

System Center Management Pack for Windows Server 2012 R2 and Earlier Operating Systems

Microsoft Corporation

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Contents

[System Center Management Pack for Windows Server 2012 R2 and Earlier Operating Systems 6](#_Toc467773459)

[Changes in Version 6.0.7326.0 10](#_Toc467773460)

[Changes in Version 6.0.7323.0 10](#_Toc467773460)

[Changes in Version 6.0.7316.0 10](#_Toc467773461)

[Changes in Version 6.0.7310.0 11](#_Toc467773462)

[Changes in Version 6.0.7303.0 12](#_Toc467773463)

[Changes in Version 6.0.7297.0 12](#_Toc467773464)

[Changes in Version 6.0.7296.0 12](#_Toc467773465)

[Changes in Version 6.0.7294.0 12](#_Toc467773466)

[Changes in Version 6.0.7292.0 13](#_Toc467773467)

[Changes in Version 6.0.7230.0 13](#_Toc467773468)

[Changes in Version 6.0.7061.0 13](#_Toc467773469)

[Changes in Version 6.0.7043.0 13](#_Toc467773470)

[Changes in Version 6.0.7026.0 14](#_Toc467773471)

[Changes in Version 6.0.6989.0 14](#_Toc467773472)

[Changes in Version 6.0.6972.0 14](#_Toc467773473)

[Changes in Version 6.0.6958.0 16](#_Toc467773474)

[Changes in Version 6.0.6957.0 16](#_Toc467773475)

[Changes in Version 6.0.6794.0 16](#_Toc467773476)

[Changes in Version 6.0.6667.0 17](#_Toc467773477)

[Changes in Version 6.0.6321.5 18](#_Toc467773478)

[Changes in Version 6.0.6278.22 18](#_Toc467773479)

[Supported Configurations 18](#_Toc467773480)

[Getting Started 19](#_Toc467773481)

[Before You Import the Management Pack 19](#_Toc467773482)

[Files in This Management Pack 19](#_Toc467773483)

[Recommended Additional Management Packs 23](#_Toc467773484)

[Other Requirements 23](#_Toc467773485)

[How to Import the Management Pack 23](#_Toc467773486)

[Create a New Management Pack for Customizations 23](#_Toc467773487)

[Optional Configuration 24](#_Toc467773488)

[Monitoring Physical Disks and Disk Partitions 24](#_Toc467773489)

[Monitoring Logical and Physical Disks 25](#_Toc467773490)

[Management Processors (Windows Server 2003/2008/2012) 28](#_Toc467773491)

[Monitoring Network Adapter 33](#_Toc467773492)

[Monitoring Memory Utilization 33](#_Toc467773493)

[Probe Module: IsFeatureInstalled 34](#_Toc467773494)

[Monitoring Software Installation Failures 37](#_Toc467773495)

[Security Considerations 37](#_Toc467773496)

[Low-Privilege Environments 37](#_Toc467773497)

[Computer Groups 38](#_Toc467773498)

[Understanding Management Pack Operations 40](#_Toc467773499)

[Objects the Management Pack Discovers 40](#_Toc467773500)

[Classes 42](#_Toc467773501)

[How Health Rolls Up 45](#_Toc467773502)

[Viewing Information in the Operations Console 50](#_Toc467773503)

[Key Monitoring Scenarios 51](#_Toc467773504)

[Troubleshooting and Known Issues 54](#_Toc467773505)

[Appendix: Reports 59](#_Toc467773506)

[Appendix: Windows Server 2008/2012 Rules and Monitors Disabled by Default 63](#_Toc467773507)

System Center Management Pack for Windows Server 2012 R2 and Earlier Operating Systems

The System Center Management Pack for Windows Server Operating System consists of the following management packs: Microsoft Windows Server Library, Microsoft Windows Server 2012 / 2012 R2 Discovery, Microsoft Windows Server 2012 / 2012 R2 Monitoring, Windows Server 2008 Discovery, Windows Server 2008 Monitoring, Microsoft Server 2008 R2 Best Practice Analyzer Monitoring, Windows Server Cluster Shared Volume Monitoring, Windows Server Operating System Reports, and Windows Server 2003. The Microsoft Windows Server management packs monitor the performance, health, and availability of Windows Server 2003, 2008, 2008 R2, 2012 and 2012 R2 operating systems.

By detecting, alerting on, and automatically responding to critical events and performance indicators, management packs reduce resolution times for issues and increase the overall availability and performance of your Windows Server 2012 R2 and earlier operating systems, thereby helping to reduce the total cost of ownership.

For information about Microsoft System Center Operations Manager, 2007, see [Microsoft System Center Operations Manager 2007 R2](http://go.microsoft.com/fwlink/?LinkId=253550) in the TechNet Library.

For information about System Center 2012 - Operations Manager, see [Microsoft System Center 2012 - Operations Manager](http://go.microsoft.com/fwlink/?LinkID=246684) in the TechNet Library.

## Document Version

This guide is based on the 6.0.7326.0 version of the Management Pack for Windows Server Operating System.

## Revision History

|  |  |
| --- | --- |
| Release Date | Changes |
| April, 2021 | “Volume Name” property discovery issue has been fixed for Logical Disks |
| November, 2016 | Added a section for the new version changes, updated “Troubleshooting and Known Issues” section, and updated “Files in This Management Pack” section. |
| July, 2016 | Added a section for the new version changes, updated “Troubleshooting and Known Issues” section. |
| June, 2016 | Added a section for the new version changes. |
| January, 2016 | Added a section for the new version changes. |
| August, 2015 | Added a section for the new version changes. |
| January, 2015 | Added a section for the new version changes. |
| December, 2014 (2 updates) | Added a section for the new version changes. |
| August, 2014 | Added a section for the new version changes. |
| October, 2013 | Added a section for the new version changes and updated “Supported Configurations” section. |
| June, 2013 | Added a section for the new version changes. |
| April, 2013 | Added a section for the new version changes. |
| September, 2012 | Added a section for the new version changes. |
| May, 2012 | Added a section for the new version changes. |
| October, 2011 | Added a section for the new version changes. |
| September, 2011 | * Changed title from “Windows Server Operating System Management Pack for Operations Manager 2007” to “System Center Management Pack for the Windows Server Operating System”. References to the “Windows Server Operating System Management Pack” in the guide have not been changed.
* Added a section for the new version changes
* Added “Upgrading an Operating System: How to Prevent Discovery Problems” section.
* Added “Appendix: Windows Server 2008 Rules and Monitors Disabled by Default”
* Added note to the “Management Logical and Physical Disks” topic to emphasize that the values for both percentage free space and MB free space must fall below the respective thresholds for health state to change.
* Added list of rules to “Appendix: Reports”.
 |
| March, 2010 | Added a section for the new version changes |
| November, 2009 | Guide update only – no changes to management pack* In “Changes in This Update”, changed “Modified logical disk discovery to exclude mount points, because numerous rules use performance counters that are not applicable to mount points.” to “Modified logical disk discovery to exclude hidden mount points, because numerous rules use performance counters that are not applicable to mount points.”
* Removed statement that agents must be installed on all computers from “Before You Begin” section.
* Fixed introductory paragraph in “Management Total Processor Performance” section.
 |
| September, 2009 | * Added a section for the new version changes.
* Added information on the new “Logical Disk Fragmentation Level” monitor to the “Key Management Scenarios” section.
* Added “Management Software Installation Failures” topic to the “Optional Configuration” section.
* Added content to “Objects the Windows Server Operating System Management Pack Discovers” topic.
* Added update requirements to “Supported Configurations”.
* Removed “Appendix: Monitors and Overrides for Management Packs”.
 |
| October, 2008 | * Documented the changes for the October release (version 6.0.6321.3) of this management pack.
* Changed “June 2008” in the Revision History table to “July 2008” to match the actual release date of the previous version, and added a section for the new version changes.
 |
| June, 2008 | * Added multiple new topics
* Added changes for the July 2008 release (version 6.0.6278.22) of this management pack.
 |
| October, 2007 | New topics in this release:* Monitors and Overrides for Management Packs
 |
| July, 2007 | Updated topics in this release:* Getting Started
 |
| March, 2007 | Original release of this guide |

## Getting the Latest Management Pack and Documentation

You can find the Management Pack for Windows Server Operating System on the [Download Center](http://www.microsoft.com/en-us/download/details.aspx?id=9296) page (<http://www.microsoft.com/en-us/download/details.aspx?id=9296>).

Changes in Version 6.0.7326.0

* Fixed bug: “Volume Name” property discovery issue has been fixed for Logical Disks in Windows Server 2003/2008/2012 Discovery MP’s.

Changes in Version 6.0.7323.0

* Added Storport Miniport monitor for monitoring Event ID 153 in Windows Server 2003, 2008 and 2012 platforms.
* Fixed bug: Logical Disk MB Free Space and Percentage Free Space monitor issues: Operator can set the threshold values for Error state even within Warning state default thresholds. At that, the Error state will supersede the Warning state according to the set values. Error threshold is independent of the Warning threshold.
* Fixed localization issue with root report folder in the Report Library.
* Windows Server Cluster Shared Volume Monitoring management pack is now supporting Nano Server and Windows Server 2016. Please note that Nano Server monitoring is supported by SCOM 2016 only.
* Fixed bug with duplicating Nano Server Cluster Disk and Nano Server Cluster Shared Volumes health discoveries upon MP upgrade. See [Troubleshooting and Known Issues section](#KI1) for details.
* Fixed bug: Windows Server 2003 Computer discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-2003 Windows Server computers.
* Fixed bug: Windows Server 2008 Computer discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-2008 Windows Server computers.
* Fixed bug: Windows Server 2008 R2 Computer discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-2008 R2 Windows Server computers.
* Fixed bug: Windows Server 2012 Computer discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-2012 Windows Server computers.
* Fixed bug: Windows Server 2012 R2 Computer discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-2012 R2 Windows Server computers.
* Fixed bug: [Nano Server] Cluster Seed Name discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-Nano objects.

Changes in Version 6.0.7316.0

* Due to incompatibility issues in monitoring logic, several Cluster Shared Volumes MP bugs remained in version 6.0.7310.0. These are now fixed in the current version (see the complete list of bugs below). To provide compatibility with the previous MP versions, all monitoring logic (structure of classes’ discovery) was reverted to the one present in version 6.0.7297.0.
	+ Fixed bug: disk free space monitoring issue on Quorum disks in failover clusters; the monitor was displayed as healthy, but actually it did not work and no performance data was collected.
	+ Fixed bug: logical disk discovery did not discover logical disk on non-clustered server with Failover Cluster Feature enabled.
	+ Fixed bug: Clustered Shared Volumes were being discovered twice - as a Clustered Shared Volume and as a logical disk; now they are discovered as Clustered Shared Volumes only.
	+ Fixed bug (partially): mount points were being discovered twice for cluster disks mounted to a folder - as a cluster disk and as a logical disk. See [Troubleshooting and Known Issues](#MontPoint) section for details.
	+ Fixed bug: Cluster Shared Volume objects were being discovered incorrectly when they had more than one partition (applied to discovery and monitoring): only one partition was discovered, while the monitoring data was discovered for all partitions available. The key field is changed, and now partitions are discovered correctly; see [Troubleshooting and Known Issues](#CSV) section for details.
	+ Fixed bug: physical CPUs are now discovered on Windows Server 2008 R2 platforms; logical CPUs are no longer discovered, see [Troubleshooting and Known Issues](#lCPU) section for details.
	+ Fixed bug: Windows Server 2008 Max Concurrent API Monitor did not work on Windows Server 2008 platform. Now, it is supported on Windows Server platforms starting from Windows Server 2008 R2.
	+ Fixed bug: when network resource name contained more than 15 symbols, the last symbols of the name were cut off, which was resulting in cluster disks and Cluster Shared Volume discovery issues.
* Cluster disk monitors alert messages: alert title might be disorienting and was corrected.

Changes in Version 6.0.7310.0

* Several bugs located in Cluster Shared Volumes MP were fixed (see below); error handling migrated to common recommended scenario. Enabled Quorum monitoring via changing the monitoring logic. The monitoring logic is splitting for Nano Server (with usage of PowerShell) and all other operation systems.
	+ Fixed bug: disk free space monitoring issue on Quorum disks in failover clusters; the monitor was displayed as healthy, but actually it did not work and no performance data was collected.
	+ Fixed bug: logical disk discovery did not discover logical disk on non-clustered server with Failover Cluster Feature enabled.
	+ Fixed bug: Clustered Shared Volumes were being discovered twice - as a Clustered Shared Volume and as a logical disk; now they are discovered as Clustered Shared Volumes only.
	+ Fixed bug (partially): mount points were being discovered twice for cluster disks mounted to a folder - as a cluster disk and as a logical disk. See [Troubleshooting and Known Issues](#MontPoint) section for details.
	+ Fixed bug: Cluster Shared Volume objects were being discovered incorrectly when they had more than one partition (applied to discovery and monitoring): only one partition was discovered, while the monitoring data was discovered for all partitions available. The key field is changed, and now partitions are discovered correctly; see [Troubleshooting and Known Issues](#CSV) section for details.
* Error handling was corrected. Logical disk correct discoveries on non-cluster server with Failover Clustered Server Feature is installed.
* Created new overrides for Cluster Shared Volume MP, as long as the old ones did not work.
* Cluster disk monitors alert messages: alert title might be disorienting and was corrected.

