

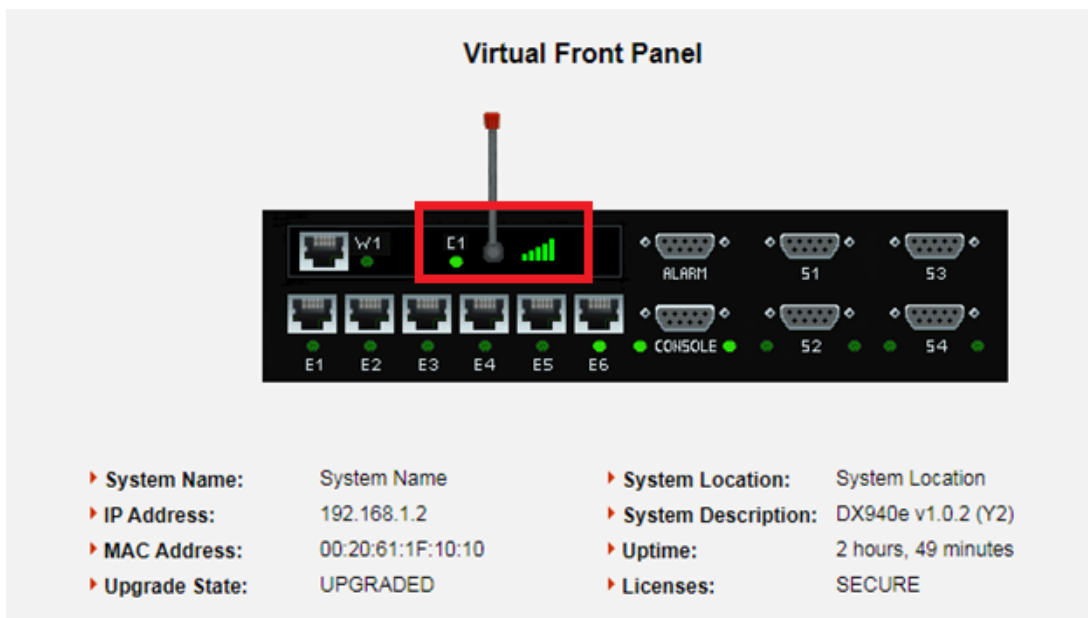
Troubleshooting Cellular Connection on DX940e

John M - 2019-12-23 - DX/10XTS Routers

How to Troubleshoot Cellular Connection on DX940e

Steps to Troubleshoot Cellular Connection using Web GUI

Step 1: Verify the Cellular interface and cell signal on the Virtual Front Panel

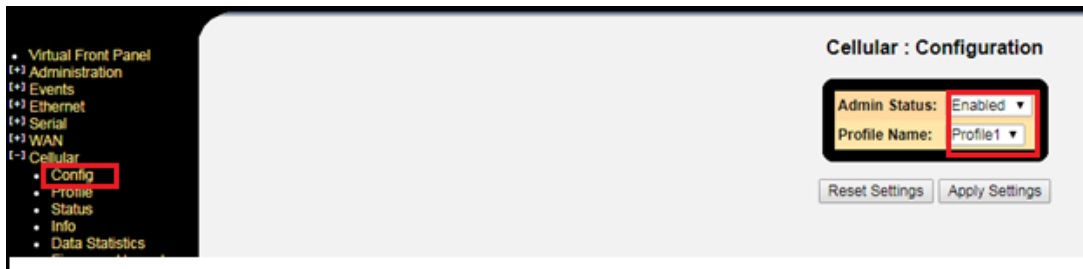


If you don't see any signal bars, there is no good connection or coverage from your service provider. In the above picture we have excellent signal strength.

