Upgrade Cellular Gateway and Modem Firmware

Contents

Introduction

This document describes the process of upgrading Cisco 5G Cellular Gateway (CG) CG522-E and its modem firmware.

Prerequisites

Basic understanding of Cisco 5G portfolio and Cisco IOS® upgrade process.

Requirements

Cisco recommends you have knowledge of:

- CG522-E operations and setup.

Components Used

- CG522-E (17.9.6)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

CG522-E supports 2 types of Cisco IOS®, Cisco IOS® XE (prior to 17.6.x) and Cisco IOS CG (from 17.6.x). The main difference between Cisco IOS XE and Cisco IOS CG on CG522-E is that Cisco IOS XE supports IPv6 and GUI (Supported again starting 17.10.1a) while Cisco IOS CG does not support these features. the same method and steps can be used to upgrade CG418-E Cellular Gateway as well.

Single-Step Image Upgrade

1. Copy the image file to the switch to which the CG device is connected to.

2. On CG, enter the command:

<#root>

gw-action:request software upgrade tftp://tftp_IP/image_name

3. Reboot the CG:

<#root>

CellularGateway#

gw-action:request system reboot

System is about to reload, Continue? [no,yes]

yes

4. Check the image upgraded:

<#root>

CellularGateway#

show gw-system:system partition

Primary Image

```
Partition    = image2
File name    = cg-ipservices-17.15.1a.SPA.bin
Version      = 17.15.1a.0.240234.1724203070..Bengaluru
Build Date   = Wed Aug 21 01:17:50 2024
Install Date = Wed Aug  9 04:21:20 2023
Boot Status  = Boot Successful.
```

Backup Image

```
Partition    = image1
File name    = cg-ipservices-17.09.04.SPA.bin
Version      =
```

17.09.04

```
.0.0.1691563291..Bengaluru
Build date   = Wed Aug 09 06:41:31 2023
Install Date = Fri Jun 22 11:13:22 2018
```

```
Boot Status  = Boot Successful.
```

Multi-Step Image Upgrade

1. Download the image to the CG:

```
gw-action:request software download tftp://tftp_IP/image_name
```

2. Install the image:

```
gw-action:request software install image_file
```

3. Activate the image:

```
gw-action:request software activate image_file
```

4. Reboot the CG:

```
<#root>

CellularGateway#

gw-action:request system reboot

System is about to reload, Continue? [no,yes]

yes
```

5. Check the image upgraded:

```
<#root>

CellularGateway#

show gw-system:system partition

Primary Image
Partition    = image2
File name    = cg-ipservices-17.15.1a.SPA.bin
Version      =
```

```
17.15.1a
```

```
.0.240234.1724203070..Bengaluru
Build Date   = Wed Aug 21 01:17:50 2024
Install Date = Wed Aug  9 04:21:20 2023
Boot Status  = Boot Successful.


Backup Image
Partition    = image1
File name    = cg-ipservices-17.09.04.SPA.bin
Version      = 17.09.04.0.0.1691563291..Bengaluru
Build date   = Wed Aug 09 06:41:31 2023
Install Date = Fri Jun 22 11:13:22 2018
Boot Status  = Boot Successful.
```

Cisco CG522-E Modem Firmware Upgrade

1. Identify the modem model:

<#root>

show cellular 1 hardware

Example:

<#root>

CellularGateway#

show cellular 1 hardware

Modem Firmware Version = SWIX55C_03.09.11.00 7bf975 jenkins

Device Model ID = EM9190

```
International Mobile Subscriber Identity (IMSI) = 268069668483162
International Mobile Equipment Identity (IMEI) = 356805515034835
Integrated Circuit Card ID (ICCID) = 89351060001115740710
Mobile Subscriber Integrated Services Digital Network Number (MSISDN) =
Factory Serial Number (FSN) = 4H4282826003B1
Current Modem Temperature = 46 deg C
PRI SKU ID = 1104703
```
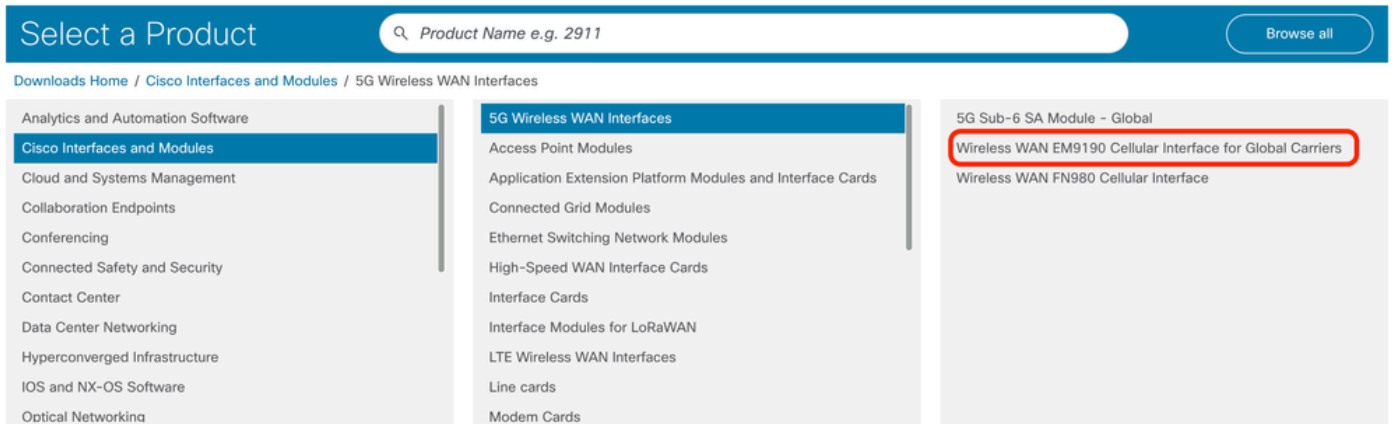
PRI Version = 030.044_006

Carrier = GENERIC

OEM PRI Version = 001.009

```
Modem Status = MODEM_STATE_DNS_ACQUIRED
```

2. Download the correct file from software.cisco.com.

For this example:

For EM9190 modems, there are 3 files for firmware upgrade available:

1. CWE (based firmware file)
2. NVU (carrier PRI file)
3. NVU (OEM PRI file)

Example:

On the next page, you can see the available software versions on the left. On the right, you can see multiple files available for the same software version. Select the appropriate image depending on the carrier being used. If the used carrier is not present in the list, the **Generic image** must be used.

For example:

Wireless WAN EM9190 Cellular Interface for Global Carriers

Release 03.09.11.00

🔔 My Notifications

Related Links and Documentation
Firmware Upgrade Guide

File Information	Release Date	Size	
03.09.11.00 modem firmware for EM9190 modem. This is the same file as EM9190_03.09.11.00-002.cwe posted on 27-Feb-2023. Only the filename got changed. Note: See Firmware Upgrade Guide for minimal FW version requirement for this upgrade. EM9190_03.09.11.00.cwe Advisories ☑	15-Aug-2023	87.34 MB	⬇ 🛒 📄
AT&T PRI for EM9190 modem. This is the same file as EM9190_03.09.11.00-001_ATT_030.046_001.nvu posted on 11-Apr-2023. Only the filename got changed. Note: See Firmware Upgrade Guide for minimal firmware version requirement for this upgrade. EM9190_03.09.11.00_ATT_030.046_001.nvu Advisories ☑	15-Aug-2023	0.06 MB	⬇ 🛒 📄
Bell carrier PRI, based on 03.09.11.00 modem firmware, for EM9190 modem. Note: See Firmware Upgrade Guide for minimal firmware version requirement for this upgrade. EM9190_03.09.11.00_BELL_030.007_001.nvu Advisories ☑	15-Aug-2023	0.07 MB	⬇ 🛒 📄
NTT DoCoMo carrier PRI, based on 03.09.11.00 modem firmware, for EM9190 modem. Note: See Firmware Upgrade Guide for minimal firmware version requirement for this upgrade. EM9190_03.09.11.00_DOCOMO_030.041_003.nvu Advisories ☑	15-Aug-2023	0.05 MB	⬇ 🛒 📄
Generic PRI for EM9190 modem. This is the same file as EM9190_03.09.11.00-001_GENERIC_030.044_006.nvu posted on 27-Feb-2023. Only the filename got changed. Note: See Firmware Upgrade Guide for minimal FW version requirement for this upgrade EM9190_03.09.11.00_GENERIC_030.044_006.nvu Advisories ☑	15-Aug-2023	0.05 MB	⬇ 🛒 📄
KDDI carrier PRI, based on 03.09.11.00 modem firmware, for EM9190 modem. Note: See Firmware Upgrade Guide for minimal firmware version requirement for this upgrade. EM9190_03.09.11.00_KDDI_030.025_001.nvu Advisories ☑	15-Aug-2023	0.07 MB	⬇ 🛒 📄
SoftBank carrier PRI, based on 03.09.11.00 modem firmware, for EM9190 modem. Note: See Firmware Upgrade Guide for minimal firmware version requirement for this upgrade. EM9190_03.09.11.00_SOFTBANK_030.031_004.nvu Advisories ☑	15-Aug-2023	0.03 MB	⬇ 🛒 📄
Verizon PRI for EM9190 modem. This is the same file as EM9190_03.09.11.00-001_VERIZON_030.046_003.nvu posted on 27-Feb-2023. Only the filename got changed. Note: See Firmware Upgrade Guide for minimal FW version requirement for this upgrade EM9190_03.09.11.00_VERIZON_030.046_003.nvu Advisories ☑	15-Aug-2023	0.07 MB	⬇ 🛒 📄

