Quick Note 39

Carrier Switching with the Sierra Wireless MC7354 Cellular Module. (L5 models)

Digi Technical Support
April 2017

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1   INTRODUCTION

1.1   Introduction

Beginning with the 5244 firmware release, Digi TransPort WR21, WR41v2, WR44v2 (including the WR44R) and WR44RR platforms will support the Sierra Wireless MC7354 LTE module in North America (designated as part number WRxx-**L5**). The MC7354 module can be configured to support the following carriers:

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

NOTE:

- The module must have the correct firmware image loaded in order to connect to the carrier's network
- The MC7354 modules ship with the Verizon image loaded as default
- The module's firmware can be updated via the Web GUI under "Carrier Switching" Wizard or under CLI using the "carrier" command.
- Support for Bell, Rogers, Telus and MC7354 Generic is only included in 5.2.10.7 and later releases.

1.2 Assumptions

This guide has been written for use by technically competent personnel with a good understanding of the communications technologies used in the product and of the requirements for their specific application. It also assumes a basic ability to access and navigate a Digi TransPort router.

This Application Note (AN) applies only to:

Model: DIGI TransPort WR21/41/44 (**L5**) with a Sierra Wireless MC7354 Cellular Module

Firmware versions: 5244 and later

Configuration: This document assumes that the devices are set to their factory default configurations. Most configuration commands are shown only if they differ from the factory default.

NOTE: This Application Note has been specifically rewritten for firmware release 5244 and later and will not work on earlier versions of firmware. Please contact tech.support@digi.com if your require assistance in upgrading the firmware of the TransPort router.

1.3 Corrections

Requests for corrections or amendments to this Application Note are welcome and should be addressed to: tech.support@digi.com

Requests for new Application Notes can be sent to the same address.

2 VERSION

Version Number	Status
1.0	Published
1.1	Updates for clarity and new carrier support
1.2	Updated for 'carrier –ftp' option

3   FIRMWARE IMAGES

3.1   MC7354 Firmware Images

The MC7354 firmware for each carrier requires three files:

carrier.txt   Text which cross references the carrier to the corresponding firmware and configuration files

*.cwe   Modem firmware, approx. 35MB in size, where <carrier> is one of the available carriers: att, verizon, telus, rogers, bell, sprint, generic

*.nvu   Carrier specific configuration file, which ranges in size from 19KB to 74KB

Digi TransPort WR21 and WR44 platforms ship with the AT&T and Verizon firmware images loaded on the device's flash file system. **This means it is possible to switch the MC7354 module between Verizon and AT&T without having to download any files to the WR21 or WR44**.

Other carrier images <u>must</u> be loaded via USB* or FTP* to the TransPort WR21 or WR44 flash file system.

(*See notes below about loading images onto WR41v2 and WR44 RR as needed.)

Before downloading the images verify that there is enough available flash space, it is advised that you delete any unused cwe files.

Files can be removed via the CLI or WebUI.

- CLI: Example: `del att.cwe`
- WebUI: Administration - **File Management > FLASH Directory >** Select file > press Delete Selected Files button at bottom of the page.

This process need only be done once, unless the carrier image needs to be changed. The files are loaded onto the module during this process, not at each boot.

3.1.1   WR44 and WR21 MC7354 firmware images

The latest carrier images are stored on the Digi Support FTP site. For the WR44 and WR21 the images can be downloaded via FTP using the *carrier –ftp* command which is described below.

3.1.2   WR41v2 MC7354 Firmware Images

Due to a lack of flash file space, the WR41v2 platform ships with no carrier firmware images loaded.

To switch the carrier on the WR41 device (or a WR21 or WR44v2 device to Sprint or other carrier as needed), the carrier firmware images must be downloaded from the Digi Support FTP site:

ftp://ftp1.digi.com/support/firmware/transport/MC7354_carrier_firmware/

Once the firmware image files have been downloaded, they should be saved onto a USB flash stick. The USB flash stick should then be inserted into the front of the WR21, WR41v2 or WR44v2. The Web GUI "Carrier Switching" wizard or CLI "carrier" command will automatically load the module from the USB flash stick so there is no need to copy the files onto the device.

3.1.3   WR44 RR Image Loading

The WR44 RR does not have a USB port, therefore the firmware images files should be FTP'd onto the device overwriting the existing AT&T or Verizon files.

