

System Center Monitoring Pack for Microsoft Data Warehouse Appliance

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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Contents

[Microsoft Data Warehouse Appliance Management Pack Guide 4](#_Toc299045616)

[Guide History 4](#_Toc299045617)

[Supported Configurations 4](#_Toc299045618)

[Management Pack Scope 4](#_Toc299045619)

[Prerequisites 4](#_Toc299045620)

[Mandatory Configuration 5](#_Toc299045621)

[Files in Management Pack 5](#_Toc299045622)

[Management Pack Purpose 5](#_Toc299045623)

[Monitoring Scenarios 6](#_Toc299045624)

[How Health Rolls Up 7](#_Toc299045625)

[Configuring Management Pack 8](#_Toc299045626)

[Import Prerequisite Management Packs 8](#_Toc299045627)

[Best Practice: Create a Management Pack for Customizations 8](#_Toc299045628)

[Security Configuration 10](#_Toc299045629)

[Setting up a Low-Privilege Environment 10](#_Toc299045630)

[Links 13](#_Toc299045631)

[Appendix: Management Pack Contents 16](#_Toc299045632)

[Microsoft Data Warehouse Appliance 16](#_Toc299045633)

[Microsoft Data Warehouse Appliance Server 16](#_Toc299045634)

[Microsoft Data Warehouse Appliance Servers 18](#_Toc299045635)

# Microsoft Data Warehouse Appliance Management Pack Guide

This guide was written based on version 1.0.10.0 of the Data Warehouse Appliance Management Pack. The Microsoft Data Warehouse Appliance Management Pack helps you discover, monitor, and manage your Microsoft Data Warehouse Appliance units.

## Guide History

| **Release Date** | **Changes** |
| --- | --- |
| 9/2011 | Original release of this guide |

## Supported Configurations

This management pack requires System Center Operations Manager 2007 R2. It supports Data Warehouse Appliance version 1.0.10.0. Agentless monitoring is not supported. The Management Pack must be imported to the SCOM RMS.

## Management Pack Scope

This Management Pack supports MDW Appliance Servers.

## Prerequisites

The following requirements must be met to run this management pack:

 The Following Management Packs must be imported and configured on Operations Manager Root Management server before the Data Warehouse Appliance Management Pack import:

1. SQL Server Appliance Library MP 1.0.3.0
2. System Center Operations Manager 2007 R2 MP 6.1.7221.0
3. Windows Server 2008 MP 6.0.6794.0
4. Microsoft SQL Server 2008 MP 6.1.400.0

## Mandatory Configuration

[Configure MDW Appliance](#z2)

 [Import Prerequisite Management Packs](#z2)

 [Import MDW Appliance Management Pack](#_Import_MDW_Management)

## Files in Management Pack

The Microsoft Data Warehouse Appliance Management Pack includes the following files:

* Microsoft.SQLServerAppliance.MDW.Discovery.mp
* Microsoft.SQLServerAppliance.MDW.Monitoring.mp

## Management Pack Purpose

The Microsoft Data Warehouse Appliance Management Pack discovers infrastructure components of the Microsoft Data Warehouse Appliance and monitors it as a complex solution.

In this section:

 [Monitoring Scenarios](#z5a9ff008734b4183946f840ae0464ab0)

 [How Health Rolls Up](#zb8b3e32eb8154a8da8b18b606568e65d)

For details on the discoveries, rules, monitors, views, and reports contained in this management pack, see [Appendix: Management Pack Contents](#zf475f3cc57b84a049d89cda7b1f37ba8).

