

Microsoft System Center 2012 R2

System Requirements for System Center 2012 R2

Microsoft Corporation

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Applies To

System Center 2012 R2

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Revision History

Release Date	Changes
October 17, 2013	Original release of this guide.
November 1, 2013	Minor updates to this guide
June 30, 2014	The following changes were made to this guide <ul style="list-style-type: none">All System Center 2012 R2 requirements are now in this one document.A new Hardware Requirements table has been added.
July 16, 2014	System Center all-up requirements and now component-level specifics are included in this one doc. All content has been re-written for easier reading.

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System Requirements for System Center 2012 R2

Use this information to evaluate if your environment is ready to support an installation of or an upgrade to System Center 2012 R2. Use this information whether you are installing one or multiple System Center components.

This information includes requirements for hardware, server and client operating system, SQL Server, Web console, PowerShell, and .NET Framework. Additional system requirements unique to each System Center component are available in separate topics as listed in the See Also section below.

System Requirement topics

- [Hardware Requirements for System Center 2012 R2](#)
- [Server Operating System Requirements for System Center 2012 R2](#)
- [SQL Server Requirements for System Center 2012 R2](#)
- [Client Operating System Requirements for System Center 2012 R2](#)
- [Self-Service Web Console Requirements for System Center 2012 R2](#)
- [System Center 2012 Agent Requirements for System Center 2012 R2](#)
- [Windows PowerShell Requirements for System Center 2012 R2](#)
- [.NET Framework Requirements for System Center 2012 R2](#)
- [Component Coexistence for System Center 2012 R2](#)
- [Language Support for System Center 2012 R2](#)

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

If you are preparing your environment for System Center, read the following topics for detailed component-level information.

See Also

[Preparing your environment for System Center 2012 R2 App Controller](#)

[Preparing your environment for System Center 2012 R2 Data Protection Manager \(DPM\)](#)

[Preparing your environment for System Center 2012 R2 Operations Manager](#)

[Preparing your environment for System Center 2012 R2 Orchestrator](#)

[Preparing your environment for System Center 2012 R2 Service Manager](#)

[Preparing your environment for System Center 2012 R2 Service Provider Foundation](#)

[Preparing your environment for System Center 2012 R2 Virtual Machine Manager](#)

Hardware Requirements for System Center 2012 R2

Use this information to evaluate if your hardware environment is ready to support the installation of or upgrade to System Center 2012 R2. Use this information to evaluate hardware requirements (processor, RAM, and free hard drive space). Both minimum (min) and recommended (rec) values are provided. Use the information here whether you are deploying one or multiple components.

System Center 2012 R2 servers	Processor (min)	Processor (rec)	RAM (min)	RAM (rec)	Hard drive space (min)	Hard drive space (rec)
App Controller Server	Pentium 4, 2 GHz (x64)	Dual-Processor, Dual Core, 2.8 GHz (x64) or greater	1 GB	4 GB	512 MB	1 GB
DPM Server	1 GHz, dual-core CPU or faster	2.33 GHz quad-core CPU	4 GB	8 GB	3 GB	3 GB
Operations Manager	Use the Operations Manager Sizing Helper					
Orchestrator management server	2.1 GHz, dual-core CPU or faster	2.1 GHz, dual-core CPU or faster	1 GB	2 GB	200 MB	200 MB
Orchestrator runbook server	2.1 GHz, dual-core CPU or faster	2.1 GHz, dual-core CPU or faster	1 GB	2 GB	200 MB	200 MB
Orchestrator web service	2.1 GHz, dual-core CPU or faster	2.1 GHz, dual-core CPU or faster	1 GB	2 GB	200 MB	200 MB

System Center 2012 R2 servers	Processor (min)	Processor (rec)	RAM (min)	RAM (rec)	Hard drive space (min)	Hard drive space (rec)
Orchestrator Runbook Designer	2.1 GHz, dual-core CPU or faster	2.1 GHz, dual-core CPU or faster	1 GB	2 GB	200 MB	200 MB
Service Manager Management Server	4-Core 2.66 GHz CPU	4-Core 2.66 GHz CPU	8 GB	8 GB	10 GB	10 GB
Service Manager Database	8-Core 2.66 GHz CPU	8-Core 2.66 GHz CPU	8 GB	32 GB	80 GB	80 GB
Service Manager Data Warehouse Management Server	4-Core 2.66 GHz CPU	4-Core 2.66 GHz CPU	8 GB	16 GB	10 GB	10 GB
Service Manager Data Warehouse Databases	8-Core 2.66 GHz CPU	8-Core 2.66 GHz CPU	8 GB	32 GB	400 GB	400 GB
Service Manager Console	2-Core 2 GHz CPU	2-Core 2 GHz CPU	4 GB	4 GB	10 GB	10 GB
Service Manager Self-Service Portal: Web Content Server with SharePoint Web Parts	8-Core 2.66 GHz CPU	8-Core 2.66 GHz CPU	16 GB	32 GB	80 GB	80 GB
Service Provider Foundation	2.1 GHz, dual-core CPU or	2.1 GHz, dual-core CPU or	1 GB	3 GB	6 GB	16 GB

System Center 2012 R2 servers	Processor (min)	Processor (rec)	RAM (min)	RAM (rec)	Hard drive space (min)	Hard drive space (rec)
	faster	faster				
VMM Management Server (Less than 150 users)	Pentium 4, 2 GHz (x64)	Pentium 4, 1 GHz CPU	2 GB	2 GB	2 GB	2 GB
VMM Management Server (More than 150 users)	Pentium 4, 2 GHz (x64)	Pentium 4, dual processor 2 GHz (x64)	4 GB	4 GB	4 GB	4 GB
VMM Console (Less than 150 users)	Pentium 4, 1 GHz CPU	Pentium 4, 1 GHz CPU	2 GB	2 GB	2 GB	2 GB
VMM Console (More than 150 users)	Pentium 4, dual processor 2 GHz	Pentium 4, dual processor 2 GHz	4 GB	4 GB	4 GB	4 GB
VMM Database (Less than 150 users)	Pentium 4, 2.8 GHz	Dual-core 2 GHz (x64)	2 GB	4 GB	20 GB	150 GB
VMM Database (More than 150 users)	Dual-core 2 GHz (x64)	Dual-core 2.8 GHz	4 GB	8 GB	50 GB	200 GB
VMM Library Server	Pentium 4 2.8 GHz	Dual-core 64-bit, 3.2 GHz or greater	2 GB	2 GB	Varies based on the number and size of the stored files.	Varies based on the number and size of the stored files.

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Server Operating System Requirements for System Center 2012 R2

Use this information to evaluate if your server-side operating system environment is ready to support the installation of or upgrade to System Center 2012 R2. Use this information here whether you are deploying one or multiple components.

Note that the System Center 2012 R2 version of the Virtual Machine Manager management server requires the Windows Server 2012 operating system.

System Center 2012 R2 server-side component	Windows Server 2008	Windows Server 2008 SP2	Windows Server 2008 R2	Windows Server 2008 R2 SP1	Windows Server® 2012 Standard, Datacenter	Windows Server® 2012 R2 Standard, Datacenter
App Controller Server	•	•	•	•	•	•
DPM Remote Administration console	•	•	•	•	•	•
DPM Server	•	•	•	•	•	•
Operations Manager Management Server				•	•	•
Operations Manager Data Warehouse				•	•	•
Operations Manager Gateway Server				•	•	•
Operations Manager Web Console				•	•	•
Operations Manager Operational Database				•	•	•

System Center 2012 R2 server-side component	Windows Server 2008	Windows Server 2008 SP2	Windows Server 2008 R2	Windows Server 2008 R2 SP1	Windows Server® 2012 Standard, Datacenter	Windows Server® 2012 R2 Standard, Datacenter
Operations Manager Reporting Server				•	•	•
Orchestrator management server			•	•	•	•
Orchestrator runbook server			•	•	•	•
Orchestrator web service			•	•	•	•
Orchestrator Runbook Designer			•	•	•	•
Service Manager Management Server				•	•	•
Service Manager Data Warehouse Management Server				•	•	•
Service Manager Database or Data Warehouse Database				•	•	•
Service Manager Self-Service Portal			•	•	•	•

System Center 2012 R2 server-side component	Windows Server 2008	Windows Server 2008 SP2	Windows Server 2008 R2	Windows Server 2008 R2 SP1	Windows Server® 2012 Standard, Datacenter	Windows Server® 2012 R2 Standard, Datacenter
(SharePoint Server and Web Content Server)						
Service Provider Foundation						•
Virtual Machine Manager Management Server					•	•
Virtual Machine Manager Virtual Machine Hosts			•	•	•	•
Virtual Machine Manager PXE Server				•	•	•
Virtual Machine Manager Update Server				•	•	•
Virtual Machine Manager Library				•	•	•

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

SQL Server Requirements for System Center 2012 R2

Use this information to evaluate if your SQL Server environment is ready to support the installation of or upgrade to System Center 2012 R2. Use this information whether you are deploying one or multiple components of System Center.

SQL Server version support

System Center 2012 R2 component	SQL Server 2008 R2 SP1 Standard, Datacenter	SQL Server 2008 R2 SP2 Standard, Datacenter	SQL Server 2012 Enterprise, Standard (64-bit)	SQL Server 2012 SP1 Enterprise, Standard (64-bit)	SQL Server 2012 SP2
App Controller Server		•	•	•	
Data Protection Manager (DPM) Database Server	•	•	•	•	
Operations Manager Data Warehouse	•	•	•	•	•
Operations Manager Operational Database	•	•	•	•	•
Operations Manager Reporting Server	•	•	•	•	•
Orchestrator Management Server	•	•	•	•	
Service Manager Database or Data Warehouse Database	•	•	•	•	

System Center 2012 R2 component	SQL Server 2008 R2 SP1 Standard, Datacenter	SQL Server 2008 R2 SP2 Standard, Datacenter	SQL Server 2012 Enterprise, Standard (64-bit)	SQL Server 2012 SP1 Enterprise, Standard (64-bit)	SQL Server 2012 SP2
Service Provider Foundation				•	
Virtual Machine Manager Database Server		•	•	•	

General SQL Server recommendations for System Center 2012 R2

This information describes general recommendations for SQL Server regardless of what System Center component you are deploying.

- You will need a minimum of four computers to deploy all System Center components. Aside from performance reasons, not all system components can coexist on the same computer. See each System Center component below for more information.
- For testing purposes only, one SQL Database Engine Services instance may be used for all components, but is not recommended in a production setting due to performance concerns.
- Reporting Services instances cannot be shared between System Center components.
- SQL_* collations are being deprecated for their Windows equivalents.
- Limit the memory of each SQL Server instance such that the Total Memory setting allows a minimum of 1 GB (2GB preferred) of free memory after all services are running.
- System Center components requiring the most disk resources are Service Manager, Operations Manager and Configuration Manager.
- Disks used should be formatted to a 64K allocation unit size.
- Disks used should be configured to allow 20% free space after all calculations for monitoring. Set growth upper limits to not exceed this space limit.
- Pre-sizing is preferred - use auto-grow if needed as it uses more resources.
- Set Pre-size to 8GB/2GB as a minimum. 20-30% of the database file size is a rule of thumb.
- Set Auto-grow to 500/100 as a minimum.

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Client Operating System Requirements for System Center 2012 R2

Use this information to evaluate the client operating system requirements to support the installation of or upgrade to System Center 2012 R2. Use this information whether you are deploying one or multiple components.

System Center client-side components	Windows® 7	Windows® 8	Windows® 8.1	Windows Server® 2008 R2 SP1	Windows Server® 2012	Windows Server® 2012 R2 Standard, Datacenter
App Controller Windows PowerShell Module	•	•	•	•	•	•
DPM Central Console	•	•	•	•	•	•
DPM Remote Administrator	•	•	•	•	•	•
Operations Manager Operations Console	•	•	•	•	•	•
Orchestrator Runbook Designer	•	•	•	•	•	•
Service Manager Console	•	•	•	•	•	•
VMM Console	•	•	•	•	•	•

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Self-Service Web Console Requirements for System Center 2012 R2

Use this information to evaluate if your Microsoft SilverLight and Internet Explorer environments are ready to support Self-Service Web Consoles for System Center 2012 R2.

System Center Component	SilverLight 4	SilverLight 5	Internet Explorer 8	Internet Explorer 9	Internet Explorer 10	Internet Explorer 11
App Controller Web Client		•	•	•	•	•
Operations Manager Web Console		•	•	•	•	•
Orchestrator Web Console	•		•	•	•	•
Service Manager Self-Service Portal Console	•	•	•	•	•	•

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

System Center 2012 Agent Requirements for System Center 2012 R2

This information lists both Microsoft and non-Microsoft operating systems and versions of Microsoft SQL Server software, Microsoft Exchange, or Microsoft SharePoint that each System Center 2012 R2 agent supports.

