

Guide to System Center Management Pack for Windows Server 2016 Operating System

**Microsoft Corporation**

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If you have an idea or suggestion about this management pack, the Operations Manager team encourages you to share it at the [SCOM Feedback site](http://systemcenterom.uservoice.com/forums/293064-general-operations-manager-feedback/filters/top).

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# System Center Management Pack for the Windows Server 2016 Operating System

The System Center Management Pack for Windows Server 2016 Operating System consists of the following management packs: Microsoft Windows Server 2016 Discovery, Microsoft Windows Server 2016 Monitoring, Microsoft Windows Server Library, Microsoft Windows Server Reports, and Microsoft Windows Server Cluster Shared Volume Monitoring. The Microsoft Windows Server management packs monitor the performance, health, and availability of Windows Server 2016.

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 2016 operating system, thereby helping to reduce the total cost of ownership.

## Document Version

This guide is based on 10.0.8.0 version of the Management Pack for Windows Server 2016 Operating System.

## Revision History

|  |  |
| --- | --- |
| Release Date | Changes |
| November, 2016 | * Added topic “Changes in version 10.0.8.0. * Updated “Troubleshooting and Known Issues” section. * Updated Revision History. * Updated “Monitoring Individual Processor Performance” section. * Added a note to “Monitoring Network Adapter” section. * Updated Appendix: Windows Server 2016 Rules and Monitors Disabled by Default. * Updated “Changes in version 10.0.2.0” topic. * Updated health roll-up diagrams. * Updated “Files in This Management Pack” section |
| June, 2016 | * Added topic “Changes in version 10.0.3.0”. * Updated Revision History. |
| January, 2016 | * Added topic “Changes in version 10.0.2.0”. * Updated Revision History. |
| December, 2015 | * Various versioning and naming changes correlated with “Windows Server Technical Preview” to “Windows Server 2016” Management Pack rebranding. * Added topic “Changes in version 10.0.0.0”. * Updated Revision History. |
| December, 2015 | * Added topic “Changes in version 10.0.1.0”. * Updated Revision History. |
| August, 2015 | Original release of this guide for Windows Server Technical Preview Management Pack (version 6.0.7298.0). |

## Getting the Latest Management Pack and Documentation

You can find the Management Pack for Windows Server 2016 Operating System on the [Download Center](http://go.microsoft.com/fwlink/?LinkId=717060) page.

## Changes in Version 10.0.8.0

* Added two new object types (*Windows Server 2016 Computer (Nano)* and *Windows Server 2016 Operation System (Nano)*) and a new group type (*Windows Server 2016 Computer Group (Nano)*). This improvement will help users to differentiate the groups and object types and manage them more accurately.
* Added a new monitor: Windows Server 2016 Storport Miniport Driver Timed Out Monitor; the monitor alerts when the Storport miniport driver times out a request.
* 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](#Undiscovery) for details.
* Fixed bug with Windows Server 2016 Operating System BPA Monitor: it did not work.
* Fixed bug with incorrect discovery of Windows Server Operating System on Windows Server 2016 agentless cluster computers occurring upon management pack upgrade. See [Troubleshooting and Known Issues section](#ImproperDiscoveryKI) for details.
* Fixed bug: Free Space monitors did not work on Nano Server.
* Changed the logic of setting the override threshold values for Free Space (MB and %) monitors: a user 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.
* Fixed localization issue with root report folder in the Report Library.
* Fixed bug: Windows Server 2016 Computer discovery was causing repeated log events (EventID: 10000) due to improper discovery of non-2016 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.
* Due to incompatibility issues in monitoring logic, several Cluster Shared Volumes MP bugs remained in version 10.0.3.0. 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 10.0.1.0.
  + 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: Cluster Shared Volumes were being discovered twice - as a Cluster Shared Volume and as a logical disk; now they are discovered as Cluster 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: 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 was changed in Failover Cluster Management, the previously discovered virtual computer and its objects were displayed for a short time, while new virtual computer and its objects were already discovered.
  + Fixed bug: performance counters for physical CPU (sockets) were collected incorrectly (for separate cores, but not for the physical CPU as a whole).
  + Fixed bug: Windows Server 2016 Operating System BPA monitor was failing with "Command Not Found" exception. Also, see [Troubleshooting and Known Issues](#BPA) section for details on the corresponding task.
  + Fixed bug: View Best Practices Analyzer compliance task was failing with exception: “There has been a Best Practice Analyzer error for Model Id”.
  + Fixed bug: in the Operations Console, “Volume Name” fields for logical disks, mount points, or Cluster Shared Volumes were empty in “Detail View”, while the corresponding data was entered correctly.
  + Fixed bug: Logical Disk Fragmentation Level monitor was not working; it never changed its state from “Healthy”.
  + Fixed bug: Logical Disk Defragmentation task was not working on Nano Server.
  + Fixed bug: If network resource name contained more than 15 symbols, the last symbols of the name was cut off, which was resulting in cluster disks and Cluster Shared Volume discovery issues.
  + Fixed bug: Logical Disk Free Space monitor did not change its state. Now it is fixed and considered as deprecated.
* The Management Pack was checked for compatibility with the latest versions of Windows Server 2016 and updated to support the latest version of Nano Server.
* Added new design for CPU monitoring: physical and logical CPUs are now monitored in different way.
* Updated Knowledge Base articles and display strings.
* Improved discovery of multiple (10+) physical disks.
* Added compatibility with Nano installation.

