OpsMgr Self Maintenance Management Pack

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Feedback:

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- You are free to modify this management pack to suit your environments.
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Consulting

Table of Contents

1 Version History

Release Date	Version	Comments
March, 2013	V1.0.0.0	Initial Release
July, 2013	V2.0.0.0	• Bug fixes in both OM12 and OM07 version of the MP. • Additional workflows in the OM12 version.
August, 2013	V2.1.0.0	• Bug fix for the Backup MP Rule • Additional rule: detect manually closed monitor-generated alerts in the OM12 version.
February 2014	V2.3.0.0	• Updated the Close Aged Rule Generated Alerts Rule • Additional Agent Task: Get management group(s) configured on an agent • Additional Rule: Auto Approve manually installed agents based on agent computer name and domain name regular expression match • Additional Monitor: monitor if each individual management server is in maintenance mode • Several minor bug fixes
June 2014	V2.4.0.0	• Corrected spelling mistake in Management Server maintenance mode watcher display name • Additional Monitor: OpsMgr 2012 Self Maintenance Management Server Default Action Account OpsMgr Admin Privilege Monitor • Additional Monitor: OpsMgr 2012 Self Maintenance Management Server Default Action Account Local Admin Privilege Monitor • Additional Rule: OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule • Additional Agent Task: Get Workflow Name(ID) • Additional Agent Task: Reset Monitor Health State • Additional Agent Task: Remove Obsolete MP References • Updated knowledge article for OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule
September 2015	V2.5.0.0	• Corrected “Collect All Management

		Server SDK Connection Count Rule" where incorrect value may be collected when there are gateway servers in the management group. • Additional Performance Rules for Data Warehouse DB Staging Tables row count. • Additional 2-State performance monitors for Data Warehouse DB Staging Tables row count. • Additional Monitor: Check if all management servers are on the same patch level • Additional discovery to replace the built-in "Discovers the list of patches installed on Agents" discovery for health service. This additional discovery also discovers the patch list for OpsMgr management servers, gateway servers and SCSM servers. • Additional Agent Task: Display patch list (patches for management servers, gateway servers, agents and web console servers). • Additional Agent Task: Configure Group Health Rollup • Updated "OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule" to include an option to reset any manually closed monitor upon detection. • Additional Rule: "OpsMgr 2012 Self Maintenance Audit Agent Tasks Result Event Collection Rule" • Additional Management Pack: "OpsMgr Self Maintenance OMS Add-On Management Pack"
September 2015	V2.5.0.1	• Updated the category for the Data Warehouse DB Staging Tables row count performance collection rules from "None" to "PerformanceCollection"

2 Introduction

OpsMgr Self Maintenance Management Pack automates some routine tasks generally performed by OpsMgr administrators on a regular basis. It also provides few rules / monitors to monitor the OpsMgr management group itself. This management pack contains 2 version.

- The OpsMgr 2007 R2 version works on both 2007 R2 and 2012 versions of OpsMgr.
- The OpsMgr 2012 version only works on OpsMgr 2012.

The 2012 version of this management pack is able to utilize OpsMgr 2012 resource pools and also provides additional rules and monitors than the 2007 version. For OpsMgr 2012 environments, it's strongly recommended to use the 2012 version of this management pack.

The following workflows are included in the version 1.0.0.0 of this management pack:

- Automatically balance OpsMgr agents among a group of management servers.
- Automatically close aged rule-generated alerts
- Convert all manually installed OpsMgr agents to Remote-Manageable.
- Enable Agent-Proxy for all agents
- Backup Unsealed (and Sealed) management packs.
- Remove Disabled discovery objects
- Detect staled stage change events
- Monitoring the size of LocalizedText able from the OpsMgr operational database.
- Detects OpsMgr management servers in maintenance mode (Only available in OpsMgr 2012 version of the MP)
- Performance Collection rule for total number of SDK connection within the management group (among all management servers). (Only available in OpsMgr 2012 version of the MP).
- Agent tasks for:
    - Manually backup management packs
    - Get currently connected users to the SDK service
    - Enable Agent Proxy for all agents.

In addition, the following workflows have been added to the version 2.0.0.0 of this management pack (**For Operations Manager 2012 only**):

- Agent tasks to check Data Warehouse DB data retention
- Detect user defined overrides in the Default Management Pack
- Configure failover management servers for agents
- Monitoring Data Warehouse data sets daily and hourly aggregations (Adopted from Michel Kamp's blog article http://michelkamp.wordpress.com/2013/03/24/get-a-grip-on-the-dwh-aggregations/)
- Performance Collection rule to collect number of outstanding DW data set aggregations (Adopted from Michel Kamp's blog article http://michelkamp.wordpress.com/2013/03/24/get-a-grip-on-the-dwh-aggregations/)
- Views:
    - State view for RMS Emulator
    - State view for Management Server

- State view for All Management Servers Resource Pool
- State View for Unhealthy Health Service Watchers
- Performance view for DW Standard Data Sets

Version 2.0.0.0 also includes the following bug fixes:

Bug fix	Impacted version
The Remove disabled discovery objects rule for the OpsMgr 2012 version of the management pack used OpsMgr 2007 version of the script in the workflow.	OpsMgr 2012
There is a typo in the scripts used by the balance agents workflows in both OpsMgr 2007 and 2012 version of the MP. The agent property "ManuallyInstalled" was spelled as "InManuallyInstalled". However this would only cause scripts to fail when trying to move manually installed agents.	OpsMgr 2007, OpsMgr 2012

Version 2.1.0.0 includes:

- Bug fix for the alert description generated by the Management Packs backup rule "OpsMgr 2012 Self Maintenance Management Packs Backup Rule"
- Additional rule: "OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule" which detects any monitor-generated alerts that were not closed by the System (manually closed).

Version 2.3.0.0 includes:

- Updated the Close Aged Rule Generated Alerts Rule to add a comment "Closed by OpsMgr 2012 Self Maintenance Management Pack" when closing alerts.
- Additional Agent Task: Get management group(s) configured on an agent
- Additional Rule: Auto Approve manually installed agents based on agent computer name and domain name regular expression match
- Additional Monitor: monitor if each individual management server is in maintenance mode
- Several minor bug fixes

Version 2.4.0.0 includes:

- Corrected spelling mistake in Management Server maintenance mode watcher display name
- Additional Monitor: OpsMgr 2012 Self Maintenance Management Server Default Action Account OpsMgr Admin Privilege Monitor
- Additional Monitor: OpsMgr 2012 Self Maintenance Management Server Default Action Account Local Admin Privilege Monitor
- Additional Rule: OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule
- Additional Agent Task: Get Workflow Name(ID)
- Additional Agent Task: Reset Monitor Health State
- Additional Agent Task: Remove Obsolete MP References

- Updated knowledge article for the OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule

Version 2.5.0.0 includes:

- Corrected "Collect All Management Server SDK Connection Count Rule" where incorrect value may be collected when there are gateway servers in the management group.
- Additional Performance Rules for Data Warehouse DB Staging Tables row count.
- Additional 2-State performance monitors for Data Warehouse DB Staging Tables row count.
- Additional Monitor: Check if all management servers are on the same patch level
- Additional discovery to replace the built-in "Discovers the list of patches installed on Agents" discovery for health service. This additional discovery also discovers the patch list for OpsMgr management servers, gateway servers and SCSM servers.
- Additional Agent Task: Display patch list (patches for management servers, gateway servers, agents and web console servers).
- Additional Agent Task: Configure Group Health Rollup
- Updated "OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule" to include an option to reset any manually closed monitor upon detection.
- Additional Rule: "OpsMgr 2012 Self Maintenance Audit Agent Tasks Result Event Collection Rule"
- Additional Management Pack: "OpsMgr Self Maintenance OMS Add-On Management Pack"

Version 2.5.0.1 includes:

- Updated the category for the Data Warehouse DB Staging Tables row count performance collection rules from "None" to "PerformanceCollection".

3 Pre-requisites and Requirements

3.1 Pre-requisites

- Most of the scripts used in the management pack are written in PowerShell, therefore, PowerShell execution policy needs to be configured to allow scripts execution on the following computers:
    - For OpsMgr 2007 – Root Management Server (if RMS is clustered, all cluster nodes in the RMS cluster).
    - For OpsMgr 2012 – **ALL** Management Servers.

3.2 Requirements

This management pack heavily relies on the OpsMgr SDK services.

For OpsMgr 2007, since there is only a single instance of SDK service running (which is on the RMS), the RMS needs to be in a healthy state for the workflows to run.

For OpsMgr 2012, SDK service is running on every management server, and with the concept of resource pools, all the workflows in the 2012 version of the MP are targeting "All Management Servers resource pool". However, for the MP to function correctly, more than half of the

management servers in “All Management Servers resource pool” need to be in healthy state otherwise the resource pool becomes offline and no longer being monitored.

4 Management Pack Objects

4.1 OpsMgr 2007 R2 Self Maintenance MP

Workflow Name	Type	Target
OpsMgr 2007 R2 Self Maintenance Balance Agents Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Close Aged Rule Generated Alerts Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Convert All Agents To Remote Manageable Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Enable Agent Proxy Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Management Packs Backup Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Remove Disabled Discovery Objects Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Stale State Change Events Detection Rule	Rule	RMS
OpsMgr 2007 R2 Self Maintenance Operational Database LocalizedText Table Health Monitor	Monitor	RMS
Enable Agent Proxy For All Agents	Agent Task	RMS
Get Currently Connected Users to the MG	Agent Task	RMS
Backup Management Packs	Agent Task	RMS

4.2 OpsMgr 2012 Self Maintenance MP

Workflow Name	Type	Target
OpsMgr 2012 Self Maintenance Legacy Balance Agents Data Source (Designed for OpsMgr 2007)	Rule	RMS Emulator
OpsMgr 2012 Self Maintenance Balance Agents Within Resource Pool Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Close Aged Rule Generated Alerts Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Convert All Agents To Remote Manageable Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Enable Agent Proxy Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Management Packs Backup Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Remove Disabled Discovery Objects Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Stale State Change Events Detection Rule	Rule	All Management Servers Resource Pool
Collect All Management Server SDK Connection Count Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Detect User Defined Overrides in Default MP Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Aggregation Process Performance Collection Rule	Rule	Data Set
OpsMgr 2012 Self Maintenance Configure Agents Failover Within Resource Pool Rule	Rule	Management Server
OpsMgr 2012 Self Maintenance Approve Manual Agents Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Audit Agent Tasks Result Event Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Alert Staging Table Row Count Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database State Staging Table Row Count Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Performance Staging Table Row Count Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database ManagedEntity Staging Table Row Count Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Event Staging Table Row Count Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse	Monitor	All Management Servers

Database Alert Staging Table Row Count 2 State Threshold Monitor		Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Event Staging Table Row Count 2 State Threshold Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Managed Entity Staging Table Row Count 2 State Threshold Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Performance Staging Table Row Count 2 State Threshold Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database State Staging Table Row Count 2 State Threshold Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Operational Database LocalizedText Table Health Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Management Servers in Maintenance Mode Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Check Data Warehouse Database Daily Aggregation 3-State Monitor	Monitor	Data Set
OpsMgr 2012 Self Maintenance Check Data Warehouse Database Hourly Aggregation 3-State Monitor	Monitor	Data Set
OpsMgr 2012 Self Maintenance Local Management Server in Maintenance Mode Monitor	Monitor	OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher
OpsMgr 2012 Self Maintenance Management Server Default Action Account Local Admin Privilege Monitor	Monitor	Management Server
OpsMgr 2012 Self Maintenance Management Server Default Action Account OpsMgr Admin Privilege Monitor	Monitor	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Management Server and Agent Patch List Discovery	Discovery	Health Service
Get Current Patch List	Agent Task	Health Service
Configure Health Rollup	Agent Task	Group
Enable Agent Proxy For All Agents	Agent Task	All Management Servers Resource Pool
Get Currently Connected Users to the MS	Agent Task	Management Server
Backup Management Packs	Agent Task	All Management Servers Resource Pool
Get DW Retention	Agent Task	Management Server
Get Management Groups	Agent Task	Agents
Get Workflow Name(ID)	Agent Task	All Management Servers Resource Pool
Reset Monitor Health State	Agent Task	All Management Servers Resource Pool
Remove Obsolete MP References	Agent Task	All Management Servers

		Resource Pool
State View for RMS Emulator	State View	RMS Emulator
State View for Management Servers	State View	Management Server
State View for All Management Servers Resource Pool	State View	All Management Servers Resource Pool
State View for Unhealthy Health Service Watchers	State View	Health Service Watcher
State View for Groups	State View	Group
State View for Health Service	State View	Health Service
Performance view for DW Data Set	Perf View	Data Set
Performance view for SDK Connection Total	Perf View	
Performance view for DW Staging Table Row Count	Perf View	
OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher Discovery	Discovery	OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher

4.3 OpsMgr Self Maintenance OMS Add-On Management Pack

Workflow Name	Type	Target
OpsMgr Self Maintenance OMS Server Heartbeat Node On Management Server Discovery	Discovery	Management Server
OpsMgr Self Maintenance OMS Server Heartbeat Node On Gateway Server Discovery	Discovery	Gateway Server
OpsMgr Self Maintenance OMS Server Heartbeat Node On Agent Discovery	Discovery	Agent
OpsMgr 2012 Self Maintenance Data Warehouse Database Aggregation Process OMS Performance Collection Rule	Rule	Data Set
OpsMgr Self Maintenance All Management Servers Resource Pool OMS Heartbeat Event Rule	Rule	All Management Servers Resource Pool
OpsMgr Self Maintenance Health Service OMS Heartbeat Event Rule	Rule	OpsMgr Self Maintenance OMS Server Heartbeat Node
OpsMgr Self Maintenance All Management Servers Resource Pool OMS Heartbeat Event Rule	Rule	All Management Servers Resource Pool
OpsMgr Self Maintenance Health Service OMS Heartbeat Event Rule	Rule	OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher
OpsMgr 2012 Self Maintenance Data Warehouse Database ManagedEntity Staging Table Row Count OMS Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Alert Staging Table Row Count OMS Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Event Staging Table Row Count OMS Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database Performance Staging Table Row Count OMS Performance Collection Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Data Warehouse Database State Staging Table Row Count OMS Performance Collection Rule	Rule	All Management Servers Resource Pool
Collect All Management Server SDK Connection Count OMS Performance Rule	Rule	All Management Servers Resource Pool
OpsMgr 2012 Self Maintenance Audit Agent Tasks Result OMS Event Collection Rule	Rule	All Management Servers Resource Pool

5 Configurations

5.1 Overview

All the discoveries, rules and monitors from the OpsMgr Self Maintenance management packs are disabled by default. This is to ensure OpsMgr administrators only turn on the workflows that are required for the OpsMgr environments they support and configure the required parameters for workflows to suit the environment.

The agent tasks from the management packs are enabled by default.

An unsealed override management pack is provided for each version of the OpsMgr Self Maintenance MP. OpsMgr administrators can use provided unsealed override MP for customization or they can also create their own override MPs for this purpose.

5.2 Detailed Configuration Steps

5.2.1 Balancing OpsMgr Agents across multiple management servers

Workflow Names:

- OpsMgr 2007 R2 Self Maintenance Balance Agents Rule
- OpsMgr 2012 Self Maintenance Legacy Balance Agents Data Source (Designed for OpsMgr 2007)
- OpsMgr 2012 Self Maintenance Balance Agents Within Resource Pool Rule

It is very common that OpsMgr agents are installed using deployment tools such as System Center Configuration Manager or it is built-in as part of the SOE build. OpsMgr administrators rarely have to push agents out via Discovery method using OpsMgr operational console.

When OpsMgr agents are installed using deployment tools, the primary management server's FQDN which the agent reports to is specified as part of the installation command line. As the result, when the agents are installed using this method, all agents will end up reporting to a single management server.

In a large environment, where the OpsMgr management group contains multiple management servers for agent management, OpsMgr administrators often have to manually balance agents across multiple management servers.

These workflows serve this purpose by rule scripts on a schedule and automatically balance agents across management servers.

5.2.1.1 For OpsMgr 2007 R2 Environments

The workflow designed for this task is called "**OpsMgr 2007 R2 Self Maintenance Balance Agents Rule**". The following parameters can be configured using overrides:

- **AgentsOnRMS** (Boolean): Whether agents should move agents to/from RMS.
- **ExcludingMgmtServers**: A list of management servers (separated by comma",") to be excluded (untouched) when the rule runs. I.e. if there are dedicated management servers for network devices, they should be added to this list.
- **IntervalHours**: How often (in hours) does this rule run.

- **MaxAgentsToMove**: Maximum number of agents to be moved at a time.
- **SyncTime**: Optional, what time does the rule run.
- **TimeoutSeconds**: Timeout in seconds for the PowerShell script inside the rule.

An information alert is generated if any agents have been moved by the rule.

Note:

If any management servers are configured to be excluded, all the agents that report to the excluded management servers are not touched by this rule.

Gateway servers are automatically excluded by the script. There is no need to manually add gateway servers to the exclusion list.

5.2.1.2 For OpsMgr 2012 Environments

The "OpsMgr 2007 R2 Self Maintenance Balance Agents Rule" has been renamed to "OpsMgr 2012 Self Maintenance Legacy Balance Agents Rule (Designed for OpsMgr 2007)". Even though this rule still works in OpsMgr 2012 environment, it's recommended to use the rule "**OpsMgr 2012 Self Maintenance Balance Agents within Resource Pool Rule**" as it is specifically designed for 2012 environments.

"OpsMgr 2012 Self Maintenance Balance Agents within Resource Pool Rule" is targeting the "All Management Servers Resource Pool" as opposed to RMS in the 2007 version. It balances the agents among all management servers within a given resource pool. The following parameters can be configured using overrides for "OpsMgr 2012 Self Maintenance Balance Agents within Resource Pool Rule":

- **IntervalHours**: How often (in hours) does this rule run.
- **ResourcePoolName**: Resource Pool Name
- **MaxAgentsToMove**: Maximum number of agents to be moved at a time.
- **SyncTime**: Optional, what time does the rule run.
- **TimeoutSeconds**: Timeout in seconds for the PowerShell script inside the rule.

An information alert is generated if any agents have been moved by the rule.

Note:

Any agents that are managed by management servers outside of the configured resource pool are not touched by this rule.

Gateway servers are automatically excluded even when the configured resource pool contains both management servers and gateway servers.

5.2.2 Remove Disabled Discovery Instance

Workflow Names:

- OpsMgr 2007 R2 Self Maintenance Remove Disabled Discovery Objects Rule
- OpsMgr 2012 Self Maintenance Remove Disabled Discovery Objects Rule

These workflows are designed to remove objects that where discovered by already disabled discoveries from the database. For more information, please refer to this blog article: http://blogs.technet.com/b/jonathanalmquist/archive/2008/09/14/remove-disabledmonitoringobject.aspx

The scripts inside the 2007 and 2012 versions of workflows are different, however, the configurable parameters are the same. The following parameters can be configured via overrides:

- **IntervalHours**: How often does the rule run. By default, every 24 hours.
- **SyncTime**: What time does the rule run. By default, 20:30
- **TimeoutSeconds**: Timeout in seconds for the PowerShell script inside the rule. By default, 3600 seconds.

5.2.3 Management packs Backup

Workflow Names:

- OpsMgr 2007 R2 Self Maintenance Management Packs Backup Rule
- OpsMgr 2012 Self Maintenance Management Packs Backup Rule

These rules run on a schedule and backup management packs that are currently loaded in the management group.

There are many community written MPs for this purpose, the rules from these management packs can be configured to also export (backup) sealed management packs. When they are configured to backup sealed MPs, the sealed MPs are exported to unsealed (XML) MPs.

A critical alert is raised when the backup failed.

I found this option useful sometimes when I wanted to quickly check the content of a sealed MP, all I had to do was to go to the backup destination and open the unsealed XML version using a text editor. It can also be useful when you need to quickly restore an in-house written MP. All you have to do is to grab the unsealed version of the MP from backup destination and seal it again using your own key.

The following parameters can be configured via overrides:

- **IntervalSeconds**: Schedule frequency in seconds
- **SyncTime**: Time when the rule runs. It's recommended to configure this rule to rule BEFORE the nightly OS backup for the destination so they are backed up to backup media.
- **BackupLocation**: Backup destination. It can be a local folder or a UNC path. For the 2012 version, since this rule will potentially run on any management server in "All Management Servers Resource Pool", please use a UNC path instead of local path so MPs are backed up to a centralized location.
- **BackupSealedMP** (Boolean): Default value is set to true. Set it to false if sealed management packs do not need to be exported during the backup process.
- **RetentionDays**: Backup file retention. Any backup sets older than the retention period will be deleted.
- **TimeoutSeconds**: Timeout in seconds for the PowerShell script within this rule. Default is 900 seconds (15 minutes). Increase it if it's required.

