DELL Technologies

Technical White Paper

Scalability with Dell EMC OpenManage Integration with Microsoft System Center (OMIMSSC) for System Center Operations Manager (SCOM)

Abstract

The Dell EMC OpenManage Integration with Microsoft System Center (OMIMSSC) for System Center Operations Manager (SCOM) appliance provides an option to configure Proxy Management Servers (henceforth referred to as Dell EMC Alert Relay Servers). When you want to scale up your infrastructure by including more devices, you can seamlessly scale up your monitoring capabilities by adding Proxy Management Servers in to your OMIMSSC environment.

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Executive summary

The Dell EMC OpenManage Integration with Microsoft Windows System Center (OMIMSSC) for Operations Manager appliance provides an option to configure Proxy Management Servers (henceforth referred to as Dell EMC Alert Relay Servers). When you want to scale up your infrastructure by including more devices, you can seamlessly scale up your monitoring capabilities by adding Proxy MS in to your OMIMSSC environment,

Proxy MS enables you to offload the monitoring, performance metrics, and SNMP alerts' workflows from the Management Server, and thus helps in scaling up the number of devices being monitored within a Management Group. The Management Server and Proxy MS are in the same domain. Discover the Proxy MS as an Agent-Managed Windows computer in the SCOM console.

In this technical white paper, the term Proxy Management Servers henceforth will be referred to as Dell EMC Alert Relay Servers.

1 Monitoring more devices with OMIMSSC by using Proxy Management Servers (henceforth referred to as Dell EMC Alert Relay Servers)

1.1 Overview of Proxy MS

Proxy MS (henceforth referred to as Dell EMC Alert Relay Servers) is a virtual machine running on Windows Server Operating System that is introduced for Dell EMC OpenManage Integration for Microsoft System Center—Operations Manager (version 7.1 and later) to offload the monitoring, performance metrics, and SNMP Alerts work flows from the Management Server and thus helping in scaling the number of devices being monitored within a Management Group. The Management Server and Proxy MS are in the same domain. Discover the Proxy MS as an Agent-Managed Windows computer in the Operations Manager console.

1.2 Benefits of Proxy MS

In Dell EMC Server Management Pack version 7.0, when a management group consisting of five management servers is used, a maximum of 600 devices can be monitored in the scalable mode. In OMIMSSC 7.1 and later versions, with the introduction of proxy management server (henceforth referred to as Dell EMC Alert Relay Servers), you can achieve higher scalability of monitored devices—nodes in multiples of thousands.

NOTE:

- The proxy management server feature is supported only on Microsoft SCOM 2016 and later versions.
- For enhanced scalability of nodes, setting up Proxy MS is mandatory for proper functioning of OMIMSSC appliance.

1.3 Proxy MS system requirements

The following are the minimum software and hardware requirements of a Windows VM to host the Proxy MS (henceforth referred to as Dell EMC Alert Relay Servers).

- Supported operating system on the MS for:
  - SCOM 2019, see the *Server operating system* section at https://docs.microsoft.com/en-us/system-center/scom/system-requirements?view=sc-om-2019
  - SCOM 2016, see the *Server operating system* section at https://docs.microsoft.com/en-us/system-center/scom/system-requirements?view=sc-om-2016
- CPU Cores — 8
- RAM — 32 GB

1.4 Setting up Proxy MS to monitor multiple devices

1.4.1 Prerequisites for setting up Proxy MS for scaling up the number of monitored devices

- Ensure that proxy management server is discovered as an agent-based computer on the SCOM console.

  - **NOTE:** Ensure that the proxy management server is hosted on a management server that is part of the All Management Servers Resource Pool (AMSRP).

- Configure registry settings on the proxy management server.
- Apply Microsoft public hotfix: https://support.microsoft.com/en-us/help/4481376/ on each SCOM server and on every proxy management server in the Scalability setup. On the proxy management server, locate SnmpModules.dll in *C:\Program Files\Microsoft Monitoring Agent\Agent\SnmpModules.dll*.