## Changes in Version 10.0.3.0

* 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: Cluster Shared Volumes were being discovered twice - as a Cluster Shared Volume and as a logical disk; now they are discovered as Cluster 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.
* 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 10.0.2.0

* Updated Microsoft.Windows.Server.ClusterSharedVolumeMonitoring.ClusterSharedVolume.Monitoring.State monitor alert properties and description. The fix resolved property replacement failure warning being generated on monitor alert firing.
* Fixed bug: Windows Server Operating System objects were discovered on Agentless Managed virtual cluster computers (Cluster Instances and Cluster Groups).

## Changes in Version 10.0.1.0

* Script code migration to PowerShell for Windows Server 2016 Nano support

## Changes in Version 10.0.0.0

* “Windows Server Technical Preview” to “Windows Server 2016” versioning and naming rebranding changes
* 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
* Network Adapter performance counters were not collected with accompanying event, and not able to resolve counter instance issue posted to event log; fixed with this release

## Supported Configurations

The System Center Management Pack for Windows Server 2016 Operating System is designed to monitor the following versions of the base operating system:

* Windows Server 2016
* Windows Server Nano

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 System Center 2012, System Center 2012 R2 and System Center 2016 Operations Manager.

Please note that Server Nano monitoring is supported by SCOM 2016 only.

## Getting Started

This section provides information about importing System Center Management Pack for Windows Server 2016 Operating System files.

### Before You Import the Management Pack

Before you import the System Center Management Pack for Windows Server 2016 Operating System, mind 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 Windows Server Library and Windows Server 2016 management pack.
* You must have Windows PowerShell installed.
* **Importan**t: Please note that you have to import Windows Server OS Library MP (Microsoft.Windows.Server.Library.mp) before importing other Windows Server OS MP files!

Files in This Management Pack

To monitor Windows Server 2016 operating system by using System Center Operations Manager, you must first download the System Center Management Pack for Windows Server 2016 Operating System from the Management Pack Catalog, located at <http://go.microsoft.com/fwlink/?LinkId=82105>. The Management Pack for Windows Server 2016 Operating System includes the following files:

|  |  |  |
| --- | --- | --- |
| File | Description | Version |
| Microsoft.Windows.Server.2016.Discovery.mp | Displayed as “Windows Server 2016 Operating System (Discovery)”.This management pack discovers Windows Server 2016 specific classes. This management pack is a prerequisite for Windows Server 2016 management pack, and is required by other management packs that focus their monitoring on systems running Windows Server 2016 specifically. | 10.0.8.0 |
| Microsoft.Windows.Server.2016.Monitoring.mp | Displayed as “Windows Server 2016 Operating System (Monitoring)“. This management pack defines the rules, monitors, views, tasks, and reports that are used for monitoring Windows Server 2016 Operating System. | 10.0.8.0 |
| 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.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 2008-2016 and Nano Server operating systems. | 10.0.8.0 |
| 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 |

### How to Import the Management Pack

For instructions about importing a management pack, see [How to Import an Operations Manager Management Pack](http://go.microsoft.com/fwlink/?LinkID=98348). The System Center Management Pack for Windows Server 2016 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.

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 preliminary deletion of 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).

## 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 2016 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 2016 physical disk objects. After the object discovery has been enabled, physical disks will be discovered within 24 hours, after which they will become monitored.

