**Microsoft System Center**

Guide for System Center Management Pack for Message Queuing 2016 and above for System Center Operations Manager

Microsoft Corporation

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The Operations Manager team encourages you to provide feedback on the management pack by providing a review on the management pack’s page in the [Management Pack Catalog](http://go.microsoft.com/fwlink/?LinkID=82105) (<http://go.microsoft.com/fwlink/?LinkID=82105>)

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Introduction to the System Center Management Pack for Message Queuing 2016 and above for System Center Operations Manager

Message Queuing (also known as MSMQ) is a server application that enables applications to communicate across heterogeneous networks and systems that may be temporarily offline or otherwise inaccessible. Instead of an application communicating with a service on another computer, it sends its information to Message Queuing, which sends the information to a Message Queuing service on the target computer where it is made available to the other application. Message Queuing provides guaranteed delivery, efficient routing, security, and priority-based messaging.

Document Version

This guide is based on the version 7.1.10242.1 of the Message Queuing Management Pack.

Revision History

| **Release Date** | **Changes** |
| --- | --- |
| September 2021 | In MP Guide, Monitors summary under “Key Monitoring Scenarios” section has been updated with proper naming convention to match with MP xml code |
| June 2021 | Below issues are fixed.   * MSMQ MPs discovers Windows Server 2012 Logical Disk Instances regardless of OS issue has fixed. * "Microsoft.MSMQ.10.0.Monitor.Queue.TestMessage" Unit Monitor Cookdown issue has fixed. * Updated “**PublisherName”** property in the event data with “**EventSourceName”** for 103 Rules to fix alert generation issue. * The MP has verified for Windows Server 2016 and above operating systems and branded as version agnostic. |
| Feb 2019 | Original release of this guide |

Getting the Latest Management Pack and Documentation

You can find the Message Queuing Management Pack in the [System Center Operations Manager Catalog](http://go.microsoft.com/fwlink/?LinkId=82105) (<http://go.microsoft.com/fwlink/?LinkId=82105>).

## Changes in version 7.1.10242.1

* Fixed Issue: MSMQ MPs discovers Windows Server 2012 Logical Disk Instances regardless of OS.
* Fixed issue: "Microsoft.MSMQ.10.0.Monitor.Queue.TestMessage" Unit Monitor Cookdown.
* Updated “**PublisherName”** property in the event data with “**EventSourceName”** for 103 Rules to fix alert generation issue.
* The MP has verified for Windows Server 2016 and above operating systems and branded as version agnostic.
* In MP Guide, Monitors summary under “Key Monitoring Scenarios” section has been updated with proper naming convention to match with MP xml code.

Supported Configurations

This management pack requires System Center Operations Manager 2016 and System Center Operations Manager 2019.

The Message Queuing Management Pack for System Center Operations Manager is designed to monitor Message Queuing for Windows Server 2016 and above.

The Message Queuing Management Pack supports the following platforms:

 Windows Server 2016 and above

 Windows 10 and above

The Message Queuing Management Pack also supports monitoring clustered MSMQ components.

Getting Started

This section describes the actions you should take before and after you import the management pack, as well as information about customizations.

### Public Queue Discovery

To discover public queues, the Run As profile MSMQ Queue Access must be associated with an account that has permissions to run Active Directory Domain Services queries. If you do not want to discover public queues, disable public queue discovery.

#### To create a RunAs account and associate it with the MSMQ Queue 10.0 Access Profile

|  |
| --- |
| 1. Open the Operations Console, and then click the Administration button.  2. In the Administration pane, expand Security, and then click Run As Accounts.  3. Right-click and select Create Run As Account and complete the wizard as follows:  a. On the General page, select Windows for Run As Account type, type a display name in the Display Name text box, and optionally type a description. Click Next.  b. On the Account page, type a user name, password, and select the domain for the account that you want to make a member of this Run As Account. When you enter the account password, be careful to type the correct password; the field is not validated.  c. Click Create.  4. In the Administration pane, click Run As Profiles.  5. Double-click MSMQ Queue 10.0 Access.  6. Click the Run As Accounts tab, and then click Add.  7. Associate the MSMQ Queue Access to all computers running MSMQ in your environment. Because of security restrictions, you must manually select each computer and associate the account until all computers running MSMQ are associated with this account. |

#### To disable public queue discovery

|  |
| --- |
| 1. Open the Operations Console, and then click the Authoring button.  2. In the Authoring pane, expand Management Pack Objects, and then click Object Discoveries.  3. Click on Scope.  4. Select View all targets.  5. Select Clear All, check MSMQ 10.0 Queue, and then click OK.  6. Right-click on Discover MSMQ 10.0 Queues and select Overrides, then Override the Object Discovery, then For all objects of type: MSMQ 10.0 Server.  7. Check the Override column for the Parameter Name Discover Public Queues and change the Override Setting to False.  8. In Select destination management pack, select the management pack created to hold MSMQ customizations.  9. Click OK. |

#### To disable private queue discovery

|  |
| --- |
| 1. Open the Operations Console, and then click the Authoring button.  2. In the Authoring pane, expand Management Pack Objects, and then click Object Discoveries.  3. Click on Scope.  4. Select View all targets.  5. Select Clear All, check MSMQ 10.0 Queue, and then click OK.  6. Right-click on Discover MSMQ 10.0 Queues and select Overrides, then Override the Object Discovery, then For all objects of type: MSMQ 10.0 Server.  7. Check the Override column for the Parameter Name Discover Private Queues and change the Override Setting to False.  8. In Select destination management pack, select the management pack created to hold MSMQ customizations.  9. Click OK. |

Files to Download

To monitor Message Queuing, you must first download the Message Queuing Management Pack from the Management Pack Catalog, located at <http://go.microsoft.com/fwlink/?LinkId=82105>. The Message Queuing Management Pack includes the files described in the following table.

| **Filename** | **Description** |
| --- | --- |
| Microsoft.Windows.MSMQ.2016.mp | Message Queuing Server 10.0 Management Pack. |
| EULA.rtf | The supplemental end-user license agreement. |
| Management Pack Guide for MSMQ 2016 and above.docx | Guide |

How to Import the Message Queuing Management Pack

For instructions about importing a management pack, see [How to Import a Management Pack](http://go.microsoft.com/fwlink/p/?LinkID=219431) (http://go.microsoft.com/fwlink/p/?LinkID=219431).

