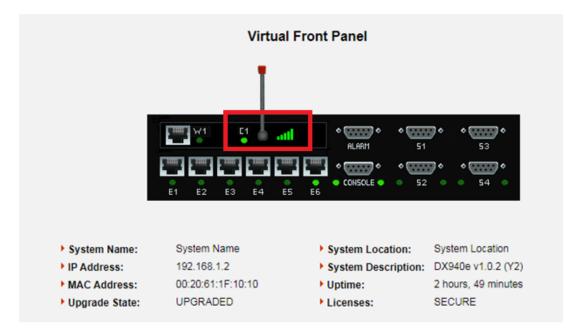


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Troubleshooting Cellular Connection on DX940e John M - 2019-12-23 - DX/10XTS Routers

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

Virtual Front Panel ^[+] Administration						Cellular : Statu	IS				
(+) Events (+) Ethernet (+) Serial		Oper Status	_		Mirendin	Service Indication		Home Network	MCC	MNC	Conn. UpTime
^[+] WAN ^[-] Cellular • Config	L	Up	Registered	CONNECTED	Excellent	HSDPA+ and HSUPA	no	AT&T	310	410	100619
Profile Status						Refresh					

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**

Virtual FrontPanel Administration			Routi	ing : IP Addresses			
Events	Interface	DHCP?	Address	Subnet Mask	Remole Address	System	Status
Serial WAN	Default	No 🔻	192.168.1.2	255.255.255.0		۲	Цp
Config	CELL1	No	166.130.101.233	255 255 255 252	166.130.101.234	0	Up
Protie Status Info Data Statistics Firmware Upgrade PPP Rotico			Refresh	esetSettings Apply Se	ttings	2	100 COLOR

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

		Routing	: Table			
Route Destination	Route Mask	Next Hop	Administrative Distance	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
100.130.101.233	200.200.200.200	100.130.101.233	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		
	0.0.0.0 122.0.0.1 166.130.101.232 180.130.101.233 192.168.1.0	0.0.0.0 0.0.0.0 127.0.0.1 255.255.255.255 166.130.101.232 255.255.255.252 160.130.101.233 255.255.255.255 162.168.1.0 255.255.255.255	Route Destination Route Mask Next Hop 0.0.0 0.0.0 166.130.101.234 122.0.0.1 255.555.255 122.0.0.1 166.130.101.232 255.255.255.255 166.130.101.233 166.130.101.233 255.255.255.255 166.130.101.233 192.168.1.0 255.255.255.05 192.168.1.2	Note Restriction Following Feature Distance 0.0.0.0 0.0.0.0 166.130.101.234 0 127.0.0.1 255.255.255 127.0.0.1 0 166.130.101.232 255.255.255.255 166.130.101.233 0 166.130.101.233 205.255.255.255 166.130.101.233 0 192.168.1.0 255.255.255.555 192.168.1.2 0	Route Destination Route Mask Next Hop Administrative Distance Metric 0.0.0.0 0.0.0.0 166.130.101.234 0 0 122.0.0.1 255.255.255.555 122.0.0.1 0 0 166.130.101.232 255.255.255.255.252 166.130.101.233 0 0 166.130.101.233 0 0 0 0 0 0 166.130.101.233 0 0 0 0 0 0 0 192.168.1.0 255.255.255.255.01.192.138 0 0 0 0 0	Route Destination Route Mask Next Hop Administrative Distance Metric Age 0.0.0.0 0.0.0.0 166.130.101.234 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< td=""></t<>

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		Туре	Туре	IP		primaryDNS	Auth
=====		== ==	====	====:		: =:	==== =====	===
=====			=== :	====:		==		
Profile1	i2Go	old	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

Service Indication : HSDPA

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

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

MagnumDX(ip)# show routes							
Network	Mask	Next Hop	AD Me	tric Age	Туре		
		= =========		== ====			
=== ====	== ======	= ========	====				
0.0.0.0	0.0.0.0	166.130.101.2	234 0 0				
127.0.0.1	255.255.2	55.255 127.0.0	0.1 0	0			
166.130.101	232 255.25	5.255.252 166	.130.101	.233 0 0		Local	
166.130.101	233 255.25	5.255.255 166	.130.101	.233 0 0			
192.168.1.0	255.255.2	255.0 192.16	3.1.2 0	0	Local		
192.168.1.2	255.255.2	255.255 192.1	68.1.2	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 ONLINE Mode: 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 CO: -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, O 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	
ОК	

• 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, "ÏP", "vzwims","0.0.0.0",0,0,0,0 +CGDCONT: 0, "ÏP","vzwadmin","0.0.0.0",0,0,0,0 +CGDCONT: 1, "ÏP","vzwinternet","0.0.0.0",0,0,0,0 +CGDCONT: 0, "ÏP","vzwapp","0.0.0.0",0,0,0,0 +CGDCONT: 0, "ÏP","vzw800","0.0.0.0",0,0,0,0 +CGDCONT: 0, "ÏP","vzwclass","0.0.0.0",0,0,0,0 +CGDCONT: 0, "ÏP","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:

Go to Administration -> DNS -> Global Settings
 Change field Allow PPP/CELL to override configured Name Server to Yes.

ual Front Panel ninistration		Administration : DNS : Global Settings	
System Time	Allow DHCPC to override configured	Name Servers: No. T	
SNTP	Allow PPP/CELL to override configur		
Global Settings DNS Status	Domain Name:		
 Static Hosts 	DNS Server 1:	0.0.0	
 DNS Cache SNMP 	DNS Server 2:	0.0.0	
HDP Authentication	DNS Server 3:	0.0.0.0	

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

Magnum DX940e	Barretton Barretton
Vitual Front Parel Vitual Front Parel Vitual Front Parel Vitual Front Parel Vitual Status Vitual Status	Administration : DNS : Status Secret of DNS Infit: PPP/CELL Domain Name: DNS Server 2: (16,216,130,41) Unit Server 3: (16,216,130,41) Unit Server 3: (16,216,130,41)
SNMP HDP O Authentication	Refesh

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 : 0.0.00

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