Data Protection Manager Agent

- Windows Server 2003 R2 with SP2
- Windows 2008 Server R2 SP1
- Windows Server 2012
- Windows Server 2012 R2

- Windows 7
- Windows 8
- Windows 8.1
- SQL Server 2005 (on Windows Server 2003 R2 with SP2)
- SQL Server 2005 SP2 (on Windows 2008 Server R2 SP1)
- SQL Server 2008
- SQL Server 2008 R2
- SQL Server 2012
- Exchange 2007
- Exchange 2010
- Exchange 2013
- Windows Sharepoint Services 3.0
- SharePoint 2007
- SharePoint 2010
- SharePoint 2013
- Windows Server 2008 with Hyper-V
- Windows Server 2008 R2 SP1 with Hyper-V
- Windows Server 2012 with Hyper-V
- Windows Server 2012 R2 with Hyper-V

Operations Manager Windows Agent

- Windows Server 2003 SP2
- Windows 2008 Server SP2
- Windows 2008 Server R2
- Windows 2008 Server R2 SP1
- Windows Server® 2012
- Windows Server® 2012 R2
- Windows XP Pro x64 SP2
- Windows XP Pro SP32
- Windows Vista SP2
- Windows XP Embedded Standard
- Windows XP Embedded Enterprise
- Windows XP Embedded POSReady
- Windows 7 Professional for Embedded Systems
- Windows 7 Ultimate for Embedded Systems
- Windows 7
- Windows® 8
- Windows® 8.1

Virtual Machine Manager Guest Agent

- Windows Server 2003 SP2
- Windows 2008 Server
- Windows 2008 Server SP2
- Windows 2008 Server R2
- Windows 2008 Server R2 SP1
- Windows Server 2012

Virtual Machine Manager Linux Guest Agent

- Red Hat Enterprise Linux 5 (x86/x64)
- Red Hat Enterprise Linux 6 (x86/x64)
- SUSE Linux Enterprise Server 10 (x86/x64)
- SUSE Linux Enterprise Server 11 (x86/x64)
- CentOS 5 (x86/x64)
- CentOS 6 (x86/x64)
- Ubuntu Server 12.04 (x86/x64)

Operations Manager Linux/Unix Agent

- HP-UX 11i V2 (PA-RISC and Itanium)
- HP-UX 11i V3 (PA-RISC and Itanium)
- Oracle Solaris 9 (SPARC)
- Oracle Solaris 10 (SPARC and x86)
- Oracle Solaris 11 (SPARC and x86)
- Red Hat Enterprises Linux 4 (x86/x64)
- Red Hat Enterprises Linux 5 (x86/x64)
- Red Hat Enterprises Linux 6 (x86/x64)
- SUSE Linux Enterprise Server 9 (x86)
- SUSE Linux Enterprise Server 10 (x86/x64)
- SUSE Linux Enterprise Server 11 (x86/x64)
- IBM AIX 5.3 (POWER)
- IBM AIX 6.1 (POWER)
- IBM AIX 7.1 (POWER)
- Cent OS 5 (x86/x64)
- Cent OS 6 (x86/x64)
- Debian 5 (x86/x64)
- Debian 6 (x86/x64)
- Ubuntu Server 10.04 (x86/x64)

- Ubuntu Server 12.04 (x86/x64)

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Windows PowerShell Requirements for System Center 2012 R2

Use this information to evaluate if your Windows PowerShell environment is ready to support the installation of or upgrade to System Center 2012 R2. Use this information here whether you are deploying one or multiple components.

System Center Component	Windows PowerShell 2.0	Windows PowerShell 3.0	Windows PowerShell 4.0
App Controller Windows Server		•	•
App Controller Windows PowerShell Module		•	•
DPM Central Console	•	•	•
DPM Remote Administration console	•	•	•
DPM Server	•	•	•
Operations Manager Management Server	•	•	•
Operations Manager Data Warehouse Server	•	•	•
Operations Manager Gateway Server	•	•	•
Operations Manager Windows Agent	•	•	•
Service Manager Console	•	•	•
Service Manager	•	•	•

System Center Component	Windows PowerShell 2.0	Windows PowerShell 3.0	Windows PowerShell 4.0
Management Server			
Service Manager Data Warehouse Management Server	•	•	•
Service Provider Foundation API Web Server		•	•
Virtual Machine Manager Management Server	•	•	•
Virtual Machine Manager Console		•	•

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

.NET Framework Requirements for System Center 2012 R2

Use this information to evaluate if your Microsoft .NET Framework is ready to support the installation of or upgrade to System Center 2012 R2. Use this information whether you are deploying one or multiple components.

System Center 2012 R2 component	.NET 3.5 SP1	.NET 4	.NET 4.5	.NET 4.5.1
DPM Central Console		•	•	
DPM Remote Administrator		•	•	
DPM Server		•	•	
Operations Manager Management Server		•	•	
Operations Manager Data Warehouse Management Server		•	•	

System Center 2012 R2 component	.NET 3.5 SP1	.NET 4	.NET 4.5	.NET 4.5.1
Operations Manager Gateway Server		•	•	
Operations Manager Web Console	•	•	•	
Operations Manager Reporting Server	•	•	•	
Operations Manager Operations Console		•	•	
Orchestrator Management Server	•			
Orchestrator Runbook Server	•			
Orchestrator Web Service	•	•		
Service Manager Management Server	•			
Service Manager Data Warehouse Management Server	•			
Service Manager console	•			
Service Manager Self-Service Portal (SharePoint Server and Web Content Server)		•	•	
Service Provider Foundation API Web Server		•	•	
Virtual Machine Manager Console			•	•
Virtual Machine Manager Management Server		•	•	•

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Component Coexistence for System Center 2012 R2

Some of the System Center 2012 R2 components will not function properly if other components have been installed on the same computer. None of the following four components can exist on the same computer with each other:

- DPM Management Server
- Operations Manager Management Server
- Service Manager Management Server
- Service Manager Data Warehouse Management Server

In addition, the Configuration Manager and Virtual Machine Manager databases cannot be installed on the same computer.

Any of the remaining System Center 2012 components, App Controller, Orchestrator, and VMM can coexist with each other and with the four components in the previous list. Therefore, four computers is the minimum number of computers that you will need to deploy all of the System Center 2012 R2 components.

The information presented here does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Language Support for System Center 2012 R2

The information in the following table lists the languages locales that are supported in System Center 2012 R2.

Windows Locale	LCID
Chinese (Traditional, Hong Kong SAR)	0xC04
Chinese (Simplified, China)	0x804
Chinese (Traditional, Taiwan)	0x404
Czech (Czech Republic)	0x405
Dutch (Netherlands)	0x413

Windows Locale	LCID
German	0x407
English	0x409
French	0x40C
Hungarian	0x40E
Italian	0x410
Japanese	0x411
Korean	0x412
Polish (Poland)	0x415
Portuguese (Brazil)	0x416
Portuguese (Portugal)	0x816
Russian	0x419
Spanish	0xC0A
Swedish (Sweden)	0x41D
Turkish (Turkey)	0x41F

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see [Supported Configurations for Configuration Manager](#)

Preparing your environment for System Center 2012 R2 App Controller

Here are the system requirements and considerations to keep in mind before you deploy System Center 2012 R2 App Controller.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

Server

This section provides information about system requirements and supported operating systems for installing and running System Center 2012 R2 App Controller.

Hardware

For a list of the supported hardware for App Controller, see [Hardware Requirements for System Center 2012 R2](#).

Software

The following software must be installed before installing App Controller.

Software Requirement	Notes
A supported operating system	For more information, see Supported Operating Systems in this topic.
Microsoft .NET Framework 4.5	If .NET Framework 4.5 is not installed (it is not installed by default), the App Controller setup wizard will install it. Note that WCF data services will be configured as part of enabling .NET Framework 4.5.
Web Server (IIS)	If the Web Server (IIS) role and the following Web Server (IIS) features are not installed, the acblue setup wizard will install them: <ul style="list-style-type: none">• Static Content• Default Document• Directory Browsing• HTTP Errors• ASP.NET• .NET Extensibility• ISAPI Extensions• ISAPI Filters• HTTP Logging• Request Monitor• Tracing• Basic Authentication• Windows Authentication• Request Filtering• Static Content Compression• IIS Management Console
The VMM console feature in System Center 2012 R2	Only the VMM console feature is required for App Controller.
A supported version of SQL Server	For more information about supported versions

Software Requirement	Notes
	of SQL Server, see Database Requirements in this topic.

Operating Systems

For a list of the supported operating systems for each feature, see [Server Operating Systems in System Center 2012 R2](#).

Running System Center 2012 R2 App Controller on Microsoft Azure virtual machines

App Controller runs on Azure just as it does on physical computers. App Controller can be deployed into Azure as part of product evaluation if you do not have sufficient capacity on-premises.

App Controller was tested by Microsoft by installing and using it in an Azure virtual machine. The testing concluded that App Controller was fully functional and operated exactly the same as it does on physical hardware.

Requirements to run App Controller in Microsoft Azure:

- The App Controller virtual machine must be connected to your corporate network; for example, by using a Site to Site VPN..
- The App Controller virtual machine must have connectivity to your Active Directory domain controller. This domain controller can be but is not required to be deployed in Azure.
- The App Controller virtual machine must have connectivity to your Virtual Machine Manager server.
- The App Controller virtual machine must have connectivity to a SQL Server database. This cannot be a SQL Azure database.
- The App Controller virtual machine must be domain joined.
- Users must be on the corporate network to access App Controller.

When deploying into an Azure virtual machine, the minimum virtual machine size is “Small” and the recommended virtual machine size is “Medium.”

Database

App Controller supports the following versions of Microsoft SQL Server for hosting the App Controller database.

For better performance, we recommend that you use an instance of SQL Server installed on a different computer for the System Center 2012 R2 App Controller database.

Supported SQL Server Edition	Service Pack	System Architecture
SQL Server 2008 R2 Datacenter	Service Pack 2	x86 and x64
SQL Server 2008 R2 Enterprise	Service Pack 2	x86 and x64
SQL Server 2008 R2 Standard	Service Pack 2	x86 and x64
SQL Server 2012 Standard	None	x86 and x64
SQL Server 2012 Enterprise	None	x86 and x64
SQL Server 2012 Standard	Service Pack 1	x86 and x64
SQL Server 2012 Enterprise	Service Pack 1	x86 and x64

Performance and Scale

The items below are the supported scale limits for App Controller.

Measure	Value
Maximum number of objects in a Windows Azure storage directory	900
Maximum number of VMM management servers	5
Maximum number of Windows Azure subscriptions per user	20
Maximum number of concurrent users	75
Maximum number of jobs that can be run in a 24-hour interval	10,000

Additional Information

- The computer on which you are installing the App Controller server must be a member of an Active Directory domain.
- For better performance, we recommend that you install the App Controller server on a separate computer from the VMM management server.

Client

This section provides information about requirements for running the App Controller client console in a browser on a computer that is not the App Controller management server.

The following software must be installed before installing the System Center 2012 R2 App Controller web console.

Requirement	Supported by App Controller client console
Operating system	Windows Server 2008 Windows Server 2008 R2 Windows Server 2012 Windows 8 Windows 7 Windows Vista
Browser	Internet Explorer 8 Internet Explorer 9 Internet Explorer 10 A 32-bit browser Silverlight 5 support

Windows PowerShell Module

This section provides information about system requirements and supported operating systems for installing and running the Windows PowerShell Module for App Controller.

Software

The following software must be installed before installing the Windows PowerShell Module for App Controller.

Software Requirement	Notes
A supported operating system	For more information, see Supported Operating Systems in this topic.
Microsoft .NET Framework 3.5.1	If .NET Framework 3.5.1 is not installed (it is not installed by default), the App Controller setup wizard will enable it for Windows Server 2008 R2 and Windows 7 only. For all other supported operating systems, you must

Software Requirement	Notes
	install .NET Framework 3.5.1 manually.
Windows PowerShell 3.0	Installed by default with Windows Server 2012 and Windows 8. For Windows Server 2008 R2 SP1, Windows Server 2008 SP2, and Windows 7 SP1 it must be installed manually. For more information, see KB968929 on the Microsoft Support website.

Operating Systems

Operating System	Edition	Service Pack	System Architecture
Windows Server 2012 R2	Standard, Datacenter, Core	None	X64
Windows Server 2012	Standard, Datacenter	None	X64
Windows 8	basic, Pro, and Enterprise	None	x86 and x64
Windows Server 2008 R2 (full installation)	Standard, Enterprise, and Datacenter	Service Pack 1	x64
Windows Server 2008 (full installation)	Standard, Enterprise, and Datacenter	Service Pack 2	x86 and x64
Windows 7	Professional, Enterprise and Ultimate	Service Pack 1	x86 and x64

Windows Safe Mode

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

Preparing for Highly Available Deployments of App Controller

App Controller can be made highly available using the following methods:

- Making the database highly available by installing the database on a clustered installation of SQL Server
- Making the App Controller server highly available by either:
 - Installing multiple App Controller servers behind a load balancer
 - Installing App Controller servers on a highly available virtual machine

If you are installing multiple App Controller servers behind a load balancer you will be required to configure an encryption key that is shared between the servers. After installing the first App Controller server you will need to export the encryption key by using the **Export-SCACAesKey** cmdlet and then provide it when installing subsequent servers. For more information, see **Installing App Controller**.

