteria (Type Projections) : Software Views Example blog post](http://go.microsoft.com/fwlink/?LinkId=184819) (http://go.microsoft.com/fwlink/?LinkId=184819) blog entry on the SCSM Engineering Team Blog.

Service Manager Database Performance

Performance of the Service Manager database is directly affected by various factors including the number of concurrent Service Manager consoles reading or writing data, the group change check interval, and data inserted by connectors. More information is available in this document. Here are a few key points.

 You should have a minimum of 8 GB of RAM for the management server that hosts the Service Manager database in order to have acceptable response time in typical scenarios.

 You should have at least 4 CPU cores on the computer hosting the Service Manager database.

 You can achieve better database performance by segregating log files and data files to separate physical disks, if possible. You can achieve further benefits by moving your tempdb on a different physical RAID drive than that of the Service Manager database. Use a RAID 1+0 disk system to host your Service Manager database, if possible.

 Performance can be negatively impacted if the Service Manager database is created with a smaller size and set to autogrow especially by small increments.

Refer to the Service Manager Sizing Helper tool included in the [Service Manager job aids](http://go.microsoft.com/fwlink/?LinkId=186291) documentation set (http://go.microsoft.com/fwlink/?LinkId=186291) to help assess the size of the database and create the database with a size closer to the final size, this will help performance by reducing the amount of times the database has to autogrow.

Similarly all the other best practices that are applicable to a high performing database are applicable, as well. For example if you could take advantage of a superior disk sub system, you could benefit from splitting up the groups of tables on respective filegroups and moving them to a different physical drives.

Service Manager Management Server Performance

Performance of the Service Manager management server is primarily affected by the number of active concurrent Service Manager consoles. Because all Service Manager roles interact with the management server, you should consider adding additional management servers if you plan to have a large number of concurrent consoles. You should have a minimum of 8 GB of RAM for the management server. You should have at least 8 CPU cores per management server, assuming you have 10-12 active consoles per CPU core, for a total of 80-100 consoles per management server.

Service Manager Console Performance

Performance of the Service Manager console is primarily affected by the number of forms your analysts typically have open and the amount of data retrieved by views. You should have a minimum of 2 GB of RAM for the computer where the Service Manager console is installed. If you have views that retrieve a large amount of data, you will need additional RAM. You should have at least a dual-core CPU for the computer where the Service Manager console is installed. Because the Service Manager console is an end user application, we recommended that you restart it if you see excessive resource consumption – the Service Manager console aggressively caches information in memory, which can contribute to overall memory usage.

Service Manager Data Warehouse Database Performance

Performance of the data warehouse is directly affected by various factors including the number of concurrent Service Manager management servers sending data, volume of data stored or the data retention period, rate of data change, and the ETL frequency. The amount of data stored in the data warehouse increases over time. Ensuring that you archive unnecessary data is important. Additionally, you can achieve better performance by segregating log files and data files to separate physical disks. Similarly you can achieve better throughput by putting the tempdb on a different physical disk than the other databases. Lastly, you can benefit by placing the three different databases on their respective physical disks, as well. Use a RAID 1+0 disk system to host your data warehouse, if possible. You should generally have a minimum of 8 GB of RAM for the computer where the data warehouse databases are installed, you will benefit from more memory on the SQL Server that hosts the data warehouse and even more so if the Datamart and Repository databases are on the same server. However, if you have 4,000 or fewer computers, then 4 GB is sufficient. You should have at least 8 CPU cores in the computer where the data warehouse database is installed. Additional cores will help both ETL and report performance.

Performance can be negatively impacted if all the databases in the system are created with a smaller size and set to autogrow especially by small increments. Refer to the Service Manager Sizing Helper tool included in the [Service Manager job aids](http://go.microsoft.com/fwlink/?LinkId=186291) documentation set (http://go.microsoft.com/fwlink/?LinkId=186291) to assess the size of the database and create the database with a size closer to the final size, which will help performance by reducing the amount of times the database has to autogrow.

