Videoscape Control Suite Endpoint Manager Service
User Guide
Please Read

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.
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Endpoint Manager Overview

Typical Endpoint Scenarios
About This Guide

Purpose
This document provides user instructions regarding the Endpoint Manager service for the Videoscape Control Suite.

The Endpoint Manager (EPM) service allows for the control and monitoring of various types of application software hosted on hardware components attached to the Videoscape platform. EPM provides a central control point to manage this application software.

Audience
The audience for this document includes system administrators, operators, and installation engineers who deploy Videoscape Conductor systems.

Document Version
This is the fourth formal release of this document. This release was updated for Videoscape Control Suite 3.0.
Introduction

Before you begin configuring the Endpoint Manager Service, be sure you have met the requirements in this chapter.

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Before You Begin

Software Requirements

- Be certain that you have installed the Videoscape Control Suite software. Refer to *Videoscape Control Suite Installation and Upgrade Guide* (part number OL-29939) for details.

- Be certain that the following components have been installed. Details are available in *Installing COP Files for the Videoscape Control Suite* (part number OL-27753).
  - HornetQ
  - UPMCDA
  - UPM

COP File Installation

Before you can begin configuring the Endpoint Manager Service, the Cisco Options Package (COP) file for that service must already be installed. To install the COP file for the EPM service, follow the instructions in *Installing COP Files for the Videoscape Control Suite* (part number OL-27753).

COP File Requirements

- cisco.conductor-endpointmanager.x.cop.sgn
- cisco.conductor-epmFiler-x.cop.sgn
- cisco.conductor-nosqlcb-x.cop

Note: COP files cannot be downloaded from the desktop.

Template File Requirements

- cisco.conductor-nosqlcb-x.tmp.xml
- cisco.conductor-endpointmanager.x.tmp.xml
- cisco.conductor-epmFiler.x.tmp.xml

Note: The template file can be downloaded from the desktop or through the SSH File Transfer Protocol (SFTP).
Before You Begin

Browser Requirements

- Internet Explorer 8
- Internet Explorer 9
- Mozilla Firefox 5
2

Configure Endpoints Using the Endpoint Manager Service

Introduction
The information in this chapter describes how to configure Endpoints using Endpoint Manager.

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Endpoint Manager Overview

The Endpoint Manager (EPM) subsystem allows for the control and monitoring of various types of application software hosted on hardware components attached to the Videoscape platform. The subsystem uses APIs to allow other components of the control suite to manage these application software entities.

The EPM subsystem provides a central control point for all application software that is compatible with the Videoscape platform, and allows for the monitoring of Endpoints and diagnostic output.
Endpoint Overview

The Endpoint Manager provides end-point management for VSR5 devices and Softclient provisioning, event collection and reporting, diagnostics, and firmware/configuration services as specified further in the Control Suite PRD [EDCS-1004068]. It does so by supporting the following major functions:

- **Endpoint Inventory** — Provides a database of managed devices, along with metadata about those Endpoints, and allows the administrator to add, remove, and browse Endpoints.

- **Endpoint Configuration** — Provides a way to manage configuration files for Endpoints.

- **Device Software Management** — Allows Endpoint software to be published to a web server/CDN, as well as for messaging triggers to be sent to groups of devices to trigger upgrades.

- **Device Monitoring** — Allows device data models to be queried, data sets to be built, and for the pass-through of monitoring data to northbound management systems.

- **Reboot/Debug Log Management** — Allows for the storage of Endpoint Reboot and Debug logs.

Videoscape Control Suite

The Videoscape Control Suite supports three different types of devices:

- **Managed devices** — Managed devices are physical devices under the control of the Videoscape architecture and hence are managed by the Endpoint Manager. A fully managed device includes factory-installed information such as device credentials (in the form of a certificate). A typical managed device is an IP set-top box.

- **Partially managed devices** — Partially managed devices contain software installed and/or controlled by the overall Videoscape architecture. However, the hardware device itself is not under the control of Videoscape. Examples include Apple iOS and Android devices, where Videoscape provides an application to install and run on the device. The install process may require certain information to be installed on the device and the device identifying itself to the Videoscape Control Suite (for example, by having a device identity created).

- **Unmanaged devices** — Unmanaged devices are all other devices that need to access the Videoscape Control Suite. Note that unmanaged devices do not install applications controlled by Videoscape. An example is a PC/Mac web browser. Unmanaged devices allow the Videoscape system to model the content consumption endpoint.
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Consumption Endpoint

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Static Device ID</th>
<th>Dynamic Device ID</th>
<th>Device Jabber ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Partially Managed</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Unmanaged</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Device Identifiers

Device identifiers are defined as follows:

- **Static Device ID** — Static device IDs are globally unique and long-lived identifiers that uniquely identify a managed or a partially managed device. The static device ID will be stored in the Videoscape Control Suite Client Directory and associated with an account. Static device IDs uniquely identify a physical Videoscape Control Suite device. However, they do not provide an addressable identifier for the Videoscape Control Suite by themselves (device JIDs are used for this). Static device IDs may be authenticated (such as, for managed devices). In any case, static device IDs may be used as identifiers for resource binding when a given user is associated with a device.

- **Dynamic Device ID** — Dynamic device IDs are globally unique identifiers that uniquely identify an unmanaged device instantiation, such as a virtual device. Dynamic device IDs are not long-lived; they may change after a reboot, or even between sessions, and hence they are not provisioned in the system. Otherwise, dynamic device IDs support the same properties as static device IDs (except they are never authenticated), and hence they can be used for resource binding and to store device capabilities for the duration of the virtual device lifetime.

- **Device JID** — Device Jabber Identifiers (device JIDs) are globally unique and long-lived Jabber Identifiers that uniquely name a managed device. Device JIDs are authenticated and they provide an addressable identifier for the Videoscape Control Suite to use. Device JIDs are associated with exactly one (static) device identifier, and hence only devices with static device ids (and hence physical devices) can have device JIDs. From an XMPP point of view, the device JID performs resource binding with the (static) device identifier.
These concepts are illustrated in the following diagram:

**Pubsub Information**

A PubSub is defined as an area where messages or notifications are sent from multiple entities to one receiver.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

Upon the installation of Endpoint Manager, the following ten PubSubs are created:

- DefaultGroupPubSub
- DownloadApplicationFinish
- DownloadApplicationStart
- EndpointProvision
- EPM_MetadataUpdate
- EPM_TOPIC_ApplicationIssue
- EPM_TOPIC_FirmwareIssue
- EPM_TOPIC_HardwareIssue
- EPM_TOPIC_Reboot
- EPM_TOPIC_TransmissionIssue

Before proceeding, verify that these PubSubs are present.

1. Log into the Videoscape Control Suite management console UI.
2. Click **Message Infrastructure**.
3. Click **Publish Subscribe**.
4. Choose the PubSub node that you defined when you installed EPM.
   **Example:** pubsub.features
5. Verify that the PubSubs are present.

**Notes:**

- Refer to *Troubleshooting the Endpoint Manager Service* (on page 65) if the PubSubs are not displayed.
- PubSubs are also created when Endpoint Topics and Endpoint Groups are created.
Registration Status

The Endpoint Manager provides the capability to allow or prevent the registration of new Endpoints, using the **Endpoint Activation Flag** setting.

1. Choose *Services > Endpoint Management*.
2. Click *Endpoint Settings*.

3. In the **Endpoint System Wide Settings** section, check the color of the **Registration Status**. If the status displays green, Endpoints can register. If the status displays red, Endpoints can no longer register.

4. Click *Enable/Disable Registration* to enable or disable registration.

5. Note that the **Access Endpoint** fields allow the user to perform the following tasks:
   - Create a new Endpoint
   - Edit an existing Endpoint
   - Delete an Endpoint
   - Search for an Endpoint
   - Retrieve/Send Debug commands to an Endpoint
   - Set/Monitor performance parameters on an Endpoint
   - Set/Retrieve Watches on an Endpoint
   - View/Delete Installed Items on an Endpoint
   - Send/Cancel Configuration of an Endpoint
   - Retrieve/View Reboot Log Files
   - Restore an Endpoint

6. Click *Clear All Debug History* to clear all debug records received for all Endpoints.

7. Click *Batch Load* to allow for a batch load from a file of multiple Endpoints.
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8  Click **Endpoint ID/JID Mapping** to create a report which shows Endpoints and their associated JIDs.