See Also

Setting up App Controller

Preparing your environment for System Center 2012 R2 Data Protection Manager (DPM)

Keep these requirements and considerations in mind when you deploy System Center 2012 R2 Data Protection Manager (DPM).

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

First things first

There are a few prerequisites you'll need to have in place before you deploy DPM:

- Instance of SQL Server installed and running for the DPM database.
- Disk to be used as dedicated space for DPM data storage.
- DPM protection agent installed on computers and servers you want to protect using DPM.

SQL Server database

DPM uses SQL Server as a database to store backup information for workloads, servers, and computers it protects.

Requirement	Details
Version	SQL Server 2012 with SP1 Standard or Enterprise 64-bit

Requirement	Details
	SQL Server 2012 Standard or Enterprise 64-bit SQL Server 2008 R2 with SP2 Standard or Enterprise 64-bit SQL Server 2008 R2 with SP1 2012 Standard or Enterprise 64-bit
RAM	4 GB minimum, 8 GB recommended
Disk	1 GB minimum, 3 GB recommended
Required features	Database Engine Services, Reporting Services
Collations	SQL_Latin1_General_CP1_CI_AS
Dynamic ports	Supported
AlwaysOn	Not supported
Installation	Install SQL Server on a remote server, or on the DPM server. It must be installed and running before you install DPM.
Remote installation	<ul style="list-style-type: none"> • Install in the same domain and time zone as the DPM server. • Installing SQL Server on a domain controller isn't supported for DPM. • Read about Setting up a remote SQL Server instance.
Clustered SQL Server	Supported
SQL Server 2014	Not supported

DPM server

Requirement	Details
Hardware	See Hardware Requirements for System Center 2012 R2 .
Software	Windows Server 2012 R2, Datacenter and Standard editions Windows Server 2012, Datacenter and Standard editions Windows Server 2008 R2 with SP1, Standard

Requirement	Details
	and Enterprise editions
Installation prerequisites	<p>Microsoft .NET Framework 4.0</p> <p>Windows Installer 4.5 or later versions</p> <p>Microsoft Visual C++ 2008 Redistributable</p> <p>Microsoft Visual C++ 2008 Redistributable</p> <p>Windows PowerShell 3.0</p> <p>Windows Single Instance Store (SIS)</p> <p>Microsoft Application Error Reporting</p> <p>Setup automatically installs these if they aren't already installed.</p>
Limitations	<p>You can install DPM on the operating system volume or on a different volume.</p> <p>DPM is designed to run on a dedicated, single-purpose server. Don't install DPM on:</p> <ul style="list-style-type: none"> • A server running the Application Server role • An Operations Manager Management server • A server running Exchange • A server running on a cluster node <p>DPM isn't supported on the Turkish language version of any of the supported Windows Server versions.</p>

Disks and storage

Requirement	Minimum	Recommended
Disk	<p>DPM requires:</p> <ul style="list-style-type: none"> • Disk for DPM installation—system files, installation files, prerequisite software, database files • Disk dedicated to the storage pool 	
DPM installation	<p>DPM installation location: 3 GB</p> <p>Database files drive: 900 MB</p>	On each protected volume you'll need a minimum of

Requirement	Minimum	Recommended
	<p>System drive: 1 GB</p> <p>The system drive disk space is required if SQL Server is installed on the DPM server. If SQL Server is remote, you'll need considerably less disk space for the system drive.</p>	<p>300 MB of free space for the change journal. In addition you'll need space because DPM copies the file catalog to a temporary DPM installation location for archiving. We recommend that the DPM installation volume has 2–3 GB of free space.</p>
Disk for storage pool	1.5 times the size of the protected data	2-3 times the size of the protected data
Logical unit number (LUN)		<p>Maximum of 17 TB for GUID partition table (GPT) dynamic disks</p> <p>2 TB for master boot record (MBR) disks</p> <p>Requirements are based on the maximum size of the disk that appears in the operating system.</p>
Limitations	<p>DPM storage pools must be dynamic.</p> <p>You can't install DPM on the disk used for the storage pool.</p> <p>You can attach or associate custom volumes with protected data sources. Custom volumes can be on basic or dynamic disks but you can't manage the space on these volumes in the DPM Administrator console.</p> <p>You can only back up to tape with iSCSI attached tape libraries. We recommend a separate adapter for that connection.</p>	
Virtualized DPM	When DPM is running on a virtual machine it can use this	

Requirement	Minimum	Recommended
	<p>storage:</p> <ul style="list-style-type: none"> • .VHD disk that meet the configuration requirements listed in Installing DPM in a virtual environment. • Passthrough disk with host direct attached storage (DAS) • Pass-through iSCSI LUN attached to a host. • Passthrough Fibre Channel LUN attached to a host. • iSCSI target LUN connected directly to the DPM virtual machine. • Fibre Channel LUN connected to the DPM virtual machine using a Windows Server 2012 Virtual Fiber Channel (VFC) controller. 	

Protected workloads

Requirement	Details
Protected workload size limits	<p>DPM can protect up to 600 volumes. 300 replica volumes and 300 recovery point volumes</p> <p>At the maximum size protected sources are typically spread across approximately 75 servers and 150 client computers.</p> <p>To protect this maximum size, DPM needs 120 TB per DPM server, with 80 TB replica space with a maximum recovery point size of 40 TB.</p>
.NET framework	All protected computers need at least .NET Framework 4.0 installed before you install the DPM protection agent.

Requirement	Details
Protected workloads	<ul style="list-style-type: none"> • Computers running client operating systems • Computers running server operating systems • File Server • SQL Server • Exchange server • SharePoint server • Hyper-V server <p>Review the Support Matrix for DPM Protection for more details.</p>
Prerequisites	<p>DPM protection agent must be installed on protected computers. For more information, see Installing and Configuring Protection Agents.</p> <p>Protected volumes must be at least 1 GB in size with NTFS formatting.</p> <p>Server operating systems protected by DPM must be 64-bit.</p>

Networking

Requirement	Details
Domain	<p>The DPM server should be in a Windows Server 2012 R2, Windows Server 2012, Windows Server 2008 R2, Windows Server 2008, or Windows Server 2003 Active Directory domain.</p>
Domain trust	<p>DPM supports data protection across forests as long as you establish a forest-level two-way trust between the separate forests.</p> <p>DPM can protect servers and workstations across domains within a forest that has a two-way trust relationship with the DPM server domain. If there's no two-way trust DPM can provide protection for computers in workgroups or untrusted domains. Managing Protected</p>

Requirement	Details
	Computers in Workgroups and Untrusted Domains.
Network configuration	If you're protecting data over a wide area network (WAN), you'll need a minimum bandwidth of 512 kilobits per second (Kbps). DPM doesn't support disjointed namespaces.

Remote management

Requirement	Details
Central Console	Use the Central Console to administer multiple DPM servers from a single location. Install it on a server running System Center 2012 Operations Manager. You'll also need to install the Operations Management agent on the DPM server. See Installing Central Console .
DPM Management Shell	Install the DPM Management Shell on a client computer to directly manage one or more DPM servers using Windows PowerShell. Install it from DPM Setup. The DPM Management Shell can be installed on computers running Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, Windows 7, Windows 8, Windows 8.1. The computer must be running at least Net Framework 4.0.
Remote Desktop Connection	Set up a Remote Desktop Connection to manage a single DPM server. The DPM Administrator console can't be installed on a remote computer. The DPM Management Shell can be installed on computers running Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2, Windows 7, Windows 8, Windows 8.1. The computer must be running at least Net

Requirement	Details
	Framework 4.0.

Preparing your environment for System Center 2012 R2 Operations Manager

Here are the system requirements and considerations to keep in mind before you deploy System Center 2012 R2 Operations Manager.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

First things first

Before you begin, it's a good idea to get to know this information:

- The Prerequisites checker is no longer an option in Setup. To check hardware and software prerequisites, you can begin the installation process and then cancel it after the required prerequisites have been determined.
- [Environmental Prerequisites for Operations Manager](#) covers the infrastructure that you need to have in place and other factors to consider before you run Setup for Operations Manager.
- **Deploying System Center 2012 - Operations Manager** details information about the security-related features and settings in Operations Manager that can affect your deployment.
- [Release Notes for Operations Manager in System Center 2012 R2](#) identifies any changes that could affect planning for a new deployment of System Center 2012 R2 Operations Manager.
- If you want to deploy Operations Manager in a test environment, see [Single-Server Deployment of Operations Manager](#).
- If you're new to Operations Manager, [Operations Manager Key Concepts](#) helps get you up to speed.

Virtualization

Operations Manager virtualization support

For performance reasons, we recommend that you store the operational database and data warehouse database on a directly attached physical hard drive, and not on a virtual disk.

Virtual computers that are running any Operations Manager server feature must not use any functionality that does not immediately commit all activity on the virtual computer to the virtual hard drive. This includes making use of point-in-time snapshots and writing changes to a temporary virtual hard drive. This is true for every virtualization technology that is used with Operations Manager.

Microsoft supports running all Operations Manager server features in any physical or virtual environment that meets the minimum requirements that are stated in this document.

Running Operations Manager on Microsoft Azure virtual machines

System Center 2012 R2 Operations Manager runs on virtual machines in Microsoft Azure just as it does on physical computer systems. We recommend using Operations Manager with Microsoft Azure virtual machines in the following scenarios:

- **Scenario 1:** You can run Operations Manager on a Microsoft Azure virtual machine and use it to monitor other Microsoft Azure virtual machines.
- **Scenario 2:** You can run Operations Manager on a Microsoft Azure virtual machine and use it to monitor instances that are not running on Microsoft Azure.
- **Scenario 3:** You can run Operations Manager on-premises and use it to monitor Microsoft Azure virtual machines.

Microsoft tested Operations Manager by installing and using it in a Microsoft Azure virtual machine. The standard sizing and supported configuration for Operations Manager applies to Microsoft Azure virtual machines.

Minimum screen resolution

Operations Manager is optimized for screen resolutions of 1280 x 1024 or larger. The minimum supported screen resolution is 1024 x 768.

Minimum hardware

Use the [Operations Manager Sizing Helper](#) to determine hardware requirements for each Operations Manager server feature. If you want to install more than one feature on the same computer, use the higher of the recommended hardware requirements for any of the combined features.

Supported processors, memory, and disk space



Note

Operations Manager does not support installing the 32-bit agent on a 64-bit operating system. Operations Manager provides native support for x86-based computers for agents and consoles, and x64-based computers for all server features.

Operating systems

Operations Manager server features require a supported operating system. For a list of the supported operating systems for each server feature, see [Server Operating Systems in System Center 2012 R2](#).

Installing System Center 2012 R2 Operations Manager on Windows Server 2012 Core requires:

- Windows 32-bit on Windows 64-bit (WoW64) support, .NET 4.5, Windows PowerShell 3.0
- In addition, you need AuthManager. To install AuthManager for Windows 2012, add **Server-Gui-Mgmt-Intra** (the Minimal Server Interface.) To install for Windows 2012 R2, install AuthManager with this command: **dism /online /enable-feature /featurename:AuthManager**
- If you attempt to install Operations Manager without WoW64 support installed, you'll see an error message telling you that the side-by-side configuration is wrong.

SQL Server

Check for updates and hotfixes for Microsoft SQL Server. See [SQL Server in System Center 2012 R2](#).

- Operations Manager does not support hosting its databases or SQL Server Reporting Services on a 32-bit edition of SQL Server.
- Using a different version of SQL Server for different Operations Manager features is not supported. The same version should be used for all features.
- For SQL Server collation settings, see [SQL Server in System Center 2012 R2](#)
- The SQL Server Agent service must be started, and the startup type must be set to automatic.
- The db_owner role for the operational database must be a domain account. If you set the SQL Server Authentication to Mixed mode, and then try to add a local SQL Server login on the operational database, the Data Access service will not be able to start. For information about how to resolve the issue, see [System Center Data Access Service Start Up Failure Due to SQL Configuration Change](#)
- If you plan to use the Network Monitoring features of System Center 2012 R2 Operations Manager, you should move the tempdb database to a separate disk that has multiple spindles. For more information, see [tempdb Database](#).

If you want to install more than one Operations Manager feature on the same computer, you must install the prerequisite software for all of the combined features.