## Monitoring Scenarios

| **Monitoring scenario** | **Description** | **Associated rules and monitors** |
| --- | --- | --- |
| TempDB Increment Step Monitoring | This scenario detects that auto growth step for all files in the TempDB is greater or equal than threshold. | Microsoft.SQLServerAppliance.MDW.TempDBIncrementStepMonitor |
| TempDB Auto growth Monitoring | This scenario detects that auto growth option enabled for all files in TempDB database. | Microsoft.SQLServerAppliance.MDW.TempDBAutogrowthMonitor |
| TempDB Recovery Model Monitoring | This scenario detects that recovery model option for the TempDB database set to the specified value. | Microsoft.SQLServerAppliance.MDW.TempDBRecoveryModelMonitor |
| SQL Server Startup Options Monitoring | This scenario checks that specified startup options of Microsoft SQL Server Database Engine are enabled | Microsoft.SQLServerAppliance.MDW.DBEngineStartupOptionE: This monitor detects that **-E** startup option is set for SQL Server DB Engine.Microsoft.SQLServerAppliance.MDW.DBEngineStartupOptionT1117: This monitor detects that **-T1117** startup option is set for SQL Server DB engine. |
| Extents FragmentationMonitoring | This scenario detects that at least one table in the database has at least one clustered index with high fragmentation. | Microsoft.SQLServerAppliance.MDW.IndexFragmentation |
| Lock PagesMonitoring | This monitor detects that the "Lock pages in memory" policy is not granted for SQL Server service account on Microsoft Data Warehouse Appliance. | Microsoft.SQLServerAppliance.MDW.DBEngineAllocatedPagesInMemory |

### How Health Rolls Up

The following diagram shows how the health states of objects roll up in this management pack.



## Configuring Management Pack

This section provides guidance on configuring and tuning this management pack.

Configure [MDW](#z2) Appliance

Import [Prerequisite](#_Import_Prerequisite_Management) Management Packs

Import [MDW](#_Import_MDW_Management) [Appliance](#_Import_DBC_Appliance) Management Pack

[Best Practice: Create a Management Pack for Customizations](#z2)

[Security Configuration](#z3)

[Tuning Performance Threshold Rules](#z4)

### Configure MDW Appliance

* Either Named Pipes or TCP protocols must be enabled on MDW Appliance Server. [How to: Enable or disable a server network protocol](http://technet.microsoft.com/en-us/library/ms191294.aspx).

### Import Prerequisite Management Packs

Use the following links on the corresponding management pack guides to deploy and configure prerequisite management packs according to their deployment guides:

* [SQL Server Appliance Base MP 1.0.3.0](http://www.microsoft.com/downloads/en/details.aspx?FamilyID=108b766a-63a3-41ff-a515-726366f6ab74)
* [System Center Operations Manager 2007 R2 MP 6.1.7221.0](http://www.microsoft.com/downloads/en/details.aspx?FamilyID=61365290-3c38-4004-b717-e90bb0f6c148)
* [SQL Server 2008 Management Pack 6.1.400.0](http://www.microsoft.com/downloads/en/details.aspx?FamilyID=8c0f970e-c653-4c15-9e51-6a6cadfca363)
* [Windows Server 2008 MP 6.0.6794.0](http://www.microsoft.com/downloads/en/details.aspx?FamilyID=3529d233-5e3e-4b51-8f66-5d6f27005ec3)

### Import MDW Management Pack

* Import MDW Discovery MP file
* Import MDW Monitoring MP file

### Best Practice: Create a Management Pack for Customizations

By default, Operations Manager saves all customizations, such as overrides, 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.

When you create a management pack for the purpose of storing customized settings for a sealed management pack, it is helpful to base the name of the new management pack on the name of the management pack that it is customizing, such as “BizTalk Server 2006 Customizations.”

Creating a new management pack for storing customizations of each sealed management pack makes it easier to export the customizations from a test environment to a production environment. It also makes it easier to delete a management pack, because you must delete any dependencies before you can delete a management pack. If customizations for all management packs are saved in the Default Management Pack and you need to delete a single management pack, you must first delete the Default Management Pack, which also deletes customizations to other management packs.