Changes in Version 6.0.7303.0

* MP used to discover physical CPU, which performance monitor instance name property was not correlated with Windows PerfMon object (expecting instance name in (socket, core) format). That affected related rules and monitors. With this release, MP discovers logical processors, rather than physical, and populates performance monitor instance name in proper format
* Microsoft.Windows.Server.ClusterSharedVolumeMonitoring.mp and Microsoft.Windows.Server.Library.mp scripts code migration to PowerShell in scope of Windows Server 2016 Nano support (relevantly introduced in Windows Server 2016 MP version 10.0.1.0).
* Updated Microsoft.Windows.Server.ClusterSharedVolumeMonitoring.ClusterSharedVolume.Monitoring.State monitor alert properties and description. The fix resolved property replacement failure warning been generated on monitor alert firing.

Changes in Version 6.0.7297.0

* In 2008, 2012 platforms, the “Logical Disk Free Space (%) Low” monitor do not alert as expected when free space is 0%. With this fix, this monitor will alert when free space is 0%
* In all platforms, logical disks are un-discovered if we configure them as Asymmetric storage on Failover Cluster. With this fix, this issue will be resolved
* The Windows Server OS Management pack collects logical disk size is megabytes. During discovery, this value used to be assigned to integer property. When logical disk size is significantly large (for example, when disk is of several petabytes), in megabytes format it goes out of boundaries of integer type. As a result, the workflow fails while trying to insert discovery data. To support large logical disk another double properties was introduced, since double type has much more wide values range. Old integer property with constant “-1” value is preserved for upgrade compatibility and marked as DEPRECATED
* “Volume Mount Points on Dynamic Disks” are not discovered by Microsoft Windows Server 2012 Discovery MP. With this fix, this issue will be resolved
* MP has been modified to not discover System Reserved volumes on Windows Server 2012 to ensure it is consistent with the rest of the OS versions

Changes in Version 6.0.7296.0

* In 2003, 2008, 2008R2 platforms, the mount point discovery script was also discovering logical disks as mount points, which appeared to many as duplicates. These mount points for logical disks were removed to prevent confusion.
* In 2012, 2012R2 platforms, mount point discovery was causing rediscovery of logical disks and this rediscovery resulted in rules being run again. This was fixed.
* In all platforms, duplicate performance rules were shown for mount points and logical disks. This has been fixed.

Changes in Version 6.0.7294.0

* Fixed more performance collection workflows that were failing for mount points. Because of this, workflows that depend on performance data did not work. Example: Low disk space alert that depends on performance data.

Changes in Version 6.0.7292.0

* Mount point Names have been changed from GUIDs to a friendly drive letter name
* Fixed performance collection workflows that were failing for some mount points

Changes in Version 6.0.7230.0

* Fixed Microsoft.Windows.Server.LogicalDiskDiscovery.Module.Type.vbs script does not discover logical disks with large disk size
* Fixed Microsoft.Windows.Server.MonitorClusterDisks.vbs causes the Operations Manager to fail at starting a process
* Updated to support two configurable threshold values (waiters and timeouts) for triggering alert ‘MAX concurrent API Reached
* Disable Logical disk fragmentation monitor by default
* Add Task launch PowerShell session on the remote machine for All Computers
* New Task added in Base OS Library MP and target to Windows Server Computer class, so this will be available for all OS versions.
* Update Cluster Resource discovery to not discover VM's
* Adding new Unit monitor to check for service state of Windows Remote Management service and also a task to start it.
* Add Monitor for Windows Remote Management Service ( WinRM )
* Fixing an error in a script with a missing alias in the MPElement expression.
* Adding Slot ID property value to the discovery of network card for Windows Server 2012 and Windows Server 2012 R2

Changes in Version 6.0.7061.0

The October 2013 update (version 6.0.7061.0) of the Windows Server Operating System Management Pack included the following changes:

 Fixed Windows Server 2012 R2 Beta Monitoring bugs for final release.

Changes in Version 6.0.7043.0

The June 2013 update (version 6.0.7043.0) of the Windows Server Operating System Beta Management Pack included the following changes:

 Added support for Windows Server 2012 R2 monitoring.

 Added filter to discovery for Windows Server 2012 and Windows Server 2012 R2.

 Fixed MaxConcurrentAPI issues.

 Changed Cluster Discovery to only discover volumes and resource type “Physical Disk”.

 Added performance rules and reports for Windows Server 2012 R2 that target Windows Server 2012 R2 Operating System.

Changes in Version 6.0.7026.0

The April 2013 update (version 6.0.7026.0) of the Windows Server Operating System Management Pack contains the following changes:

 Fixed a bug in Microsoft.Windows.Server.2008.Monitoring.mp where the performance information for Processor was not getting collected.

 Made monitoring of Cluster Shared Volume consistent with monitoring of Logical Disks by adding performance collection rules. (“Cluster Shared Volume - Free space / MB”,”Cluster Shared Volume - Total size / MB”,”Cluster Shared Volume - Free space / %”,”Cluster Disk - Total size / MB”,”Cluster Disk - Free space / MB”,”Cluster Disk - Free space / %”).

 Fixed bug in Microsoft.Windows.Server.ClusterSharedVolumeMonitoring.mp where the Cluster disks running on Windows Server 2008 (non-R2) were not discovered.

 Fixed bug Cluster Disk Free Space Percent and Cluster Disk Free Space MB' monitors generate alerts with bad descriptions when the volume label of a cluster disk is empty.

Added feature to raise event when NTLM requests time out and customers are unable to use mailboxes, outlook stops responding, due to the low default value for Max Concurrent API registry Key (HLM\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters), which is a ceiling for the maximum NTLM or Kerberos PAC password validations a server can take care of at a time. It uses the “Netlogon” performance counter to check for the issue.

Changes in Version 6.0.6989.0

The September 2012 update (version 6.0.6989.0) of the Windows Server Operating System Management Pack included the following changes:

 Introduced support for Windows Server 2012

 Added monitoring for NTFS events to check if they are corrupted or unavailable

 Disabled monitoring of Event 55 in Windows 2012 as this event can be raised even if there is no corruption. Event 55 has been replaced with Event 98.

 Update rules and monitors for Counter Processor Information in the 2008 Management Pack to fix the issue of renaming “Processor” to “Processor Information”.

 Updated Cluster disk monitoring to fix the warning 999 and the Script error generated when a cluster disk is removed.

Changes in Version 6.0.6972.0

 Unless explicitly noted, these updates apply to all operating system versions supported by this Management pack:

 Updated the Cluster shared volume disk monitors so that alert severity corresponds to the monitor state.

 Fixed an issue where the performance by utilization report would fail to deploy with the message “too many arguments specified”.

 Updated the knowledge for the available MB monitor to refer to the Available MB counter.

 Added discovery and monitoring of cluster disks for Windows Server 2008 and above clusters.

 Added views for cluster disks.

 Aligned disk monitoring so that all disks (logical disks, Cluster Shared Volumes, cluster disks) now have the same basic set of monitors.

 There are now separate monitors that measure available MB and %Free disk space for any disk (logical Disk, Cluster Shared Volume, or cluster disk).

Note

These monitors are disabled by default for logical disks, so you will need to enable them.

 Updated display strings for all disks to be consistent, regardless of the disk type.

 The monitors generate alerts when they are in an Error state. A Warning state does not create an alert.

 The monitors have a roll-up monitor that also reflects disk state. This monitor does not alert by default. If you want to alert on both warning and Error states, you can have the unit monitors alert on Warning state and the roll-up monitor alert on Error state.

 Fixed an issue where network adapter monitoring caused high CPU utilization on servers with multiple NICs.

 Updated the Total CPU Utilization Percentage monitor to run every 5 minutes and alert if it is three consecutive samples above the threshold.

 Updated the properties of the Operating System instances so that the path includes the server name it applies to so that this name will show up in alerts.

 Disabled the network bandwidth utilization monitors for Windows Server 2003.

 Updated the Cluster Shared Volume monitoring scripts so they do not log informational events.

 Quorum disks are now discovered by default.

 Mount point discovery is now disabled by default.

Notes

This version of the Management Pack consolidates disk monitoring for all types of disks as mentioned above. However, for logical disks, the previous Logical Disk Free Space monitor, which uses a combination of Available MB and %Free space, is still enabled. If you prefer to use the new monitors (Disk Free Space (MB) Low Disk Free Space (%) Low), you must disable the Logical Disk Free Space monitor before enabling the new monitors.

The default thresholds for the Available MB monitor are not changed, the warning threshold (which will not alert) is 500MB and the error threshold (which will alert) is 300MB. This will cause alerts to be generated for small disk volumes. Before enabling the new monitors, it is recommended to create a group of these small disks (using the disk size properties as criteria for the group), and overriding the threshold for available MB.

Changes in Version 6.0.6958.0

The October 2011 release (version 6.0.6958.0) of the System Center Management Pack for the Windows Server Operating System includes the following changes:

 Disabled BPA Rules by default

 Added appropriate SQL Stored Procedures credentials

 Updated Knowledge of Logical Disks

 Updated Overrides for Logical Disks

Note

The Microsoft.Windows.Server.Reports Management Pack will only import on systems that use SQL Server 2008 as the Database and is not currently supported on SQL Server 2005.

Changes in Version 6.0.6957.0

The September 2011 release (version 6.0.6957.0) of the System Center Management Pack for the Windows Server Operating System includes the following changes:

 Optimized operating system performance collection rules.

 Added two new operating system-specific reports:

 Performance by System

 Performance by Utilization

 Added support for the Server Manager Best Practices Analyzer (BPA). The management pack now collects BPA results from monitored servers and returns the BPA state to the Operations Manager.

 Added support to discover and monitor Cluster Shared Volumes (CSV).

 Modified collection rules to include the latest service packs and hotfixes.

 Changed the threshold for the “Average Disk Seconds Per Read”, “Average Disk Seconds Per Transfer”, and “Average Disk Seconds Per Write” monitors to 0.04.

 Added new monitors for “Disk $ Idle Time” and “Current Disk Queue Length”.

 Changed the monitor types for disk performance from Average Samples to Consecutive Samples to reduce noise and improve collected data.

 “Logical Disk Availability Monitor” has been renamed to “File System Error or Corruption”.

Changes in Version 6.0.6794.0

The March 2010 release (version 6.0.6794.0) of the Windows Server Operating System Management Pack includes the following change:

 Updated the script used in the “Discover Windows 2008 Servers” discovery to prevent it from failing completely on computers running Windows Server 2008 R2 when an attempt to query the Win32\_PowerPlan class fails.

Changes in Version 6.0.6667.0

The September 2009 release (version 6.0.6667.0) of the Windows Server Operating System Management Pack includes the following changes:

 Support for Windows Server 2008 R2, including new classes to represent Windows Server 2008 R2 systems specifically.

 The intervals for some discoveries have been changed to reduce CPU usage. For details, see [Objects the System Center Management Pack for Windows Server Operating System Discovers](#z87792d9bf5d848daad1d529a7c864455).

 Added Logical Disk Fragmentation Level monitors for Windows Server 2003 and Windows Server 2008.

 Disabled the following rules and monitors for Windows Server 2008 because the events needed are in Windows Server 2003 only.

 Duplicate computer name was detected

 Windows Activation State

 Disk Group Failed

 Disk Group Auto Import Failed

 Volume Not Started

 Run WMIAdap

 Fixed the summary details for the Performance History (Percent Processor Time) report to indicate that the object type is Windows Server 2003 operating system rather than Windows Server 2003 processor.

 Fixed the Performance History (Percent Interrupt Time) report to use a rule that targets the operating system rather than the processor.

 Changed the data source for discoveries from System.Scheduler to System.Discovery.Scheduler to avoid performance issues.

 Changed the Logical Disk Availability monitor to use a Run As profile with administrative privileges to enable it to run in a low-privilege environment.

 Modified logical disk discovery to exclude hidden mount points, because numerous rules use performance counters that are not applicable to mount points. (A hidden mount point is a mount point with no drive letter or drive path.)

 Fixed an issue in which an alert could be generated for Windows Activation too early.

 Addressed an issue that was causing some discoveries to not show up correctly in the authoring section of the console.

 Improved the product knowledge for the alert generated by the A Service is Misconfigured rule.

 Fixed issue in which logical disk health check could have performance problems when run against clustered servers.

 Fixed links to views in product knowledge articles.

 Added Active Alerts views for Windows Server 2003 and Windows Server 2008.