Requirements for Operations Manager features

Management server

Hardware/Software	Requirement
Disk space	%SYSTEMDRIVE% requires at least 1024 MB free hard disk space
Server Operating System	See Server Operating Systems in System Center 2012 R2
Processor architecture	x64

Hardware/Software	Requirement
Windows PowerShell	See Windows PowerShell Support in System Center 2012 R2
Windows Remote Management	Windows Remote Management must be enabled for the management server
.NET Framework	.NET Framework 4 or .NET Framework 4.5 is required. For more information, see .NET Framework in System Center 2012 R2 and .NET Framework 4 redistributable package

Operations console

- You need [Microsoft Report Viewer 2012 Redistributable Package](#)

Important

Report Viewer also has a dependency on [Microsoft System CLR Types for SQL Server 2012](#). The SQL Server System CLR Types package contains the components implementing the geometry, geography, and hierarchy ID types in SQL Server 2012. This component can be installed separately from the server to allow client applications to use these types outside of the server. Click the installation instructions and you see the links that point to other requirements for this component: [Windows Installer 4.5](#), x86 Package (SQLSysClrTypes.msi), x64 Package (SQLSysClrTypes.msi), and SQL Server System CLR Types Books on-line page.

Hardware/Software	Requirement
Disk space	%SYSTEMDRIVE% requires at least 512 MB free hard disk space
File system	%SYSTEMDRIVE% must be formatted with the NTFS file system
Server Operating System	See Server Operating Systems in System Center 2012 R2
Processor architecture	x64 for servers and x64 or x86 for a client computer
Windows Installer	At least Windows Installer 3.1
Windows PowerShell	See Windows PowerShell Support in System Center 2012 R2
.NET Framework	For more information, see .NET Framework 4

Hardware/Software	Requirement
	redistributable package

Web console

Hardware/Software	Requirement
Operating System	See Server Operating Systems in System Center 2012 R2
Processor architecture	x64
Web browsers	See Self-Service Web Console Support in System Center 2012 R2a
Internet Information Services (IIS)	<p>IIS 7.5 and later versions, with the IIS Management Console and the following role services installed:</p> <ul style="list-style-type: none"> • Static Content • Default Document • Directory Browsing • HTTP Errors • HTTP Logging • Request Monitor • Request Filtering • Static Content Compression • Web Server (IIS) Support • IIS 6 Metabase Compatibility • ASP.NET (both the 2.0 and 4.0 versions of ASP.NET are required.) • Windows Authentication
Selected website for web console	Requires a configured http or https binding

Important

Installing the web console on a computer that has Microsoft SharePoint installed is not supported.

- The System Center 2012 R2 Operations Manager SharePoint Dashboard Viewer Web Part works on SharePoint 2010 and SharePoint 2013 and is supported. However, it does not work on Office 365 SharePoint and is not supported.

- .NET Framework 4 is required for Setup to run. For more information, see the following documents:
 - [.NET Framework 4 redistributable package](#)



Note

Installation of the web console requires that ISAPI and CGI Restrictions in IIS are enabled for ASP.NET 4. To enable this, select the web server in IIS Manager, and then double-click **ISAPI and CGI Restrictions**. Select **ASP.NET v4.0.30319**, and then click **Allow**.



Important

You must install IIS before installing .NET Framework 4. If you installed IIS after installing .NET Framework 4, you must register ASP.NET 4.0 with IIS. Open a Command prompt window by using the **Run As Administrator** option, and then run the following command:
`%WINDIR%\Microsoft.NET\Framework64\v4.0.30319\aspnet_regiis.exe -r`

Operational database

Hardware/Software	Requirement
Disk space	Needs at least 1024 MB free disk space. This is enforced at the time of database creation, and it will likely grow significantly. For information about SQL Server Planning, see Installing SQL Server 2008 R2 or Install SQL Server 2012
File system	%SYSTEMDRIVE% must be formatted with the NTFS file system
Operating systems	See Server Operating Systems in System Center 2012 R2
Processor architecture	x64
Windows Installer	At least Windows Installer 3.1
Microsoft SQL Server	See SQL Server in System Center 2012 R2
SQL Server Full Text Search	Required
.NET Framework	.NET Framework 4 is required. For more information, see .NET Framework in System Center 2012 R2 and .NET Framework 4 redistributable package

Microsoft Monitoring Agent – Windows-based computers

Hardware/Software	Requirement
File system	%SYSTEMDRIVE% must be formatted with the NTFS file system
Operating systems	See Server Operating Systems in System Center 2012 R2
Processor architectures	x64 or x86
Microsoft Core XML Services (MSXML) version	Microsoft Core XML Services 6.0 is required for the Operations Manager agent for Windows Server 2003.
Windows PowerShell	Windows PowerShell version 2.0, or Windows PowerShell version 3.0  Note Windows PowerShell is required for agents that will be monitored by a management pack that uses Windows PowerShell scripts.

Operations Manager Agent – UNIX- or Linux-based computers

See [System Center 2012 Agents in System Center 2012 R2](#)

Operations Manager reporting

Disk space	%SYSTEMDRIVE% requires at least 1024 MB free hard disk space
Operating system	See Server Operating Systems in System Center 2012 R2
Processor architecture	x64
Microsoft SQL Server	See SQL Server in System Center 2012 R2
Remote Registry service	must be enabled and started
Microsoft SQL Server Reporting Services	See SQL Server in System Center 2012 R2  Warning System Center 2012 – Operations

Disk space	%SYSTEMDRIVE% requires at least 1024 MB free hard disk space
	Manager supports SQL Server Reporting Services in native mode only; do not use SharePoint integrated mode.
.NET Framework	.NET Framework 4 is required. For more information, see .NET Framework in System Center 2012 R2 and .NET Framework 4 redistributable package

Operations Manager data warehouse

Hardware/Software	Requirement
Disk space	The data warehouse database must have at least 1024 MB free hard disk space. This is enforced at the time of database creation, and the required disk space will likely grow significantly. For information about requirements in SQL Server Planning, see Installing SQL Server 2008 or Installing SQL Server 2008 R2 .
File system	%SYSTEMDRIVE% must be formatted with the NTFS file system.
Operating system	See Server Operating Systems in System Center 2012 R2
Processor architecture	x64
Windows Installer version	At least Windows Installer 3.1
Microsoft SQL Server Full Text Search	Required
.NET Framework	.NET Framework 4 is required for Setup to run. For more information, see .NET Framework in System Center 2012 R2 and .NET Framework 4 redistributable package

Operations Manager gateway server

Hardware/Software	Requirement
Disk space	%SYSTEMDRIVE% requires at least 1024 MB free hard disk space
Server operating system	Windows Server 2008 R2 SP1, Windows Server 2012, Windows Server 2012 Core Installation, or Windows Server® 2012 R2.
Processor architecture	x64
Windows PowerShell	Windows PowerShell version 2.0, or Windows PowerShell version 3.0
Microsoft Core XML Services (MSXML) version	Microsoft Core XML Services 6.0 is required for the management server
.NET Framework	.NET Framework 4 is required if the Gateway server manages UNIX/Linux agents or network devices.

Firewalls

Supported firewall scenarios

The following table shows Operations Manager feature interaction across a firewall, including information about the ports that are used for communication between the features, which direction to open the inbound port, and whether the port number can be changed.

Firewall scenarios for System Center 2012 R2 Operations Manager

Operations Manager Feature A	Port number and direction	Feature B	Configurable	Note
Management server	1433 --->	Operational database	Yes (Setup)	
Management server	1434 UDP < - --	Operational database	No	If the operational database is installed on a named instance of SQL Server 2008 R2 SP1, SQL Server 2008 R2

Operations Manager Feature A	Port number and direction	Feature B	Configurable	Note
				SP2, SQL Server 2012, or SQL Server 2012 SP1 such as in a cluster, and the Windows Firewall is enabled on the management server, you have to also open UDP 1434 inbound on the management server.
Management server	5723, 5724 -->	Management server	No	Port 5724 must be open to install this feature and can be closed after this feature has been installed.
Management server	1433 -->	Reporting data warehouse	No	
Reporting server	5723, 5724 -->	Management server	No	Port 5724 must be open to install this feature and can be closed after this feature has been installed.
Operations console	5724 --->	Management server	No	
Connector Framework source	51905 --->	Management server	No	
Web console server	Selected web site port --->	Management server	No	
Web console (for Application Diagnostics)	1433, 1434 -->	Operational database	Yes (Setup)	

Operations Manager Feature A	Port number and direction	Feature B	Configurable	Note
Web console (for Application Advisor)	1433, 1434 -->	Data warehouse	Yes (Setup)	
Web console (for Application Advisor)	80 --->	SQL Server Reporting Services	No	
Web console browser	80, 443 --->	web console server	Yes (IIS Admin)	Default for HTTP or SSL. For either Network Authentication or Mixed Authentication, an account name and password can be sent as part of the request. We recommend you use SSL.
Agent installed by using MOMAgent.msi	5723 --->	Management server	Yes (Setup)	
Agent installed by using MOMAgent.msi	5723 --->	Management server	Yes (Setup)	
Agent installed by using MOMAgent.msi	5723 --->	Gateway server	Yes (Setup)	
Gateway server	5723 --->	Management server	Yes (Setup)	
Agent (Audit Collection Services (ACS) forwarder)	51909 --->	Management server Audit Collection Services (ACS) Collector	Yes (Registry)	
Agentless Exception Monitoring data from client	51906 --->	Management server Agentless Exception Monitoring (AEM) file share	Yes (Client Monitoring Wizard)	

Operations Manager Feature A	Port number and direction	Feature B	Configurable	Note
Customer Experience Improvement Program data from client	51907 --->	Management server (Customer Experience Improvement Program) Endpoint	Yes (Client Monitoring Wizard)	
Operations console (reports)	80 --->	SQL Server Reporting Services	No	The Operations console uses port 80 to connect to the SQL Server Reporting Services website.
Reporting server	1433 --->	Reporting data warehouse	Yes	
Management server (Audit Collection Services Collector)	1433 --->	Audit Collection Services (ACS) database	Yes	
Management Server	161, 162 <--->	Network device	Yes	All firewalls between the management servers in the resource pool and the network devices need to allow SNMP (UDP) and ICMP bi-directionally, and ports 161 and 162 need to be open bi-directionally. This includes Windows Firewall on the management server itself. If your network devices are using a port other than

Operations Manager Feature A	Port number and direction	Feature B	Configurable	Note
				161 and 162, you need to open bi-directional UDP traffic on these ports as well.
Management server or gateway server	1270 --- >	UNIX or Linux computer	No	
Management server or gateway server	22 --- >	UNIX or Linux computer	Yes	

In the preceding table, if SQL Server 2008 R2 SP1, SQL Server 2008 R2 SP2, SQL Server 2012, or SQL Server 2012 SP1 is installed by using a default instance, the port number is 1433. If SQL Server is installed with a named instance, it is probably using a dynamic port. To identify the port, do the following:

1. Run SQL Server Configuration Manager.
2. Open SQL Server Network Configuration.
3. Open Protocols for INSTANCE1 (or the instance that is running under it).
4. Open TCP/IP.
5. Click **IP Addresses**.
6. The port is under IPAll (usually the TCP Dynamic Ports).

Operations Manager feature firewall exceptions

Feature	Exception	Port and protocol	Configured by
Management server	• System Center Management service	5723/TCP	Setup
		5724/TCP	Setup
	• System Center Data Access service	51905/TCP	Setup
		51907/TCP	Setup
		51906/TCP	Setup
	• Operations Manager Connector Framework		
	• Operations Manager Customer Experience Improvement		

Feature	Exception	Port and protocol	Configured by
	<ul style="list-style-type: none"> Operations Manager Application Error Monitoring 		
Web console	Operations Manager web console	Selected web site port/TCP	Setup
Web console, http	World Wide Web Services, http	80/TCP	Windows Firewall
Web console, https	Secure World Wide Web Service, https	443/TCP	Windows Firewall
Operational database	<ul style="list-style-type: none"> SQL Server database server If using a named instance, add. 	1433/TCP 1434/UDP	Windows Firewall Windows Firewall
Operations Manager data warehouse database	<ul style="list-style-type: none"> SQL Server database server If using a named instance, add. 	1433/TCP 1434/UDP	Windows Firewall Windows Firewall
Operations Manager Reporting	SQL Server Reporting Services	80/TCP	Windows Firewall
Agent, manual installation of MOMAgent.msi	System Center Management service	5723/TCP	Windows Firewall
Agent, push installation	<ul style="list-style-type: none"> System Center Management service File and Print Sharing Remote Administration 	5723/TCP 137/UDP, 138/UDP, 139/TCP, 445/TCP 135/TCP, 445/TCP	Windows Firewall Windows Firewall Windows Firewall
Agent, pending repair	<ul style="list-style-type: none"> System Center Management service File and Print Sharing Remote Administration 	5723/TCP 137/UPD, 138/UPD, 139/TCP, 445/TCP 135/TCP, 445/TCP	Windows Firewall Windows Firewall Windows Firewall

Feature	Exception	Port and protocol	Configured by
Agent, pending upgrade	<ul style="list-style-type: none"> System Center Management service File and Print Sharing Remote Administration 	5723/TCP 137/UDP, 138/UDP, 139/TCP, 445/TCP 135/TCP, 445/TCP	Windows Firewall Windows Firewall Windows Firewall
Gateway	System Center Management service	5723/TCP	Setup
Operations Manager Audit Collection Services database	<ul style="list-style-type: none"> SQL Server If using a named instance, add. 	1433/TCP 1434/UDP	Windows Firewall Windows Firewall
Operations Manager Audit Collection Services Collector	ACS Collector Service	51909/TCP	Windows Firewall

Minimum network connectivity speeds

Operations Manager requires the following minimum network connectivity speeds between the specified features.