### Security Configuration

| **Run As Profile Name** | **Associated Rules and Monitors** | **Notes** |
| --- | --- | --- |
| Microsoft Data Warehouse Appliance Discovery Profile | * Microsoft Data Warehouse Appliance Discovery
* Microsoft Data Warehouse Appliance Group Discovery
 | This Run As profile is used for Data Warehouse Appliance Servers and Server Group discovery |
| Microsoft Data Warehouse Appliance Monitoring Profile | * TempDB Increment Step Monitor
* TempDB Auto growth Monitor
* TempDB Recovery Model Monitor
* Increase Extents Number in Database
* Even growth DB files in file group
* Extents Fragmentation
* Lock Pages
 | This Run As profile is used for all Data Warehouse Appliance monitoring Rules and Monitors |

### Setting up a Low-Privilege Environment

This section describes how to configure the Microsoft Data Warehouse Appliance management pack for low-privilege access (discovery and monitoring) for Data Warehouse Appliance Servers and SQL Server database engines. When you follow the instructions in this section, the health service hosting the Microsoft Data Warehouse Appliance management pack executes all the workflows with low-privilege access to the target servers and database engines.

#### Note

The following procedure describes the steps needed to configure low-privilege Discovery and Monitoring for version 1.0.100.0 of the Microsoft Data Warehouse Appliance Management Pack.

#### To configure the low-privilege environment in Active Directory

In Active Directory create two domain users which will be used for low-privilege access to all target servers:

1. **MDWDiscovery**
2. **MDWMonitoring**

#### To configure the low-privilege environment on the agent machine

1. On the agent machine, grant **Account Enable** permission to the **Root\Microsoft\SqlServer\ComputerManagement10** namespace for the MDWMonitoring domain user and **Account Enable, Execute Methods** permissions to the **Root\DEFAULT** namespace for the **MDWDiscovery** domain user.

To grant permissions to the user:

* 1. Open MMC with the **WMI Control** snap-in.
	2. In the left pane right click **WMI Control**, and then click **Properties**.
	3. On the **Security** tab find and select required namespace then click **Security**. The security configuration window appears.
	4. Add user to the list and grant requiredpermission.
	5. Apply changes.
1. Grant **Full Control** permission to the **HKLM\SOFTWARE\Microsoft\Microsoft Operations Manager\3.0\Modules\SQL Server Appliance** registry path and **Read** permission to the **HKLM\SOFTWARE\Microsoft\SQL Server Appliance** registry path for the **MDWDiscovery** domain user.
2. If the operating system on the agent machine is Windows Server 2008 or Windows Server 2008 R2, add the **MDWDiscovery** domain users to **EventLogReaders** local group.

If the operating system on the agent machine is Windows Server 2003 or Windows Server 2003 R2, ensure that **MDWDiscovery** has read access to the Application Event Log and System Event Log. For more information, see [How to set event log security locally or by using Group Policy in Windows Server 2003](http://support.microsoft.com/kb/323076).

#### To configure the SQL Server instance for discovery

1. In the SQL Server Management Studio, create a login for the **MDWDiscovery** domain user in the instance to be monitored, and grant the **ALTER SETTINGS** permission to this login.

Example script:

USE MASTER

GO

CREATE LOGIN [YOURDOMAIN\MDWDiscovery] FROM WINDOWS

GO

GRANT ALTER SETTINGS TO [YOURDOMAIN\MDWDiscovery]

GO

1. Create **MDWDiscovery** database user in the master database. Map this user to the **MDWMonitoring** login.

#### To configure the SQL Server instance for monitoring

1. In the SQL Server Management Studio, create a login for the **MDWMonitoring** domain user in the instance to be monitored, and grant the **VIEW SERVER STATE** permission to this login.