Prior to enabling this job, please make sure the backup destination folder exists and the management server's action account has least Modify NTFS permission and Change Share permission to the destination folder.

Note:

The PowerShell script used by these workflows automatically creates a subfolder under "BackupLocation" with the name of the management group and management packs will be backed up to the sub-folder. In an environment with multiple OpsMgr management groups, administrators can use a single backup location for multiple management groups.

5.2.4 Covert All Agents to Remote Manageable

Workflow Names:

- OpsMgr.2007.R2.Self.Maintenance.Convert.All.Agents.To.Remote.Manageable.Rule
- OpsMgr 2012 Self Maintenance Convert All Agents To Remote Manageable Rule

These workflows runs on a schedule and convert any manually installed OpsMgr agents to "Remote Manageable" by using SQL command "**UPDATE MT_HealthService SET IsManuallyInstalled=0 WHERE IsManuallyInstalled=1**" against the operational DB.

If any agents have been converted, an information alert is created indicating number of agents been converted. For environments that are fairly static, this rule may not be required (or required to run less often).

The following parameters can be customized via overrides:

- **IntervalHours**: How often the rule is set to run, default is every 12 hours.
- **SQLQueryTimeoutSeconds**: timeout second for the SQL query execution within the PowerShell script. Default is 120 seconds.
- **SyncTime**: time when the rule runs.
- **TimeoutSeconds**: timeout seconds for the PowerShell script used by the rule.

Note:

If both this rule and the balance agents rule are enabled, it's recommended to schedule this rule to run first, because agents need to be remotely manageable to move to other management servers.

5.2.5 Detect Stale State Change Events in Database

Workflow Names:

- OpsMgr 2007 R2 Self Maintenance Stale State Change Events Detection Rule
- OpsMgr 2012 Self Maintenance Stale State Change Events Detection Rule

These workflows detects if stale state change events exist in the database (event age older than the state change event data grooming setting). This is because state change events created by already disabled monitors are not groomed out by the grooming jobs. A critical alert is raised when the earliest state change event in the database is more than 1 day older than the "State change events data" grooming setting. The SQL command used to delete these events is included in the knowledge article of the rule.

For more information, please refer to this blog article: http://blogs.technet.com/b/kevinholman/archive/2009/12/21/tuning-tip-do-you-have-monitors-constantly-flip-flopping.aspx

The following parameters can be customized using overrides:

- **DaysOfWeekMask**: The day of the week when the rule runs. This rule does not need to run too often, the default is every Sunday. Please refer to the PublicSchedulerType definition http://msdn.microsoft.com/en-us/library/ee692976.aspx if you wish to modify which day(s) this rule should run.
- **StartTime**: Time when the run rules. Default is 3:00am (Sunday)
- **SQLQueryTimeout**: timeout second for the SQL query execution within the PowerShell script. Default is 120 seconds.
- **TimeoutSeconds**: timeout seconds for the PowerShell script used by the rule.

Note:

The table below outlines what the integer value of the "DaysOfWeekMask" represents:

Day	Value
Sunday	1
Monday	2
Tuesday	4
Wednesday	8
Thursday	16
Friday	32
Saturday	64

To specify a single day, enter the enumerator value for that day directly into the DaysOfWeekMask configuration element.

To specify multiple days, add the enumerator values for the days together. For example, for Monday, Wednesday, and Friday, specify 42 (2+8+32).

5.2.6 Close Old Rule-Generated Alerts (Version 1.0.0.0 Only)

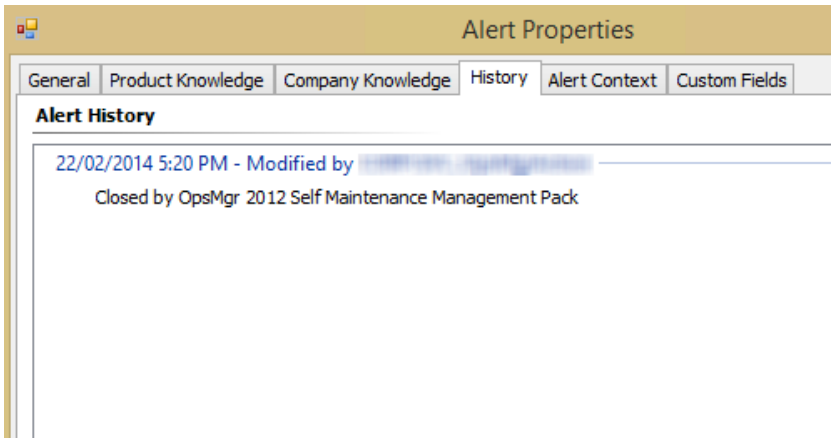
Workflow Names:

- OpsMgr 2007 R2 Self Maintenance Close Aged Rule Generated Alerts Rule
- OpsMgr 2012 Self Maintenance Close Aged Rule Generated Alerts Rule

These workflows close rule generated alerts. The following parameters can be customized via overrides:

- **CloseCriticalAlerts** (Boolean): Whether critical alerts should be closed.
- **CloseInfoAlerts** (Boolean): Whether information alerts should be closed.
- **CloseWarningAlerts** (Boolean): Whether warning alerts should be closed.
- **DaysToKeep**: Alerts maximum age before been closed.
- **IntervalSeconds**: How often in seconds the rule runs. By default, 86400 seconds (1 day).

This rule adds a comment to the alert upon closing:



If there are any alerts failed to be closed, a warning alert is generated.

5.2.7 Close Old Rule Generated Alerts (Version 2.0.0.0, OpsMgr 2012 Only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Close Aged Rule Generated Alerts Rule

This rule close rule generated alerts. The following parameters can be customized via overrides:

- **CloseCriticalAlerts** (Boolean): Whether critical alerts should be closed.
- **CloseInfoAlerts** (Boolean): Whether information alerts should be closed.
- **CloseWarningAlerts** (Boolean): Whether warning alerts should be closed.
- **DaysToKeep**: Alerts maximum age before been closed.
- **IntervalSeconds**: How often in seconds the rule runs. By default, 86400 seconds (1 day).
- **UseLastModifiedDate**: Default value is set to false. Set it to true if you wish to filter alerts using 'LastModified' date rather than 'TimeRaised' date. When set to true, only alerts that have not been updated for the given period will be closed.

Note:

This rule has been updated in version 2.0.0.0 for OpsMgr 2012. It now has an option to use "LastModified" date rather than "TimeRaised" date. This is to cater in situations where alerts suppression is configured for the alert generating rule, administrators may not want to close the alert if the Repeat Count is still increasing.

5.2.8 Enable Agent Proxy for all agents

Workflow Names:

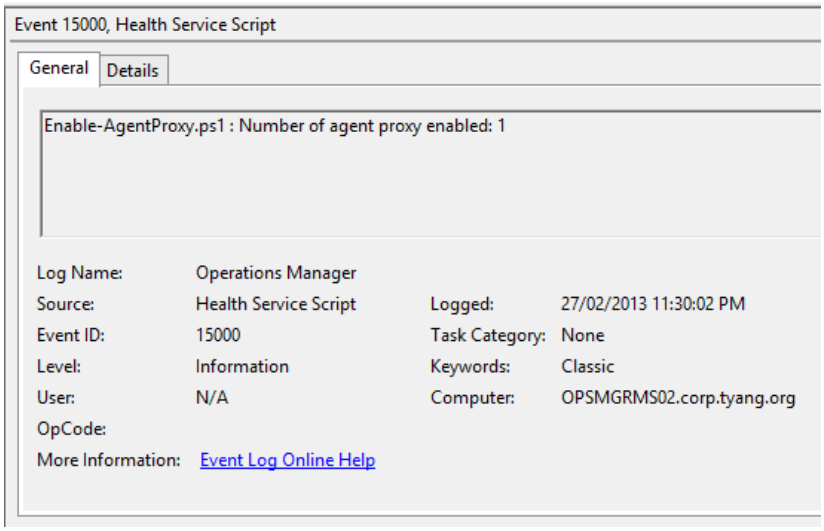
- OpsMgr.2007.R2.Self.Maintenance.Enable.Agent.Proxy.Rule
- OpsMgr 2012 Self Maintenance Enable Agent Proxy Rule

These workflows runs on a schedule and enables Agent Proxy setting for all OpsMgr agents. They use the script posted in this blog article: http://blog.tyang.org/2012/09/06/powershell-script-to-enable-scom-agent-proxy-in-a-more-efficient-way/

The following parameters can be customized via overrides:

- **IntervalSeconds**: How often in seconds the rule runs. By default, 86400 seconds (1 day).
-
- **SQLQueryTimeout**: timeout second for the SQL query execution within the PowerShell script. Default is 120 seconds.
- **TimeoutSeconds**: timeout seconds for the PowerShell script used by the rule.

The script used in the workflows logs an information event with event ID 15000 in the Operations Manager event log on the management server where it ran from (RMS for 2007 version).



5.2.9 Collect Total SDK Client Connections among All Management Servers (For OpsMgr 2012 Only)

Workflow Name:

- Collect All Management Server SDK Connection Count Rule

This performance collection rule runs on a schedule to collect SDK connection count from each management server in the OpsMgr 2012 management group and present the total number of SDK connections as performance data.

The performance data can be access either via any performance reports or performance views in operational console.

- **Target:** All Management Servers Resource Pool
- **Perf Data Object:** OpsMgr SDK Service
- **Perf Data Counter:** Total Client Connections

5.2.10 Checking the size of LocalizedText table in Operational DB

Workflow Names:

- OpsMgr 2007 R2 Self Maintenance Operational Database LocalizedText Table Health Monitor
- OpsMgr 2012 Self Maintenance Operational Database LocalizedText Table Health Monitor

These monitors detect if the LocalizedText table is the largest table in the Operational database and the row count is above configured threshold. These monitors run on a schedule (by default once a day), and raises alert if LocalizedText table is the largest table AND the row count is above configured threshold (default threshold is 1,000,000).

For more information in regards to LocalizedText table, please refer to this blog article: http://blogs.technet.com/b/kevinholman/archive/2008/10/13/does-your-opsdb-keep-growing-is-your-localizedtext-table-using-all-the-space.aspx

The following parameters can be customized via overrides:

- **IntervalHours**: How often does the monitor run. By default, every 24 hours.
- **SQLQueryTimeout**: timeout second for the SQL query execution within the PowerShell script. Default is 300 seconds.
- **RowCountThreshold**: The row count threshold, default is 1,000,000 (1 million).
- **SyncTime**: time when the monitor runs.
- **TimeoutSeconds**: timeout seconds for the PowerShell script used by the rule.

5.2.11 Detecting Management Servers in Maintenance Mode (For OpsMgr 2012 only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Management Servers in Maintenance Mode Monitor

This monitor targets All Management Servers Resource Pool and runs a schedule to check if any OpsMgr 2012 management servers have been placed into maintenance mode.

A critical alert is generated if any management servers have been placed into maintenance mode.

There are 2 overrideable parameters that can be used to customize this monitor:

- **IntervalSeconds**: How often is this monitor set to run. Default is 300 (5 minutes).
- **TimeoutSeconds**: Timeout value for the PowerShell script that is used by this monitor.

Note:

This monitor will only work under below conditions:

- There are multiple management servers in the OpsMgr 2012 management group.
- Only less than half of the management servers have been placed in maintenance mode. This is because when over half of the management servers have lost heartbeat or been placed into maintenance mode, the “All Management Servers Resource Pool” becomes offline and workflows (including this monitor) targeting this resource pool no longer runs. This is a known issue.

5.2.12 Agent Task: Enable Agent Proxy For All Agents

This agent task is available in both version of the management pack. For 2007 agent. The task in 2007 version is targeting RMS and the 2012 version is targeting All Management Servers resource pool.

This task runs the same write action module as the Enable Agent Proxy For All Agents rule.

5.2.13 Agent Task: Backup Management Packs

This agent task is available in both version of the management pack. For 2007 agent. The task in 2007 version is targeting RMS and the 2012 version is targeting All Management Servers resource pool.

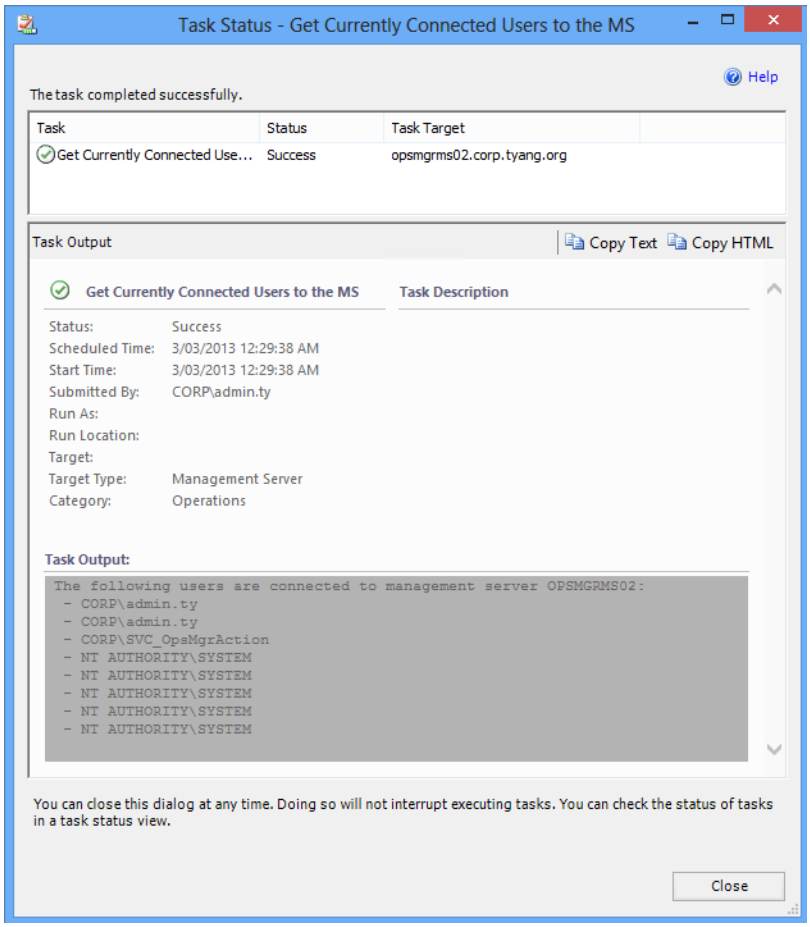
This task can be used to manually backup management packs.

5.2.14 Agent Task: Get Current Connected Users to MG / MS

This agent task is available in both version of the management pack. For 2007 agent. The task in 2007 version is targeting RMS and the 2012 version is targeting Management Servers.

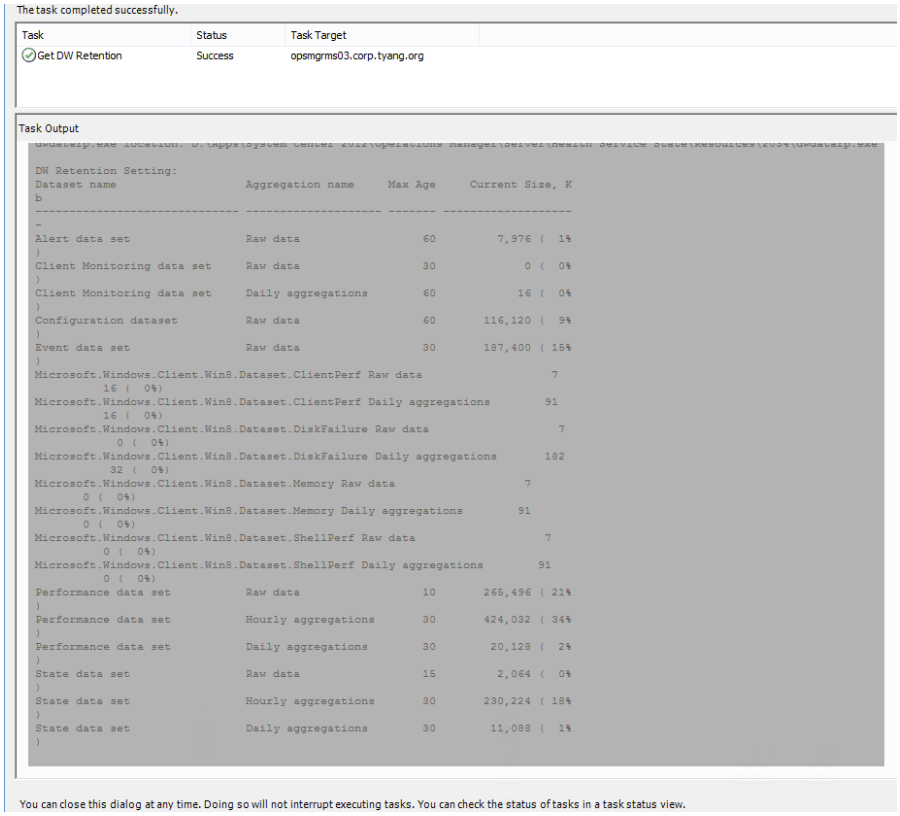
This task displays the user names who are currently connected to the SDK service on the RMS (for OpsMgr 2007) and for the particular management server (for OpsMgr 2012).

i.e.



5.2.15 Agent Task: Get DW Retention (For OpsMgr 2012 Only)

This agent task is targeting the management server class and it runs a script which then calls the dwdatarp.exe which is embedded in the management pack bundle as a binary resource. The task displays the data retention period for each data warehouse data set:



Note:

Dwdatarp.exe is a standalone tool released by Microsoft. For more information regarding to dwdatarp.exe, please refer to the following blog article:

http://blogs.technet.com/b/momteam/archive/2008/05/14/data-warehouse-data-retention-policy-dwdatarp-exe.aspx

5.2.16 Detecting User Defined Overrides in the Default Management Pack (For OpsMgr 2012 Only)

The "OpsMgr 2012 Self Maintenance Detect User Defined Overrides in Default MP Rule" detects any user defined overrides that are saved in the OpsMgr 2012 Default Management Pack

This rule targets the "All Management Servers Resource Pool" and it is triggered when an updated Default Management Pack is received by the management group. It then executes a PowerShell script to detect user defined overrides in the default MP. This rule can be modified using the following override parameters:

- **MinutesToCheck:** used by the PowerShell script, it looks for any user defined overrides created since x minutes ago. When set this value to 0, the script will look for ALL user defined overrides. The Default value is 10.

- **TimeoutSeconds:** Defines the number of seconds allowed for the PowerShell script execution. Default value is 120.

An alert is generated when users have saved overrides in the Default Management Pack. This is against the OpsMgr best practice. It will create unnecessary dependencies between the default MP and other MPs, which will cause problems when deleting management packs.

To resolve the issue, firstly, identify and remove the override. Then export the default MP, delete the reference to the source MP and re-import the default MP back to the management group.

Note:

This rule is triggered events in the Operations Manager event log. When all of the following conditions are true:

- Event ID = 1201
- Event Source = HealthService
- The first parameter in the event data =" Microsoft.SystemCenter.OperationsManager.DefaultUser" (the default management pack)

This rule will not alert on the two (2) built-in overrides stored in the Default Management Pack.