 Added retry logic to the "Probe Module: Is Feature Installed" module to avoid failures due to periodic time-outs.

 Added a new integer property named "Size (MBytes) (Numeric)" to the Logical Disk class and updated the existing property "Size (Bytes) (String)" to clarify that it is a string. The new property can now be used in formulas and views as expected.

Changes in Version 6.0.6321.5

The October 2008 release (version 6.0.6321.5) of the Windows Server Operating System Management Pack includes the following changes:

 Various scripts were updated to prevent issues with locale specific number formatting.

Changes in Version 6.0.6278.22

The July 2008 update (version 6.0.6278.22) of the Windows Server Operating System Management Pack included the following changes:

 Introduced support for Windows Server 2008.

 Added version specific notations to the names of the performance collection rules to reduce ambiguity, specifically when searching for rules by name.

 Added a new task to leverage the new “Admin” switch of the remote desktop connection tool. More detail is provided in the “Troubleshooting” section.

 Updated the logical drive discoveries to omit mapped network drives.

 Addressed an issue with the Logical Disk Free Space to prevent it from looking as if the thresholds were set incorrectly.

 The state of the configuration of a server now reflects the state of its operating system as well.

 Fixed an issue with the Server Service Configuration Health monitor, which prevented it from ever generating an alert.

Supported Configurations

The System Center Management Pack for Windows Server Operating System is designed to monitor the following versions of the basic operating system:

* Windows Server 2012 R2

 Windows Server 2012

 Windows Server 2008 (including Windows Server 2008 R2)

 Windows Server 2003

Support for these operating systems is also subject to Microsoft’s overall support lifecycle (<http://go.microsoft.com/fwlink/?Linkid=26134>).

All the management packs are supported on Operations Manager 2007 R2 and System Center 2012 and System Center 2012 R2 Operations Manager. For specific configurations regarding patches, see the table below.

|  |  |
| --- | --- |
| Operating system being monitored | Operations Manager 2007 R2 |
| Windows Server 2008 SP1 | Install the updates for the operating system as provided in the following Knowledge Base articles:****** [KB951327](http://go.microsoft.com/fwlink/?LinkId=161026) (install on computers running the Operations console)****** [KB952664](http://go.microsoft.com/fwlink/?LinkId=161027)****** [KB953290](http://go.microsoft.com/fwlink/?LinkId=161028) |
| Windows Server 2008 SP2 | No updates required. |
| Windows Server 2008 R2 | Refer to the support statement in [Knowledge Base article 974722](http://go.microsoft.com/fwlink/?LinkId=161394) (http://go.microsoft.com/fwlink/?LinkId=161394).Windows PowerShell 2.0 for Windows Server 2008 (http://www.microsoft.com/en-us/download/details.aspx?id=9864 ) |

Getting Started

This section provides information about importing System Center Management Pack for Windows Server Operating System files.

Before You Import the Management Pack

Before you import the System Center Management Pack for Windows Server Operating System, know the following:

 The Management Pack for Windows Server Operating System provides the fundamental monitoring basics for monitoring computers running the Microsoft Windows operating system and Windows-based applications. You should import the Management Pack for Windows Server Operating System before using any other management packs such as Microsoft SQL Server, Active Directory Domain Services (AD DS), and Internet Information Services (IIS).

 This management pack includes newer versions of the Windows Server Library and the Windows Server 2012 R2, Windows Server 2008 R2, Windows Server 2008, and Windows Server 2003 management packs. Importing these management packs will overwrite any previous versions of those management packs.

Files in This Management Pack

To monitor a Windows Server operating system by using Operations Manager 2007 R2 or System Center 2012 - Operations Manager or System Center 2012 R2 Operations Manager, you must first download the System Center Management Pack for Windows Server Operating System from the Management Pack Catalog, located at <http://go.microsoft.com/fwlink/?LinkId=82105>. The Management Pack for Windows Server Operating System includes the following files:

|  |  |  |
| --- | --- | --- |
| File | Description | Version |
| Microsoft.Windows.Server.Library.mp | Displayed as “Windows Server Operating System Library,” this management pack is the library management pack that defines all of the features and components that are common to all versions of the Windows Server operating systems. This management pack contains no monitoring configuration and is a prerequisite for all other Windows Server operating system management packs. Therefore, this management pack must be imported at the same time or prior to the version-specific management packs. | 10.0.8.0 |
| Microsoft.Windows.Server.2012.R2.Discovery.mp | Displayed as “Windows Server 2012 R2 Operating System (Discovery),” this management pack discovers Windows Server 2012 R2 version specific classes. This management pack is a prerequisite for the Windows Server 2012 R2 management pack and is required by other management packs that focus their monitoring on systems running Windows Server 2012 R2 specifically. | 6.0.7323.0 |
| Microsoft.Windows.Server.2012.R2.Monitoring.mp | Displayed as “Windows Server 2012 R2 Operating System (Monitoring),” this management pack defines the rules, monitors, views, tasks, and reports that are used for monitoring the Windows Server 2012 R2 operating system. | 6.0.7323.0 |
| Microsoft.Windows.Server.2012.Discovery.mp | Displayed as “Windows Server 2012 Operating System (Discovery),” this management pack discovers Windows Server 2012 version specific classes. This management pack is a prerequisite for the Windows Server 2012 monitoring management pack and is required by other management packs that focus their monitoring on systems running Windows Server 2012 specifically. | 6.0.7323.0 |
| Microsoft.Windows.Server.2012.Monitoring.mp | Displayed as “Windows Server 2012 Operating System (Monitoring),” this management pack defines the rules, monitors, views, tasks, and reports that are used for monitoring the Windows Server 2012 operating system. | 6.0.7323.0 |
| Microsoft.Windows.Server.2008.Discovery.mp | Displayed as “Windows Server 2008 Operating System (Discovery),” this management pack discovers Windows Server 2008. It contains the version-specific classes used for monitoring and provides the means by which instances of those classes will be discovered. This management pack is a prerequisite for the Windows Server 2008 monitoring management pack and is required by other management packs that focus their monitoring on systems running Windows Server 2008 specifically. | 6.0.7323.0 |
| Microsoft.Windows.Server.2008.Monitoring.mp | Displayed as “Windows Server 2008 Operating System (Monitoring),” this management pack defines the rules, monitors, views, tasks, and reports that are used for monitoring the Windows Server 2008 operating system. | 6.0.7323.0 |
| Microsoft.Windows.Server.2008.R2.Monitoring.BPA.mp | Displayed as “Windows Server 2008 R2 Best Practice Analyzer Monitoring,” this management pack defines the rules, monitors, views, tasks, and reports that are used for monitoring the Best Practice Analyzer on Windows Server 2008 operating systems. | 6.0.7323.0 |
| Microsoft.Windows.Server.Reports.mp | Displayed as “Windows Server Operating System Reports,” this management pack defines reports on Windows Server operating systems. | 10.0.8.0 |
| Microsoft.Windows.Server.ClusterSharedVolumeMonitoring.mp | Displayed as “Windows Server Cluster Shared Volume Monitoring,” this management pack defines the rules, monitors, views, tasks, and reports that are used for monitoring Cluster Shared Volumes on Windows Server 2008 (2008 R2), Windows Server 2012 (2012 R2), Windows Server 2016, and Nano Server operating systems. | 10.0.8.0 |
| Microsoft.Windows.Server.2003.mp | Displayed as “Windows Server 2003 Operating System,” this management pack provides both discovery and monitoring for the Windows Server 2003 operating system | 6.0.7323.0 |

Recommended Additional Management Packs

You should import the System Center Management Pack for Windows Server Operating System before using any other management packs such as Microsoft SQL Server, Active Directory Domain Services (AD DS), and Internet Information Services (IIS).

Other Requirements

The Windows Server 2003 management packs rely on the RTM (Release to Manufacturing) version of Operations Manager 2007, but the Windows Server 2008 Management Pack requires Operations Manager 2007 Service Pack 1 (SP1) because the agent must be SP1 to run on a server running Windows Server 2008.

The Windows Server Library and the Windows Server 2012 management packs rely on both RTM of System Center 2012 Operations Manager and Operations Manager 2007 R2 with the latest updates installed.

How to Import the Management Pack

For instructions about importing a management pack, see [How to Import a Management Pack](http://go.microsoft.com/fwlink/?LinkID=98348) (http://go.microsoft.com/fwlink/?LinkID=98348).

The System Center Management Pack for Windows Server Operating System files must be imported together.

Create a New Management Pack for Customizations

Most vendor management packs are sealed so that you cannot change any of the original settings in the management pack file. However, you can create customizations, such as overrides or new monitoring objects, and save them to a different management pack. By default, the Operations Manager saves all customizations to the default management pack. As a best practice, you should instead create a separate management pack for each sealed management pack you want to customize.

Creating a new management pack for storing overrides has the following advantages:

 It simplifies the process of exporting customizations that were created in your test and pre-production environments to your production environment. For example, instead of exporting a default management pack that contains customizations from multiple management packs, you can export just the management pack that contains customizations of a single management pack.

 It allows you to delete the original management pack without first needing to delete the default management pack. A management pack that contains customizations is dependent on the original management pack. This dependency requires you to delete the management pack with customizations before you can delete the original management pack. If all of your customizations are saved to the default management pack, you must delete the default management pack before you can delete an original management pack.

 It is easier to track and update customizations to individual management packs.

For more information about sealed and unsealed management packs, see [Management Pack Formats](http://go.microsoft.com/fwlink/?LinkId=108355) (http://go.microsoft.com/fwlink/?LinkId=108355). For more information about management pack customizations and the default management pack, see [About Management Packs](http://go.microsoft.com/fwlink/?LinkId=108356) (http://go.microsoft.com/fwlink/?LinkId=108356).

Optional Configuration

This section contains information about optional configuration changes you can make to the management pack features; for example, you can change the thresholds for monitoring physical and logical disk partitions, processors, and memory. It also contains step-by-step instructions for enabling a number of object discoveries.

Monitoring Physical Disks and Disk Partitions

By default, Windows Server operating system management packs do not discover physical disk partitions, only logical disk partitions. If you want to monitor physical disk drives, you can do so by enabling the Object Discoveries feature for the Windows Server 2008, Windows Server 2003 physical disk objects. After the object discovery has been enabled, physical disks will be discovered within 24 hours, after which they will become monitored. The following procedure for enabling Object Discoveries for Windows Server 2008 is for use with the Windows Server 2008 Management Pack.

Note

You can use these steps for the Windows Server 2003 management packs by substituting Windows Server 2003 in place of Windows Server 2008. The same applies for Windows Server 2012.

To enable Object Discoveries for Windows Server 2008 physical disk

|  |
| --- |
| 1. Log on to the computer with an account that is a member of the Operations Manager Administrators role for the Operations Manager management group.2. In the Operations Console, click the Authoring button.Note When you run the Operations Console on a computer that is not a management server, the Connect To Server dialog box is displayed. In the Server name box, type the name of the Operations Manager management server that you want the Operations Console to connect to.3. In the Administration pane, expand Authoring, expand Management Pack Objects, and then click Object Discoveries.4. On the Operations Manager toolbar, click Scope.5. In the Scope Management Pack Objects by target(s) dialog box, click Clear All.6. In the Look for box, type Windows Server 2008 Physical Disk, select the Windows Server 2008 Physical Disk check box, and then click OK.7. In the Object Discoveries pane, expand Discovered Type: Windows Server 2008 Physical Disk.8. Right-click Discover Windows Physical Disks, point to Overrides, point to Override the Object Discovery, and click For a specific object of type: Windows Server 2008 Operating System.Note By selecting For a specific object of type: Windows Server 2008 Operating System, you decide which objects are affected by this change. If you select For all objects of type: Windows Server 2008 Operating System, every object of this type will be affected by this change.9. In the Select Object dialog box, click the object on which you want to monitor the physical disk, and then click OK.10. In the Override Properties dialog box, locate the row with the Parameter Name of Enabled, click Override, click the Override Setting menu, click True, and then click OK.  |

Monitoring Logical and Physical Disks

|  |  |
| --- | --- |
| Objects | Monitor name |
| Windows Server 2008 Logical Disk | Logical Disk Free Space |
| Windows Server 2008 Logical Disk | Disk Free Space (MB) Low |
| Windows Server 2008 Logical Disk | Disk Free Space (%) Low |
| Windows Server 2008 Logical Disk | Average Disk Seconds Per Transfer |
| Windows Server 2008 Logical Disk | Average Disk Seconds Per Read |
| Windows Server 2008 Logical Disk | Average Disk Seconds Per Write |
| Windows Server 2008 Logical Disk | Logical Disk Percent Idle Time |
| Windows Server 2008 Logical Disk | Current Disk Queue Length (Logical Disk) |
| Windows Server 2008 Physical Disk | Average Disk Seconds Per Transfer |
| Windows Server 2008 Physical Disk | Average Disk Seconds Per Read |
| Windows Server 2008 Physical Disk | Average Disk Seconds Per Write |
| Windows Server 2012 Logical Disk | Current Disk Queue Length (Logical Disk) |
| Windows Server 2012 Logical Disk | File system error or corruption |
| Windows Server 2012 Logical Disk | Average Logical Disk Seconds Per Transfer |
| Windows Server 2012 Logical Disk | Logical Disk Free Space |
| Windows Server 2012 Logical Disk | Logical Disk Fragmentation Level  |
| Windows Server 2012 Logical Disk | Logical Disk Percent Idle Time (Disabled by Default) |
| Windows Server 2012 Logical Disk | Average Disk Seconds Per Read (Logical Disk) (Disabled by Default) |
| Windows Server 2012 Logical Disk | Average Disk Seconds Per Write (Logical Disk) (Disabled by Default) |
| Windows Server 2012 Logical Disk | Windows Server 2012 Logical Disk Free Space (MB) Low (Disabled by Default) |
| Windows Server 2012 Logical Disk | Windows Server 2012 Logical Disk Free Space (%) Low (Disabled by Default) |
| Windows Server 2012 Physical Disk | Current Disk Queue Length (Physical Disk) |
| Windows Server 2012 Physical Disk | Average Physical Disk Seconds Per Transfer |
| Windows Server 2012 Physical Disk | Physical Disk Percent Idle Time (Disabled by Default) |
| Windows Server 2012 Physical Disk | Average Physical Disk Seconds Per Read (Disabled by Default) |
| Windows Server 2012 Physical Disk | Average Physical Disk Seconds Per Write (Physical Disk) (Disabled by Default) |

Notes

The same monitors and default settings are defined in the Windows Server 2003 management packs.

