

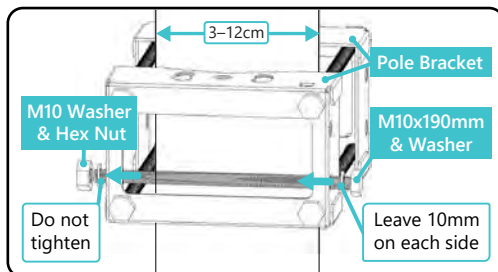
7.6. Pole mounting (page 2/2)

Step 3: Insert long bolt into bracket

Insert the M10_HEX_SOCKET_190MM (x1) into the POLE_BRACKET, and lightly secure with:

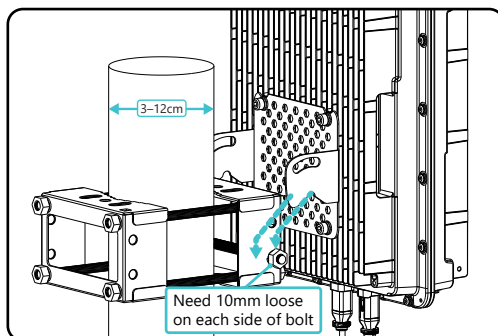
- M10_SPRING_WASHER (x2)
- M10_HEX_NUT (x1)

Leave 10mm on each side because the next step will hang the Small Cell onto this bolt.



Step 4: Hang the Small Cell

Latch the CASE_ADJUSTED back plate onto the loose bolt on the pole mount assembly.

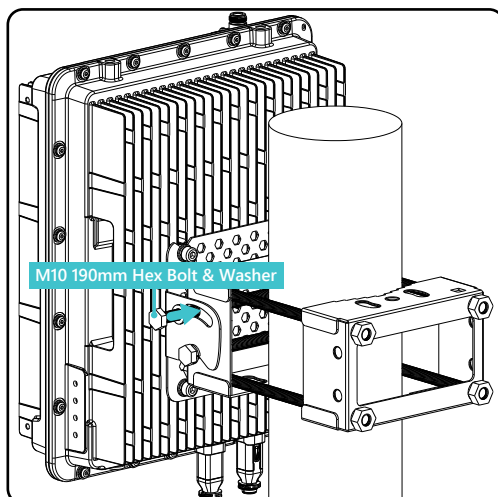
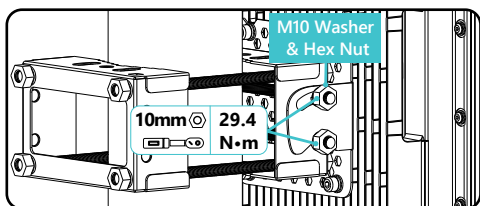


Step 5: Secure the Small Cell

Secure the CASE_ADJUSTED plate with:

- M10_HEX_SOCKET_190MM (x1)
- M10_SPRING_WASHER (x2)
- M10_HEX_NUT (x1)

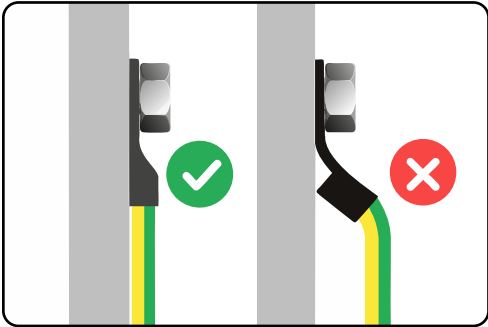
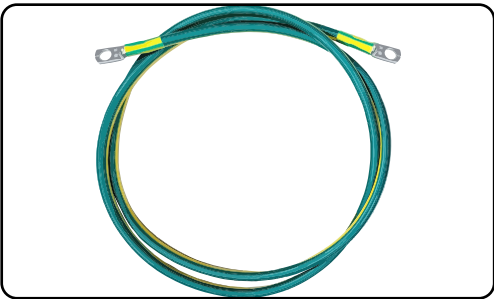
Tighten the two M10_HEX_NUT on the other side.



7.7. Earth grounding

To connect the ground cable, remove the M6-sized grounding screw from the unit and attach the provided green- yellow grounding cable using the OT terminal. Secure the other OT terminal end to an external ground bar that is connected to a protective earth conductor.

Power surge ground cable example on the right (**not included**).



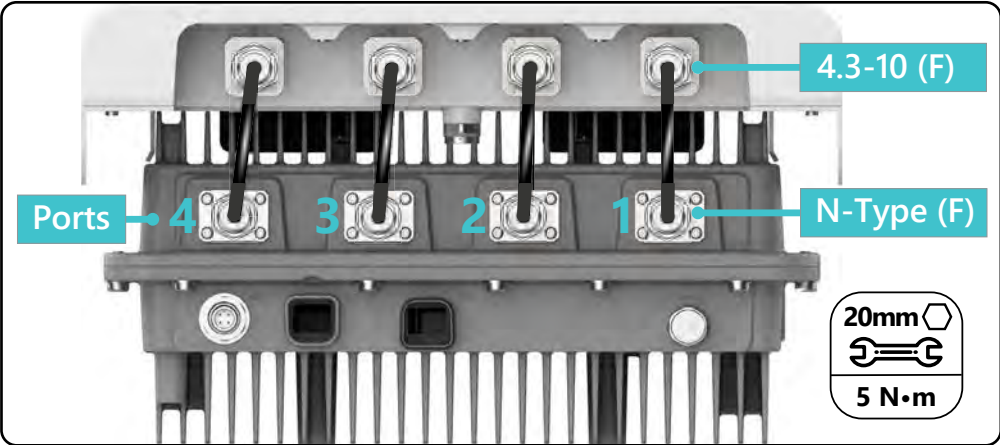
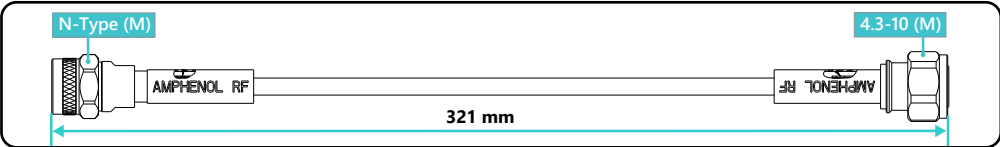
► Note: When installing the grounding cable, ensure that the OT terminal crimps are oriented properly, so they sit flat against the protective earth conductor.

WARNING: This device must be grounded using a green and yellow striped copper wire with either a single core of at least 16 AWG or a multicore of at least 18 AWG.

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WALL
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GND
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ANT
CONN
8
CONN
TAPE
9
CON
NECT
10
FW
UP
10
WEB
GUI
10
FW
UP 2
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AGE

7.8. Antenna connections (Pegatron)

Connect the four provided N-Type Male Plug to 4.3/10 Male Plug RF cable assembly to the antenna unit.



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2 DOC
3 SPEC
4 PACS
4 ANT
4 KIT POLE
4 KIT WALL
5 PORT
5 LED
6 ANT SPEC
7 INST REQ
7 WALL FIX
7 POLE FIX
7 GND
7 ANT CONN
8 CONN TAPE
9 CON NECT
10 FW UP
10 WEB GUI
10 FW UP 2
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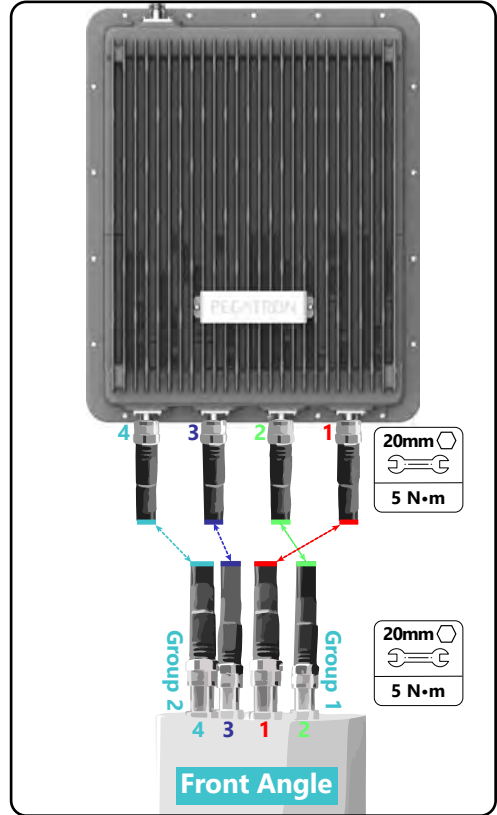
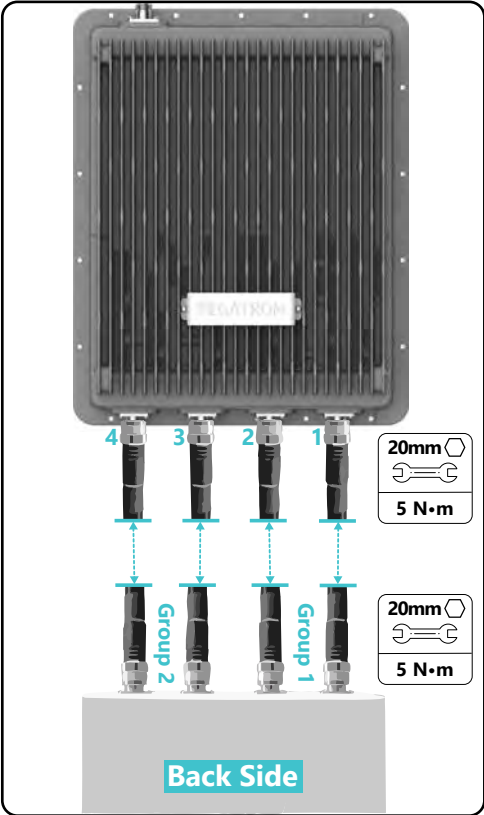
7.9. Antenna connections (Others)

Secure the plastic antenna unit with the provided mounting clamp and connect the long RF cables purchased separately with your antenna.

PR1410-78/48 (Pulse) optional



PR1410-79 (Whayu) optional



TOC
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4 ANT
4 KIT
POLE
4 KIT
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5 PORT
5 LED
6 ANT
SPEC
7 INST
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7 WALL
FIX
7 POLE
FIX
7 GND
7 ANT
CONN
8 CONN
TAPE
9 CON
NECT
10 FW
UP
10 WEB
GUI
10 FW
UP 2
11 MAN
AGE

TOC
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3 SPEC
4 PACK
4 ANT
4 KIT POLE
4 KIT WALL
5 PORT
5 LED
6 ANT SPEC
7 INST REQ
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7 POLE FIX
7 GND
7 ANT CONN
8 CONN TAPE
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10 FW UP
10 WEB GUI
10 FW UP 2
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7.10. Antenna connections - UL conduit

WARNING: The RF cables on both the ISC and the external antenna must equally matched in the designated port number.

For example (name will vary on the antenna):

- ANT1 to Port1 • ANT2 to Port2
- ANT3 to Port3 • ANT4 to Port4

If your antenna ports are labeled Group 1 and Group 2:

- Connect ANT1 & ANT2 to Group 1
- Connect ANT3 & ANT4 to Group 2

UL outdoor usage requirements

IMPORTANT: The mains power cord, the power output cord, and all system interconnecting cables shall be routed inside UL-listed conduits for outdoor use.



