OpenManage™ Essentials

Command Line Interface

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Contents
Overview............................................................................................................................................... 5

Details - PowerShell Extension ........................................................................................................... 5
Authentication....................................................................................................................................... 5
Discovery / Inventory task control through CLI - Command Line Syntax ........................................ 5
Discovery Configuration Profile Template ........................................................................................... 5
Accessing the CLI Prompt ...................................................................................................................... 7
Getting Command Line Help ................................................................................................................. 8

Details - Discovery and Inventory commands ...................................................................................... 9
Create a discovery range ....................................................................................................................... 10
Remove a discovery range .................................................................................................................... 11
Create a discovery range group ............................................................................................................ 11
Remove a discovery range group ......................................................................................................... 12
Enable a discovery range / discovery range group ............................................................................ 13
Disable a discovery range / discovery range group ........................................................................... 14
Create a discovery exclude range ......................................................................................................... 14
Remove a discovery exclude range ....................................................................................................... 15
Run a discovery range/group: discovery / discovery & inventory / inventory / status polling .......... 15
Get status execution progress of a discovery range ............................................................................. 16

Detail - Device Group Management ................................................................................................... 17
Device List Details ............................................................................................................................... 17
Create a custom device group .............................................................................................................. 17
Add devices to a custom group .......................................................................................................... 18
Remove devices from custom group ................................................................................................. 19
List Device Membership ................................................................................................................... 20
Delete Group ........................................................................................................................................ 20
### Table of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CLI access point</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>CLI window</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>CLI Help example</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Add Discovery Range</td>
<td>11</td>
</tr>
<tr>
<td>5</td>
<td>Remove Discovery Range</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>Add discovery range group</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>Remove discovery range group</td>
<td>13</td>
</tr>
<tr>
<td>8</td>
<td>Enable discovery range</td>
<td>13</td>
</tr>
<tr>
<td>9</td>
<td>Disable discovery range group</td>
<td>14</td>
</tr>
<tr>
<td>10</td>
<td>Add discovery exclude range</td>
<td>15</td>
</tr>
<tr>
<td>11</td>
<td>Remove discovery exclude range</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Execute discovery and inventory</td>
<td>16</td>
</tr>
<tr>
<td>13</td>
<td>Get discovery status</td>
<td>17</td>
</tr>
<tr>
<td>14</td>
<td>Add custom group</td>
<td>18</td>
</tr>
<tr>
<td>15</td>
<td>Added group in console</td>
<td>18</td>
</tr>
<tr>
<td>16</td>
<td>Add devices to custom group</td>
<td>19</td>
</tr>
<tr>
<td>17</td>
<td>Remove devices from custom group</td>
<td>20</td>
</tr>
<tr>
<td>18</td>
<td>List devices in a custom group</td>
<td>20</td>
</tr>
<tr>
<td>19</td>
<td>Remove custom group</td>
<td>21</td>
</tr>
</tbody>
</table>
Overview
Many customers choose to use OpenManage Essentials (OME) without the graphical interface. OME 1.1 provides a CLI (Command Line Interface) that allows a user to define and manipulate discovery range information, to create custom groups, add/remove devices from custom groups, and initiate discovery and inventory. Note that the CLI functionality is a subset of the OME console functionality; the CLI infrastructure does not provide any additional functionality beyond what it available in the OME console.

Details - PowerShell Extension
The OME CLI infrastructure is an extension to the PowerShell command shell. Windows PowerShell is an interactive prompt and scripting environment that can be used independently, or in combination, and is used by a System Administrator. Unlike most shells, which accept and return text, Windows® PowerShell is built on top of the .NET Framework common language runtime (CLR) and the .NET Framework and accepts and returns .NET Framework objects. Many system administrators are familiar with PowerShell commands and feel very comfortable using PowerShell’s infrastructure; common practices and WRT-defining commands make OME’s CLI functionality much easier to adopt.

Authentication
CLI authentication uses the same methodology as the OME console; single sign-on is used to access the OME console, and the CLI commands can only be run by a user who is a member of the OMEAdministrators group. Note that the CLI infrastructure is available on the management station only, the CLI capability is not available remotely.

Discovery / Inventory task control through CLI - Command Line Syntax
From within the PowerShell prompt, the user can use three types of commands:
- **Add**-<command>
- **Remove**-<command>
- **Set**-<command>
These three are the approved PowerShell command verbs that must prefix any new commands. The following conventions are used in the following paragraphs:
- *[…]*: an optional value
- `<…>`: user provided input
- ‘|’ logical ‘or’.
- **RangeName <name> | RangeList <rangeList.xml>**: you can only provide the -Range or -RangeList switch on the command line but not both.