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, 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 in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkId=108356) (http://go.microsoft.com/fwlink/?LinkId=108356).

Security Considerations

You may need to customize your management pack. Certain accounts cannot be run in an environment with minimal privileges or the account must have minimum permissions. The MSMQ Queue 10.0 Access profile needs to have an account with the following privileges:

| **Account** | **Privileges** |
| --- | --- |
| MSMQ Queue 10.0 Access | This profile is used by the DataSource Modules and WriteAction Modules that interact with queues. Private queues must grant privileges to this account for:   * Receive Message * Peek Message * Receive Journal Message * Get properties * Set Properties * Send Message |

To populate the Run As profiles, first create the appropriate accounts with the required rights and then populate the profiles.

**Note**

When trying to monitor a private queue with an account other than the one that created the queue, those permissions will need to be added to the queue manually to obtain the appropriate privileges for:

* Receive Message
* Peek Message
* Receive Journal Message
* Get properties
* Set Properties
* Send Message

Computer Groups

You can delegate authority to a precise level with user roles.

You can use the following computer groups for scoping and roles authorization:

Message Queuing Groups

| **Group** | **Contents** |
| --- | --- |
| Message Queuing Servers | All instances of Message Queuing Server class |
| Message Queuing Queues | All instances of Message Queuing Queue class. Should not contain explicit members but is simply the parent group of Message Queuing Public Queues and Message Queuing Private Queues. |
| Message Queuing Public Queues | All instances of Message Queuing Queue with Public = True. Parent group is Message Queuing Queues. |
| Message Queuing Private Queues | All instances of Message Queuing Queue with Public = False. Parent group is Message Queuing Queues. |
| Message Queuing Test Queues | All instances of Message Queuing Queue where TestQueue = True. |

Understanding Management Pack Operations

This section provides information about the types of objects the Message Queuing Management Pack for Operations Manager discovers information about classes, how health rolls up, and monitoring scenarios.

Objects the Message Queuing Management Pack Discovers

The Message Queuing Management Pack discovers the object types described in the following table. Not all of the objects are automatically discovered. Use overrides to discover those that are not discovered automatically. For more information about discovering objects, see the "[Object Discoveries in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkId=108505)" topic in Operations Manager 2007 Help (http://go.microsoft.com/fwlink/?LinkId=108505).

Class Discovery Summary

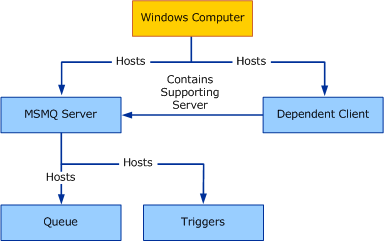
| **Monitor Name** | **Class Discovered** | **Target** | **Frequency** |
| --- | --- | --- | --- |
| Client Discover Server | Message Queuing Server | Windows Client Computer | 12 hours |
| Triggers |
| Downlevel Client Support |
| Server Discover Server | Message Queuing Server | Windows Server Computer | 12 hours |
| Triggers |
| Downlevel Client Support |
| Discover Queues | Queue | Message Queuing Server | 6 hours |

Relationship Discovery Summary

| **Monitor Name** | **Relationship Discovered** | **Target** | **Frequency** |
| --- | --- | --- | --- |
| Discover Supporting Server Relationship | Dependent Client contains Supporting Server | Message Queuing Dependent Client | 12 hours |
| Discover Disk Relationship | Server Contains Logical Disk | Message Queuing Server | 12 hours |

Classes

The following diagram shows the classes defined in this management pack.



Key Monitoring Scenarios

The following table provides a summary of the monitors to be created for Message Queuing

Monitors Summary

| **Target** | **Type** | **Category** | **Name** | **Enabled?** |
| --- | --- | --- | --- | --- |
| MSMQ 10.0 Server | Unit | AvailabilityHealth | Server Monitor: Send Test Message | No |
| Unit | AvailabilityHealth | Message Queuing Service State | Yes |
| Unit | Performance Health | Incoming Messages/sec - Baseline | No |
| Unit | Performance Health | Incoming Messages/sec | Yes |
| Unit | Performance Health | Memory Usage - Baseline | No |
| Unit | Performance Health | Memory Usage | Yes |
| Unit | Performance Health | Outgoing Messages/sec - Baseline | No |
| Unit | Performance Health | Outgoing Messages/sec | Yes |
| Unit | Performance Health | Processor - Baseline | No |
| Unit | Performance Health | Processor | Yes |
| Unit | Performance Health | MSMQ Service: Total bytes in all queues - Baseline | No |
| Unit | Performance Health | MSMQ Service: Total bytes in all queues | Yes |
| Unit | Performance Health | MSMQ Service: Total messages in all queues - Baseline | No |
| Unit | Performance Health | MSMQ Service: Total messages in all queues | Yes |
| Dependency | AvailabilityHealth | MSMQ Queue Health Rollup | Yes |
| Dependency | AvailabilityHealth | Logical Disk Health Rollup | Yes |
| Dependency | AvailabilityHealth | Triggers Health Rollup | Yes |
| MSMQ 10.0 Queue | Unit | Availability Health | Connection | Yes |
| Unit | AvailabilityHealth | Journal Percentage | No |
| Unit | AvailabilityHealth | Quota Percentage | No |
| Unit | AvailabilityHealth | Queue Monitor: Send Test Message | No |
| Unit | AvailabilityHealth | Oldest Message | No |
| Unit | Performance Health | Size of Messages | No |
| Unit | Performance Health | Number of Messages | No |
| MSMQ 10.0 Triggers | Unit | AvailabilityHealth | Triggers Service State | Yes |

Monitoring Availability Using Test Messages

Send Test Message monitor on a Message Queuing Server will create a private queue named msmqtestqueue on the server. This queue is also used or created when using the Send Test Message monitor on a transactional Queue. Acknowledgements are not able to be placed into transactional queues and therefore the acknowledgements are routed to the msmqtestqueue.