#### Monitoring Logical and Physical Disks

The same set of monitors apply to logical disks, Cluster Shared Volumes, and cluster disks.

|  |  |
| --- | --- |
| Objects | Monitor name |
| Windows Server 2016 Logical Disk | Current Disk Queue Length (Logical Disk) |
| Windows Server 2016 Logical Disk | File system error or corruption |
| Windows Server 2016 Logical Disk | Average Logical Disk Seconds Per Transfer |
| Windows Server 2016 Logical Disk | [Deprecated] Logical Disk Free Space (Disabled by Default) |
| Windows Server 2016 Logical Disk | Logical Disk Fragmentation Level |
| Windows Server 2016 Logical Disk | Logical Disk Percent Idle Time (Disabled by Default) |
| Windows Server 2016 Logical Disk | Average Disk Seconds Per Read (Logical Disk) (Disabled by Default) |
| Windows Server 2016 Logical Disk | Average Disk Seconds Per Write (Logical Disk) (Disabled by Default) |
| Windows Server 2016 Logical Disk | Windows Server 2016 Logical Disk Free Space (MB) Low (Disabled by Default) |
| Windows Server 2016 Logical Disk | Windows Server 2016 Logical Disk Free Space (%) Low (Disabled by Default) |
| Windows Server 2016 Physical Disk | Current Disk Queue Length (Physical Disk) |
| Windows Server 2016 Physical Disk | Average Physical Disk Seconds Per Transfer |
| Windows Server 2016 Physical Disk | Physical Disk Percent Idle Time (Disabled by Default) |
| Windows Server 2016 Physical Disk | Average Physical Disk Seconds Per Read (Disabled by Default) |
| Windows Server 2016 Physical Disk | Average Physical Disk Seconds Per Write (Physical Disk) (Disabled by Default) |

Evaluate the default settings for the following parameters and compare them against your business needs.

#### 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.

This monitor is designed 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 by default. Use the override to enable alerts on a Warning 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.

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.

### Monitoring Processors

Windows Server 2016 management pack 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 2016. 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.   
Please note that there is no separate performance counter for sockets (processors) in Windows Server. To provide correct collection of performance data for sockets, a special script is used, which gathers the necessary data from *Win32\_PerfFormattedData\_PerfOS\_Processor* WMI class.

#### 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 2016 Operating System | Core Windows Services Rollup |
| Windows Server 2016 Operating System | Computer Browser Service Health |
| Windows Server 2016 Operating System | DHCP Client Service Health |
| Windows Server 2016 Operating System | DNS Client Service Health |
| Windows Server 2016 Operating System | Plug and Play Service Health |
| Windows Server 2016 Operating System | Memory Pages Per Second |
| Windows Server 2016 Operating System | Computer Browser Service Health |
| Windows Server 2016 Operating System | Windows Event Log Service Health |
| Windows Server 2016 Operating System | Available Megabytes of Memory |
| Windows Server 2016 Operating System | Plug and Play Service Health |
| Windows Server 2016 Operating System | RCP Service Health |
| Windows Server 2016 Operating System | Server Service Health |
| Windows Server 2016 Operating System | TCP/IP NetBIOS Service Health |
| Windows Server 2016 Operating System | Total CPU Utilization Percentage |
| Windows Server 2016 Operating System | Workstation Service Health |
| Windows Server 2016 Operating System | Windows Server 2016 Operating System BPA Monitor |
| Windows Server 2016 Operating System | Percentage of Committed Memory in Use (Disabled by Default) |
| Windows Server 2016 Operating System | Total DPC Time Percentage (Disabled by Default) |
| Windows Server 2016 Operating System | Total Percentage Interrupt Time (Disabled by Default) |
| Windows Server 2016 Operating System | Windows Server 2016 Max Concurrent API Monitor |

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.

Please note that Computer Browser Service Health monitor is not running on Nano Server (the state of the monitor will be always “Healthy”).