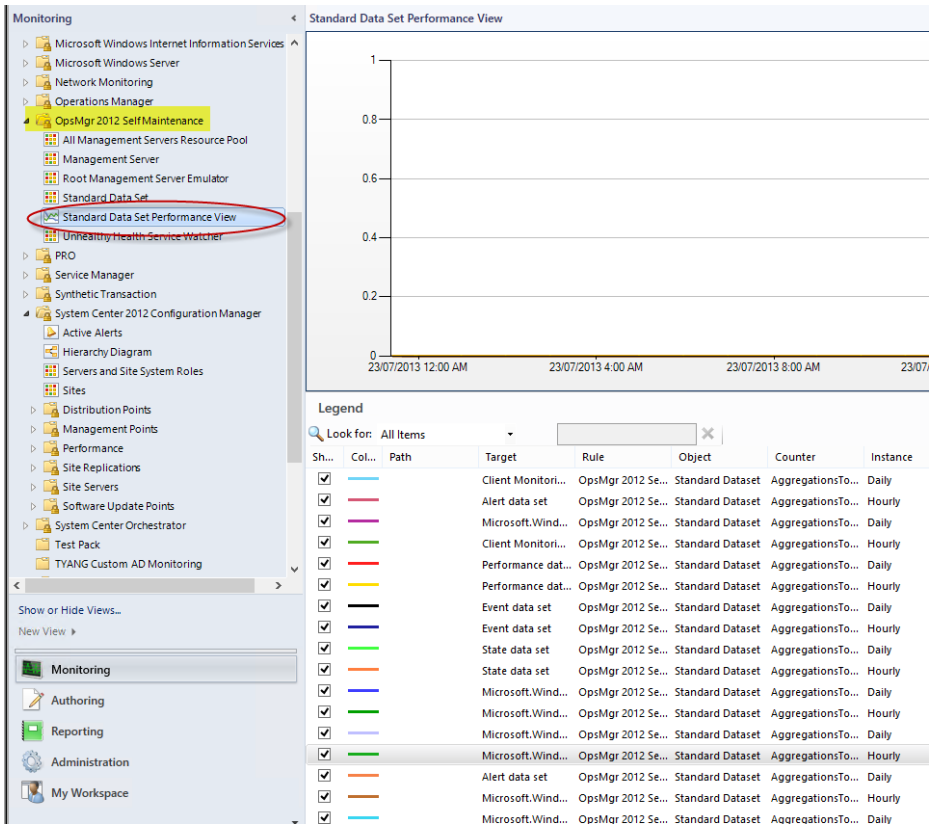
For more information in regards to cleaning up the Default Management Pack, please refer to the article blow:

http://blogs.technet.com/b/kevinholman/archive/2008/11/11/cleaning-up-the-default-mp.aspx

5.2.17 Collecting the Outstanding Number of Data Sets to be Processed by DW DB Aggregation Processes (For OpsMgr 2012 Only)

The "OpsMgr 2012 Self Maintenance Data Warehouse Database Aggregation Process Performance Collection Rule" collects the outstanding count of dataset still to be processed by the DW DB hourly and daily aggregation process. Higher count may indicate there is a performance related issue with the OpsMgr Data Warehouse Database. This rule is adopted from Michel Kamp's blog post: http://michelkamp.wordpress.com/2013/03/24/get-a-grip-on-the-dwh-aggregations/

The performance data collected by this rule can be viewed in the "Standard Data Set Performance View":



By default, this rule runs hourly against DW standard Data Sets. There are also two (2) separate 3-state monitors from this management pack that would generate alerts when the outstanding data sets are above configured thresholds.

There are several possible causes for the higher performance reading. More information can be found from this article: http://blogs.technet.com/b/operationsmgr/archive/2011/09/06/standard-dataset-maintenance-troubleshooter-for-system-center-operations-manager-2007.aspx

For additional information in regards to this issue, please refer to the article below: http://michelkamp.wordpress.com/2012/04/10/scom-dwh-aggregations-data-loose-tip-and-tricks/

5.2.18 Configuring Failover Management Servers for Agents within a Resource Pool (For OpsMgr 2012 Only)

The "OpsMgr 2012 Self Maintenance Configure Agents Failover within Resource Pool Rule" runs on ALL management servers according to a schedule and configure failover management servers for agents reporting to the management server if the management server is a member of the resource pool as defined via the override. All other management servers that are member of the defined resource pool will be configured as failover management servers for the agents.

This rule can be customized using overrides:

- **IntervalHours:** How often (in hours) does this rule run.
- **ResourcePoolName:** Resource Pool Name.
- **MaxAgentsToConfig:** Maxinum number of agents to be configured at a time.
- **SyncTime:** What time does this rule run.
- **TimeoutSeconds:** Timeout in seconds for the PowerShell script inside the rule. Note: in a large management group, this script may take a long time to run.

This rule will configure failover management servers for agents which the number of current failover management server does not equal to the number of the remaining management servers (not including the primary management server) within the resource pool. This script will not make any configuration changes if it is being targeted to a gateway management server or if the targeted management server is not a member of the resource pool.

An information alert is generated if the rule has configured at least one (1) agent(s) on the management server.

Note:

This rule is targeting every management server due to concerns with performance. The script within this workflow checks if the targeted management server is a member of the defined resource pool. It will not continue if the management server is not a member.

The "Balancing agents within resource pool" rule also configures failover management servers for agents when the agents are being moved. However, if the agent has never been moved to another management server by the balancing agents rule, the failover management servers would not be configured. Therefore this rule fills the gap by configuring all required agents.

5.2.19 Monitoring Outstanding DW Data Sets to be aggregated (For OpsMgr 2012 Only)

Workflow Names:

- OpsMgr 2012 Self Maintenance Check Data Warehouse Database Daily Aggregation 3-State Monitor
- OpsMgr 2012 Self Maintenance Check Data Warehouse Database Hourly Aggregation 3-State Monitor

These two (2) mornitors run on a schedule and check for number of DW standard data sets that are waiting to be aggregated (aggregation type: Hourly and Daily). These two (2) monitors are adopted from Michel Kamp's blog post: http://michelkamp.wordpress.com/2013/03/24/get-a-grip-on-the-dwh-aggregations/

By default, these monitors run hourly and have 2 thresholds. The default warning threshold is configured to 4 and critical threshold is configured to 10.

There are several possible causes for this monitor to become unhealthy. More information can be found from this article: http://blogs.technet.com/b/operationsmgr/archive/2011/09/06/standard-dataset-maintenance-troubleshooter-for-system-center-operations-manager-2007.aspx

The instruction provided from the article below can be used as a guide to rectify the issue:

http://michelkamp.wordpress.com/2012/03/23/dude-where-my-availability-report-data-from-the-scom-dwh/

Additional Information:

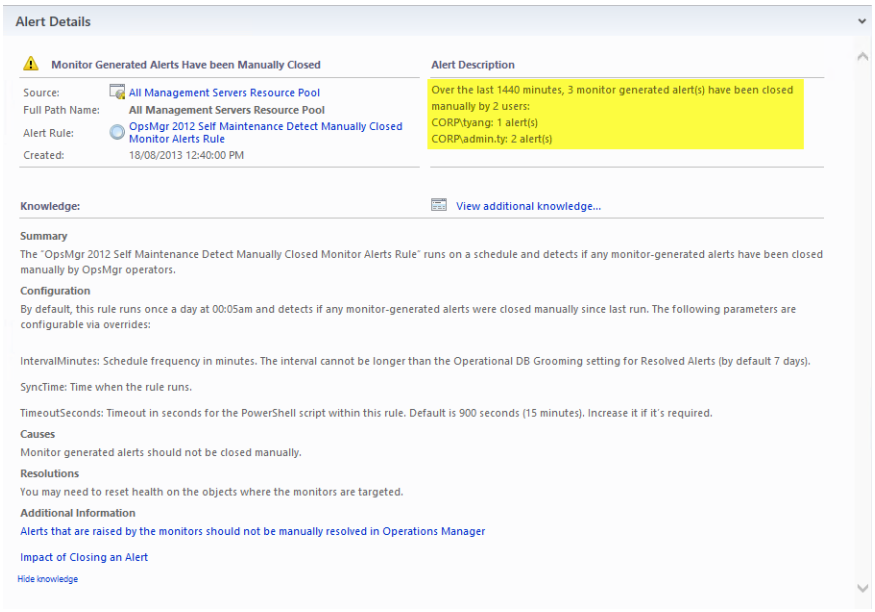
http://michelkamp.wordpress.com/2012/04/10/scom-dwh-aggregations-data-loose-tip-and-tricks/

5.2.20 Detect Manually Closed Monitor-Generated Alerts (For OpsMgr 2012 Only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Detect Manually Closed Monitor Alerts Rule

This rule runs on a schedule and detects if any monitor-generated alerts have been closed manually by OpsMgr operators. A warning alert is generated with when manually closed monitor-generated alerts are detected:



By default, this rule runs once a day at 00:05am and detects if any monitor-generated alerts were closed manually since last run. The following parameters are configurable via overrides:

IntervalMinutes: Schedule frequency in minutes. The interval cannot be longer than the Operational DB Grooming setting for Resolved Alerts (by default 7 days).

SyncTime: Time when the rule runs.

ResetUnitMonitors: When set to 'true', the rule will also reset the health state of the monitor of which generated the alert if the monitor is a unit monitor and its state is warning or error.

TimeoutSeconds: Timeout in seconds for the PowerShell script within this rule. Default is 900 seconds (15 minutes). Increase it if it's required.

More information regarding to this behaviour:

Alerts that are raised by the monitors should not be manually resolved in Operations Manager

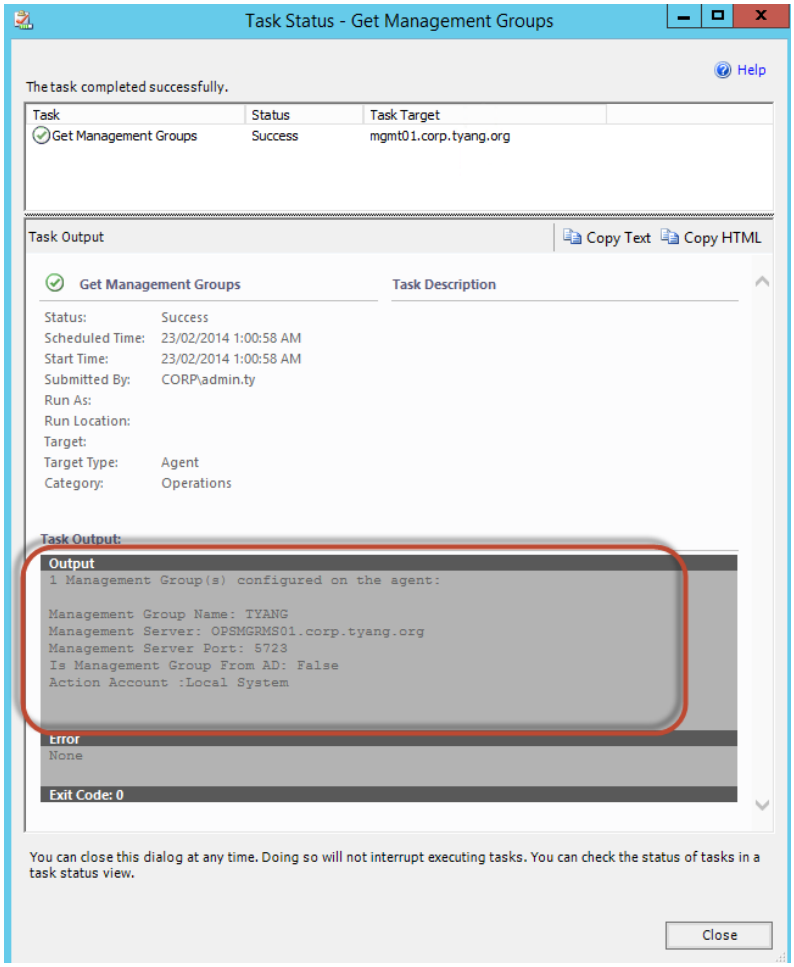
Impact of Closing an Alert

Note:

This rule has been updated in Version 2.5, which added an overrideable parameter "ResetUnitMonitors".

5.2.21 Agent Task: Get Management Groups (For OpsMgr 2012 Only)

This agent task is targeting the "Agent" object in OpsMgr 2012. it displays the management group(s) that are currently configured on the agent.



5.2.22 Auto Approve Manually Installed Agents based on Agents computer name and domain name regular expression match (For OpsMgr 2012 Only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Approve Manual Agents Rule

By default in OpsMgr, there are 3 possible options for manually installed agents:

- Reject all
- Automatically Approve all
- Manually Approve by OpsMgr administrators

The "OpsMgr 2012 Self Maintenance Approve Manual Agents Rule" runs on a schedule and approve manually installed agents of which computer name and domain name match the configurable computer name and domain name regular expression. This rule presents 2 benefits:

1. Allow OpsMgr to automatically approve agents based on preconfigured naming convention. It eliminates the needs for administrators to manually approve agents.

2. Agents approvals are staged. This prevents large number of agents are approved at once. In a large OpsMgr environment, this is particularly important as approving a large number of agents at once could consume a lot of system resources on management servers to transfer management packs and process the initial discovery workflows submitted from the agents.

This rule can be customized using overrides:

IntervalMinutes: How often (in minutes) does this rule run.

AgentNameRegex: Regular Expression for acceptable Agent computer names

AgentDomainRegex: Regular Expression for acceptable Agent domain names

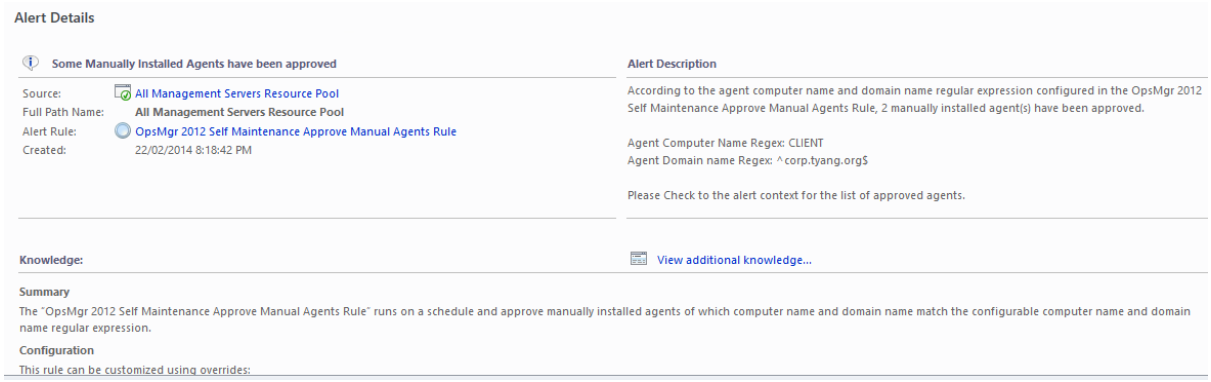
MaxToApprove: Maxinum number of manually installed agents to be approved at a time.

SyncTime: What time does this rule run.

TimeoutSeconds: Timeout in seconds for the PowerShell script inside the rule.

This rule will approve manually installed agents (up to the number configured for MaxToAPprove) if both agent's computer name and domain name match configured regular expressions.

An information alert is generated if the rule has approved at least one (1) agent(s).



The list of approved agents is available in Alert Context:

5.2.23 Detect if each individual management server is in maintenance mode (For OpsMgr 2012 Only)

Workflow Names:

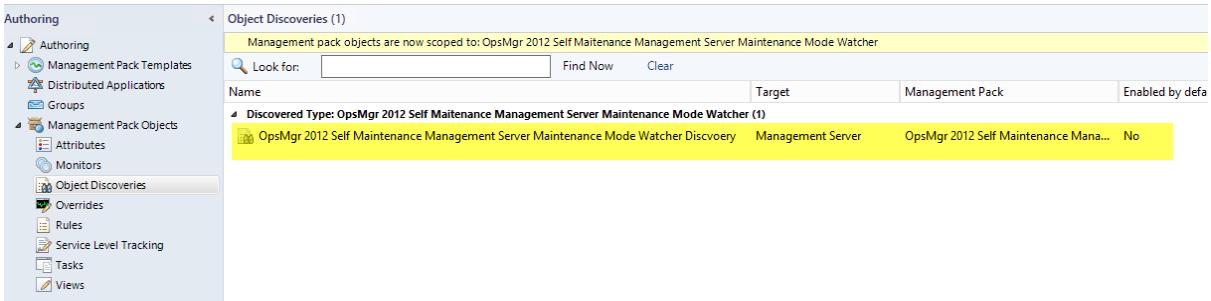
- OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher Discovery
- OpsMgr 2012 Self Maintenance Local Management Server in Maintenance Mode Monitor
- OpsMgr.2012.Self.Maintenance.Local.Management.Server.In.Maintenance.Mode.Monitor.Recovery.Task

This monitor is different than the "OpsMgr 2012 Self Maintenance Management Servers in Maintenance Mode Monitor" from Section 5.2.11 of this document. It is different in the following ways:

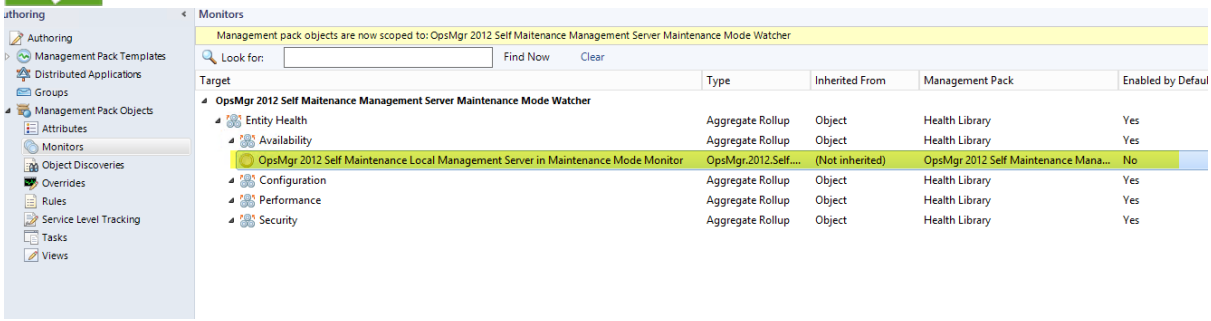
1. Instead of running the workflow on "All Management Servers Resource Pool", a separate unhosted class called "`OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher`" is created for the management servers.
    - This class is discovered on each OpsMgr management server but it is not hosted by Windows Computer. I have taken this idea from Kevin Holman's blog article [How to create workflows that wont go into Maintenance Mode](). By doing so, the monitor that's targeting this class will still run even when the management server's Windows Computer object has been placed into maintenance mode.
    - The "OpsMgr 2012 Self Maintenance Management Servers in Maintenance Mode Monitor" from Section 5.2.11 has a limitation that it will only generate alerts when more than 50% of members of "All Management Servers Resource Pool" is healthy and not in maintenance mode.
2. A recovery task is also associated to this monitor (disabled by default). When enabled, it will automatically end the maintenance mode for the management server.
    - Please enable this recovery task with caution. i.e. If the monitor is configured to run every 5 minutes, you will never be able to place a management server into maintenance mode for more than 5 minutes. It may not always be desired.

