Managing DRA Operations

Operations Overview

The Operation page enables you to access various interfaces and perform operations, maintenance, and troubleshooting activities. It assists system administrators and network engineers to operate and monitor the Policy Server.

Monitoring DRA

DRA monitoring page under operations includes the following options:

- DRA Peer Monitoring
- DRA Binding Monitoring
- DRA SLF Bindings
- DRA Relay Connection
- Grafana

Peer Monitoring

DRA peer monitoring page displays the active peer endpoints (by default) for the cluster node. You can click the toggle for active/inactive peers to view the active or inactive peer endpoints.

The active and inactive peer monitoring screens have resize option for each column. You can use the scrollbar to view multiple values.

When the page is loaded, the Autorefresh checkbox is enabled by default which refreshes peers data every 30 seconds. You can stop this functionality by disabling the checkbox. After every refresh, the Data Last Refreshed field is updated with the locale time.

You can use the filter option to filter active and inactive peer endpoints. You can also view all event logs and peer details for specific active or inactive peer endpoints of the cluster node.

Pagination support is provided in active and inactive peer endpoints table data. A number of rows per page drop-down are displayed below each table which contains the different set of numbers indicating the number of rows which can be shown per page. This option enables you to perform the following tasks:

- Select the number of rows to be displayed in each page.
- Specify the page to which you want to navigate.

You can use the **Close All** option to close all the displayed popups. By default the **Close All** option is disabled. If you have many popups open, the **Close All** option gets enabled.

View Filtered Data

Step 1 In CPS DRA, navigate to **DRA Peer Monitoring**.

Step 2 Select the **Filter by** drop-down and click on any one of the following data options displayed:

- Peer Host Name
- Peer IP Address
- Admin State
- DRA Host Name
- DRA IP Address
- Application Id
- Peer Group
- Details/Event Logs
- Actions

Step 3 Enter a value in the **Filter Peer Endpoints** option.

Step 4 Click **Toggle for Active Peers** to view filtered active peer endpoints or **Toggle for Inactive Peers** to view filtered inactive peer endpoints.

Under Active Peer Endpoints:

- You can administratively disable or disconnect selected peers.
- You can multi-select peer connections and administratively disable them. You will be prompted for confirmation before executing the action.

Note In Active Peer Endpoints GUI, after admin disable of active peer, if peer's Admin State gets changed from Enabled to Disabled but still it is shown under Active Peer Endpoints, then peer has to be disconnected by using the disconnect action.

Figure 1: Active Peer Endpoints

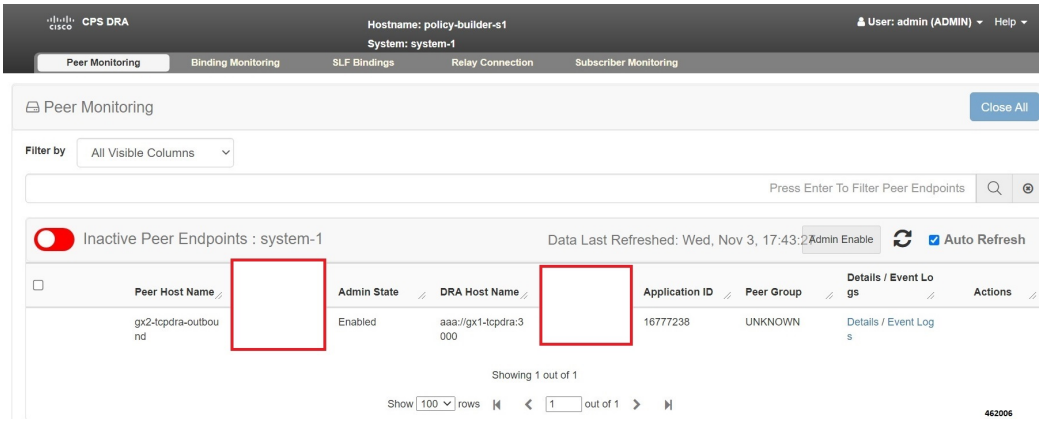
Under Inactive Peer Endpoints:

- You can enable peers which are administratively disabled. This option is enabled only for peers which are administratively disabled.
- Table always lists admin disabled peers as inactive endpoints even if there are no recent active connections from those peers.
- You can multi-select admin disabled peers and enable them. You will be prompted for confirmation before executing the action.