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 that 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 2016 Processor | Processor % Interrupt Time |
| Windows Server 2016 Processor | Processor % Processor Time |
| Windows Server 2016 Processor | Processor % DPC Time |
| Windows Server 2016 Processor | CPU Percentage Utilization |
| Windows Server 2016 Processor | CPU DPC Time Percentage (Disabled by Default) |
| Windows Server 2016 Processor | CPU Percentage Interrupt Time (Disabled by Default) |
| Windows Server 2016 Logical Processor | Logical Processor % Interrupt Time |
| Windows Server 2016 Logical Processor | Logical Processor % Processor Time |
| Windows Server 2016 Logical Processor | Logical Processor % DPC Time |
| Windows Server 2016 Logical Processor | Logical CPU Percentage Utilization |
| Windows Server 2016 Logical Processor | Logical CPU DPC Time Percentage (Disabled by Default) |
| Windows Server 2016 Logical Processor | Logical CPU Percentage Interrupt Time (Disabled by Default) |

Processor Information % 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 Information % 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 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 2016 Network Adapter | Percent Bandwidth Used Total |
| Windows Server 2016 Network Adapter | Percent Bandwidth Used Read (Disabled by Default) |
| Windows Server 2016 Network Adapter | Percent Bandwidth Used Write (Disabled by Default) |
| Windows Server 2016 Network Adapter | Network Adapter Connection Health (Disabled by Default) |

Note: only “physical” network adapters with MAC addresses are discovered.

### 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 2016 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.

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 2016 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 |

## Security Considerations

This section provides information about using a low-privilege account with the System Center Management Pack for Windows Server 2016 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 the rights needed to perform discovery and run rules, tasks, and monitors.

### Computer Groups

You can delegate authority to a precise level by using user roles.

The following groups are added when you install the System Center Management Pack for Windows Server 2016 Operating System:

|  |  |
| --- | --- |
| Group | Comments |
| Windows Server 2016 Computer Group | A group containing all computers that are running a Windows Server 2016 version of the Windows operating system. |
| Windows Server 2016 Computer Group (Full) | A group containing all computers that are running a Windows Server 2016 Full version of the Windows operating system |
| Windows Server 2016 Computer Group (Core) | A group containing all computers that are running a Windows Server 2016 Core installation type of the Windows operating system. |
| Windows Server 2016 Computer Group (Nano) | A group containing all computers that are running a Windows Server 2016 Nano installation type of the Windows operating system. |
| 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 |

## Objects the Management Pack Discovers

By default, the System Center Management Pack for Windows Server 2016 Operating System will discover the following objects:

 Operating systems

 Logical disks

 Cluster Shared Volumes

 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

* Mount Points

### 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.

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 existing applications/objects only.

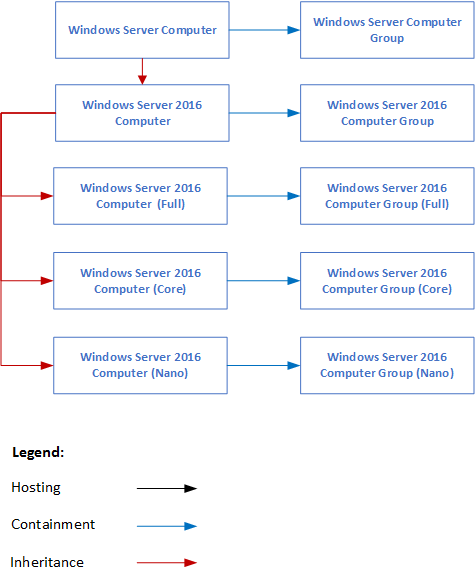
### Classes

The following table describes the available classes:

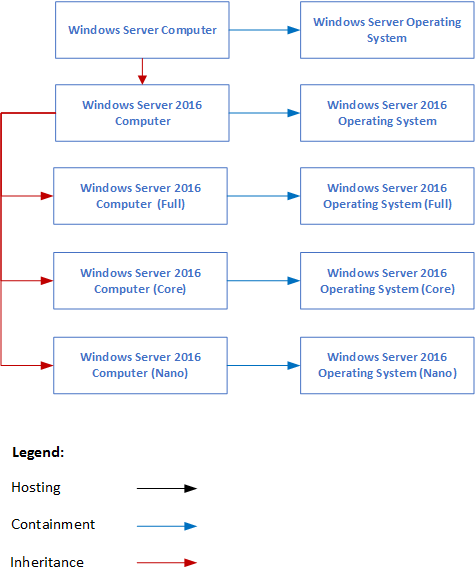
|  |  |
| --- | --- |
| Available Classes | Description |
| Windows Server 2016 Computer | All instances of computers running the Windows Server 2016 operating system. |
| Windows Server 2016 Computer (Full) | All instances of computers running the Windows Server 2016 Full installation type of the operating system. |
| Windows Server 2016 Computer (Core) | All instances of computers running the Windows Server 2016 Core installation type of the operating system. |
| Windows Server 2016 Computer (Nano) | All instances of computers running the Windows Server 2016 Nano installation type of the operating system. |
| Windows Server 2016 Operating System | All instances of the Windows Server 2016 operating system. |
| Windows Server 2016 Operating System (Full) | All instances of the Windows Server 2016 Full installation type of the operating system. |
| Windows Server 2016 Operating System (Core) | All instances of the Windows Server 2016 Core installation type of the operating system. |
| Windows Server 2016 Operating System (Nano) | All instances of the Windows Server 2016 Nano installation type of the operating system. |
| Windows Server 2016 Computer Group | A group containing all computers that are running a Windows Server 2016 version of the Windows operating system. |
| Windows Server 2016 Computer Group (Full) | A group containing all computers that are running a Windows Server 2016 Full version of the Windows operating system |
| Windows Server 2016 Computer Group (Core) | A group containing all computers that are running a Windows Server 2016 Core installation type of the Windows operating system. |
| Windows Server 2016 Computer Group (Nano) | A group containing all computers that are running a Windows Server 2016 Nano installation type of the Windows operating system. |
| Windows Server 2016 Disk Partition | All instances of a disk partition on a Windows Server 2016 operating system |
| Windows Server 2016 Logical Disk | All instances of a logical disk on a Windows Server 2016 operating system |
| Windows Server 2016 Network Adapter | All instances of a network adapter on a Windows Server 2016 operating system |
| Windows Server 2016 Physical Disk | All instances of a physical disk on a Windows Server 2016 operating system. |
| Windows Server 2016 Processor | All instances of a processor on Windows Server 2016 operating system. |

### How Health Rolls Up

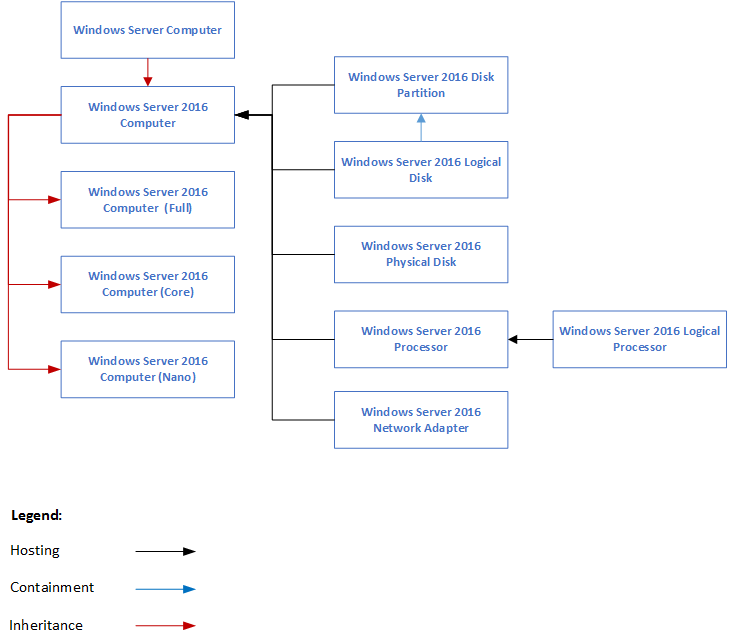
The following diagrams explain how health rolls up within Windows Server 2016 Operating System Management Pack. Health model of this Management Pack is complicated so it is divided into logical parts.



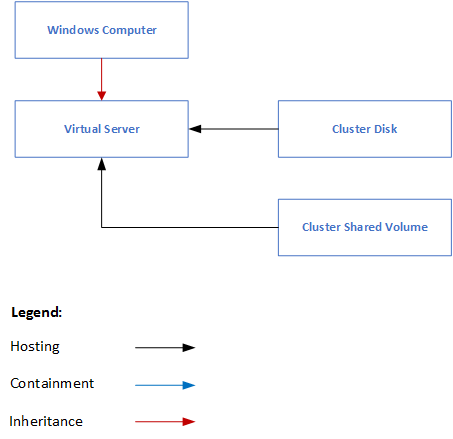
*Diagram 1. Windows Server OS Management Pack Health Rollup 1 of 4*