8. Connector Waterproofing (Tape)

CRITICAL WARNING: Failure to strictly follow the waterproofing instructions for the antenna connectors on the radio and antenna units will void the warranty. You must take photographic evidence of each installation step for future reference or upon request.

Materials provided

If the provided materials are unavailable, use equivalent alternatives that strictly meet the specified technical criteria.



3M™ Scotch Seal™ Tape 2229 (called **2166** in some markets) is a 125 mil thick, highly conformable, tacky mastic, available in roll and pad form on an easy release liner, suitable for insulating, padding, and sealing objects against adverse environmental conditions. It withstands temperatures up to 194 °F (90 °C). It is UV resistant, has self-healing properties after being cut or punctured, and adheres to irregular surfaces to provide excellent moisture resistance.

Width: 63.5 mm (2.5 in)



3M™ Scotch® Rubber Mastic Tape 2228 is a 65-mil thick, premium grade, highly conformable, self-fusing rubber electrical insulating and sealing tape. It consists of an ethylene propylene diene monomer (EPDM) backing coated with an aggressive, temperature-stable mastic adhesive on a liner. Designed for electrical insulating and moisture sealing, it is intended for both indoor and weather-exposed outdoor applications, including resistance to UV exposure.

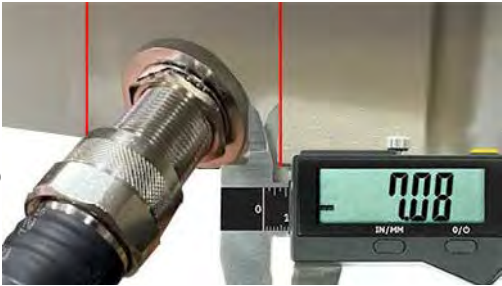
Width: 50.8 mm (2 in)

TOC
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6 ANT
SPEC
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7 WALL
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7 POLE
FIX
7 GND
7 ANT
CONN
8 CONN
TAPE
9 CON
NECT
10 FW
UP
10 WEB
GUI
10 FW
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8.1. Connector and tape preparation

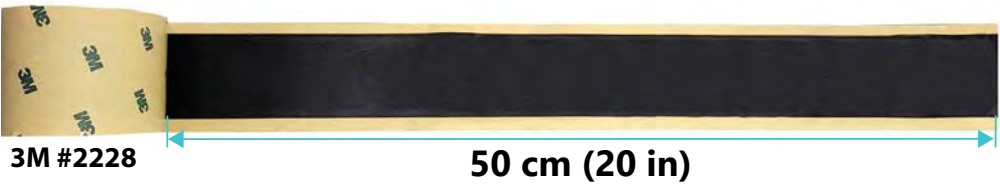
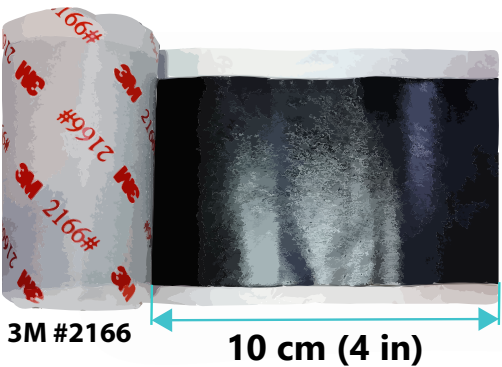
Step 1:

- 1. **Clean and dry the area:** Ensure the area around the N-Type port is thoroughly cleaned and dried.
- 2. **Mark 7mm (1/4in)** with a pencil next to each antenna connector. You will cover the pencil marking with tape.



Step 2:

- 1. Measure 3M #2166 Sticky Mastic Tape to 10cm.
- 2. Measure 3M #2228 Rubber Mastic Tape to 50cm.

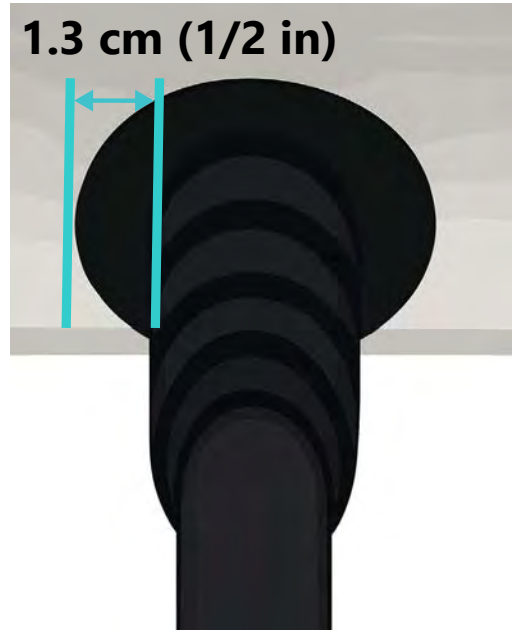


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7 INST REQ
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3M™ Scotch Seal™ (tacky) Tape 2229/2166

Step 3:

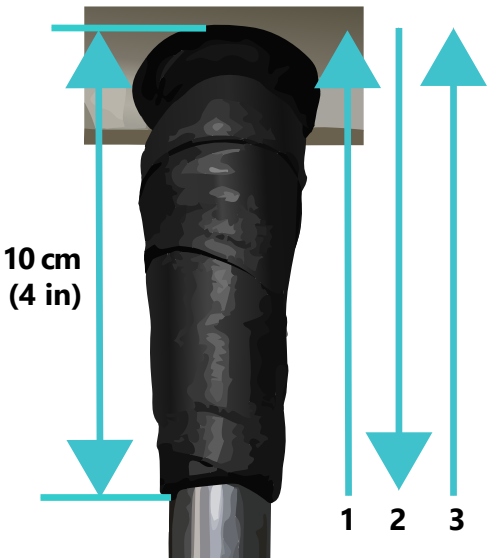
1. **Clean and dry the area:** Ensure the area around the N-Type port is thoroughly cleaned and dried.
2. **Wrap the tape:** Cut a 10 cm length of 3M™ Scotch Seal™ (tacky) Tape 2229/2166, remove the entire paper backing, and wrap it securely around the entire metal connector, including the gap and at least 1.3 cm (1/2 inch) of the enclosure you marked earlier.
3. **Squeeze to secure:** Apply firm pressure to the tape, ensuring it adheres fully to both the connector and the enclosure, eliminating any air gaps.



3M™ Scotch® Rubber Mastic Tape 2228

Step 4:

- 1. Wrap the tape: Cut a 50 cm length of 3M™ Scotch® Rubber Mastic Tape 2228. Remove only one-third of the paper backing and begin wrapping at a point 10 cm (4 inches) from the base of the connector.
- 2. Stretch and wrap: Stretch the tape to three-quarters of its original width and apply it in half-lapped layers, ensuring a uniform build-up as you wrap down to the base of the connector. Make sure the waterproof tape overlaps and fully covers the previous layer of Mastic Tape.



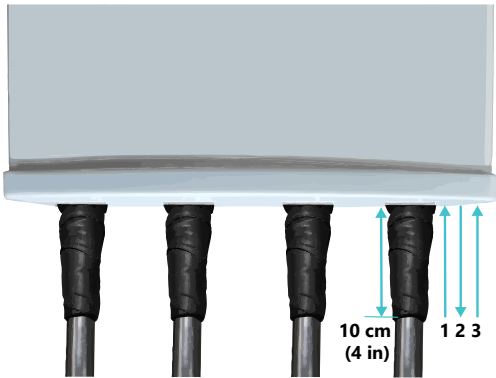
- 3. Ensure proper layers: Follow the wrapping direction as shown to form three layers of waterproofing, maintaining the overlap while wrapping over both the RF cable and the connector.
- 4. Squeeze to secure: Apply firm pressure to the tape, ensuring it adheres completely to both the connector and the enclosure, eliminating any air gaps.

Step 5:

Repeat all steps to seal all four antenna connectors.

Step 6:

Repeat all steps to seal all four antenna connectors on the external plastic antenna unit.

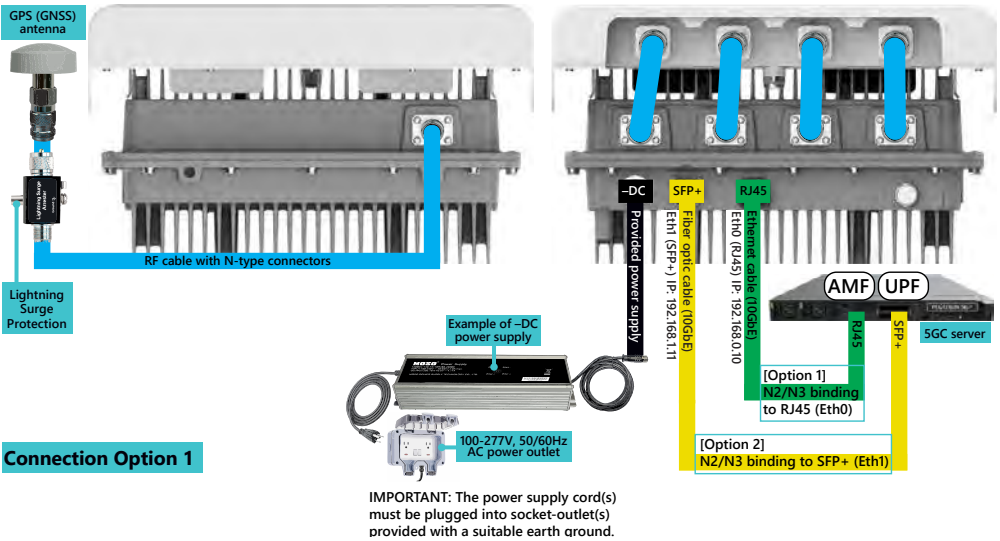


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9. Getting Started

9.1. Connections and access

This section provides a quick overview for accessing and operating the ISC (Integrated Small Cell). It covers cable connections, network configuration for access, RAN configuration, status checks, log collection, and firmware upgrades.



Management network configuration

The ISC contains 2 interface for management access, one of RJ45, another one is SFP+, refer to Network configuration to configure it accordingly.

NGC/NGU (N2/N3) network configuration

The ISC contains 2 interface for backhaul N2/N3 connection, either choose to binding to RJ45 or SFP+, refer to Network configuration to configure it accordingly.