Similarly all the other best practices that are applicable to a high performing database are applicable, as well. For example if you could take advantage of a superior disk sub system, you could benefit from splitting up the groups of tables on respective filegroups and moving them to a different physical drives.

Service Manager Data Warehouse Server Performance

Performance of the data warehouse server is affected by the number of Service Manager management servers that are registered to the data warehouse and by the size of your deployment. You should generally have a minimum of 4 GB of RAM for the data warehouse server; however you’ll benefit by having additional memory up to 8 GB of RAM for advanced deployment scenarios where more than one Service Manager management server inserts data into data warehouse. If you must tradeoff performance, your highest priority should be for memory for the SQL Server. You should have at least 4 CPU cores to prevent performance problems. The data warehouse server is mostly stateless and it is unlikely to pose an I/O problem, so it should not present a performance problem.

Self Service Portal Performance

The Self-Service Portal is designed for easy access to incident filing and software self-provisioning. It is not designed to handle thousands on users simultaneously using it. When complete, more thorough performance guidelines for the Self-Service Portal will be published.

Performance testing for the Self-Service Portal was focused on typical “Monday morning” scenarios. Specifically, to ensure that on Monday morning hundreds of users can log in within the span of 5-10 minutes and open incidents with acceptable (less than 4-5 seconds) response times. This goal was achieved with the minimum hardware recommended in this document.

Configurations for Deployment Scenarios

For performance and scalability planning purposes, we recommend that you plan your deployment topology using scenarios that we have tested. While these are not firm guidelines, Microsoft has tested deployment topologies using these scenarios and found that each configuration achieves satisfactory performance.

Test and Small Deployment Scenarios

The test and small deployment scenarios contain only 2 servers and support 100-2000 computers. In these configurations, a single physical computer hosts a virtual server.

Test Scenario

In this scenario, we recommend the following hardware configured for roles and hardware as described.

Service Manager roles:

 One physical computer with a management server, Service Manager database, Service Manager console and Self-Service Portal.

 One virtual Data warehouse server. The Self-Service Portal should be placed on a physical host, or on a virtual computer other than the one hosting the data warehouse.

Hardware configuration:

 Dual quad-core 2.66 GHz CPU (4 GB dedicated to the virtual computer)

 16 GB RAM for the virtual machine host

 200 GB of available disk space

This configuration was tested with the following load:

|  |  |
| --- | --- |
| Description | Value |
| Number of Supported End Users | Up to 500 |
| Number of Computers in the Service Manager database | 500 |
| Number of New Incidents per Month for each computer | 199 |
| Number of New Change Requests per Month | 20 |
| Number of Concurrent Consoles | 2 |
| Is the Self-Service Portal Installed? | Yes |
| Is the Active Directory Connector Enabled? | Yes |
| Is the Configuration Manager Connector Enabled? | Yes |
| Is the Operations Manager Connector Enabled? | Yes |

Small Scenario

In this scenario, we recommend the following hardware configured for roles and hardware as described.

Service Manager roles:

 One physical computer with the Management Server, Service Manager database, and console.

 One virtual Data warehouse server. The Self-Service Portal should be placed on a physical host, or on a virtual computer other than the one hosting the data warehouse.

Hardware configuration:

 Dual quad-core 2.66 GHz CPU (4 GB dedicated to the virtual computer)

 16 GB RAM for the virtual machine host

 100 GB of available disk space

This configuration was tested with the following load:

|  |  |
| --- | --- |
| Description | Value |
| Number of Supported End Users | 501-2,000 |
| Number of Computers in the Service Manager database | 2,000 |
| Number of New Incidents per Month for each computer | 1 |
| Number of New Change Requests per Month | 100 |
| Number of Concurrent Consoles | 10 |
| Is the Self-Service Portal Installed? | Yes |
| Is the Active Directory Connector Enabled? | Yes |
| Is the Configuration Manager Connector Enabled? | Yes |
| Is the Operations Manager Connector Enabled? | Yes |

Medium Scenario

The medium deployment scenario contains 2 servers and supports 2,001-5,000 computers. In this configuration, two physical computers host the Service Manager management server and Service Manager data warehouse management server.

