Perform Prechecks for Cellular Interface on PIM Module

Contents

Introduction

This document describes how to do prechecks on PIM module when it is deployed and to confirm that the cellular interface is assigned an IP address.

Prerequisites

Requirements

Cisco recommends that you have basic knowledge of these topics:

- 5G Cellular Network Basics
- Cisco P-5GS6-GL module
- Cisco IOS® XE and Cisco IOS® CG

Components Used

The information in this document is based on these software and hardware versions:

- Cisco C8300 with Cisco IOS® XE version 17.06.03a with a P-5GS6-GL module plugged in.

This applies to a P-5GS6-GL module connected to a router in a controller mode in SD-WAN.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Troubleshoot

Device not Attached to 5G Band

1. Ensure with the carrier that the acquired network plan is activated for 5G band.

2. Confirm with the carrier about 5G coverage area in the zone the 5G device is placed.

Confirm the Cellular Interface of the Device is not Assigned an IP Address

<#root>

```
ISR#sh ip int brief
Interface          IP-Address      OK? Method Status          Protocol
GigabitEthernet0/0/0  172.16.173.10  YES other  up            up
GigabitEthernet0/0/1  unassigned     YES unset  up            up
Gi0/0/1.2989       10.10.22.74     YES other  up           up
GigabitEthernet0/0/2  unassigned     YES unset  down          down
GigabitEthernet0/0/3  10.244.182.1    YES other  up           up
GigabitEthernet0/0/4  unassigned     YES unset  down          down
GigabitEthernet0/0/5  unassigned     YES unset  down          down

Cellular0/2/0          unassigned     YES IPCP   up                      up
Cellular0/2/1          unassigned     YES IPCP   administratively down down


Sdwan-system-intf     10.244.182.1    YES unset  up                      up
Loopback65528         192.168.1.1     YES other  up                      up
NVI0                  unassigned     YES unset  up                      up
Tunnel0               172.16.173.138  YES TFTP   up                      up
Tunnel2989001         10.10.22.74     YES TFTP   up                      up
```

Confirm the Device Detects the SIM

<#root>

```
ISR#sh controllers cellular 0/X/0 details
Cellular Dual SIM details:
--------------------------

SIM 0 is present



SIM 1 is not present



SIM 0 is active SIM
```

```
<#root>

ISR#sh cellular 0/X/0 security

Active SIM = 0


SIM switchover attempts = 0
Card Holder Verification (CHV1) = Disabled

SIM Status = OK


SIM User Operation Required = None
Number of CHV1 Retries remaining = 3
```

Confirm the Device Actively Uses Required SIM

```
<#root>

ISR#sh controllers cellular 0/2/0 details
Cellular Dual SIM details:
--------------------------
SIM 0 is present
SIM 1 is not present

SIM 0 is active SIM
```

Verify the Modem Firmware is Updated and SIM Information is Populated

If the SIM information is not populated, ensure the SIM is inserted and not defective:

```
<#root>

isr#show cellular 0/X/0 all
Hardware Information
====================
Modem Firmware Version = MOH.020202
Host Firmware Version = AOH.000292
Device Model ID = FN980

International Mobile Subscriber Identity (IMSI) = XXXXXXXXXXXXXXX


International Mobile Equipment Identity (IMEI) = XXXXXXXXXXXXXX


Integrated Circuit Card ID (ICCID) = XXXXXXXXXXXXXXXXXXXX


Mobile Subscriber Integrated Services
Digital Network-Number (MSISDN) = XXXXXXXXXX
             *
             *
```

Check the Radio values

If radio values are out of valid ranges, ensure all antennas are connected and not defective.

