Status Monitoring Using Commands

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	PCF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Configuration required to disable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
Enhancement introduced. Introduced procedure to view the NF connection status	2020.03.0
First introduced.	2020.01.0

Feature Description

PCF allows you to view the Diameter peer, LDAP connection, and NRF registration status using the PCF Ops Center. Alternatively, you can access this information from the Grafana dashboard. For information on Grafana, see the *Ultra Cloud Core 5G Policy Control Function Statistics Reference*.

PCF provides an in-depth information about the NF endpoint that it has discovered through NRF. PCF discovers an NF endpoint only when both, PCF and the NF are registered with the same NRF. PCF also lets you view the subscriber session details across the configured regions.

Viewing the Connection and Registration Status

This section describes how to view the Diameter peer, LDAP connection, and NRF registration status.

Based on the component that you want to view the status for, use the following configuration:

- To view the status of the configured Diameter peers, use the following configuration:

  `show diameter peer-status`

  The output of this command displays the peer hostname, peer realm, and the peer status.

  The following is a sample output of the **show diameter peer-status** command.

```
pcf# show diameter peer-status
PEER HOSTNAME   PEER REALM                      PEER
                                                     STATUS
-----------------------------------------------------------
site-host-rx2   site-rx-client-mob-1.com        Connected
site-host-rx1   site-rx-client-mob-2.com        Connected
```

- To view the status of the LDAP connection, use the following configuration:

  `show ldap connection-status`

  The output of this command displays the ServerSet, maximum number of available connections, and the number of available connections.

  The following is a sample output of the **show ldap connection-status** command.

```
pcf# show ldap connection-status
SERVERSET   METRIC                      VALUE
-------------------------------------------------
USD         MaximumAvailableConnections    10
USD         NumAvailableConnections        0
```

- To view the NRF registration status, use the following configuration:

  `show rest-endpoint registration-status`

  The output of this command displays the IP address of the pod, registration status, and the registered NRF URI.

  The following is a sample output of the **show rest-endpoint registration-status** command.

```
pcf# show rest-endpoint registration-status
POD IP             REGISTERED    NRF URI
-------------------------------------------------------------
192.0.2.19:8486 Registered    http://192.0.2.12:8001/
```

Viewing the NFs Connected to PCF

This section describes how to view the NFs that are presently connected to PCF.

- To view the NFs that are currently connected to PCF, use the following configuration:

  show rest-endpoint peer-status

  The command displays the mapped port numbers only if you have configured the ports for the interface. After you configure the port and send a request to that port, then on running the **show rest-endpoint peer-status** command, the PCF displays the mapping details. If the request comes to the pcf-rest-ep external port, which is not associated with any configured interface port, then the NFName is displayed as "UNKNOWN".

  For information on how to configure the NFs and the corresponding port numbers with PCF, see *Configuring the External IP Address* section in the *Multiple Virtual IP Address* chapter.

  The output of this command displays NF name, peer details, pod IP address, peer IP address, and the duration for which the connection is active.

```
pcf# show rest-endpoint peer-status
PEER  NF
PORT  NAME  POD IP        PEER IP     CONNECTION DURATION
-------------------------------------------------------------------------
8142  AMF   192.0.2.255  192.0.2.254  1 days 17 hours 44 minutes 38 seconds
8147  AMF   192.0.2.255  192.0.2.254  1 days 17 hours 44 minutes 13 seconds
6082  CHF   192.0.2.255  192.0.2.254  1 days 17 hours 44 minutes 22 seconds
8042  SMF   192.0.2.255  192.0.2.252  1 days 17 hours 44 minutes 17 seconds
8043  SMF   192.0.2.255  192.0.2.252  1 days 17 hours 44 minutes 38 seconds
8044  SMF   192.0.2.255  192.0.2.252  1 days 17 hours 44 minutes 17 seconds
8045  SMF   192.0.2.255  192.0.2.252  1 days 17 hours 44 minutes 17 seconds
8046  SMF   192.0.2.255  192.0.2.252  1 days 17 hours 44 minutes 17 seconds
8047  SMF   192.0.2.255  192.0.2.252  1 days 17 hours 44 minutes 17 seconds
```

Viewing the Discovered Endpoint

This section describes how to view the discovered endpoint details such as the NF type, IP address, and the port number of the endpoint.

Based on the endpoint that you want to view, use the following configuration:

- To view the discovered endpoints associated to the CHF service, use the following configuration:

  show rest-endpoint discover-profiles chf

  The output of this command displays the NF type, NF instance ID, NF status, IPv4 address, port number, and the expiry date of the CHF's discovered profiles.

  The following is a sample output of the **show rest-endpoint discover-profiles chf** command.

```
pcf# show rest-endpoint discover-profiles chf
NF Type  NF INSTANCE ID                       NF STATUS   IPV4 ADDRESS  PORT    EXPIRY
CHF   bdb743fc-80fd-49e4-8563-ab54f24ba019  REGISTERED  192.168.103.150  5082  175
 []
CHF   95430d8c-68d4-48a5-9e6a-9915f94eee52  REGISTERED  192.168.103.150  5083  175
 []
CHF   a3a454a2-0ead-4d0e-bc5b-b34dd8d7bac9  REGISTERED  192.168.103.150  5084  175
 []
```

Note The NF Status indicates the discovered NFs registration status with NRF.

- To view the discovered endpoints associated to the UDR service, use the following configuration:

  show rest-endpoint discover-profiles udr

  The output of this command displays the NF type, NF instance ID, NF status, IPv4 address, port number, and the expiry date of the UDR's discovered profiles.

