



Quick Note 56

MC7455 Firmware update/SIM Switching

Digi Technical Support
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1 INTRODUCTION

Beginning with the 5.2.18.X firmware release, Digi TransPort WR44R and WR44RR platforms support the Sierra Wireless MC7455 LTE module. The MC7455 module can be configured to support the following carriers:

- AT&T
- Verizon
- Telus
- Rogers
- Bell
- Generic

The MC7455 must have the correct firmware versions loaded in order to connect to the carrier's network. This document describes several methods for updating the firmware version running on the modem.

1.1 Auto SIM detection

The MC7455 uses a SIM-based image switching feature which allows the module to automatically switch between carrier-approved firmware. When the transport device boots the MC7455 checks the SIM's MCC/MNC or ICCID and checks the list of cached images for a 'best match':

- If an exact or acceptable match is found, that image will be used for the image switch.
- If there is no exact or acceptable matching image, the Generic image will be used if it is available.
- Otherwise (no match, and no Generic available), no image switch occurs, and the module continues to use the current configuration.

NOTE: On start-up, if a firmware switch is required this can take several minutes depending on the type of firmware switch. For example, switching from AT&T to Verizon is the longest and can take an additional 120 seconds before the MC7455 attaches to the network. The switch is only performed once if a SIM from the same carrier is used.

NOTE 2: Auto SIM detection can be disabled by issuing the following commands:

- `modemcc o auto_sim off`
- `carrier switch <carrier_name>`

The list of available carrier names that can be used with the above command are:

- `verizon`
- `att`
- `telus`
- `rogers`
- `bell`
- `generic`

2 VERSION

Version Number	Status
1.0	Published

3 MC7455 FIRMWARE UPDATE

3.1 MC7455 Firmware Images

The MC7455 firmware for each carrier requires three files:

- car_7455.txt Text file which cross references the carrier to the corresponding firmware and configuration files
- *.cwe Modem firmware, approx. 62MB in size, several *.cwe files are shared between carriers, for example AT&T and Telus both use att.cwe, this can change over time and the list is specified in the file car_7455.txt
- *.nvu Carrier specific configuration file, which ranges in size from 19KB to 74KB, carriers: att, verizon, telus, rogers, bell, sprint, generic

The latest carrier images along with car_7455.txt are stored on the Digi Support FTP site ([anonymous ftp login](ftp://anonymous@ftp.digi.com)):

ftp://ftp1.digi.com/support/firmware/transport/MC7455_carrier_firmware/

3.2 Displaying the Current Firmware Version

The firmware version is displayed using the `modemstat ?` CLI command (or via web UI at Management-Network Status->Interfaces->Mobile), refer to the fields:

1. Firmware: Contains the *.cwe version
2. Firmware Carrier ID: Contains the *.nvu version

```
ICCID: 8514800000145947045
Firmware: SWI9X30C_02.20.03.22 r6827 CARMD-EV-FRMWR2 2016/10/11 16:03:14
Bootcode: SWI9X30C_02.20.03.22 r6827 CARMD-EV-FRMWR2 2016/10/11 16:03:14
Hardware version: 1.0
Firmware Carrier ID: VERIZON_002.026_001
```

3.3 Update via FTP

There are two methods which are available to update using the FTP command, one is to have the transport automatically download the FTP files, the second is to manually download the files via FTP and copy them to the device. Verify your transport device has enough flash space available before downloading the files.

3.3.1 Automatic FTP Download

This method requires a connection to <ftp1.digi.com> from the transport.