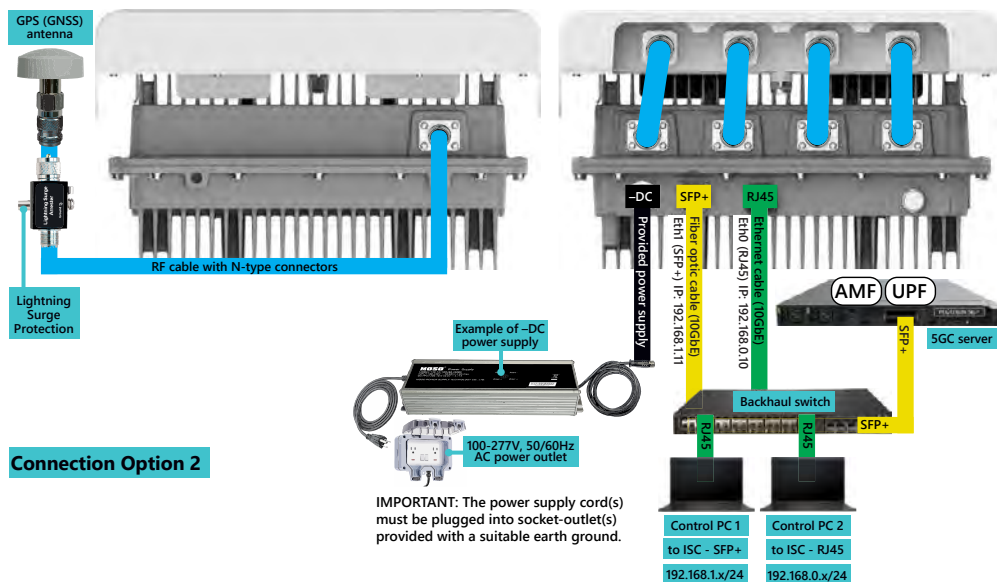
Timing synchronization configuration

The ISC supports GNSS, PTP, and GNSS+PTP synchronization mode. Refer to GNSS configuration to configure it accordingly.

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6 ANT SPEC
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For initial provisioning, you can connect to the ISC in a few different ways.



9.2. Connections & Network

This section details the required physical connections and network settings to establish access. Access to the WebGUI requires a login account and password (described later).

Connection Options

Connect your Control PC (PC 1 or PC 2) using one of the following methods. The N2/ N3/Management traffic must be routed through a backhaul switch for all options.

Interface	Cable	Traffic Binding	Note
SFP+ (eth1)	Optical Fiber	Binds N2/N3 to eth1	High-speed fiber link
RJ45 (eth0)	Cat 6A 10Gb Ethernet	Binds N2/N3 to eth0	High-speed link

Control PC IP Configuration (can use either 1 of 2)

To communicate with the device, your PC's IP address must be manually configured to match the required subnet of the connected port.

Connected Port	Cable	Required PC Subnet	Example PC IP
SFP+ (eth1)	Optical Fiber	192.168.1.x/24	192.168.1.5
RJ45 (eth0)	Cat 6A 10Gb Ethernet	192.168.0.x/24	192.168.0.5

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4 KIT WALL
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10. Software Section

10.1. Firmware upgrade

Since FW v1.1.1.5, a single binary file was introduced for upgrading. Refer to below section to upgrade the firmware:

- Refer to Maintenance - General Upgrade for whole system firmware upgrade, including bootloader, kernel, gNB DU/CU stack.
- Refer to Maintenance - gNB Upgrade for DU/CU stack only upgrade.

Install FW image to EMMC:

1. Check current running slot: `imgSwUpd.sh show`
2. Install FW to EMMC:

- Install to EMMC-1 (If current running slot is 2, then upgrade should choose another slot – EMMC-1)

```
./flex-installer.sh -b boot_LS_arm64_lts_5.15.tgz -B2 -r ls-image-main-lx2160apgc.tar.gz -R3 -f firmware_lx2160apgc_emmcboot.img -d /dev/mmcblk1
```

```
./flex-installer.sh -r SYSREPO_CUDU_4.6.0_PEGA_1.0.0_HOST.tar.gz -R5 -d /dev/mmcblk1
```

- Install to EMMC-2 (If current running slot is 1, then upgrade should choose another slot – EMMC-2)

```
./flex-installer.sh -b boot_LS_arm64_lts_5.15.tgz -B6 -r ls-image-main-lx2160apgc.tar.gz -R7 -f firmware_lx2160apgc_emmcboot.img -d /dev/mmcblk1
```

```
./flex-installer.sh -r SYSREPO_CUDU_4.6.0_PEGA_1.0.0_HOST.tar.gz -R8 -d /dev/mmcblk1
```

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10.2. Accessing the WebGUI

Once your physical connection is complete and your PC's IP is configured (as described in the technical section), you can log in via a web browser.

Device IP Addresses

You can access the WebGUI using any reachable IP address. The default device IPs are:

- For SFP+ connections: 192.168.1.11
- For RJ45 connections: 192.168.0.10

Access URL and Subnet Check

- Open any web browser on your Control PC.
- In the address bar, type the device's IP address:
- URL: `http://<Device (RU) IP>`
- Examples:
`http://192.168.0.10` or
`http://192.168.1.11`



REMINDER: If you cannot reach the WebGUI, double-check that your PC's IP address is on the same subnet as the device IP you are trying to reach (e.g., if you use 192.168.0.10, your PC must be 192.168.0.x).

10.3. Login account and password

There are several accounts used to access the ISC.

Type	Account	Password	Permission Description
SSH connection	padmin	Pega@2025	Super user
	ruser	Pega#1234	Non-sudo user
WebGUI log in	padmin	Pega@2025	Super user
	ruser	Pega#1234	1. No Terminal page. 2. Cannot upgrade single DU, CU, OAM image.
MPlane Netconf Session connection	root	PEGA@xu42k6xj4	root

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4 KIT WALL
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7 POLE FIX
7 GND
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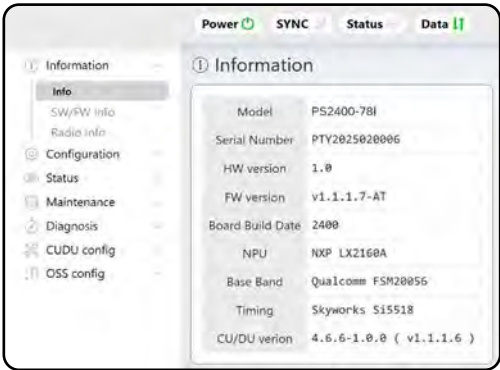
10.4. Information

This section contains below informations:

- PS2400 information: Including generic hardware product information.
- Software/Firmware information: Including software version information across different swappable slot
- Radio information: Including radio information, frequency and bandwidth.

PS2400 information

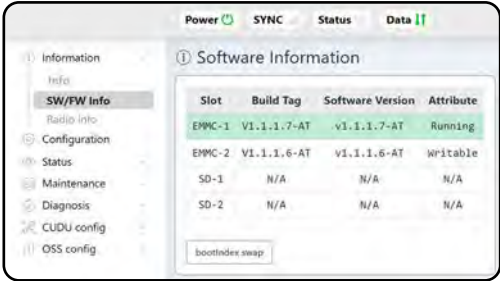
Basic ISC information, including Model name, serial number, HW version, FW version, DU/CU version.



SW/FW Info (Software/Firmware information)

This section displays multiple software slot in ISC, including Running slot, and Writable slot.

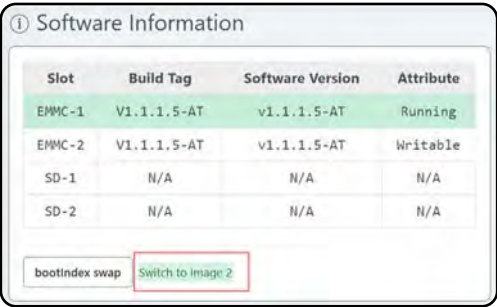
- Running slot – Currently running slot.
- Writable slot – Slot used to upgrade.



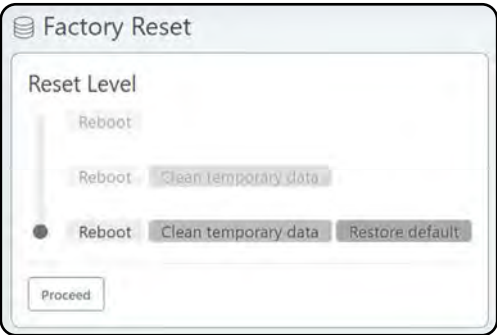
TOC
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SW/FW Info (cont.)

To swap software slot, click “boot index swap” button, it will show “Switch to image #”, example shows it switched from Running slot EMMC-1 to Writable slot EMMC-2. T activate it, need to perform Reboot.



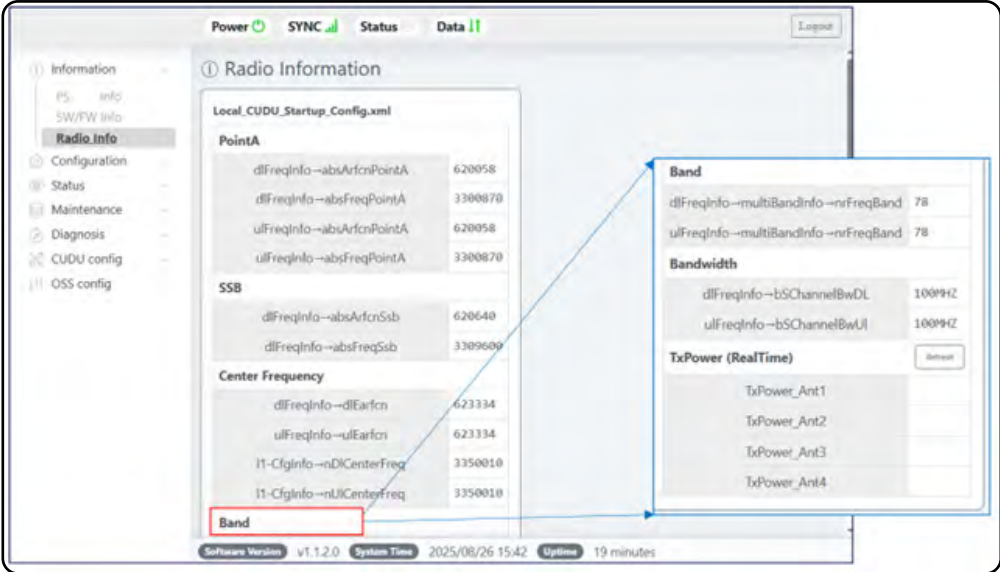
Then refer to section “Factory reset” to perform “Reboot - Clean temporary data - Restore default”.



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10.5. Radio information

This section including basic radio information, including PointA, SSB, Center Frequency, Band and Bandwidth.