9  Click **Endpoint/Group Association** to create a report that displays the Endpoints and the groups to which they are assigned.

**Note:** See the collection of notes that follow for additional information on steps 6 through 9.

**Batch Load**

This option allows for multiple Endpoints located in a file to be uploaded to the system.

1  Navigate to **Services > Endpoints**.
2  Select **Batch Load**.
3  Browse to choose the file.
4  Click **Upload**.
5  At the Security Warning message, click **Continue**.

**Notes:**

- The batch load file report is located at /common/log/taos-log-a/EPM_Reports.
- To view the report, enter a CLI command similar to the following:
  
  ```
  file dump activelog EPM_Reports/batchload.10072013-15:50:40.839.rpt.gz
  ```

**Endpoint ID/JID Mapping**

1  Navigate to **Services > Endpoint Settings**.
2  In the Endpoint Reports section, click **Endpoint ID/JID Mapping**.

   **Result:** The EPM generates the report and indicates the name of the file and its location in the /common/log/taos-log-a/EPM_Reports directory.

3  To view the report, enter a CLI command similar to the following:

   ```
   file dump activelog EPM_Reports/endpointidtojid.10072013-15:59:40.rpt.gz
   ```

**Endpoint Group Association**

The EPM allows for the reporting of all Endpoints and the groups to which they are assigned.

1  Navigate to **Services > Endpoint Settings**.
2  In the Endpoint Reports section, click **Endpoint/Group Association**.

   **Result:** The EPM generates a report for all Endpoints and the groups to which they are associated, and indicates the file name and location in /common/log/taos-log-a/EPM_Reports where the file can be found.

3  To view the report, enter a CLI command similar to the following:

   ```
   file dump activelog EPM_Reports/endpointgroupassociations.10072013-16:00:00.rpt.gz
   ```
Creating an Endpoint

1. Click Services.
2. Under the Endpoint Management heading, click Endpoint Settings.

3. Type a unique number for the Endpoint ID and then click New.
   Note: The Endpoint ID is a string with a minimum size of 1 and a maximum size of 128 items.

4. Enter the Time Zone, Location, Endpoint Name, Billing ID, and choose a Group for the Endpoint. These are all required fields for the creation of an Endpoint. Then, Save the information.

Notes:
- The Default group is automatically created when Endpoint Manager is installed. If the Default group is not present, see Troubleshooting the Endpoint Manager Service (on page 65).
- Use these guidelines when creating the Endpoint:
  - Endpoint Name — String, length from 3 to 256 characters
  - Time Zone — Range from 12 to -12
  - Billing ID — Integer, range from 1 to 2,147,483,647. The Billing ID is received from the billing vendor.
  - Location — Geographic location
  - Endpoint Description — String, maximum of 256 characters
Chapter 2 Configure Endpoints Using the Endpoint Manager Service

Editing the Endpoint

1. Choose Services > Endpoint Management.
2. Click Endpoint Settings.
3. Type the Endpoint ID and click Edit. The Endpoint Attributes window opens. You can edit the fields that are not dimmed.
4. Click Endpoint Logging (located at the bottom of the Endpoint Attributes window) to either activate or deactivate logging on the Endpoint.

Notes:
- The Endpoint will be assigned to the Default Group if no other group is selected.
- If the Logging field has a check-mark next to it, logging is activated. If the field is unchecked, logging is deactivated. Logging allows Endpoints to send logs to the EPM. An Endpoint can still send logs to the EPM if logging is deactivated. However, in such a case, the EPM will not store these logs in the database.
- Click Join Dynamic Group to allow the Endpoint to join a specific Dynamic Group based on the rules of the group and the Endpoint settings. If the Endpoint settings match those of a rule, and if the rules are assigned to a Dynamic Group, the Endpoint becomes a member of that group when you click Join Dynamic Group.
- The Connected field will be selected once the Endpoint has "attached" or signed on to Endpoint Manager.
5. Click Save.

Deleting an Endpoint

1. Choose Services > Endpoint Management > Endpoint Settings.
2. Enter the Endpoint ID and then click Delete.
Search for an Endpoint by Endpoint ID or Endpoint JID

Users can search for Endpoints that match an input string. When complete, the search returns a set of matching Endpoint values, either the Endpoint ID or the Endpoint JID.

The search string may be a partial match and/or include a single wild card character (*). For example, a JID search string could be `username1*ipad@cisco.com`.

1. Choose Services > Endpoint Management > Endpoint Settings.
2. Enter the Endpoint ID or Endpoint JID and then click Search.

Notes:
- Searches can be performed using the complete Endpoint ID or JID, as well as using wildcard characters, such as *.
- There is a limit of 1,000 records that a search result can return. If a search contains more than 1,000 records, the following error message appears: 
  
  `Error searching for endpoint by ID key. mex result set exceeded (1000+ matches found), aborting search`
Endpoint Parameters

A Parameter is defined as a value in an Endpoint that needs to be monitored or configured. An example of a value that should be monitored is the amount of RAM in use. Currently, the process for assigning a Parameter to an internal value on an Endpoint is based upon the software resident in the Endpoint.

The GUI allows for the creation, deletion, editing, or viewing of an Endpoint Parameter. Parameters are building blocks for either Configurations, Watches, or Log Performance operations.

Creating an Endpoint Parameter

1. Choose Services > Endpoint Management > Parameters.
2. Click Create.
3. Type the Name, Description, Type, and Value, for the Parameter you are creating.
4. Click Save.

Notes:
- The Endpoint Manager can contain a maximum of 10,000 parameters.
- Name — Unique; string, from 3 to 256 characters
- Description — String, maximum of 256 characters
- Type — Drop-down menu; integer or string
- Value — Integer or string

Example: http:\10.90.70.5\guide\atlanta
Endpoint Configurations

A Configuration is composed of one to many parameters. A Configuration can be used to configure a single Endpoint or a group of Endpoints. In addition, the UI provides the capability to publish a Configuration to the PubSub associated with a Group.

Creating an Endpoint Configuration

1. Choose Services > Endpoint Management > Configuration. The Endpoint Configuration list appears.
2. Click Create.
3. Type the Name, Description, and Type of the Configuration to be created.
4. Select a Parameter from the Available Parameters list.
5. Click Save.

Notes:
- **Name** — String, from 3 to 256 characters; a unique string within the context of the Configuration
- **Description** — String, maximum of 256 characters
- **Type** — Drop-down menu; iPad, iPad2, iPhone, FireFox, IE, Safari, Unknown
- The maximum number of Parameters per Configuration is 100.
- The Endpoint Manager service contains a maximum of 1,000 Configurations.
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Publishing a Configuration to a Group

In order to publish a configuration to a group, the configuration first needs to be associated to the group.

1. From the Services menu, navigate to the Endpoint Management section and click Groups.

2. Choose the desired group from the Groups list and click Edit.

3. From the Configuration drop-down list, choose the desired configuration; then, click Save.

4. From the Endpoint Group list, choose the group that has been associated with the Configuration; then, click Publish Configuration.

Results:
- The EPM displays a message stating that the publish configuration action was successful.
- All Configurations associated with the Group are published.

Note: All Endpoints that are members of the group receive the Configuration.
Canceling Configurations from a Group

1. From the Services menu, navigate to the Endpoint Management section and choose Groups.
2. Choose the desired group from which to cancel the Configuration or Configurations.
3. Click Cancel Configuration.

   **Result:** All Configurations published to the group are canceled.

   **Note:** To further disassociate the configuration from the group, complete the following steps:
   1. Select the Group and click Edit.
   2. From the Selected Configurations list, choose the configuration to be removed and click Remove.

Sending a Configuration Directly to an Endpoint

A Configuration can be sent directly to an Endpoint.

1. From the Services menu, navigate to Endpoint Management; then, choose Endpoint Settings.
2. From the Endpoint Settings window, enter the desired Endpoint ID or JID; then, click Manage Configurations.
3. From the Endpoint Settings window, navigate to the Available Configurations list and choose the desired Configuration to send to the Endpoint.
4. Click Send. The EPM sends the Configuration directly to the Endpoint.