Feature A	Feature B	Minimum requirement
Management server	Agent	64 Kbps
Management server	Agentless	1024 Kbps
Management server	Database	256 Kbps
Management server	Console	768 Kbps
Management server	Management server	64 Kbps
Management server	Data warehouse database	768 Kbps
Management server	Reporting server	256 Kbps
Management server	Gateway server	64 Kbps
Local management group	Connected management group (tiered)	1024 Kbps
Web console server	web console	128 Kbps

Feature A	Feature B	Minimum requirement
Reporting Data Warehouse	Reporting server	1024 Kbps
Console	Reporting server	768 Kbps
Audit collector	Audit database	768 Kbps

Supported cluster configurations

Operations Manager supports the clustering configurations for Operations Manager features as shown in the following table:

Important

Clustering of management servers is not supported in System Center 2012 R2 Operations Manager.

You can use SQL Server failover clustering or SQL Server 2012 AlwaysOn. For more information about SQL Server 2012 AlwaysOn, see [Using SQL Server 2012 Always On Availability Groups with System Center 2012 SP1 - Operations Manager](#).

When using SQL Server failover clustering, only Cluster service quorum node clusters are supported. Multisite clusters (geographically dispersed clusters) are supported for all Operations Manager cluster roles. You can use replication technology to help provide high availability for data in Operations Manager, but the latency of communications between components introduce risks to data replication and might introduce failover issues. We recommend that you use synchronous mirroring of data disks between sites. Synchronous mirroring means that the data is fully synchronized across all sites and ensures the correct behavior of applications in the event of failover across sites.

Important

Microsoft is not obligated to release a hotfix on any Operations Manager issue that cannot be reproduced in a non-multisite cluster environment. If an analysis determines that non-Microsoft components in the configuration are causing the issue, the customer must work with the appropriate vendor for those components.

Server Feature	Cluster	Notes
Operations Manager Operational database	Single Active-Passive cluster	Other Operations Manager features must not be installed on the cluster or nodes of the cluster.
Operations Manager Reporting data warehouse	Single Active-Passive cluster	Other Operations Manager features must not be installed on the cluster or nodes of the

Server Feature	Cluster	Notes
		cluster.
Audit Collection Services (ACS) database	Single Active-Passive cluster	Other Operations Manager features must not be installed on the cluster or nodes of the cluster.

Supported, but not recommended cluster configurations

Operations Manager supports the following clustering configurations for Operations Manager server roles, as shown in the following table; however, because of a potential performance effect on your computer running SQL Server, these configurations are not recommended:

Server Feature	Cluster	Notes
Operations Manager operational database and Operations Manager Reporting data warehouse.	Active-Active cluster where the operational database is installed on one node of the cluster and the Reporting data warehouse is installed on the other node of the cluster.	There might be some performance issues with SQL Server in this configuration.
Operations Manager operational database, Reporting data warehouse, and Audit Collection Services (ACS) database.	Single Active-Passive or Active-Active cluster where all three components are on a single cluster.	There might be some performance issues with SQL Server in this configuration.
Operations Manager operational database and Audit Collection Services database.	Single Active-Passive cluster where both components are on a single cluster.	There might be some performance issues with SQL Server in this configuration.
Operations Manager operational database and Reporting data warehouse.	Single Active-Passive cluster where both components are on a single cluster.	There might be some performance issues with SQL Server in this configuration.
Reporting data warehouse and Audit Collection Services database.	Single Active-Passive cluster where both components are on a single cluster.	There might be some performance issues with SQL Server in this configuration.

Monitored item capacity

Operations Manager supports the following number of monitored items.

Monitored item	Recommended limit
Simultaneous Operations consoles	50
Agent-monitored computers reporting to a management server	3,000
Agent-monitored computers reporting to a gateway server	2,000
Agentless Exception Monitored (AEM)-computers per dedicated management server	25,000
Agentless Exception Monitored (AEM)-computers per management group	100,000
Collective client monitored computers per management server	2,500
Management servers per agent for multihoming	4
Agentless-managed computers per management server	10
Agentless-managed computers per management group	60
Agent-managed and UNIX or Linux computers per management group	6,000 (with 50 open consoles); 15,000 (with 25 open consoles)
UNIX or Linux computers per dedicated management server	500
UNIX or Linux computers monitored per dedicated gateway server	100
Network devices managed by a resource pool with three or more management servers	1,000
Network devices managed by two resource pools	2,000
Agents for Application Performance Monitoring (APM)	700
Applications for Application Performance Monitoring (APM)	400

Monitored item	Recommended limit
URLs monitored per dedicated management server	3000
URLs monitored per dedicated management group	12,000
URLs monitored per agent	50

Support for languages in addition to English

For supported languages, see [Language Support for System Center 2012 R2](#)

Support for different languages

If your systems run a language other than English, you can install Operations Manager for that language. You also have the option of installing English Operations Manager for your management group.

For example, if you use a German version of a Windows operating system on all your servers, you can install German Operations Manager features for your entire management group. If you have a German version of a Windows operating system on all your servers, you can optionally install English Operations Manager features for your entire management group.

Agents for different languages

If you use an English management group, you can monitor any Windows Operating System Locale type.

If you use another language, you can monitor Windows operating systems for English and that language. For instance, if you use a German management group, you can monitor only English and German Windows operating systems.

Console for different languages

Operations Manager consoles are language independent. For example, you can use an Italian Operations Manager console to connect to a German management group.

Supported network monitoring scenarios

Operations Manager supports monitoring of network devices that support Simple Network Management Protocol (SNMP). Port monitoring is available for devices that have implemented the interface MIB (RFC 2863) and MIB-II (RFC 1213) standards. In addition, peripheral monitoring, including processor and memory monitoring, is supported on a subset of devices. For more information, see [System Center Operations Manager 2012: Network Devices with Extended Monitoring Capability](#).

Operations Manager can identify connected devices in a recursive discovery that use an IPv6 address; however, the initial device that is discovered must use an IPv4 address.

For more information about supported network devices, see [Network Devices Supported for Discovery by Operations Manager 2012](#).

Application Performance Monitoring requirements

To view Application Performance Monitoring event details, you must install the Operations Manager web console. For more information, see [How to Install the Operations Manager Web Console](#).

Application Performance Monitoring requires the following software on the agent:

- .NET Framework 3.5, .NET Framework 3.5 SP1, .NET Framework 4, or .NET Framework 4.5.

Note

- Application monitoring built on .NET Framework 2.0 is supported, but the computer must have .NET Framework 3.5 installed for some parts of the agent to work correctly.
- Internet Information Services (IIS) 7.0 or Internet Information Services (IIS) 8.0. Application monitoring on a Microsoft Failover IIS configuration is not supported. However, application monitoring using load balancing is supported instead.
- ISAPI and CGI Restrictions in IIS be enabled for ASP.NET 4.0. To enable this, select the web server in IIS Manager, and then double-click **ISAPI and CGI Restrictions**. Select **ASP.NET v4.0.30319**, and then click **Allow**.

Additionally, you must start the SQL Server Agent service and set the startup type to automatic. This only refers to the SQL instance where SQL Reporting Services is installed to run report subscriptions.

Preparing your environment for System Center 2012 R2 Orchestrator

Here are the system requirements and considerations to keep in mind before you deploy System Center 2012 R2 Orchestrator.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

Before installing on a single computer

Here are the system requirements and considerations to keep in mind before you deploy System Center 2012 R2 Orchestrator on a single computer.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

Note

Installing Orchestrator on the same computer as a domain controller is not supported.

Hardware

Orchestrator requires supported hardware. For a list of the supported hardware for Orchestrator, see [Hardware Requirements for System Center 2012 R2](#).

Operating system

Orchestrator features require a supported operating system. For a list of the supported operating systems for each feature, see [Server Operating Systems in System Center 2012 R2](#).

Software

The following software is required for a full installation of Orchestrator on a single computer.

Requirement	Additional information
Microsoft SQL Server 2008 R2 or Microsoft SQL Server 2012	Orchestrator requires only the basic SQL Server features found in the Database Engine Service. No additional features are required. Orchestrator supports SQL_Latin1_General_CP1_CI_AS for collation. The installation wizard uses SQL_Latin1_General_CP1_CI_AS as the default collation to create the orchestration database. Management servers and runbook servers installed on the same computer must use the same database. The management server must run as a 32-bit application.
Microsoft Internet Information Services (IIS)	Setup enables the IIS role if it is not enabled.
Microsoft .NET Framework 3.5 Service Pack 1	Must be manually installed before running Setup
Microsoft .NET Framework 4.5 (see the procedure immediately following this table)	Also requires WCF HTTP Activation
Join the computer to an Active Directory domain	
Microsoft Silverlight 4	On first use of the Orchestration console, you are prompted to install Microsoft Silverlight 4 on

Requirement	Additional information
	the computer if it is not already installed.

► **To install .NET Framework 4.5 and HTTP Activation on Windows Server 2012**

1. On the Windows **Start** screen, click the **Server Manager** tile.
2. On the **Manage** menu in the Server Manager console, click **Add Roles and Features**.
3. Go through the wizard until you reach the **Features** page.
4. Expand **.NET Framework 4.5 Features**.
5. Select **.NET Framework 4.5** if it isn't already selected.
6. Expand **WCF Services**.
7. Select **HTTP Activation** if it isn't already selected.
8. Click **Next** and follow the prompts to finish the installation. If you have problems, check the issues covered in **Troubleshoot your Orchestrator Installation**.

Before a distributed installation

Here are the system requirements and considerations to keep in mind before you deploy individual features of System Center 2012 R2 Orchestrator.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

Management server requirements

Here are the system requirements and considerations to keep in mind before you deploy the Orchestrator management server.

Hardware

Orchestrator features require supported hardware. For a list of the supported hardware for each Orchestrator feature, see [Hardware Requirements for System Center 2012 R2](#).

Operating system

Orchestrator features require a supported operating system. For a list of the supported operating systems for each feature, see [Server Operating Systems in System Center 2012 R2](#).

Feature	Operating system
Management server	Windows Server 2008 R2 Windows Server 2012 Windows Server 2012 R2

Software

The following software must be deployed and available to install the Orchestrator management server:

Requirement	Additional information
Microsoft SQL Server 2008 R2 or Microsoft SQL Server 2012	<p>Orchestrator requires only the basic SQL Server features found in the Database Engine Service. No additional features are required.</p> <p>Orchestrator supports SQL_Latin1_General_CP1_CI_AS for collation. The installation wizard uses SQL_Latin1_General_CP1_CI_AS as the default collation to create the orchestration database.</p> <p>Management servers and runbook servers installed on the same computer must use the same database.</p> <p>The management server must run as a 32-bit application.</p>
Microsoft .NET Framework 3.5 Service Pack 1	Orchestrator Setup installs and enables .NET Framework 3.5 SP1 if it is not installed and enabled.

Runbook server requirements

Here are the system requirements and considerations to keep in mind before you deploy the Orchestrator runbook server.

Hardware

Orchestrator features require supported hardware. For a list of the supported hardware for each Orchestrator feature, see [Hardware Requirements for System Center 2012 R2](#).

Operating system

Orchestrator features require a supported operating system. For a list of the supported operating systems for each feature, see [Server Operating Systems in System Center 2012 R2](#).

Software

The following software must be deployed and available to install the Orchestrator runbook server:

Requirement	Additional information
The Orchestrator management server and database must be already deployed and functional.	
Microsoft .NET Framework 3.5 Service Pack 1	Must be manually installed before running Setup

Orchestrator web service requirements

Here are the system requirements and considerations to keep in mind before you deploy the Orchestrator web service.

Hardware

Orchestrator features require supported hardware. For a list of the supported hardware for each Orchestrator feature, see [Hardware Requirements for System Center 2012 R2](#).

Operating system

Orchestrator features require a supported operating system. For a list of the supported operating systems for each feature, see [Server Operating Systems in System Center 2012 R2](#).

Software

The following must be deployed and available to successfully install the Orchestrator web service:

Requirement	Additional information
The Orchestrator management server and database must be already deployed and functional.	
Microsoft Internet Information Services (IIS) 7.0	Setup enables the IIS role if it is not enabled.
Microsoft .NET Framework 3.5 Service Pack 1	Must be manually installed before running Setup
Microsoft .NET Framework 4.5 (see the procedure immediately following this table)	Also requires WCF HTTP Activation
Microsoft Silverlight 4	Microsoft Silverlight 4 is not required for the Orchestrator web service installation. It is

Requirement	Additional information
	required for any computer that runs the Orchestration console.