We recommend the following hardware configured for roles and hardware as described.

Hardware configuration for the Service Manager management server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 2 disk RAID 1

Hardware configuration for the Service Manager data warehouse management server:

 Dual quad-core 2.66 GHz CPU

 4 GB RAM

 2 disk RAID 1

This configuration was tested with the following load:

|  |  |
| --- | --- |
| Description | Value |
| Number of Supported End Users | 2,001-5,000 |
| Number of Computers in the Service Manager database | 3,000 |
| Number of New Incidents per Month for each computer | 1 |
| Number of New Change Requests per Month | 150 |
| Number of Concurrent Consoles | 15-30 |
| Is the Self-Service Portal Installed? | Yes |
| Is the Active Directory Connector Enabled? | Yes |
| Is the Configuration Manager Connector Enabled? | Yes |
| Is the Operations Manager Connector Enabled? | Yes |

Large Deployment Scenario

The large deployment scenario contains 4 servers and support 5,000-20,000 computers. In this large configuration, four physical computers host server roles.

In this scenario, we recommend the following hardware configured for roles and hardware as described.

Hardware configuration for the Service Manager management server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 2 disk RAID 1

Hardware configuration for the Service Manager data warehouse management server:

 Dual quad-core 2.66 GHz CPU

 4 GB RAM

 2 disk RAID 1

Hardware configuration for the Service Manager database server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 4 RAID 1+0 disk drives for data

 2 RAID 1 disk drives for logs

Hardware configuration for the Service Manager data warehouse database server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 4 RAID 1+0 disk drives for data

 2 RAID 1 disk drives for logs

This configuration was tested with the following load:

|  |  |
| --- | --- |
| Description | Value |
| Number of Supported End Users | 5,001-20,000 |
| Number of Computers in the Service Manager database | 6,000-20,000 |
| Number of New Incidents per Month for each computer | 1 |
| Number of New Change Requests per Month | 1,000-2,000 |
| Number of Concurrent Consoles | 40-60 |
| Is the Self-Service Portal Installed? | Yes |
| Is the Active Directory Connector Enabled? | Yes |
| Is the Configuration Manager Connector Enabled? | Yes |
| Is the Operations Manager Connector Enabled? | Yes |

Advanced Deployment Scenario

The advanced deployment scenario contains more than 4 servers and supports more than 20,000 computers. Each additional management server can host up to 60 Service Manager consoles. In this advanced configuration, physical computers host server roles.

In this scenario, we recommend the following hardware configured for roles and hardware as described.

Hardware configuration for the Service Manager management server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 2 RAID 1 disk drives

Hardware configuration for each additional Service Manager management server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 2 RAID 1 disk drives

Hardware configuration for the Service Manager data warehouse management server:

 Dual quad-core 2.66 GHz CPU

 4 GB RAM

 2 RAID 1 disk drives

Hardware configuration for the Service Manager database server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM – 32 GB RAM, depending on the expected size of the database

 4 RAID 1+0 disk drives for data

 2 RAID 1 disk drives for logs

Hardware configuration for the Service Manager data warehouse database server:

 Dual quad-core 2.66 GHz CPU

 8 GB RAM

 4 RAID 1+0 disk drives for data

 2 RAID 1 disk drives for logs

This configuration was tested with the following load:

|  |  |
| --- | --- |
| Description | Value |
| Number of Supported End Users | More than 20,000 |
| Number of Computers in the Service Manager database | 20,000 - 50,000 or more |
| Number of New Incidents per Month for each computer | 1 |
| Number of New Change Requests per Month | 2,000 or more |
| Number of Concurrent Consoles | 60-100 |
| Is the Self-Service Portal Installed? | Yes |
| Is the Active Directory Connector Enabled? | Yes |
| Is the Configuration Manager Connector Enabled? | Yes |
| Is the Operations Manager Connector Enabled? | Yes |