You can choose whether you want Logical Disk Free Space measured by a single monitor, or by separate monitors. It is not recommended to leave all three monitors enabled.

Evaluate the default settings for the following parameters and compare them against your business needs. If your monitoring strategy could benefit from a change in these values, use overrides to make the necessary changes. For more information about overrides, see the "Overrides in the Operations Manager" topic in the Operations Manager Help

Monitoring Logical Disk Free Space using the Logical Disk Free Space monitor

The default health state thresholds for the Logical Disk Free Space monitor are different for system and non-system logical disk volumes. Error and Warning health states are based on both percentage of free space and on an absolute value, designated in megabytes (MB), of free space, as shown in the following sections.

System Partition

|  |  |  |
| --- | --- | --- |
| Health state | Percentage free space | MB free space |
| Error | 5% | 300 MB |
| Warning | 10% | 500 MB |

Important

For health state to change to Error or Warning, the values for both percentage free space and MB free space must drop below the corresponding threshold.

Non-system Partition

|  |  |  |
| --- | --- | --- |
| Health state | Percent free space | MB free space |
| Error | 5% | 1,000 MB |
| Warning | 10% | 2,000 MB |

Important

For health state to change to Error or Warning, the values for both percentage free space and MB free space must drop below the corresponding threshold.

By designing this monitor to evaluate both percentage free and MB free, the monitor works equally well for disks regardless of their storage capacity. This monitor does not alert on Warning state, only on Error state.

Monitoring Logical Disk Free Space using the Disk Free Space (%) Low and Disk Free Space (MB) Low monitors

The thresholds used in these monitors are the same as the ones used for the Disk Free Space Monitor. However, you can set the threshold values for Error state even within Warning state default thresholds. At that, the Error state will supersede the Warning state according to the set values.

One reason for using these monitors is for the case when you want to receive alerts regarding available MB and % free space separately. Therefore, you should disable the Logical Disk Free Space monitor.

These monitors do not alert on Warning state, only on Error state by default. Use the override to enable alerts on Warning state.

Monitoring Logical and Physical Disk Performance

The following monitors can be used to assess disk performance. By default, Average Disk Seconds Per Transfer is enabled. Average Disk Seconds Per Read and Average Disk Seconds Per Write are not enabled by default. For more information about enabling these two monitors, see the "How to Override a Monitor" topic in the Operations Manager Help.

Average Disk Seconds Per Transfer

Average Disk Seconds Per Transfer monitors the time, in seconds, of the disk transfer. The default threshold value is .04. This monitor collects fifteen samples to compute the threshold. The threshold is met when the value of all fifteen consecutive samples is greater than .04. The health state is considered Healthy when it is below the threshold value and Critical when it is above the threshold. We recommend leaving the threshold at its default value of .04 seconds for an average disk transfer, which is considered acceptable performance.

Average Disk Seconds Per Read and Write

Average Disk Seconds Per Read is the average time, in seconds, to read data from the disk. Average Disk Seconds Per Write is the average time, in seconds, to write data to the disk. The threshold for both these monitors is .04 seconds and a sample is taken every minute. These monitors collect fifteen samples to compute the threshold. The threshold is met when the values of fifteen consecutive samples are greater than .04.

Management Processors (Windows Server 2003/2008/2012)

Windows Server 2012, Windows Server 2008, and Windows Server 2003 management packs can monitor individual instances of processors or all instances together. By default, the health of the processors is monitored as a total of all instances. If you are interested in monitoring individual processor instances, you can do so by enabling the Object Discoveries for Windows Server 2008 Processor or Object Discoveries for Windows Server 2003 Processor objects. After Object Discoveries has been enabled, the processors will be discovered within 24 hours after which they will become monitored and performance data will be collected. The following is a procedure for enabling Object Discoveries for processors running Windows Server 2008 or Windows Server 2003 for use with the Windows Server 2008 and Windows Server 2003 management packs.

Note

You can use these steps for the Windows Server 2003 management pack by substituting Windows Server 2003 in place of Windows Server 2008.

To enable Object Discoveries for Windows Server 2008 Processor

|  |
| --- |
| 1. Log on to the computer with an account that is a member of the Operations Manager Administrators role for the Operations Manager management group.2. In the Operations console, click the Authoring button.3. In the Administration pane, expand Authoring, expand Management Pack Objects, and then click Object Discoveries.4. In the Operations Manager toolbar, click Scope.5. On the Scope Management Pack Objects by target(s) dialog box, click Clear All.6. In the Look for box, type Windows Server 2008 Processor, select the Windows Server 2008 Processor check box, and then click OK.7. In the Object Discoveries pane, expand Discovered Type: Windows Server 2008 Processor.8. Right-click Discover Windows CPUs, point to Overrides, point to Override the Object Discovery, and click For a specific object of type: Windows Server 2008 Operating System.Note By selecting For a specific object of type: Windows Server 2008 Operating System, you decide which objects are affected by this change. If you select For all objects of type: Windows Server 2008 Operating System, every object will be affected by this change.9. In the Select Object dialog box, click the computer on which you want to monitor the individual processors, and then click OK.10. In the Override Properties dialog box, locate the row with the Parameter Name of Enabled, click Override, click the Override Setting menu, click True, and then click OK.  |

After you have enabled an override for the processor, rules, and monitors for the targets, Windows Server 2008 Processor or Windows Server 2003 Processor will start to work on the CPUs.

Monitoring Total Processor Performance

Many rules, tasks, and monitors in the management pack are used for monitoring processor performance. We recommend that you at least monitor the items listed in the following table.

|  |  |
| --- | --- |
| Object | Monitor/rule name |
| Windows Server 2008 Operating System | Total CPU Utilization Percentage(enabled by default) |
| Windows Server 2008 Operating System | Total Processor % Interrupt Time(disabled by default) |
| Windows Server 2008 Operating System | Processor % Processor Time Total(enabled by default) |
| Windows Server 2008 Operating System | Total Processor % DPC Time(disabled by default) |
| Windows Server 2012 Operating System | Free System Page Table Entries |
| Windows Server 2012 Operating System | Memory Pages Per Second |
| Windows Server 2012 Operating System | Computer Browser Service Health |
| Windows Server 2012 Operating System | DHCP Client Service Health |
| Windows Server 2012 Operating System | DNS Client Service Health |
| Windows Server 2012 Operating System | Windows Event Log Service Health |
| Windows Server 2012 Operating System | Available Megabytes of Memory |
| Windows Server 2012 Operating System | Plug and Play Service Health |
| Windows Server 2012 Operating System | RCP Service Health |
| Windows Server 2012 Operating System | Server Service Configuration Health |
| Windows Server 2012 Operating System | Server Service Health |
| Windows Server 2012 Operating System | TCP/IP NetBIOS Service Health |
| Windows Server 2012 Operating System | Total CPU Utilization Percentage |
| Windows Server 2012 Operating System | Workstation Service Health |
| Windows Server 2012 Operating System | Windows Server 2012 Operating System BPA Monitor |
| Windows Server 2012 Operating System | Percentage of Committed Memory in Use (Disabled by Default) |
| Windows Server 2012 Operating System | Total DPC Time Percentage (Disabled by Default) |
| Windows Server 2012 Operating System | Total Percentage Interrupt Time (Disabled by Default) |

Note

The same parameters are available in the Windows Server 2003 management packs.

Evaluate the default settings for the following parameters and compare them against your business needs. If your management strategy could benefit from a change in these values, use overrides to make the necessary changes. For more information about overrides, see the "Overrides in the Operations Manager" topic in the Operations Manager Help

Total CPU Utilization Percentage (Monitor)

CPU utilization is the percentage of elapsed time that the processor spends to run a non-idle thread. It is calculated by measuring the duration of the idle thread that is active in the sample interval and subtracting that time from interval duration. CPU utilization is the primary indicator of processor activity, and this monitor displays the average percentage of busy time observed during the sample interval.

CPU queue length is the current length of the system work queue for this CPU.

By default, the threshold for this monitor is a CPU utilization of 95 percent along with a CPU queue length greater than 15 measured once every 2 minutes using five samples to compute the threshold.

Total Processor % Interrupt Time (Collection Rule)

This rule collects the Total Instance of the % Interrupt Time performance counter. By default, a sample is taken every 5 minutes. % Interrupt Time monitors the overall average processor utilization that occurred in Interrupt mode. Only interrupt service routines (ISRs), which are device driver functions run in Interrupt mode. Excessive % Interrupt Time can identify that a device is malfunctioning and serves as a secondary indicator that a device might be contributing to a processor bottleneck.

Processor % Processor Time Total (Collection Rule)

This rule collects the Total Instance of the % Processor Time performance counter. By default, a sample is taken every 5 minutes. % Processor Time is the percentage of time when the processor is not running the idle thread and it is assumed that the processor is busy on behalf of real work. % Processor Time is the primary indicator of a processor bottleneck. You should be concerned of sustained periods of % Processor Time over 80 to 90 percent.

Total Processor % DPC Time (Collection Rule)

This rule collects the Total Instance of the % DPC Time performance counter. By default, a sample is taken every 5 minutes. % DPC Time monitors the percentage of time that the processor spent in routines known as deferred procedures calls, which are device driver scheduled routes, which are called from ISRs. Excessive %DPC Time might be an indication of a hardware or device driver problem.

Monitoring Individual Processor Performance

The following monitors and rules are enabled when you enable Object Discoveries for processors.

|  |  |
| --- | --- |
| Object | Monitor/rule name |
| Windows Server 2008 Processor | Processor % Interrupt Time |
| Windows Server 2008 Processor | Processor % Processor Time |
| Windows Server 2008 Processor | Processor % DPC Time |
| Windows Server 2008 Processor | CPU Percentage Utilization |
| Windows Server 2012 Processor | CPU Percentage Utilization |
| Windows Server 2012 Processor | CPU DPC Time Percentage (Disabled by Default) |
| Windows Server 2012 Processor | CPU Percentage Interrupt Time (Disabled by Default) |

Note

The same parameters are available in the Windows Server 2003 management pack.

Processor % Interrupt Time (Collection Rule)

This rule collects the Processor of the % Interrupt Time performance counter. By default, a sample is taken every 5 minutes. % Interrupt Time monitors the overall average processor utilization that occurred in Interrupt mode. Only interrupt service routines (ISRs), which are device driver functions run in Interrupt mode. Excessive % Interrupt Time can identify that a device is malfunctioning and serves as a secondary indicator that a device might be contributing to a processor bottleneck.

Processor % Processor Time (Collection Rule)

This rule collects the Processor of the % Processor Time performance counter. By default, a sample is taken every 5 minutes. % Processor Time is the percentage of time when the processor is not running the idle thread and it is assumed that the processor is busy on behalf of real work. % Processor Time is the primary indicator of a processor bottleneck. You should be concerned of sustained periods of % Processor Time over 80 to 90 percent.

Processor % DPC Time (Collection Rule)

This rule collects the Processor of the % DPC Time performance counter. By default, a sample is taken every 5 minutes. % DPC Time monitors the percentage of time that the processor spent in routines known as deferred procedures calls, which are device driver scheduled routes, which are called from ISRs. Excessive %DPC Time might be an indication of a hardware or device driver problem.

CPU Utilization Percentage (Monitor)

CPU utilization is the percentage of elapsed time that the processor spends to run a non-idle thread. It is calculated by measuring the duration of the idle thread that is active in the sample interval and subtracting that time from interval duration. CPU utilization is the primary indicator of processor activity, and this monitor displays the average percentage of busy time observed during the sample interval.