The `carrier <carrier> -ftp` command performs the following actions:

- Download the latest MC7455 firmware files from the Digi FTP site to flash
- Check to see if a firmware download is required (a newer version is available)
- Download the files from flash to the MC7455
- Reboot the modem

Before issuing the carrier command, verify the following:

1. The device has enough available flash space (around 62MB)
2. You can ping the Digi FTP site <ftp1.digi.com>. **Cellular data rates may apply.**

When ready issue the 'carrier <carrier_name> -ftp' command; for example to update AT&T issue the command:

```
carrier att -ftp
Checking the firmware and the carrier

Please wait while retrieving the file.....
OK
config 0 save
Please wait...
Power Up Profile: 0
OK
.....
Downloading att.cwe file 100%
Download speed: 7473600 bps time 37240ms
Waiting modem to complete firmware download

Firmware download completed

Resetting modem...

Done.

OK
```

NOTE: This action will take several minutes. *Do not reboot* the TransPort during the process. The following messages will be written to the Event Log, look for 'firmware download complete' to indicate a successful firmware download.

```
13:51:33, 07 Apr 2017,GOBI Modem enable
13:51:33, 07 Apr 2017,GOBI firmware download complete
13:51:33, 07 Apr 2017,GOBI file att.cwe download complete (34790809 bytes)
13:51:31, 07 Apr 2017,GOBI write unframed response timeout
13:51:23, 07 Apr 2017,GOBI write unframed response timeout
13:50:56, 07 Apr 2017,GOBI firmware download start
Done.

OK
```

3.3.2 Local FTP Update

Instead of using the 'carrier -ftp' option you can copy the files locally and transfer them to the transport device.

This method is the same as the previous section, minus the -ftp option.

1. Transfer the required files to the flash drive on the transport using FTP
2. Issue the command: carrier <carrier_name>
3. Wait several minutes to complete and check the event log for 'firmware download complete'
4. Delete the downloaded files
5. Repeat for each carrier

3.4 Update via USB (autoexec method)

When a USB memory stick is inserted into a transport device if a file called autoexec.bat exists the commands in this file are automatically executed. This can be used for an automatic USB update of the modem firmware, meaning that upon insertion of the memory stick the firmware update process will auto-start. The procedure for doing this is as follows:

1. Download the carrier images from the Digi support site and copy them to a USB memory stick.
2. Create a text file called autoexec.bat which contains the carrier command; for example to update Verizon firmware the autoexec.bat contains the following line:
carrier verizon
3. Once autoexec.bat and the firmware images are copied on the USB memory stick insert the stick into the transport
4. Wait 2-3 minutes for the carrier update to complete and check the event log for 'firmware download complete'

3.5 Update via USB (manual method)

This is similar to the above approach but does not use the autoexec.bat file and instead requires the user to issue the carrier command manually; when the carrier command is executed the presence of the files on a USB stick is checked first, if the file is not there then flash is searched.

1. Download the carrier images from the Digi support site and copy them to a USB memory stick.
2. Once the firmware images are copied on the USB memory stick insert the stick into the transport
3. For each carrier enter the 'carrier <carrier_name>' command
4. Wait 2-3 minutes for each carrier update to complete and check the event log for 'firmware download complete'

3.6 Updating all firmware images via USB

In order to update all the images on the MC7455 via USB a python script is used which is contained on the memory stick; the python script does the following:

1. For each supported carrier:
 - a. Issue the carrier <carrier_name> command
 - b. Check the 'carrier status'
 - c. If complete successful goto next carrier

The script mc7455.py is available on the [Digi FTP](#) site and must be copied onto the memory stick. Ensure to include the following line in the "autoexec.bat" script:

```
python u:mc7455.PY
```

The USB memory stick must contain:

1. mc7455.py
2. autoexec.bat
3. The firmware and carrier images (*.cwe and *.nvu)

Insert the USB Flash Drive and wait for the process to complete the message 'Updating MC7455 firmware complete' will appear in the event log upon successful completion.

4 TROUBLESHOOTING

If the carrier download fails and an error message is displayed, try performing the following checks:

1. Check for errors in the Event Log; verify that the FTP download did not report errors.
2. If using FTP, verify that enough flash space is available (around 62 MB).
3. If using FTP, verify that you can ping "ftp1.digi.com".
4. If not using FTP, verify that the images are available in flash or USB. For example, for Verizon, the files *car_7455.txt*, *verizon.cwe* and *verizon.nvu* must be available.

For information on configuring a TransPort device for the Verizon LTE network, please refer to **Application Note 51** which is available on the Digi Support site: [here](#).

For information on configuring a TransPort device for other North American LTE networks, please refer to **Application Note 52** which is available on the Digi Support site: [here](#).