► **To install .NET Framework 4.5 and HTTP Activation on Windows Server 2012**

1. On the Windows **Start** screen, click the **Server Manager** tile.
2. On the **Manage** menu in the Server Manager console, click **Add Roles and Features**.
3. Go through the wizard until you reach the **Features** page.
4. Expand **.NET Framework 4.5 Features**.
5. Select **.NET Framework 4.5** if it isn't already selected.
6. Expand **WCF Services**.
7. Select **HTTP Activation** if it isn't already selected.
8. Click **Next** and follow the prompts to finish the installation. If you have problems, check the issues covered in **Troubleshoot your Orchestrator Installation**.

Runbook Designer requirements

Here are the system requirements and considerations to keep in mind before you deploy the Orchestrator Runbook Designer.

Hardware

Orchestrator features require supported hardware. For a list of the supported hardware for each Orchestrator feature, see [Hardware Requirements for System Center 2012 R2](#).

Operating system

The following table lists the supported operating systems for the Orchestrator Runbook Designer.

Feature	Operating system
Runbook Designer	Windows Server 2008 R2 Windows Server 2012 Windows Server 2012 R2 Windows 7, 32-bit or 64-bit

Software

The following software must be deployed and available to successfully install the Orchestrator Runbook Designer.

Requirement	Additional information
The Orchestrator management server and database must be already deployed and functional.	
Microsoft .NET Framework 3.5 Service Pack 1	Must be manually installed before running Setup

Running Orchestrator in an on-premises virtual machine

The system requirements for an System Center 2012 R2 Orchestrator installation in an on-premises virtual machine are the same as they are for Orchestrator on a physical computer. Orchestrator does not require a domain controller to be deployed with it.

Running Orchestrator in a Windows Azure virtual machine

System Center 2012 R2 Orchestrator runs on Windows Azure just as it does on physical computer systems.

Orchestrator was tested by Microsoft by installing and using it in a Windows Azure virtual machine. The testing concluded that Orchestrator was fully functional and operated exactly the same as it does on physical hardware. Stability and performance benchmarks inside a Windows Azure virtual machine were at a level where no special considerations were needed. Orchestrator does not require a domain controller to be deployed with it, and the virtual machine requirements do not differ from what is recommended for the product that is deployed in an on-premises virtual machine.

Other resources for this product

- [TechNet Library main page for System Center Orchestrator 2012](#)
- [System Center Orchestrator 2012 Deployment Guide](#)
- [Plan your Orchestrator Deployment](#)

Preparing your environment for System Center 2012 R2 Service Manager

Here are the system requirements and considerations to keep in mind before you deploy System Center 2012 R2 Service Manager.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#)

First things first

Before you begin, it's a good idea to get to know this information:

- [Release Notes for Service Manager in System Center 2012 R2](#) identifies any changes that could affect planning for a new deployment of System Center 2012 R2 Service Manager.
- If you want to deploy Service Manager in a test environment, see [Installing Service Manager on a Single Computer \(Minimum Configuration\)](#).

Minimum hardware

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

For System Center 2012 SP1 only: The hardware requirements for Service Manager in System Center 2012 Service Pack 1 (SP1) are unchanged from its initial release.

Hardware requirements table

Service Manager database	8-core 2.66 gigahertz (GHz) CPU 8 gigabytes (GB) of RAM for 20,000 users, 32 GB of RAM for 50,000 users (See Hardware Performance) 80 GB of available disk space RAID Level 1 or Level 10 drive*
Service Manager management server	4-Core 2.66 GHz CPU 8 GB of RAM (See Hardware Performance) 10 GB of available disk space
Service Manager console	2-core 2.0 GHz CPU 4 GB of RAM 10 GB of available disk space
Data warehouse management server	4-Core 2.66 GHz CPU 8 GB of RAM (See Hardware Performance) When a data warehouse management group

	<p>and SQL Server Analysis Services are hosted on a single server, it should contain at least 16 GB RAM.</p> <p>10 GB of available disk space</p>
Data warehouse databases	<p>8-core 2.66 GHz CPU</p> <p>8 GB of RAM for 20,000 users, 32 GB of RAM for 50,000 users (See Hardware Performance)</p> <p>400 GB of available disk space</p> <p>RAID Level 1 or Level (1+0) drive</p>
Self-Service Portal: Web Content Server with SharePoint Web Parts	<p>8-Core 2.66 GHz CPU</p> <p>8-core, 64-bit CPU for medium deployments</p> <p>16 GB of RAM for 20,000 users, 32 GB of RAM for 50,000 users (See Hardware Performance)</p> <p>80 GB of available hard disk space</p>

* For more information, see [RAID levels and Microsoft SQL Server](#).

** Hardware requirements are based on SharePoint specifications. For more information, see [Hardware and Software Requirements \(SharePoint Server 2010\)](#).

SQL Server

Check for updates and hotfixes for Microsoft SQL Server. See [SQL Server in System Center 2012 R2](#).

SQL Server considerations for Service Manager:

RAM: 4 GB minimum, 8 GB recommended

Disk: As per the Service Manager Sizing Helper Tool recommendations - see [Planning for Performance and Scalability in System Center 2012 - Service Manager](#)

Features Required: Database Engine Services, Full-Text for Search, Reporting Services, Analysis Services

Collations Supported: SQL_Latin1_General_CP1_CI_AS, Latin1_General_100_CI_AS. Also see [Support for languages in addition to English](#).

Dynamic Port Support: Yes

AlwaysOn Support: Supported

Coexistence: Cannot be installed with Data Protection Manager or Operations Manager. Should not be installed with Virtual Machine Manager on the same computer, to avoid potential performance problems.

For a sizing tool for Service Manager, see specific information in topic [Planning for Performance and Scalability in System Center 2012 - Service Manager](#).

Requirements for Service Manager features

Requirements for Service Manager vary by the feature you choose to install. Feature include:

- Service Manager management server
- Service Manager data warehouse management server
- Service Manager or data warehouse databases
- Stand-alone Service Manager console
- Self-Service Portal web content server
- Self-Service Portal SharePoint web parts
- Self-Service Portal web console

Service Manager management server

The Service Manager management server handles all the workflows in your Service Manager environment. It also manages the Service Manager database, which is a repository for configuration items—a type of configuration management database (CMDB). Service Manager consoles connect to the Service Manager management server.

Software requirements

Before you install the System Center 2012 R2 Service Manager management server, you must install the following software.

Software	Notes
A supported operating system	For more information, see Supported operating systems in this topic.
Microsoft .NET Framework 3.5 SP1	Microsoft .NET Framework 3.5 SP1 is required for running Service Manager. Microsoft .NET Framework 3.5 SP1 is included with the Service Manager installation media.
ADO.NET Data Services Update for .NET Framework 3.5 SP1 for Windows Server 2008 R2	To obtain the ADO.NET Data Services update, you can download it at ADO.NET Data Services Update for .NET Framework 3.5 SP1 for Windows 7 and Windows Server 2008 R2 .
A supported version of SQL Server	For more information about the supported versions of SQL Server and required configuration, see SQL Server support .
SQL Server 2008 R2 Native Client or SQL Server 2012 Native client	The SQL Server Native Client is contained in the SQL Server Feature Packs, available at Microsoft® SQL Server® 2008 R2 Feature Pack and Microsoft® SQL Server® 2012

Software	Notes
	Feature Pack.
SQL Server 2012 Analysis Management Objects	SQL Server 2012 Analysis Management Objects are required regardless of the SQL Server version that you use to support the Service Manager console with SQL Server Analysis Server. Microsoft SQL Server 2012 Analysis Management Objects is a part of the SQL Server 2012 Feature Pack, available at Microsoft® SQL Server® 2012 Feature Pack.
Microsoft Report Viewer Redistributable	The Microsoft Report Viewer Redistributable is available with the Service Manager media. For more information, see How to Install the Microsoft Report Viewer Redistributable Security Update in the Deployment Guide for System Center 2012 – Service Manager.
Optional: Excel 2007 or later	You must have Microsoft Excel 2007 or later installed in order to view OLAP data cubes on the computer running a Service Manager console.

Supported operating systems

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Windows Server 2012 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2012 R2 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2008 R2 SP1	Standard and Datacenter	Service Pack 1	X64

Additional information

- Service Manager has the capability to import alerts and configuration items from your Operations Manager 2007 environment. You must have Operations Manager 2012, Operations Manager 2007 SP1, or Operations Manager 2007 R2 installed to work with Service Manager.
- You cannot use Operations Manager 2007 SP1 to monitor Service Manager management servers. You must use Operations Manager 2007 R2 or Operations Manager 2012.
- If you plan to install both Service Manager and Operations Manager 2007 in the same environment, see [Operations Manager Considerations in System Center 2012 - Service Manager](#).
- Service Manager can import configuration items from your Microsoft System Center Configuration Manager 2007 environment. You must have Configuration Manager 2007 SP1, Configuration Manager 2007 R2, Configuration Manager 2012, or Configuration Manager 2012 R2 installed to work with Service Manager.
- You must have access to a Simple Mail Transfer Protocol (SMTP) server to use the Notification feature and for incident creation through email.
- You can view external content from within knowledge articles. To view external content, computers that host the Service Manager console must have Internet access, either directly or through a proxy server.
- Service Manager does not operate and the services used by Service Manager do not start if Windows is running in safe mode. If you attempt to start the Service Manager services manually while in safe mode, the services fail to start and an error is written into the event log.

Service Manager data warehouse management server

The Service Manager data warehouse management server manages the data warehouse databases. It is used to store long-term historical data and it is optimized for reporting. You can use a variety of reporting methods to view and analyze Service Manager data.

Software requirements

Before you install the System Center 2012 R2 Service Manager data warehouse management server, you must install the following software.

Software	Notes
A supported operating system	For more information, see Supported operating systems in this topic.
Microsoft .NET Framework 3.5 SP1	Microsoft .NET Framework 3.5 SP1 is required for running Service Manager. Microsoft .NET Framework 3.5 SP1 is included with the Service Manager installation media.

Software	Notes
ADO.NET Data Services Update for .NET Framework 3.5 SP1 for Windows Server 2008 R2	To obtain the ADO.NET Data Services update, you can download it at ADO.NET Data Services Update for .NET Framework 3.5 SP1 for Windows 7 and Windows Server 2008 R2 .
A supported version of SQL Server	For more information about the supported versions of SQL Server and required configuration, see SQL Server support .
SQL Server Analysis Services	SQL Server Analysis Services (SSAS) is included with the version of SQL Server that you're using. For more information about SSAS, see Analysis Services .
SQL Server Reporting Services	SQL Server Reporting Services (SSRS) is included with the version of SQL Server that you're using.
SQL Server 2008 R2 Native Client or SQL Server 2012 Native client	The SQL Server Native Client is contained in the SQL Server Feature Packs, available at Microsoft® SQL Server® 2008 R2 Feature Pack and Microsoft® SQL Server® 2012 Feature Pack .
SQL Server 2012 Analysis Management Objects	SQL Server 2012 Analysis Management Objects are required regardless of the SQL Server version that you use to support the Service Manager console with SQL Server Analysis Server. Microsoft SQL Server 2012 Analysis Management Objects is a part of the SQL Server 2012 Feature Pack, available at Microsoft® SQL Server® 2012 Feature Pack .

Supported operating systems

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Windows Server 2012 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Windows Server 2012 R2 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2008 R2 SP1	Standard and Datacenter	Service Pack 1	X64

Additional information

- You cannot use Operations Manager 2007 SP1 to monitor Service Manager management servers. You must use Operations Manager 2007 R2 or Operations Manager 2012.
- If you plan to install both Service Manager and Operations Manager 2007 in the same environment, see [Operations Manager Considerations in System Center 2012 - Service Manager](#).
- Service Manager does not operate and the services used by Service Manager do not start if Windows is running in safe mode. If you attempt to start the Service Manager services manually while in safe mode, the services fail to start and an error is written into the event log.

Service Manager or data warehouse databases

You can install the Service Manager and data warehouse databases on dedicated servers to optimize performance or storage.

Software requirements

The following software is needed to support the databases.

