Understanding Discovery and Inventory of Dell Devices

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Executive Summary

A fundamental element of any Device Management is discovery and inventory of the devices an organization is looking to manage. Discovery needs to be non-invasive, easy to administer, efficient, thorough, accurate, broad in scope and responsive to network changes.

Discovery is a process for identifying all Dell hardware devices in your network, such as Dell PowerEdge Servers, Dell EqualLogic storage, Dell PowerConnect switches, etc. It is an unobtrusive way of searching out all networked devices and providing an analysis of each device, including its software, memory, components, serial number, etc. The Inventory Report provides detailed information on all discovered devices, such as device health, available memory and installed software.

Introduction

OpenManage Essentials (OME) is a hardware management application that provides a comprehensive view of Dell systems, devices, and components in the enterprise’s network. OpenManage Essentials is a web-based and one-to-many systems management application. For the Dell systems and other devices and components, a user can discover and inventory the systems, monitor systems’ health and perform system updates.

Scope

The purpose of this document is to help a user with the necessary steps to perform discovery and inventory of Dell devices. These are the high-level areas covered:

- Steps to perform discovery and inventory.
- Providing a holistic view of the datacenter.
- Searching specific devices.

Discovery and Inventory

Discovery and inventory aids understanding of what hardware and software are installed across an organization and is the most basic step to effective systems management. Areas such as license compliance, health monitoring, security and upgrades and migrations all require the networked hardware to be available to the System Administrator on a single console to help ease the process. OpenManage Essentials provides these capabilities to initialize the discovery and inventory process and perform required actions on these devices.
Prerequisites
These are the prerequisites for performing discovery and inventory:

Credentials: The discovery process in OME communicates to the devices using the following supported protocols:

<table>
<thead>
<tr>
<th>Protocols</th>
<th>Required credentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNMP</td>
<td>SNMP Community string</td>
</tr>
<tr>
<td>WMI</td>
<td>Windows Administrator credentials</td>
</tr>
<tr>
<td>IPMI</td>
<td>IPMI operator credentials.</td>
</tr>
<tr>
<td>WS-Man</td>
<td>WS-Man Administrator credentials</td>
</tr>
<tr>
<td>Dell/EMC Array</td>
<td>EMC credentials</td>
</tr>
</tbody>
</table>

Setting up the systems to be managed: There are a few settings to be performed in Managed Node to make it discoverable over the network. Please refer to ‘Make your Environment Manageable with Dell OpenManage Essentials’ for more details.

OpenManage Server Administrator (OMSA): OMSA should be installed on all the systems that are required to be managed with OME.

Steps for Discovery and Inventory
After the above prerequisites are met, the discovery and inventory process can take place. The steps can be summarized as follows:

- Discovery Range Configuration
- ICMP Configuration
- SNMP Configuration
- WMI Configuration
- Storage Configuration
- WS-Man Credentials
- WS-Man Credentials
- IPMI Configuration
- Discovery Range Action
- Summary Screen
Discovery Range Configuration

First, specify device IP ranges in the environment to perform discovery and inventory.

1. Navigate to Manage → Discovery and Inventory → Discovery Ranges → Discovery Range Summary.
2. Right-click Include Ranges and select Add Discovery Range.

![Discovery Range Wizard](image)

Below are some sample IP ranges that can be used as an IP Range for Discovery.

<table>
<thead>
<tr>
<th>IP Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>193.109.112.*</td>
</tr>
<tr>
<td>193.104.20-40.*</td>
</tr>
<tr>
<td>192.168.<em>.</em></td>
</tr>
<tr>
<td>192.168.2-51.3-91</td>
</tr>
<tr>
<td>193.109.112.45-99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hostname</th>
<th>Single IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>WIN-17L2JS8</td>
<td>193.109.112.99</td>
</tr>
</tbody>
</table>
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Additionally, an ‘Import’ functionality provided in OpenManage Essentials helps with importing a Discovery Range which is defined within a .csv file format, as shown in Figure 2. The maximum numbers of devices that can be imported using this method is 500.

**Figure 2. .csv File**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1750-win-r03-03</td>
<td>Host (A)</td>
<td>10.94.172.180</td>
</tr>
<tr>
<td>1750-win-r04-02</td>
<td>Host (A)</td>
<td>10.94.172.184</td>
</tr>
<tr>
<td>1850-win-r05-05</td>
<td>Host (A)</td>
<td>10.94.172.179</td>
</tr>
<tr>
<td>2650-win-r01-04</td>
<td>Host (A)</td>
<td>10.94.172.193</td>
</tr>
<tr>
<td>2800-W2K3</td>
<td>Host (A)</td>
<td>10.94.168.32</td>
</tr>
<tr>
<td>2850-win-r01-03</td>
<td>Host (A)</td>
<td>10.94.161.71</td>
</tr>
<tr>
<td>2900-win-r03-07</td>
<td>Host (A)</td>
<td>10.94.161.72</td>
</tr>
<tr>
<td>2970-esx</td>
<td>Host (A)</td>
<td>10.94.168.203</td>
</tr>
<tr>
<td>4600-WIN-R04-14</td>
<td>Host (A)</td>
<td>10.94.172.168</td>
</tr>
</tbody>
</table>

The following example demonstrates adding a discovery range using SNMP and WMI protocol, using the Add Discovery Range Wizard.

i. Type-in the Discovery range.

ii. Click Add.

