

Troubleshooting

This chapter contains the following sections:

- Verifying Data Call Setup , on page 1
- Checking Signal Strength, on page 2
- Verifying Service Availability, on page 2
- Sample Command Output, on page 5

Verifying Data Call Setup

To verify the data call setup, follow these steps:

1. After you create a modem data profile using the cellular profile create command and configuring DDR on the cellular interface, send a ping from the router to a host across the wireless network.
2. If the ping fails, capture the following show commands:
   - show version
   - show cellular 0/x/0 all
   - show controller cellular 0/x/0 all
   - show interface cellular 0/x/0
   - show dialer
   - show ip route
   - show running-config
3. For more detailed troubleshooting, capture traces from debug commands:
   - debug cellular all — All debugging
   - debug cellular async — Cellular async debugging
   - debug cellular callback — Cellular data callback debugging
   - debug cellular callcontrol — Cellular Direct IP call control debugging
   - debug cellular data — Data path debugging

- debug cellular dm— DM debugging
- debug cellular dualsim — Cellular dual SIM debugging
- debug cellular fota — Cellular Fota debugging
- debug cellular fw — Cellular modem firmware upgrade debugging
- debug cellular gps — Cellular gps debugging
- debug cellular ipc — Cellular IPC debugging
- debug cellular linkrecovery — Cellular Link Recovery debugging
- debug cellular management — Mgmt path debugging
- debug cellular mobile-app — Cellular mobile app debugging
- debug cellular nas — Cellular NAS log debugging
- debug cellular nmea — GPS NMEA messages debugging
- debug cellular sms — SMS messages debugging
- debug cellular snmp — Cellular snmp debugging

Checking Signal Strength

If the Received Signal Strength Indication (RSSI) level is very low (for example, if it is less than –110 dBm), follow these steps:

1. Ensure at least one antenna is connected to the 'MAIN' RF port on the 4G module. Preferably both MAIN and DIV RF ports should be connected to antenna for better RF signal. Check to ensure the antenna are threaded and tightened.
2. If you are using a remote antenna, move the antenna cradle and check if the RSSI has improved.
3. Contact your wireless service provider to verify if there is service availability in your area.

Verifying Service Availability

The following is a sample output for the **show cellular** *slot* **all** command.

```
Router# show cellular x/x/x all
Hardware Information
====================
Modem Firmware Version = 32.00.116
Host Firmware Version = 32.00.007
Device Model ID = LM960A18
International Mobile Subscriber Identity (IMSI) = 310170205101138
International Mobile Equipment Identity (IMEI) = 356299100001310
Integrated Circuit Card ID (ICCID) = 89011702272051011382
Mobile Subscriber Integrated Services
Digital Network-Number (MSISDN) =
Modem Status = Modem Online
```

```
Current Modem Temperature = 39 deg C
PRI version = 1026, Carrier = Generic
OEM PRI version = 32101006

Profile Information
====================

Profile 1 = ACTIVE* **
--------
PDP Type = IPv4
PDP address = 10.54.25.215
IPv4 PDP Connection is successful
Access Point Name (APN) = m2m.com.attz
Authentication = None
Primary DNS address = 8.8.8.8
Secondary DNS address = 8.8.4.4

Profile 2 = INACTIVE
--------
PDP Type = IPv4
Access Point Name (APN) = m2m.com.attz
Authentication = None

Profile 3 = INACTIVE
--------
PDP Type = IPv4
Access Point Name (APN) = mmsbouygtel.com
Authentication = None

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

* - Default profile
** - LTE attach profile


Configured default profile for active SIM 0 is profile 1.


Data Connection Information
===========================
Profile 1, Packet Session Status = ACTIVE
Cellular0/1/0:
Data Packets Transmitted = 30 , Received = 30
Data Transmitted = 2160 bytes, Received = 3000 bytes
IP address = 10.54.25.215
Primary DNS address = 8.8.8.8
Secondary DNS address = 8.8.4.4
Profile 2, Packet Session Status = INACTIVE
Profile 3, Packet Session Status = INACTIVE
Profile 4, Packet Session Status = INACTIVE
Profile 5, Packet Session Status = INACTIVE
Profile 6, Packet Session Status = INACTIVE
Profile 7, Packet Session Status = INACTIVE
Profile 8, Packet Session Status = INACTIVE
Profile 9, Packet Session Status = INACTIVE
Profile 10, Packet Session Status = INACTIVE
Profile 11, Packet Session Status = INACTIVE
Profile 12, Packet Session Status = INACTIVE
Profile 13, Packet Session Status = INACTIVE
Profile 14, Packet Session Status = INACTIVE
```

```
Profile 15, Packet Session Status = INACTIVE
Profile 16, Packet Session Status = INACTIVE

Network Information
===================
Current System Time = Mon Apr 25 9:16:36 2022
Current Service Status = Normal
Current Service = Packet switched
Current Roaming Status = Roaming
Network Selection Mode = Automatic
Network = F-Bouygues Telecom
Mobile Country Code (MCC) = 208
Mobile Network Code (MNC) = 20
Packet switch domain(PS) state = Attached
LTE Carrier Aggregation state = Deconfigured
Registration state(EMM) = Registered
EMM Sub State = Normal Service
Tracking Area Code (TAC) = 30440
Cell ID = 128697859
Negotiated network MTU = 1430

Radio Information
=================
Radio power mode = Online
LTE Rx Channel Number(PCC) = 3175
LTE Tx Channel Number(PCC) = 21175
LTE Band = 7
LTE Bandwidth = 15 MHz
Current RSSI = -67 dBm
Current RSRP = -96 dBm
Current RSRQ = -11 dB
Current SNR = 6.0 dB
Physical Cell Id = 378
Number of nearby cells = 1
Idx PCI (Physical Cell Id)
-------------------------------
1 378
Radio Access Technology(RAT) Preference = AUTO
Radio Access Technology(RAT) Selected = LTE
Network Change Event = unknown


LTE bands supported by modem:
- Bands 1 2 3 4 5 7 8 12 13 14 17 18 19 20 25 26 28 29 30 32 38 39 40 41 42 43 46 48 66 71.
LTE band Preference settings for the active sim(slot 0):
- Bands 1 2 3 4 5 7 8 12 13 14 17 18 19 20 25 26 28 29 30 32 38 39 40 41 42 43 46 48 66 71.


3G bands supported by modem:
Index:
23 - UMTS Band 1: 2100 MHz (IMT)
24 - UMTS Band 2: 1900 MHz (PCS A-F)
26 - UMTS Band 4: 1700 MHz (AWS A-F)
27 - UMTS Band 5: US 850 MHz (CLR)
50 - UMTS Band 8: 900 MHz (E-GSM)
51 - UMTS Band 9: Japan 1700 MHz
61 - UMTS Band 19: 800 MHz (800 Japan)
3G band Preference settings for the active sim(slot 0):
Index:
23 - UMTS Band 1: 2100 MHz (IMT)
24 - UMTS Band 2: 1900 MHz (PCS A-F)
26 - UMTS Band 4: 1700 MHz (AWS A-F)
27 - UMTS Band 5: US 850 MHz (CLR)
50 - UMTS Band 8: 900 MHz (E-GSM)
```

```
51 - UMTS Band 9: Japan 1700 MHz
61 - UMTS Band 19: 800 MHz (800 Japan)

=========================================

Band index reference list:

For LTE and 5G, indices 1-128 correspond to bands 1-128.

For 3G, indices 1-64 maps to the 3G bands mentioned against each above.


Modem Security Information
==========================
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

Cellular Firmware List
==========================
Idx Carrier FwVersion PriVersion Status
1 Generic 32.00.116 1026 Active
2 Verizon 32.00.126 2022 Inactive
3 ATT 32.00.147 4024 Inactive
4 TMUS 32.00.156 5005 Inactive

Firmware Activation mode = MANUAL
```