In order to use this monitor, the following workflows need to be enabled via overrides:

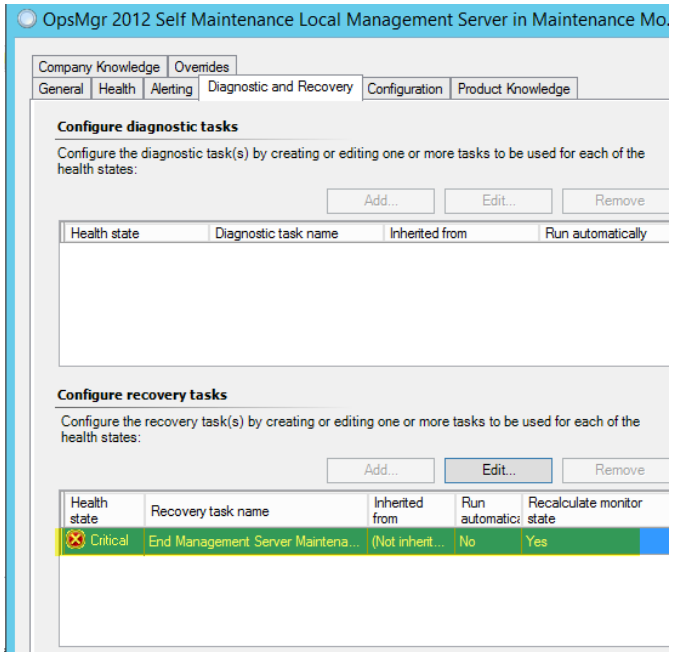
- OpsMgr 2012 Self Maintenance Management Server Maintenance Mode Watcher Discovery



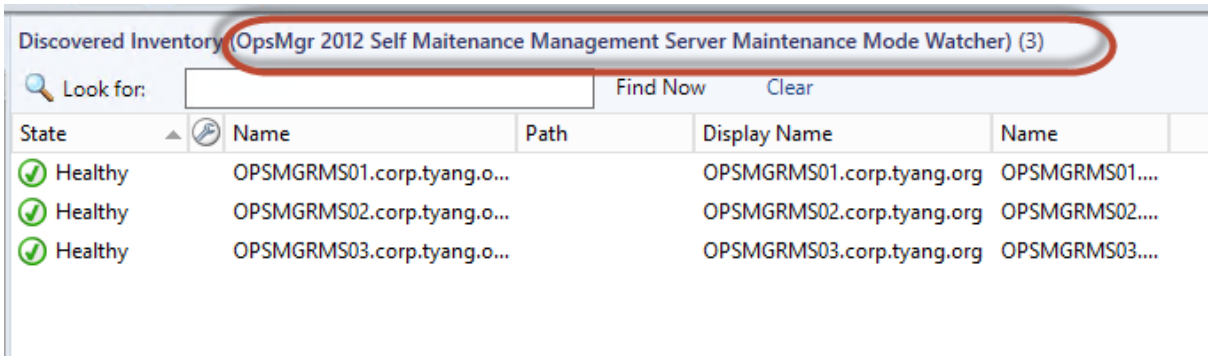
- OpsMgr 2012 Self Maintenance Local Management Server in Maintenance Mode Monitor



- OpsMgr.2012.Self.Maintenance.Local.Management.Server.In.Maintenance.Mode.Monitor.Recovery.Task (Optional)

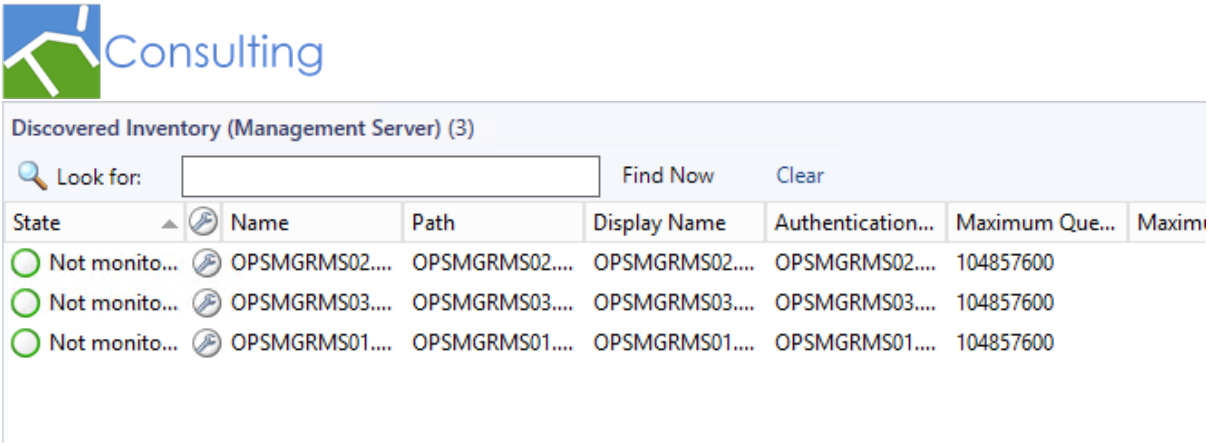


When the object is enabled, a Maintenance Mode Watcher object will be created for each management server:

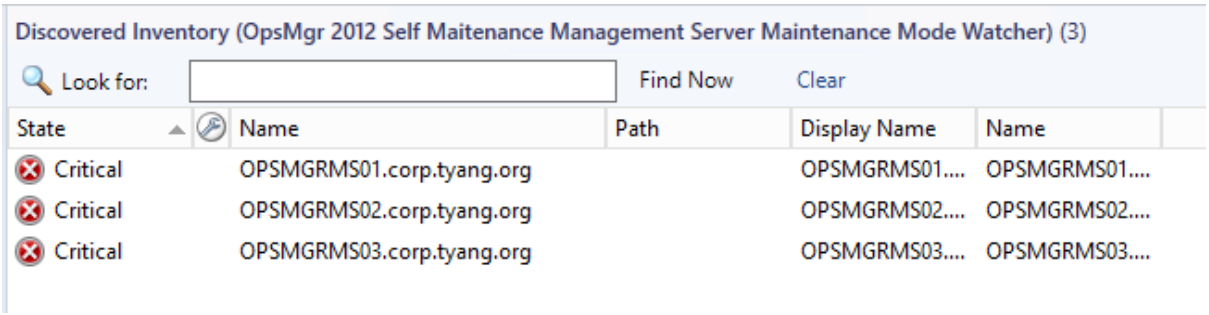


When the monitor is enabled, and management servers are placed into maintenance mode, The health state for the Maintenance Mode Watcher object becomes unhealthy and alerts are generated:

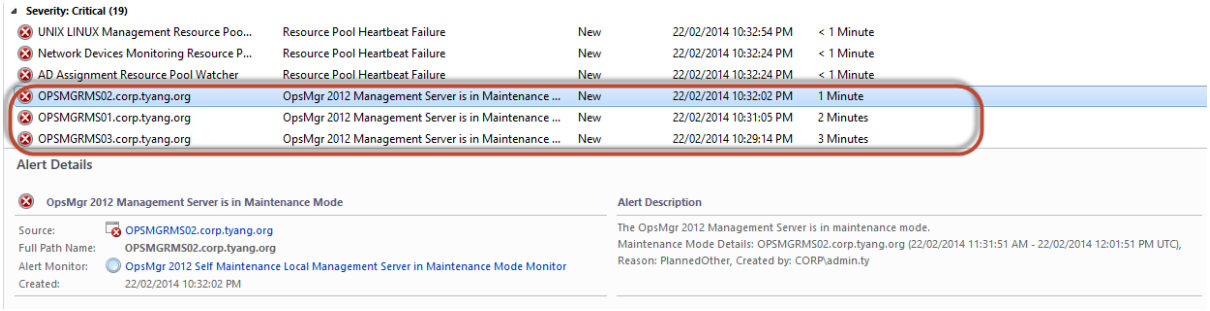
Management servers in Maintenance Mode:



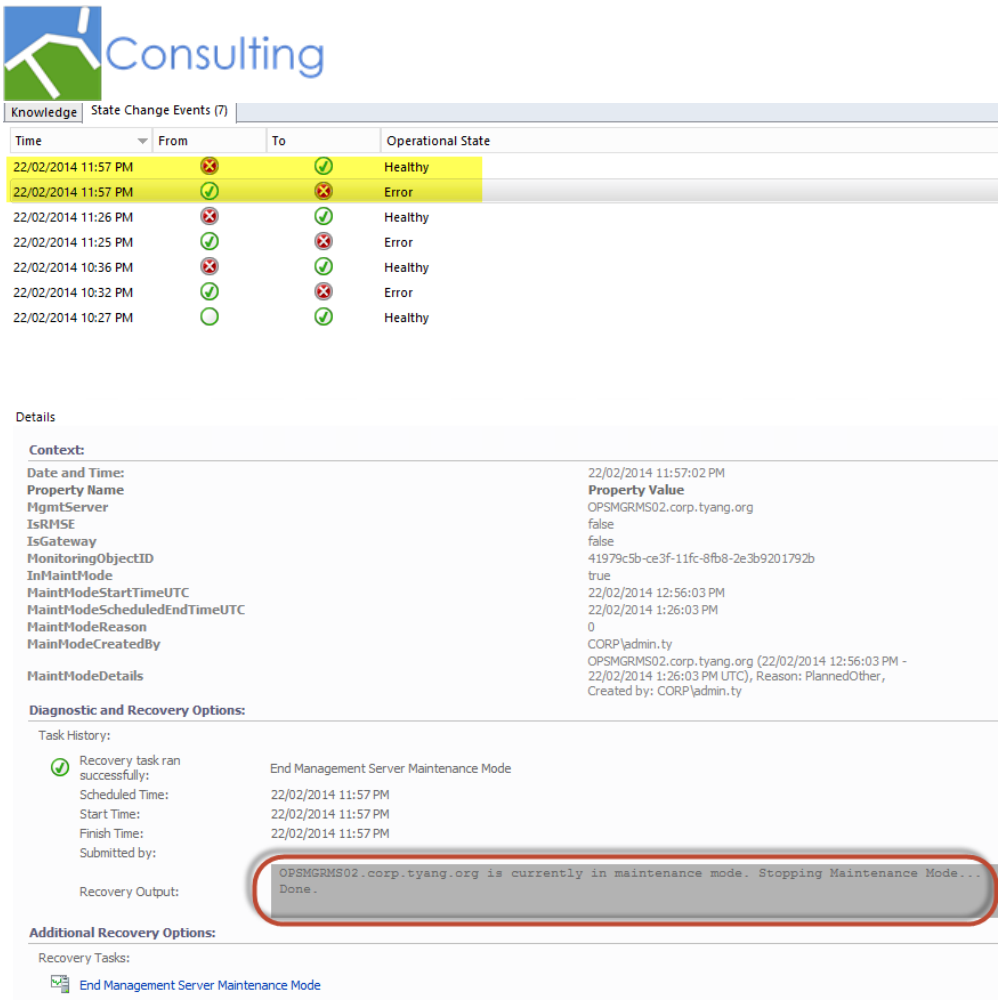
Maintenance Mode Watcher Objects:



Alert for each management server:



If the recovery task is enabled, the management server will automatically be taken out of maintenance mode:

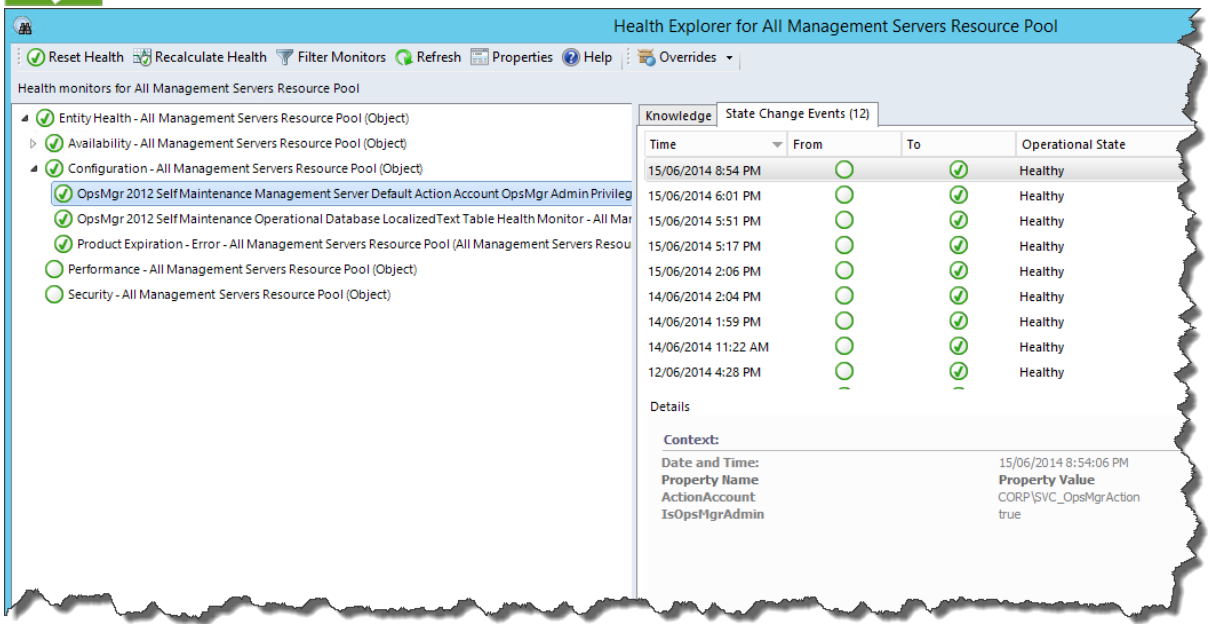


5.2.24 Detect if Management Server Default Action Account has OpsMgr administrator privilege (For OpsMgr 2012 Only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Management Server Default Action Account OpsMgr Admin Privilege Monitor

This monitor targets All Management Servers Resource Pool and runs once a day by default. It checks if the management server's default action account has OpsMgr administrator privilege within the management group. All workflows within this management pack runs under the default action account. This monitor ensures this account has required privilege within the management group to carry out the administrative workflows within this management pack.



When the monitor detects the Management Server's default action account does not have OpsMgr administrator privilege, a critical alert will be raised.

Note: On-Demand detection feature has been enabled for this monitor, OpsMgr operators may use the "Recalculate Health" button in Health Explorer to manually trigger the monitor.

The following parameters are configurable via overrides:

IntervalHours: Schedule frequency in hours.

SyncTime: Time when the rule runs.

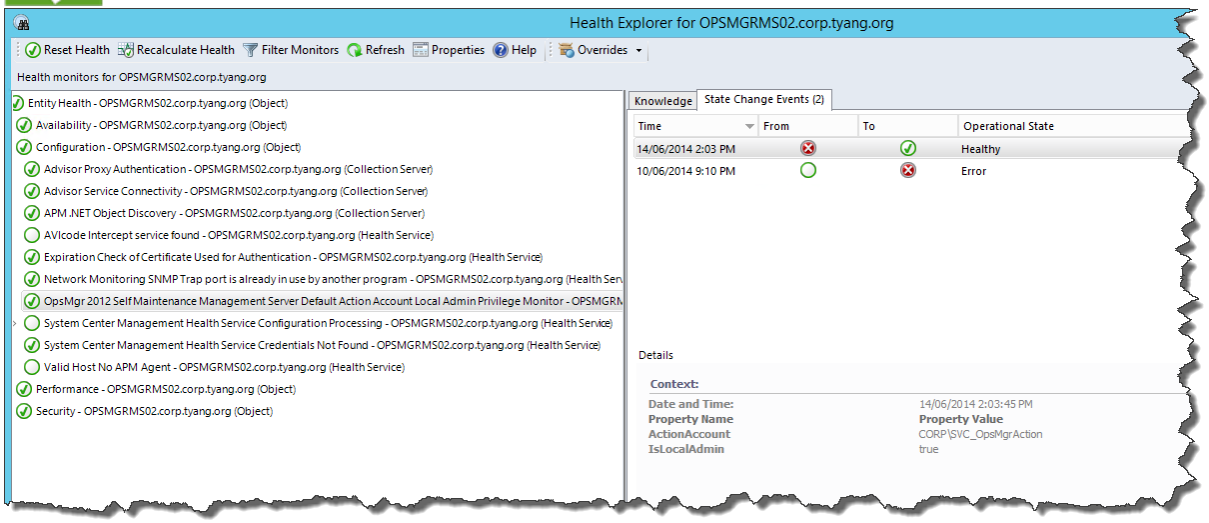
TimeoutSeconds: Timeout in seconds for the PowerShell script within this rule. Default is 120 seconds (2 minutes). Increase it if it's required.

5.2.25 Detect if Management Server Default Action Account has local administrator privilege on management servers (For OpsMgr 2012 Only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Management Server Default Action Account Local Admin Privilege Monitor

This monitor targets each management server and runs once a day by default. It checks if the management server's default action account has local administrator privilege on the management servers. All workflows within this management pack runs under the default action account. This monitor ensures this account has required privilege on the management server to carry out the administrative workflows within this management pack.



When the monitor detects the Management Server's default action account does not have local administrator privilege, a critical alert will be raised.

Note: On-Demand detection feature has been enabled for this monitor, OpsMgr operators may use the "Recalculate Health" button in Health Explorer to manually trigger the monitor.

The following parameters are configurable via overrides:

IntervalHours: Schedule frequency in hours.

SyncTime: Time when the rule runs.

TimeoutSeconds: Timeout in seconds for the PowerShell script within this rule. Default is 120 seconds (2 minutes). Increase it if it's required.

5.2.26 Detect Obsolete Management Pack References (MP Aliases) in Unsealed Management Packs (For OpsMgr 2012 Only)

Workflow Name:

- OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule

This rule runs on a schedule and detects obsolete aliases from unsealed management packs. These obsolete references creates unnecessary dependencies between management packs. It prevents sealed management packs from deletion.

When references to the following built-in common management packs are detected in any unsealed management packs, they will be ignored (the whitelist):

- Microsoft.SystemCenter.Library
- Microsoft.Windows.Library
- System.Health.Library
- System.Library
- Microsoft.SystemCenter.DataWarehouse.Internal
- Microsoft.SystemCenter.Notifications.Library
- Microsoft.SystemCenter.DataWarehouse.Library

- Microsoft.SystemCenter.OperationsManager.Library
- System.ApplicationLog.Library
- Microsoft.SystemCenter.Advisor.Internal
- Microsoft.IntelligencePacks.Types
- Microsoft.SystemCenter.Visualization.Configuration.Library
- Microsoft.SystemCenter.Image.Library
- Microsoft.SystemCenter.Visualization.ServiceLevelComponents
- Microsoft.SystemCenter.NetworkDevice.Library
- Microsoft.SystemCenter.InstanceGroup.Library
- Microsoft.Windows.Client.Library

This is because these common management packs are referenced in some out-of-box unsealed management packs by default. Additionally, since it is very unlikely that above listed management packs will ever be deleted from the management group, therefore it should not be an issue when they are referenced in other management packs. This rule also allows OpsMgr administrators to add up to 5 additional sealed management packs to the list by utilizing “CustomMP1” – “CustomMP5” override fields (additional items for the whitelist).

This rule can be customized using overrides:

IntervalHours: How often (in hours) does this rule run.

SyncTime: What time does this rule run?

CommonMP1 - CommonMP5: Additional common referenced sealed management packs this rule should ignore (the whitelist). When using these overrides, please use the management pack name (ID) instead of the display name.

TimeoutSeconds: Timeout in seconds for the PowerShell script inside the rule.

Alert Suppression: In order to reduce the number of alerts, alert suppression is enabled. The repeat count would increase if same obsolete references are detected. A new alert will only be generated if different obsolete references are detected.

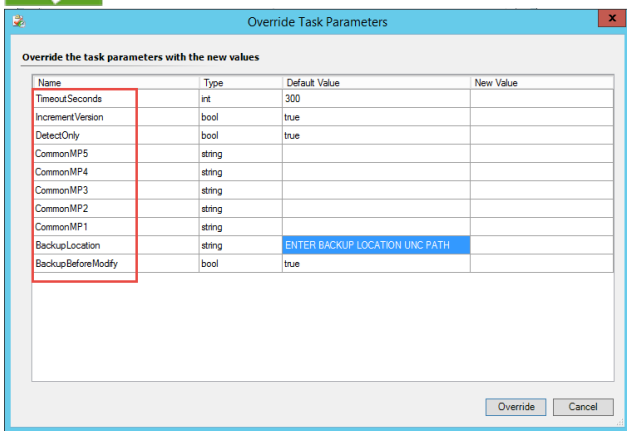
If obsolete MP references are detected, you may remove these obsolete references by using the "Remove Obsolete MP References" (Refer to Section 5.2.27) agent task targeting "All Management Servers Resource Pool".

5.2.27 Agent Task: Remove Obsolete MP References (For OpsMgr 2012 Only)

This task is targeting All Management Servers Resource Pool. It is designed to remove obsolete management pack references from unsealed management packs.

Same as the “OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule”, the built-in common management packs listed in section 5.2.26 will also be ignored by this task.

When running this task, users must use overrides to define options:



TimeoutSeconds: Timeout in seconds for the PowerShell script used by the task

IncrementVersion: Whether the unsealed MP version should be increased (the last section or the revision number of the MP version will be increased by 1. i.e. MP version 1.0.0.0 would be changed to 1.0.0.1.)

DetectOnly: by default, the value is set to true, which means this task will **ONLY** detect obsolete references but will **NOT** delete them. The override **MUST** be set to **false** in order to delete obsolete references. This is to prevent accidental update of the unsealed management pack when the task is executed by accident. It is recommended to run this task using the DetectOnly switch (set to true) first before actually deleting the obsolete references (set to false).

CommonMP1 – CommonMP5: Same as the "OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule", users can define up to 5 additional common MPs to be ignored when running this task. If these overrides are defined in the "OpsMgr 2012 Self Maintenance Obsolete Management Pack Alias Detection Rule", they should also be defined here when running the task.