**

*Diagram 2. Windows Server OS Management Pack Health Rollup 2 of 4*



*Diagram 3. Windows Server OS Management Pack Health Rollup 3 of 4*



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

## Key Monitoring Scenarios

The System Center Management Pack for Windows Server 2016 Operating System is designed to provide monitoring information for computers running Windows Server 2016 (Full, Core and Nano). 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  ****** Server  ****** Workstation  ****** Remote Procedure  ****** DHCP Client  ****** Computer Browser  ****** DNS Client  ****** Event Log  ****** Messenger  ****** Plug and Play  ****** TCP/IP NetBIOS Helper  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 Time  Processors can optionally be monitored on a per processor basis using the following criteria performance indicators:  ****** CPU Utilization  ****** Percent Interrupt Time  ****** Percent DPC Time  Performance 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 usage  Performance 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 2016 during non-business hours. Use overrides to enable automatic defragmentation or to modify the configuration of non-business hours. |
| 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 corresponding 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: 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 Issue: Cluster disks managed by third-party software are not monitored

Issue: If the 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, the discovery for these will be also removed.

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

Issue: When the management pack is updated to version 10.0.3.0, 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

Issue: 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. The issue was fixed for Nano server clusters, but it is still relevant for Server Core and full server version.

Workaround: As soon as Cluster Shared Volume comes online and gets discovered, it will be displayed in the Operations Manager again. Please note that discovery is performed on a certain schedule, and rediscovery may take some time.

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: 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 10.0.8.0, 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, or network resource name of the cluster group is changed.

Workaround: If possible, move the affected resource to the initial node, or return its initial network resource name. Then, clear the agent’s cache and restart the agent to make the 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: "Run Chkdsk with Full option" and "Run Chkdsk with Spot Fix option" tasks cannot run.

Issue: On some disks storing system services and applications, "Run Chkdsk with Full option" and "Run Chkdsk with Spot Fix option" tasks may require user action: the tasks cannot run, as long as selection of “yes” or “no” options is required.

Workaround: No workaround.

Known Issue: "Run Chkntfs" task is not supported on Nano Server.

Issue: "Run Chkntfs" task is not supported on Nano Server; if user starts the task for Nano Server on Windows Server 2016, a corresponding output message is displayed.

Workaround: No workaround.

Known Issue: Performance metrics are not collected for GUID mount points on Nano Server.

Issue: For GUID mount points on Nano Server, no performance metrics are collected; no monitors are working, except for Free Disk Space monitor.

Workaround: No workaround.

Known Issue: On Windows Server 2016, partitions without mount points and drive letters will not be populated.

Issue: Partitions without mount points and drive letters will not be populated on Windows Server 2016.

Workaround: No workaround.

Known Issue: Performance instance for a physical disk on a cluster node may be generated incorrectly.

Issue: Performance instance for a physical disk on a cluster node may be generated incorrectly if the disk was moved or was offline for some time.

Workaround: No workaround.

Known Issue: Physical Disk-to-Disk Partition Discovery Rule may work incorrectly.

Issue: If both Discover Windows Physical Disks and Discover Windows Disk Partitions discoveries are not enabled simultaneously, Physical Disk to Disk Partition Discovery Rule may work incorrectly.

Workaround: Make sure that both discoveries mentioned above are enabled.

Known Issue: Physical Disk-to-Disk Partition discovery in cluster environment may go wrong.

Issue: As long as clustered resources tend to be occasionally moved from one node to another while the discovery of relations between the resources is run according to a schedule, a certain inconsistency may appear in the discovery results.

Workaround: Make sure that the discovery is run while no resources’ movement is performed.

Known Issue: Logical Disk Fragmentation Level monitor may work incorrectly for some configurations.

Issue: For virtual machines (e.g. Azure), defragmentation data may be sent by operating systems incorrectly (empty data); in this case, Logical Disk Fragmentation Level monitor will always be displayed as healthy.

Workaround: No workaround.

Known Issue: Output for some tasks is returning wrong path value.

Issue: Output for some tasks (Display Server Statistics, Display Workstation Statistics) is returning “\\” instead of computer name.

Workaround: No workaround.

Known Issue: After repartition, previously discovered Cluster Shared Volume partitions are displayed instead of new ones in the Operations Manager (Windows Server 2016).

Issue: After repartition, previously discovered Cluster Shared Volume partitions are displayed instead of new ones in the Operations Manager, if this Cluster Shared Volume has been repartitioned, but has not been previously formatted. The issue is observed on Windows Server 2016.