Placing Monitored Objects in Maintenance Mode

When a monitored object, such as a computer or distributed application, goes offline for maintenance, Operations Manager detects that no agent heartbeat is being received and, as a result, might generate numerous alerts and notifications. To prevent alerts and notifications, place the monitored object into maintenance mode. In maintenance mode, alerts, notifications, rules, monitors, automatic responses, state changes, and new alerts are suppressed at the agent.

Appendix: Monitors and Overrides for Management Packs

This section provides detailed procedures and scripts that you can use to display rules and other information about the management packs you import.

How to View Management Pack Details

For more information about a monitor and the associated override values, see the knowledge for the monitor.

To view knowledge for a monitor

|  |
| --- |
| 1. In the Operations Console, click the Authoring button.  2. Expand Management Pack Objects, and then click Monitors.  3. In the Monitors pane, expand the targets until you reach the monitor level. You can also use the Search box to find a particular monitor.  4. Click the monitor, and in the Monitors pane, click View knowledge.  5. Click the Product Knowledge tab. |

How to Display Monitors for a Management Pack

To use the Command Shell to display a list of outputs for a management pack's monitors and overrides, use the following procedure.

To display monitors for a management pack

|  |
| --- |
| 1. In the Command Shell, type the following command:  get-monitor -managementPack name.mp | export-csv filename  2. A .csv file is created. You can open the .csv in Microsoft Excel.  Note  In Excel, you may be required to specify that the .csv file is a text file. |

For example, the command below retrieves data for the monitors associated with one of the core management packs:

get-monitor -managementPack System.Health.Library.mp | export-csv "C:\monitors.csv"

How to Display Overrides for a Management Pack

To display overrides for a management pack use the following procedure.

To display overrides for a management pack

|  |
| --- |
| 1. In the Command Shell, type the following command:  get-override -managementPack name.mp | export-csv filename  2. A .csv file is created. You can open the .csv file in Excel.  Note  In Excel, you may be required to specify that the .csv file is a text file. |

For example, this command displays the overrides for one of the core management packs:

get-override -managementPack Microsoft.SystemCenter.OperationsManager.Internal.mp | export-csv "c:\overrides.csv"

How to Display All Management Pack Rules

Use the following procedure to display a list of rules for the management packs that you imported. You can view the list of rules in Excel.

To display management pack rules

|  |
| --- |
| 1. In your management server, click Programs, and then click System Center.  2. Click Command Shell.  3. In the Command Shell window, type the following command:  get-rule | select-object @{Name="MP";Expression={ foreach-object {$\_.GetManagementPack().DisplayName }}},DisplayName | sort-object -property MP | export-csv "c:\rules.csv"  4. A .csv file is created. You can open the .csv file in Excel.  Note  In Excel, you may be required to specify that the .csv file is a text file. |

How to Display Monitor Thresholds

To display monitor thresholds, use the script described in this section. This script works for the majority of monitors. It creates a .csv file that contains the columns shown in the following table, and can be viewed by using Excel.

| **Column** | **Description** |
| --- | --- |
| Type | The type of objects the monitor is targeted to |
| DisplayName | The display name of the monitor |
| Threshold | The threshold used by the monitor |
| AlertOnState | Determines whether the monitor generates an alert when the state changes |
| AutoResolveAlert | Determines whether the generated alert will be automatically resolved when the monitor state returns to green |
| AlertSeverity | The severity of the generated alert |

Run the following script to create the .csv file that displays the monitor thresholds:

function GetThreshold ([String] $configuration)

{

$config = [xml] ("<config>" + $configuration + "</config>")

$threshold = $config.Config.Threshold

if($threshold -eq $null)

{

$threshold = $config.Config.MemoryThreshold

}

if($threshold -eq $null)

{

$threshold = $config.Config.CPUPercentageThreshold

}

if($threshold -eq $null)

{

if($config.Config.Threshold1 -ne $null -and $config.Config.Threshold2 -ne $null)

{

$threshold = "first threshold is: " + $config.Config.Threshold1 + " second threshold is: " + $config.Config.Threshold2

}

}

if($threshold -eq $null)

{

if($config.Config.ThresholdWarnSec -ne $null -and $config.Config.ThresholdErrorSec -ne $null)

{

$threshold = "warning threshold is: " + $config.Config.ThresholdWarnSec + " error threshold is: " + $config.Config.ThresholdErrorSec

}

}

if($threshold -eq $null)

{

if($config.Config.LearningAndBaseliningSettings -ne $null)

{

$threshold = "no threshold (baseline monitor)"

}

}

return $threshold

}

$perfMonitors = get-monitor -Criteria:"IsUnitMonitor=1 and Category='PerformanceHealth'"

$perfMonitors | select-object @{name="Target";expression={foreach-object {(Get-MonitoringClass -Id:$\_.Target.Id).DisplayName}}},DisplayName, @{name="Threshold";expression={foreach-object {GetThreshold $\_.Configuration}}}, @{name="AlertOnState";expression={foreach-object {$\_.AlertSettings.AlertOnState}}}, @{name="AutoResolveAlert";expression={foreach-object {$\_.AlertSettings.AutoResolve}}}, @{name="AlertSeverity";expression={foreach-object {$\_.AlertSettings.AlertSeverity}}} | sort Target, DisplayName | export-csv "c:\monitor\_thresholds.csv"

How to Display Performance Collection Rules

To display performance collection rules, use the script in this section. This script works for the majority of monitors. It creates a .csv file that with the following columns, and you can view it by using Excel.

| **Column** | **Description** |
| --- | --- |
| WriteAction | Contains information about where the performance counter is written |
| WriteToDB or CollectionPerformanceData | Writes to the Operations Manager database |
| WriteToDW or CollectPerfDataWarehouse | Writes to the data warehouse |
| WC | Stores baseline data for a performance counter into the Operations Manager database |

To display the performance collection rules present in the management group, run the following script:

function GetPerfCounterName ([String] $configuration)

{

$config = [xml] ("<config>" + $configuration + "</config>")

return ($config.Config.ObjectName + "\" + $config.Config.CounterName)