CPU queue length is the current length of the server work queue for this CPU.

By default, the threshold for this monitor is CPU utilization of 95 percent measured once every 2 minutes using 5 samples to compute the threshold.

Monitoring Network Adapter

The performance counters measured from network interfaces are key indicators of network issues.

|  |  |
| --- | --- |
| Windows Server 2012 Network Adapter | Percent Bandwidth Used Total |
| Windows Server 2012 Network Adapter | Percent Bandwidth Used Read (Disabled by Default) |
| Windows Server 2012 Network Adapter | Percent Bandwidth Used Write (Disabled by Default) |
| Windows Server 2012 Network Adapter | Network Adapter Connection Health (Disabled by Default) |

Monitoring Memory Utilization

Sufficient memory is essential for efficient operation of a computer. We recommend that you consider using the following monitor.

|  |  |
| --- | --- |
| Class | Monitor name |
| Windows Server 2008 Operating System | Available Megabytes of Memory |
| Windows Server 2003 Operating System | Available Megabytes of Memory |

Available Megabytes of Memory

Available Megabytes of Memory is the amount of physical memory, in megabytes, immediately available for allocation to a process or for system use. It is equal to the sum of memory assigned to the standby (cached), free, and zero page lists. For more information about the memory manager, see MSDN, or the System Performance and Troubleshooting Guide chapter in the Windows Server 2008 Resource Kit or the Windows Server 2003 Resource Kit.

The default threshold is 2.5MB, a sample is taken every 2 minutes, and three samples are taken to compute the threshold. This monitor is considered Healthy when available memory is above the threshold and Critical when it is below the threshold.

Probe Module: IsFeatureInstalled

The Microsoft.Windows.Server.IsFeatureInstalled.Probe checks whether a specified feature is installed on a computer running the Windows Server 2008 or later server operating system. This module can be used by developers who need to discover features installed.

Module

|  |  |
| --- | --- |
| ID | Microsoft.Windows.Server.IsFeatureInstalled.Probe |
| Type | ProbeActionModuleType |
| MP | Microsoft.Windows.Server.Library |
| Run As | System.PrivilegedManagementAccount |
| Accessibility | Public |

Input (Configuration)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Description | Overridable |
| TimeoutSeconds | int | Timeout (seconds) | No |
| TargetComputerName | string | Target computer name | No |
| ServerFeature | string | Server component ID or name.The possible values of the ServerFeature property correspond to values of the ID or Name property of the WMI class Win32\_ServerFeature (<http://go.microsoft.com/fwlink/?LinkId=119210>). If ServerFeature is a valid integer, then the module will try to search for a particular feature/role by ID first, and then by Name.Important Win32\_ServerFeature::Name does not correspond to a description field provided in documentation for Win32\_ServerFeature::ID. One way to determine the actual name is to run servermanagercmd.exe -q and find the name in the output. There is also a risk that Win32\_ServerFeature::Name is subject to change without any notice in future operating system versions. | No |

Example Code

The following discovery and data source module type discovers Fax Server (ID = 5) on Windows Server 2008:

<DataSourceModuleType ID="Windows.Fax.Server.Discovery.DataSource" RunAs="System!System.PrivilegedMonitoringAccount" Accessibility="Internal">

 <Configuration>

 <xsd:element minOccurs="1" name="IntervalSeconds" type="xsd:unsignedInt" />

 <xsd:element minOccurs="1" name="TimeoutSeconds" type="xsd:unsignedInt" />

 </Configuration>

 <OverrideableParameters>

 <OverrideableParameter ID="IntervalSeconds" Selector="$Config/IntervalSeconds$" ParameterType="int" />

 <OverrideableParameter ID="TimeoutSeconds" Selector="$Config/TimeoutSeconds$" ParameterType="int" />

 </OverrideableParameters>

 <ModuleImplementation Isolation="Any">

 <Composite>

 <MemberModules>

 <DataSource ID="Scheduler" TypeID="System!System.Discovery.Scheduler">

 <Scheduler>

 <SimpleReccuringSchedule>

 <Interval Unit="Seconds">$Config/IntervalSeconds$</Interval>

 </SimpleReccuringSchedule>

 <ExcludeDates />

 </Scheduler>

 </DataSource>

 <ProbeAction ID="Probe" TypeID="WindowsServer!Microsoft.Windows.Server.IsFeatureInstalled.Probe">

 <TimeoutSeconds>$Config/TimeoutSeconds$</TimeoutSeconds>

 <TargetComputerName>$Target/Host/Property[Type="Windows!Microsoft.Windows.Computer"]/NetworkName$</TargetComputerName>

 <!--It is possible to pass the feature/role name instead of its ID-->

 <ServerFeature>5</ServerFeature><!--"Fax Server"-->

 <!--<ServerFeature>Fax Server</ServerFeature>-->

 </ProbeAction>

 <ConditionDetection ID="Mapper" TypeID="System!System.Discovery.ClassSnapshotDataMapper">

 <ClassId>$MPElement[Name="Windows.Fax.Server"]$</ClassId>

 <InstanceSettings>

 <Settings>

 <Setting>

 <Name>$MPElement[Name="Windows!Microsoft.Windows.Computer"]/PrincipalName$</Name>

 <Value>$Target/Host/Property[Type="Windows!Microsoft.Windows.Computer"]/PrincipalName$</Value>

 </Setting>

 <Setting>

 <Name>$MPElement[Name="System!System.Entity"]/DisplayName$</Name>

 <Value>Fax Server</Value>

 </Setting>

 </Settings>

 </InstanceSettings>

 </ConditionDetection>

 </MemberModules>

 <Composition>

 <Node ID="Mapper">

 <Node ID="Probe">

 <Node ID="Scheduler" />

 </Node>

 </Node>

 </Composition>

 </Composite>

 </ModuleImplementation>

 <OutputType>System!System.Discovery.Data</OutputType>

</DataSourceModuleType>

<Discovery ID="Windows.Fax.Server.Discovery" Enabled="true" Target="Server2008!Microsoft.Windows.Server.2008.OperatingSystem" ConfirmDelivery="true" Remotable="true" Priority="Normal">

 <Category>Custom</Category>

 <DiscoveryTypes>

 <DiscoveryClass TypeID="Windows.Fax.Server" />

 </DiscoveryTypes>

 <DataSource ID="DS" TypeID="Windows.Fax.Server.Discovery.DataSource">

 <IntervalSeconds>60</IntervalSeconds>

 <TimeoutSeconds>360</TimeoutSeconds>

 </DataSource>

</Discovery>

Related Links

 ServerManagerCmd.exe tool for installing/removing server roles/features:

<http://go.microsoft.com/fwlink/?LinkId=119209>

 Windows Management Instrumentation (WMI) Win32\_ServerFeature class

<http://go.microsoft.com/fwlink/?LinkId=119210>

Monitoring Software Installation Failures

The rule "A Software Update Installation Failed" is disabled for Windows Server 2003 and Windows Server 2008. You can enable this rule for Windows Server 2003 and Windows Server 2008 by using overrides.

Security Considerations

This section provides information about using a low-privilege account with the System Center Management pack for Windows Server Operating System. It also includes information about the computer groups that are added when this management pack is installed.

Low-Privilege Environments

The Windows Operating System Management Pack uses the agent action account to perform discovery and run rules, tasks, and monitors. The agent action account can run as Local System or as a named account. When running as Local System, the agent action account has all of the rights needed to perform discovery and run rules, tasks, and monitors.

Important

A low-privilege account can be used only on computers running Windows Server 2008 or Windows Server 2003. On computers running Windows 2000 Server, the action account must be a member of the local administrator security group or Local System.

Using a low-privilege domain account requires password updating that is consistent with your password expiration policies.

Using a Low-Privilege Account

You can use a low-privilege account for the agent action account; however, a number of rules and monitors require elevated rights. On computers running Windows Server 2008 or Windows Server 2003, the low-privilege account must meet the following requirements:

 Member of the local users group

 Member of the local Performance Monitor Users group

 Granted Log On Locally rights

Three of the monitors and object discoveries in the Windows Operating System Management Pack require a high-privilege account to perform the functions:

 Mount Point Discovery

 Physical Disk Discovery

 Monitoring the Computer Browser service

In addition, the following tasks related to Windows Server 2008 require a high-privilege account:

 Top CPU Usage

 Display Active Sessions

 Display Server Statistics

These rules and monitors have been configured to use the Privileged Monitoring Account Run As Profile, which defaults to Local System, and does not require association with any Run As account and target computer. As a result, no user intervention is required for these rules and monitors that need to use a high-privilege account.

If your requirements stipulate that only a low-privilege account is to be used in your environment, use overrides to disable the three monitors and object discoveries.

Computer Groups

You can delegate authority to a precise level by using user roles. For more information about user roles, see the "[About User Roles in the Operations Manager](http://go.microsoft.com/fwlink/?LinkId=108357)" topic in the Operations Manager Help (http://go.microsoft.com/fwlink/?LinkId=108357).

The following groups are added when you install the System Center Management Pack for Windows Server Operating System:

|  |  |
| --- | --- |
| Group | Comments |
| Windows Server 2008 R2 Computer Group | A group containing all computers that are running a Windows Server 2008 R2 version of the Windows operating system. |
| Windows Server 2008 R2 Core Computer Group | A group containing all computers that are running a Windows Server 2008 R2 Core version of the Windows operating system. |
| Windows Server 2008 R2 Full Computer Group | A group containing all computers that are running a Windows Server 2008 R2 Full version of the Windows operating system |
| Windows Server 2008 Computer Group | A group containing all computers that are running a Windows Server 2008 version of the Windows operating system. |
| Windows Server 2008 Core Computer Group | A group containing all computers that are running a Windows Server 2008 Core version of the Windows operating system. |
| Windows Server 2008 Full Computer Group | A group containing all computers that are running a Windows Server 2008 Full version of the Windows operating system |
| Windows Server 2003 Computer Group | A group containing any computer running Windows Server 2003 |
| Windows 2000 Server Computer Group | A group containing any computer running Windows 2000 Server |
| Windows Server Computer Group | A group containing any computer that is running Windows Server 2008, Windows Server 2003, or Windows 2000 Server |
| Windows Server Instances Group | A group containing any instance of the Windows Server classes such as logical disk, physical disk, disk partition network adapter, or processor |
| Windows Server 2012 Computer Group | A group containing all computers that are running a Windows Server 2012 version of the Windows operating system. |
| Windows Server 2012 Core Computer Group | A group containing all computers that are running a Windows Server 2012 Core version of the Windows operating system. |
| Windows Server 2012 Full Computer Group | A group containing all computers that are running a Windows Server 2012 Full version of the Windows operating system. |
| Windows Server 2012 R2 Computer Group | A group containing all computers that are running a Windows Server 2012 R2 version of the Windows operating system. |
| Windows Server 2012 R2 Core Computer Group | A group containing all computers that are running a Windows Server 2012 R2 Core version of the Windows operating system. |
| Windows Server 2012 R2 Full Computer Group | A group containing all computers that are running a Windows Server 2012 R2 Full version of the Windows operating system. |

Understanding Management Pack Operations

This section provides information about the objects that are discovered, how health rollup works, key monitoring scenarios, and additional views that you can expect in the Operations Manager user interface as a result of importing this management pack.

Objects the Management Pack Discovers

By default, the System Center Management Pack for Windows Server Operating System will discover the following objects:

 Operating systems

 Logical disks

 Cluster Shared Volumes

 Mount point

 Disk partitions containing logical partitions

 Physical disks containing a disk partition

 Network adapter

The following objects are not discovered by default but can be discovered if Object Discoveries is enabled using overrides.

 Physical disks

 Processor

 Disk partitions

In version 6.0.6667.0 of the Windows Server Operating System Management Pack, the following group discoveries are disabled:

 Microsoft.Windows.Server.2008.R2.Full.AllServersComputerGroupDiscovery

 Microsoft.Windows.Server.2008.R2.Core.AllServersComputerGroupDiscovery

In version 6.0.6667.0 of the Windows Server Operating System Management Pack, the intervals for some discoveries are changed for Windows Server 2003 and Windows Server 2008 as shown in the following table:

|  |  |  |
| --- | --- | --- |
| Discovery | Previous interval (seconds) | New interval (seconds) |
| Computer Discovery | 3605 | 86400 |
| CPU Discovery (disabled) | 3605 | 86640 |
| DiskPartition.Discovery (disabled) | 3605 | 86700 |
| DiskPartitionContainsLogicalDisk.Discovery | 7200 | 86580 |
| LogicalDisk.Discovery | 3605 | 86460 |
| MountPoint.Discovery | 3605 | 86520 |
| NetworkAdapter.All.Discovery (disabled) | 3605 | 86760 |
| NetworkAdapter.Discovery | 3605 | 86820 |
| PhysicalDisk.Discovery(disabled) | 3605 | 86880 |
| PhysicalDiskContainsDiskPartition.Discovery | 7200 | 86940 |

Note

Some discoveries are disabled by default, such as the discovery of physical disks. These discoveries can have a negative impact on performance. Consider the trade-off in benefits versus performance cost when deciding to enable any of these discoveries.