Workaround: Format and repartition the Cluster Shared Volume.

Known Issue: View Best Practices Analyzer Compliance Results task does not work on Nano Server.

Issue: On Nano Server, View Best Practices Analyzer Compliance Results task will not work, and the monitor will always be displayed as “Healthy”, as long as Nano Server does not support BPA PowerShell module. Besides, it will not work on Windows Server 2016, if BPA monitor is not enabled for the task.

Workaround: No resolution for Nano Server. On Windows Server 2016, enable BPA monitor if necessary.

Known Issue: Incorrect discovery of Windows Server Operating System on Windows Server 2016 agentless cluster computers may occur upon management pack upgrade.

Issue: Incorrect discovery of Windows Server Operating System on Windows Server 2016 agentless cluster computers may occur upon upgrade from version 10.0.2.0 of the management pack. Previously discovered Windows Server Operating System on Windows Server 2016 agentless cluster computers (Cluster Instances and Cluster Groups) is saved after the update. Logical disks, CPUs, network adapters, disk partitions are discovered repeatedly: for Agentless Managed virtual cluster computers (Cluster Instances and Cluster Groups) and Agent Managed cluster node computers.

Workaround: To remove the improperly discovered entities, perform the following actions: in the Operations Manager, open “**Discovery Inventory**” folder and select “**Change Target Type..**” action in the Tasks pane on the right. As a result, “**Select Items to Target**” dialog menu will be displayed. In this menu, choose “**View all targets**” option, select “**All Management Servers Resource Pool**” and click OK button. After that, run “**Undiscovery of improper Windows cluster objects [2016]**” task from the Tasks pane. Please note that to run this task, you can use either the predefined Run As account or another specific Run As account. Make sure that the Run As account you use is included into the Operations Manager Administrators user role. Therefore, if you prefer to use a specific Run As account (other than the predefined one), do not forget to enter the account credentials in the corresponding fields of the task dialog menu. After that, click Run button. Upon completion of the task, the results will be displayed in the dialog menu. If any artifacts are still present, run the task once again.

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 10.0.2.0 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: Some disk partitions are displayed as “Not monitored”.

Issue: If a disk partition does not have a logical disc, it is displayed as "Not monitored", even if the discovery is enabled.

Workaround: No workaround.

Known Issue: PowerShell script based discoveries fail to run on Nano Agent.

Issue: Any discovery based on a PowerShell script stops working on Nano Agent; at that, a corresponding warning alert is received: "PowerShell Script failed to run".

Workaround: Disable "Agent Initiated Maintenance Mode" rule. To do that, follow these steps:

1. In SCOM console, go to **Authoring -> Rules**.
2. Look for “**Agent Initiated Maintenance Mode**”. Select the rule.
3. Go to overrides: **->** **Override the Rule -> For all Objects of class: Agent**.
4. Set override value to “False”.
5. Click "New" button to create a new management pack.
6. Apply the override.

Known Issue: Nano Agent periodically stops collecting Performance Counters.

Issue: Nano Agent periodically stops collecting Performance Counters; at that, corresponding gaps appear in the graphs.

Workaround: Override the following monitors:

* Health Service Handle Count Threshold
* Health Service Private Bytes Threshold
* Monitoring Host Private Bytes Threshold
* Monitoring Host Handle Count Threshold

Set the threshold value to >= 700 MB.

Known Issue: Network Adapter Connection Health monitor does not work on Nano Server.

Issue: Network Adapter Connection Health monitor looks for the events related to the connection health in the system event log. As long as Nano Server do not create any corresponding events (e.g. regarding media disconnection etc.), the monitor never changes its state (remains always 'Healthy").

Workaround: In order to get the real current state of the monitor, go to Health Explorer, select the monitor and click “Recalculate Health” button.

Known Issue: Performance collection rules of total used, read and write network adapter bandwidth may stop collecting data.