Software	Notes
A supported operating system	For more information, see Supported operating systems in this topic.
A supported version of SQL Server	For more information about the supported versions of SQL Server and required configuration, see SQL Server support .
SQL Server Analysis Services	Required only for the data warehouse database server. SQL Server Analysis Services (SSAS) is included with the version of SQL Server that you're using. For more information about SSAS, see Analysis Services . The SQL Server and Analysis

Software	Notes
	Services collation settings must be compatible between the Service Manager data warehouse and SSAS. The collation used must be the same for the computers hosting the Service Manager database, data warehouse database, analysis services database, and Reporting Services database.
SQL Server Reporting Services	<p>Required only for the data warehouse database server. SQL Server Reporting Services (SSRS) is included with the version of SQL Server that you're using.</p> <p>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 Service Manager for System Center 2012 Deployment Guide.</p>
SQL Server 2008 R2 Native Client or SQL Server 2012 Native client	The SQL Server Native Client is contained in the SQL Server Feature Packs, available at Microsoft® SQL Server® 2008 R2 Feature Pack and Microsoft® SQL Server® 2012 Feature Pack .
SQL Server 2012 Analysis Management Objects	SQL Server 2012 Analysis Management Objects are required regardless of the SQL Server version that you use to support the Service Manager console with SQL Server Analysis Server. Microsoft SQL Server 2012 Analysis Management Objects is a part of the SQL Server 2012 Feature Pack, available at Microsoft® SQL Server® 2012 Feature Pack .

Supported operating systems

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Windows Server 2012 (Server with a GUI and Server Core)	Standard and Datacenter	Not applicable	x64

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Installation options)			
Windows Server 2012 R2 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2008 R2 SP1	Standard and Datacenter	Service Pack 1	X64

SQL Server support

Service Manager is supported with the following versions of SQL Server:

- SQL Server 2008 R2 SP1 Standard, Datacenter
- SQL Server 2008 R2 SP2 Standard, Datacenter
- SQL Server 2012 Enterprise, Standard (64-bit)
- SQL Server 2012 SP1 Enterprise, Standard (64-bit)

SQL Server configuration

Use the following configuration with your version of SQL Server:

- SQL Server full-text search: Full-text search must be selected during installation on the computers running SQL Server that will host the Service Manager and data warehouse databases.
- SQL Server configured to use case-insensitive databases.
- Service Account configured in accordance with your organization's requirements.
- The 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](#).
- Ensure that you use the same collation in SQL Server and Analysis Services on the computers that host the Service Manager database, the data warehouse database, and the analysis services database. For more information about SQL Server collations, see [Using SQL Server Collations](#).

If your SQL Server installation is using the default collation (SQL_Latin1_General_CP1_CI_AS), a warning message appears, stating that the collation is not one of the supported collations for Service Manager and that an unsupported collation can cause unpredictable behavior in multilingual environments.

Caution

Support for languages other than English in Service Manager is not possible when you are using the collation SQL_Latin1_General_CP1_CI_AS. If later you decide to support multiple languages using a different collation, you have to reinstall SQL Server. There are

no issues with using the SQL_Latin1_General_CP1_CI_AS collation with the English-only installations of Service Manager. SQL_Latin1_General_CP1_CI_AS is supported despite the warning message in setup. It is generally used for installations where the Service Manager databases will share a SQL Server instance with other System Center components which must be installed on SQL_Latin1_General_CP1_CI_AS, most notably Operations Manager. If Service Manager will be installed on its own SQL Server instance, it is recommended to use the newer and more complete collation Latin1_General_100_CP1_CI_AS. For more information about language support, see [Support for languages in addition to English](#).

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

Additional information

- If you plan to install both Service Manager and Operations Manager 2007 in the same environment, see [Operations Manager Considerations in System Center 2012 - Service Manager](#).
- Service Manager does not operate and the services used by Service Manager do not start if Windows is running in safe mode. If you attempt to start the Service Manager services manually while in safe mode, the services fail to start and an error is written into the event log.

Service Manager console

The Service Manager console is the management interface that you use to conduct your day-to-day service desk tasks with Service Manager. The Service Manager console is the only Service Manager component that you can install on a non-server operating system.

Software requirements

Before you install the Service Manager console, you must install the following software.

Software	Notes
A supported operating system	For more information, see Supported operating systems in this topic.
Microsoft .NET Framework 3.5 SP1	Microsoft .NET Framework 3.5 SP1 is required for running Service Manager. Microsoft .NET Framework 3.5 SP1 is included with the Service Manager installation media.
ADO.NET Data Services Update for .NET Framework 3.5 SP1 for Windows Server 2008 R2	To obtain the ADO.NET Data Services update, you can download it at ADO.NET Data Services Update for .NET Framework 3.5 SP1

Software	Notes
	for Windows 7 and Windows Server 2008 R2.
SQL Server 2012 Analysis Management Objects	SQL Server 2012 Analysis Management Objects are required regardless of the SQL Server version that you use to support the Service Manager console with SQL Server Analysis Server. Microsoft SQL Server 2012 Analysis Management Objects is a part of the SQL Server 2012 Feature Pack, available at Microsoft® SQL Server® 2012 Feature Pack.
Microsoft Report Viewer Redistributable	The Microsoft Report Viewer Redistributable is available with the Service Manager media. For more information, see How to Install the Microsoft Report Viewer Redistributable Security Update in the Deployment Guide for System Center 2012 – Service Manager.
Optional: Excel 2007 or later	You must have Microsoft Excel 2007 or later installed in order to view OLAP data cubes on the computer running the Service Manager console.

Supported operating systems

The Service Manager console in System Center 2012 R2 Service Manager is supported on the following operating systems:

- Windows® 7
- Windows® 8
- Windows® 8.1
- Windows Server® 2008 R2
- Windows Server® 2012
- Windows Server® 2012 R2 Standard, Datacenter

Self-Service Portal web content server

The Self-Service Portal web content server is one of the Service Manager components that are used to support the Self-Service Portal. It is a web application that forms the interface between the Silverlight application and the Service Manager database. The web content server provides a path for data from the Service Manager database to the Silverlight-based application that is running in the browser.

Software requirements

Before you install the Self-Service Portal: Web Content server, you must install the following software.

Software	Notes
A supported operating system	For more information, see Supported operating systems in this topic.
Microsoft .NET Framework 3.5 SP1	Microsoft .NET Framework 3.5 SP1 is required for running Service Manager. Microsoft .NET Framework 3.5 SP1 is included with the Service Manager installation media.
Microsoft .NET Framework 4.0	
Microsoft Internet Information Services (IIS) 7 or later	IIS must be configured with IIS 6 metabase compatibility installed.
Optional: Secure Sockets Layer (SSL) certificate	You can use the SSL certificate on the IIS server that hosts the Self-Service Portal.

Supported operating systems

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Windows Server 2012 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2012 R2 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2008 R2 SP1	Standard and Datacenter	Service Pack 1	X64

Self-Service Portal SharePoint web parts

The SharePoint server hosts the web parts for the Self-Service Portal.

Software requirements

Before you install the System Center 2012 R2 Service Manager Self-Service Portal SharePoint web parts, you must install the following software.

Software	Notes
A supported operating system	For more information, see Supported operating systems in this topic.
Microsoft .NET Framework 3.5 SP1	Microsoft .NET Framework 3.5 SP1 is required for running Service Manager. Microsoft .NET Framework 3.5 SP1 is included with the Service Manager installation media.
Microsoft .NET Framework 4.0	
One of the following versions of Microsoft SharePoint: <ul style="list-style-type: none"> • Microsoft SharePoint Foundation 2010 SP2 • Microsoft SharePoint Server 2010 SP2 • Microsoft SharePoint 2010 SP2 for Internet Sites Enterprise 	<p>If your Service Manager database uses SQL Server 2012, then you must have Service Pack 2 or later applied to your SharePoint 2010 installation.</p> <p>SharePoint 2013 is not supported on the server hosting the SharePoint Web Parts.</p> <p>You must install the English language pack in non-English SharePoint installations so that the Self-Service Portal installs correctly.</p>
Excel Services in SharePoint	Excel Services in SharePoint Server 2010 is required for hosting dashboards for advanced analytical reports. For more information about installing and configuring Excel Services, see Configure Excel Services for a BI test environment .

Supported operating systems

For Service Manager in System Center 2012 R2	Edition	Service pack	System architecture
Windows Server 2012 (Server with a GUI and Server Core Installation options)	Standard and Datacenter	Not applicable	x64
Windows Server 2012 R2 (Server with a GUI)	Standard and	Not applicable	x64

For Service Manager in System Center 2012 R2 and Server Core Installation options)	Edition	Service pack	System architecture
Windows Server 2008 R2 SP1	Standard and Datacenter	Service Pack 1	X64

Additional information

- Software requirements for SharePoint Web Parts for the Self-Service Portal are based on Microsoft SharePoint Server 2010 specifications. For more information, see [Hardware and Software Requirements \(SharePoint Server 2010\)](#).

Self-Service Portal web console

Use this information to evaluate if your Microsoft SilverLight and Internet Explorer environments are ready to support the Self-Service Portal in System Center 2012 R2 Service Manager.

SilverLight 4	SilverLight 5	Internet Explorer 8	Internet Explorer 9	Internet Explorer 10	Internet Explorer 11
•	•	•	•	•	•

This information does not apply to System Center 2012 Configuration Manager. For those system requirements, see <http://go.microsoft.com/fwlink/p/?LinkId=248315>

Support for languages in addition to English

It is assumed in this guide that you are installing System Center 2012 – Service Manager on a computer where no previous version of Service Manager is installed. For information about upgrading Service Manager, see the [Upgrade Guide for Service Manager 2012 - System Center](#).

Including English, System Center 2012 – Service Manager supports a total of 21 languages. There are some search-related issues with six languages: Czech, Danish, Finnish, Greek, Polish, and Turkish. For more information about these issues, see the section "Search Issues" in this topic.

Setting your Windows locale on a computer that hosts a Service Manager console to one of the supported languages results in Service Manager being displayed in that language. In addition to the languages that Service Manager supports, you must also consider the ability to search and sort data in the Service Manager databases. The ability to search and sort data in a specific language is defined by the collation settings in Microsoft SQL Server.

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

Windows locale	Collation
English	Latin1_General_100_CI_AS
English	SQL_Latin1_General_CP1_CI_AS
English	Latin1_General_CI_AS
Chinese_PRC	Chinese_Simplified_Pinyin_100_CI_AS
Chinese (Traditional, Taiwan)	Chinese_Traditional_Stroke_Count_100_CI_AS
Czech (Czech Republic)	Czech_100_CI_AS
Danish (Denmark)	Danish_Norwegian_CI_AS
Dutch (Netherlands)	Latin1_General_100_CI_AS
Finnish (Finland)	Finnish_Swedish_100_CI_AS
French	French_100_CI_AS
German_Standard	Latin1_General_100_CI_AS
Greek (Greece)	Greek_100_CI_AS
Hungarian	Hungarian_100_CI_AS
Italian_Standard	Latin1_General_100_CI_AS
Japanese	Japanese_XJIS_100_CI_AS
Korean	Korean_100_CI_AS
Norwegian (Bokmål, Norway)	Norwegian_100_CI_AS
Polish (Poland)	Polish_100_CI_AS
Portuguese (Brazil)	Latin1_General_100_CI_AS
Portuguese (Portugal)	Latin1_General_100_CI_AS
Russian	Cyrillic_General_100_CI_AS
Spanish_Modern_Sort	Modern_Spanish_100_CI_AS
Swedish (Sweden)	Finnish_Swedish_100_CI_AS
Turkish (Turkey)	Turkish_100_CI_AS

Search issues

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

Greek, Czech, and Finnish languages

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

Danish, Polish, and Turkish languages

Full-text search does not function in SQL Server 2008 or SQL Server 2008 R2 for these languages. You can load a licensed third-party word breaker that enables full-text search to function correctly. If you have Service Manager consoles using the Danish, Polish, or Turkish languages, regardless of the language collation that you have selected for your SQL Server installation, you have to install a third-party word breaker.

For more information, see the following links for the version of SQL Server that you are using:

- [SQL Server 2008](#)
- [SQL Server 2008 R2](#)

Turkish language

None of the Turkish collations is supported in Service Manager. 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 will be affected for some Turkish characters.

Port assignments for firewalls

As part of your security infrastructure, you may want to keep track of port numbers that are used throughout your System Center 2012 – Service Manager 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 piece A	Port number and direction	Service Manager piece B
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
Service Manager management server	1433 --->	Configuration Manager Connector
Data warehouse management server	1433 --->	Remote data warehouse database server
Data warehouse management server	1433 --->	Remote Service Manager database server
Data warehouse management server	2383 --->	SQL Server Analysis Services**
SQL reporting service server	1433 --->	Remote data warehouse database server
Web browser	80 --->	SQL Server Reporting Services (SSRS)
Web browser	[setup***] --->	SharePoint Web Parts server
Web browser	[setup***] --->	Web content server
Web content server	1433 --->	Service Manager database

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

** Port 2383 is the default port for SQL Server Analysis Services (SSAS). However, the port number can be changed. For more information, see [Configure Windows Firewall for Analysis Services Access](#).

*** The port number that is used between the browser and the SharePoint Web Parts server and the web content server is configured during installation of the Self-Service Portal.

Preparing your environment for System Center 2012 R2 Service Provider Foundation

Here are the system requirements and considerations to keep in mind before you deploy Service Provider Foundation.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#).