  The following is a sample output of the **show rest-endpoint discover-profiles udr** command.

```
pcf# show rest-endpoint discover-profiles udr
NF Type  NF INSTANCE ID                       NF STATUS   IPV4 ADDRESS  PORT    EXPIRY
UDR   66bf4f8b-02ea-48af-84ed-4494764f9921  REGISTERED  192.168.103.50  5183  0
-
UDR   cff06a6d-b89a-4895-bbd7-edad8b4813f7  REGISTERED  192.168.103.50  5184  0
-
UDR   bf3941b9-8fd8-4c49-a4c2-5ad0b038ed72  REGISTERED  192.168.103.50  5182  0
-
```

- To view the consolidated list of endpoints that PCF has discovered, use the following configuration:

  show rest-endpoint discover-profiles

  The output of this command displays the NF type, NF instance ID, NF status, IPv4 address, port number, and the expiry date of both, CHF and UDR discovered profiles.

  The following is a sample output of the **show rest-endpoint discover-profiles** command.

```
pcf# show rest-endpoint discover-profiles
NF Type  NF INSTANCE ID                       NF STATUS   IPV4 ADDRESS  PORT    EXPIRY
UDR   66bf4f8b-02ea-48af-84ed-4494764f9921  REGISTERED  192.168.103.50  5183  0
-
UDR   cff06a6d-b89a-4895-bbd7-edad8b4813f7  REGISTERED  192.168.103.50  5184  0
-
UDR   bf3941b9-8fd8-4c49-a4c2-5ad0b038ed72  REGISTERED  192.168.103.50  5182  0
-
```

Fetching the Subscriber Sessions

This section describes how to fetch the subscriber sessions that are configured across regions.

- Prerequisites for Fetching Subscriber Sessions
- Viewing the Subscriber Session Details

Prerequisites for Fetching Subscriber Sessions

This section describes the prerequisites configuration that you must configure before fetching the subscriber session data across the configured regions.

The prerequisite configuration involves the following step:

- Configuring the Configuration File, on page 5

Configuring the Configuration File

This section describes how to configure the cluster name, external IP address, and port number of the unified API service in the configuration file.

The PCF configuration file determines the application servers and their associated configurations.

To configure the cluster and external IP address for the unified API service, use the following configuration:

```
config
  deployment add config
    cluster-name cluster_name
    unified-api-external-ip external_ip
    port port_number
    end
```

NOTES:

- **cluster-name** *cluster_name*—Specify the cluster name where you want to deploy PCF.
- **unified-api-external-ip** *external_ip*—Specify the IP address on which the unified API listens.
- **port** *port_number*—Specify the port number on which the unified API is exposed.

Verifying the Contents of the Configuration File

This section describes how to verify the contents of the configuration file.

Use the **deployment show-config** command to view the deployment details.

The following is a sample output of the **deployment show-config** command.

```
pcf# deployment show-config
deploymentInfo:
west-coast, 192.0.2.18, http,9090
east-coast, 192.0.2.22, http,9090
```

Deleting the Configuration File

This section describes how to delete the configuration file.

You can delete a configuration file when you no longer require any of the configured resources and services.

To delete the configuration file that is currently configured in your deployment environment, use the following configuration:

```
deployment remove-config
```

Viewing the Subscriber Session Details

This section describes how to view the subscriber session information about the sessions configured.

Before proceeding with the configuration, make sure that you have configured the cluster and external IP for the unified API. For more information, see Configuring the Configuration File, on page 5.

- To view the sessions available on all the configured regions, use the following configuration:

  ```
  show subscriber [ imsi imsi_value | msisdn msisdn_value]
  ```

  NOTES:

- *imsi_value*—Displays the subscriber session associated to the specified IMSI value.
- *msisdn_value*—Displays the subscriber session associated to the specified MSISDN value.

The output of this command displays session details and the interfaces that are involved.

```
pcf# show subscriber imsi 100100222233266
SessionInfo:

+-------------------------------------------------------------------------------------+
| 1: development-session      : ism.3.imsi-10012121212123.133131313.1222.68881149 |
+-------------------------------------------------------------------------------------+
| Activity Timestamp                                                                  |
| ------------------------------------------------------------------------------------|
| Connect Time                : 06-03-2020 04:39:43 AM      |
| Expiration Time             : 29-03-2020 04:39:43 PM remaining: 23 days, 20:04.0|
|                                                                                     |
| Session Detail                                                                      |
| ------------------------------------------------------------------------------------|
|  Bearer Session Type        : STATIC_5G                                             |
|   External Profile          : No                                                    |
|-------------------------------------------------------------------------------------|
| LDAP                                                                                |
|-------------------------------------------------------------------------------------|
|   External Profile          : No                                                    |
|                                                                                     |
| N7                                                                                  |
|-------------------------------------------------------------------------------------|
| mcc,mnc                     : 100, 010                                              |
| dnn                         : static.one.5g                                         |
| rat-type                    : NR                                                    |
| access-type                 : 3GPP_Access                                           |
| pdu-session-id              : 5                                                     |
| supi                        : imsi-100101222233266                                  |
| gpsi                        : msisdn-11112433266                                    |
| framed-ip-v4                : 31.31.154.88                                          |
| framed-ip-v6                : 2710:ae00:d2f3:9a78                                   |
| update-notify-url           : http://192.0.2.12:7010/callbacks/v1/           |
|                               smPoliciesUpdateNotification/i msi-10001011111:5  |
```