  Note You can administratively disable maximum 20 peer connections in a single operation using multi-selection. If more than 20 peer connections are selected, an error is prompted with an option to proceed with disabling the first 20 of selected connections.

- By default, peer connection details for inactive endpoints is retained in the system for 48 hours. If a peer is administratively disabled for more than 48 hours, then last connection details (Peer IP address, DRA endpoint, Event Logs and so on) is not displayed.

Figure 2: Inactive Peer Endpoints



The following tables describe the details displayed under Peer Endpoints section:

Table 1: Active Peer Endpoint Details

Parameter	Description
Peer Host Name	Peer host name.
Peer IP Address	Peer IP address
Admin State	Indicate the admin state of the peer. You can filter the inactive peers by admin state.
DRA Host Name	DRA host name and port.
DRA IP Address	DRA IP address
Application Id	Identifier of the Diameter application (Gx, Rx, Sy, Sh and so on).
Peer Group	Peer group of the connected peer.
Details/Event Logs	When selected provides Details and Event Logs links. To view details of a particular peer, click **Details**. To view event logs of a particular peer, click **Event Logs**.
Actions	Options are Disconnect and Disable. Disconnect: Disconnects an active peer by confirming from the user and sends the request to the API for disconnecting the active peer. Disable: Disables admin active peer by confirming from the user and sends the request to the API for disabling the active peer.

Table 2: Inactive Peer Endpoint Details

Parameter	Description
Peer Host Name	Peer host name.
Peer IP Address	Peer IP address
Admin State	Indicate the admin state of the peer. You can filter the inactive peers by admin state.
DRA Host Name	DRA host name and port.
DRA IP Address	DRA IP address
Application Id	Identifier of the Diameter application (Gx, Rx, Sy, Sh and so on).
Peer Group	Peer group of the connected peer.

Parameter	Description
Details/Event Logs	When selected provides Details and Event Logs links. To view details of a particular peer, click **Details**. To view event logs of a particular peer, click **Event Logs**.
Actions	Used to enable the peer which was disabled by admin earlier.

You can use the refresh option provided next to the toggle for active/inactive peer endpoints to refresh the table data.

You can enable the **Auto-refresh** checkbox to refresh data every 30 seconds. The **Data Last Refreshed** field displays time when data is fetched from server.

View Details

Step 1 In CPS DRA, navigate to **DRA Peer Monitoring**.

Step 2 Click **Toggle for Active Peers** to view active peer endpoints or **Toggle for Inactive Peers** to view inactive peer endpoints.

Step 3 To view details of a particular peer, click **Details**.

Figure 3: Peer Endpoint Details

Peering Information for Peer Key: gx24-tcpdra@gx24-tcpdra:3891@16777238@1

Data Last Refreshed: Fri, Jan 15, 10:36:25

Name	Value
Key	gx24-tcpdra@gx24-tcpdra:3891@16777238@1
Realm	gx24-tcpdra.cisco.com
Host	gx24-tcpdra
Application Ids	16777238
Peer Group	UNKNOWN
Peer Weight	100
Session Routing Key	
Direction	Inbound
Transport Protocol	TCP
Peer Status	UP
Last Connect Time	Fri Jan 15 03:26:29 UTC 2021
Own Host	aaa://gx24-tcpdra:3891
Own IP Addresses	
Own Port	3891
Peer Uri	aaa://gx24-tcpdra:55851
Remote IP Addresses	
Remote Port	55851
Instance Id	diameter-endpoint-s1.weave.local-1
Peer Message Class	0
Admin State	Enabled

The following details are displayed:

Table 3: Peer Endpoint Details

Parameter	Description
Application ID	Identifier of the Diameter application (Gx, Rx, Sy, Sh and so on).
Peer Group	Peer group of the connected peer.
Session Routing Key	Identifier to select peer for routing.
Realm	Realm of the connected peer.
Last Connect Time	Last connection time.
Own Host	Own host name and port of CPS vDRA.
Peer Status	Peer connection status (up/down).
Direction	Inbound/Outbound.
Key	Internal key/identifier assigned by CPS vDRA.
Host	Host name of the connected peer.