Repeat steps i and ii if required.

iii. Click Next to proceed.

**Figure 3. Specifying an IP Range**
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**ICMP Configuration**

i. Set **Ping Timeout** for pinging the device on the network.

ii. Specify the number of attempts to be tried.

iii. Click **Next** to proceed.

**Figure 4. ICMP Configuration Screen**
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**SNMP and WMI Configuration**

**SNMP Configuration Screen**
- i. Select the check box to use SNMP protocol for discovery.
- ii. Type in the Community Name.
- iii. Click Next to proceed.

**WMI Configuration Screen**
- i. Select the check box to use WMI discovery
- ii. Provide Windows credentials.
- iii. Click Next to proceed.

Figure 5. SNMP and WMI Configuration Screens

![SNMP and WMI Configuration Screens](image)

**Storage Configuration**

This screen is only used to set the options to discover PowerVault Modular Disks or Dell | EMC Devices. Any required credentials for EMC devices are entered here.

**WS-Man Credentials**

This screen is used to set the options to configure WS-Man parameters for discovering ESXi-installed devices.

**IPMI Configuration**

This screen is used to set the options to configure IPMI credentials for discovering DRAC or iDRAC devices.
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**Discovery Range Action**
Select one of the radio buttons as necessary.

*Figure 6. Discovery Range Action Screen*
Summary Screen

This screen displays a consolidated list that summarizes the options selected from the first screen. After reviewing the summary, you can modify the settings or complete the process.

i. Click **Back** to navigate to previous screens (sequentially).

ii. Click **Finish** to complete the range configuration.

iii. Select the required label to jump directly to a specific screen.

On clicking **Finish**, the range will be added to the **Include Range** list.

![Summary Screen](image_url)
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Discovery and Inventory Portal
The Discovery and Inventory Portal screen provides a single point of access to most details of discovered/inventoried devices at any given point of time. To view the portal, navigate to Manage→Discovery and Inventory→Discovery Ranges→Discovery Ranges→Include Ranges. Using this screen, a System Administrator can monitor the progress of the Discovery Inventory process.

Figure 8. Discovery and Inventory Portal Page

The screen is divided into four sub-screens:

- **Include Ranges**: The range of IPs added through the wizard.
- **Task Status**: The progress of Discovery process of an IP. The status will change from Running to Completed.
- A Pictorial / Graphical representation of discovered and classified devices to help visually separate the devices.
- Details from the last discovery and inventory task run.
All Devices Tree

Once the discovery and inventory process is completed, the System Administrator can obtain a detailed view of all the devices using the Device Tree screen.

To view the Device Tree, navigate to **Manage** → **Devices** tab and select the **All Devices** node to view the devices classified under specific nodes as per the device category. The icon corresponding to each device shows the current health status.

This screen gives a glance of all discovered and inventoried devices, the type and health of device, and the health of each device (green: normal, yellow: warning and red: critical).

**Figure 9. Device Tree Screen**
Device Inventory Details

To see a detailed Inventory of a particular device, select the device and view the details in the right pane.

The inventory details table includes all the details displayed depending on the discovery protocol used. The following table shows all possible inventory headers captured and displayed by OME.

<table>
<thead>
<tr>
<th>Device Summary</th>
<th>Physical Disk</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS information</td>
<td>Virtual Disk</td>
</tr>
<tr>
<td>S/w Agent Info.</td>
<td>Contact</td>
</tr>
<tr>
<td>Nic Info.</td>
<td>S/w Inv.</td>
</tr>
<tr>
<td>Rac Info.</td>
<td>Trusted Platform Module</td>
</tr>
<tr>
<td>iDRac</td>
<td>FRU</td>
</tr>
<tr>
<td>Processor Info.</td>
<td>Acquisition Info</td>
</tr>
<tr>
<td>Memory Device Info.</td>
<td>Depreciation Info</td>
</tr>
<tr>
<td>Firmware Info.</td>
<td>Extended Warranty</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Ownership Info.</td>
</tr>
<tr>
<td>Embedded Device</td>
<td>Outsource Info.</td>
</tr>
<tr>
<td>Controller Device</td>
<td>Virtual Machine Guest Info.</td>
</tr>
<tr>
<td>Enclosure Info</td>
<td>Virtual Machine Guest Nic Info.</td>
</tr>
</tbody>
</table>

Figure 10. Device Details
Device Search

If there are many devices under the tree, managing them might be difficult. Searching manually for a particular device for monitoring can be a tedious process. To overcome this situation, OME includes a Device Search option:

i. Navigate to the Manage→Device Search tab and provide a name for the new search query.
ii. Select desired options from the Where drop-down.
iii. Select any supporting sub-criteria.
iv. Provide a part of the device name.
v. Click Run Query.
vi. The result will be displayed in the lower pane.

Learn More

Visit http://en.community.dell.com for more information on Dell’s Management Software.