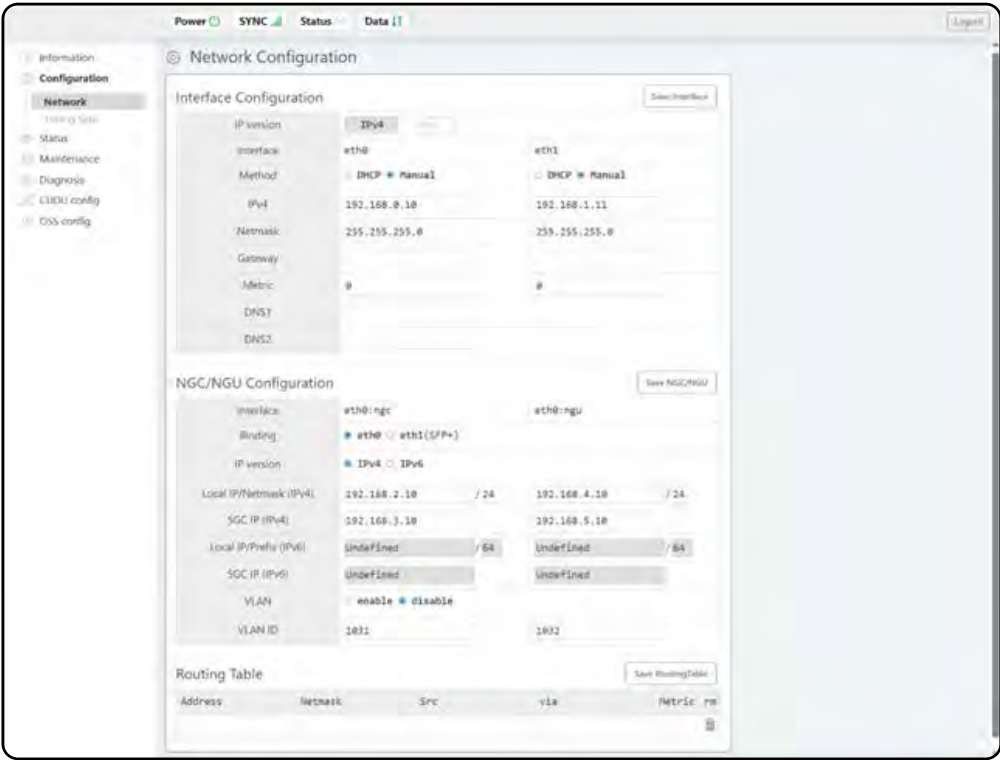


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7 GND
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10.6. Configuration - Network

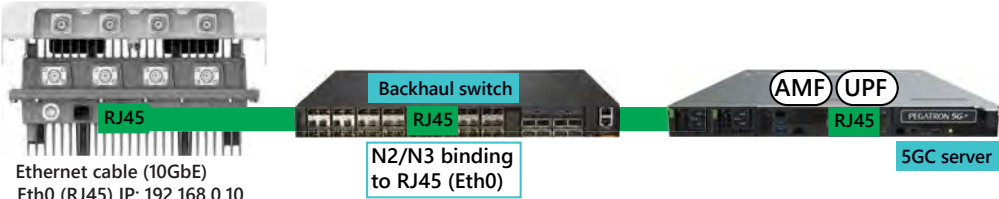
This page includes:

- Management network interface IPv4 configuration, either static (Manual) or DHCP.
- NGC toward 5GC-AMF, NGU toward 5GC-UPF IPv4 configuration.
 - VLAN is supported.
 - Choose binding to eth0 (RJ45) or eth1 (SFP+), need to reboot to apply change.
- Routing Table: N2 gateway routing table configuration is supported.



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4 KIT POLE
4 KIT WALL
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5 LED
6 ANT SPEC
7 INST REQ
7 WALL FIX
7 POLE FIX
7 GND
7 ANT CONN
8 CONN TAPE
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Network configuration (example)



Eth0	192.168.0.10	N2-GW	192.168.2.175	AMF	192.168.3.10
Eth0-ngc	192.168.2.10	N3-GW	192.168.4.175	UPF	192.168.5.10
Eth0-ngu	192.168.4.10				

Based on above topology, you can configure NGC/NGU IPv4 as below picture, then click button “Save NGC/NGU”, then reboot to activate new settings.

NGC/NGU Configuration

Save NGC/NGU

Interface	eth0:ngc	eth0:ngu
Binding	☒ eth0 ☐ eth1(SFP+)	
Local IP/Netmask	192.168.2.10 / 24	192.168.4.10 / 24
5GC IP	192.168.3.10	192.168.5.10
VLAN	☐ enable ☒ disable	
VLAN ID	1031	1032

Routing Table

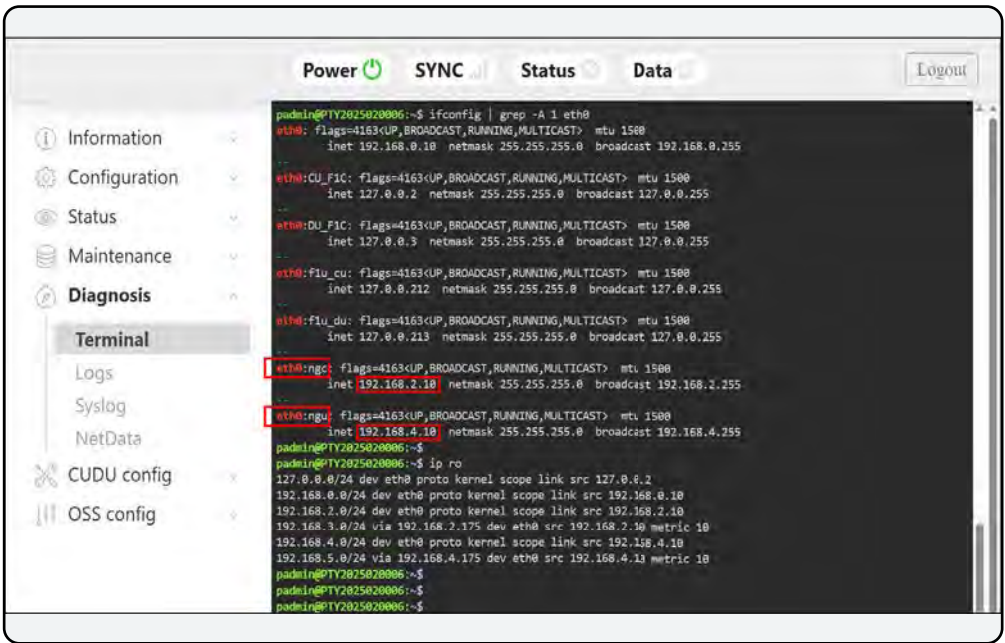
Save RoutingTable

Address	Netmask	Src	via	Metric	rm
192.168.3.0	255.255.255.0	192.168.2.10	192.168.2.175	10	
192.168.5.0	255.255.255.0	192.168.4.10	192.168.4.175	10	

Network configuration (example)

Note: Routing entry may not able to create at this moment, **reboot** to activate interface setting, then refer to next page to make sure **eth0:ngc** and **eth0:ngu** interface are created, then routing entry can be added.

Go to "Diagnosis -> Terminal", check eth0:ngc and eth0-ngu interface are created and IPv4 configured correctly, then you can add Routing entry accordingly.

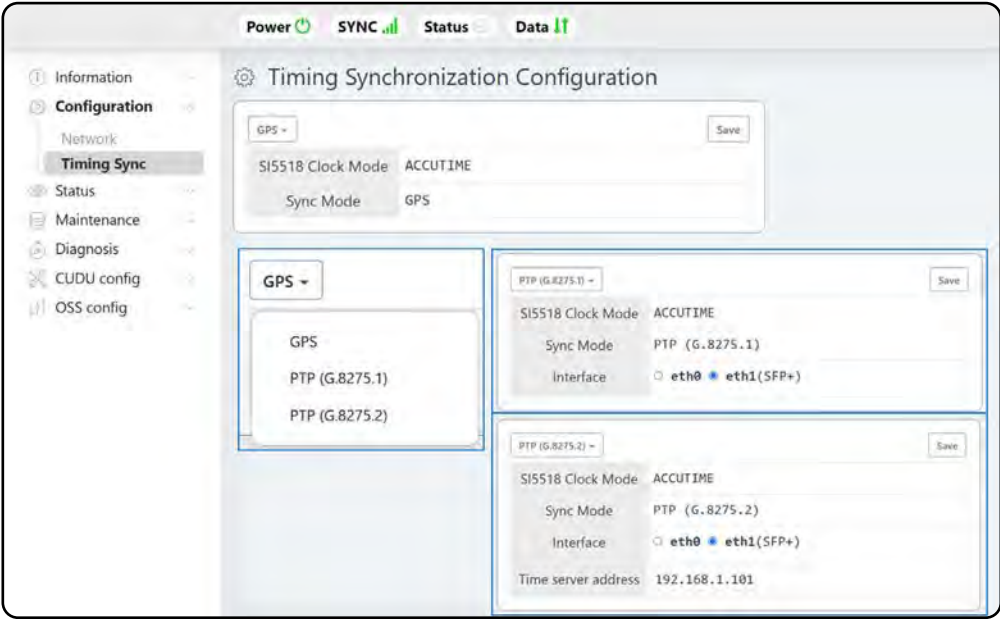


10.7. Timing synchronization

ISC supports GNSS, PTP G.8275.1 and G.8275.2 profile for timing synchronization. Need to click "Save" button and reboot to apply change.

Since FW v1.1.2.0, includes

- FreeRun mode for experimental usage.
- Time Zone setting,



Parameter	G.8275.1 Profile	G.8275.2 Profile
1-Step, 2-Step	Both supported by default	Both supported by default
sync_interval	-4	-6
delay_req_interval	-4	-6
announce_interval	-3	0
announce_receipt_timeout	3	2
local_priority	128	128
domain number	24	44

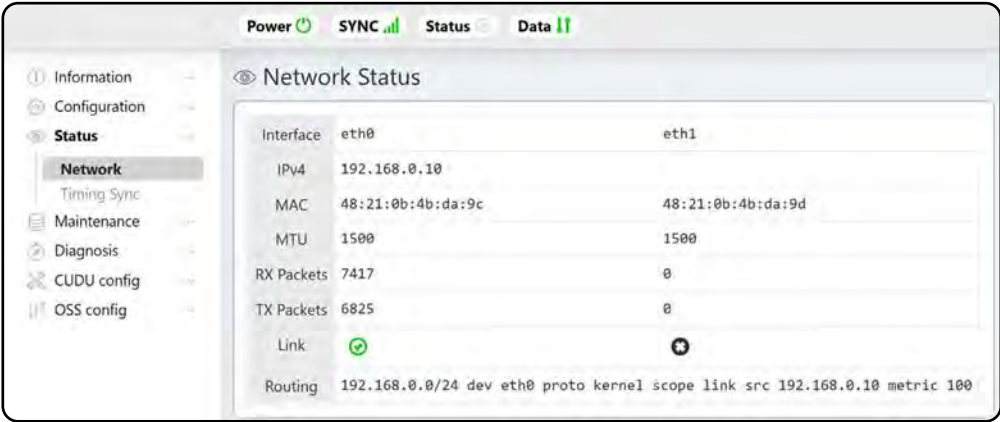
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10.8. Status

Network status

Check physical eth0 (RJ45) and eth1(SFP+) network status, including:

- Interface – show eth0 or eth1
- IPv4 – show interface IPv4 address
- MAC – show interface mac address
- MTU - show interface MTU
- RX Packets – show interface RX packets
- TX Packets – show interface TX packets
- Link – show interface link state