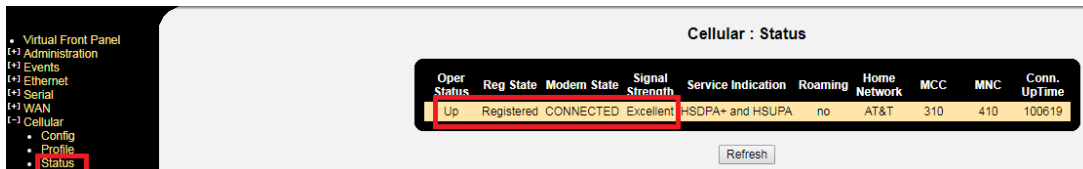
Step 2: Verify the Cellular admin status, See picture below, **Cellular -> Config**

Note: Profile Name would be SIM specific, For AT&T SIM **Profile1 (APN: i2gold)** is default profile while for Verizon it is **Profile3 (APN: vzwinternet)**.

In the picture below Profile Name is selected for the AT&T SIM which is Profile1.

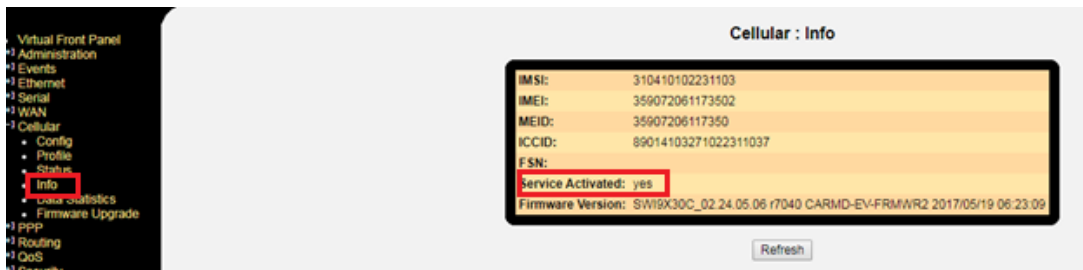


Step 3: Verify Cellular interface Connection Status. See picture below under **Cellular -> Status**

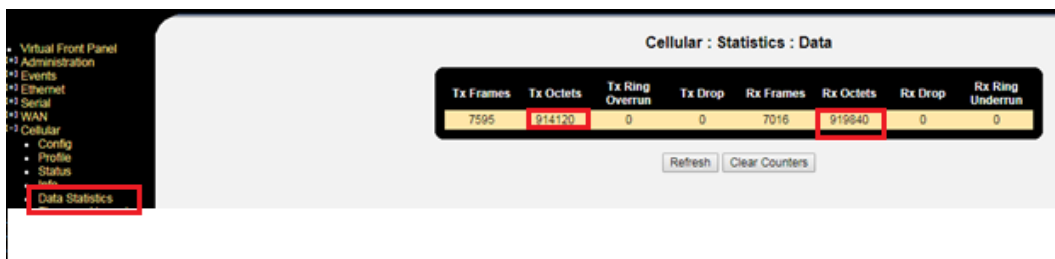


Make sure operation status is Up, Modem State: Connected, Signal Strength: Excellent

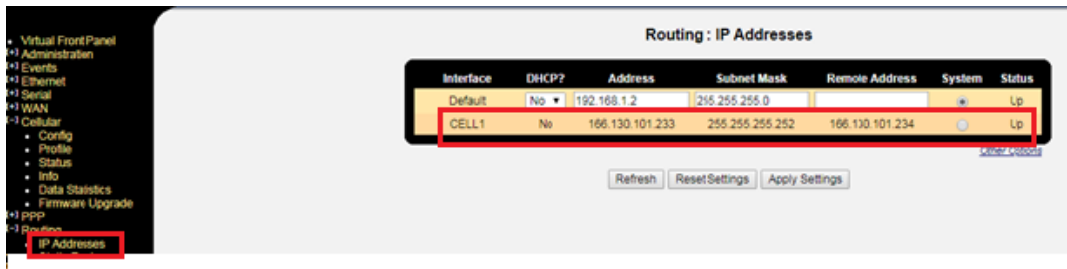
Step 4: Verify Cellular information, see picture below under **Cellular -> Info**