}

function GetFrequency ([String] $configuration)

{

$config = [xml] ("<config>" + $configuration + "</config>")

$frequency = $config.Config.Frequency;

if($frequency -eq $null)

{

$frequency = $config.Config.IntervalSeconds;

}

return ($frequency)

}

function GetDisplayName($performanceRule)

{

if($performanceRule.DisplayName -eq $null)

{

return ($performanceRule.Name);

}

else

{

return ($performanceRule.DisplayName);

}

}

function GetWriteActionNames($performanceRule)

{

$writeActions = "";

foreach($writeAction in $performanceRule.WriteActionCollection)

{

$writeActions += " " + $writeAction.Name;

}

return ($writeActions);

}

$perf\_collection\_rules = get-rule -criteria:"Category='PerformanceCollection'"

$perf\_collection\_rules | select-object @{name="Type";expression={foreach-object {(Get-MonitoringClass -id:$\_.Target.Id).DisplayName}}},@{name="RuleDisplayName";expression={foreach-object {GetDisplayName $\_}}} ,@{name="CounterName";expression={foreach-object {GetPerfCounterName $\_.DataSourceCollection[0].Configuration}}},@{name="Frequency";expression={foreach-object {GetFrequency $\_.DataSourceCollection[0].Configuration}}},@{name="WriteActions";expression={foreach-object {GetWriteActionNames $\_}}} | sort Type,RuleDisplayName,CounterName | export-csv "c:\perf\_collection\_rules.csv"

Appendix: Reports

The following table summarizes the reports that are included in the Message Queuing Management Pack.

Reports

| **Name** | **Description** | **Rules** |
| --- | --- | --- |
| Server Configuration | Provides the collected properties for specified instances of each class. | None |
| Queue Configuration | Provides the collected properties for specified instances of each class. | None |
| Queue Size | Message and Journal counts and quota percentages. Should show trending for each counter. | * Collect Queue Message Count * Collect Queue Journal Message Count * Collect Queue Bytes * Collect Queue Journal Bytes * Collect Queue Quota Percentage * Collect Queue Journal Percentage |
| MSMQ Server Performance | Shows trending for all collected server counters. | * Performance Collection Rule for STT Monitor [Outgoing Messages/sec] * Performance Collection Rule for STT Monitor [Incoming Messages/sec] * Collect MSMQ Service: Sessions * Collect Total Messages in All Queues * Collect Total Bytes in All Queues |

Appendix: Views

The following table lists the views that should be created for the management pack.

Views

| **Name/Folder** | **Type** | **Details** |
| --- | --- | --- |
| Microsoft Message Queue 10.0 | | |
| All alerts | Alerts | All alerts generated from the Message Queuing management pack |
| MSMQ Events | Event | All events with a source that starts with Message Queuing. For non-clustered servers, this will always be simply Message Queuing. For clustered servers, it will be the service name, which starts with Message Queuing. |
| Microsoft Message Queue 10.0\Servers | | |
| MSMQ Servers | State | State of each Message Queuing Server with its complete set of properties for columns. |
| MSMQ Triggers | State | State of each Message Queuing Triggers Service. |
| Microsoft Message Queue 10.0\Servers\Performance | | |
| Dead Letter Queue KBytes | Performance | Graph showing Dead Letter Queue Bytes counter for all Message Queuing Servers |
| Dead Letter Queue Messages | Performance | Graph showing Dead Letter Queue Messages counter for all Message Queuing Servers |
| Total Bytes | Performance | Graph showing Total Bytes in All Queues counter for all Message Queuing Servers |
| Total Messages | Performance | Graph showing Total Messages in All Queues counter for all MSMQ Servers |
| Microsoft Message Queue 10.0\Queues | | |
| All Queues | State | State of all queues with its complete set of properties for columns. |
| Private Queues | State | State of private queues with its complete set of properties for columns. |
| Public Queues | State | State of public queues with its complete set of properties for columns. |
| Microsoft Message Queue 10.0\Queues\Performance | | |
| Queue Messages | Performance | Graph showing Messages in Queue counter for all queues |
| Queue Size | Performance | Graph showing Bytes in Queue counter for all queues |
| Quota Percentage | Performance | Graph showing Quota Percentage counter for all queues |
| Journal Message Count | Performance | Graph showing Messages in Journal Queue counter for all queues |
| Journal Size | Performance | Graph showing Bytes in Journal Queue counter for all queues |
| Journal Quota Percentage | Performance | Graph showing Journal Quota Percentage counter for all queues |

Appendix: Tasks

The following table lists the tasks that should be available for this management pack.

Tasks

| **Target** | **Name** | **Category** | **Description** |
| --- | --- | --- | --- |
| MSMQ 10.0 Queues | Get Queue Statistics | Maintenance | Gets the real time statistics from the queue selected |
| Purge Queue | Maintenance | Removes all messages in the Queue |
| Trim Journal Queue | Maintenance | Removes messages from journal queue until specified quota usage is reached |
| MSMQ 10.0 Servers | Start Service | Custom | Starts the MSMQ Service at the server |
| Stop Service | Custom | Stops the MSMQ Service at the server |
| MSMQ 10.0 Trigger | Start Service – Triggers | Custom | Starts the MSMQ Triggers Service at the server |
| Stop Service - Triggers | Custom | Stops the MSMQ Triggers Service at the server |

**Note:**

To run any of the tasks you must select first at least one object of the target type. Once the object is selected the task will be available in the **Actions** panel under the corresponding tasks group.

Trim Journal Queue

This task removes messages from the journal queue until it meets a specific criterion. This task has two parameters that can be overridden:

* Trim Logic: Quota Percentage, Time and Quota Size
* Numeric Parameter: Depending on the Trim Logic this will define the value for this parameter.

The default parameters for this task are shown in the following table.

**Trim Journal Queue Default Values**

| **Name** | **Default Value** | **Optional Values** | **Description** |
| --- | --- | --- | --- |
| Trim Logic | quota | quota | Trim queue down to the specified Journal Quota Percentage usage. |
| time | Trim all messages that were not received in the last specified number of minutes. |
| kbytes | Trim the specified number of Kbytes from the Journal Queue. |
| Numeric Parameter | 60 | Any Number | Depending on the value of Trim Logic, the numeric parameter can be used as percentage, minutes or Kbytes. |

Appendix: Recoveries

The following table lists the Recovery that should be available for this management pack.