Discovery Configuration Profile Template
Several discovery configuration range or discovery configuration group commands require a template that defines the various parameters and the associated protocol values. This template can be individually modified and submitted as part of the command line’s argument input parameter. The input parameter is consistent for all the commands that create
discovery configuration ranges or groups, and it is `-Profile <profile.xml file>`. The template is outlined below:

```xml
<DiscoveryConfiguration>
  <ICMPConfig>
    <Timeout>400</Timeout>
    <Retries>1</Retries>
  </ICMPConfig>
  <SNMPConfig Enable="True">
    <GetCommunity>public</GetCommunity>
    <SetCommunity/> <SetCommunity>
    <Timeout>4</Timeout>
    <Retries>2</Retries>
  </SNMPConfig>
  <WMIConfig Enable="False">
    <UserName/></UserName>
  </WMIConfig>
  <StoragePowerVaultConfig Enable="False"/>
  <StorageEMCConfig Enable="False">
    <UserName/>
    <UserName> <Port>443</Port>
  </StorageEMCConfig>
  <WSManConfig Enable="False">
    <UserId/></UserId>
    <Timeout>2</Timeout>
    <Retries>4</Retries>
    <Port>623</Port>
    <SecureMode Enable="False" SkipNameCheck="False" TrustedSite="False">
      <CertificateFile/></CertificateFile>
    </SecureMode>
  </WSManConfig>
  <IPMIConfig Enable="False">
    <UserName/></UserName>
    <KGKey/></KGKey>
    <Timeout>5</Timeout>
    <Retries>2</Retries>
  </IPMIConfig>
</DiscoveryConfiguration>
```

The same template can be used for creating a discovery configuration range or discovery configuration group.

**Protocol Credentials**

If protocols are enabled that require credentials (WMI, IPMI, WSMan, EMC) for security reasons, the password cannot be stored in the xml file. If the user knows that the profile.xml enables protocols that require credentials, then the password is provided in the command line using the following command line flags:

- `wmiPassword <wmi password>`
- `ipmiPassword <ipmi password>`
- `wsmanPassword <wsman password>`
- `emcPassword <emc password>`
**Default Action**
From the console, the default action for adding a discovery range or discovery range group is “Discover and Inventory,” and the default action for adding a discovery range or a discovery range group is “No Action”. In other words, any discovery configuration ranges or groups that are added from the command line will not automatically be submitted for discovery and inventory. The user will have to execute a Set-RunDiscovery or Set-RunDiscoveryInventory command that is explained later in the paper to perform the discovery and inventory actions.

**Range List Template**
The commands that create or modify discovery configuration groups can use a file that defines the ranges as an input parameter; this can be a comma delimited list or ranges. However, in this case, the input list is an XML file that initially defines the name of the ranges. Having an XML file allows for future updates to add additional information related to each range without having to rewrite the parsing algorithm.

```xml
<DiscoveryConfigurationRanges>
  <Range Name=""/>
  <Range Name=""/>
  <Range Name=""/>
</DiscoveryConfigurationRanges>
```

**Accessing the CLI Prompt**
To access the OME CLI prompt, from the Start button, navigate to Dell OpenManage Applications / Essentials, and select Essentials Command Line Interface as shown below.

![CLI access point](image)

Figure 1: CLI access point
Getting Command Line Help

There is built-in help for each of the OME CLI commands. To get syntax related information, enter:

- `help <ome-cli-command>`

This entry provides short syntax information on the command entered in; at the bottom of the help information displayed on the command console, it lists additional ways of obtaining more detailed help information.
Details - Discovery and Inventory commands

The following functionality is provided by from the PowerShell command line interface:

Details on each command are outlined in the following sections.