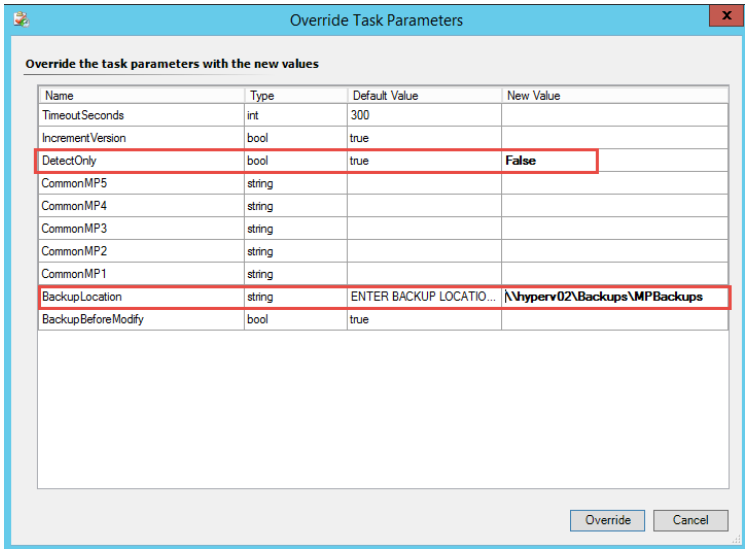
BackupBeforeModify: Specify whether the task should backup each unsealed management packs before modification if it needs to be updated. When this is set to true (by default), the BackupLocation override should also be specified.

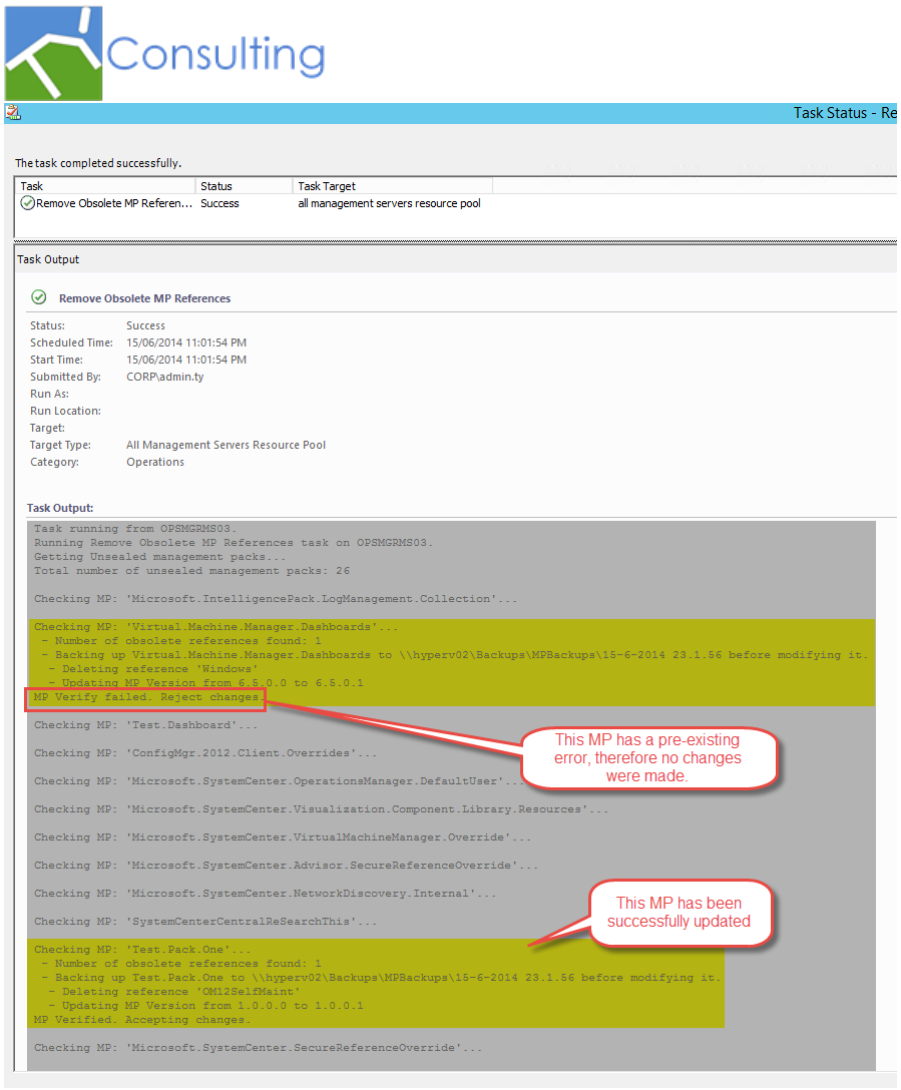
BackupLocation: Specify a location where the unsealed management packs will be updated. Because the task is targeting a resource pool, it is recommended to use an UNC path instead of a local path. The task will create a sub-folder which is named as the current time stamp in this location and the MPs will be backed up in this sub folder.

Note: When configured the task to remove the obsolete references, the script used by this task verifies the MP before committing changes. If there are any errors found, including pre-existing errors, the changes will **NOT** be committed and the MP will not be updated.

i.e. Running the task using DetectOnly switch:

i.e. Running the task with DetectOnly set to false:

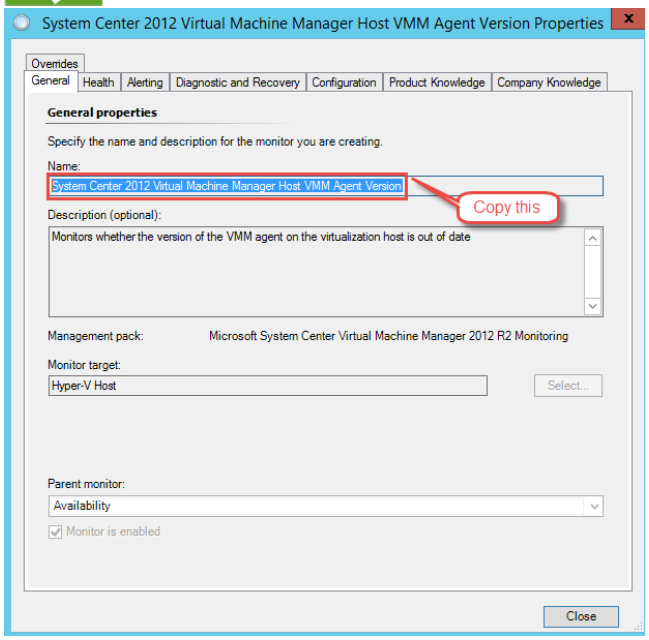




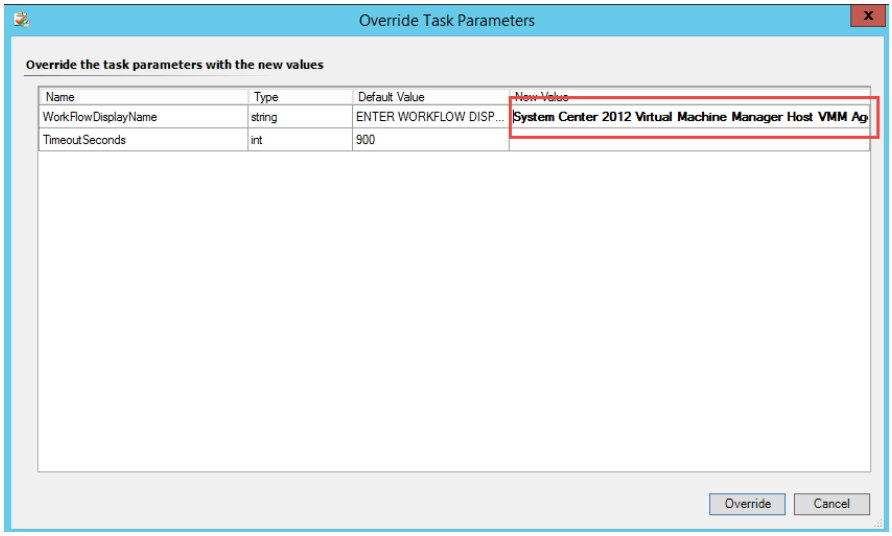
5.2.28 Agent Task: Get Workflow Name (ID) (For OpsMgr 2012 Only)

This task is targeting All Management Servers Resource Pool. It is designed to display the name (sometimes also refers to ID) of a rule, monitor or discovery workflow. This would help administrators to easily retrieve the real name of a workflow because users can only see the display names in the Operations console.

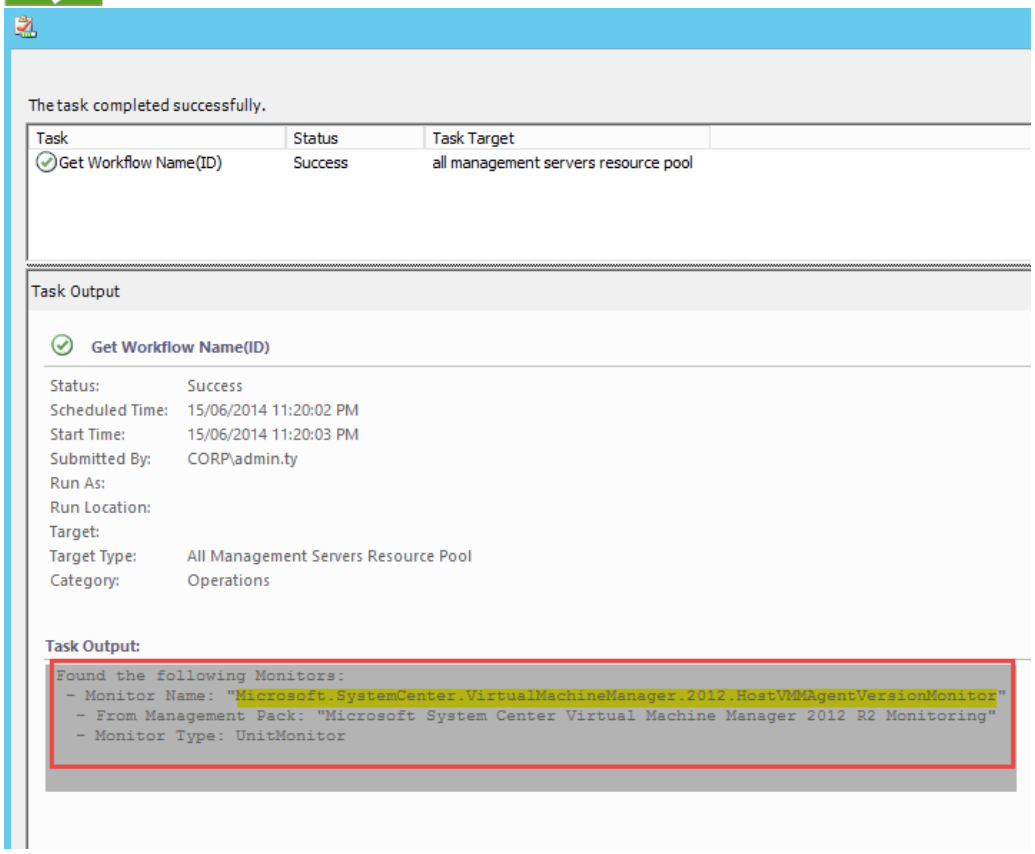
To use this task, firstly copy the display name of the workflow (rule / monitor / discovery) in Operations Console,



Then enter or paste the display name in the override field of this task:



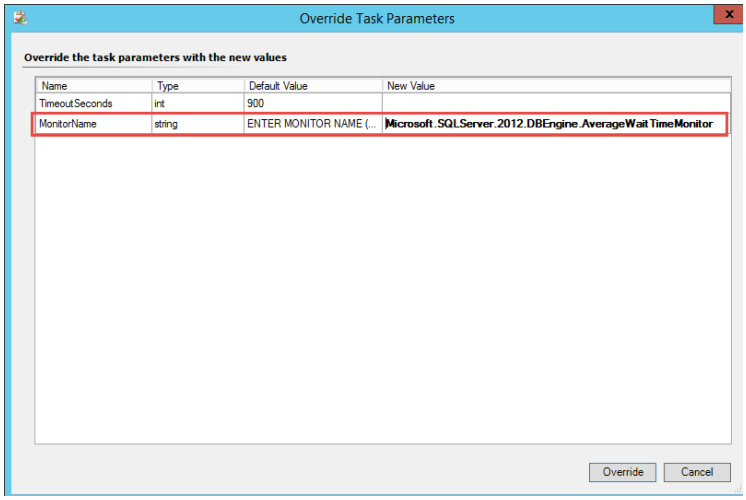
All workflows with such display name will be displayed in the output pane when the task is executed:



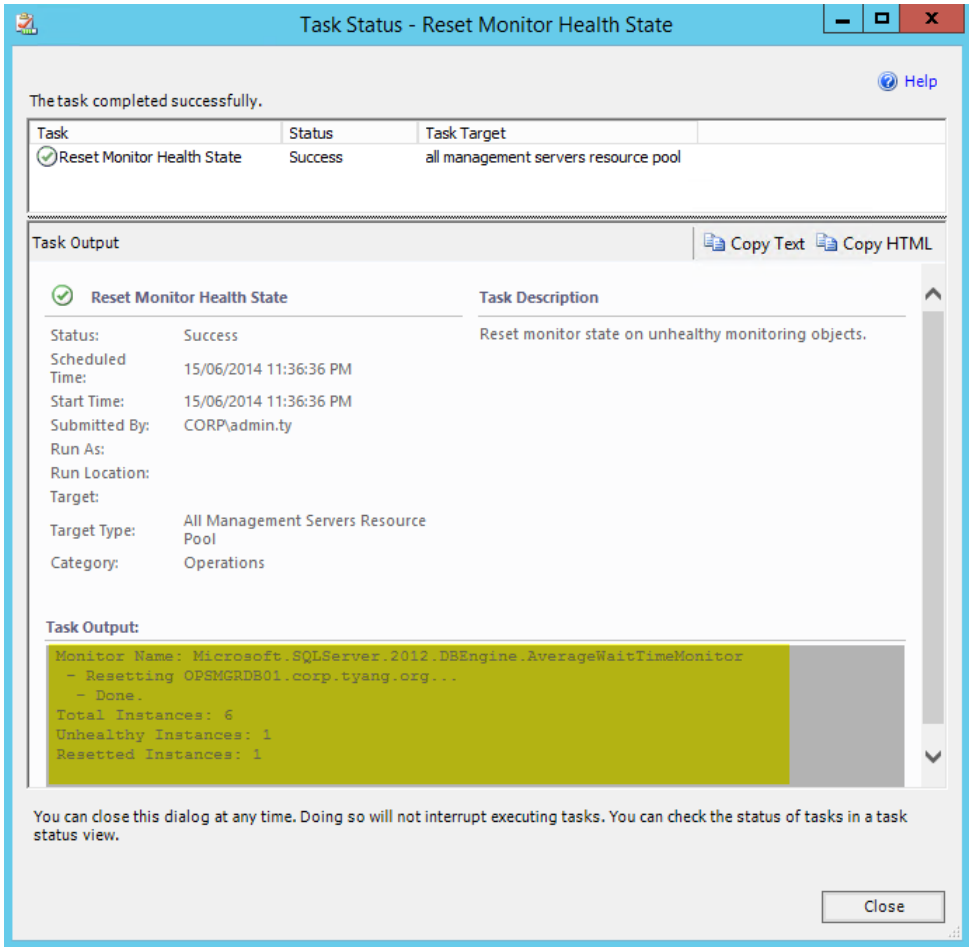
5.2.29 Agent Task: Reset Monitor Health State (For OpsMgr 2012 Only)

This task is targeting All Management Servers Resource Pool. It is designed to reset the health state of a particular monitor on all unhealthy monitoring objects.

The monitor name (Not display name) must be specified via override. The monitor name can be retrieved using the “Get Workflow Name(ID)” task (refer to section 5.2.28).



The task results indicates which unhealthy instances have been reset:



5.2.30 Monitoring the Data Warehouse Staging Tables Row Count (For OpsMgr 2012 Only)

The version 2.5.0.0 of this management pack has added few workflows to monitor the following 5 staging tables in the OpsMgr Data Warehouse database:

- Alert Staging Table: ***Alert.AlertStage***
- Event Staging Table: ***Event.EventStage***
- Performance Staging Table: ***Perf.PerformanceStage***
- State Staging Table: ***State.StateStage***
- Managed Entity Staging Table: ***ManagedEntityStage***

Higher row count on these tables may indicate performance related issues on the OpsMgr Data Warehouse DB and SQL server. The OpsMgr 2012 Self Maintenance MP provides a performance collection rule and a 2-state performance threshold monitor for each of these 5 tables:

- Performance Collection Rules:
    - OpsMgr 2012 Self Maintenance Data Warehouse Database Alert Staging Table Row Count Performance Collection Rule
    - OpsMgr 2012 Self Maintenance Data Warehouse Database Event Staging Table Row Count Performance Collection Rule

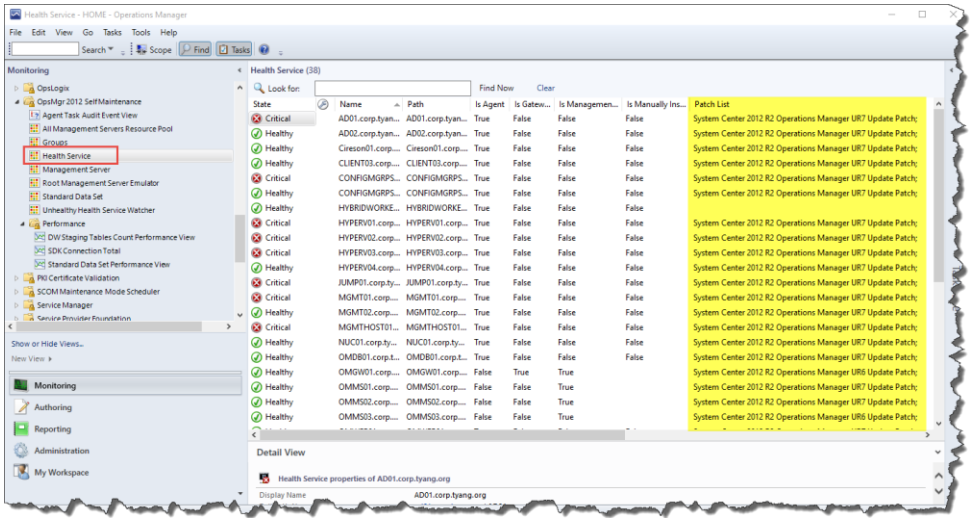
  - OpsMgr 2012 Self Maintenance Data Warehouse Database ManagedEntity Staging Table Row Count Performance Collection Rule
  - OpsMgr 2012 Self Maintenance Data Warehouse Database Performance Staging Table Row Count Performance Collection Rule
  - OpsMgr 2012 Self Maintenance Data Warehouse Database State Staging Table Row Count Performance Collection Rule
- 2-State Performance Monitors:
  - OpsMgr 2012 Self Maintenance Data Warehouse Database Alert Staging Table Row Count 2 State Threshold Monitor
  - OpsMgr 2012 Self Maintenance Data Warehouse Database Event Staging Table Row Count 2 State Threshold Monitor
  - OpsMgr 2012 Self Maintenance Data Warehouse Database Managed Entity Staging Table Row Count 2 State Threshold Monitor
  - OpsMgr 2012 Self Maintenance Data Warehouse Database Performance Staging Table Row Count 2 State Threshold Monitor
  - OpsMgr 2012 Self Maintenance Data Warehouse Database State Staging Table Row Count 2 State Threshold Monitor

All the above listed rules and monitors are targeting the "All Management Servers Resource Pool" and they are disabled by default. In order to utilise OpsMgr Cook Down feature, these rules and monitors are sharing the same data source module with the same input parameters. Therefore, when modifying the input parameters for these workflows, please make sure the same override is applied to all of above mentioned rules and monitors otherwise it will break Cook Down.