   **Note:** Only the last Configuration sent directly to an Endpoint is stored by the Endpoint.

Canceling a Configuration from an Endpoint

1. From the Services menu, navigate to Endpoint Management, and then choose Endpoint Settings.
2. In the Endpoint Settings window, enter the Endpoint ID or JID and then click Manage Configurations.
3. Navigate to the Configuration List on the Endpoint at the top of the page, and choose Remove Configuration.

   **Result:** The Configuration is removed from the Endpoint.
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Editing a Configuration

1. From the Services menu, navigate to Endpoint Management and then choose Configurations.
2. Choose the configuration to edit and click Edit.
3. Make the necessary changes and click Save.

Note: A configuration cannot be edited if it has been published to a group or sent directly to an Endpoint. The configuration has to first be canceled from the group or Endpoint before it can be edited.
Endpoint Group Rules

An Endpoint Group Rule is an expression that is composed of a parameter, an operation, and a value. The expression evaluates to either true or false.

Creating Endpoint Group Rules


2. Click Create.

3. Configure the Endpoint Group Rule.
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Notes:

- Click Reset to reset all values that have been entered.
- Click Cancel to cancel any changes that you have made and to exit the window.
- Name — String, from 3 to 256 characters
- Description — String, maximum of 256 characters
- Parameter — Drop-down menu:TypeID, JID, Time Zone, Location Code, Billing ID
- Operation — Drop-down menu: Equal To, Not Equal To, Starts With, Contains
- Value — Drop-down menu: Integer, String
- Value Type — Drop-down menu: Integer, String

4 Click Save.
Endpoint Groups

Groups allow for the division of the entire population of Endpoints into sets. This provides the capability to apply configurations to geographic areas, Endpoint types, or specially defined test groups, such as friendlies. Associated with each Group is a PubSub node, named by adding the Group ID to “EPM_Group.”

Notes:

- Groups can be either Fixed or Dynamic.
- A Fixed Group is a group without rules.
- A Dynamic Group includes at least one rule. That group must also be activated.
- The maximum number of groups that the Endpoint Manager is required to store is 200.
- The GroupName is a unique string within the context of the Group definitions.

Creating a Fixed Endpoint Group

1. **Choose Services > Endpoint Management > Groups.** The Endpoint Group window opens.

2. **Click Create.**

3. **Enter or select the Name, Description, and Configuration.**
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4 Click Save.

![Endpoint Group Configuration](image)

Notes:
- **Name** — String, from 3 to 256 characters
- **Description** — String, maximum of 256 characters

Creating a Dynamic Endpoint Group

1 Choose **Services > Endpoint Management > Groups**. The Endpoint Group window opens.

![Endpoint Group List](image)

2 Click **Create**.

3 Enter or select the **Name**, **Description**, and **Configuration**.
4. Select at least one rule from the Available Rules list.

Notes:
- **Name** — String, from 3 to 256 characters
- **Description** — String, maximum of 256 characters

5. Click **Save**. The group is added to the Group List.
Choose the group from the Group List and click **Activate/Deactivate**. The system activates the group and displays **Yes** in the Active Dynamic Group column.

**Note:** To deactivate a group, click **Activate/Deactivate**. The system deactivates the group and displays **No** in the Active Dynamic Group column.
Endpoint Topics

A Topic is an area where an Endpoint sends data. Each Topic has a corresponding PubSub node to which Events, Watches, or Notifications on Endpoints can publish. The associated data is then handled by other components of the EPM Videoscape system.

Note: A Topic is needed to create a Watch.

Creating an Endpoint Topic


2. Click Create.

3. Enter the Topic Name and Description.

4. Click Save.

Notes:
- Name — String, from 3 to 256 characters
- Description — String, maximum of 256 characters
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

Endpoint Watches

A Watch is a trigger that occurs when one or more conditions have been met. When a trigger occurs, the Endpoint publishes the data that matched the conditions to the specified PubSub. A condition is composed of a Parameter, an operation, and a value. Conditions may be concatenated using logical operators.

Example: If Number of Movies = 5 and Maximum Movie Rental = 5

Creating an Endpoint Watch

2. Click Create.
3. Type the Watch Name and Description. Then, select the Topic to which the Watch is tied.
4. Build the watch expression in Expression Builder.
5. Click Save.

Notes:
- Name — String, from 3 to 256 characters
- Description — String, maximum of 256 characters
Deploying Watches to Endpoints

Notes:

- Watches can be deployed through the Access Endpoint window or through the Endpoint Attribute window.
- An Endpoint Watch needs to have been previously created. See Creating an Endpoint Watch (on page 28).

1 Choose Services > Endpoint Management > Endpoint Settings. The Endpoint Settings window opens.

2 Type an Endpoint ID and then click Manage Watches. The Deployed and Available Watch List window opens.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

3 In the Available Watch List portion of the window, choose a Watch to deploy to an Endpoint.

4 Click Add. The Watch is added to the Endpoint and is now visible on the Deployed Watch List.

Retrieving all Watches from an Endpoint

To retrieve all Watches from an Endpoint, from the Deployed Watch List, click Get Watches. All the Watches deployed to an Endpoint are displayed.

Removing a Watch from an Endpoint

To remove a Watch from an Endpoint, from the Deployed Watch List, click Remove. The Watch is removed from the Endpoint and is no longer visible in the Deployed Watch List.

Deploying a Watch to a Group

EPM permits the transmission of Watches to all Endpoints assigned to a Group.

1 Choose Services > Endpoint Management > Watches.

2 Choose a Watch from the Watch List window.

3 Click Publish/Remove.
4. Click **Publish Watch**, choose the **Group** to which the Watch is to be published, and click **OK**.

**Note:** When the Watch is successfully deployed, the system displays a message that indicates a successful deployment.

### Removing a Watch from a Group

1. Choose **Services > Endpoint Management > Watches**.
2. Choose a Watch from the Watch List window.
3. Click **Publish/Remove**.
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4  Click **Remove Watch**, choose the **Group**, and click **OK**.

**Note:** When the Watch is successfully removed, the system displays a message that indicates the successful removal.
Endpoint Performance Parameters

Information on the state of an Endpoint is available using the Performance Parameter function. EPM specifies what Parameter the Endpoint should monitor and how often. Then, the Endpoint performs the actions to monitor the status and returns the information to the associated Topic PubSub.

**Note:** To deploy a Performance Parameter to an Endpoint, a Parameter and Topic must be previously set up. See *Creating an Endpoint Topic* (on page 27).

**Deploying a Performance Parameter to an Endpoint**

1. Choose **Services > Endpoint Management > Endpoint Settings**. The Endpoint Settings window opens.

2. Type an **Endpoint ID** and click **Monitor**. The Performance Parameter window opens.
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3  Click **Add**. The Performance Attributes window opens.

4  Click to select the **Parameter** and **Topic** for the Performance Parameter.

5  Type the **Interval** for the Performance Parameter.

6  Click **Publish**. The Performance Parameter is published to the Endpoint and is now visible in the Performance Parameters list.

7  Click **OK** to close the **The performance parameter published success** message.

**Note:** The Interval is measured in seconds.
Retrieving a Performance Parameter from an Endpoint

1. Choose Services > Endpoint Management > Endpoint Settings. The Endpoint Settings window opens.

2. Type an Endpoint ID and click Monitor. The Performance Parameter window opens.

3. On the top, right portion of the window, click monitor. The Performance Parameters window opens.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

4  Click **Retrieve Performance Parameters**. The Performance Parameters of the Endpoint are displayed.

---

**Removing a Performance Parameter from an Endpoint**

1  Choose **Services > Endpoint Management > Endpoint Settings**. The Endpoint Settings window opens.
2 Type an Endpoint ID and click Monitor. The Performance Parameters window opens.

3 Click Retrieve Performance Parameters. The Performance Parameters of the Endpoint are displayed.

4 Choose the Performance Parameter to delete by clicking on the check-box next to the Parameter.

5 Click Remove. The Performance Parameter is removed from the Endpoint and is no longer visible in the Performance Parameter List.