1.4.2 Recommendations to configure Proxy MS

- You can check for number of devices that you want to monitor and create proxy management server accordingly. Each proxy management server can monitor a maximum of 250 devices in scalable mode or 30 devices in detailed mode.

  - **Note**: In the scalable mode of OMIMSSC, inventory and health monitoring details are displayed up to the device and component group level. However, in the detailed mode of OMIMSSC, inventory and health monitoring details are displayed for individual components such as memory, processors, Compute Usage Per Second (CUPS), BIOS, and sensors in addition to the group level details.

- Maximum number of proxy management servers that can be hosted on a single management server is four in scalable mode and two in detailed mode.
- Symmetrically distribute the proxy management server across all the management servers in the resource pool.
- Ensure not to overload management servers by adding a greater number of proxy management servers. When using proxy management server, the safe limit for a management server is to monitor a maximum of 1,000 devices in the Scalable mode or 60 devices in the Detailed mode.

1.4.3 Configure registry settings on the proxy management server

1. After extracting the OMIMSSC_<Version>.A00_SCOM.zip file, do the following:

   a. Copy **DellEMC-SCOM-Agent-Registry.reg** and **DellEMC-Proxy-MS-Configuration-Script.ps1** files from the extracted location on each of the proxy management server in the same directory.
   b. Run the **DellEMC-Proxy-MS-Configuration-Script.ps1** script from the PowerShell CLI (by using administrator privileges).

   - **NOTE**: The above sample script is provided to simplify configuration of the above required settings on the proxy management server. Dell Technologies does not officially support this script.

After running the DellEMC-Proxy-MS-Configuration-Script.ps1 script:

- The script stops the agent health services and backs up current registry values in the same directory path.
- The required registry key changes are implemented on the proxy management server. See Proxy management server registry configuration definitions.
- Microsoft Monitoring Agent Health Services are started.

1.4.4 Proxy management server registry configuration definitions

- **CAUTION**: Using Registry Editor incorrectly can cause serious issues that might require you to reinstall the operating system.

The registry path: "HKLM\SYSTEM\CurrentControlSet\services\HealthService\Parameters".

- Persistence Version Store Maximum Registry Path is set to 131072.
- Maximum Global Pending Data Count Registry is set to 20408.
- State Queue Items Registry is set to 20480.
- Persistence checkpoint Depth Maximum Registry is set to 20971520.

- **NOTE**: For more information about registry key settings, see https://docs.microsoft.com/en-us/archive/blogs/.

1.5 Deployment scenarios and correlation between management server and Proxy MS

The Dell EMC devices can be discovered in the SCOM console and by using the Dell EMC OMIMSSC appliance. One instance of OMIMSSC provides support to only one management group for discovery and monitoring of devices.

You can configure the management server and proxy management server as per the deployment scenarios that is required for your environment.

There are required configurations which must be done on management servers running specific version of Microsoft SCOM. See the following sections for the required configurations for:

- Management Servers running with Microsoft SCOM 2012 R2
- Management Servers running with Microsoft SCOM 2016 and later

1.6 Required configuration for SCOM 2012 R2

- NOTE:
- To monitor 600+ devices in the scalable mode, upgrade SCOM 2012 R2 to SCOM 2016 and later by using this issue fix, which is available only for SCOM 2016 and later versions: https://support.microsoft.com/en-us/help/4481376/system-center-operations-manager-hotfix-for-snmp-modules.
- The OMIMSSC appliance features are not supported on the SCOM 2012 SP1 version.

Table 1 Use-case scenarios for configuring proxy management server on a management server that is running on SCOM 2012 R2.

Monitoring Mode	Device Count	Number of Management Servers
Scalable	<=600	For minimum hardware recommendation for MS, DB, and the number of management servers, set Number of Network Devices count to 2,000 in Sizing Guide. **NOTE**: This configuration is required for monitoring Dell devices that are mentioned under Device count column.
Detailed	<=120	For minimum hardware recommendation for MS, DB, and the number of Management Servers, set Number of Network Devices count to 2,000 in Sizing Guide. **NOTE**: This configuration is required for monitoring Dell devices that are mentioned under Device count column.