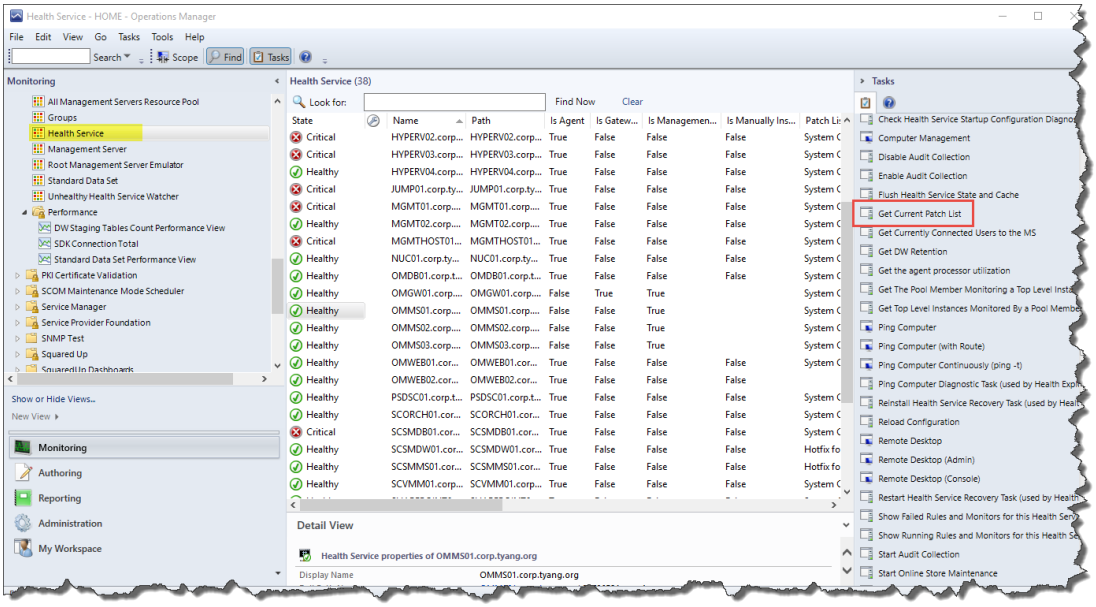
5.2.31 Monitoring the Patch Level of Various OpsMgr 2012 Components (For OpsMgr 2012 Only)

When applying OpsMgr 2012 Update Rollups (UR), a certain order must be followed. Failed to do so may lead to the inconsistent UR among various components. In order to address this common problem, the OpsMgr 2012 Self Maintenance MP (Version 2.5.0.0) has provided the following workflows:

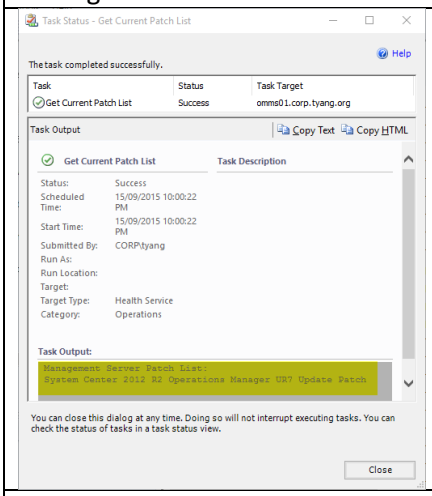
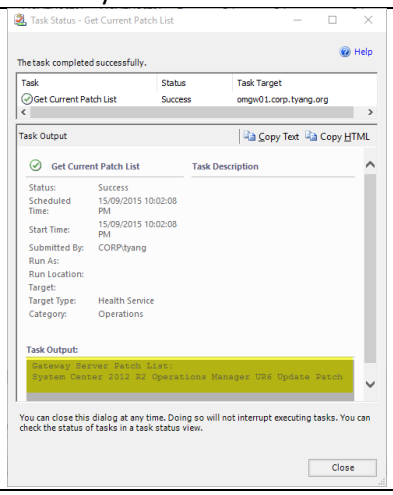
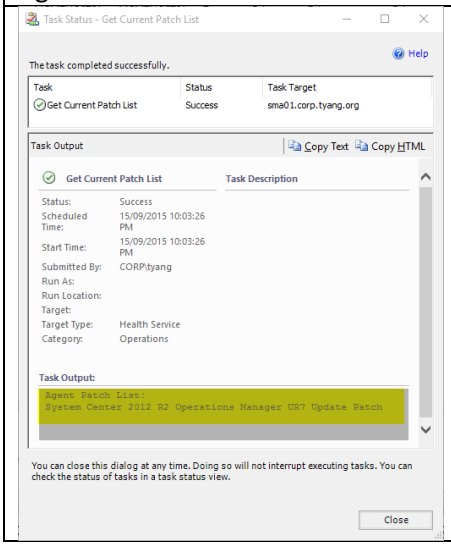
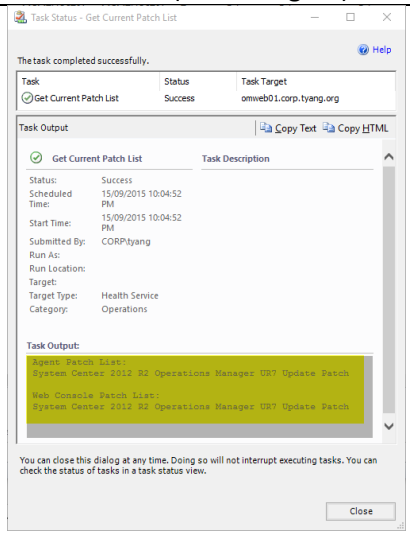
- **State view for Health Service which also displays the patch list:**



- **An agent task targeting Health Service to list OpsMgr components patch level:**

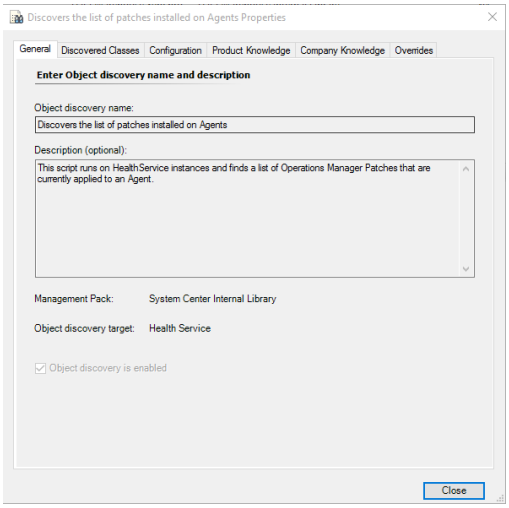


This task will display the patch list for any of the following OpsMgr components installed on the selected health service:

Management Servers	Gateway Servers
	
Agent	**Web Console (Also an agent)**
	

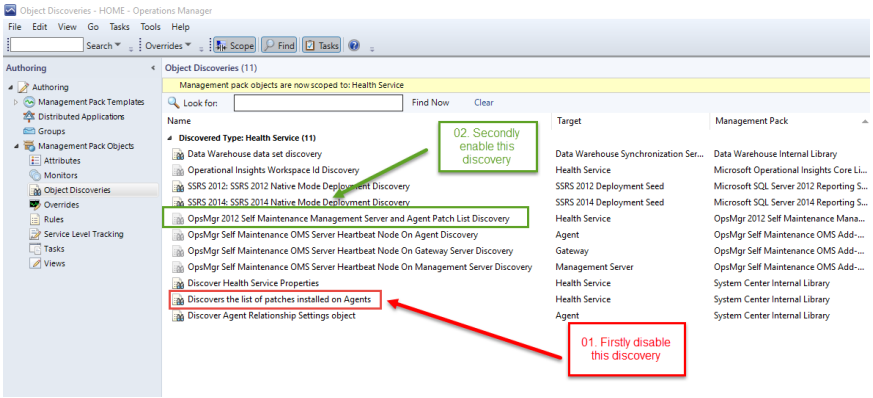
- **Object Discovery: OpsMgr 2012 Self Maintenance Management Server and Agent Patch List Discovery**

  Natively in OpsMgr, the agent patch list is discovered by an object discovery called "Discovers the list of patches installed on Agents":



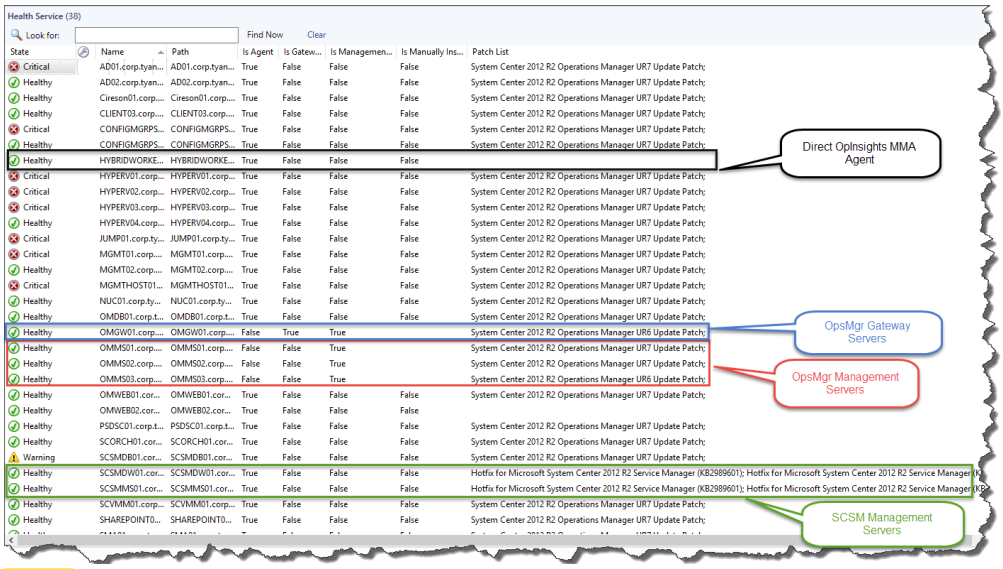
As the name suggests, this discovery discovers the patch list for agents, and nothing else. It does not discover the patch list for OpsMgr management servers, gateway servers, and SCSM management servers (if they are also monitored by OpsMgr using the version of the Microsoft Monitoring Agent that is a part of the Service Manager 2012). The discovery provided by the OpsMgr 2012 Self Maintenance MP (Version 2.5.0.0) is designed to replace the native patch list discovery. Instead of only discovering agent patch list, it also discovers the patch list for OpsMgr management servers, gateway servers, SCSM management servers and SCSM Data Warehouse management servers.

Same as all other workflows in the Self Maintenance MP, this discovery is disabled by default. In order to start using this discovery, please disable the built-in discovery "Discovers the list of patches installed on Agents" BEFORE enabling "OpsMgr 2012 Self Maintenance Management Server and Agent Patch List Discovery":



Shortly after the built-in discovery has been disabled and the "OpsMgr 2012 Self Maintenance Management Server and Agent Patch List Discovery" has been enabled for the Health Service class, the patch list for the OpsMgr management servers, gateway servers

and SCSM management servers (including Data Warehouse management server) will be populated (as shown in the screenshot below):



Note:

As shown above, the patch list for different flavours of Health Service is properly populated, with the exception of the Direct Microsoft Monitoring Agent for OpInsights (OMS). This is because at the time of writing this documentation for version 2.5.0.0 (September, 2015), Microsoft has yet released any patches to the OMS direct MMA agent. The last Update Rollup for the Direct MMA agent is actually released as an updated agent (MSI) instead of an update (MSP). Therefore, since there is no update to the agent installer, the patch list is not populated.

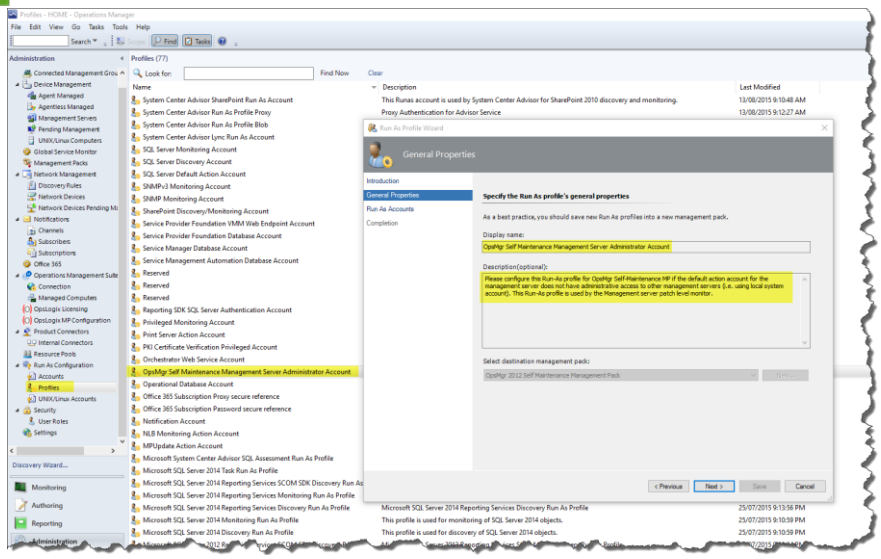
Warning:

Please do not leave both discoveries enabled at the same time as it will cause config-churn in your OpsMgr environment.

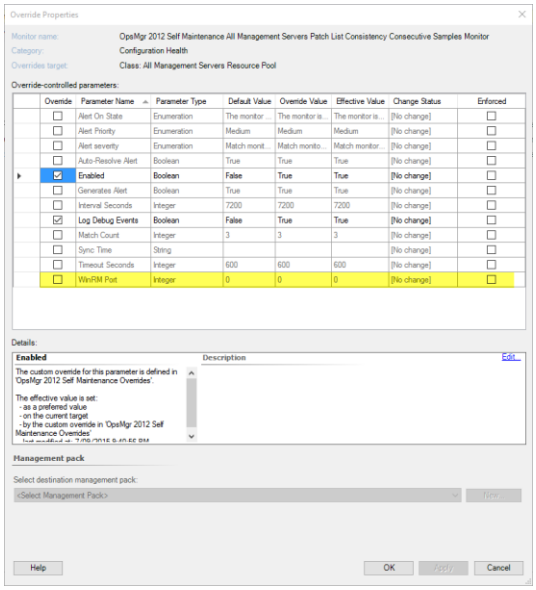
- **Monitor: OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor**

  This consecutive sample monitor is targeting the “All Management Servers Resource Pool” and it is configured to run every 2 hours (7200 seconds) by default. It executes a PowerShell script which uses WinRM to remotely connect to each management server and check if all the management servers are on the same UR patch level.

  In order to utilise this monitor, WinRM must be enabled and configured to accept connections from other management servers. The quickest way to do so is to run “Winrm QuickConfig” on these servers. The account that is running the script in the monitor must also have OS administrator privilege on all management servers (by default, it is running under the management server’s default action account). If the default action account does not have Windows OS administrator privilege on all management servers, a Run-As profile can be configured for this monitor:



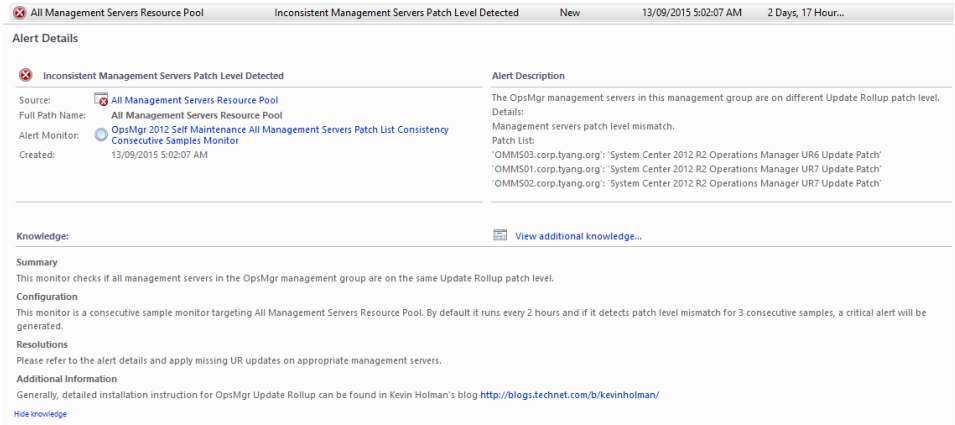
In addition to the optional Run-As profile, if WinRM on management servers are listening to a non-default port, the port number can also be modified via override:



Note:

All management servers must be configured to use the same WinRM port. Using different WinRM port is not supported by the script used by the monitor.

If the monitor detected inconsistent patch level among management servers in 3 consecutive samples, a Critical alert will be raised:

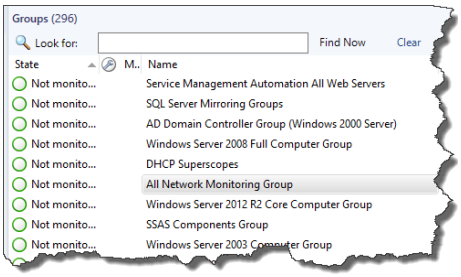


The number of consecutive sample can be modified via override (Match Count) parameter.

5.2.32 Agent Task: Configure Group Health Rollup (For OpsMgr 2012 Only)

In OpsMgr, groups are frequently used when designing service level monitoring and dashboards. The group members' health rollup behaviours can be configured by creating various dependency monitors targeting against the group.

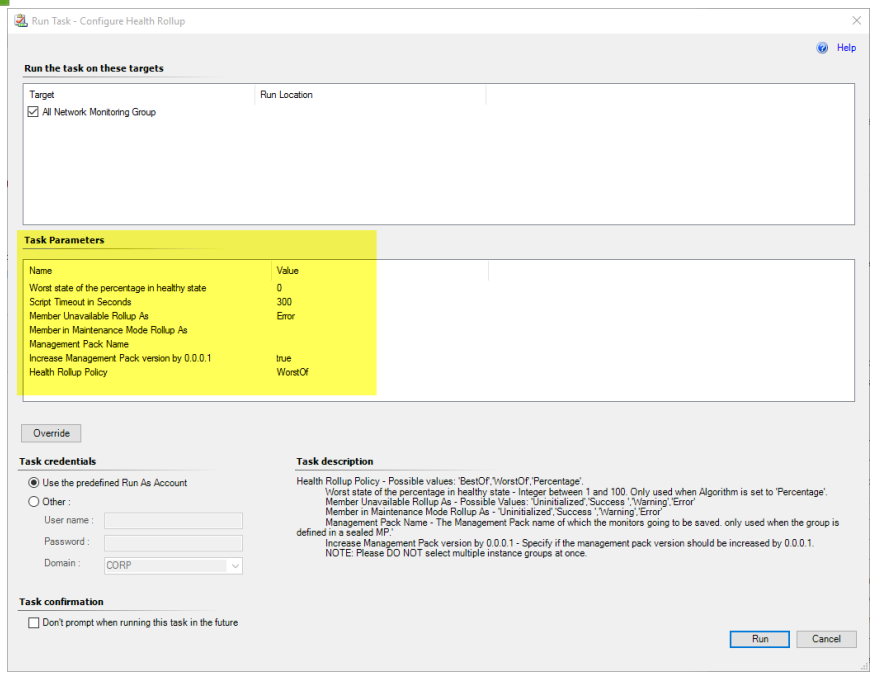
When creating groups, only instance groups can be created within the OpsMgr console. Unlike computer groups, instance groups do not inherit any dependent monitors from their base class. Therefore when an instance group is created in the OpsMgr console, by default, the health state of the group is "Not monitored" (Uninitialized):



In order to configure group members to rollup health state to the group object (so the group can be used in dashboards), one or more dependency monitors must be created manually after the group has been created. This manual process can be time consuming. This agent task is created to simplify the process of configuring groups' health rollup by creating a set of dependency monitors using OpsMgr SDK.

Although a set of required parameters are pre-configured for the agent task, the operators can also modify these parameters using overrides.

The following parameters can be customized via overrides:

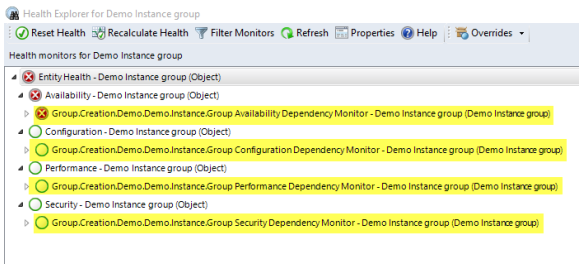


- Health Rollup Policy: Possible values: ‘BestOf’, ‘WorstOf’, ‘Percentage’
- Worst state of the percentage in healthy state: Integer between 1 and 100. Only used when Algorithm is set to ‘Percentage’
- Member Unavailable Rollup As: Possible Values: ‘Uninitialized’, ‘Success ‘, ‘Warning’ and ‘Error’
- Member in Maintenance Mode Rollup As: ‘Uninitialized’, ‘Success’, ‘Warning’ and ‘Error’
- Management Pack Name: The Management Pack name of which the monitors going to be saved. Only used when the group is defined in a sealed MP.
- Increase Management Pack version by 0.0.0.1: Specify if the management pack version should be increased by 0.0.0.1.

NOTE: Please DO NOT select multiple instance groups at once.