4 SWITCHING CARRIER IMAGES

4.1 Switching Carrier using the Web GUI Wizard

The carrier's firmware image can be loaded using the "Carrier Switching Wizard" in the TransPort Web GUI image. The images for the carrier must be available in flash or USB drive in order to use the wizard (only Verizon and AT&T are preloaded).
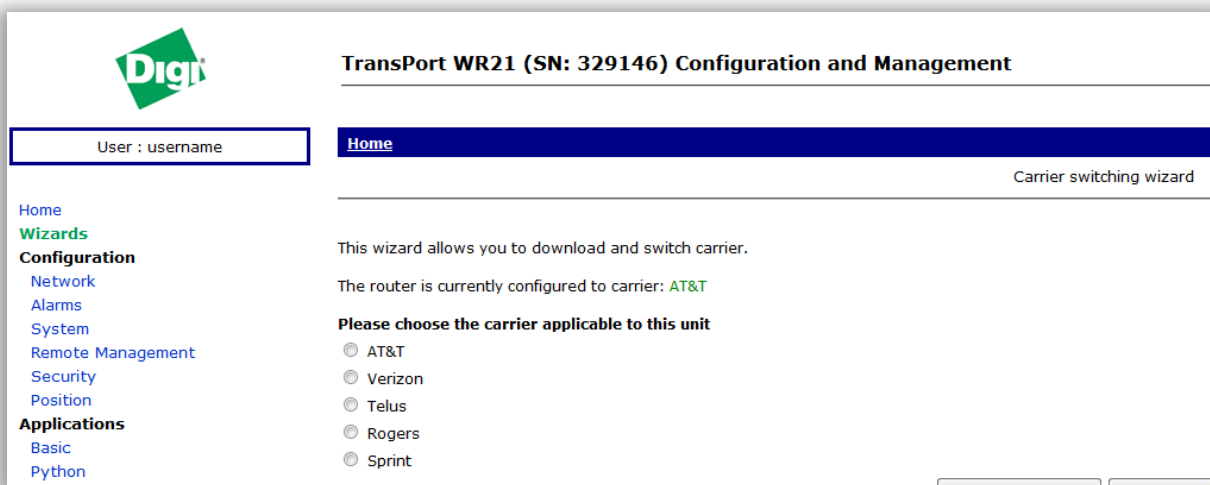
NOTE: This process will take several minutes. **Do not power cycle the TransPort until the process is complete!**

To run the Carrier Switching Wizard, click on the Wizards menu option in the left hand menu, select "Carrier Switching Wizard" and then click on "Next".
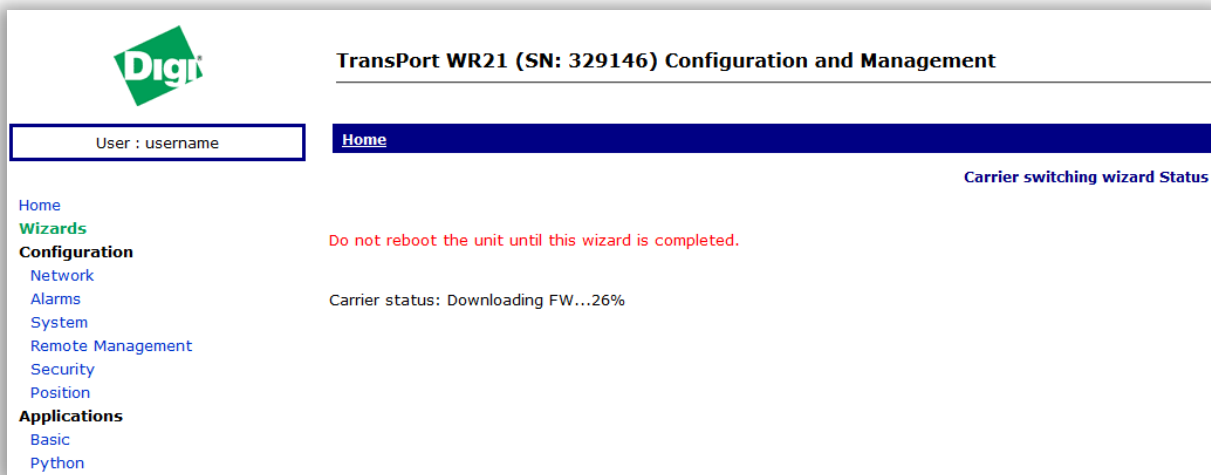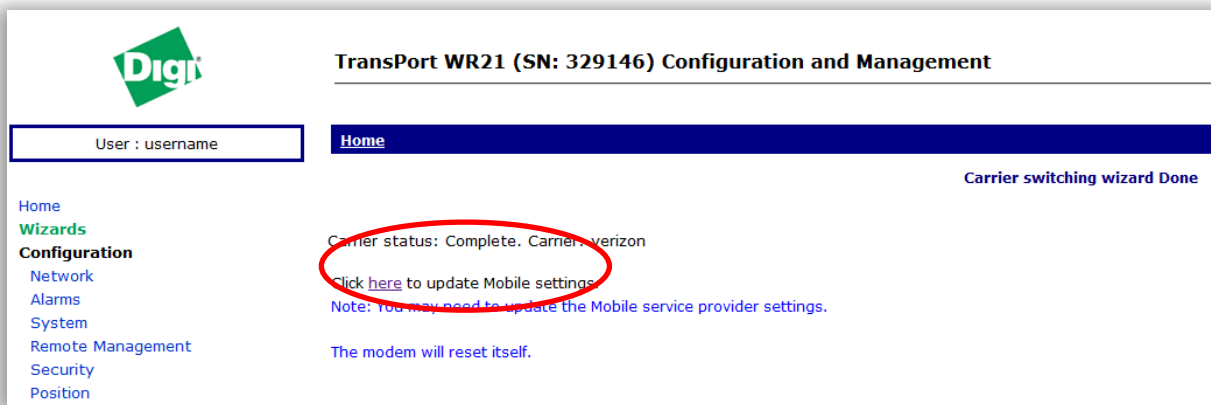
Wizards > Carrier switching wizard