Valid Radio Ranges

RSSI: "Good" value is greater than -80 dBm (such as 79 is greater than -80)

RSRP: "Good" value is greater than -105 dBm (such as-104 is greater than -105)

RSRQ: "Good" value is greater than -12 dBm (such as 11 is greater than -12)

SNR: "Good" value is greater than 5 dBm (6 is better than 5)

The RSSI = -128 dBm usually means that the modem is down or the antennas are not connected. No radio signal at all.

```
<#root>

Isr#sh cellular 0/2/0 radio
*

Current RSSI = -65 dBm


Current RSRP = -94 dBm


Current RSRQ = -12 dB


Current SNR = 8.4  dB


*
*
```

Confirm Whether the PS State is Attached or not

If PS state is not attached, make sure the correct APN is in use and provisioned on carrier side:

```
<#root>

isr#sh cellular 0/2/0 network
Current System Time = Sun Jan 6 3:11:7 1980
Current Service Status = No service
Current Service = Unknown
Current Roaming Status = Home
Network Selection Mode = Automatic
Network = 420 212
Mobile Country Code (MCC) = 420
Mobile Network Code (MNC) = 4

Packet switch domain(PS) state = Not attached
```

```
Registration state(EMM) = Searching/Not Registered
EMM Sub State = No IMSI
Tracking Area Code (TAC) = 0
Cell ID = 0
Network MTU = Not Available
```

Check Profile Configuration and Correct APN is in Use

<#root>

```
isr#show cellular 0/x/0 profile
Profile password Encryption level =  7
```

Profile 1 = INACTIVE* **

PDP Type = IPv4

Access Point Name (APN) = SAMIS.M2M

Authentication = None

```
Profile 2 = INACTIVE
--------
PDP Type = IPv4v6
Access Point Name (APN) = ims
Authentication = None

Profile 5 = INACTIVE
--------
PDP Type = IPv4
Access Point Name (APN) = SAMIS.M2M
Authentication = None

  * - Default profile
 ** - LTE attach profile
```

Configured default profile for active SIM 0 is profile 1.

Confirm that the Detected Network, MCC and MNC Values are Correct

<#root>

```
isr#sh cellular 0/2/0 network
```

```
Current System Time = Sun Jan 6 3:11:7 1980
Current Service Status = No service
Current Service = Unknown
Current Roaming Status = Home
Network Selection Mode = Automatic

Network = 420 212



Mobile Country Code (MCC) = 420



Mobile Network Code (MNC) = 4


Packet switch domain(PS) state = Not attached
Registration state(EMM) = Searching/Not Registered
EMM Sub State = No IMSI
Tracking Area Code (TAC) = 0
Cell ID = 0

Network MTU = Not Available
```

If the values shown are incorrect, confirm using https://www.mcc-mnc.com/:

Force Change to Correct MCC and MNC Values

1. Shutdown the cellular interface:

```
conf t
int cellular 0/X/0
shut
```

2. Perform a PLMN search, this forces the modem search for available networks in the area:

```
cellular 0/X/0 lte plmn search     //This command is entered in PRIV mode, no config mode.
```

3. Once the PLMN search is completed, see the available networks with:

```
show cellular 0/X/0 network
```

4. Select the desired network with:

```
cellular 0/X/0 lte plmn select manual MCC MNC INDX RAT    //Enter the desired MCC,MNC,INDX and RAT from
```

5. To force select the desired network :

```
 cellular 0/X/0 lte plmn select force MCC MNC INDX RAT   //Enter the desired MCC,MNC,INDX and RAT from
```

Check the Available PLMNs

```
<#root>

isr#sh cellular 0/2/0 network
Current System Time = Tue Jan 8 23:43:48 1980
Current Service Status = No service
Current Service = Unknown
Current Roaming Status = Roaming
Network Selection Mode = Automatic
Network = Zain KSA
Mobile Country Code (MCC) = 420
Mobile Network Code (MNC) = 4
Packet switch domain(PS) state = Not attached
Registration state(EMM) = Not registered
EMM Sub State = Attach needed
Tracking Area Code (TAC) = 0
Cell ID = 0

Available PLMNs at  =  11:31:30 AST Thu Nov 21 2024


Idx MCC MNC RAT     Desc


1   420 1   lte     stc
```

```
2   420 3   lte     Mobily


3   420 4   lte     Zain KSA
```

Related Information

- [Hardware Installation Guide](#)

- [Software configuration guide for PIM](#)

- [Modem Firmware Upgrade guide (CG and PIM)](#)