Displaying the Active Performance Parameter List

The Active Performance Parameter List displays a listing of active Performance Parameters set on Endpoints.

Choose Services > Endpoint Management > Performance Parameters. The Performance Parameters List window opens.
Chapter 2 Configure Endpoints Using the Endpoint Manager Service

Endpoint Debug Commands

Debug commands are used by the EPM in order to assist in troubleshooting issues on an Endpoint. The Videoscape Control Suite server does not know what the debug commands are for each Endpoint device, so it has to query each Endpoint in order to discover the supported debug commands. Once the commands are discovered, they can be selected for execution.

Retrieving Debug Commands from an Endpoint

1. Choose Services > Endpoint Management > Endpoint Settings. The Endpoint Settings window opens.

2. Type an Endpoint ID and click Debug. The Debug Command History List opens.

3. Choose Services > Endpoint Management > Endpoint Settings. The Endpoint Settings window opens.
3 Click **Retrieve Debug Commands**. The Endpoint displays a list of available debug commands.

4 Click the drop-down arrow to the right of the **Available Commands** field to see a list of all available debug commands.

**Sending Debug Commands to an Endpoint**

1 Choose **Services > Endpoint Management > Endpoint Settings**. The Endpoint Settings window opens.

2 Type an **Endpoint ID** and click **Debug**. The Debug Command History List opens.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

3 From the Send New Debug Command to Endpoint section, select the required command from the Available Commands drop-down list.

4 Enter any required parameters and click Send.

Clear Debug History from an Endpoint

1 Navigate to Services > Endpoint Settings.
2 Enter the Endpoint ID and click Debug.
3 Click Clear Debug History.

Results: All Debug responses to a previous command are deleted for the Endpoint.
Manage Installed Items

EPM provides support for lifecycle management of binary data on Endpoints. Through EPM, the operator can access information for installed items that are resident on an Endpoint. Additionally, the operator can delete installed items.

Retrieve an Installed Item

1. Choose Services > Endpoint Management > Endpoint Settings.

2. Enter an Endpoint ID and click Installed Items. The Current Installed Items list is displayed.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

3  Click Retrieve Installed Items.

![Endpoint Manager Service](image)

Result: The system displays a list of installed items.

Delete an Installed Item

1  Choose the item that you want to delete from the list of installed items.

2  Click Delete. The system deletes the item.

![Endpoint Settings](image)
Manage Reboot Log Files

EPM allows for the storing of reboot logs generated when the Endpoint receives a trap, and then reboots. The user can view or delete these logs by accessing the Endpoint.

**Note:** See *Installing COP Files for the Videoscape Control Suite* (part number OL-27753) for instructions on installing the EPMFiler service. For EPM to store Reboot files from Endpoints, the EPM Filer COP file needs to have been previously installed.

1. Choose **Services > Endpoint Settings**.
2. Enter the **Endpoint ID** and then click **Reboot Log Files**.
3. Click an entry in the Log Files List and then click **View**. The user can now browse the contents of the log file for the cause of the reboot.
4. If you want to delete a Reboot Log File, select the log file and click **Delete**.
Manage Endpoint Restore

EPM allows an Endpoint to be restored with the configurations it received from the group of which it is a member so long as the group still contains the configuration. The Endpoint will also be restored with its original configurations as long as those configurations have not been canceled from the Endpoint.

1. Click Services and then click Endpoint Settings.
2. Enter the Endpoint ID.
3. Click Restore.
Endpoint Application Images

The addition of a new file to EPM requires that the manifest, which is prepended, be read and used to populate the Videoscape Code Version Table (vsCVT). The vsCVT will be published to one or more group PubSubs in order to signal the client that this image is available for download. Currently, the file with the associated manifest data, is generated outside of the Videoscape system by the software creation process of the Endpoint manufacturer.

Uploading an Image File


2. Click Upload. The Select Image pop-up window opens.

3. Browse the Select Image window and choose the image that you want to upload.


5. Click Continue. The image uploads and is displayed on the Application Image List.

Associating an Image with a Group

1. Choose Services > Endpoint Manager > Application Images. The Application Image List window opens containing the newly uploaded image.

2. Choose the image that you want to associate with a group and click Associate. The Associate Image pop-up window opens.
Disassociating an Image From a Group

1. Choose Services > Endpoint Management > Application Images. The Application Image List window opens containing a list of uploaded images.

2. Choose the image that you want to disassociate from a group and click Disassociate. The Disassociate Image pop-up window opens.

3. Click the arrow to select the Group from which the image is to be disassociated and click OK.
Deleting an Image From the Image List

Note: You cannot delete an image if it is associated with a group. The image needs to be first disassociated from the group if it is to be deleted.

2. Choose the image that you want to delete and click Delete. The system deletes the image.
Manage vsCVTs

The term vsCVT refers to the process whereby software is made available to Endpoints to download. When an application file is made available to one or more Endpoint clients, the EPM updates the vsCVT to include the information on the application file and notifies the clients of one or more groups via a PubSub. The clients will be subscribed to the PubSub by the EPM and receive notification messages with the attached vsCVT.

Adding an Image to the vsCVT List

**Important:** Prior to adding an image to the vsCVT list, the image must be associated with a group. See *Associating an Image with a Group* (on page 45) for details.

1. Choose **Services > Endpoint Management > Application Images**. The Application Image List opens.
2. Choose the image you require and click **vsCVT**. The Image vsCVTs pop-up window opens.
3. Click the drop-down menu to select the group for which you intend to build the vsCVT and then click **OK**.
Publishing a vsCVT to a Group

2. Click vsCVT. The Image vsCVTs pop-up window opens.
3. Choose the Group that you want to publish the vsCVT, and click OK. The vsCVT List appears.
4. Choose the vsCVT and click Configure (at the top of the window).
5. Enter or select the desired Type of download.

Notes:
- Select one of the following download Types:
  - **Emergency** — The client starts the download immediately.
  - **Immediate** — The client should start the download as soon as possible.
  - **Normal** — Download occurs when the client determines that there is no impact to any video service the subscriber has requested, such as scheduled DVR events.
  - **Forced** — The clients are required to download the specified application/component immediately even if this application is identical to the installed application.
  - **Delete** — The client removes the indicated application/component from the installed set.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

- The **Download Start Time** field (in the next step) specifies the start time, in UTC, of the window when the client should download the application/image.
- The **Download Stop Time** field (in the next step) specifies the stop time, in UTC, of the window when the client should download the application/image.

6  Click to select the **Download Start Time** and the **Download Stop Time**.

7  Click **Publish**. The vsCVT publishes to the Group.

**Sending a vsCVT to an Endpoint**

1  Click **Services**.
2  Under **Endpoint Management Settings**, choose **Application Images**. The Send Image vsCVTs to Endpoint dialog window opens.
3  Enter the **Endpoint ID**, **Urgency**, **Download Start Time**, and **Download Stop Time**.
4  Click **Ok**. The vsCVT is sent to the Endpoint.

**Note:** A vsCVT cannot be directly sent to an Endpoint. **CSCuj66170** addresses this issue.
Endpoint Notification Access

EPM provides the capability to query a specific notification for information that occurred within a start and stop time. It also provides access to the entire contents of any notification.

Notification information includes the Endpoint JID value, a time stamp, and the type of notification for each entry.

Notes:

- A notification is tied to a Topic.
- The notification source consists of an Event, a Performance, or a Watch.
  
  **Note:** In the case of the Event notification source, the service provider provides this information in the client code. The operator needs to know the events supported by the clients in advance, and then create Topics for those events. Once the Topics have been created, EPM receives the Event notifications from the Endpoints.

1. Choose **Services > Endpoint Management > Notifications**. The Endpoint Notifications window opens.

2. Select the **Topic**, **Notification Source**, **Notification Start Time**, and **Notification End Time**.
Chapter 2  Configure Endpoints Using the Endpoint Manager Service

3  Click View. The EPM displays the notification entries.

Note: The notification includes the Endpoint JID, the time the notification was sent, and element/reason for the notification, as well as the Notification Source Type.

4  Click Clear Logs to clear all notifications.
Prime Analytics reports real and historical data for Events, Performance, and Watch notifications. Refer to the **Install the Data Analytics** chapter of *Installing COP Files for the Videoscape Control Suite* (part number OL-27753) for more information on installing and configuring Prime Analytics.