- Create a discovery range
- Remove a discovery range
- Create a discovery range group
- Remove a discovery range group
- Enable discovery range / discovery range group
- Disable discovery range / discovery range group
- Create a discovery exclude range
- Remove a discovery exclude range
- Run a discovery range - discovery only (also per device)[range name]
- Run a discovery range - discovery and inventory only
- Run a discovery range - inventory only
- Run a discovery range - status polling
- Run a discovery range group - discovery only (also per device)[range name]
- Run a discovery range group - discovery and inventory only
- Run a discovery range group - inventory only
- Run a discovery range group - status polling
- Get status execution progress of a discovery range
- List devices discovered in a given discovery range
- List ranges / List range groups

Create a discovery range
- PS> Add-DiscoveryRange  -Profile <profile.xml> -RangeName <range>
- PS> Add-DiscoveryRange  -Profile <profile.xml> -RangeList <ranges in xml>
- PS> Add-DiscoveryRange  -Profile <profile.xml> -RangeListCSV <ranges in CSV format>

Optional Flags:
- wmiPassword <wmi password>
- ipmiPassword <ipmi password>
- wsmansPassword <wsman password>
- emcPassword <emc password>

The above flags are required if the corresponding section in the profile.xml is enabled. If a password flag is passed to a protocol that it is not enabled in the profile.xml, it is ignored.

Input Parameters:
- <profile.xml> is a protocol definition associated with the discovery range. The OME discovery profile template defines the entire variable set that can be entered by using the UI discovery configuration wizard.
- OME installs a sample discovery protocol profile file that is located in C:\Program Files(x86)\Dell\SysMgmt\Essentials\Tools\CLI\Samples and it is named DiscoveryProfile.xml. Start with this template and customize it in a text editor to turn on the desired protocols.
- A sample range list XML and CSV files are also provided in the same directory location. Enter the desired ranges for discovery using the XML/CSV templates as a guide.
**Figure 4: Add Discovery Range**

**Returns:**
- A message indicating the operation was successful
- Failure message

**Note:** Unlike adding a range using the OME console, the range added by the CLI will not automatically be submitted for discovery. To submit the range for discovery and inventory, run one of the following two commands:
  - Set-RunDiscovery
  - Set-RunDiscoveryInventory

**Remove a discovery range**
- `PS> Remove-DiscoveryRange -Range <range>`
- `PS> Remove-DiscoveryRange -RangeList <ranges in xml>`

**Input Parameters:**
- Either a range name to remove, or a list of ranges to remove, specified in an XML file.

**Returns:**
- A message indicating the operation was successful
- Failure message

**Figure 5: Remove Discovery Range**

**Create a discovery range group**
- `PS> Add-DiscoveryRangeGroup -Profile <profile.xml> -GroupName <group name> -RangeList <list.xml>`

**Input Parameters:**
- A discovery configuration profile file, the name of the group to create, a list or ranges to add to the group
Returns:

A message indicating the operation was successful

Or

Failure message

Note: This command may be partially successful if the group was created, but not all ranges were added possibly due to malformed range names, or range names that already exist. The command will provide relevant feedback to the user.

![Image of PowerShell command output]

Figure 6: Add discovery range group

Remove a discovery range group

- PS> Remove-DiscoveryRangeGroup -GroupName <groupName>

Input Parameter:

- The group name to be removed

Returns:

A message indicating the operation was successful

Or

Failure message
Enable a discovery range / discovery range group

The enabling or disabling a discovery range, or range group, relates to the software being able to discover and/or inventory it. An enabled group can be discovered and inventoried manually, as well automatically, by the discovery scheduler. A disabled discovery range/range group cannot be discovered or inventoried.

- PS> Set-Enable-DiscoveryRange - Range <rangeName> | -RangeList <rangeList.xml>
- PS> Set-Enable-DiscoveryRangeGroup -GroupName <groupName>

Input Parameter:
- The range name, a range list or a discovery group name to be enabled

Returns:
- A message indicating the operation was successful
Or
- Failure message
Disable a discovery range / discovery range group

- PS> Set-Disable-DiscoveryRange - Range <rangeName> | -RangeList <rangeList.xml>
- PS> Set-Disable-DiscoveryRangeGroup -GroupName <groupName>

Input Parameter:
- The range name, a range list or a discovery group name to be disabled

Returns:
- A message indicating the operation was successful
- Or
- Failure message

Create a discovery exclude range

- PS> Add-DiscoveryExcludeRange -RangeName <range>
- PS> Add-DiscoveryExcludeRange -RangeList <ranges in xml>

Input Parameters:
- An exclude range name
- A list of exclude ranges names in an XML file

Returns:
- A message indicating the operation was successful
- For each range that could not be added, an explanation is returned:
  - Exclude Range <range> exists already
Remove a discovery exclude range

- PS> Remove-DiscoveryExcludeRange -RangeName <range>
- PS> Remove-DiscoveryExcludeRange -RangeList <ranges in xml>