1.7 Required configuration for SCOM 2016 and later

There are two different scenarios which must be addressed for the management servers and it also requires specific configuration for Proxy MS.

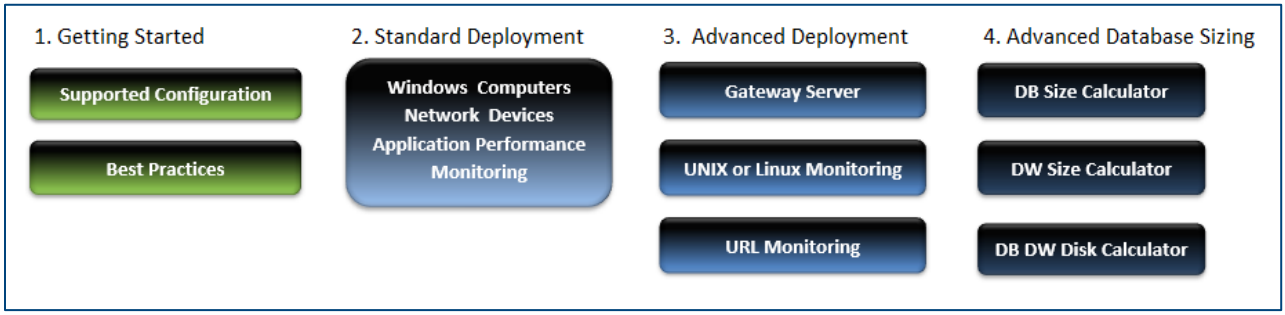
- Devices discovered by using SCOM (SMASH / Network Devices)
- Devices discovered by using Dell EMC OpenManage Integration Dashboard (iDRAC, Chassis, Network Switch)

Scenario 1: **Devices discovered by using SCOM (SMASH/Chassis/Network Switch)**

Dell EMC devices are discovered as SMASH devices, Chassis, or Network devices in the SCOM console. The inputs for SMASH devices are provided in the SMASH monitoring wizard, and for chassis and network switches in the respective device discovery wizards of the SCOM console.

NOTE: In the below table, value under the **Number of Management Servers** column is for minimum hardware recommendation for MS, DB, and the number of Management Servers. These must be set by following Microsoft SCOM Sizing Guide. Set **Number of Network Devices** to 2000. This configuration is required for monitoring Dell devices that are mentioned under Device count column.