After the task is executed against a group, 4 dependency monitors are created:

- Availability Dependency Monitor
- Configuration Dependency Monitor
- Performance Dependency Monitor
- Security Dependency Monitor



Security Consideration

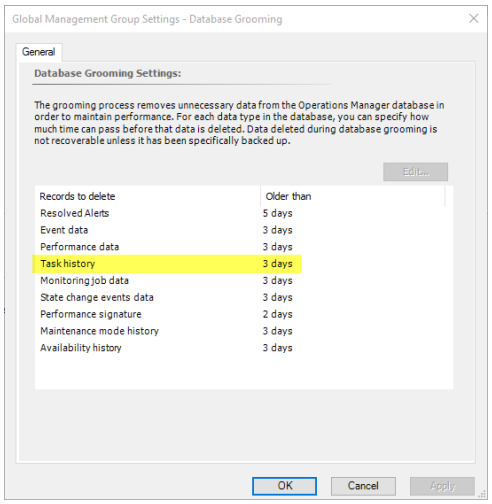
Natively in OpsMgr, only user accounts assigned either authors role or administrators role have access to create monitors. However, users with lower privileges (such as operators and advanced operators) can potentially execute this task and create dependency monitors.

Please keep this in mind when deploying this management pack. You may need to scope user roles accordingly to only allow appropriate users have access to this task.

This agent task has previously published via a separate management pack: http://blog.tyang.org/2015/07/28/opsmgr-group-health-rollup-configuration-task-management-pack/. It has been made as part of the version 2.5 of the Self Maintenance MP.

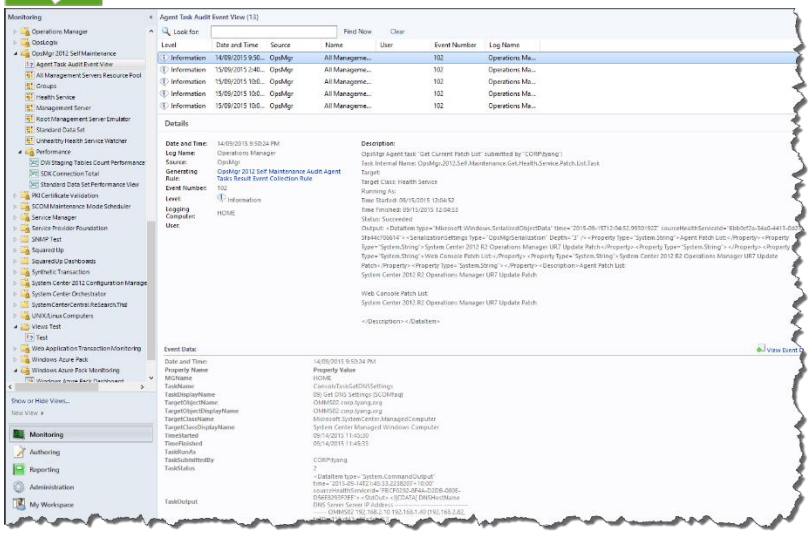
5.2.33 Audit Agent Task Execution Results (For OpsMgr 2012 Only)

In OpsMgr, the task history is stored in the Operational DB, which has a relatively short retention period:



The “OpsMgr 2012 Self Maintenance Audit Agent Tasks Result Event Collection Rule” is designed to collect the agent task execution result and store it in both operational and Data Warehouse DB as event data. Because the data in the DW database generally has a much longer retention, the task execution results can be audited and reported.

Once enabled, this rule runs every 5 minutes by default. It retrieves all the task execution results since last rule execution using OpsMgr SDK and format each agent task execution result as an event before saving it to both operational and data warehouse DB. The event severity is Information and the event ID is 102. This management pack also provides an event view for event data collected by this rule:

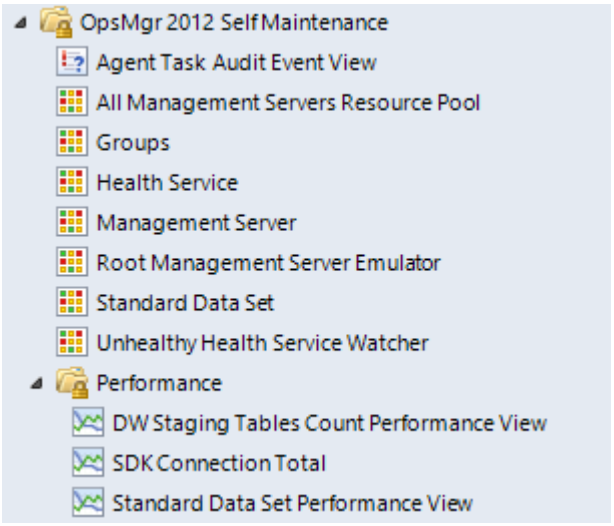


Note:

This rule was inspired by this blog post (although the script used in this rule is completely different than the script from this post): http://www.systemcentercentral.com/archiving-scom-console-task-status-history-to-the-data-warehouse/

6 Views

The following views are configured in the version 2.0.0.0 of the MP for OpsMgr 2012:



The purpose of creating the state views is to help OpsMgr administrators and operators to easily find the tasks that are targeting each OpsMgr class.

7 OpsMgr Self Maintenance OMS Add-On Management Pack

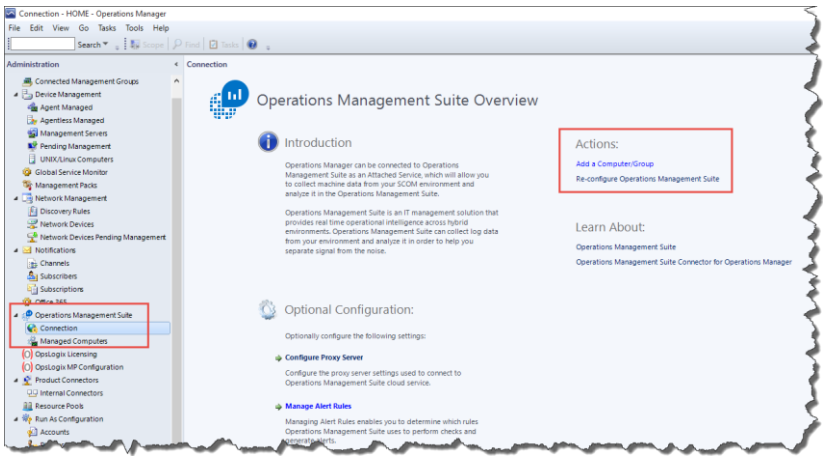
With the release of version 2.5.0.0, the new “OpsMgr Self Maintenance OMS Add-On Management Pack” has been introduced.

This management pack is designed to also send performance and event data generated by the OpsMgr 2012 Self Maintenance MP to the Microsoft Operations Management Suite (OMS) Workspace (http://www.microsoft.com/OMS)

In addition to the existing performance and event data, this management pack also provides 2 event rules that send periodic “heartbeat” events to OMS from configured health service and All Management Servers Resource Pool. These 2 event rules are designed to monitor the basic health of the OpsMgr management group from OMS (Monitor the monitor scenario).

Note:

In order to use this management pack, the OpsMgr management must meet the minimum requirements for the OMS / Azure Operational Insights integration, and the connection to OMS must be configured prior to importing this management pack:



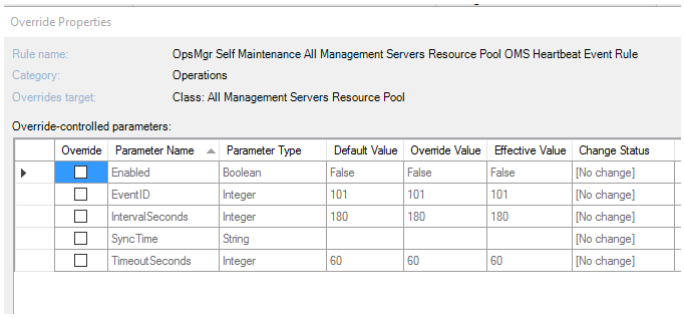
7.1 Sending Heartbeat Events to OMS

There have been many discussion and custom solutions on how to monitor the monitor? It is critical to be notified when the monitor - OpsMgr management group is “down”. With the recent release of Microsoft Operations Management Suite (OMS) and the ability to connect the on-premise OpsMgr management group to OMS workspace, the “OpsMgr Self Maintenance OMS Add-On Management Pack” provides the ability to send “heartbeat” events to OMS from

- All Management Servers Resource Pool
- Various Health Service
    - Management Servers and Gateway Servers
    - Agents

7.1.1 OMS Heartbeat Events from All Management Servers Resource Pool

The "OpsMgr Self Maintenance All Management Servers Resource Pool OMS Heartbeat Event Rule" is targeting the All Management Servers Resource Pool and it is configured to send a heartbeat event to OMS every 180 seconds (3 minutes). The EventID is 101. The following parameters can be modified via overrides:


Override Properties

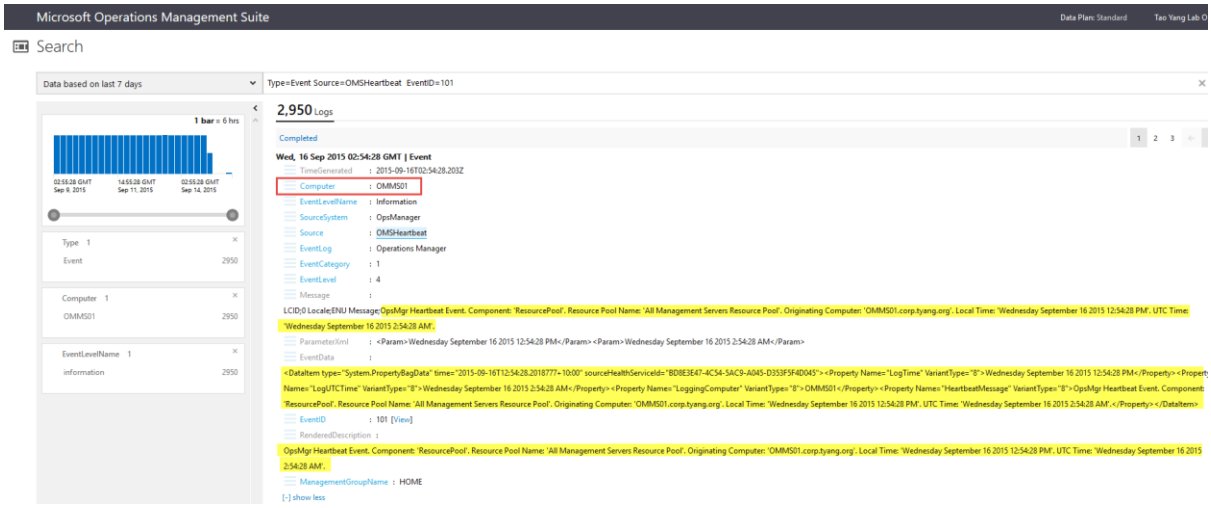
Rule name: OpsMgr Self Maintenance All Management Servers Resource Pool OMS Heartbeat Event Rule
Category: Operations
Overrides target: Class: All Management Servers Resource Pool

Override-controlled parameters:

Override	Parameter Name	Parameter Type	Default Value	Override Value	Effective Value	Change Status
☐	Enabled	Boolean	False	False	False	[No change]
☐	EventID	Integer	101	101	101	[No change]
☐	IntervalSeconds	Integer	180	180	180	[No change]
☐	SyncTime	String				[No change]
☐	TimeoutSeconds	Integer	60	60	60	[No change]

Once enabled, the heartbeat events can be accessed in the OMS web portal using queries such as:

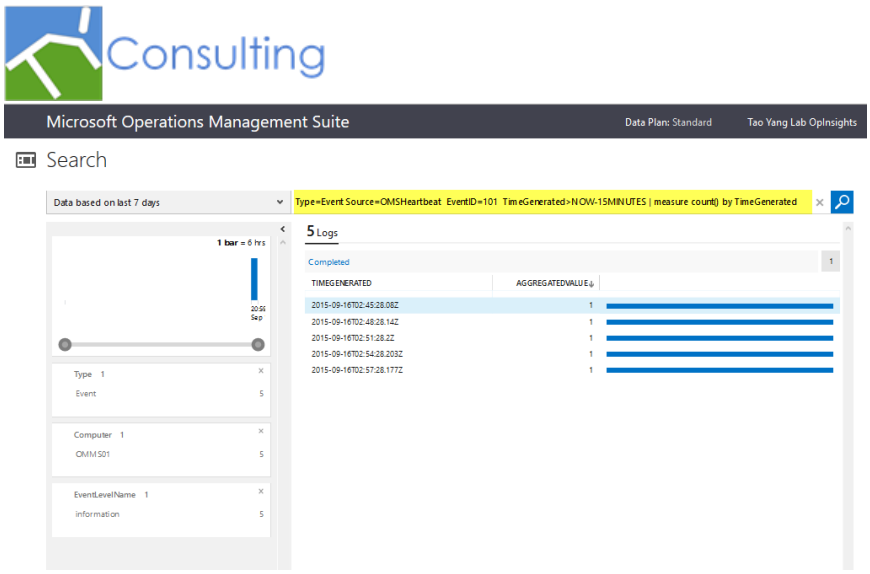
Type=Event Source=OMSHeartbeat EventID=101



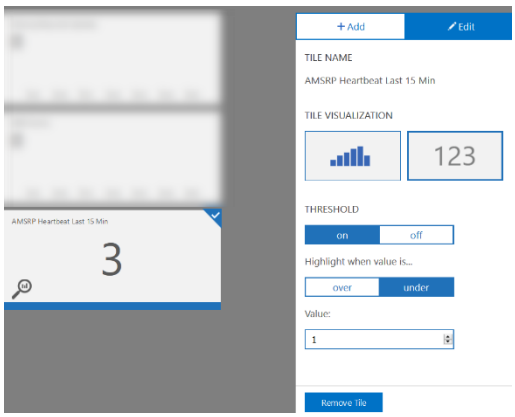
As shown above, the heartbeat event contains information such as originating computer (active member of the resource pool at that point of time) as well as the local and UTC time when the event was generated.

The number of heartbeat events over the last x number of minutes can be retrieved using a query such as:

Type=Event Source=OMSHeartbeat EventID=101 TimeGenerated>NOW-15MINUTES | measure count() by TimeGenerated



This query can also be used to create a dashboard tile with a threshold:



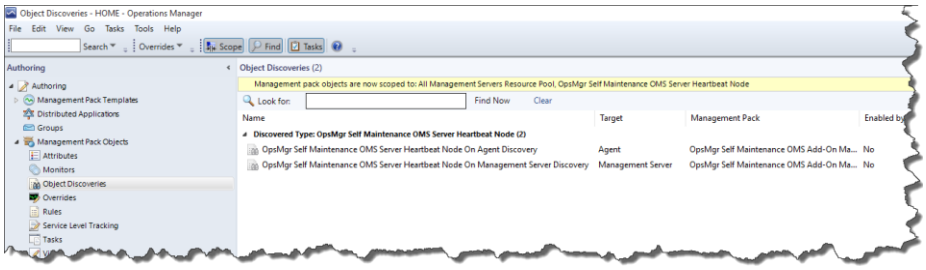
7.1.2 OMS Heartbeat Events from Health Services

This management pack also provides abilities to send heartbeat events from the following components:

- Management Servers (including gateway servers)
- Agents

In order for the computers to continue sending the heartbeat events even when it has been placed into maintenance mode, an unhosted class named “OpsMgr Self Maintenance OMS Server Heartbeat Node” is defined. This class can be discovered by the following discoveries:

- OpsMgr Self Maintenance OMS Server Heartbeat Node On Management Server Discovery
- OpsMgr Self Maintenance OMS Server Heartbeat Node On Agent Discovery

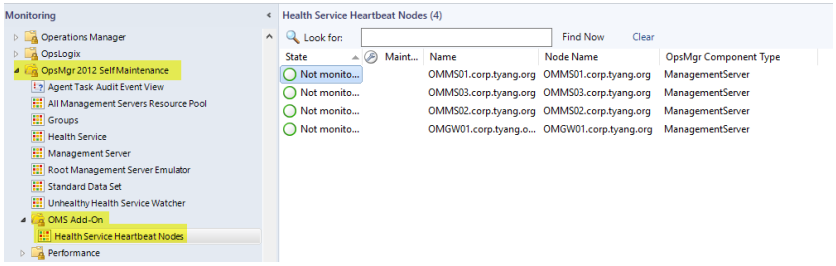


These discoveries are disabled by default. They need to be enabled via overrides for the components that you wish to send heartbeat events to OMS.

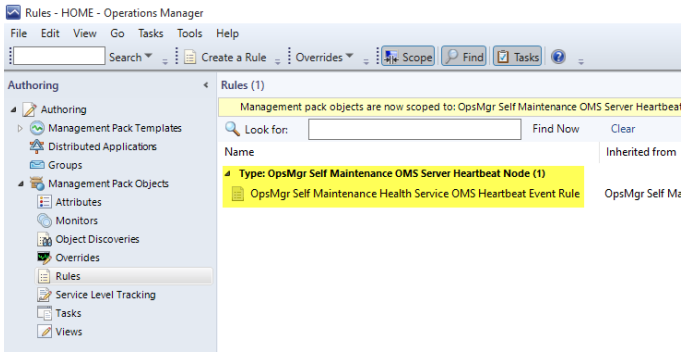
Note:

- The discovery for the management server is also targeting the gateway servers.
- Since agents are already sending heartbeat to the management servers, it is recommended not to enable the discovery for agents unless there are specific requirements.

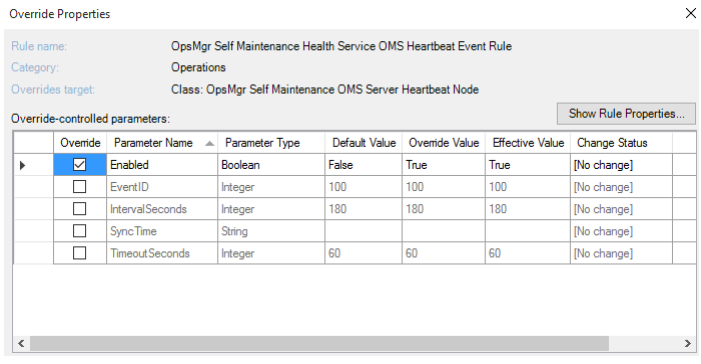
Once the appropriate discoveries are enabled, the discovered heartbeat nodes will become available in the “Health Service Heartbeat Nodes” state view:



In order for the heartbeat nodes to start sending heartbeat events to OMS, the “OpsMgr Self Maintenance Health Service OMS Heartbeat Event Rule” must be enabled via overrides:

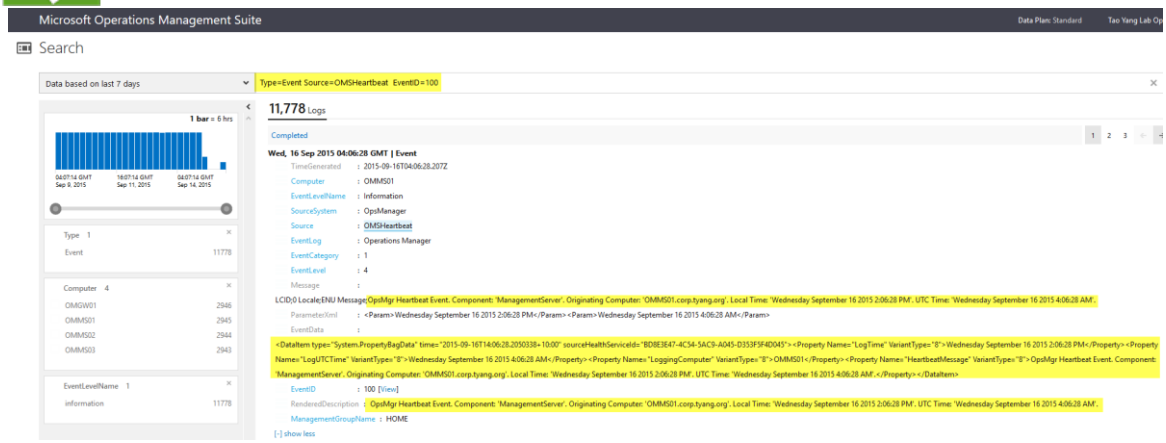


The following parameters are also available for overrides:



Once enabled, this rule will send a heartbeat event with event ID 100 every 3 minutes (180 seconds). The heartbeat events can be viewed in the OMS web portal using queries such as:

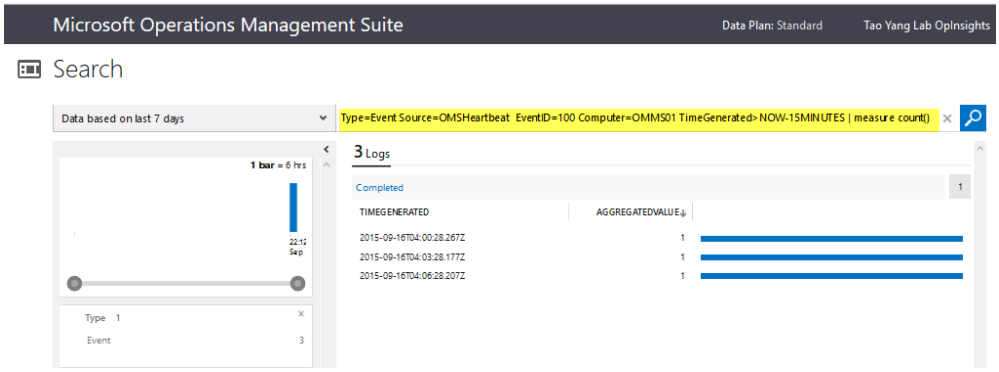
Type=Event Source=OMSHeartbeat EventID=100



Similar to the All Management Servers Resource Pool heartbeat events, the health service heartbeat events contain information such originating computers, time when event was generated (both local and UTC time).