If the **Auto-refresh** checkbox is enabled, the **Data Last Refreshed** field is displayed at the top of the Details dialog box of the selected peer.

When you select **Details** modal, the **Data Last refreshed** field displays the time at which peers data was last refreshed. If the a**Auto-refresh** is performed when modal is opened, **Data Last refreshed** time in the modal is not updated and you have to re-open the modal to view the updated data.

View Event Logs

Step 1 In CPS DRA, navigate to **DRA Peer Monitoring**.

Step 2 Click **Toggle for Active Peers** to view active peer endpoints or **Toggle for Inactive Peers** to view inactive peer endpoints.

Step 3 To view event logs of a particular peer, click **Event Logs**.

The **Peer Status Logs** is displayed.

If the **Auto-refresh** checkbox is enabled, the **Data Last Refreshed** field is displayed at the top of the Event Logs dialog box of the selected peer.

When you select **Event Logs** modal, the **Data Last Refreshed** field displays the time at which modal is opened. The data is not updated when the modal is opened. You have to re-open the modal to get the updated data. Event log data is independent of auto refresh data.

Binding Monitoring

CPS vDRA stores bindings in the mongo database. A binding database is needed to map search keys to PCRF binding information. Each binding has a search key and binding data associated with it.

You can access CPS vDRA binding information based on the following supported search keys:

- IMSI
- IMSI + APN
- MSISDN
- MSISDN + APN
- IPv6
- IPv4

View DRA Binding Details

Perform the following steps to view DRA binding details:

Step 1 In CPS DRA, navigate to **DRA Binding Monitoring**.

Step 2 To view CPS vDRA binding information for a supported search key, click on any one of the following options displayed in the **DRA Binding** page:

- IMSI
- IMSI + APN
- MSISDN
- MSISDN + APN
- IPv6
- IPv4

Step 3 Enter the required value. The search button is enabled which when clicked displays the following binding details:

Table 4: DRA Binding Details

Parameter	Description
APN	Access Point Name (Called Station ID).
Gx Session ID	Gx Session Identifier (unique) assigned by PCEF.
Session Routing Key	Identifier to select peer for routing.
Origin Host	Host name of the connected peer.

Parameter	Description
Age	Duration of session establishment. Age format is as follows: `xxxd xxh xxm xxs,` Where: • d is days • h is hours • m is minutes • s is second
Details	CPS vDRA binding details.

View Gx Session Details

Step 1 In CPS DRA, navigate to **DRA Binding Monitoring**.

Step 2 Select a supported search key and provide an input value in the search input field.

Step 3 Click **Search**.

CPS vDRA Bindings is displayed with two links for **Gx Session ID** and **Details** in each row.

Step 4 To view Gx session details, click **Gx Session ID**.

The following details are displayed in a Gx session details popup:

Table 5: Gx Session Details

Parameter	Description
Age	Duration of session establishment.
Gx Session ID	Gx Session Identifier (unique) assigned by PCEF.
IMSI	International Mobile Subscriber Identity (15 digits).
APN	Access Point Name (Called Station ID).
IPv4	IPv4 PDN address.
MSISDN	Mobile Subscriber ISDN Number (11 digits).
Origin Realm	Origin-Realm AVP from Gx CCR-I message.
Destination Realm	Destination-Realm AVP from Gx CCR-I message.
Origin Host	Origin-Host AVP from Gx CCR-I message.
Destination Host	Destination-Host AVP from Gx CCR-I message.