Upgrading an Operating System: How to Prevent Discovery Problems

Best Practice: Before you upgrade the operating system on a monitored computer, uninstall the Operations Manager agent. After the upgrade, reinstall the Operations Manager agent.

Explanation: The objects that the management pack discovers, such as logical disks, are hosted by a parent class that is not version-specific. When you upgrade the operating system, the order in which discovery occurs can result in duplicate objects being discovered.

For example, you upgrade a computer running Windows Server 2003 to Windows Server 2008.

 If the Windows Server 2003 discovery rules run first after the upgrade, the instance of the computer running Windows Server 2003 and its objects will be removed from discovery because the operating system base class has been removed. When the Windows Server 2008 discovery rules run, the computer and its objects will be discovered again.

 If the Windows Server 2008 discovery rules run first after the upgrade, the computer running Windows Server 2008 and its objects will be discovered. When the Windows Server 2003 discovery rules run, the instance of the computer running Windows Server 2003 will be removed from discovery, but the objects hosted by that instance will not be removed.

If you upgrade a computer without uninstalling the agent first and then discover duplicate objects, uninstall the agent to mark all hosted objects as deleted in the database. Next, reinstall the agent to discover only existing applications/objects.

Classes

The following table describes the available classes:

|  |  |
| --- | --- |
| Available Classes | Description |
| Windows Server 2003 Computer | All instances of computers running the Windows Server 2003 operating system |
| Windows Server 2003 Computer Group | A group containing all computers that are running a Windows 2003 Server version of the Windows operating system |
| Windows Server 2003 Disk Partition | All instances of a disk partition on a Windows 2003 Server operating system |
| Windows Server 2003 Logical Disk | All instances of a logical disk on a Windows 2003 Server operating system |
| Windows Server 2003 Network Adapter | All instances of a network adapter on a Windows 2003 Server operating system |
| Windows Server 2003 Operating System | All instances of the Windows Server 2003 operating system |
| Windows Server 2003 Physical Disk | All instances of a physical disk on a Windows 2003 Server operating system |
| Windows Server 2003 Processor | All instances of a processor on a Windows 2003 Server operating system |
| Windows Server 2008 Computer | All instances of computers running the Windows Server 2008 operating system |
| Windows Server 2008 Computer Group | A group containing all computers that are running a Windows 2008 Server version of the Windows operating system |
| Windows Server 2008 Core Computer | All instances of computers running the Windows Server 2008 Core operating system |
| Windows Server 2008 Core Computer Group | A group containing all computers that are running a Windows 2008 Core Server version of the Windows operating system |
| Windows Server 2008 Core Operating System | All instances of the Windows Server 2008 Core operating system |
| Windows Server 2008 Disk Partition | All instances of a disk partition on a Windows 2008 Server operating system |
| Windows Server 2008 Full Computer | All instances of computers running the Windows Server 2008 Full operating system |
| Windows Server 2008 Full Computer Group | A group containing all computers that are running a Windows 2008 Full Server version of the Windows operating system |
| Windows Server 2008 Full Operating System | All instances of the Windows Server 2008 Full operating system |
| Windows Server 2008 Logical Disk | All instances of a logical disk on a Windows 2008 Server operating system |
| Windows Server 2008 Network Adapter | All instances of a network adapter on a Windows 2008 Server operating system |
| Windows Server 2008 Operating System | All instances of the Windows Server 2008 operating system |
| Windows Server 2008 Physical Disk | All instances of a physical disk on a Windows 2008 Server operating system |
| Windows Server 2008 Processor | All instances of a processor on a Windows 2008 Server operating system |
| Windows Server 2008 R2 Computer | All instances of computers running the Windows Server 2008 R2 operating system |
| Windows Server 2008 R2 Core Computer | All instances of computers running the Windows Server 2008 R2 Core operating system |
| Windows Server 2008 R2 Full Computer | All instances of computers running the Windows Server 2008 R2 Full operating system |
| Windows Server 2008 R2 Operating System | All instances of the Windows Server 2008 R2 operating system |
| Windows Server 2008 R2 Core Operating System | All instances of the Windows Server 2008 R2 Core operating system |
| Windows Server 2008 R2 Full Operating System | All instances of the Windows Server 2008 R2 Full operating system |
| Windows Cluster | All instances of a Windows Cluster. This is used for Cluster Shared Volumes |
| Cluster Shared Volume | All instances of Windows Server Cluster Shared Volumes |
| Windows Server 2012 Computer | All instances of computers running the Windows Server 2012 operating system. |
| Windows Server 2012 Core Computer | All instances of computers running the Windows Server 2012 Core operating system. |
| Windows Server 2012 Full Computer | All instances of computers running the Windows Server 2012 Full operating system. |
| Windows Server 2012 Operating System | All instances of the Windows Server 2012 operating system. |
| Windows Server 2012 Core Operating System | All instances of the Windows Server 2012 Core operating system. |
| Windows Server 2012 Full Operating System | All instances of the Windows Server 2012 Full operating system. |
| Windows Server 2012 Disk Partition | All instances of a disk partition on a Windows 8 Server operating system. |
| Windows Server 2012 Logical Disk | All instances of a logical disk on a Windows 8 Server operating system. |
| Windows Server 2012 Network Adapter | All instances of a network adapter on a Windows 8 Server operating system. |
| Windows Server 2012 Physical Disk | All instances of a physical disk on a Windows 8 Server operating system. |
| Windows Server 2012 Processor | All instances of a processor on a Windows 8 Server operating system. |
| Windows Server 2012 R2 Computer | All instances of computers running the Windows Server 2012 R2 operating system. |
| Windows Server 2012 R2 Core Computer | All instances of computers running the Windows Server 2012 R2 Core operating system. |
| Windows Server 2012 R2 Full Computer | All instances of computers running the Windows Server 2012 R2 Full operating system. |
| Windows Server 2012 R2 Operating System | All instances of the Windows Server 2012 R2 operating system. |
| Windows Server 2012 R2 Core Operating System | All instances of the Windows Server 2012 R2 Core operating system. |
| Windows Server 2012 R2 Full Operating System | All instances of the Windows Server 2012 R2 Full operating system. |

How Health Rolls Up

The System Center Management Pack for Windows Server Operating System views the operating system as a hierarchy, where each level depends on the objects at the next lower level to be healthy. The health state from a lower-level object rolls up the hierarchy to the computer node.



*Diagram 1. Windows Server OS Management Pack Health Rollup 1 of 5*



*Diagram 2. Windows Server OS Management Pack Health Rollup 2 of 5*



*Diagram 3. Windows Server OS Management Pack Health Rollup 3 of 5*



*Diagram 4. Windows Server OS Management Pack Health Rollup 4 of 5*



*Diagram 5. Windows Server OS Management Pack Health Rollup 5 of 5*

Viewing Information in the Operations Console

After you import the System Center Management Pack for Windows Server Operating System, the following additions are made to the Operations Manager.

Monitoring Pane

The Microsoft Windows Server node is added to the Monitoring pane and contains the following views:

 Active Alerts

 Operating System Performance

 Task Status

 Windows Server State

The following views are available in the Health Monitoring node:

 Cluster Shared Volumes Health

 Disk Health

 Cluster Disk Health

 Network Adapter Health

 Operating System Health

The following views are available under the Operating System Events node:

 Failed Software Update Installations

 Services or Drivers Failing to Start

 Shares with Invalid Configuration

 Unexpected Service Terminations

The following views are available under the Performance node:

 Cluster Shared Volume Disk Capacity

 Disk Capacity

 Disk Performance

 Disk Utilization

 Memory Utilization (Page File)

 Memory Utilization (Physical)

 Network Adapter Utilization

 Processor Performance

Key Monitoring Scenarios

The System Center Management Pack for Windows Server Operating System is designed to provide monitoring information for computers running Windows Server 2008 (Full and Core), Windows Server 2003 or Windows 2000 Server. The following section describes some of the most common monitoring scenarios.

Availability

|  |  |
| --- | --- |
| Operating system and services | The following required services are checked for status (for example, running, not running, or paused):****** Logical Disk Manager (Windows Server 2003)****** Server (Windows Server 2012, Windows Server 2008 and Windows Server 2003)****** Workstation (Windows Server 2012, Windows Server 2008, and Windows Server 2003)****** Remote Procedure Call (Windows Server 2012, Windows Server 2008, and Windows Server 2003)****** DHCP Client (Windows Server 2012, Windows Server 2008, and Windows Server 2003)****** Computer Browser (Windows Server 2003)****** DNS Client (Windows Server 2012, Windows Server 2008, and Windows Server 2003)****** Event Log (Windows Server 2012, Windows Server 2008, and Windows Server 2003)****** Messenger (Windows Server 2012, and Windows Server 2003)****** Plug and Play (Windows Server 2012, Windows Server 2008, and Windows Server 2003)****** TCP/IP NetBIOS Helper (Windows Server 2012, Windows Server 2008, and Windows Server 2003)In addition, services and drivers are checked for unstable or unpredictable states, incorrect configuration, failure to start, or unexpected termination. |
| Storage | Logical hard drives are checked for availability, sufficient free space, and integrity of the NTFS partition. |
| Network | Network adapters are checked for connection health, name and IP address conflicts. |

Performance

|  |  |
| --- | --- |
| Processor | System processor(s) performance is checked system-wide using the following performance indicators:****** CPU Utilization****** Percent Interrupt Time****** DPC TimeProcessors can optionally be monitored on a per processor basis using the following criteria performance indicators:****** CPU Utilization****** Percent Interrupt Time****** Percent DPC TimePerformance data is collected for the following processor performance indicators:****** System Processor Queue Length****** System Context Switches Per Second****** Total Percent Interrupt Time****** Total DPC Time****** Total CPU Utilization |
| Memory | Memory consisting of physical memory and virtual memory (also known as page files) is monitored using the following performance indicators:****** Available memory (in MB)****** Pages per second****** Page file percent usagePerformance data is collected for the following memory criteria:****** Percent Committed Bytes In Use****** Available MB****** Pages per second****** Memory Pool Non Paged Bytes (disabled by default)****** Memory Pool Paged Bytes (disabled by default)****** Page File Percent Usage |
| Logical disk | ****** Logical disks are monitored, and performance data is collected for average disk seconds per read, disk seconds per write, and disk seconds per transfer.****** The “Logical Disk Fragmentation Level” monitor runs a periodic fragmentation check for all logical disks on a given computer running Windows Server 2003, Windows Server 2008, or Windows Server 2012 during non-business hours. Use overrides to enable automatic defragmentation or to modify the configuration of non-business hours. The Logical Disk Defragmentation task for Windows Server 2003 disks may take long periods of time to execute (up to several hours).Note The “Logical Disk Fragmentation Level” does not apply to Windows Server 2003 clusters. |
| Physical disk | Physical disks are monitored, and performance data is collected for average disk seconds per read, disk seconds per write, and disk seconds per transfer. |
| Network adapter | Network adapters are monitored for the number of bytes received per second, the number of bytes sent per second, and the total bytes per second. In addition, the health state of the network adapter is evaluated and is set to Healthy if connected and Critical if disconnected. |

Troubleshooting and Known Issues

The following issues have been identified in the System Center Management Pack for Windows Server Operating System.

Known Issue: Disk partitions, which correspond to mounted disks are not monitored

Issue: Disk partition discovery is not enabled by default, but when enabled, disk partitions that correspond to mounted disks cannot be monitored properly and will show up as “Not Monitored” in the Operations Console. Management is still provided by way of other means in this management pack, but the disk partition perspective will not work in these instances.

Workaround: There is no workaround currently available.

Known Issue: The “Core Windows Services Rollup” monitor for Windows Server 2008 includes services that it should not

Issue: The Core Windows Services Rollup monitoring that exists in all server operating system management packs aggregates the state of a number of monitors that are watching the state of various “core services” and will change state if any one of those services is not running. The Windows Server 2008 version of this monitor includes a monitor for the “Computer Browser Service Health,” which is not accurate because the service is no longer required for the Windows Server 2008 operating system to function properly.

Workaround: The monitor can be safely ignored, but it can also be disabled by overriding it.

Known Issue: Remote Desktop (Admin) not always accessible

Issue: There are times when Remote Desktop (Admin) is not accessible.

Workaround: The new Remote Desktop (Admin) functionality of Windows Server 2008 is supported by way of the /admin switch. However, it is available only in Windows Server 2008 and the Windows Vista operating system with SP1.

Known Issue: The console session does not work in Windows Server 2008

Issue: Attempts to use the /console switch do not work properly.

Workaround: The console session no longer exists in Windows Server 2008. Use of the /console switch will be ignored, and the behavior is the same as a simple Remote Desktop task.