The number of heartbeat events for a given computer over the last x number of minutes can be retrieved using a query such as:

Type=Event Source=OMSHeartbeat EventID=100 Computer=<ComputerName> TimeGenerated>NOW-15MINUTES | measure count() by TimeGenerated



Dashboard tiles can also be created similar to the AMSRP heartbeat events tile.

7.1.3 Notification In the Event of Missing Heartbeats

At the time of writing (September, 2015), OMS does not currently provide any notification mechanism like what OpsMgr does. Therefore, natively, we cannot configure OMS to send notification when heartbeat events are missing.

However, since we are able to programmatically access OMS data using the OMS search API (https://azure.microsoft.com/en-us/documentation/articles/operational-insights-api-log-search/) or the community solution OMSSearch Powershell module (https://github.com/slavizh/OMSSearch), it is pretty straightforward to utilise automation engines such as System Center Service Management Automation (SMA) or Azure Automation to periodically check for missing heartbeats and notify the relevant parties when it occurs.

Since this is not in the scope of the OpsMgr Self Maintenance management pack, it will not be covered in this guide.

7.2 Collecting Data Generated by the OpsMgr 2012 Self Maintenance MP

Other than the heartbeat event collection rules, the OMS Add-On MP also contains the following event and performance collection rules:

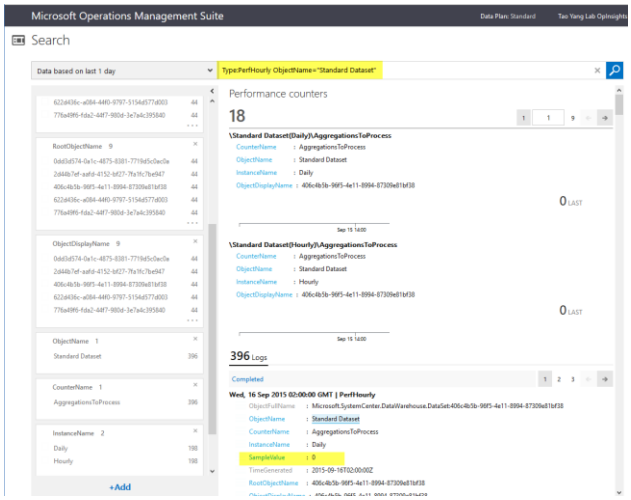
- OpsMgr 2012 Self Maintenance Data Warehouse Database Aggregation Process OMS Performance Collection Rule
- OpsMgr 2012 Self Maintenance Data Warehouse Database ManagedEntity Staging Table Row Count OMS Performance Collection Rule
- OpsMgr 2012 Self Maintenance Data Warehouse Database Alert Staging Table Row Count OMS Performance Collection Rule
- OpsMgr 2012 Self Maintenance Data Warehouse Database Event Staging Table Row Count OMS Performance Collection Rule
- OpsMgr 2012 Self Maintenance Data Warehouse Database Performance Staging Table Row Count OMS Performance Collection Rule
- OpsMgr 2012 Self Maintenance Data Warehouse Database State Staging Table Row Count OMS Performance Collection Rule
- Collect All Management Server SDK Connection Count OMS Performance Rule
- OpsMgr 2012 Self Maintenance Audit Agent Tasks Result OMS Event Collection Rule

The above listed rules collect the performance and event data that are already been generated by the OpsMgr 2012 Self Maintenance MP, and store them in OMS.

7.2.1 Data Warehouse Aggregation Process Performance Data

This performance counter can be access using queries such as:

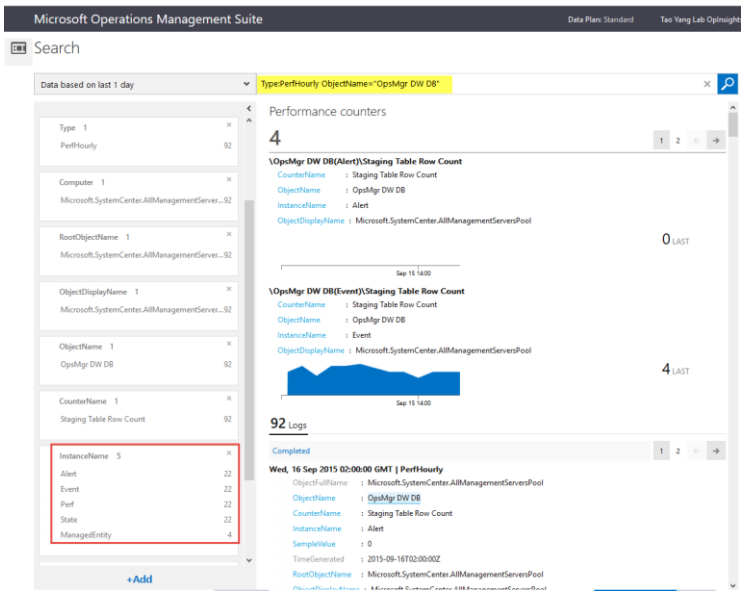
Type:PerfHourly ObjectName="Standard Dataset"

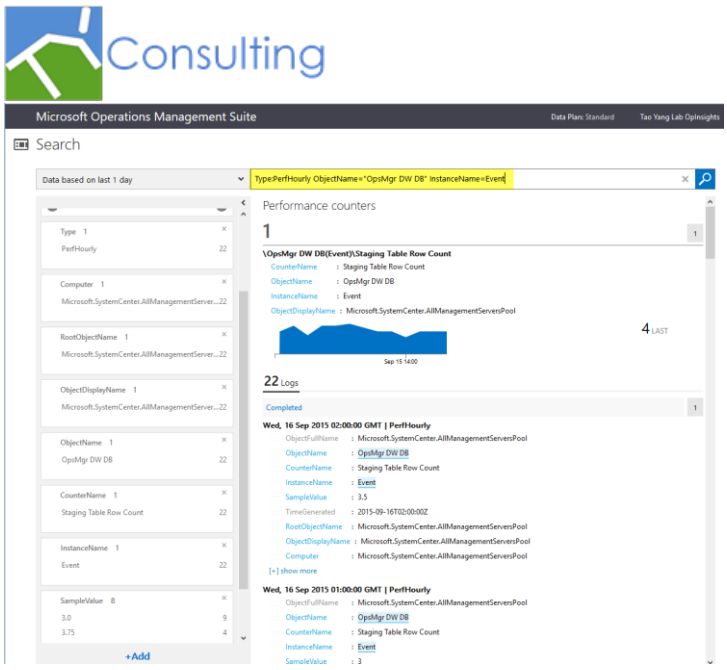


7.2.2 Data Warehouse Staging Tables Row Count Performance Data

The performance data for the DW DB staging tables row count can be accessed using queries such as:

- ***Type:PerfHourly ObjectName="OpsMgr DW DB"***
- ***Type:PerfHourly ObjectName="OpsMgr DW DB" InstanceName=Alert***
- ***Type:PerfHourly ObjectName="OpsMgr DW DB" InstanceName=Event***
- ***Type:PerfHourly ObjectName="OpsMgr DW DB" InstanceName=Perf***
- ***Type:PerfHourly ObjectName="OpsMgr DW DB" InstanceName=State***
- ***Type:PerfHourly ObjectName="OpsMgr DW DB" InstanceName=ManagedEntity***

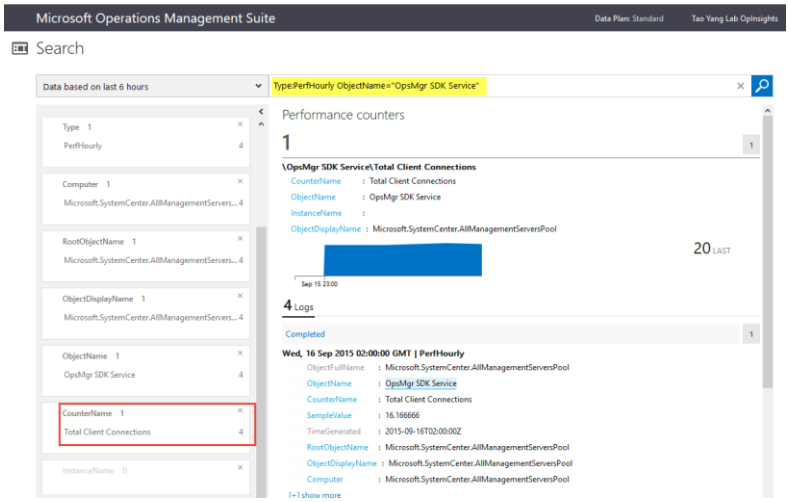




7.2.3 All Management Servers SDK Connection Count Performance Data

The performance data for the total SDK connection count can be accessed via search query such as:

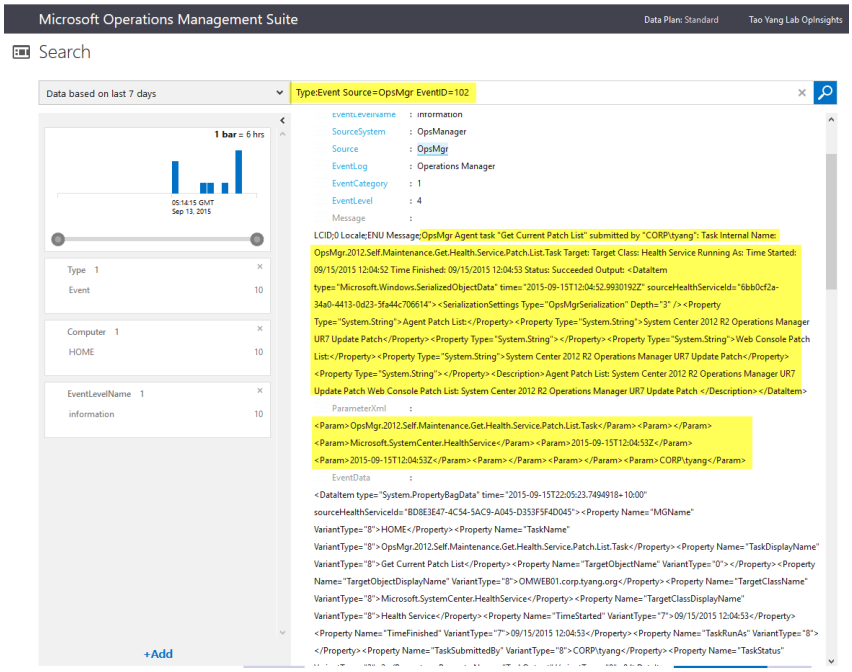
Type:PerfHourly ObjectName="OpsMgr SDK Service"



7.2.4 OpsMgr Agent Tasks Result Audit Event Data

The event data for the OpsMgr agent tasks result audit can be accessed via search query such as:

Type:Event Source=OpsMgr EventID=102

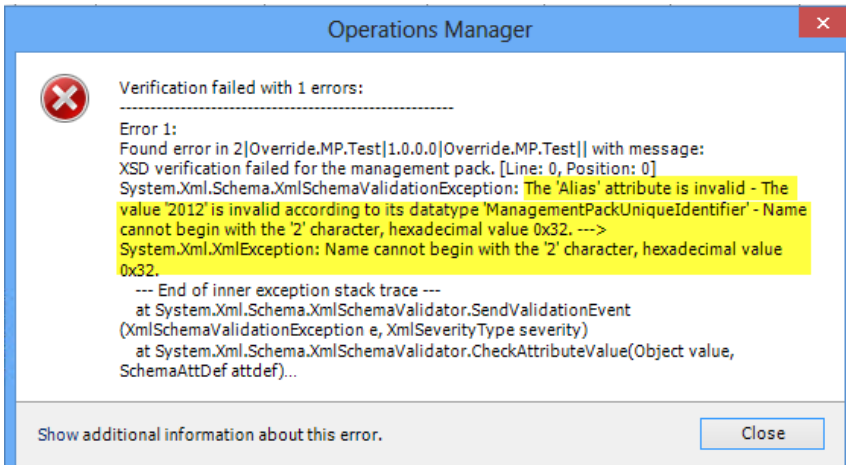


Note:

The value of the computer name field for these events is the name of the OpsMgr management group.

8 Known Issues

When configuring overrides for both OpsMgr 2007 R2 Self Maintenance MP and OpsMgr 2012 Self Maintenance MP, if the destination for the override is created inside the OpsMgr operations console (in another word, the provided override MP is not used), you may see an error when trying to save the MP:



This is because both Self Maintenance MPs contains the phrase “2012” or “2007” as part of the names and when the Operations console is trying to create a reference in the override MP, the alias it uses starts the character “2” which is not allowed.

If the provided override MP cannot be used, to fix this issue, please follow the following steps:

1. Export the override MP
2. Remove the reference to the self maintenance MP if exists (in <manifest> <references> section, which is located at the top of the xml).
3. For OpsMgr 2012 version of the MP, Add the following lines inside the <references> tag:

```
<References>
<Reference Alias=”OM12SelfMaint”>
<ID>OpsMgr.2012.Self.Maintenance</ID>
<Version>1.0.0.1</Version>
<PublicKeyToken>136b1dfd385ca82a</PublicKeyToken>
</Reference>
```

4. For OpsMgr 2007 R2 version of the MP, Add the following lines inside the <references> tag:

```
<References>
<Reference Alias=”OM07SelfMaint”>
<ID>OpsMgr.2007.R2.Self.Maintenance</ID>
<Version>1.0.0.0</Version>
<PublicKeyToken>136b1dfd385ca82a</PublicKeyToken>
</Reference>
```

Appendix A: Event Log Entries Generated by This MP

Workflow	Script Name	Event ID	Event Severity	Description
OpsMgr.2012.Self.Maintenance.Balance.Agents.Within.ResourcePool.Rule	Balance-ManagementServersWithinResourcePool.ps1	9703	Error	Resource Pool Not Found
OpsMgr.2012.Self.Maintenance.Configure.Agents.Failover.Within.ResourcePool.Rule	Configure-AgentsFailoverWithinResourcePool.ps1	9708	Error	Resource Pool Not Found
OpsMgr.2012.Self.Maintenance.Configure.Agents.Failover.Within.ResourcePool.Rule	Configure-AgentsFailoverWithinResourcePool.ps1	9709	Info	The failover MS for agent xxxxx has been reconfigured. Failover MS before and after count.
OpsMgr.2012.Self.Maintenance.Configure.Agents.Failover.Within.ResourcePool.Rule	Configure-AgentsFailoverWithinResourcePool.ps2	9710	Info	The server is either a gateway server or it's not a member of the resource group. No changes have been made.
OpsMgr.2012.Self.Maintenance.User.Defined.Overrides.In.Default.MP.Detection.Rule	Detect-OverridesInDefaultMP.ps1	9706	Error	Unable to find Default MP
OpsMgr.2012.Self.Maintenance.User.Defined.Overrides.In.Default.MP.Detection.Rule	Detect-OverridesInDefaultMP.ps2	9707	Info	xx(number) user defined override(s) found in default MP
OpsMgr.2012.Self.Maintenance.MS.In.Maint.Mode.Monitor	MgmtServerInMaintModeProbe.ps1	9705	Info	No management servers are currently in maint mode
OpsMgr.2012.Self.Maintenance.MS.In.Maint.Mode.Monitor	MgmtServerInMaintModeProbe.ps1	9704	Warning	MS in maint mode, maint mode details
OpsMgr.2012.Self.Maintenance.Remove.Disabled.Discovery.Objects.Rule	Remove-DisabledDiscoveryObjects12.ps1	9700	Info	Start removing disabled discovery objects via SDK service on <MS Name>
OpsMgr.2012.Self.Maintenance.Remove.Disabled.Discovery.Objects.Rule	Remove-DisabledDiscoveryObjects12.ps1	9701	Info	Finished removing disabled discovery objects via SDK service on <MS Name>

OpsMgr.2012.Self.Maintenance.Local.Management.Server.In.Maintenance.Mode.Monitor	LocalMgmtServerInMaintModeProbe.ps1	9702	Info	LocalMgmtServerInMaintModeProbe.ps1 : Checking if OpsMgr Management Server <Mgmt Server FQDN> is in maintenance mode.
OpsMgr.2012.Self.Maintenance.Close.Aged.Rule.Generated.Alerts.Rule	Close-AgedRuleAlerts.ps1	9900	Warning	Incorrect configuration detected for the OpsMgr Self Maintenance Close Aged Rule Generated Alerts Rule. All 3 alert severities are configured to be excluded!
OpsMgr.2012.Self.Maintenance.Enable.Agent.Proxy.Rule	Enable-AgentProxy.ps1	15000	Info	number of agents proxy enabled
OpsMgr.2012.Self.Maintenance.Management.Server.Default.Action.Account.Local.Admin.Priviledge.Monitor	MSAccountLocalAdminPrivilegeProbe.ps1	9711	Info	Start checking Management Server Default Action Account's Local Admin privilege
OpsMgr.2012.Self.Maintenance.Management.Server.Default.Action.Account.OpsMgr.Admin.Priviledge.Monitor	MSAccountOpsMgrAdminPrivilegeProbe.ps1	9712	Info	Start checking Management Server Default Action Account's OpsMgr Admin privilege
OpsMgr.2012.Self.Maintenance.Obsolete.Management.Pack.Alias.Detection.Rule	ObsoleteMPReferencesProbe.ps1	9713	Info	Start checking obsolete aliases from unsealed management packs.
OpsMgr.2012.Self.Maintenance.Obsolete.Management.Pack.Alias.Detection.Rule	ObsoleteMPReferencesProbe.ps1	9714	Info	No obsolete aliases found in unsealed management packs
OpsMgr.2012.Self.Maintenance.Obsolete.Management.Pack.Alias.Detection.Rule	ObsoleteMPReferencesProbe.ps1	9715	Warning	Obsolete aliases found in unsealed management packs
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	AllMgmtServerPatchListProbe.ps1	9716	Info	Start checking management servers patch level from <resource pool active member>.
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	AllMgmtServerPatchListProbe.ps1	9717	Info	Start checking management server <server name>.
OpsMgr 2012 Self Maintenance All Management Servers Patch List	AllMgmtServerPatchListProbe.ps1	9718	Info	Patch Detected on <Management Server Name>. Patch Code <Patch Code>.

Consistency Consecutive Samples Monitor				
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	AllMgmtServerPatchListProbe.ps1	9719	Info	Patch List on <Management Server Name>: <Patch List>
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	AllMgmtServerPatchListProbe.ps1	9720	Info	Remotely Checking OpsMgr management server patch list from <resource pool active member>.
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	AllMgmtServerPatchListProbe.ps1	9721	Error	<management server> is missing patch code <patch code>
OpsMgr 2012 Self Maintenance All Management Servers Patch List Consistency Consecutive Samples Monitor	AllMgmtServerPatchListProbe.ps1	9722	Error	The number of patches on <management server> is <patch count>, but there are totally <total patch count> patches installed in the management group.
OpsMgr 2012 Self Maintenance Data Warehouse Database (Alert | Event | Performance | State | ManagedEntity) Staging Table Row Count OMS Performance Collection Rule **OpsMgr 2012 Self Maintenance Data Warehouse Database (Alert | Event | Performance | State | ManagedEntity) Staging Table Row Count 2 State Threshold Monitor**	DWStagingTablesRowCountProbe.ps1	9723	Info	Start checking Data Warehouse DB Staging tables' row count. DB Connection String <DB connection string>.
OpsMgr.2012.Self.Maintenance.Detect.Manually.Closed.Monitor.Alerts.Rule	ManuallyClosedMonitorAlertsProbe.ps1	9724	Info	Resetting Unit Monitor '<monitor name.' for monitoring object '<Monitoring Object Full Name>' because it was manually resolved by user '<user name>' at '<Time Resolved UTC>'.