Parameter	Description
IPv6	IPv6 PDN address.
App Id	Identifier of the Diameter application (Gx, Rx, Sy, Sh and so on).
Session Route Key	Identifier to select peer for routing.

View Details

Step 1 In CPS DRA, navigate to **DRA Binding Monitoring**.

Step 2 Select a supported search key and provide an input value in the search input field.

Step 3 Click **Search**.

CPS vDRA Bindings is displayed with two links for **Gx Session ID** and **Details** in each row.

Step 4 To view details, click **Details**.

The following details are displayed in a details popup:

Table 6: DRA Binding Details

Parameter	Description
Age	Duration of session establishment.
Gx Session ID	Gx Session Identifier (unique) assigned by PCEF.
IMSI	International Mobile Subscriber Identity (15 digits).
APN	Access Point Name (Called Station ID).
Origin Host	Host name of the connected peer.
Session Route Key	Identifier to select peer for routing.

SLF Bindings

This section describes how to view SLF Bindings details.

View SLF Bindings Details

Perform the following steps to view SLF binding details:

In CPS DRA, navigate to **DRA SLF Monitoring**.

The **DRA SLF Monitoring** page is displayed. You can access SLF binding information based on the following supported search keys:

- Subscriber ID
- IMSI
- MSISDN

View Subscriber ID Details

Step 1 Select **Subscriber ID**.

Step 2 Enter a valid subscriber ID.

Step 3 Click **Search**.

The following details are displayed in a Subscriber Details popup:

Parameter	Description
Subscriber ID	Unique identifier to identify the subscriber.
Destination	Destination specified in the map.
SLF Destination Type	Type of SLF destination specified in the map.
SLF Destination	SLF Destination specified in the map.

Step 4 Click **Details**.

The following details are displayed in a Subscriber Details popup:

Parameter	Description
Subscriber ID	Unique identifier to identify the subscriber.
IMSI	International Mobile Subscriber Identity (15 digits).
MSISDN	Mobile Subscriber ISDN Number (11 digits).
Destination	Destination specified in the map.
SLF Destination Type	Type of SLF destination specified in the map.
SLF Destination	SLF Destination specified in the map.

View IMSI Details

Step 1 Select **IMSI**.

Step 2 Enter a valid IMSI.

Step 3 Click **Search**.

The following details are displayed in a Subscriber Details popup:

Parameter	Description
IMSI	International Mobile Subscriber Identity (15 digits).
Subscriber ID	Unique identifier to identify the subscriber.
Destination	Destination specified in the map.
SLF Destination Type	Type of SLF destination specified in the map.
SLF Destination	SLF Destination specified in the map.

Step 4 Click **Details**.

The following details are displayed in a Subscriber Details popup:

Parameter	Description
Subscriber ID	Unique identifier to identify the subscriber.
IMSI	International Mobile Subscriber Identity (15 digits).
MSISDN	Mobile Subscriber ISDN Number (11 digits).
Destination	Destination specified in the map.
SLF Destination Type	Type of SLF destination specified in the map.
SLF Destination	SLF Destination specified in the map.

View MSISDN Details

Step 1 Select **MSISDN**.

Step 2 Enter a valid MSISDN.

Step 3 Click **Search**.

The following details are displayed in a Subscriber Details popup:

Parameter	Description
MSISDN	Mobile Subscriber ISDN Number (11 digits).
Subscriber ID	Unique identifier to identify the subscriber.
Destination	Destination specified in the map.
SLF Destination Type	Type of SLF destination specified in the map.

Parameter	Description
SLF Destination	SLF Destination specified in the map.

Step 4 Click **Details**.

The following details are displayed in a Subscriber Details popup:

Parameter	Description
Subscriber ID	Unique identifier to identify the subscriber.
IMSI	International Mobile Subscriber Identity (15 digits).
MSISDN	Mobile Subscriber ISDN Number (11 digits).
Destination	Destination specified in the map.
SLF Destination Type	Type of SLF destination specified in the map.
SLF Destination	SLF Destination specified in the map.