For reference only: Microsoft SCOM Sizing Guide references



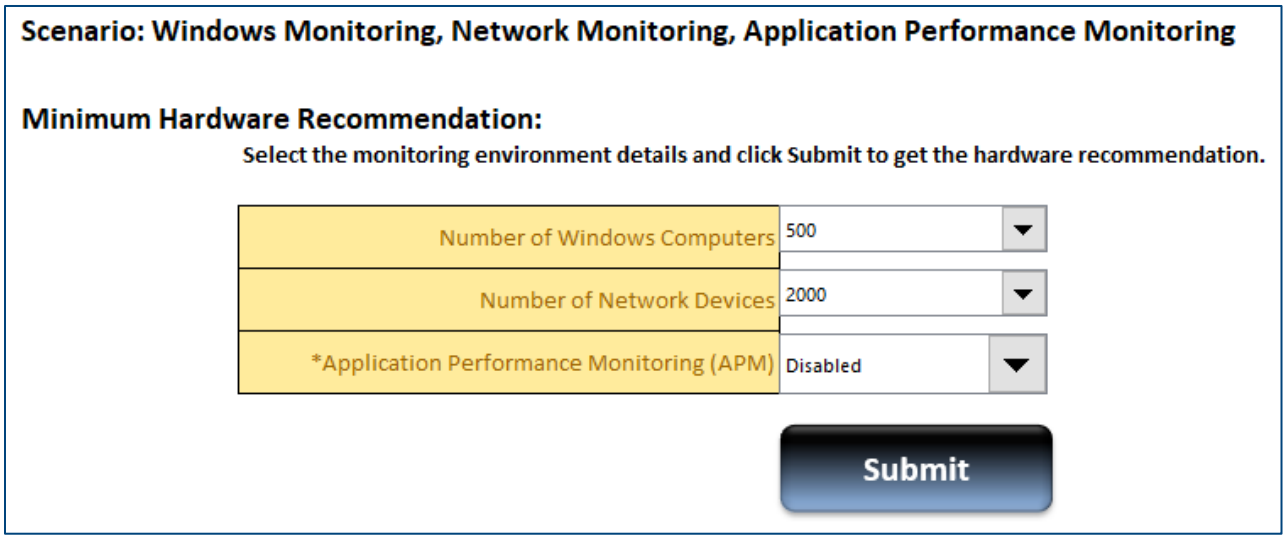


Table 2 Scenario 1. Use-case scenarios for configuring proxy management server on management server running on SCOM 2016 and later versions

Monitoring mode	Dell EMC Devices count	Proxy management server configured	Number of management servers	Required minimum number of proxy management servers	Remarks
Scalable	<=600	No	Set “Number of Network Devices” count to 2,000 in Sizing Guide.	NA	NA
		Yes	Same as above.	3	Each Proxy MS can monitor maximum of 250 Each Management Server can be connected to maximum of 4 Proxy MS.
Detailed	<=120	No	Same as above.	NA	NA

Monitoring mode	Dell EMC Devices count	Proxy management server configured	Number of management servers	Required minimum number of proxy management servers	Remarks
		Yes	Same as above.	4	Each Proxy MS can monitor maximum of 30 devices Each Management Server can be connected to maximum of 2 Proxy MS

Scenario 2: **Devices discovery using Dell EMC OMIMSSC (iDRAC, chassis, network switch)**

Dell EMC devices are discovered as iDRAC, Dell EMC Chassis, or Dell EMC Network. The inputs are provided in the OpenManage Integration Dashboard and during discovery, the IP address range is provided, and appropriate credential profile is associated with the job.

Table 3 Scenario 2. Use-case scenarios for configuring proxy management server on management server running on SCOM 2016 and later versions

Monitoring mode	Dell EMC Devices count	Proxy management server configured	Number of management servers	Required minimum number of proxy management servers	Remarks
Scalable	600 to multiple 1000+	Yes	Set Number of Network Devices count to 2,000 in Sizing Guide.	3	Each Proxy MS can monitor maximum of 250 devices Each Management Server can be connected to maximum of 4 Proxy MS.
Detailed	120–300	Yes	Same as above.	4	Each Proxy MS can monitor maximum of 30 devices Each management server can be connected to maximum of 2 Proxy MS.

- **NOTE**: To achieve higher scalability numbers, you can do a horizontal scaling of management group as per the Microsoft Sizing guide. In that case, every Management group requires a new OMIMSSC appliance.

1.8 Add proxy management servers to the proxy management server group (ProxyMSGroup)

After enrollment, a group named **DellProxyMSGroup** is created. Proxy management servers that are discovered in SCOM console as an Agent-Managed Windows computer are required to be added to the group DellProxyMSGroup, and then perform synchronization with SCOM from the OpenManage Integration Dashboard.

- **NOTE**: Before adding proxy management servers to the proxy management server group, install the Operations Manager Agents on all proxy management servers by performing following steps.

1. Discover the proxy management server VM as an Agent-Managed Windows computer in the SCOM console. For more information, see the respective SCOM documentation at docs.microsoft.com/scom.
2. After enrollment in the OMIMSSC Admin portal, log in to OMIMSSC.
3. Click **Authoring** → **Groups**.
4. From the **Group** list, select **DellProxyMSGroup**.
5. Right-click **DellProxyMSGroup** and select **Properties**.
6. Click **Explicit Members** and click **Add/Remove Objects**.
   The Create Group Wizard-Object Selection wizard is displayed.
7. To be a part of this group, from the **Search for list** drop-down menu, select **Windows Computer**.
8. Click **Search**.

All the Windows computers that are discovered in the SCOM console are displayed in **Available items**.