Issue: Performance collection rules of total used, read and write network adapter bandwidth may stop collecting data. It may be caused by possible problem with WMI functionality. The following alerts can be shown:

*System.Management.Automation.CmdletInvocationException: Illegal operation attempted on a registry key that has been marked for deletion.At line:169 char:18*

*+ ... oInstance = Get-CimInstance -ComputerName $sTargetComputer -Namespace ...*

*+ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~*

*at System.Management.Automation.Runspaces.PipelineBase.Invoke(IEnumerable input)*

*at Microsoft.EnterpriseManagement.Common.PowerShell.RunspaceController.RunScript[T](String scriptName, String scriptBody, Dictionary`2 parameters, Object[] constructorArgs, IScriptDebug iScriptDebug, Boolean bSerializeOutput)*

*Script Name: Microsoft.Windows.Server.NetworkAdapter.BandwidthUsed.ModuleType.ps1*

Workaround: Run Get-ciminstance Win32\_PerfFormattedData\_Tcpip\_NetworkAdapter command in PowerShell to check if the performance data is collected correctly. If successful, restart Microsoft Monitoring agent. Otherwise, check WMI operation on the agent and resolve all discovered issues.

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.

Known Issue: Windows Server 2016 Operating System BPA Monitor results may differ from those of the server UI BPA.

Issue: The results of Windows Server 2016 Operating System BPA Monitor may differ from those presented by the server UI Best Practice Analyzer.

Workaround: No workaround.

## Appendix: Windows Server 2016 Rules and Monitors Disabled by Default

The following table lists the rules and monitors for Windows Server 2016 that are disabled by default.

|  |  |  |
| --- | --- | --- |
| Rule/monitor | Why disabled | When to enable |
| Discover Windows CPUs | This discovery is disabled based on customer feedback. Most 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. Most 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. Most 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. |
| Mount Point Discovery Rule | This discovery is disabled based on customer feedback. Most of our customers do not monitor Windows mount points by default. | Enable this discovery rule when Windows physical disks need to be discovered and monitored. |
| Windows Server 2016 Network Adapter Connection Health | This monitor is disabled based on customer feedback. Most 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 2016 Percent Bandwidth Used Read | This monitor is disabled based on customer feedback. Most 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 2016 Percent Bandwidth Used Write | This monitor is disabled based on customer feedback. Most 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 2016 Percentage of Committed Memory in Use | This monitor is disabled based on customer feedback. Most 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 2016 Total DPC Time Percentage | This monitor is disabled based on customer feedback. Most 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 2016 Total Percentage Interrupt Time | This monitor is disabled based on customer feedback. Most 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 2016 Average Physical Disk Seconds Per Read | This monitor is disabled based on customer feedback. Most 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 2016 Physical Disk Percent Idle Time | This monitor is disabled based on customer feedback. Most 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 2016 CPU DPC Time Percentage | This monitor is disabled based on customer feedback. Most of our customers do not monitor Logical CPU DPC time percentage performance information on CPUs by default. | Enable this monitor if CPU DPC time percentage performance monitoring is required. |
| Windows Server 2016 Logical CPU DPC Time Percentage | This monitor is disabled based on customer feedback. Most of our customers do not monitor Logical CPU DPC time percentage performance information on CPUs by default. | Enable this monitor if Logical CPU DPC time percentage performance monitoring is required. |
| Windows Server 2016 CPU Percentage Interrupt Time | This monitor is disabled based on customer feedback. Most 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. |
| Windows Server 2016 Logical CPU Percentage Interrupt Time | This monitor is disabled based on customer feedback. Most of our customers do not monitor Logical CPU percentage interrupt time performance information on CPUs by default. | Enable this monitor if Logical CPU percentage interrupt time performance monitoring is required. |
| Windows Server 2016 Logical CPU Percentage Utilization | This monitor is disabled based on customer feedback. Most of our customers do not monitor Logical CPU percentage utilization performance information on CPUs by default. | Enable this monitor if Logical CPU percentage utilization performance monitoring is required. |
| Collection rule for the Average Disk Queue Length Windows Server 2016 | 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 Disk Bytes Per Second Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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. Most 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. Most 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. Most 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. Most 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Bytes per Second Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 (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 Windows Server 2016 | 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 Windows Server 2016 | 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 Windows Server 2016 (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 Windows Server 2016 | 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 Information % DPC Time Windows Server 2016 | 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 Information % Interrupt Time Windows Server 2016 | 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 Windows Server 2016 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. |
| [Deprecated] Logical Disk Free Space Monitor | This monitor is disabled as long as it duplicates the features of Windows Server 2016 Logical Disk Free Space Monitor | Enable this monitor only if necessary. |
| Reserved Monitor | This monitor is disabled by default as long as it is reserved. | Enable this monitor only if necessary. |