First things first

The two main products that Service Provider Foundation requires are System Center 2012 R2 Virtual Machine Manager and SQL Server. Please note:

- Only the VMM Console must be on the same server as Service Provider Foundation but the VMM Management Server can be on a different server. You can also have them all on the same server. The SQL Server database can be on any server, as only the server name and port number of the SQL Server installation are needed to install Service Provider Foundation.
- If you plan to implement usage metering to manage tenant costs, you will need an System Center 2012 R2 Operations Manager server and an Operations Manager Data Warehouse server.

Operating systems

See [Server Operating System Requirements for System Center 2012 R2](#).

Server Manager

Server Manager Features	Server Manager Roles
<ul style="list-style-type: none">• Management OData Internet Information Services (IIS) Extension• .NET Framework 4.5 features, WCF Services, and HTTP Activation.	<ul style="list-style-type: none">• Web Server (IIS) server. Include the following services:<ul style="list-style-type: none">• Basic Authentication• Windows Authentication• Application Deployment ASP.NET 4.5• Application Development ISAPI Extensions• Application Deployment ISAPI Filters• IIS Management Scripts and Tools Role Service

SQL Server and database storage

Although it's not required to install Service Provider Foundation, SQL Server is required on at least one server to contain the Service Provider Foundation database. 5 GB is sufficient storage for even large databases. Only the name and port for a SQL Server installation are required. See [SQL Server Requirements for System Center 2012 R2](#).

Hardware

See [Hardware Requirements for System Center 2012 R2](#).

Web services

Install the following from the Microsoft Download Center:

- [WCF Data Services 5.0 for OData V3](#)
- [ASP.NET MVC 4](#)

Virtual Machine Manager

You must have System Center 2012 R2 Virtual Machine Manager in your environment, but you only need Virtual Machine Manager Console on the server where you install Service Provider Foundation .

Certificates

You must obtain an SSL server certificate, or you can choose to have a test certificate automatically generated during setup.

See Also

[System Requirements for System Center 2012 R2](#)

How to Install Service Provider Foundation for System Center 2012 R2

Preparing your environment for System Center 2012 R2 Virtual Machine Manager

Here are the system requirements and considerations to keep in mind before you deploy System Center 2012 R2 Virtual Machine Manager.

If you're evaluating your environment, see [System Requirements for System Center 2012 R2](#).

VMM management server

- The computer on which you install the VMM management server must be a member of an Active Directory domain.
- The management server's computer name cannot exceed 15 characters.
- If you use the VMM management server also as a library server, then you must provide additional hard disk space to store objects. For more information about the requirements for a VMM library server, see [System Requirements: VMM Library Server](#).
- If you install the VMM management server on a virtual machine and you use the Dynamic Memory feature of Hyper-V, then you must set the startup RAM for the virtual machine to be at least 2,048 megabytes (MB).
- For better performance when you manage more than 150 hosts, we recommend that you use a dedicated computer for the VMM management server and do the following:
 - Add one or more remote computers as library servers, and do not use the default library share on the VMM management server.
 - For the VMM database, do not use a SQL Server instance that runs on the same computer on which you install the VMM management server.
- You can use VMM to install a highly available VMM management server on a failover cluster that runs any supported operating system.

For information about how to install a VMM management server, see [Installing a VMM Management Server](#) and [Installing a Highly Available VMM Management Server](#).

VMM console

The computer on which you install the VMM console must be a member of an Active Directory domain.

For information about how to install the VMM console, see [Installing and Opening the VMM Console](#).

SQL Server and database

- The instance of SQL Server that you are using must allow for case-insensitive database objects.
- The SQL Server's computer name cannot exceed 15 characters in length.
- If the VMM management server and the SQL Server computer are not members of the same Active Directory domain, then a two-way trust must exist between the two domains.
- When you install SQL Server, select the **Database Engine Services** and **Management Tools - Complete** features.
- For the VMM database, better performance is achieved when you store the database on a separate disk from the one that is used for the operating system.
- If you are using Software Defined Networking (SDN) in VMM, then all networking information is stored in the VMM database. As such, you need to consider the following best practices for this database:

- Use failover clustering. For more information, see [AlwaysOn Failover Cluster Instances \(SQL Server\)](#).
- Use the AlwaysOn feature. For more information, see [Getting Started with AlwaysOn Availability Groups \(SQL Server\)](#). If you are deploying VMM to a failover cluster, read the Word document [SQL Server 2012 AlwaysOn: Multisite Failover Cluster Instance](#).
- You do not need to configure collation. During deployment, Setup automatically configures CI collation according to the language of the server operating system.
- Dynamic port is supported.

For detailed information about SQL Server and System Center R2, see [SQL Server in System Center 2012 R2](#).

VMM library

The library server is where VMM stores files such as virtual machine templates, virtual hard disks, virtual floppy disks, ISO images, scripts and stored virtual machines are stored. The optimal hardware requirements that are specified for a System Center 2012 – Virtual Machine Manager (VMM) library server vary, depending on the quantity and size of these files. You will need to check CPU usage, and other system state variables to determine what best works in your environment.

- The .vhdx file format is supported only as of VMM library servers that are running Windows Server 2012.
- VMM does not provide a method for replicating physical files in the VMM library or a method for transferring metadata for objects that are stored in the VMM database. Instead, if necessary, you need to replicate physical files outside of VMM, and you need to transfer metadata by using scripts or other means.
- VMM does not support file servers that are configured with the case-sensitive option for Windows Services for UNIX, because the Network File System (NFS) case control is set to **Ignore**. For more information about the NFS case control, see [Windows Services for UNIX 2.0 NFS Case Control](#).

For more information about library servers in VMM, see [Configuring the VMM Library](#).

Virtual machine hosts

Virtual Machine Manager (VMM) supports Microsoft Hyper-V, VMware ESX, and Citrix XenServer as virtual machine hosts:

Hyper-V hosts

Virtual Machine Manager (VMM) supports the following versions of Hyper-V.

Operating system	Edition	Service pack	System architecture
Hyper-V Server 2008	N/A	Service Pack 1	x64

Operating system	Edition	Service pack	System architecture
R2			
Windows Server 2008 R2 (Hyper-V server role) (full installation or Server Core-MiniShell installation)	Standard, Enterprise, and Datacenter	Service Pack 1	x64
Hyper-V Server 2012	N/A	N/A	X64
Windows Server 2012 (Hyper-V server role) (full installation or Server Core installation)	Standard and Datacenter	N/A	X64
Hyper-V Server 2012 R2	N/A	N/A	X64
Windows Server 2012 R2 (Hyper-V server role)	Standard or Datacenter	N/A	X64

For more information about:

- Which guest operating systems are supported by Hyper-V - See [Hyper-V Overview-Software requirements \(for supported guest operating systems\)](#).
- How to manage Hyper-V hosts in VMM - See [Adding and Managing Hyper-V Hosts and Host Clusters in VMM](#).

VM Ware ESX hosts

VMM supports the following VMware virtualization software:

Software	Notes
vCenter Server: <ul style="list-style-type: none"> • VMware vCenter Server 4.1 • VMware vCenter Server 5.0 • VMware vCenter Server 5.1 	For more information about the requirements for vCenter Server, refer to the VMware product documentation.
Virtual machine hosts and host clusters that run any of the following versions of VMware: <ul style="list-style-type: none"> • VMware ESXi 5.0 	The host or host clusters must be managed by a vCenter Server, which is managed by VMM.

Software	Notes
<ul style="list-style-type: none"> VMware ESXi 5.1 VMware ESXi 4.1 VMware ESX 4.1 	

For more information, see [Managing VMware ESX Hosts Overview](#).

Citrix XenServer hosts

The following software is required for a host that runs Citrix virtualization software.

- Citrix XenServer 6.0
- Citrix XenServer 6.1
- Citrix XenServer – Microsoft System Center Integration Pack

For more information about:

- Requirements for XenServer – See the Citrix product documentation.
- Citrix XenServer – Microsoft System Center Integration Pack - See [Citrix XenServer – Microsoft System Center Integration Pack](#).
- Citrix XenServer in general - See [Managing Citrix XenServer Overview](#).



Note

All information and content at <http://www.citrix.com> is provided by the owner or the users of the website. Microsoft makes no warranties, express, implied, or statutory, as to the information at this website.

Hyper-V host deployment to a bare-metal computer

You can use VMM to find physical computers on the network and then automatically install the Windows operating system on these computers and convert them into managed Hyper-V hosts. Such physical computers can be computers on which no operating system is installed, often referred to as “bare-metal” computers. Or these can be a computers on which you want to overwrite an existing operating system.

For more information, see **Adding Physical Computers as Hyper-V Hosts Overview**.

System role	System requirement
Physical computer to be discovered	Must have a baseboard management controller (BMC) with a supported out-of-band management protocol. VMM supports the following out-of-band management protocols: <ul style="list-style-type: none"> Intelligent Platform Management Interface

System role	System requirement
	<p>(IPMI) versions 1.5 or 2.0</p> <ul style="list-style-type: none"> • Data Center Management Interface (DCMI) version 1.0 • System Management Architecture for Server Hardware (SMASH) version 1.0 over WS-Management (WS-Man) • Custom protocols such as Integrated Lights-Out (iLO). <p>Make sure that you use the latest version of firmware for the baseboard management controller (BMC) model.</p>
<p>PXE Server that is used to initiate the operating system installation on the physical computer.</p>	<ul style="list-style-type: none"> • A computer that runs Windows Server 2008 R2 with the Windows Deployment Services role installed. • A computer that runs Windows Server 2012 with the Windows Deployment Services role installed. • A computer that runs Windows Server 2012 R2 with the Windows Deployment Services role installed. <p>The PXE server needs to be in the same subnet as the out-of-band computer.</p>
<p>Image operating system</p>	<ul style="list-style-type: none"> • A Windows Server 2008 R2 Service Pack 1 operating system image. • A Windows Server 2012 operating system image. • Windows Server 2012 R2 operating system image. <p>The operating system image must support the option to boot from virtual hard disk.</p> <p>You can create the virtual hard disk by running the System Preparation Tool (Sysprep.exe). Use Sysprep.exe with both the /generalize and the /oobe options on a virtual machine that runs the operating system that will be on the image.</p>

Update management

In VMM you can use a Windows Server Update Services (WSUS) server to manage updates for the following computers in your VMM environment:

- Virtual machine hosts
- Library servers
- VMM management server
- PXE servers
- The WSUS server
- Infrastructure servers running Windows Server 2012 R2.

You can configure the update baselines, scan computers for compliance, and perform update remediation.

Supported WSUS servers	Notes
<ul style="list-style-type: none"> • A 64-bit edition of Windows Server Update Services (WSUS) 3.0 Service Pack 2 (SP2) • A 64-bit edition of Windows Server Update Services (WSUS) server role on Windows Server 2012 • A 64-bit edition of Windows Server Update Services (WSUS) server role for Windows Server 2012 R2 	<ul style="list-style-type: none"> • For information about WSUS system requirements and to download WSUS 3.0 SP2, see Windows Server Update Services 3.0 SP2 on the Microsoft Download Center.  Important If you use WSUS 3.0 SP2 to enable updates for Windows Server 2012 hosts, then you must apply KB2734608. Make sure that you carefully read the Known Issues for this update as they apply to VMM. • On Windows Server 2012 and Windows Server 2012 R2, WSUS is an integrated server role. • VMM supports using a WSUS server that is part of a Configuration Manager 2007 R2 or System Center 2012 Configuration Manager environment, but additional configuration steps are required. For more information, see How to Integrate Fabric Updates with Configuration Manager.

- The operating system requirement for the server on which WSUS is running is Windows Server 2008 R2 Service Pack 1 or later.
- There must be full trust between the WSUS management server and the VMM management server domains.

- VMM can use either a WSUS root server or a downstream WSUS server. VMM does not support using a WSUS replica server.
- The WSUS server can either be dedicated to VMM or can be a WSUS server that is already in use in your environment.
- If VMM will process a very large volume of updates, consider installing the WSUS server on a separate computer from the VMM management server.
- VMM can also work with System Center Updates Publisher, but only full content updates are supported. Metadata-only updates cannot be added to an update baseline.

For more information about update management in VMM, see [Managing Fabric Updates in VMM](#).

Monitoring and reporting

VMM can monitor the health and performance of virtual machines and their hosts. To do so, VMM integrates with Operations Manager and enables Performance and Resource Optimization (PRO). VMM also provides the capability to use the reporting functionality of Operations Manager. To use the forecasting reports, SQL Server Analysis Services must be installed on the Operations Manager reporting server.

VMM in System Center 2012 R2 supports Operations Manager in System Center 2012 R2 only.

Requirements:

- The version of Analysis Services must be SQL Server Analysis Services 2008 SP2 or later.
- The version of the Operations Manager operations console that is installed on the VMM management server must match the version of Operations Manager with which you intend to integrate.
- The version of the Operations Manager agent should be supported by the respective version of Operations Manager.

For more information, see [Configuring Operations Manager Integration with VMM](#).