<table>
<thead>
<tr>
<th>Query Type</th>
<th>Dashboard</th>
<th>Feature</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Time Graph</td>
<td>EPM Event - Real Time</td>
<td>Show total number of Events by Topic and Error Name.</td>
<td>Data point every 5s. Drop-down selections for Topic, Error Name.</td>
</tr>
<tr>
<td></td>
<td>EPM Parameter - Real Time</td>
<td>Show Performance Parameters received by Topic, Parameter Name, Device Type, Function Type (Total or Min/Max/Avg).</td>
<td>Data point every 5s. Drop-down selections for Topic, Parameter Name, Device Type, Function Type.</td>
</tr>
<tr>
<td></td>
<td>EPM Watch - Real Time</td>
<td>Show total number of Watch events by Topic and Watch Name.</td>
<td>Data point every 5s. Drop-down selections for Topic, Watch Name.</td>
</tr>
<tr>
<td>Historical Graph</td>
<td>EPM Event - Last Day</td>
<td>Show total number of Events by Topic and Error Name for selected time ranges in the last 24 hours.</td>
<td>Drop-down Selections for Time Range, Topic, Error Name.</td>
</tr>
<tr>
<td></td>
<td>EPM Parameter - Last Day</td>
<td>Show Performance Parameters received by Topic, Parameter Name, Device Type, Function Type (Total or Min/Max/Avg) for selected time ranges in the last 24 hours.</td>
<td>Drop-down selections for Time Range, Topic, Parameter Name, Device Type, Function Type.</td>
</tr>
<tr>
<td></td>
<td>EPM Watch - Last Day</td>
<td>Show total number of Watch events by Topic and Watch Name for selected time ranges in the last 24 hours.</td>
<td>Drop-down selections for Time Range, Topic, Watch Name.</td>
</tr>
</tbody>
</table>
To view data in the Real Time or Historical Dashboard, Endpoints have to be currently sending notifications to view the real-time data, or have previously sent notifications to view the historical data.

From the Services menu, navigate to the Endpoint Management section and click Analytics.

- To view real-time data for Watch notifications, click Real Time EPM Watch.
To view Historic EPM Watch notifications, click **Historic EPM Watch**.

- Filter on **Time Range**, **Topic Name**, or **Watch Name**.
- The user can see real-time performance parameters by specific **Topic Name**, **Parameter Name**, **Device Type**, and function type of "total" or "min-max-avg".
- To view real-time data for Parameter notifications by "total", click **Real Time EPM Parameter**. Then, filter on **Topic Name**, **Parameter Name**, and **Device Type**. Select **Function Type** "total".
Configure Endpoints Using the Endpoint Manager Service

- To view real-time data for Parameter notifications by "min-max-avg", click **Real Time EPM Parameter**. Then, filter on **Topic Name**, **Parameter Name**, and **Device Type**. Select **Function Type** min-max-avg.

- To view Historic data for Parameter notifications, click **Historic EPM Parameter**.

- To view real-time data for Event notifications, click **Real Time EPM Event**.
To view Historic data for Event notifications, click **Historic EPM Event**. Filter on **Time Range**, **Topic Name**, or **Error Name** to see specific data.
Endpoint Diagnostics

The EPM Dashboard window provides configuration and key resource utilization information for the following items:

- vsCVT
- Application Files
- Endpoint Configurations
- Endpoint Debugs
- Dynamic Groups
- Endpoints
- Fixed Groups
- Endpoint Logs
- Endpoint Parameters
- Active Publish Records
- Group Rules
- Topics
- Watches
- Configuration Deployment (to a device within the last 1, 6, 12, or 24 hours)
- Watch Deployment (to a device within the last 1, 6, 12, or 24 hours)
- Performance Parameter Deployment (to a device within the last 1, 6, 12, or 24 hours)
To access the Dashboard, choose **Services > Endpoint Management > Dashboard**.
Endpoint Management Settings

The Endpoint Management Settings window allows the user to set the Message Level in the EndpointManager and server logs. Message levels are INFO, WARN, DEBUG, ERROR, and TRACE.

- **INFO** — The INFO level identifies informational messages that highlight the progress of the application at a coarse-grained level.
- **WARN** — The WARN level identifies potentially harmful situations.
- **DEBUG** — The DEBUG Level shows fine-grained informational events that are most useful to debug an application.
- **ERROR** — The ERROR level identifies error events that might still allow the application to continue running.
- **TRACE** — The TRACE Level shows finer-grained informational events than the DEBUG level.

To change the levels, click the arrow to the right of the Message Level tab and choose the desired level. Then, click **Update**.
Endpoint Management Maximum Configuration Provision

The Endpoint Management Maximum Configuration Provision section displays the default configuration of Endpoint Manager.

To change the configuration values, enter the new value and select **Save**.

**Note:** The current default value and maximum settings are as follows:

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Default Value</th>
<th>Maximum Setting</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>BatchLoadRecordMaximum</td>
<td>10,000</td>
<td>100,000</td>
<td>Integer</td>
</tr>
<tr>
<td>GroupMaximumPerEndpoint</td>
<td>20</td>
<td>200</td>
<td>Integer</td>
</tr>
<tr>
<td>WatchCountMaximum</td>
<td>20</td>
<td>200</td>
<td>Integer</td>
</tr>
<tr>
<td>GroupRuleMaximum</td>
<td>13</td>
<td>100</td>
<td>Integer</td>
</tr>
<tr>
<td>GroupMaximum</td>
<td>100</td>
<td>1000</td>
<td>Integer</td>
</tr>
<tr>
<td>ApplicationStoreMaximum</td>
<td>100</td>
<td>200</td>
<td>Integer</td>
</tr>
<tr>
<td>ParameterPerConfigurationMaximum</td>
<td>100</td>
<td>500</td>
<td>Integer</td>
</tr>
<tr>
<td>PublishObjectsMaximum</td>
<td>10,000</td>
<td>100,000</td>
<td>Integer</td>
</tr>
<tr>
<td>TimeUpdateValue</td>
<td>24 hours</td>
<td>N/A</td>
<td>Integer</td>
</tr>
<tr>
<td>DeleteEntryMaximum (per Endpoint)</td>
<td>100</td>
<td>500</td>
<td>Integer</td>
</tr>
<tr>
<td>LogonMaximum</td>
<td>500</td>
<td>1000</td>
<td>Integer</td>
</tr>
<tr>
<td>ParameterMaximum</td>
<td>5,000</td>
<td>10,000</td>
<td>Integer</td>
</tr>
<tr>
<td>ConfigurationMaximum</td>
<td>1,000</td>
<td>1,000</td>
<td>Integer</td>
</tr>
</tbody>
</table>
SNMP Alarms

EPM currently implements two alarms: communication errors with the database and errors encountered when subscribing to the ClientDirectory. Alarms are displayed using the Alarm Summary icons at the bottom right corner of the CMC UI.

1. In the main Videoscape Control Suite window, click Alarm Summary (at the bottom of the window). The Alarm Summary window opens.

2. Click Videoscape Control Suite Service. The window updates to show alarms associated with the Videoscape Control Suite service.

3. Click the arrow to the left of an alarm to see the details for that alarm.

Notes:
- To acknowledge, unacknowledge, or clear an alarm, choose the alarm and click Change Status.
- To assign an alarm, choose the alarm and click Assign.
- To annotate an alarm, choose the alarm and click Annotation.
- To delete an alarm, choose the alarm and click Delete.
- To ping or perform a traceroute operation upon an alarm, choose the alarm and click Troubleshoot.
Manage Endpoint Manager Logs

Endpoint Manager writes to two logs: EndpointManager.log and server.log.