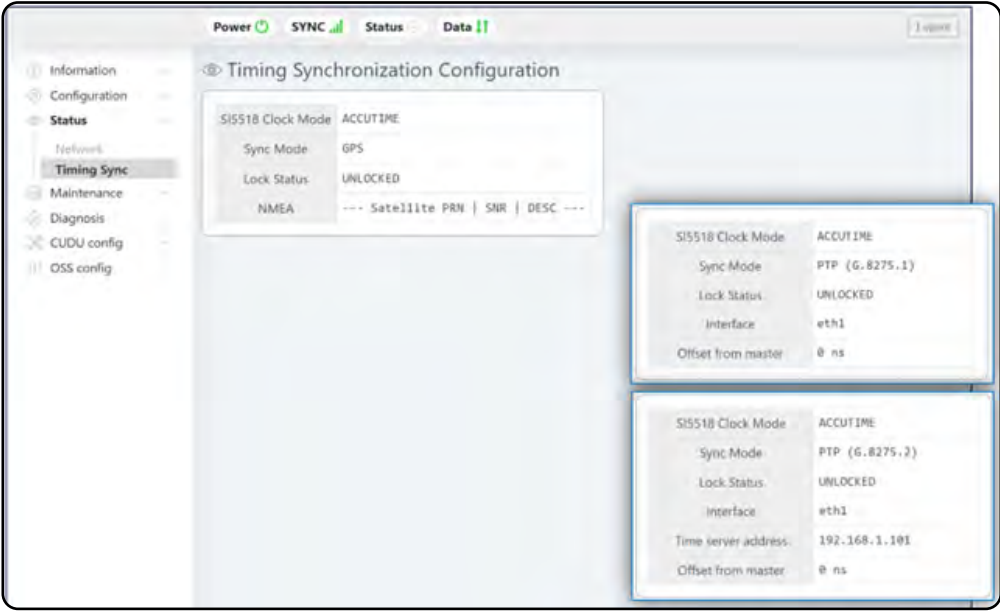


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Timing synchronization status

Check timing synchronization status, including:

- GNSS
 - Lock Status
- PTP (G.8275.1)
 - Lock Status
 - Interface name
 - Offset from master
- PTP (G.8275.2)
 - Lock Status
 - Interface name
 - Timer server address
 - Offset from master



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10.9. Maintenance

General upgrade including 3 partitions:

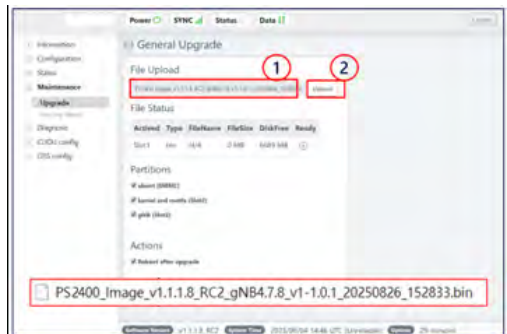
- Uboot – Bootloader information, if checked, system will boot from EMMC-1 slot, please refer to section Software/Firmware information to swap to upgraded slot manually.
- Kernel and rootfs – Kernel and file system.
- gNB – DU/CU software stack.

Actions: Reboot after upgrade

If this option is selected, then system will automatically reboot and boot with the correct EMMC slot for the new firmware. Note: If the Uboot partition is selected for upgrade, refer to the section Software/Firmware information to verify the EMMC slot with the expected firmware.

Upgrade steps:

1. Choose FW .bin file
2. Click upload, it will take few minutes to upload the FW .bin file from your Control-PC to ISC. Shows: Image uploading...
3. Checked all 3 partitions, uboot/kernel and rootfs/gNB, then click "Start upgrade". Shows: System upgrading... it will take few minutes.
4. After upgraded successfully, system will Reboot automatically.

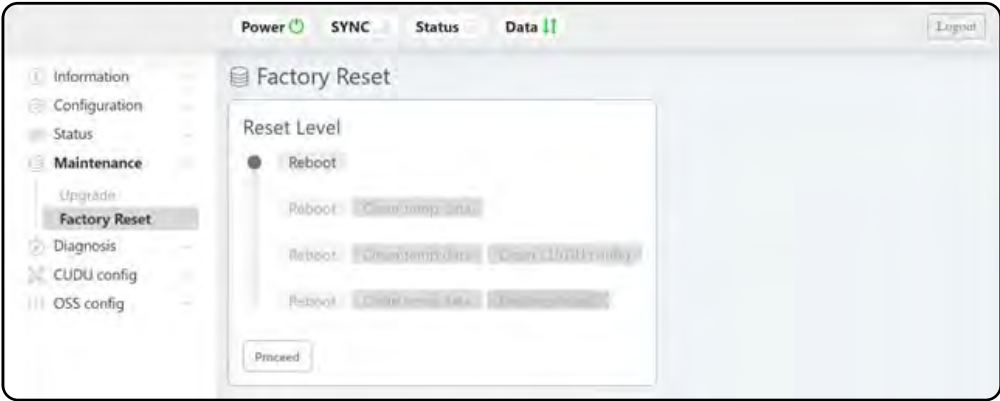


10.10. Factory reset

There are three types of factory reset on the ISC:

Reset levels

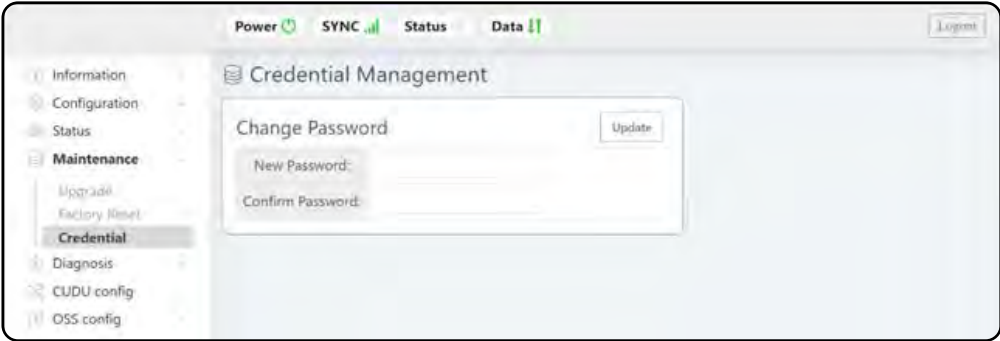
- 1. Reboot ISC.
- 2. Clear the log, temp data, reboot the system.
- 3. Clear the log, temp data, restore CUDU XML file to factory default, reboot the system.
- 4. Clear the log, temp data, restore CUDU XML file to factory default, reset all settings (including Timing configuration and IP address), reboot the system



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10.11. Credential

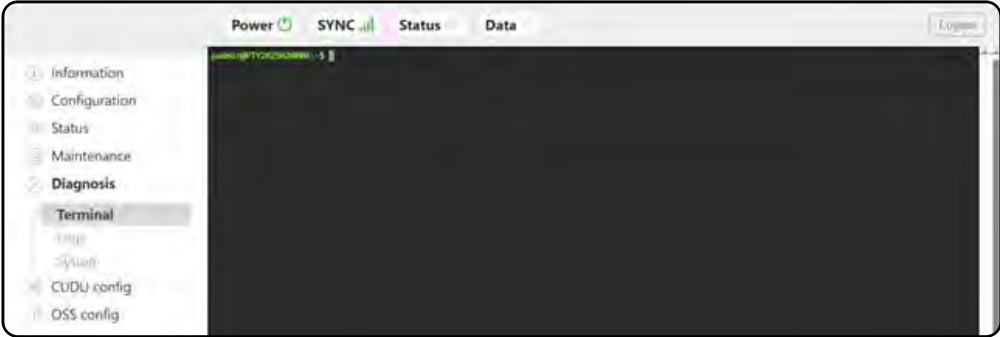
This page provides the ability to change password for the account currently logged into.



10.12. Diagnosis

Terminal

Only available in DEBUG-type firmware image.



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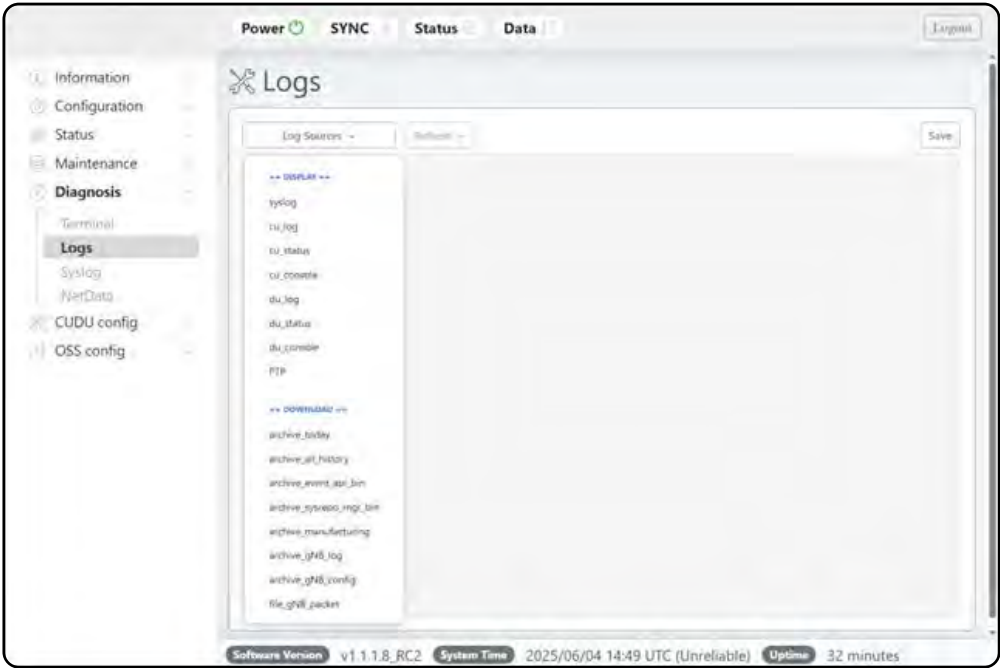
10.13. Logs

In this page, you can click specific component in category DISPLAY to show live log.

- Syslog: showing system general log
- CU log/status/console: CU log, statistical counter, console log.
- DU log/status/console: DU log, statistical counter, console log.
- PTP: Timing log, content will depend on timing synchronization method GPS and PTP.

You can also click archive_today or archive_all_history in category DOWNLOAD to collect ISC log for further investigation.

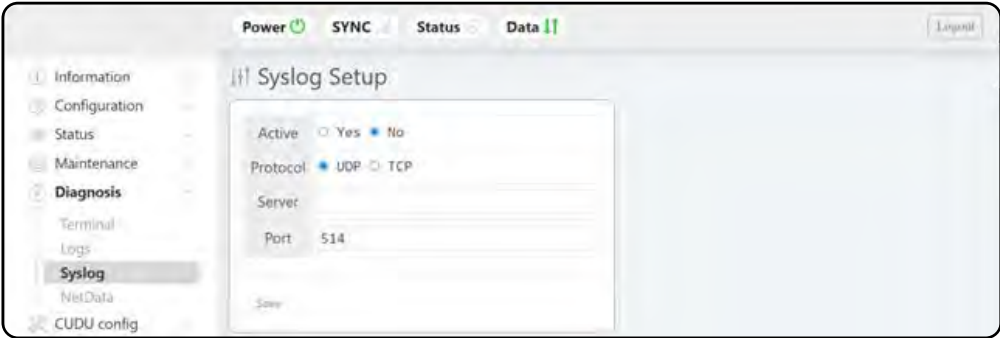
- Archive_today: today's log
- Archive_all_history: last 30 days logs, rotated everyday at 00:00:00 +0 GMT time.



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Syslog Setup

This page follows standard Syslog protocol to upload log to server side.