Known Issue: Behavior for accessing the console session of Windows Server 2003 has changed

Issue: There is a change in behavior for accessing the console session of Windows Server 2003.

Workaround: For the Windows XP operating system with SP1 or earlier and Windows Vista, use the Remote Desktop (Console) task in Windows Server 2003. Remote Desktop (Admin) will cause an error dialog. For Windows Vista with SP1, use the Remote Desktop (Admin) task in Windows Server 2008. Remote Desktop (Console) will work as the Remote Desktop task without any notice.

Known Issue: SUBST drive mappings are not supported by logical disk monitoring

Issue: There is a command-line tool (SUBST.exe) that can be used to associate a path (such as c:\windows\system32) with a drive letter (such as D:\). Because these mappings are exposed in WMI, logical disk monitoring discovers them and attempts to monitor them as such, but will subsequently generate errors.

Workaround: There is no workaround currently available, and this configuration is not supported.

Known Issues with localized versions of the Management Pack

 Object discoveries scoped to Windows Server 2008 Computer and Windows Server 2008 Operating System may not display correctly in the Authoring pane.

 Some instances of localized display strings may not display correctly in the Operations console.

Known Issue: Cluster disks managed by third-party software are not monitored

Issue: If cluster disks are managed by third party software, and they change the resource type to anything other than “Physical Disk”, these disks will be discovered but we do not provide monitoring for these.

Workaround: There is no workaround currently available. In future, we will be removing discovery for these too.

Known Issue: PowerShell in 2012 MP fails if .NET is uninstalled from Core OS agent by user

Issue: .NET 4.5 and PowerShell are installed by default on Core OS and PowerShell depends on .NET, if they are uninstalled from Core OS agent by user, some workflows depending on PowerShell in 2012 MP will be failed.

Workaround: Install .NET Framework 4.5 and PowerShell on Core Operating System.

Known Issue: Disk Performance dashboard view is empty

Disk Performance Dashboard View is empty. This is because the rule to see this data is not enabled. In order to populate this view, please enable the rules.

In 2012 Monitoring MP:

 Microsoft.Windows.Server.6.2.OperatingSystem.TotalPercentDPCTime.Collection

 Microsoft.Windows.Server.6.2.OperatingSystem.TotalPercentInterruptTime.Collection

 Microsoft.Windows.Server.6.2.Processor.PercentDPCTime.Collection

 Microsoft.Windows.Server.6.2.Processor.PercentInterruptTime.Collection

In 2012 R2 Monitoring MP:

 Microsoft.Windows.Server.2012.R2.OperatingSystem.TotalPercentDPCTime.Collection

 Microsoft.Windows.Server.2012.R2.OperatingSystem.TotalPercentInterruptTime.Collection

Known Issue: Some objects may be missing in dashboard view during rediscovering upon the management pack update.

Issue: When the management pack is upgraded from version 6.0.7310.0 to version 6.0.7315.0, some objects (cluster disks and Cluster Shared Volumes) may be missing in dashboard view during rediscovering.

Workaround: The objects will appear in dashboard view again after some time (within 24 hours by default). Otherwise, the following discovery rules should be overridden:

* Cluster Name Discovery
* Cluster Shared Volume Discovery
* Cluster Disks Discovery

Known Issue: Cluster disks discovery

Cluster disks are discovered only for cluster groups that have network name resource.

Workaround: No workaround.

Cluster network name resource state Known Issue.

Issue: When a network name resource is taken offline, the cluster disks related to the same cluster group are displayed, but performance counters are not collected and the discovery does not work.

Workaround: No workaround.

Cluster disks state Known Issue.

**Issue:** When cluster disks are taken offline, they are rediscovered with different names (e.g. \\?\GLOBALROOT\Device\HarddiskX\PartitionY\).

Workaround: No workaround.

Known Issue: Offline Cluster Shared Volume is not displayed in the Operations Manager.

**Issue:** If Cluster Shared Volume is offline, it is not displayed in the Operations Manager console.

Workaround: No workaround.

Known Issue: Cluster Shared Volume State monitor does not work correctly if Cluster Shared Volume goes offline.

**Issue:** If Cluster Shared Volume goes offline for a certain period, Cluster Shared Volume State monitor may work incorrectly (the displayed monitor state may not reflect the actual situation).

Workaround: Wait until Cluster Shared Volume gets rediscovered while it is online. Please note that discovery is performed on a certain schedule, and rediscovery may take some time.

Known Issue: Performance counters of logical CPUs are no longer available upon MP upgrade.

Issue: Upon upgrade from MP versions 6.0.7303.0 and 6.0.7310.0 to version 6.0.7316.0, performance counters of logical CPUs on Windows Server 2008 R2 platforms will be removed from the operational database and will not be available in the Operations Manager console.

Workaround: No workaround.

Known Issue: Cluster Shared Volume objects will be re-discovered with a new key value upon the management pack upgrade.

Issue: Upon upgrade of the MP to version 6.0.7316.0, Cluster Shared Volume objects will be re-discovered with a new key value and will have different names (e.g. CSV\_C:\ClusterStorage\VolumeX instead of CSV).

Workaround: No workaround.

Known Issue: SCOM may stop discovery of clusters and cluster groups.

Issue: SCOM may stop launching discovery on virtual agentless computers that represent clusters and cluster groups. In most cases, the issue arises when cluster groups are moved from one cluster node to another.

Workaround: If possible, move the affected resource to the initial node and restart the agent to make discovery work.

Known Issue: Mount point discovery may work incorrectly.

Issue: In some cases, volume identifier of a cluster disk does not match with volume identifier of a logical disk; therefore, the discovery may work incorrectly: a cluster disk may be discovered as a logical disk. It may be connected with OS operation specifics.

Workaround: No workaround.

Known Issue: "Cluster Disc – Free Space Monitor (MB)” changes its state to “Critical” when the cluster disk is offline.

Issue: When a cluster disk is offline, “Cluster Disc – Free Space Monitor (MB)” changes its state to “Critical”.

Workaround: No workaround.

Known Issue: Previously discovered virtual computer and its objects are displayed along with the new ones upon change of network resource name.

Issue: When network resource name is changed in Failover Cluster Management, the previously discovered virtual computer and its objects are displayed for a short time, while new virtual computer and its objects are already discovered.

Workaround: No workaround.

Known Issue: Nano Server cluster health discoveries may be duplicated after MP upgrade.

Issue: Nano Server Cluster Disk and Nano Server Cluster Shared Volumes health discoveries may get duplicated after MP upgrade from version 6.0.7303.0 to a newer one.

Workaround: Wait until the discovery is completed. If any duplicates are still present, use a special task (**Undiscovery of legacy cluster objects for Nano Server**) to fix the issue. The task is provided to search for new Nano Server cluster objects, and if the objects are found, it gets all the previous Nano Server cluster objects, performs a comparison and removes the older duplicated objects.

Known Issue: Cluster Shared Volume NTFS State Monitor does not switch to Critical state.

Issue: Cluster Shared Volume NTFS State Monitor always remains in Healthy state, even if its real state is critical.

Workaround: No workaround.

Appendix: Reports

The Windows Server 2008 Operating System and Windows Server 2003 Operating System nodes appear in the Reporting pane and contain the following reports:

 Disk Performance Analysis

 Memory Performance History (Available MB)

 Memory Performance History (Page Reads per Sec)

 Memory Performance History (Page Writes per Sec)

 Memory Performance History (Pages per Sec)

 Operating System Configuration

 Operating System Performance

 Operating System Storage Configuration

 Paging File Performance History (Percentage Usage)

 Performance By System

 Performance By Utilization

 Performance History

 Performance History (Context Switches per Sec)

 Performance History (Percent Processor Time)

 Performance History (Processor Queue Length)

 Performance History Interrupt Time

 Physical Disk Performance History (Average Disk Queue Length)

 Pool Performance History (Non-Paged Bytes)

 Pool Performance History (Paged Bytes)

To run the Performance report for logical drives

|  |
| --- |
| 1. In the Operations console, click the Reporting button.2. Expand Reporting and then click Microsoft Generic Report Library.3. In the list of reports, click Performance and then in the Actions pane, click Open.4. In the From field, select a specific date or a previous week’s day that equates to seven days earlier than the day you are running the report. Leave the time field to the default.5. In the To field, leave the day and time fields to the default.6. In the Objects section, click Change.7. In the Settings window, click New Series.8. In the Details section, click Add object.9. In the Add Object window, select Contains, type : and click Search. This displays a list of all logical disks discovered.10. Click one of the C: drive instances in Available items, click Add, and then click OK.11. In the Settings window, in the Rule section, click Browse.12. On the Search By Counter tab, in the Performance object field, select LogicalDisk.13. In the Counter field, click % Free Space, and then click OK.14. Repeat steps 6 through 13 for a different instance (ideally using the same rule).15. Run the report. There will be a line corresponding to each instance and the lines are correlated to instances in the table below the chart. |

The following table lists the rules that generate data for each report.

|  |  |
| --- | --- |
| Report | Rules used to generate data for report |
| Disk Performance Analysis | **** Microsoft.Windows.Server.2008.LogicalDisk.AvgDiskQueueLength.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.DiskReadsPerSec.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.DiskReadsPerSec.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.AvgDiskSecPerTransfer.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.AvgDiskSecPerTransfer.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.DiskBytesPerSec.Collection |
| Memory Performance History (Available MB) | **** Microsoft.Windows.Server.2008.OperatingSystem.MemoryAvailableMBytes.Collection |
| Memory Performance History (Page Reads per Sec) | **** Microsoft.Windows.Server.2008.OperatingSystem.MemoryPageReadsPerSec.Collection |
| Memory Performance History (Page Writes per Sec) | **** Microsoft.Windows.Server.2008.OperatingSystem.MemoryPageWritesPerSec.Collection |
| Memory Performance History (Pages per Sec) | **** Microsoft.Windows.Server.2008.OperatingSystem.MemoryPagesPerSec.Collection |
| Operating System Performance | **** Microsoft.Windows.Server.2008.OperatingSystem.TotalPercentProcessorTime.Collection**** Microsoft.Windows.Server.2008.OperatingSystem.SystemProcessorQueueLength.Collection**** Microsoft.Windows.Server.2008.OperatingSystem.MemoryAvailableMBytes.Collection**** Microsoft.Windows.Server.2008.OperatingSystem.MemoryPagesPerSec.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.FreeSpace.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.AvgDiskSecPerRead.Collection**** Microsoft.Windows.Server.2008.LogicalDisk.AvgDiskSecPerWrite.Collection |
| Paging File Performance History (Percentage Usage) | **** Microsoft.Windows.Server.2008.OperatingSystem.PageFilePercentUsage.Collection |
| Performance History | **** Microsoft.Windows.Server.2008.OperatingSystem.TotalPercentProcessorTime.Collection |
| Performance History (Context Switches per Sec) | **** Microsoft.Windows.Server.2008.OperatingSystem.SystemContextSwitchesPerSec.Collection |
| Performance History (Percent Processor Time) | **** Microsoft.Windows.Server.2008.OperatingSystem.TotalPercentProcessorTime.Collection |
| Performance History (Processor Queue Length) | **** Microsoft.Windows.Server.2008.OperatingSystem.SystemProcessorQueueLength.Collection |
| Performance History Interrupt Time | **** Microsoft.Windows.Server.2008.OperatingSystem.TotalPercentInterruptTime.Collection |
| Physical Disk Performance History (Average Disk Queue Length) | **** Microsoft.Windows.Server.2008.PhysicalDisk.AvgDiskQueueLength.Collection |
| Pool Performance History (Non-Paged Bytes) | **** Microsoft.Windows.Server.2008.OperatingSystem.MemoryPoolNonPagedBytes.Collection |
| Pool Performance History (Paged Bytes) | **** Microsoft.Windows.Server.2008.OperatingSystem.MemoryPoolPagedBytes.Collection |

Appendix: Windows Server 2008/2012 Rules and Monitors Disabled by Default

The following table lists the rules and monitors for Windows Server 2008 that are disabled by default.