Input Parameters:
- An exclude range name
- A list of exclude ranges names in an XML file

Returns:
- A message indicating the operation was successful
- For each range that could not be removed, an explanation is returned:
  - Exclude Range <range> does not exist

Run a discovery range/group: discovery / discovery & inventory / inventory / status polling

- PS> Set-RunDiscovery -RangeName <rangeName> | -RangeGroup <rangeGroupName> | -RangeList <rangeList.xml>
- PS> Set-RunInventory -RangeName <rangeName> | -RangeGroup <rangeGroupName> | -RangeList <rangeList.xml>
- PS> Set-RunDiscoveryInventory -RangeName <rangeName> | -RangeGroup <rangeGroupName> | -RangeList <rangeList.xml>
- PS> Set-RunStatusPoll -RangeName <rangeName> | -RangeGroup <rangeGroupName> | -RangeList <rangeList.xml>
Input Parameters:
- An individual range name
- An individual range group
- A range list of individual ranges

Note: A range list of discovery range groups is currently not supported.

Returns:
- A message indicating the operation was successful

Or
- For each range that has a condition as outlined below, a line will be printed on the console
  - Failed: Range/Range Group does not exist
  - Failed: Range/Range Group currently disabled
  - Failed: <other system error>

Figure 12: Execute discovery and inventory

Get status execution progress of a discovery range
- PS> Get-DiscoveryStatus -RangeName <rangeName>
- PS> Get-DiscoveryStatus -RangeList <rangeList.xml>
- PS> Get-DiscoveryStatus -GroupName <group name>

Input Parameters:
- <rangeName> The name of the range to execute as shown in the OME discovery portal
- <rangeList.xml> a list of the ranges to get status for.
- <group name> The discovery range group name to get execution status for

Returns:
Progress information for each range is returned. If a discovery range group is specified, then progress information for each discovery range belonging to the discovery group is returned.

Or
Failure message
Detail - Device Group Management

The CLI for device group management supports the following functionality:

- Create a custom device group hierarchy [static only]
- Add devices to a custom group
- Remove devices from a custom group
- List device membership in a given custom group
- Delete group (hierarchical)

Device List Details

Some of the commands below call for providing a list of devices to create/add to or remove from a device group. A comma-delimited list of device names is sufficient however, it limits extensibility and expandability in the future. Instead, a simple XML template is used to provide a list of devices. A sample XML file format is below:

```xml
<DeviceList>
  <Device Name=""/>
  <Device Name=""/>
  . . . . . .
</DeviceList>
```

Create a custom device group

- PS> Add-CustomGroup -Group <groupName> -[DeviceList <deviceList.xml] [Devices <comma separated list of devices>]

Input Parameters:

- `<groupName>`: This is a hierarchical definition of the group name that will show up in the tree. For example, if the `<groupName>` is `MyServers`, then the group named `MyServers` will appear under root node. If the `<groupName>` is `Data Centers/Austin/DownTown` then the group hierarchy is built out as needed.
Returns:
- A message indicating the operation was successful
Or
- Failure message

Figure 14: Add custom group

Figure 15: Added group in console

Add devices to a custom group
- `PS> Add-DevicesToCustomGroup -Group <groupName> -DeviceList <deviceList> | -Devices <comma delimited list of devices>`

Input Parameters:
- Group name
- A list of devices that will comprise membership of the group.

Note: If the device is not currently discovered and available in the device table in the database, the device name will be ignored.
Returns:
- Success
Or
- Warning: Some devices would not be added to the group
- Failure message

Figure 16: Add devices to custom group

Remove devices from custom group
- PS> Remove-DevicesFromCustomGroup -Group <groupName> -DeviceList <deviceList.xml> | -Devices <comma delimited list of devices>

Input Parameters:
- Group Name to remove devices from
- A list of devices to remove

Returns:
- Success

Note: If any of the devices specified in the device list are not members of the group, the devices are ignored and a warning message is displayed.
Or
- Failure message
**Figure 17: Remove devices from custom group**

**List Device Membership**
- PS> Select-DevicesFromCustomGroup -Group <groupName>

**Input Parameters:**
- Group Name

**Returns:**
- A list of device comprising the custom group one per line
- Failure message

**Figure 18: List devices in a custom group**

**Delete Group**
- PS> Remove-CustomGroup -Group <groupName>

**Input Parameters:**
- Group Name
Returns:
- Success
Or
- Failure message

Figure 19: Remove custom group