Recoveries

| **Target** | **Name** | **Category** | **Description** |
| --- | --- | --- | --- |
| MSMQ 10.0 Queues | Trim Journal Queue Recovery | Availability Health | Whenever the Journal Queue Quota has exceeded the Error Threshold the Journal Queue will be trimmed. This recovery uses the same logic than the Trim Journal Queue Task. |

This recovery is disabled by default.

The default values for this recovery are:

|  |  |
| --- | --- |
| **Name** | **Value** |
| Enabled | False |
| Numeric Parameter | 60 |
| TimeoutSeconds | 60 |
| TrimLogic | Quota |

**Note:**

See the Trim Journal Queue Default Values table in the previous section to learn more about the Trim Journal Queue Task.

Appendix: Rules

The following tables list the rules from the Management Pack. There are some rules disabled by default in this management pack. You can enable the rules according to the requirements of your computing environment.

Note

Be aware that some of these rules may create noise in your environment.

Downlevel Client Support Rules

Event Based Rules

| **Name** | **Type** | **Event Id** | **Enabled?** |
| --- | --- | --- | --- |
| MSMQ Directory service failed to update flag in Active Directory during demotion process. | Availability Health | 2149 | No |
| MSMQ Directory service failed to update flag in Active Directory during promotion process. | Availability Health | 2150 | No |
| The Message Queuing directory service is not running as a local system. | Configuration Health | 2152 | No |
| The Message Queuing Downlevel Client Support service started. | Event Collection | 2159 | No |
| Message Queuing Downlevel Client support failed to create the MSMQ Configuration object. | Availability Health | 2162 | No |
| The Message Queuing Downlevel Client Support service cannot operate in mixed mode. | Event Collection | 2174 | No |

Queue Rules

Event Based Rules

| **Name** | **Type** | **Event Id** | **Enabled** |
| --- | --- | --- | --- |
| Mapping file URL is already mapped to another queue. | Availability Health | 2157 | No |
| A queue cannot listen/bind to multicast address. | Availability Health | 2160 | No |
| An invalid URL is mapped to a queue. | Availability Health | 2161 | No |
| Message Queuing service unable to check sender access. | Configuration Health | 2177 | No |
| Opening the queue for peeking at or retrieving messages failed. | Availability Health | 2205 | No |

Data collection rules

| **Name** | **Type** | **Details** | **Enabled** |
| --- | --- | --- | --- |
| Collect Queue Bytes | Performance Collection | Collects the number of message bytes in the queue. | Yes |
| Collect Queue Bytes Baseline Learning | Performance Collection | Collects the number of message bytes in the queue for baseline learning. | Yes |
| Collect Queue Journal Bytes | Performance Collection | Collects the number of message bytes in the journal of the queue. | Yes |
| Collect Queue Journal Message Count | Performance Collection | Collects the number of journal messages in the journal of the queue. | Yes |
| Collect Queue Journal Percentage | Performance Collection | Collects the journal quota percentage used from the journal quota of the queue. | Yes |
| Collect Queue Message Count | Performance Collection | Collects the number of messages in the queue. | Yes |
| Collect Queue Message Count Baseline Learning | Performance Collection | Collects the number of messages in the queue for baseline learning. | Yes |
| Collect Queue Quota Percentage | Performance Collection | Collects the quota percentage used from the quota of the queue. | Yes |

Triggers Rules

Event Based Rules

| **Details** | **Event Id** | **Type** | **Enabled** |
| --- | --- | --- | --- |
| Message Queuing Triggers service initialization failed. | 2201 | Availability Health | No |
| Message Queuing Triggers failed to create an instance of the triggers transactional object. | 2202 | Availability Health | No |
| The trigger information cannot be retrieved from the trigger store in registry. At least one trigger is nonfunctional. | 2203 | Availability Health | No |
| The information for the attached rule cannot be retrieved from the trigger store. | 2204 | Availability Health | No |
| Opening an internal queue needed by the Triggers service failed. | 2206 | Availability Health | No |
| An instance of a rule handler for the rule was not created. | 2207 | Availability Health | No |
| The action or a condition parameter for the rule was not parsed. | 2208 | Availability Health | No |
| The action defined by the rule was not invoked. | 2209 | Availability Health | No |
| Rule evaluation or execution failed for the transactional trigger. | 2210 | Availability Health | No |
| The trigger associated with this queue is nonfuctional. | 2212 | Availability Health | No |
| At least one of the required dependencies was not found. | 2213 | Configuration Health | No |
| Unable to update EventLog information in registry. | 2214 | Configuration Health | No |
| The Triggers transactional component could not be registered in COM+. | 2215 | Availability Health | No |
| Network Service account will not take effect until Triggers service is restarted | 2219 | Configuration Health | No |
| Message Queuing objects were successfully created | 2023 | Event Collection | No |
| The Message Queuing Triggers service started successfully. | 2024 | Event Collection | No |
| The Message Queuing Triggers service started successfully. | 2200 | Event Collection | No |
| The Message Queuing Triggers stopped. | 2211 | Event Collection | No |
| Retrieving messages from a queue located on a remote pre-Windows XP computer is not supported. | 2216 | Event Collection | No |

