G-router

GSM/GPRS to RS-232 and Ethernet Gateway

Roaming HOWTO guide

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Contents

Revision History

Revision	Reason	Author	Date
00010	Initial version	WSM	02-12-2008
00011	Removed warning about default saved network	WSM	12-12-2008

References

Reference	Description	Code
1	G-router Quick Install Guide v. 1.2	**QIG_G-router_1.2**

1 Roaming HOWTO guide

This is a HOWTO guide on testing roaming other networks with a foreign SIM card. This HOWTO describes how you can set a different network to roam with.

Basic G-router and AT command knowledge are assumed. Please consult the Quick Installation Guide for more information on the G-router.

The commands found below can only be performed when logged in locally. The GSM daemon will be shutdown, so no dial-in is possible.

This has been tested on G-router software version 1.1.1.

Open a shell on the G-router as root user and start the `gsm_troubleshoot` script.
Answer "`y`" to the "Are you sure to continue question" and choose "`1`", for the "AT Commands" channel:

```
root@G-router-0080485324B8:/tmp/root$ gsm_troubleshoot
******************************** WARNING ********************************

This script will stop the GSM daemon and open a console to the GSM module.
If you are connected to the system via a remote GSM/GPRS connection,
the connection will be lost! In that case, do not run this script!

RUN AT YOUR OWN RISK.
******************************** WARNING ********************************
Are you sure to continue? (N/y) y

Stopping GPRS and GSM daemons...
GPRS and GSM daemons stopped

The GSM module is divided in several logical channels.

1) Is used for AT commands. (i.e. like AT&V)
2) Is used for CSD calls (i.e. RING indication)
q) Quit

Please choose the channel you want to debug,
or q to quit debugging. (1/2/q) 1
Connect to /dev/gsm_dlc1 at 57600 bps
        ~~    send tilde
        ~.    exit console
        ~b    send break
        ~d    dtr hop
        ~xNN  enter HEX character
------------------------------------------------------------------------------
```

Test the channel by typing the command "at":

```
at
OK
```

"`OK`" should be returned.

The network currently associated to can be retrieved via the "`at+cops?`" command:

```
at+cops?
+COPS: 000,000,"vodafone NL"

OK
```

Here you can see that the GSM module is registered to the "vodafone NL" network.

To retrieve a list of GSM networks seen by the GSM module, use the "`at+cops=?`" command:

```
at+cops=?
+COPS: (002,"vodafone NL","voda NL","20404"),(001,"T-Mobile NL","TMO NL","20416"),
(001,"Orange NL","Orange","20420"),(001,"NL KPN","NL KPN","20408"),,
(000,001,002,003,004),(000,001,002)

OK
```

The meaning of the parameters is as follows:

- First parameter, status:
  - 000 Unknown
  - 001 Available (roaming allowed)
  - 002 Current
  - 003 Forbidden (no roaming allowed)

- Second parameter, long alphanumeric network name
- Third parameter short alphanumeric network name
- Fourth parameter numeric network name

In above list, "vodafone NL" is the current network, and the other networks are available (001).

When connected with a SIM card in the Home country (i.e. no roaming to other networks allowed), the list could be as follows:

```
at+cops=?
+COPS: (002,"vodafone NL","voda NL","20404"),(003,"Orange NL","Orange","20420"),
(003,"T-Mobile NL","TMO NL","20416"),(003,"NL KPN","NL KPN","20408"),,
(000,001,002,003,004),(000,001,002)
```

Indicating "vodafone NL" as the current network, and the other networks are Forbidden (no roaming allowed)

To roam to another network, the "`at+cops=...`" command must be used.
This can be done in 3 ways:

- Long alphanumeric format (up to 16 chars) (i.e. "vodafone NL")
- Short alphanumeric format (up to 8 chars) (i.e. "voda NL")
- Numeric format (i.e. "20404")

For long alphanumeric format use the command "`at+cops=4,0,"XXX"`", where `XXX` is the long network name (i.e. "Orange NL" to roam with):

```
at+cops=4,0,"Orange NL"
OK

+CREG: 002
```

The "+CREG: 002" means "Not registered, but the GSM module is currently searching for a new operator to which to register."

```
+CREG: 005,283f,9135
```

The "`+CREG: 005,283f,9135`" is depicted as follows:

"`005`" means "Registered, roaming."
"`283f`" is the two-byte location area code in hexadecimal format.
"`9135`" is the two-byte cell ID in hexadecimal format.

Checking the current network can be done with "`at+cops?`" again:

```
at+cops?
+COPS: 000,000,"Orange NL"

OK
```

For short alphanumeric format use the command "`at+cops=4,1,"XXX"`", where `XXX` is the short network name (i.e. "Orange" to roam with):

```
at+cops=4,1,"Orange"
OK
```

For numeric format use the command "`at+cops=4,2,"XXX"`", where `XXX` is the numeric network value (i.e. "20420" to roam with):

```
at+cops=4,2,"20420"

OK
```

When roamed and register to the correct network, you can test dial-in by quiting the "AT command channel" with " `~.`" (note the space before the tilde, to prevent quiting the running SSH session) and choosing channel 2, CSD calls.

Type "`ate1`" to enable local echo:

```
OK
```

Ring the GSM SIM number from your dial-in modem. When all is correct, you should see a "`RING`" indication coming in the CSD channel. Answer it by giving the command "`ATA`" or hangup by giving the command "`ATH`":

```
RING
ath
OK

NO CARRIER
```

After succesfull debuging, quit the CSD channel by typing " `.~`" again and choosing "`q`" and "`y`" to quit and reboot the unit.

```
Please choose the channel you want to debug,
or q to quit debugging. (1/2/q) q

Finished debugging.
System in undefined state!
Please reboot the system
Should I reboot now? (Y/n) y

Going down for reboot, goodbye.
```