Sample Command Output

The following examples show samples of command output:

```
router# debug cellular 0/0/0 messages profile
PROFILE_3GPP2 debugging is on
router#

router #show cellular 0/0/0 profile
Profile 1 = INACTIVE **
--------
PDP Type = IPv6
Access Point Name (APN) = vzwims
Profile 2 = INACTIVE
--------
PDP Type = IPv4v6
Access Point Name (APN) = vzwadmin
Profile 3 = ACTIVE*
--------
PDP Type = IPv4v6
PDP address = 10.187.130.3
Access Point Name (APN) = VZWINTERNET
        Primary DNS address = 198.224.173.135
        Secondary DNS address = 198.224.174.135
Profile 4 = INACTIVE
--------
PDP Type = IPv4v6
Access Point Name (APN) = vzwapp
3GPP2 Profiles:
==============
Profile 1 = INACTIVE
```

```
--------
PDN Type = IPv6
Access Point Name (APN) = vzwims
Profile 2 = INACTIVE
--------
PDN Type = IPv4v6
Access Point Name (APN) = vzwadmin
Profile 3 = INACTIVE*
--------
PDN Type = IPv4v6
Access Point Name (APN) = VZWINTERNET
Profile 4 = INACTIVE
--------
PDN Type = IPv4v6
Access Point Name (APN) = vzwapp

Profile 5 = INACTIVE
--------
PDN Type = IPv4v6
Access Point Name (APN) =
Profile 6 = INACTIVE
--------
PDN Type = IPv4v6
Access Point Name (APN) =
  * - Default profile
 ** - LTE attach profile
```

Dual SIM

The following example shows there are two SIMs present:

```
router# show controller cellular 0
Interface Cellular0
4G WWAN Modem - Global Multimode LTE/DC-HSPA+/HSPA+/HSPA/UMTS/EDGE/GPRS
Cellular modem configuration
=====================================
Modem is recognized as valid
manufacture id:  0x00001199     product id: 0x000068A2
Power status: Active
Sierra Wireless Direct IP MC7710 modem
:
:
Cellular Dual SIM details:
--------------------------
SIM 0 is present
SIM 1 is present
SIM 0 is active SIM
```

The following example shows how to display the status of the active SIM:

```
router# show 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
router#
```