Select the required carrier and click on "**Next**".

The firmware update will now start.

Once the firmware update is complete, it may be necessary to update the modem parameters (e.g. APN) for the carrier. To do this, click on the "update Mobile Settings" link on the final wizard page.

For more 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 more 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.

4.2 Switching Carrier using the Command Line Interface (CLI)

The CLI command to switch between carriers is "**carrier**". It will display the firmware version that is currently loaded in the module and the available carriers that are supported.

```
Carrier ?

Current images:
  FW image: unique ID = 002.009_001 build ID = 02.08.02.00_ATT
  PRI image: unique ID = 002.009_001 build ID = 02.08.02.00_ATT

Available carriers <att|verizon|telus|rogers|bell|sprint|generic>


Parameters:
      att - AT&T
   verizon - Verizon
    telus - Telus
   rogers - Rogers
     bell - Bell
   sprint - Sprint
  generic - Generic

Syntax:

carrier <carrier> <optional msl>        Download firmware to the modem, must be in
flash or USB stick
carrier <carrier> <optional msl> -ftp   FTP and download firmware to the modem
carrier ftp-carrier-info                FTP latest carrier information file
carrier switch <carrier>                Switch to preloaded carrier image
carrier status                          Status of the current download


    msl - Enter Master Subsidy Lock Code for Sprint
OK
```

To switch to a new carrier, run the `carrier` command with the desired carrier.

NOTE: *The modem images must be loaded in flash, otherwise use the –ftp option as described in the next section.*

For example:

```
carrier verizon

Checking the firmware and the carrier

Waiting for the modem.........................
Downloading verizon.cwe file 100%
Download speed: 2702400 bps time 102720ms
Downloading verizon.nvu file 100%
Download speed: 2403200 bps time 250ms
Waiting modem to complete firmware download

Firmware download completed

Done.
Modem will be reset
```

Once the module's firmware image has been updated, it may be necessary to configure the modem parameters (e.g. APN) for the carrier.

For more 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 more 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](#).

4.3 Carrier –ftp option (WR44 and WR21)

The carrier <carrier> –ftp command performs the following actions:

• Download the latest MC7354 firmware files from the Digi FTP site to flash

• Download the files from flash to the MC7354

• Reboot the modem

Before issuing this command, verify the following:

1. The device has enough available flash space (around 40MB)

2. You can ping the Digi FTP site [ftp1.digi.com](#). **Cellular data rates may apply**.

Available carriers can be listed by issuing the `carrier` command, for example, to update AT&T:

```
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:

```
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
```

5 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 40 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 *carriers.txt*, *verizon.cwe* and *verizon.nvu* must be available.