Monitoring Relay Connections

You can monitor different relay connections to remote DRAs using the DRA Relay Connection option.

View Relay Connections

Perform the following steps to view relay connections:

Step 1 Navigate to **DRA Relay Connection**.

Step 2 Select the **Filter by** drop down and click on any one of the following data options displayed:

- All Visible Columns
- Remote System
- Peer
- Remote IP Address
- Local Host Name
- Status
- Direction
- Details/Event Logs
- All Data

Step 3 Enter a value in the **Filter Relay Connections** field.

Step 4 Click **Toggle for Active Relays** to view filtered active relay endpoints or **Toggle for Inactive Relays** to view filtered inactive relay endpoints.

The following table describes the details displayed under Relay Connections:

Table 7:

Parameter	Description
Remote System	Connected relay system.
Peer	Connected relay host name.
Remote IP Address	Connected relay IP address.
Local Host Name	DRA's own host name and port.
Local IP Address	DRA's own IP address.
Status	Relay connection status (up/down).
Direction	Inbound or outbound.
Details/Event Logs	Relay details/relay connection history log.

You can check the **Auto-refresh** checkbox to refresh data every 30 seconds. The **Data Last Refreshed** field displays time when data is fetched from server

View Relay Details

Perform the following steps to view relay details:

Step 1 Navigate to **DRA Relay Connection**.

Step 2 Click **Toggle for Active Relays** to view filtered active relay endpoints or **Toggle for Inactive Relays** to view filtered inactive relay endpoints.

Step 3 To view details of a particular relay connection, click **Details**.

The following details are displayed:

Table 8:

Parameter	Description
Key	Internal key or identifier assigned by DRA.
Last Connect Time	Last connection time.
Peer Status	Relay connection status (up/down).
Direction	Inbound or outbound.
Own Host	DRA's own host name and port

Parameter	Description
Own IP Address	DRA's own IP address.
Own Port	DRA's own port.
Peer Uri	Connected relay host name.
Remote I P Address	Connected relay host port.
Remote Port	Connected relay IP address.
Remote System Id	Connected relay system.

If the **Auto-refresh** checkbox is checked, the **Data Last Refreshed** field is displayed at the top of the Details dialog box of the selected peer.

When you select the **Details** modal, the **Data Last Refreshed** field displays the time at which data was last refreshed. If the **Auto-refresh** is performed when the modal is opened, **Data Last refreshed** time in the modal is not updated and you have to reopen the modal to view the updated data.

View Relay Event Logs

Perform the following steps to view relay event logs:

Step 1 Navigate to **DRA Relay Connection**.

Step 2 Click **Toggle for Active Relays** to view filtered active relay endpoints or **Toggle for Inactive Relays** to view filtered inactive relay endpoints.

Step 3 To view event logs of a particular relay connection, click **Event Logs**.

The **Event Logs for Relay Key** is displayed.

If the **Auto-refresh** checkbox is enabled, the **Data Last Refreshed** field is displayed at the top of the Event Logs dialog box of the selected peer.

When you select **Event Logs** modal, the **Data Last Refreshed** field displays the time at which modal is opened. The data is not updated when the modal is opened. You have to re-open the modal to get the updated data. Event log data is independent of auto refresh data.

Monitoring Installation Using Grafana

You can access the Grafana interface under DRA Monitoring to monitor installation. It is a third-party metrics dashboard and graph editor. Grafana provides a graphical or text-based representation of statistics and counters collected in the Prometheus database.

Note After the DRA Director (DD) failover/reboot, the TPS values in Grafana dashboards takes approx. 5 minutes to fetch and display the latest updated values. Until the values are updated, Grafana displays the old data.

For more information about Grafana in vDRA, refer to the *Prometheus and Grafana* chapter in the *CPS vDRA Operations Guide*.

Viewing CPS APIs

API information option enables you to view API related information:

- Service Orchestration API: to manage Policy Builder data

Select the link to view the documentation and usage examples.