Example script:

USE MASTER

GO

CREATE LOGIN [YOURDOMAIN\MDWMonitoring] FROM WINDOWS

GO

GRANT VIEW SERVER STATE TO [YOURDOMAIN\MDWMonitoring]

GRANT VIEW ANY DEFINITION TO [YOURDOMAIN\MDWMonitoring]

GO

1. Create **MDWMonitoring** database user in all databases including user databases and system databases: master, msdb and model. Map this user to the **MDWMonitoring** login. After you create this user in the model database, it will be automatically createdin all new users databases. You need provision this user manually for attached and restored databases.

Grant **MDWMonitoring** user **VIEW DATABASE STATE** permission for each existing user database.

Example script:

USE UserDatabase

GO

CREATE USER MDWMonitoring FOR LOGIN [YOURDOMAIN\MDWMonitoring]

GO

GRANT VIEW DATABASE STATE TO [MDWMonitoring]

GO

#### To Configure System Center Operations Manager 2007

1. Import the Microsoft Data Warehouse Appliance Management Pack if it has not been imported.
2. Create **MDWDiscovery** and **MDWMonitoring** Run As accounts with **Windows** account type for the **MDWDiscovery** and **MDWMonitoring** domain users. For more information about how to create a Run As account, see [How to Create a Run As Account in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkId=193877). For more information about various Run As account types, see [Run As Accounts and Run As Profiles in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkId=193879).
3. On the System Center Operation Manager console, configure the Run As profiles for the management pack as following:
	1. Set the **Microsoft Data Warehouse Appliance Discovery Profile** to use **MDWDiscovery** Run As account.
	2. Set the **Microsoft Data Warehouse Appliance Monitoring Profile** to use **MDWMonitoring** Run As account

## Links

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

 [Administering the Management Pack Life Cycle](http://go.microsoft.com/fwlink/?LinkId=211463) (http://go.microsoft.com/fwlink/?LinkId=211463)

 [How to Import a Management Pack in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkID=142351) (http://go.microsoft.com/fwlink/?LinkID=142351)

 [How to Monitor Using Overrides](http://go.microsoft.com/fwlink/?LinkID=117777)

(http://go.microsoft.com/fwlink/?LinkID=117777)

 [How to Create a Run As Account in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkID=165410) (http://go.microsoft.com/fwlink/?LinkID=165410)

 [How to Modify an Existing Run As Profile](http://go.microsoft.com/fwlink/?LinkID=165412)

(http://go.microsoft.com/fwlink/?LinkID=165412)

 [How to Export Management Pack Customizations](http://go.microsoft.com/fwlink/?LinkId=209940) (http://go.microsoft.com/fwlink/?LinkId=209940)

 [How to Remove a Management Pack](http://go.microsoft.com/fwlink/?LinkId=209941)

(http://go.microsoft.com/fwlink/?LinkId=209941)

For questions about Operations Manager and management packs, see the [System Center Operations Manager community forum](http://go.microsoft.com/fwlink/?LinkID=179635) (http://go.microsoft.com/fwlink/?LinkID=179635). A useful resource is the [System Center Operations Manager Unleashed blog](http://opsmgrunleashed.wordpress.com/) (http://opsmgrunleashed.wordpress.com/), which contains “By Example” posts for specific management packs.

For additional information about Operations Manager, see the following blog posts:

 [Operations Manager Team Blog](http://blogs.technet.com/momteam/default.aspx)

(http://blogs.technet.com/momteam/default.aspx)

 [Kevin Holman's OpsMgr Blog](http://blogs.technet.com/kevinholman/default.aspx)

(http://blogs.technet.com/kevinholman/default.aspx)

 [Thoughts on OpsMgr](http://thoughtsonopsmgr.blogspot.com/)

(http://thoughtsonopsmgr.blogspot.com/)

 [Raphael Burri’s blog](http://rburri.wordpress.com/)

(http://rburri.wordpress.com/)

 [BWren's Management Space](http://blogs.technet.com/brianwren/default.aspx)

(http://blogs.technet.com/brianwren/default.aspx)