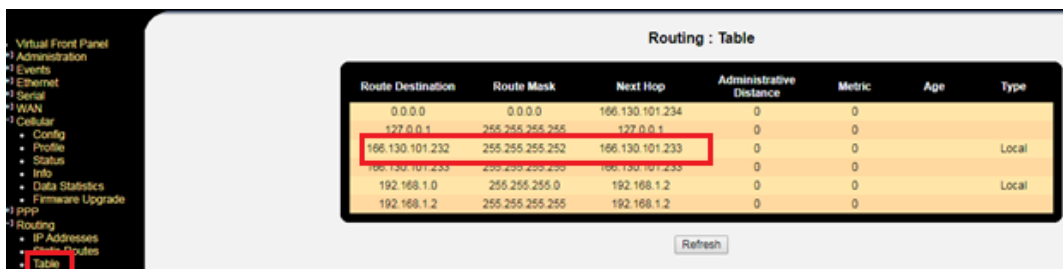
Step 5: Verify Data is Transmitting and Receiving on Cellular Interface, see picture below under **Cellular -> Data Statistics**



Step 6: Verify Cellular Interface has an IP address from the Service Provider, see picture below under **Routing -> IP addresses**



Step 7: Verify Cellular interface entry in Routing table, see picture below under **Routing àTable**



Steps and Commands to troubleshoot Cellular connection from CLI

Step 1: Verify Cellular Interface is enabled and associated with a Profile, run the command below:

MagnumDX(cellular)# show settings

```
Admin Status : Enabled
Profile Name : Profile1
```

Step 2: Verify current profile setting, profile provided by the Service Provider, run the command below:

MagnumDX(cellular)# show profile

```
Net PDP
Profile APN Type Type IP primaryDNS Auth
=====
Profile1 i2Gold lte ipv4 0.0.0.0 0.0.0.0 none
```

Step 3: Verify status of the cellular interface connection, run the command below:

MagnumDX(cellular)# show status

Oper Status : Up

Reg. State : Registered

Modem State : Connected

Signal Strength : Excellent

Service Indication : HSDPA DL

Roaming : no

Home Network : AT&T

MCC : 310

MNC : 410

Conn. Uptime : 5653

Step 4: Verify cellular interface information

MagnumDX(cellular)# show info

IMSI : 310410102231103

IMEI : 359072061173502

MEID : 35907206117350

ICCID : 89014103271022311037

FSN :

Service Activated : yes

Firmware Version : SWI9X30C_02.24.05.06 r7040 CARMD-EV-FRMWR2

2017/05/19 06:23:

09

Step 5: Verify cellular interface is receiving and transmitting data.

MagnumDX(cellular)# show statistics data

txFrames : 5534

txOctets : 707466

txRingOverrun : 0

txDrop : 0

rxFrames : 4795

rxOctets : 660179

rxDrop : 0

rxRingUnderrun : 0

Step 6: Verify the Cellular Interface has an IP address from the Service Provider

MagnumDX(ip)# show addresses

Interface	DHCP Address	Subnet Mask	Remote Address	Sys Status
-----------	--------------	-------------	----------------	------------

```

=====
=====
Default      No 192.168.1.2 255.255.255.0          Yes Up
CELL1      No 166.130.101.233 255.255.255.252 166.130.101.234
No Up

```

Step 7: Verify the Routing table for Entry for Cellular Interface

MagnumDX(ip)# show routes

```

Network      Mask      Next Hop    AD Metric Age  Type
=====
=====
0.0.0.0      0.0.0.0   166.130.101.234 0 0
127.0.0.1    255.255.255.255 127.0.0.1    0 0
166.130.101.232 255.255.255.252 166.130.101.233 0 0      Local
166.130.101.233 255.255.255.255 166.130.101.233 0 0
192.168.1.0   255.255.255.0 192.168.1.2   0 0      Local
192.168.1.2   255.255.255.255 192.168.1.2   0 0

```

Troubleshooting Using AT-Commands

NOTE: Only use Shell mode commands, when working with a Technical Support person in troubleshooting. You will not need these commands on daily basis. These are commands related to Modem used in the device.