Server Rules

Event Based Rules

| **Details** | **Event Id** | **Type** | **Enabled** |
| --- | --- | --- | --- |
| The Message Queuing service cannot start due to bad registry value. | 2000 | Availability Health | No |
| The Message Queuing service cannot start due to inability to write a registry key. | 2001 | Availability Health | No |
| At least one of the required dependencies was not found. | 2002 | Configuration Health | No |
| There are insufficient memory resources. | 2003 | Configuration Health | No |
| The message queuing service is not online with Active Directory. | 2015 | Availability Health | No |
| The Message Queuing service cannot start due to internal private queue problem. | 2020 | Availability Health | No |
| The Message Queuing service cannot start due to problem with message store. | 2023 | Availability Health | No |
| The Message Queuing service cannot start due to problem with Active Directory interface. | 2035 | Availability Health | No |
| The Message queuing service deleted a message that couldn’t be restored because the queue doesn’t exist. | 2043 | Availability Health | No |
| The Message Queuing service has insufficient privileges to create audit log messages. | 2044 | Configuration Health | No |
| The Message Queuing downlevel client support service has insufficient privileges to create audit log messages. | 2045 | Configuration Health | No |
| The Message Queuing service cannot start due to problem with DTC. | 2047 | Availability Health | No |
| The server cannot support the automatic recognition of sites and connected networks for downlevel clients. | 2048 | Availability Health | No |
| The Message Queuing service cannot start due to problem with incoming sequences checkpoint file. | 2053 | Availability Health | No |
| MSMQ Server RPC interface cannot use the TCP/IP protocol. | 2059 | Availability Health | No |
| The Message Queuing service cannot start due to problem with local RPC interface. | 2061 | Availability Health | No |
| The Message Queuing service cannot start due to problem with transactions checkpoint file. | 2064 | Availability Health | No |
| The list of Message Queuing servers with directory service functionality in the Windows registry is empty. | 2068 | Configuration Health | No |
| Logger files cannot be initialized. | 2076 | Configuration Health | No |
| The Message Queuing cannot start. | 2079 | Configuration Health | No |
| The Message Queuing service cannot start due to problem with log file. | 2083 | Availability Health | No |
| The Message Queuing cannot start because a queue is in an inconsistent state. | 2084 | Availability Health | No |
| The message file cannot be created due to insufficient disk space or memory | 2085 | Availability Health | No |
| The Message Queuing folder cannot be created. | 2096 | Configuration Health | No |
| The Message Queuing registry values cannot be read. The registry is probably corrupted. | 2097 | Availability Health | No |
| Message Queuing was unable to create the MSMQ object in Active Directory | 2116 | Availability Health | No |
| Message Queuing was unable to load Mqupgrd.dll | 2117 | Availability Health | No |
| Message Queuing was unable to find the address of MqCreateMsmqObj in Mqupgrd.dll | 2118 | Availability Health | No |
| The Message Queuing service was unable to obtain the properties of the MSMQ object from Active Directory. | 2120 | Availability Health | No |
| This domain controller is not trusted for delegation. | 2122 | Configuration Health | No |
| The Message Queuing server cannot determine if the local domain controller is trusted for delegation. | 2123 | Configuration Health | No |
| The Message Queuing service failed to join the computer’s domain. | 2124 | Availability Health | No |
| Message Queuing objects cannot move automatically between domains | 2127 | Performance Health | No |
| Message Queuing detected a problem with the local domain controller. | 2139 | Availability Health | No |
| This server was unable to resolve the IP addresses of other routing servers. | 2140 | Availability Health | No |
| The properties of the queue cannot be set. Copying the queue file to the temporary file returned an error. | 2141 | Performance Health | No |
| The properties of the queue cannot be set. Replacing the queue file with the temporary file returned error. | 2142 | Performance Health | No |
| The Microsoft Distributed Transaction Coordinator (DTC) failed. | 2143 | Availability Health | No |
| Inconsistency between network addresses for this MSMQ server. | 2144 | Configuration Health | No |
| Computer object not found in Active Directory. | 2145 | Availability Health | No |
| MSMQ service cannot start due to insufficient disk space or memory. | 2147 | Availability Health | No |
| MSMQ service cannot start due to its failure to connect to its device driver. | 2148 | Availability Health | No |
| Message Queuing Downlevel Client Support cannot start. | 2153 | Configuration Health | No |
| The Message Queuing service stopped monitoring a mapping folder. | 2155 | Availability Health | No |
| Mapping files contents cannot be read. | 2156 | Availability Health | No |
| MSMQ mapping file was ignored. | 2158 | Configuration Health | No |
| Message Queuing service cannot join the domain. | 2164 | Availability Health | No |
| The sites where the computer resides cannot be resolved. | 2165 | Configuration Health | No |
| The Message Queuing service resource cannot bind to the cluster IP address. | 2168 | Availability Health | No |
| Message Queuing routing server is operating in workgroup mode. | 2169 | Configuration Health | No |
| Message Queuing failed to bind to port 1801. | 2170 | Availability Health | No |
| Message Queuing cannot bind to UDP port 3527. | 2171 | Availability Health | No |
| The MsmqServices object is configured with weakened security to support MSMQ 1. | 2172 | Configuration Health | No |
| Message Queuing not using strong encryption. | 2175 | Configuration Health | No |
| Storage quota exceeded for MSMQ queue. No more messages can be stored in the queue. | 2182 | Availability Health | No |
| Machine MSMQ storage quota was exceeded or there is insufficient disk space. | 2183 | Availability Health | No |
| Message Queuing could not resolve a name to an IP address. | 2184 | Availability Health | No |
| A socket operation failed. Message Queuing cannot send the message now, but it will retry to send the message. | 2185 | Availability Health | No |
| Message Queuing connection was refused by the recipient computer. | 2187 | Availability Health | No |
| Message Queuing could not access Active Directory and failed to compute routing path | 2188 | Availability Health | No |
| Message Queuing failed to send a message due to low memory. | 2189 | Availability Health | No |
| Message Queuing could not complete SSL negotiation with the remote computer. | 2190 | Configuration Health | No |
| Message Queuing could not validate server certificate in HTTPS scenario. This certificate cannot be trusted. | 2191 | Security Health | No |
| Message Queuing could not establish SSL connection with the recipient computer. | 2192 | Security Health | No |
| Message Queuing could not establish SSL connection with the recipient computer | 2193 | Security Health | No |
| The Message Queuing service cannot communicate with other computers. | 2194 | Availability Health | No |
| Message Queuing could not authenticate a message sent to queue. | 2195 | Security Health | No |
| Message Queuing failed to verify digital signature of a message sent to queue. | 2196 | Security Health | No |
| Message Queuing failed to listen on the IPv6 protocol. | 2197 | Availability Health | No |
| Message Queuing failed to listen on IPv4 protocol | 2198 | Availability Health | No |
| Message Queuing Service failed to listen on both IPv4 and IPv6 protocol | 2199 | Availability Health | No |
| Configured IP address is not valid. | 2220 | Configuration Health | No |
| Message Queuing will not be able to accept messages temporarily because system paged pool is low. | 2250 | Performance Health | No |
| Message Queuing will not be able to accept messages temporarily because system commit is high. | 2251 | Availability Health | No |
| The message could not be moved to deadletter queue. | 2253 | Configuration Health | No |
| The message could not be moved to deadletter queue. The authenticity of the message could not be verified. | 2254 | Security Health | No |
| The message could not be moved to deadletter queue. Deadletter queues should not require privacy of messages. | 2255 | Configuration Health | No |
| The message could not be moved to deadletter queue. The deadletter queue needs to be transactional. | 2256 | Configuration Health | No |
| Message Queuing objects were successfully created. | 2023 | Event Collection | No |
| The Message Queuing service started. | 2024 | Event Collection | No |
| The Message Queuing service started. | 2028 | Event Collection | No |
| Message Queuing service is online. | 2060 | Event Collection | No |
| Expression cannot be recovered for the checkpoint. | 2078 | Availability Health | No |
| The message Queuing service successfully joined the computers domain. | 2125 | Event Collection | No |
| Message Queuing operating in workgroup mode. | 2126 | Event Collection | No |
| A multicast listener initialization failed. | 2154 | Event Collection | No |
| The Message Queuing service stopped. | 2163 | Event Collection | No |
| The Message Queuing service cannot join Windows NT 4.0 domain. | 2166 | Event Collection | No |
| Message Queuing is operating in Hardened mode. | 2167 | Event Collection | No |
| The MsmqService object is configured with default security | 2173 | Event Collection | No |
| Message Queuing found multiple IP addresses for the local computer. | 2176 | Event Collection | No |
| Message Queuing will use the provided IP address. | 2221 | Event Collection | No |
| Message Queuing found multiple IP addresses for the local computer. Message Queuing will use the default IP address determined by the PGm driver for multicast messages. | 3895 | Event Collection | No |
| Performance Counter not available for server |  | Configuration Health | Yes |