Sidebar:

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Latest Release ⌄
  03.10.07.00
  03.04.03.00
  03.09.11.00
  01.07.13.00

All Release ⌄
  03.10.07.00 ›
  03.09.11.00 ⌄
    03.09.11.00
  03.04.03.00 ⌄
    03.04.03.00
  01.07.13.00 ›

c. NVU (OEM PRI file)

Example:

Software Download

Select a Software Type

Cellular Modem Firmware
Cellular OEM PRI Firmware

Software Download

Wireless WAN EM9190 Cellular Interface for Global Carriers

Release EM9190_001.009   Related Links and Documentation
🔔 My Notifications   Firmware Upgrade Guide

| | Search... | |
| Expand All | Collapse All |

Latest Release   ⌄
EM9190_001.009

All Release   ⌄
EM9190_001.009   ＞

File Information	Release Date	Size
This OEM PRI file is only for EM9190 modem. It is compatible with modem firmware 03.04.03.00 and above. EM9190_1104703_03.09.11.00_Cisco_001.009 (nvu) Advisories	15-Aug-2023	0.02 MB

To update all 3 versions (based firmware, carrier PRI, and OEM PRI), firmware upgrade process needs to be performed 2 separate times:

1. 1st time with .CWE (based firmware file) and .NVU (carrier PRI file) in 1 folder.
2. 2nd time with .NVU (OEM PRI file) in 1 folder.

3. Make sure the CG is upgraded to the latest Cisco IOS.

4. Download the latest **.CWE** and **.NVU** (carrier PRI) files for EM9190 modem and make sure they are stored on the CG.

5. Create a **folder** in flash. The name must be different from firmware or fw:

<#root>

gw-action:

request file create_dir firm_new

Example:

<#root>

CellularGateway#

gw-action:request file create_dir firm_new

```
Created Directory at: firm_new
```

6. Copy both **.CWE** and **.NVU** (carrier PRI) files to CG flash:

```
gw-action:request file copy source tftp://<tftf_server_ip>/<fw_file_name> destination/storage/firm_new/
```

Example:

```
<#root>

CellularGateway#

gw-action:request file copy source tftp://192.168.1.2/fw.bin destination/storage/firm_new/fw.bin
```

7. Verify the .CWE and .NVU (carrier PRI) files were correctly downloaded into the newly created folder:

```
<#root>

CellularGateway#

gw-action:request file list fw_folder


-rw-r--r-- 50575 May 19 06:57 EM9190_03.09.11.00-001_GENERIC_030.044_006.nvu
-rw-r--r-- 91579911 May 19 06:50 EM9190_03.09.11.00-002.cwe
CellularGateway#
```