Steps to enter in the AT command shell are below:

Type **serv cell-at-cmd** in Magnum shell

Type yes for Proceed.

MagnumDX# serv cell

cell cell-at-cmd

MagnumDX# serv cell-at-cmd

!!! WARNING !!!

THIS COMMAND IS INTENDED FOR USE ONLY BY TRAINED GARRETTCOM SUPPORT PERSONNEL. THIS COMMAND MAY CAUSE IRREPARABLE HARM TO YOUR SYSTEM.

Proceed only under the explicit instruction of trained GarrettCom support personnel.

Do you wish to proceed (yes/no)? yes

Proceed only under the explicit instruction of trained GarrettCom support personnel.

Do you REALLY wish to proceed (yes/no)? yes
done.

Enter AT commands ex ATI. Press q to exit.

Below are some AT-Commands for Cellular interface troubleshooting purpose.

AT!GSTATUS?

Display the status of LTE Modem.

Output:

AT!GSTATUS?

!GSTATUS:

Current Time: 111 Temperature: 25

Reset Counter: 40 Mode: ONLINE

System mode: WCDMA PS state: Not attached

WCDMA band: WCDMA 2100

WCDMA channel: 10757

GMM (PS) state:Registering NORMAL SERVICE

MM (CS) state: Wait RR LU UPDATING

WCDMA L1 state:L1M_FACH LAC: 56BA (22202)

RRC state: CONNECTING Cell ID: 03FA5498 (66737304)

RxM RSSI C0: --- RxD RSSI C0: -86

RxM RSSI C1: --- RxD RSSI C1: ---

- **AT+CGDCONT?**

Configure and show dedicated access point name (APN) at SDK.

Output:

AT+CGDCONT?

+CGDCONT: 1,"IP","apn1","0.0.0.0",0,0,0,0

- **AT!PCINFO?**

Return the modem's power control status information.

Output:

AT!PCINFO?

State: Online

LPM voters - Temp:0, Volt:0, User:0, W_DISABLE:0, IMSWITCH:0, BIOS:0,

LWM2M:0, 0

MADM:0, FOTA:0

LPM persistence - None

- **AT!IMPREF?**

Query/set Image Management preferences

Indicate which firmware image (firmware plus carrier configuration) should be selected

from those available on the device, or enable SIM-based image switching. Use the

query format to list the configuration pairs that are currently downloaded and preferred

Output:

AT!IMPREF?

!IMPREF:

preferred fw version: 02.24.05.06
preferred carrier name: ATT
preferred config name: ATT_002.027_000
current fw version: 02.24.05.06
current carrier name: ATT
current config name: ATT_002.027_000

- **AT+CPIN?**

This command checks the SIM status mounted on the box (If SIM is present and ready or not?).

Output:

```
-----  
AT+CPIN?  
+CPIN:READY  
OK
```

- **AT+COPS?**

This command checks that on which network SIM is registered.

Output:

```
-----  
AT+COPS?  
+COPS: 0,0,"AmariSoft Network USIM",7
```

- **AT+CGDCONT?**

This Command checks the available APN's for the installed SIM on the device and which APN is selected at present.

Output (For AT&T):

```
-----  
AT+CGDCONT?  
+CGDCONT: 1,"IP","i2gold","0.0.0.0",0,0,0,0
```


SIM Specific Troubleshooting

All the commands above are common for Verizon/AT&T SIM's. The only difference is of APN name and their indexes.

For AT&T SIM:

Default APN Name for AT&T SIM is **i2gold** at index 1.

AT+CGDCONT?

+CGDCONT: 1,"IP","i2gold","0.0.0.0",0,0,0,0

For Verizon SIM:

Default APN Name for Verizon SIM is **vzwinternet** at index 3.

AT+CGDCONT?