Data Collection Rules

| **Name** | **Type** | **Details** | **Enabled** |
| --- | --- | --- | --- |
| Collect Dead Letter Queue KBytes | Performance Collection | Collects the number of message Kbytes in the Dead Letter Queue. | Yes |
| Collect Dead Letter Queue Message Count | Performance Collection | Collects the number of messages in the Dead Letter Queue. | Yes |
| Collect MSMQ Log Detail Script Events | Availability Health | Collect MSMQ Log Detail Script Events. | Yes |
| Collect MSMQ Service: Sessions | Performance Collection | Collect MSMQ Service:Sessions | Yes |
| Collect Total Bytes in all Queues | Performance Collection | Collect Total Bytes in All Queues | Yes |
| Collect Total Messages in all Queues | Performance Collection | Collect Total Messages in All Queues | Yes |
| Performance Collection Rule for STT Monitor [Incoming Messages/sec] | Performance Collection | Performance Collection Rule for STT Monitor [Incoming Messages/sec] | Yes |
| Signature Collection Rule for STT Monitor [Incoming Messages/sec] | Performance Collection | Signature Collection Rule for STT Monitor [Incoming Messages/sec] | Yes |
| Collection for Private Bytes | Performance Collection | Collection for Private Bytes | Yes |
| Baseline learning for Private Bytes | Performance Collection | Baseline learning for Private Bytes | Yes |
| Performance Collection rule for STT Monitor [Outgoing Messages/sec] | Performance Collection | Performance Collection rule for STT Monitor [Outgoing Messages/sec] | Yes |
| Signature Collection Rule for STT Monitor [Outgoing Messages/sec] | Performance Collection | Signature Collection Rule for STT Monitor [Outgoing Messages/sec] | Yes |
| Collection for Processor Time | Performance Collection | Collection for Processor Time | Yes |
| Baseline learning for Processor Time | Performance Collection | Baseline learning for Processor Time | Yes |
| Error searching Active Directory while discovering public queues | Configuration Health | Error searching Active Directory while discovering public queues | Yes |
| Could not connect to queue for Queue Discovery. | Discovery | Could not connect to queue for Queue Discovery. | Yes |
| Baseline learning for Total Bytes in all Queues | Performance Collection | Baseline learning for Total Bytes in all Queues | Yes |
| Collection for Total Messages in All Queues | Performance Collection | Collection for Total Messages in All Queues | Yes |
| Baseline learning for Total Messages in All Queues | Performance Collection | Baseline learning for Total Messages in All Queues | Yes |

Appendix: Optional Monitoring

This section provides procedures and information about the rules and monitors in this management pack.

Monitors Disabled by Default

The following table lists the monitors that are disabled by default in this management pack. You can enable the monitors according to the requirements of your computing environment.

Note

Be aware that some of these monitors may create noise in your environment.