1. To see a listing of available logs, type the following command at the admin prompt and then press Enter.
   ```bash
   file list activelog jboss
   ```
   **Result:** The system returns a list of available logs.
   **Example:**
   - EndpointManager.log.1
   - EndpointManager.log.2
   - EndpointManager.log.3
   - EndpointManager.log.4
   - EndpointManager.log.5
   - EndpointManager.log.6
   - EndpointManager.log.7
   - EndpointManager.log.8
   - EndpointManager.log.9
   - boot.log
   - server.log
   - server.log.2013-03-29.log.1.gz
   - server.log.2013-03-30.log.1.gz
   - server.log.2013-03-31.log.1
   - server.log.2013-04-01.log.1
   - server.log.2013-04-01.log.2
   - server.log.2013-04-02.log.1.gz
   - server.log.2013-04-02.log.2
   - server.log.2013-04-03.log.1
   - server.log.2013-04-04
   - server.log.2013-04-04.log.1

   **Notes:**
   - Files with a .log extension are the most recent.
   - Files with a .log.1 extension are the next most recent, and so on.
   - Files that have been compressed (.gz extension) cannot be uncompressed from the CLI. They need to be transferred to a desktop server, uncompressed, and viewed from there.

2. To view a log file, type the following command and press Enter.
   ```bash
   file view activelog jboss/[server.log]
   ```
   **Note:** Replace [server.log] with the name of any log file from the output of step 1.

3. To tail a log, type the following command and press Enter.
   ```bash
   file tail activelog jboss/EndpointManager.log
   ```

4. To search through a log, type the following command and press Enter.
   ```bash
   file search activelog jboss/EndpointManager.log jid
   ```
   **Note:** In this example, jid is the string you are looking for in the EndpointManager.log file.

5. To transfer a log file to another server, type the following command and press Enter.
   ```bash
   file transfer secure-export [local-src-file-path] [user@host:file_path]
   ```
   **Example:**
   ```bash
   file transfer secure-export jboss/EndpointManager.log
   ftpuser@10.90.187.251:/home/ftpuser
   ```
Introduction

Refer to this chapter for information that can help you troubleshoot the Endpoint Manager service.

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Endpoint Manager Troubleshooting

EPM HTTP Error Codes

The standard HTTP error codes that EPM returns are as follows:

- 200 Ok
- 201 Created
- 400 Bad Request
- 401 Unauthorized
- 404 Not Found
- 405 Method Not Allowed
- 500 Internal Error; a status object is returned and the error message is populated upon error.

Registration Flag Red, Service Instance Green, Unable to Create Endpoints (1)

Possible Cause: Incorrect IP addresses entered for NOSQLCB during EndpointManager COP file install

1. View the server.log file for NOSQLCB connection errors.
   
```
   admin:file dump activelog jboss/server.log
   ```
   
Sample output:

```
14:28:27,083 INFO  [stdout] (pool-1160-thread-1) 2012-11-09
14:28:27,083 ERROR [root] CouchbaseConnection.openConnection() Exception while trying to connect to Couchbase Cluster null
14:28:27,083 INFO  [stdout] (pool-1160-thread-1) 2012-11-09
14:28:27,083 INFO  [stdout] (pool-1160-thread-1) 2012-11-09
14:28:27,083 ERROR [root] EPMInstancePoolDAO.getAndLock(): Couldn't establish a connection with Couchbase Server
14:28:27,083 INFO  [stdout] (pool-1160-thread-1) 2012-11-09
14:28:27,083 ERROR [root] CheckLeadershipTask.run(): Unknown exception while trying to read instance pool object: Couldn't establish a connection with Couchbase Server
14:28:32,087 ERROR [stderr] (pool-1160-thread-1) 2012-11-09
14:28:32,088 ERROR [stderr] (pool-1160-thread-1) java.net.ConnectException: Connection refused
```
2 Enter the correct NOSQLCB IP address(es) in the Endpoint Manager configuration file.
3 Uninstall and then reinstall the Endpoint Manager service, using the correct NOSQLCB IP address(es).

**Registration Flag Red, Service Instance Green, Unable to Create Endpoints (2)**

**Possible Cause:** NOSQLCB password mismatch

1 View the server.log file for HTTP response 401 errors.
   ```
   admin:file dump activelog jboss/server.log
   ```
   Sample output:
   ```
   15:14:18,893 ERROR [stderr] (pool-1344-thread-1) 2012-11-09
   15:14:18.893 WARN
   com.couchbase.client.vbucket.ConfigurationProviderHTTP:
   Connection problems with URI http://10.90.187.31:8091/pools
   ...skipping
   15:14:18,894 ERROR [stderr] (pool-1344-thread-1)
   java.io.IOException: Server returned HTTP response code: 401
   for URL: http://10.90.187.31:8091/pools
   ```

2 Check to ensure that the NOSQLCB password entered during the Endpoint Manager COP file installation matches the password used when creating the bucket in NOSQLCB.

3 View the Endpoint Manager configuration file and compare the password in the file to the password used in creating the NOSQLCB bucket.
   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <configuration>
   <node-attributes>
   <serviceJID>epmjid@svc.csvm18725.cisco.com</serviceJID>
   <clientDirVSNSServiceJID>epmjid@svc.csvm18725.cisco.com</clientDirVSNSServiceJID>
   <clientDirJID>client@cisco.com</clientDirJID>
   <couchbasePrimaryIP>10.90.187.31</couchbasePrimaryIP>
   <couchbaseSecondaryIP>10.90.187.32</couchbaseSecondaryIP>
   <couchbasePort>8092</couchbasePort>
   <bindingJsm>jsm-1.rtr-svc25-2</bindingJsm>
   <password>cisco123</password>
   <userID>endpoint</userID>
   <userPassword>epmpasswd</userPassword>
   <pubsubDomain>pubsub.features</pubsubDomain>
   <mccHost>10.90.187.26</mccHost>
   <fileProxyServer>10.90.187.251</fileProxyServer>
   <jsmHost>10.90.187.26</jsmHost>
   </node-attributes>
   </configuration>
   ```

4 If there is a password mismatch, edit the Endpoint Manager configuration file. Then, uninstall and reinstall Endpoint Manager.
Chapter 3  Troubleshooting the Endpoint Manager Service

Endpoint Manager Fails to Start, Registration Flag is red, Service Instance is Red

Possible Cause: The SVC password was changed for the SVC JID in the Endpoint Manager Configuration file.

1  Check the server.log file.

```bash
file dump activelog jboss/server.log
```

Sample output:

```
Starting EndpointMgr Conductor Service thread under virtual service ns: conductor://endpointmgr
12:36:53,269 INFO [com.cisco.conductor.servicesdk.backend.ConductorService] (MSC service thread 1-5) EndpointManagerConductorService service is initialized successfully
Exception while trying to start Endpoint Conductor Service: SASL authentication DIGEST-MD5 failed: not-authorized:
```

2  Edit the Endpoint Manager configuration file and change the password back to the correct password.

3  Uninstall and then reinstall Endpoint Manager.

The Default Group is Missing When an Endpoint is Created

1  Check the management console UI to determine whether the DefaultGroupPubSub is present.

   a  Log into the management console UI and navigate to the PubSub list:
   ```
   Message Infrastructure > PubSub Management > pubsub.features
   ```

   b  If the DefaultGroupPubSub is present, delete it along with the following pubsubs:
   ```
   – DownloadApplicationFinish
   – DownloadApplicationStart
   – EndpointProvision
   ```

2  Uninstall and then reinstall Endpoint Manager.

No Endpoint Log Information Stored for Endpoints

Possible causes:

- Logging is not enabled on the relevant Endpoint(s).
  Solution: Enable logging on the Endpoint(s).

- There is no PubSub created for the desired Topic Log Source.
  Solution: Create the appropriate Topic for Events, Watches, or Performances.
4

Troubleshooting EPM Analytics

Introduction
Refer to this chapter for information that can help you troubleshoot EPM Analytics.

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Chapter 4  Troubleshooting EPM Analytics

EPM Analytics Troubleshooting

- Start the EPM analytics application
  
  ```
  cd /opt/cisco/vcs/analytics/connectors/epm/epm && ./start.sh
  ```

- Stop the EPM analytics application
  
  ```
  cd /opt/cisco/vcs/analytics/connectors/epm/epm && ./stop.sh
  ```

- EPM install log
  
  `/opt/cisco/vcs/analytics/logs/epm/da_install.log`

- Uninstall log
  
  `/var/da_uninstall.log`

Database Purge

The database has tables that are purged each day. To keep the database from growing too large, a script removes data older than 24 hours from all tables that belong to EPM. A notice is sent to the root email account (smtp).

- Script location: `/etc/cron.d/epm_purge_archives.cron`

- Cron entry: `
  
  00 01 * * * root
  
  /opt/cisco/vcs/analytics/scripts/epm/epm_purge_archives.sh epm all 1`

- To review events in the database
  
  `psql -C -U epm`

- To review the primary stream
  
  `cqdb=> select date, Cmd from endpoint_events;` (Ctrl-C to end)

  ![Database Purge Example](image)

Notes:

- Heartbeat (TimeMarker): Database commit every 10 records
- Events: Database commit every 500 records
Review Derived Streams and Archive Tables

Derived stream tables for 5 s, 1 m, 5 m, 15 m, 30 m, 60 m

Example:

1 m Derived Stream — endpoint_events_1m

1 m Archive — endpoint_events_1m_archive
If You Have Questions

If you have technical questions, contact Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.
Appendix A

Endpoint Manager Operational Scenarios

Introduction
This appendix defines a typical set of operational scenarios that employ the Endpoint Manager.

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Appendix A
Endpoint Manager Operational Scenarios

Endpoint Manager Overview

The EPM software is intended to operate on the Videoscape Control Suite platform interconnected to the other system components with XMPP. EPM provides the system configuration and lifecycle management of the software on the attached clients. In addition, EPM provides the capability to monitor the status of Endpoints and log this information for reference by an external system.

This appendix defines a number of typical scenarios that an operator will perform to manage a normal EPM system. Included in this is the monitoring of Endpoint performance, software lifecycle operations, and the set-up of groups of Endpoints to standard configurations.

Endpoint Manager Features

**Endpoint Groups** — Endpoint Groups allow the division of the entire population of Endpoints into subsets. This provides the capability to apply configurations to geographic areas, Endpoint types, or to specially defined test groups, i.e. “friendlies”. Groups may be cascaded, one under another, to provide flexible configurations of Endpoints. Dynamic Groups use Rules to determine which Endpoint is part of a Group.

**Topics** — A Topic is defined as part of a data collection system where Endpoints send data that requires monitoring. Each Topic has a corresponding PubSub node to which Events, Watches, or Logs on Endpoints can publish. The associated data is recorded and handled by components of the EPM Videoscape system for access by external systems.

**Endpoint Parameters** — A Parameter is defined as a value in an Endpoint that needs to be monitored or configured. An example is the amount of RAM in use. Endpoint Parameters are assigned to Endpoints based upon the software resident in the Endpoint.

**Endpoint Watches** — A Watch is defined as a trigger that occurs when one or more conditions have been met. When a trigger occurs, the Endpoint will publish data matching the conditions to the specified PubSub. A condition is composed of a Parameter value, an operation, and a value. Conditions may be concatenated using logical operators.

**Endpoint Configurations** — An Endpoint Configuration is composed of one-to-N Parameters. A Configuration can be used to configure a single Endpoint or a Group of Endpoints. In addition, the capability to publish a Configuration to the PubSub associated with a Group is defined. The Configuration may be composed of the merger of high to low-level sets of Parameters.
Monitor Endpoint Performance — Endpoint Performance monitoring is used to provide data on a Parameter at a selected rate. A Parameter is selected for monitoring with an operator-defined interval, and the Endpoint will publish the data at the specified rate to a Topic PubSub. The Endpoint is responsible for the actions required to monitor the parameter and returns the information to the EPM after each interval has elapsed.

Debug — EPM provides the capability to query an Endpoint for a list of commands that are applicable to it. EPM performs the transmission of debug commands to Endpoints and receives the associated responses.

Image/Application Download — The process for distributing applications or images to the population of clients within the Videoscape system is divided into three major areas:

- Conversion of an image file into the format used by the EPM subsystem
- Loading of the file into Videoscape storage for later distribution to clients
- Signaling to the client population that images are available for download using the Videoscape Code Version Table (vsCVT)

Rule — A Rule is an expression that is composed of a Parameter, an operation, and a value, which evaluates to either True or False. Currently the Parameter list is composed of:

- **TypeID**
- **JID**
- **TimeZone**
- **LocationCode**
- **BillingID**
- **MetadataID**.

The set of operations that may be included is:

- **GreaterThan**
- **LessThan**
- **EqualTo**
- **NotEqualTo**
- **StartsWith**
- **Contains**
Typical Endpoint Scenarios

During the normal operation of the Endpoint Manager, there are sets of typical operations that will be required to be executed by an operator. This section describes these scenarios using the operations defined earlier in this guide.

Watch Creation/Deployment

These are the steps required to create and deploy a Watch to an Endpoint, and then to gather any data that is generated by the Endpoint.

1 Create Parameter
Reference the Endpoint Parameters (on page 16) section to perform a create operation for a new Parameter. This Parameter should correspond to a value that is defined by the vendor of the Endpoint software and must be specified by a unique name. Enter the unique name and type of the value, either integer or string.

2 Create Topic
Reference the Endpoint Topics (on page 27) section to perform a create operation for a new Topic. Specify the name and description.

3 Create Watch
Reference the Endpoint Watches (on page 28) section to perform a create operation for a new Watch. Specify a unique name for the Watch and optionally enter a description. Using the drop-down list, select the Topic created in the last step. Define a logical operation using the Parameter created in the first step. For example, this operation can include equality/inequality with respect to a value.

4 Deploy Watch to Endpoint
Reference the Endpoint Settings (on page 29) section to perform a deploy operation for the Watch that was created in the previous step. Select the Endpoint that is to receive the Watch by entering the Endpoint ID. Select from the list of available Watches the Watch created in the last step and have the EPM deploy it to the Endpoint.

5 Alternate Deploy Watch to a Group
Reference the Endpoint Watches (on page 28) section to perform a deploy operation for the Watch that was created. Select the Publish Watch and then from the drop-down list, select the Group that is to receive the Watch.

6 Access Watch Data
Reference the Endpoint Notification Access (on page 51) section to see any data that may have been generated by the Watch. Select an existing Topic, and for the log source, select “Watch”. Select a time interval to examine for entries by entering a start and stop time. Because a Watch only generates data when the condition is true, there may be no data present.
Event Data Collection

These are the steps required to create the Topic used to gather data that is generated by an Endpoint Event. Events are defined by the vendor of the Endpoint software and include a predefined, well-known Topic value.

1 Create Topic
   Reference the Endpoint Topics (on page 27) section to perform a create operation for a new Topic. Specify the Name value that is part of the software embedded in the Endpoint, and, if needed, a Description.
   Note: The Event will be active as soon as an Endpoint is part of the system, but data will only be collected when a corresponding Topic is created.

2 Access Event Data
   Reference the Endpoint Log Access (on page 51) section to see any data that may have been generated by the Event. Select an existing Topic, and for the log source select “Event.” Select a time interval to examine for entries by entering a start and stop time. Because an Event only generates data when the condition is true, there may be no data present.

Log Performance Creation/Deployment

These are the steps required to create and deploy a Log Performance data monitor to an Endpoint, and then to examine any data that is generated by the Endpoint.

1 Create Parameter
   Reference the Endpoint Parameters (on page 16) section to perform a create operation for a new Parameter. This Parameter should correspond to a value that is defined by the vendor of the Endpoint software, and must be specified by a unique name. Enter the unique name and type of the value, either integer or string.

2 Create Topic