8. Verify current firmware and carrier PRI versions:

```
<#root>

CellularGateway#

show cellular 1 hardware


Modem Firmware Version = SWIX55C_01.07.13.00 000000

 jenkins
Device Model ID = EM9190
International Mobile Subscriber Identity (IMSI) = 123456700004023
International Mobile Equipment Identity (IMEI) = 356805510129085
Integrated Circuit Card ID (ICCID) = 8952530076180184023
Mobile Subscriber Integrated Services Digital Network Number (MSISDN) =
Factory Serial Number (FSN) = 4H1531500901A1
Current Modem Temperature = 35 deg C
PRI SKU ID = 1104703

PRI Version = 016.006_004 Carrier = GENERIC
```
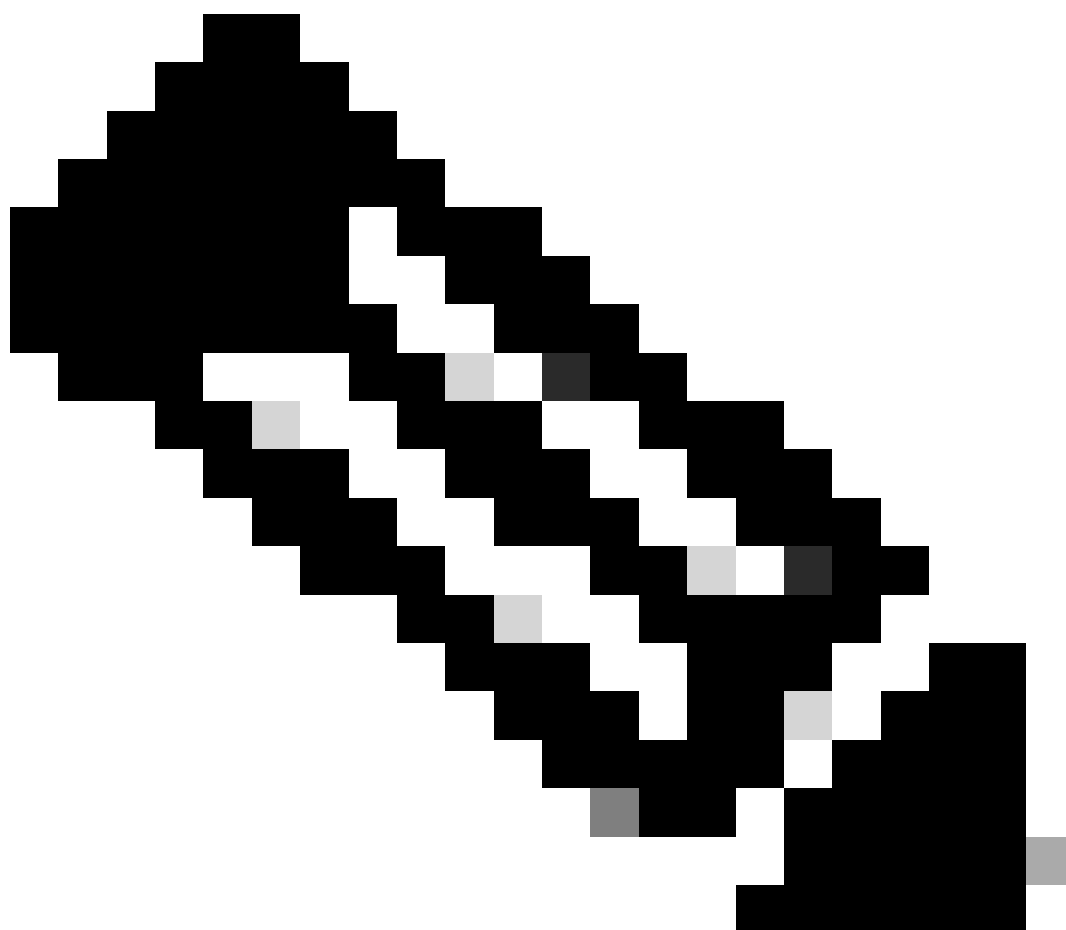
```
OEM PRI Version = 001.006
Modem Status = MODEM_STATE_NETWORK_READY
CellularGateway#
CellularGateway#
CellularGateway# show cellular 1 firmware Firmware
Activation Mode = AUTO
INDEX CARRIER FW VERSION PRI VERSION STATUS
-------------------------------------------------------

1 GENERIC 01.07.13.00_GEN 016.006_004 ACTIVE



CellularGateway#
```

9. Initiate modem firmware upgrade using the command:

```
cellular 1 upgrade firmware <created_earlier_folder_directory>
```