| **Monitor Name** | **Target** | **Type** | **Description** | |
| --- | --- | --- | --- | --- |
| Journal Percentage | MSMQ 10.0 Queue | AvailabilityHealth | Monitors the Queue Journal Quota Percentage usage. | |
| Quota Percentage | MSMQ 10.0 Queue | AvailabilityHealth | Monitors the Quota Percentage usage of a Queue. | |
| Queue Monitor: Send Test Message | MSMQ 10.0 Queue | Availability | This monitor tests a server by sending a test message to a queue. Receipt of the message is validated through a response message to an admin queue at which point both the test message and response message are removed. | |
| Oldest Message | MSMQ 10.0 Queue | Availability | This monitor checks the age of the oldest message in a queue. | |
| Size of Messages | MSMQ 10.0 Queue | Performance | Monitors the size of messages in a Queue for baseline learning. | |
| Number of Messages | MSMQ 10.0 Queue | Performance | Monitors the number of messages in a Queue for baseline learning. | |
| Server Monitor: Send Test Message | MSMQ 10.0 Server | Availability | This monitor tests a server by sending a test message to a queue. Receipt of the message is validated through a response message to an admin queue at which point both the test message and response message are removed. | |
| Incoming Messages/sec - Baseline | MSMQ 10.0 Server | Performance | Monitor and baseline the "Incoming Messages/sec" counter and alert if the value is larger than normal. | |
| Memory Usage - Baseline | MSMQ 10.0 Server | Performance | Monitor and baseline the "Private Bytes" counter for the MSMQ process and alert if the value is larger than normal. | |
| Outgoing Messages/sec - Baseline | MSMQ 10.0 Server | Performance | Monitor and baseline the "Outgoing Messages/sec" counter and alert if the value is larger than normal. | |
| Processor - Baseline | MSMQ 10.0 Server | Performance | Monitor and baseline the "% Processor Time" counter for the MSMQ process and alert if the value is larger than normal. | |
| MSMQ Service: Total bytes in all queues - Baseline | MSMQ 10.0 Server | Performance | Monitor and baseline the "Total bytes in all queues" counter and alert if the value is larger than normal. | |
| MSMQ Service: Total messages in all queues - Baseline | MSMQ 10.0 Server | Performance | Monitor and baseline the "Total messages in all queues" counter and alert if the value is larger than normal. | |
| **Monitor Name** | | | **Target** | **Type** | | **Description** |
| Journal Percentage | | | MSMQ 10.0 Queue | AvailabilityHealth | | Monitors the Queue Journal Quota Percentage usage. |
| Quota Percentage | | | MSMQ 10.0 Queue | AvailabilityHealth | | Monitors the Quota Percentage usage of a Queue. |
| Queue Monitor: Send Test Message | | | MSMQ 10.0 Queue | AvailabilityHealth | | This monitor tests a server by sending a test message to a queue. Receipt of the message is validated through a response message to an admin queue at which point both the test message and response message are removed. |
| Oldest Message | | | MSMQ 10.0 Queue | AvailabilityHealth | | This monitor checks the age of the oldest message in a queue. |
| Size of Messages | | | MSMQ 10.0 Queue | PerformanceHealth | | Monitors the size of messages in a Queue for baseline learning. |
| Number of Messages | | | MSMQ 10.0 Queue | PerformanceHealth | | Monitors the number of messages in a Queue for baseline learning. |
| Server Monitor: Send Test Message | | | MSMQ 10.0 Server | AvailabilityHealth | | This monitor tests a server by sending a test message to a queue. Receipt of the message is validated through a response message to an admin queue at which point both the test message and response message are removed. |
| Incoming Messages/sec - Baseline | | | MSMQ 10.0 Server | Custom | | Monitor and baseline the "Incoming Messages/sec" counter and alert if the value is larger than normal. |
| Memory Usage - Baseline | | | MSMQ 10.0 Server | Custom | | Monitor and baseline the "Private Bytes" counter for the MSMQ process and alert if the value is larger than normal. |
| Outgoing Messages/sec - Baseline | | | MSMQ 10.0 Server | Custom | | Monitor and baseline the "Outgoing Messages/sec" counter and alert if the value is larger than normal. |
| Processor - Baseline | | | MSMQ 10.0 Server | Custom | | Monitor and baseline the "% Processor Time" counter for the MSMQ process and alert if the value is larger than normal. |
| MSMQ Service: Total bytes in all queues - Baseline | | | MSMQ 10.0 Server | Custom | | Monitor and baseline the "Total bytes in all queues" counter and alert if the value is larger than normal. |
| MSMQ Service: Total messages in all queues - Baseline | | | MSMQ 10.0 Server | Custom | | Monitor and baseline the "Total messages in all queues" counter and alert if the value is larger than normal. |

Optional Time Interval Configuration

The following table lists the discoveries, monitors and rules that have time intervals that can be modified. You can modify the intervals according to the requirements of your computing environment.

Note

Be aware that modifying the intervals can add an overhead to your environment.

Discoveries

| **Discovery Name** | **Time Interval** | **Enabled** |
| --- | --- | --- |
| Discover MSMQ 10.0 Servers | 12 hrs | Yes |
| Discover MSMQ 10.0 Clients | 12 hrs | Yes |
| Discover MSMQ 10.0 Queues | 6 hrs | Yes |
| Discover Disk Relationships | 12 hrs | Yes |
| Discover Supporting Server relationships | 12 hrs | Yes |

Monitors

| **Target** | **Parent Monitor** | **Monitor Name** | **Time Interval** | **Enabled** |
| --- | --- | --- | --- | --- |
| MSMQ 10.0 Queue | Availability | Connection | 10 min | Yes |
| Journal Percentage | 10 min | No |
| Quota Percentage | 10 min | No |
| Send Test Message | 5 min | No |
| Oldest Message | 10 min | No |
| Performance | Number of Messages | 5 min | No |
| Size of Messages | 5 min | No |
| MSMQ 10.0 Server | Availability | Send Test Message | 5 min | No |

Rules

| **Rule Name** | **Time Interval** | **Enabled** |
| --- | --- | --- |
| Collect Queue Bytes | 15 min | Yes |
| Collect Queue Bytes Baseline Learning | 10 min | Yes |
| Collect Queue Journal Bytes | 15 min | Yes |
| Collect Queue Journal Message Count | 15 min | Yes |
| Collect Queue Journal Percentage | 15 min | Yes |
| Collect Queue Message Count | 15 min | Yes |
| Collect Queue Message Count Baseline Learning | 10 min | Yes |
| Collect Queue Quota Pctg | 15 min | Yes |

Links

The following links connect you to information about common tasks that are associated with System Center management packs:

System Center - Operations Manager

 [Management Pack Life Cycle](https://go.microsoft.com/fwlink/?linkid=2024509)

 [How to import, export, and remove an Operations Manager management pack](https://go.microsoft.com/fwlink/?linkid=2024512)

 [How to create a management pack for overrides](https://go.microsoft.com/fwlink/?linkid=2024520)

 [How to override a rule or monitor](https://go.microsoft.com/fwlink/?linkid=2024439)

 [How to enable or disable a rule or monitor](https://go.microsoft.com/fwlink/?linkid=2024524)

 [How to create a Run As account and associate with a Run As profile](https://go.microsoft.com/fwlink/?linkid=2024431)

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