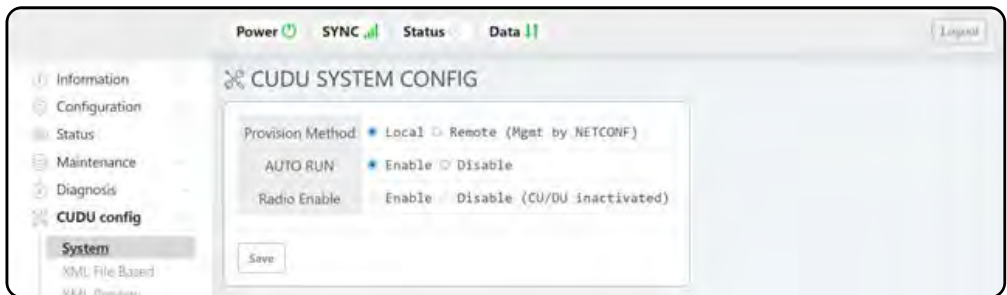


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10.14. CU and DU configurations

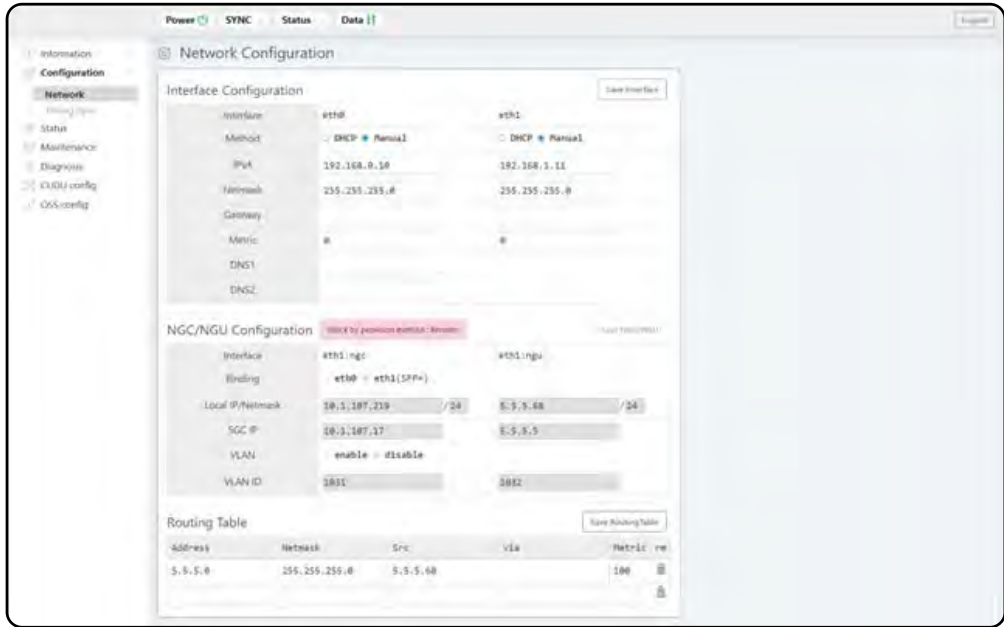
System

- “**Provision Method**” can choose to configure via local WebGUI or remote NetconfClient with M-plane (usually is EMS/SMO like tool).
 - When choose Remote, below configuration will be blocked and solely rely on remote NetconfClient tool
 - Configuration -> Network -> NGC/NGU configuration
 - Configuration -> Timing sync
 - CUDU config -> Single Item
 - CUDU config -> Neighbor Cell
- The AutoRun configuration will start OAM/DU/CU service automatically once timing synchronization locked. (Need to reboot to apply change).
- Radio Enable/Disable allow to turn on/off RF radio dynamically.
 - Only available when CU/DU is activated.

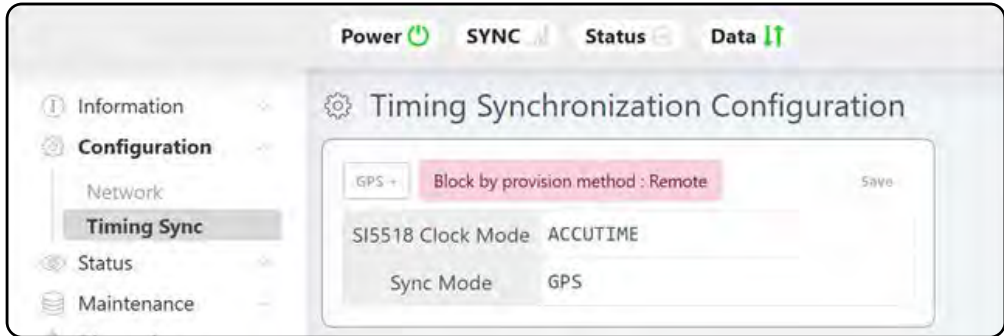


10. Software Section WebGUI - CU and DU configurations

- Configuration -> Network -> **NGC/NGU configuration** is blocked if provision method choose "Remote".



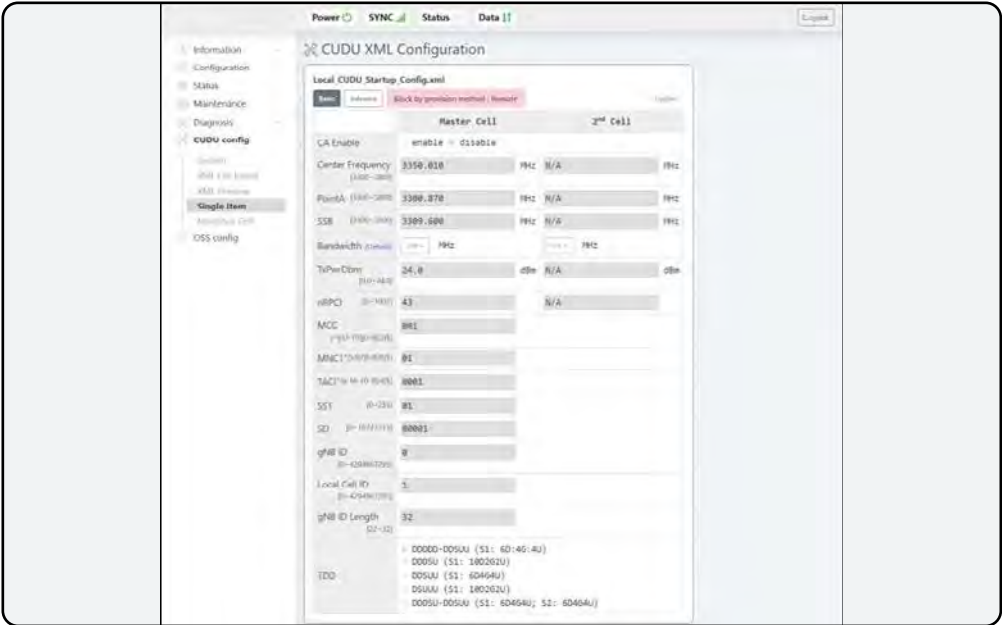
- Configuration -> **Timing sync** is blocked if provision method choose "Remote".



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10. Software Section WebGUI - CU and DU configurations

► CUDU config -> **Single Item** is blocked if provision method choose "Remote".



► CUDU config -> **Neighbor Cell** is blocked if provision method choose "Remote".



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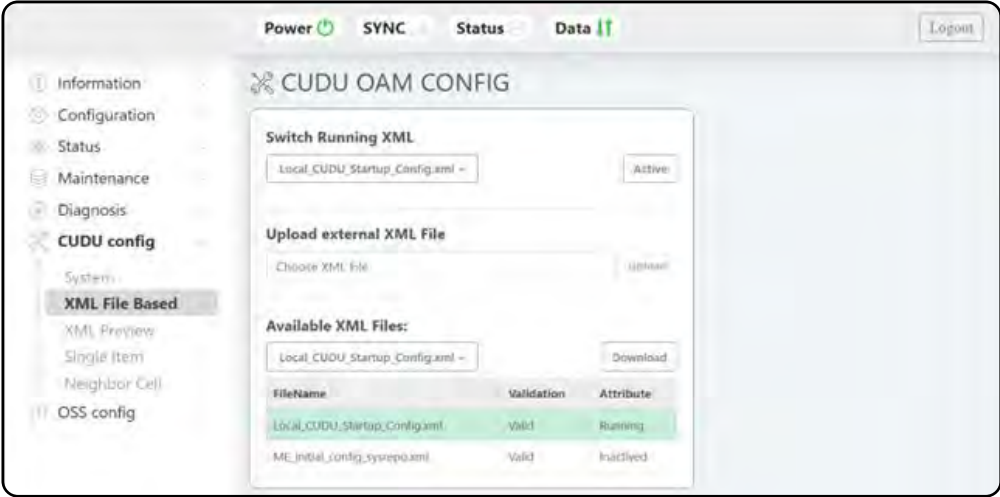
10. Software Section WebGUI - CU and DU configurations

XML file based configuration

DU/CU configuration is XML file based. In this page, DU/CU configuration will be applied based on whole XML file, user can switch, upload, download XML file.

- Switch Running XML – **select** running xml.
- Upload external XML File – **upload** external xml to ISC.
- Available XML Files – **download** available xml files from ISC.

In section DU/CU configuration – System , when the **Provision Method** is changed to **Remote** and the NetconfClient pushes the configuration into ISC, the system will automatically generate an XML file named **Remote_NETCONF_Config.xml**.

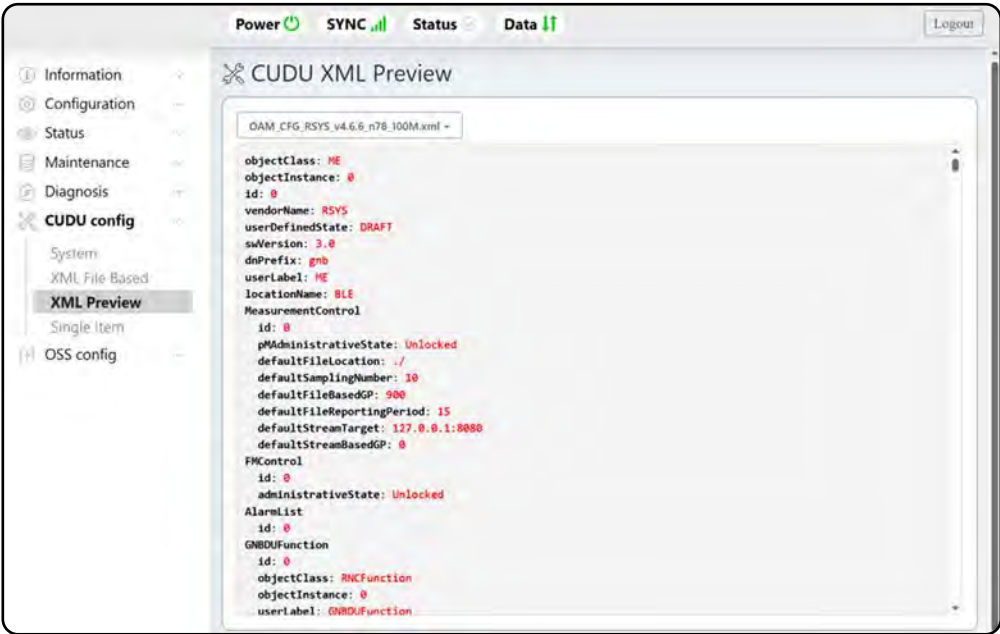


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10. Software Section WebGUI - CU and DU configurations

XML file preview

DU/CU configuration is XML file based. In this page, select specific configuration XML file, and review the whole xml file content.