   Reference the Endpoint Topics (on page 27) section to perform a create operation for a new Topic. Specify the name and description.

3 Deploy Log Performance to Endpoint
   Reference the Endpoint Settings (on page 29) section to perform an edit operation for an existing Endpoint. Select the Endpoint that is to have a Performance Parameter monitored by entering the Endpoint ID. Select the Parameter created in the first step from the drop-down list. Select the Topic created in the previous step from the drop-down list. Enter an interval between samples, in milliseconds.
   Important: If the update interval is very short and/or a large number of Endpoints are selected, then a very large amount of data will be generated.
4 Access Log Performance Data
Reference the Endpoint Log Access (on page 51) section to see any data that may have been generated by the Log Performance. Select an existing Topic, and for the log source, select “Log Performance.” Select a time interval to examine for entries by entering a start and stop time. If no data is present, then either the interval selected is prior to the start of the Log Performance, or the update rate is very slow.

Dynamic Group Creation

These are the steps required to create a Dynamic Group, and to allocate Endpoints to it.

1 Create Group Rule(s)
Reference the Endpoint Group Rules (on page 21) section to perform a create operation for each new Rule required to define a Group. Select a parameter from the drop-down list, then an operation, and finally a value to complete the Rule expression. Give each Rule a unique name with an optional description.

2 Create Group
Reference the Endpoint Groups (on page 23) section to perform a create operation for a new Dynamic Group. Select one or more of the Rules defined in the previous step and add them to the Select Rules area. Give each Group a unique name, with an optional description.

Note: The Dynamic group created will be the product of the Rules selected. Each Rule that is added will narrow the number of Endpoints contained in the Dynamic Group.

3 Activate Dynamic Group
Reference the Endpoint Groups (on page 23) section to perform an activate operation for an existing Dynamic Group. Select the Dynamic Group created in the last step. Click on the Activate/Deactivate button for this Group. The EPM will begin determining which Endpoints from the entire population are a member of the Dynamic Group.

Simple Configuration

These are the steps required to create and deploy a Configuration to an Endpoint.

1 Create Parameter
Reference the Endpoint Parameters (on page 16) section to perform a create operation for a new Parameter. This Parameter should correspond to a value that is defined by the vendor of the Endpoint software, and be specified by a unique name. Enter the value to which to set the Parameter. Enter the unique name and type of the value, either integer or string.
Typical Endpoint Scenarios

2 Create Configuration
Reference the Endpoint Configurations (on page 17) section to perform a create operation for a new Configuration. This Parameter should correspond to a value that is defined by the vendor of the Endpoint software, and must be specified by a unique name. Enter the unique name and type of the value, either integer or string.

3 Associate Configuration with Endpoint
Reference the Endpoint Settings (on page 29) section to perform an edit operation for an existing Endpoint. Add the Configuration created in the previous step to the Endpoint.

4 Configure Endpoint
Reference the Endpoint Settings (on page 29) section to transmit the Configuration to the Endpoint selected in the previous step. The Endpoint will receive a message with the Configuration value and perform the indicated Setting.

Simple Configuration – Published

These are the steps required to create and deploy a Configuration to a group of Endpoints.

1 Create Parameter
Reference the Endpoint Parameters (on page 16) section and perform a create operation for a new Parameter. This Parameter should correspond to a value that is defined by the vendor of the Endpoint software and be specified by a unique name. Enter the value to which to set the Parameter. Enter the unique name and type of the value, either integer or string.

2 Create Configuration
Reference the Endpoint Configurations (on page 17) section and perform a create operation for a new Configuration. Enter the unique name and type of the value, either integer or string.

3 Select Configuration
Reference the Endpoint Groups (on page 23) section and select a Group from the list of those available. Then, click on the Edit icon. From the Available Configurations window, select the one created in the previous step and click on Add. Then save the Group information.

4 Publish Configuration
Reference the Endpoint Groups (on page 23) section and select the Group that has the Configuration associated with it. Click on the Publish Configuration icon. This will send the Configuration to the PubSub associated with the Group and distribute it to all the Endpoints in the Group.
5 Unpublished Configurations
In the Endpoint Groups (on page 23) section there is a list of unpublished Configurations. These correspond to Configurations that have been associated with a Group, but not pushed down to the PubSub for distribution to the Endpoints.

Cancel Configuration

These are the steps that are required to remove a Configuration that has been published to a group of Endpoints.
1 Cancel Configuration
Using the Endpoint Groups (on page 23) section, select the Group from the previous Simple Configuration - Published (on page 81). Click on the Cancel Configuration icon. This will send a Cancel message to the PubSub associated with the Group and distribute it to all the Endpoints in the Group.
2 Endpoints
The Endpoints will receive the Cancel message and delete all references to the Configuration and its associated Parameter settings.

Complex Configuration

These are the steps required to configure a group of Endpoints using more than one Configuration. This example will apply them to the Endpoints associated with multiple Groups.
1 Create Group Rules
Reference the Endpoint Group Rules (on page 21) section to perform a create operation for a Rule that defines TypeID equal to “X.” Give this Rule a unique name, with an optional description.
2 Create Groups
Reference the Endpoint Groups (on page 23) section to perform a create operation for a new Dynamic Group. Select the first Rule defined in the previous step and add it to the Select Rules area. Give the Group a unique name, with an optional description.
3 Create Parameter
Reference the Endpoint Parameters (on page 16) section and perform a create operation for a new Parameter. This Parameter should correspond to a value that is defined by the vendor of the Endpoint software and be specified by a unique name. Enter the value to which to set the Parameter. Enter the unique name and type of the value, either integer or string.
4 Create Configuration
Reference the Endpoint Configurations (on page 17) section and perform a create operation for a new Configuration. Enter the unique name and type of the value, either integer or string.
5 Select Configuration
Reference the Endpoint Groups (on page 23) section and select the Dynamic Group from step 2. Then click on the Edit icon. From the Available Configurations, select the one created in the previous step and click Add. Then, Save the Group information.

6 Create Second Configuration
Repeat steps 3 through 5 with a different Parameter name.

7 Activate Dynamic Groups
Reference the Endpoint Groups (on page 23) section to perform an activate operation for both Dynamic Groups. Select the Dynamic Groups created in the previous step. Click on the Activate/Deactivate button for each Group. The EPM will begin determining which Endpoints from the entire population are a member of each Dynamic Group.

8 Publish Configuration
Reference the Endpoint Groups (on page 23) section and select the Group that has the Configurations associated with it. Click on the Publish Configuration icon. This will send the Configurations to the PubSub associated with the Group and distribute it to all the Endpoints in the Group.

Image Download

These are the steps required to load an image into the Endpoint Manager and to signal its availability to a set of Endpoints.

1 Load Image
Reference the Endpoint Application Images (on page 45) section to perform an upload operation. If the Image is correctly formatted with the proper manifest then it will be successfully loaded into the application image list.

2 Create Group Rule(s)
Reference the Endpoint Group Rules (on page 21) section to perform a create operation for each new Rule required to define a Group. Select a parameter from the drop-down list, then an operation, and finally a value to complete the Rule expression. Give each Rule a unique name, with an optional description.

3 Create Group
Reference the Endpoint Groups (on page 23) section to perform a create operation for a new Dynamic Group. Select one or more of the Rules defined in the previous step and add them to the Select Rules area. Give each Group a unique name, with an optional description.

Note: The Dynamic group created will be the product of the Rules selected. Each Rule that is added will narrow the number of Endpoints contained in the Dynamic Group.
4 Activate Dynamic Group
Reference the Endpoint Groups (on page 23) section to perform an activate operation for an existing Dynamic Group. Select the Dynamic Group created in the previous step. Click on the Activate/Deactivate button for this Group. The EPM will begin determining which Endpoints from the entire population are a member of the Dynamic Group.

5 Associate Image to Group
Reference the Endpoint Application Images (on page 45) section to select the image loaded in the first step. Perform the association operation for the Group defined in the third step. The EPM will update (or, if needed, create) the vsCVT associated with the Group.

6 Publish vsCVT to Group
Reference the Endpoint Application Images (on page 45) section to select the image loaded in the first step. Select the vsCVT created in the previous step and associated with the Group from the second step. Enter the download Type and a download time window for the Endpoints in the Group to attempt to retrieve the Image. This vsCVT will be published to the PubSub that is part of the Group.

7 Image Retrieval
As specified in the vsCVT, the Endpoints will retrieve the Image from the EPM.

Endpoint Restore

These are the steps that are used to trigger an Endpoint to match the Configuration data that EPM has for it.

1 Select Endpoint
Reference the Endpoint Settings (on page 29) section and enter either an Endpoint ID or an Endpoint JID value.

2 Command Restore
On the Endpoint Settings page, select the Restore button.

3 Endpoints
The Endpoints will receive the Restore message;= and delete all references to all Configurations. Then, the Endpoint will receive the Configurations associated with any Group that the Endpoint is part of and the Configurations assigned specifically to it.