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| Rule/monitor | Why disabled | When to enable |
| Discover Windows CPUs | This discovery is disabled based on customer feedback. A majority of our customers do not monitor Windows CPUs by default. | Enable this discovery rule when CPUs need to be discovered and monitored. |
| Discover Windows Disk Partitions | This discovery is disabled based on customer feedback. A majority of our customers do not monitor Windows disk partitions by default. | Enable this discovery rule when Windows disk partitions need to be discovered and monitored. |
| Discover Network Adapters (Both Enabled and Disabled) | There are two different discoveries for network adapters; Discover Network Adapters (Enabled) and Discover Network Adapters (Both Enabled and Disabled). Since they both discover enabled network adapters, both should not be enabled at the same time.  | Enable this discovery rule when disabled network adapters need to be discovered. |
| Discover Windows Physical Disks | This discovery is disabled based on customer feedback. A majority of our customers do not monitor Windows physical disks by default. | Enable this discovery rule when Windows physical disks need to be discovered and monitored. |
| Populate All Windows Server 2008 R2 Core Computer Group | This group population rule is disabled based on customer feedback. A majority of our customers does not differentiate between Windows Server 2008 R2 Core and Full computers and therefore do not need to populate these groups. | Enable this Group Population Rule if you need a group of only the Windows Server 2008 R2 Core computers. |
| Populate All Windows Server 2008 R2 Full Computer Group | This Group Population Rule is disabled based on customer feedback. A majority of our customers does not differentiate between Windows Server 2008 R2 Core and Full computers and therefore do not need to populate these groups. | Enable this group population rule if you need a group of only the Windows Server 2008 R2 Full computers. |
| (Windows Server 2008 Logical Disk) Average Disk Seconds Per Write (Logical Disk) | This monitor is disabled based on customer feedback. A majority of our customers do not monitor average disk seconds per write performance information on logical disks by default. | Enable this monitor if average disk seconds per write performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Logical Disk) Average Logical Disk Seconds Per Read | This monitor is disabled based on customer feedback. A majority of our customers do not monitor average logical disk seconds per read performance information on logical disks by default. | Enable this monitor if average logical disk seconds per read performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Logical Disk) Logical Disk Percent Idle Time | This monitor is disabled based on customer feedback. A majority of our customers do not monitor logical disk percent idle time performance information on logical disks by default. | Enable this monitor if logical disk percent idle time performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Network Adapter) Network Adapter Connection Health | This monitor is disabled based on customer feedback. A majority of our customers do not monitor network adapter connection health by default. | Enable this monitor if network adapter connection health monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Network Adapter) Percent Bandwidth Used Read | This monitor is disabled based on customer feedback. A majority of our customers do not monitor percent bandwidth used read performance information on network adapters by default. | Enable this monitor if percent bandwidth used read performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Network Adapter) Percent Bandwidth Used Write | This monitor is disabled based on customer feedback. A majority of our customers do not monitor percent bandwidth used write performance information on network adapters by default. | Enable this monitor if percent bandwidth used write performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Operating System) Percentage of Committed Memory in Use | This monitor is disabled based on customer feedback. A majority of our customers do not monitor percentage of committed memory in use performance information by default. | Enable this monitor if percentage of committed memory in use performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Operating System) Total DPC Time Percentage | This monitor is disabled based on customer feedback. A majority of our customers do not monitor total DPC time percentage performance information by default. | Enable this monitor if total DPC time percentage performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Operating System) Total Percentage Interrupt Time | This monitor is disabled based on customer feedback. A majority of our customers do not monitor total percentage interrupt time performance information by default. | Enable this monitor if total percentage interrupt time performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Physical Disk) Average Physical Disk Seconds Per Read | This monitor is disabled based on customer feedback. A majority of our customers do not monitor average physical disk seconds per read performance information on physical disks by default. | Enable this monitor if average physical disk seconds per read performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Physical Disk) Physical Disk Percent Idle Time | This monitor is disabled based on customer feedback. A majority of our customers do not monitor physical disk percent idle time performance information on physical disks by default. | Enable this monitor if physical disk percent idle time performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Processor) CPU DPC Time Percentage | This monitor is disabled based on customer feedback. A majority of our customers do not monitor CPU DPC time percentage performance information on CPUs by default. | Enable this monitor if CPU DPC time percentage performance monitoring is required. |
| (Windows Server 2012, Windows Server 2008 Processor) CPU Percentage Interrupt Time | This monitor is disabled based on customer feedback. A majority of our customers do not monitor CPU percentage interrupt time performance information on CPUs by default. | Enable this monitor if CPU percentage interrupt time performance monitoring is required. |
| Collection rule for the Average Disk Queue Length 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average disk queue length performance information by default. | Enable this collection rule if average disk queue length performance collection is required. |
| Collection rule for Average Disk Seconds Per Read 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average disk seconds per read performance information by default. | Enable this collection rule if average disk seconds per read performance collection is required. |
| Collection rule for Average Disk Seconds Per Write 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average disk seconds per write performance information by default. | Enable this collection rule if average disk seconds per write performance collection is required. |
| Collection rule for Disk Bytes Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the disk bytes per second performance information by default. | Enable this collection rule if disk bytes per second performance collection is required. |
| Collection rule for Disk Reads Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the disk reads per second performance information by default. | Enable this collection rule if disk reads per second performance collection is required. |
| Collection rule for Disk Writes Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the disk writes per second performance information by default. | Enable this collection rule if disk writes per second performance collection is required. |
| Disk Read Bytes Per Second 2008 and 2012 (Logical Disk) | This collection rule is disabled based on customer feedback. Most of our customers do not collect the disk read bytes per second performance information on logical disks by default. | Enable this collection rule if disk read bytes per second performance collection is required. |
| Logical Disk Write Bytes Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect disk write bytes per second performance information on logical disks by default. | Enable this collection rule if disk writes per second performance collection is required. |
| Average Logical Disk Read Queue Length 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average logical disk read queue length performance information on logical disks by default. | Enable this collection rule if average logical disk read queue length performance collection is required. |
| Average Disk Write Queue Length 2008 and 2012 (Logical Disk) | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average disk write queue length performance information on logical disks by default. | Enable this collection rule if average disk write queue length performance collection is required. |
| Logical Disk Split I/O Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect split I/O per second performance information on logical disks by default. | Enable this collection rule if split I/O per second performance collection is required. |
| Output Queue Length | This collection rule is disabled based on customer feedback. Most of our customers do not collect the output queue length performance information on network adapters by default. | Enable this collection rule if output queue length performance collection is required. |
| Percent Bandwidth Used Read | This collection rule and monitor is disabled based on customer feedback. Most of our customers do not collect the percent bandwidth used read performance information on network adapters by default. | Enable this collection rule or monitor if percent bandwidth used read performance collection or monitoring is required. |
| Percent Bandwidth Used Write | This collection rule and monitor is disabled based on customer feedback. Most of our customers do not collect the percent bandwidth used write performance information on network adapters by default. | Enable this collection rule or monitor if percent bandwidth used write performance collection or monitoring is required. |
| Network Adapter Bytes Received per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the network adapter bytes received per second performance information on network adapters by default. | Enable this collection rule if network adapter bytes received per second performance collection is required. |
| Network Adapter Bytes Sent per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the network adapter bytes sent per second performance information on network adapters by default. | Enable this collection rule if network adapter bytes sent per second performance collection is required. |
| Memory Page Reads per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the memory page reads per second performance information by default. | Enable this collection rule if memory page reads per second performance collection is required. |
| Memory Page Writes per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the memory page writes per second performance information by default. | Enable this collection rule if memory page writes per second performance collection is required. |
| Memory % Committed Bytes in Use 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the memory % committed bytes in use performance information by default. | Enable this collection rule if memory % committed bytes in use performance collection is required. |
| Page File Percentage Use 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the page file percentage use performance information by default. | Enable this collection rule if page file percentage use performance collection is required. |
| A Service or Driver Failed to Start | This alert rule is disabled based on customer feedback. A majority of our customers do not alert on a generic failure such as “A Service or Driver Failed to Start” by default. | Enable this alert rule if a generic failure such as “A Service or Driver Failed to Start” monitoring is required. |
| A Service Terminated Unexpectedly | This alert rule is disabled based on customer feedback. A majority of our customers do not alert on a generic failure such as “A Service Terminated Unexpectedly” by default. | Enable this alert rule if a generic failure such as “A Service Terminated Unexpectedly” monitoring is required. |
| A Share Configuration is Invalid | This alert rule is disabled based on customer feedback. A majority of our customers do not alert on a generic failure such as “A Share Configuration is Invalid” by default. | Enable this alert rule if a generic failure such as “A Share Configuration is Invalid” monitoring is required. |
| A Software Update Installation Failed | This alert rule is disabled based on customer feedback. A majority of our customers do not alert on a generic failure such as “A Software Update Installation Failed” by default. | Enable this alert rule if a generic failure such as “A Software Update Installation Failed” monitoring is required. |
| System Context Switches per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect system context switches per second performance information by default. | Enable this collection rule if system context switches per second performance collection is required. |
| Total Processor % DPC Time 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the total processor % DPC time performance information by default. | Enable this collection rule if total processor % DPC time performance collection is required. |
| Total Processor % Interrupt Time 2008 and 2012  | This collection rule is disabled based on customer feedback. Most of our customers do not collect total processor % interrupt time performance information by default. | Enable this collection rule if total processor % interrupt time performance collection is required. |
| Cache Bytes | This collection rule is disabled based on customer feedback. Most of our customers do not collect the cache bytes performance information by default. | Enable this collection rule if cache bytes performance collection is required. |
| Committed Bytes | This collection rule is disabled based on customer feedback. Most of our customers do not collect the committed bytes performance information by default. | Enable this collection rule if committed bytes performance collection is required. |
| Pages Output Per Second | This collection rule is disabled based on customer feedback. Most of our customers do not collect the pages output per second performance information by default. | Enable this collection rule if pages output per second performance collection is required. |
| Pages Input Per Second | This collection rule is disabled based on customer feedback. Most of our customers do not collect the pages input per second performance information by default. | Enable this collection rule if pages input per second performance collection is required. |
| Commit Limit | This collection rule is disabled based on customer feedback. Most of our customers do not collect the commit limit performance information by default. | Enable this collection rule if commit limit performance collection is required. |
| Pool Paged Resident Bytes | This collection rule is disabled based on customer feedback. Most of our customers do not collect the pool paged resident bytes performance information by default. | Enable this collection rule if pool paged resident bytes performance collection is required. |
| System Cache Resident Bytes | This collection rule is disabled based on customer feedback. Most of our customers do not collect the system cache resident bytes performance information by default. | Enable this collection rule if system cache resident bytes performance collection is required. |
| Cache Data Map Hits Percent | This collection rule is disabled based on customer feedback. Most of our customers do not collect the cache data map hits percent performance information by default. | Enable this collection rule if cache data map hits percent performance collection is required. |
| Physical Disk Average Disk Queue Length 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk average disk queue length performance information by default. | Enable this collection rule if physical disk average disk queue length performance collection is required. |
| Physical Disk Average Disk Seconds per Read 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk average disk seconds per read performance information by default. | Enable this collection rule if physical disk average disk seconds per read performance collection is required. |
| Physical Disk Average Disk Seconds per Write 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk average disk seconds per write performance information by default. | Enable this collection rule if physical disk average disk seconds per write performance collection is required. |
| Physical Disk Disk Bytes per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk bytes per second performance information by default. | Enable this collection rule if physical disk bytes per second performance collection is required. |
| Physical Disk Reads per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk reads per second performance information by default. | Enable this collection rule if physical disk reads per second performance collection is required. |
| Physical Disk Writes per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk writes per second performance information by default. | Enable this collection rule if physical disk writes per second performance collection is required. |
| % Physical Disk Idle Time 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the % physical disk idle time performance information by default. | Enable this collection rule if % physical disk idle time performance collection is required. |
| Disk Read Bytes Per Second 2008 and 2012 (Physical Disk) | This collection rule is disabled based on customer feedback. Most of our customers do not collect the disk read bytes per second performance information by default. | Enable this collection rule if disk read bytes per second performance collection is required. |
| Physical Disk Write Bytes Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk write bytes per second performance information by default. | Enable this collection rule if physical disk write bytes per second performance collection is required. |
| Average Physical Disk Read Queue Length 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average physical disk read queue length performance information by default. | Enable this collection rule if average physical disk read queue length performance collection is required. |
| Average Disk Write Queue Length 2008 and 2012 (Physical Disk) | This collection rule is disabled based on customer feedback. Most of our customers do not collect the average disk write queue length performance information by default. | Enable this collection rule if average disk write queue length performance collection is required. |
| Physical Disk Split I/O Per Second 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the physical disk split I/O per second performance information by default. | Enable this collection rule if physical disk split I/O per second performance collection is required. |
| Processor % DPC Time 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the processor % DPC time performance information by default. | Enable this collection rule if processor % DPC time performance collection is required. |
| Processor % Interrupt Time 2008 and 2012 | This collection rule is disabled based on customer feedback. Most of our customers do not collect the processor % interrupt time performance information by default. | Enable this collection rule if processor % interrupt time performance collection is required. |
| Cluster Shared Volume - NTFS State Monitor | This monitor is disabled because the state of the NTFS partition is not typically needed (Dirty State notification). | Enable this monitor if the state of the NTFS file system is required. |
| Cluster Shared Volume - State Monitor | This monitor is disabled because, when enabled, it may cause false negatives during backups of the Cluster Shared Volumes. | Enable this monitor if availability of the Cluster Shared Volume is necessary (not based on CSV space). |
| Windows Server 2008 R2 Operating System BPA Monitor | This monitor is disabled based on customer feedback. Customers do not want BPA data to be collected on all systems by default. | Enable this monitor if BPA information is necessary. |