+CGDCONT: 0, "IP", "vzwims", "0.0.0.0", 0, 0, 0, 0

+CGDCONT: 0, "IP", "vzwadmin", "0.0.0.0", 0, 0, 0, 0

+CGDCONT: 1, "IP", "vzwinternet", "0.0.0.0", 0, 0, 0, 0

+CGDCONT: 0, "IP", "vzwapp", "0.0.0.0", 0, 0, 0, 0

+CGDCONT: 0, "IP", "vzw800", "0.0.0.0", 0, 0, 0, 0

+CGDCONT: 0, "IP", "vzwclass", "0.0.0.0", 0, 0, 0, 0

+CGDCONT: 0, "IP", "vzw", "0.0.0.0", 0, 0, 0, 0

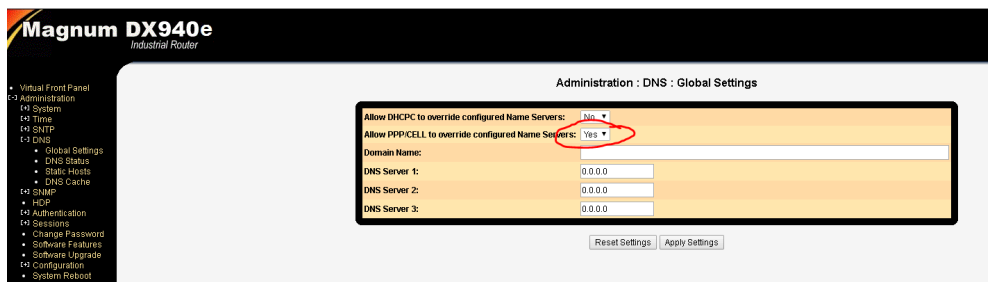
Note: Output could be different for different boxes.

Steps to Configure DNS to Cellular ISP

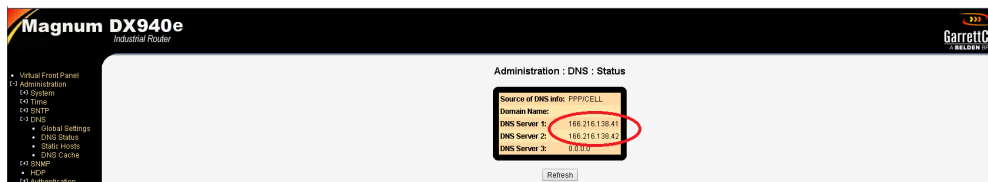
From Web:

1. Go to Administration -> DNS -> Global Settings

Change field Allow PPP/CELL to override configured Name Server to Yes.



2. Go to Administration -> DNS -> DNS Status to check if DNS Server has been updated.



From CLI:

1. Set PPP/CELL Override Yes.

MagnumDX# **dns set ppp-override y**

2. Check If DNS Server Name has been updated or not using following command.

MagnumDX# **dns sh status**

Source of DNS info : PPP/CELL

Domain Name :

DNS Server 1 : 166.216.138.41

DNS Server 2 : 166.216.138.42

DNS Server 3 : 0.0.0.0

3. Now try to ping www.google.com, If it is able to resolve the Domain Name or not.

MagnumDX# ping google.com

Pinging yx-in-f113.1e100.net (64.233.177.113) with 64 bytes of data:

Reply from 64.233.177.113 bytes=64 ttl=41 icmp_seq=0

time=66ms

Reply from 64.233.177.113 bytes=64 ttl=41 icmp_seq=1

time=100ms

Reply from 64.233.177.113 bytes=64 ttl=41 icmp_seq=2

time=100ms

Reply from 64.233.177.113 bytes=64 ttl=41 icmp_seq=3

time=100ms

Reply from 64.233.177.113 bytes=64 ttl=41 icmp_seq=4

time=100ms

----yx-in-f113.1e100.net PING Statistics----

5 packets transmitted, 5 packets received, 0% packet loss, time
262095583 ms

round-trip (ms) min/avg/max = 66/93/100 ms