Note: Do not remove power or reload the router during the firmware upgrade process.
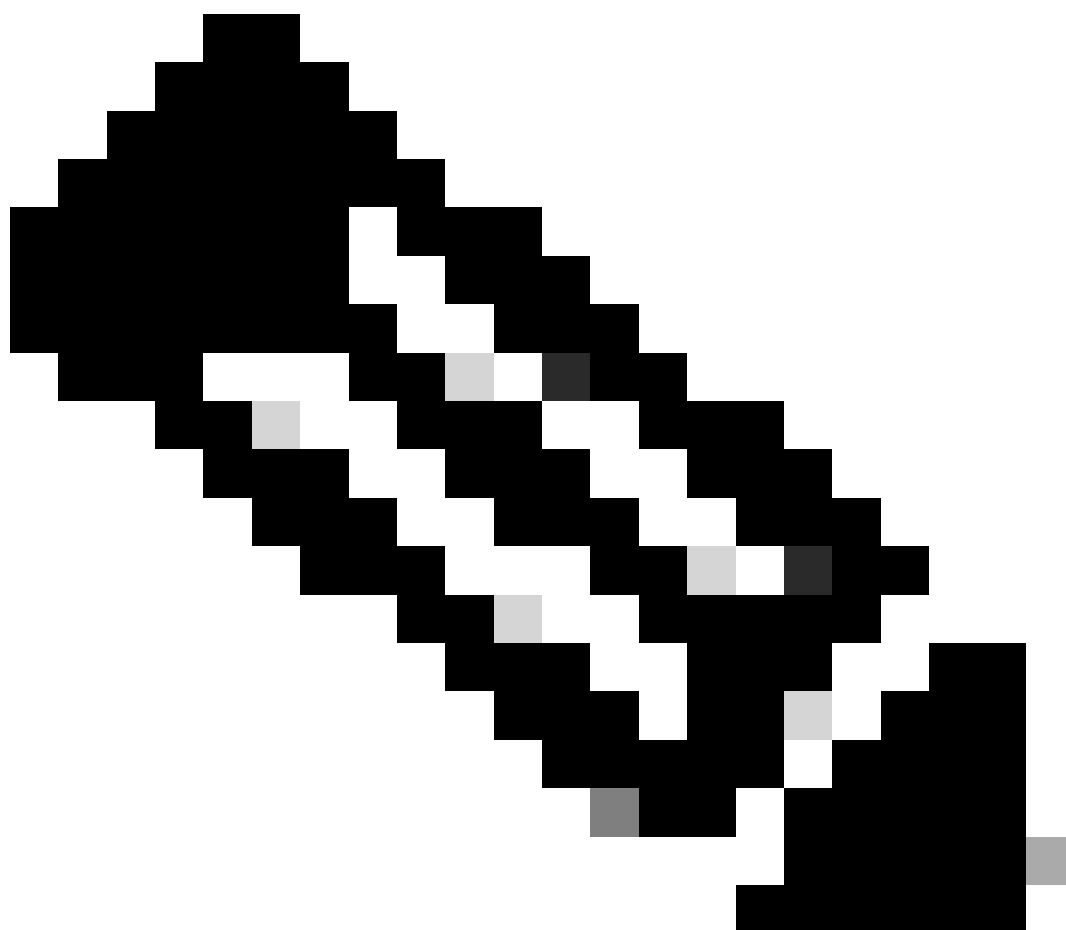
Example:

<#root>

CellularGateway#

cellular 1 upgrade firmware /flash/firm_new
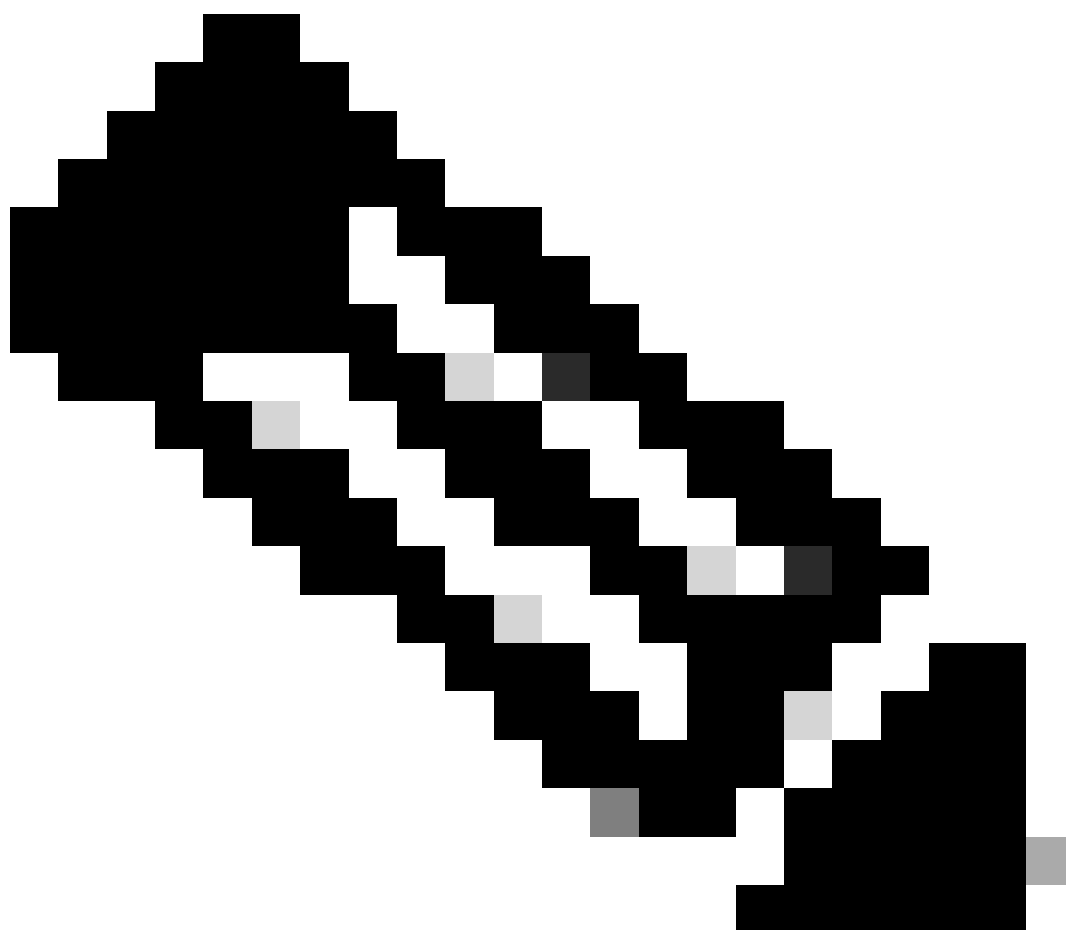
```
status inprogress response
Firmware upgrade is in progress!!!
CellularGateway#
```

Note: Make sure to keep only the needed firmware files in the created folder to avoid conflicts in case more than one version is stored in the same folder.

Note: For SWI EM9190 Modem, if the current version is 01.07.08, upgrade to 01.07.13 first before upgrading to the latest versions.

10. Verify the modem firmware and carrier PRI were upgraded successfully:

```
<#root>

CellularGateway# show cellular 1 hardware

Modem Firmware Version = SWIX55C_03.09.11.00

 7bf975 jenkins
Device Model ID = EM9190
International Mobile Subscriber Identity (IMSI) = 123456700004023
International Mobile Equipment Identity (IMEI) = 356805510129085
Integrated Circuit Card ID (ICCID) = 8952530076180184023
Mobile Subscriber Integrated Services Digital Network Number (MSISDN) =
Factory Serial Number (FSN) = 4H1531500901A1
Current Modem Temperature = 35 deg C
PRI SKU ID = 1104703
```

```
PRI Version = 030.044_006


Carrier = GENERIC


OEM PRI Version = 001.006
Modem Status = MODEM_STATE_NETWORK_READY
CellularGateway#
CellularGateway#
CellularGateway#show cellular 1 firmware
Firmware Activation Mode = AUTO
INDEX CARRIER FW VERSION PRI VERSION STATUS
-------------------------------------------------------

1 GENERIC 03.09.11.00_GEN 030.044_006 ACTIVE



CellularGateway#
```

11. For OEM PRI upgrade, repeat the same steps with the .NVU files for OEM PRI.

Conclusion

It is recommended to always run the latest software release available for the cellular gateway, and the latest modem firmware as it contains the latest PRI files required for the cellular carrier support.