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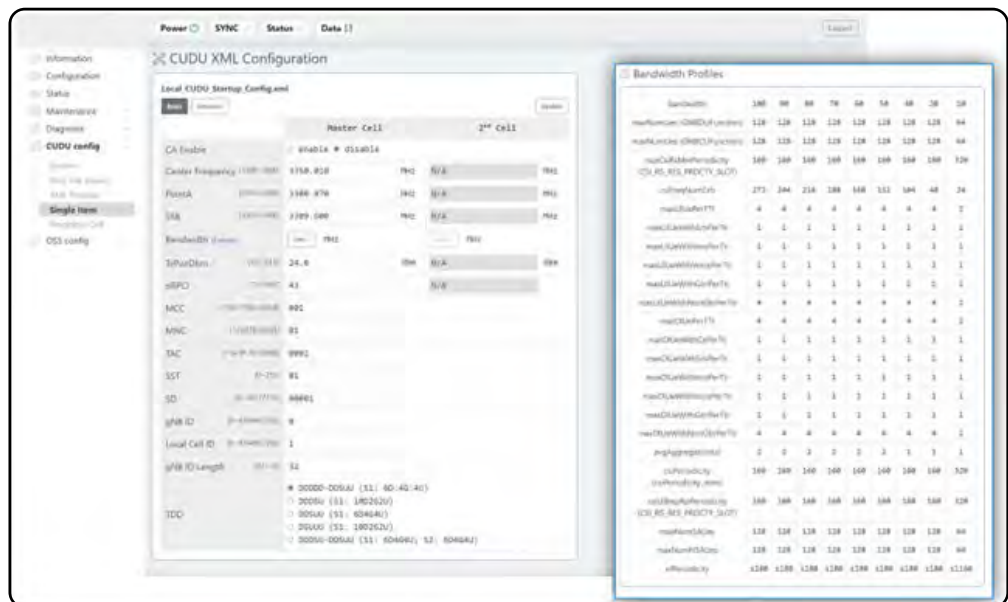
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Different to XML file based configuration, this page provides single item configuration. The contents are showed/applied to running XML file selected in section XML file-based configuration.

The basic configuration page includes:

- Center frequency
- PointA frequency
- SSB frequency
- Bandwidth
- Tx Power
- nRPCI
- MCC
- MNC
- TAC
- SST
- SD
- gNB ID
- gNB ID length
- TDD

Click (Detail) besides Bandwidth field to show Bandwidth Profiles, including corresponding detail configurations for each bandwidth.



Single item configuration (Advanced)

Different to XML file based configuration, this page provides single item configuration. The contents are showed/applied to running XML file selected in section XML file-based configuration.

The advanced configuration page includes:

- DMRS additional position for DL
- DMRS additional position for UL
- DL MCS
- DL QAM table
- UL MCS
- UL QAM table
- Ciphering Algorithm (NEA)
- Integrity Prot Algorithm (NIA)

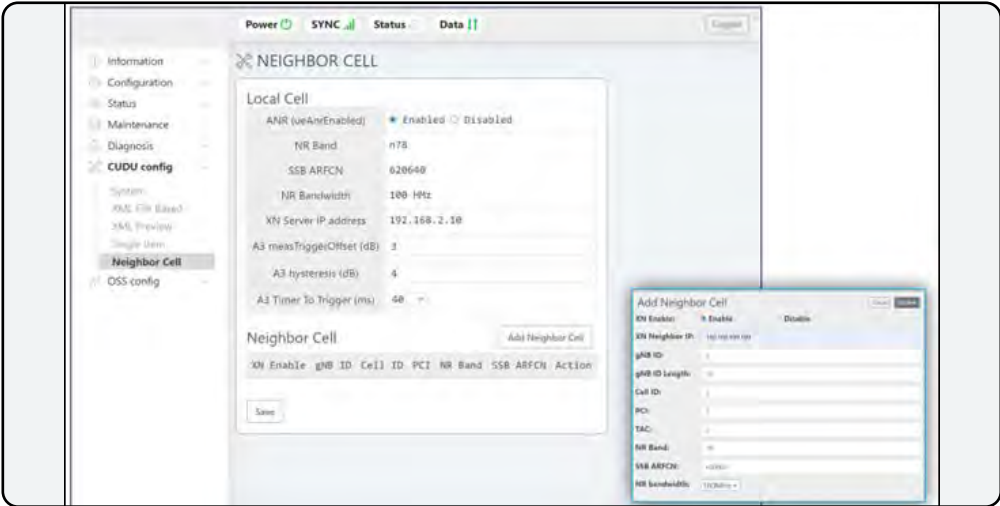


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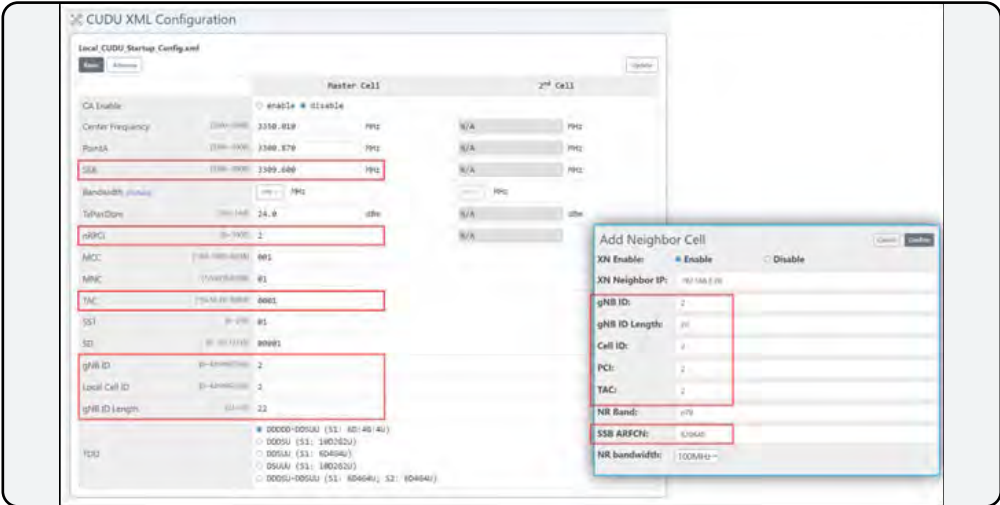
10. Software Section WebGUI - CU and DU configurations

Neighbor Cell Configuration

You can add 5G NR neighbor cell configuration on this page.

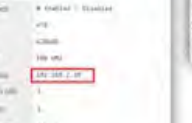


Neighbor cell information can be found on the Neighbor Cell CU/DU XML Configuration page.



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This is an example of 5G Serving Cell (gNodeB) and Neighbor Cell (gNodeB) configuration, which are connected to each other via the eth0 Ethernet interface (Xn-based connectivity).



NEIGHBOR CELL

Local Cell

BH binding interface: **eth0**

N2 IP: **192.168.2.10**

Xn Server IP: **192.168.2.10**

Serving Cell and Configuration

BH binding interface: **eth0**

N2 IP: **192.168.2.10**

Xn Server IP: **192.168.2.10**



NEIGHBOR CELL

Neighbor Cell

BH binding interface: **eth0**

N2 IP: **192.168.2.10**

Xn Server IP: **192.168.2.10**

Serving Cell and Configuration

BH binding interface: **eth0**

N2 IP: **192.168.2.10**

Xn Server IP: **192.168.2.10**

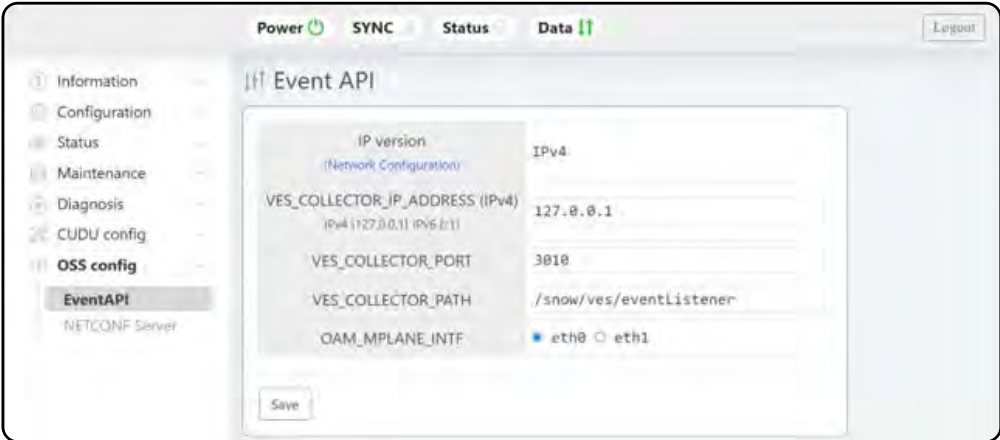
10.15. OSS configurations

VES configuration for PM/FM operation

In the Event API page, configure corresponding VNF Event Streaming (VES) collector's IPv4 address, port and PATH, once ISC connected to VES collector, ISC will report below messages:

- 1. PNF Registration
- 2. Heartbeat
- 3. Fault notification
- 4. Performance file ready

It is supported to choose binding to interface eth0 or eth1 to connect to VES_Collector, refer to Configuration -> Network for interface eth0/eth1 IPv4 setting.