9. Select the proxy management servers and click **Add**.
10. In the Properties wizard, click **OK**.
11. After adding the proxy management servers to DellProxyMSGroup, disable the iSM discovery job run on the proxy agent so that the event ID 33333 is not generated. See Disable the discovery of iSM on the proxy management server.
12. When you add proxy management server in the SCOM group **Dell ProxyMSGroup**, perform synchronization to apply the required configuration changes in the proxy management server agent. Synchronize Dell proxy management server groups with OMIMSSC.

1.8.1 Disable the discovery of iSM on the proxy management server

After adding the proxy management servers to DellProxyMSGroup, disable the iSM discovery job run on the proxy agent so that the event ID 33333 is not generated. To disable iSM from getting discovered on the management server, do the following:

1. Click **Authoring** → **Management Pack Objects** → **Object Discoveries**.
2. In the **Look for** box, enter `iSM`.
3. Click **Discovered type**: **Dell Server** → **Dell Server Discovery**.
4. Right-click **Dell Server Discovery**, and then click **Overrides** → **Override the Object Discovery** → **For a Group**.
   The Select Object wizard is displayed.
5. Select the **DellProxyMSGroup** and click **OK**.
   The iSM discovery feature is disabled on the proxy management server.

1.9 Synchronize Dell proxy management server groups with OMIMSSC

1. In the **Monitoring** pane of the SCOM console, expand **Dell EMC OpenManage Integration Views** → **OpenManage Integration Dashboard**.
2. Log in to OMIMSSC.
3. Click **Monitoring**, select any of the devices, and then click **Synchronize with MSSC**.
4. Before triggering the device discovery, ensure that the Sync task is completed.
5. Read through the **Process to retrieve all Management Server Completed** message in generic logs.

- **NOTE**: Wait for 15 minutes for the OMIMSSC appliance to be updated with new proxy management server information, and then continue to perform discovery.

1.10 Resolve errors when discovery of devices is unsuccessful by using the Resolve Sync Errors feature

1. On the SCOM console, in the left pane, click **Monitoring**.
2. Click **Dell EMC OpenManage Integrations Views** → **OpenManage Integration Dashboard**.
3. Log in to the OMIMSSC appliance as an administrator. The OMI Dashboard page is displayed.
4. Select the device type that you want to synchronize. For example, to synchronize a server with SCOM, click **View Servers**. A list of devices that are monitored by OMIMSSC is displayed.
5. In the **<Device type> View** page, click **Resolve Sync Errors**. In the Resolve Sync Errors dialog box, a list of devices is displayed.
6. Select the device, and then click **Synchronize with MSSC**.
7. When prompted, click **Yes**.

A job is started to synchronize the device with SCOM management server. To view the status of the job, see the **Jobs and Logs** page. Before trying to start the discovery job, ensure that the synchronization task in completed. Read through the Process to retrieve all Management Server Completed message in generic logs.

- **NOTE**: Wait 15 minutes for the OMIMSSC appliance to be updated with new proxy management server information, and then continue to perform discovery.

A Technical support and resources

Dell.com/support is focused on meeting customer needs with proven services and support.

Dell.com/esmmanuals: For Dell EMC Enterprise Systems Management, Dell EMC Remote Enterprise Systems Management, and Dell EMC Virtualization Solutions documents.

A.1 Related resources

Table 4 OMIMSSC-related resources

Document	Description	Availability
Dell EMC OpenManage Integration with Microsoft System Center for System Center Operations Manager User's Guide	Provides information about deploying, configuring, using, and troubleshooting the OMIMSSC appliance.	1. Go to Dell.com/esmmanuals. 2. Select **Server Management Pack Versions for Microsoft System Center Operations Manager**, and then select the required application version. 3. Select the **DOCUMENTATION** tab to access these documents.
Dell EMC Server Management Pack Suite for Microsoft System Center Operations Manager User's Guide	Provides information about installing, configuring, using, and troubleshooting DSMPS for SCOM.	
Dell EMC OpenManage Integration with Microsoft System Center for System Center Operations Manager Release Notes	Provides information about new features, known issues, and workarounds in the OMIMSSC appliance.	