 [The System Center Operations Manager Support Team Blog](http://blogs.technet.com/operationsmgr/) (http://blogs.technet.com/operationsmgr/)

 [Ops Mgr ++](http://blogs.msdn.com/boris_yanushpolsky/default.aspx)

(http://blogs.msdn.com/boris\_yanushpolsky/default.aspx)

 [Notes on System Center Operations Manager](http://blogs.msdn.com/mariussutara/default.aspx) (http://blogs.msdn.com/mariussutara/default.aspx)

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## Appendix: Management Pack Contents

The Microsoft Data Warehouse Appliance Monitoring Management Pack discovers the object types described in the following sections. Not all of the objects are automatically discovered. Use overrides to discover those objects that are not discovered automatically.

### Microsoft Data Warehouse Appliance

Discovery Information

| **Interval** | **Enabled** | **When to Enable** |
| --- | --- | --- |
| 14400 seconds | True | not applicable |

Related Views

| **View** | **Description** | **Rules and Monitors that Populate the View** |
| --- | --- | --- |
| Microsoft.SQLServerAppliance.MDW.ApplianceView | Microsoft Data Warehouse Units | Microsoft.SQLServerAppliance.MDW.Appliance.Discovery |

### Microsoft Data Warehouse Appliance Server

Discovery Information

| **Interval** | **Enabled** | **When to Enable** |
| --- | --- | --- |
| 14400 seconds | True | not applicable |

Related Monitors

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.TempDBIncrementStepMonitor** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.TempDBIncrementStepMonitor |
| **Interval:** | 28800 |
| **Alert:** | No |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True  |
| **When to Enable:** | Not Applicable |

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.TempDBAutogrowthMonitor** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.TempDBAutogrowthMonitor |
| **Interval:** | 28800 |
| **Alert:** | No |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True  |
| **When to Enable:** | Not Applicable |

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.TempDBRecoveryModelMonitor** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.TempDBRecoveryModelMonitor |
| **Interval:** | 28800 |
| **Alert:** | No |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True  |
| **When to Enable:** | Not Applicable |

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.DBEngineStartupOptionE** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.DBEngineStartupOptionE |
| **Interval:** | 3600 |
| **Alert:** | Yes |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True  |
| **When to Enable:** | Not Applicable |

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.DBEngineStartupOptionT1117** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.DBEngineStartupOptionT1117 |
| **Interval:** | 3600 |
| **Alert:** | Yes |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True  |
| **When to Enable:** | Not Applicable |

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.IndexFragmentation** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.IndexFragmentationProvider |
| **Interval:** | 3600 |
| **Alert:** | Yes |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True\*  |
| **When to Enable:** | \*This monitor targeted to the SQL Server 2008 DB, it is disabled by default, but enabled through overrides for Microsoft Data Warehouse Appliance Servers group. Not need to enable.  |

|  |
| --- |
| **Microsoft.SQLServerAppliance.MDW.DBEngineAllocatedPagesInMemory** |
| **Data Source:** | Microsoft.SQLServerAppliance.MDW.DBEngineAllocatedPagesInMemoryProvider |
| **Interval:** | 3600 |
| **Alert:** | Yes |
| **Reset Behavior:** | Automatic |
| **Corresponding Rule:** | No |
| **Enabled:** | True\*  |
| **When to Enable:** | \* This monitor targeted to the SQL Server 2008 DB Engine, it is disabled by default, but enabled through overrides for Microsoft Data Warehouse Appliance Servers group. Not need to enable. |

Note

If you are using connectors, you can disable the monitor and enable its corresponding rule to enable alerts without changing health status.

Related Views

| **View** | **Description** | **Rules and Monitors that Populate the View** |
| --- | --- | --- |
| Microsoft.SQLServerAppliance.MDW.ServerView | Microsoft Data Warehouse Servers | Microsoft.SQLServerAppliance.MDW.Appliance.Discovery |