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11. Management

11.1. Fault Management (FM) Alarms

Type: Communications Alarms

#	PEGA Code	Alarm ID	Communications Alarms	Alarm Object Class	Alarm Severity
1	301020	4609	CU_ALARM_ALL_AMF_COMM_DOWN	NGC	CRITICAL
2	301011	5121	CELL_ALARM_SLEEPING_CELL_DETECTION	NRCelICU	MINOR
3	301102	5122	PCI_COLLISION_CELL_DETECTED	NRCelICU	MAJOR
4	301007	5123	PCI_CONFUSION_DETECTED	NRCelICU	MINOR
5	301103	5126	ALARM_GTPU_PATH_FAILURE	NGU	CRITICAL
6	301104	5127	CELL_ALARM_GTPU_ALL_PATH_FAILURE	NGU	CRITICAL
7	301105	5128	CELL_ALARM_GTPU_PATH_UNSTABLE	NGU	MAJOR
8	301106	5129	CELL_ALARM_GTPU_ALL_PATH_UNSTABLE	NGU	MAJOR
9	301107	5131	CELL_ALARM_XNAP_CONNECTION_DOWN	XN	MAJOR
10	301108	5377	NGC_ALARM_AMF_COMM_DOWN	NGC	MAJOR
11	301008	5378	NGC_ALARM_NG_SETUP_FAILURE	NGC	MAJOR
12	301019	5380	NGC_ALARM_AMF_CONNECTION_UNSTABLE	NGC	MAJOR
13	302013	13313	CELL_ALARM_CELL_ADMIN_LOCKED	NRCelIDU	MAJOR
14	302104	13319	CELL_ALARM_BAND_NOT_SUPPORTED	NRCelIDU	CRITICAL
15	302105	13320	CELL_ALARM_NR_RF_CONFIGURATION_FAILURE	NRCelIDU	CRITICAL
16	302106	13321	CELL_ALARM_RF_TEMPERATURE_CRITICAL	NRCelIDU	CRITICAL
17	302107	13322	CELL_ALARM_RF_TEMPERATURE_WARNING	NRCelIDU	CRITICAL
18	302108	13323	CELL_ALARM_RF_TX_POWER_NOT_CONVERGED	NRCelIDU	CRITICAL
19	302109	13324	CELL_ALARM_CELL_CONFIGURATION_FAILURE	NRCelIDU	CRITICAL
20	302010	14081	F1_C_ALARM_F1_C_COMM_DOWN	F1C	MAJOR

► Source are from CU. All supports Raising Alarms and Clearing Alarms

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Fault Management (FM) Alarms

Type: Quality of Service Alarms

#	Pega Code	Alarm ID	Quality of Service Alarms	Alarm Object Class	Alarm Severity
21	502101	502012	MEMORY_EXCEEDED_90_PERCENTAGE	system	CRITICAL
22	502102	502101	GENERAL_CPU_EXCEEDED_95_PERCENTAGE	system	CRITICAL
23	502103	502102	ISOLATED_CPU_EXCEEDED_95_PERCENTAGE	system	CRITICAL
24	502104	502113	ROOT_FILE_SYSTEM_EXCEEDED_90_PERCENTAGE	system	CRITICAL
25	502105	502114	LOGS_FILE_SYSTEM_EXCEEDED_90_PERCENTAGE	system	CRITICAL

► Source are from CU. All supports Raising Alarms and Clearing Alarms

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11.2. Performance Management

Performance Management (PM) Counters

#	KPI Name	Performance Management (PM) Counters
1	Accessibility	RRC.ConnEstabAtt.sum
		RRC.ConnEstabSucc.sum
		UECNTX.ConnEstabAtt.sum
		UECNTX.ConnEstabSucc.sum
		DRB.EstabAtt.5QI.sum
		DRB.EstabSucc.5QI.sum
2	drbPdcpsduVolDL	DRB.PdcpsduVolumeDL_5QI1~9 DRB.PdcpsduVolumeDL_QCI1~9
3	drbPdcpsduVolUL	DRB.PdcpsduVolumeUL_5QI1~9 DRB.PdcpsduVolumeUL_QCI1~9
4	Mobility	MM.HoPrepInterReq
		MM.HoPrepInterSucc
		MM.HoExelInterReq
		MM.HoExelInterSucc
5	PRB utilization- DL	RRU.PrbUsedDL RRU.PrbAvailDL
6	PRB utilization- UL	RRU.PrbUsedUL RRU.PrbAvailUL
7	Retainability	DRB.RelActNbr.5QI.sum DRB.SessionTime.5QI.sum
8	Availability	CellAvailability.Active

► Source are from CU. All supports Raising Alarms and Clearing Alarms

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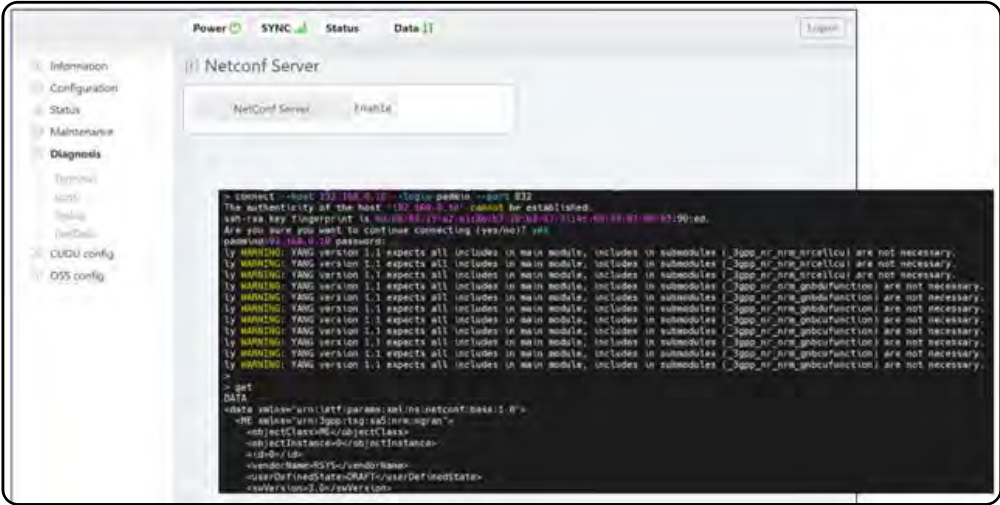
11.3. Netconf Server for CM

Netconf Server for Configuration Management (CM) operations. It's Enable/Disable status is directly associated to "AutoRun" enabled status in section "System",

ISC Netconf Server information:

- IP: Both eth0 and eth1 interface's IPv4 can be connected.
- Port: 832
- Account/Password: padmin/Pega@2025, which is directly inherited from Credential setting.

Once the NetconfServer is enabled, use a NetconfClient tool (such as netopeer2) to connect to ISC.



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Supported Configuration Management (CM) via Netconf Connection

Connection with 5GC and CU

Configuration requirement		value example	ISC NETCONF XPATH
5GC	N2 IP	<remoteAddress> 5.5.5.19 </remoteAddress>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/EP_NgC[id=0]/remoteAddress
	N3 IP	<remoteAddress> 5.5.5.5 </remoteAddress>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/EP_NgU[id=0]/remoteAddress
	Mobile country code (MCC)	<MCC>001</MCC>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/pLMNid/MCC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/NRCellCU[id=0]/plmnInfoList/MCC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/pLMNidList/MCC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/pLMNidList
	Mobile network code (MNC)	<MNC>01</MNC>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/pLMNid/MNC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/NRCellCU[id=0]/plmnInfoList/MNC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/pLMNidList/MNC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/pLMNidList
	Tracking area code (TAC)	<TAC>1</TAC>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/NRCellCU[id=0]/TAC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/nRTAC

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Connection with 5GC and CU

Configuration requirement	value example	ISC NETCONF XPATH
Slices	SST (Slice/Service Type)	<sST>01</sST> get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/NRCellCU[id=0]/plmnInfoList/sNSSAI/sST get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/pLMNIdList/sNSSAIDList/sST
	SD (Slice Differentiator)	<sD>00001</sD> get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/NRCellCU[id=0]/plmnInfoList/sNSSAI/sD get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDFunction[id=0]/NRCellDU[id=0]/pLMNIdList/sNSSAIDList/sD
NGC	IP address	<localIpAddress>5.5.5.68</localIpAddress> <remoteAddress>5.5.5.19</remoteAddress> get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/EP_NgC[id=0]/localIpAddress

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Connection with 5GC and CU

Configuration Requirement		Value Example	ISC NETCONF XPATH
NGU	IP address	<localIpAddress> 5.5.5.68 </localIpAddress>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/ EP_NgU[id=0]/localIpAddress
		<innerSecureLocalIpAddress> 5.5.5.68 </innerSecureLocalIpAddress>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/platform/ innerSecureLocalIpAddress

Basic gNB Settings

Configuration Requirement		Value Example	ISC NETCONF XPATH
gNodeB	gNB ID	<gNBId>0</gNBId>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/gNBId
		<gNBId>1</gNBId>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/gNBId
	gNB ID length	<gNBIdLength>32 </gNBIdLength>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/gNBIdLength
		<gNBIdLength>22 </gNBIdLength> <gNBIdLength>32 </gNBIdLength>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/gNBIdLength
	Release version	<swVersion>3.0 </swVersion>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/swVersion

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Connection with 5GC and CU

Configuration Requirement		Value Example	ISC NETCONF XPATH
Encryption algorithm	NEA0 NEA1 NEA2 NEA3	NEA0) encAlgo=NEA0 encAlgo1=NEA1 encAlgo2=NEA2 encAlgo3=NEA3 NEA1) encAlgo=NEA1 encAlgo1=NEA0 encAlgo2=NEA2 encAlgo3=NEA3 NEA2) encAlgo=NEA2 encAlgo1=NEA0 encAlgo2=NEA1 encAlgo3=NEA3 NEA3) encAlgo=NEA3 encAlgo1=NEA0 encAlgo2=NEA1 encAlgo3=NEA2	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/ NRCellCU[id=0]/CipheringAlgorithm

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Connection with 5GC and CU

Configuration Requirement		Value Example	ISC NETCONF XPATH
Integrity algorithm	NIA0 NIA1 NIA2 NIA3	NIA0)	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/NRCellCU[id=0]/IntegrityProtAlgorithm
		intAlgo1=NIA0	
		intAlgo1=NIA1	
		intAlgo2=NIA2	
		intAlgo3=NIA3	
		NIA1)	
		intAlgo1=NIA1	
		intAlgo1=NIA0	
		intAlgo2=NIA2	
		intAlgo3=NIA3	
		NIA2)	
		intAlgo1=NIA2	
		intAlgo1=NIA0	
		intAlgo2=NIA1	
		intAlgo3=NIA3	
		NIA3)	
		intAlgo1=NIA3	
		intAlgo1=NIA0	
		intAlgo2=NIA1	
		intAlgo3=NIA2	

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Supported Configuration Management (CM) via Netconf Connection

Connection with 5GC and CU

Configuration Requirement	Value Example	ISC NETCONF XPATH
DL MCS table and MCS index	dIModulation= QAM64, QAM256 dIMcs=0~31	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dIModulation get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dIMcs
UL MCS table and MCS index	ulModulation= QAM64, QAM256 ulMcs: 0~31	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/ulModulation get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/ulMcs
Antenna ports	4T1R: dlIRank=4 dlNumAntPorts=4 ulRank=1 ulNumOfAntPorts=4	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dlIRank get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dlNumAntPorts get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/ulRank get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/ulNumOfAntPorts

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Connection with 5GC and CU

Configuration Requirement	Value Example	ISC NETCONF XPATH
TDD time slot pattern	"DDDSUUDDDD"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/numDISlot get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numDISymbol
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "2", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "4", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	
	"DDDDDDDSUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/numUISlot
	"numDISlot": "7", "numDISymbol": "6", "numUISlot": "2", "numUISymbol": "4", "p2Pres": "0", "numDISlotP2": "0", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/numUISlotP2
	"DDDSU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/p2Pres
	"numDISlot": "3", "numDISymbol": "10", "numUISlot": "1", "numUISymbol": "2", "p2Pres": "0", "numDISlotP2": "0", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISymbol
	"DDDSUU DSUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/p2Pres
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "2", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "1", "numDISymbolP2": "10", "numUISlotP2": "2", "numUISymbolP2": "0", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numDISlotP2
	"DSUUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numDISymbolP2
	"numDISlot": "2", "numDISymbol": "6", "numUISlot": "2", "numUISymbol": "4", "p2Pres": "0", "numDISlotP2": "0", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISlotP2
	"DDDSUUUDD"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numDISymbolP2
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "4", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "2", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISlotP2
	"DDDSUDDSUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISlotP2
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "1", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "1", "numDISymbolP2": "6", "numUISlotP2": "2", "numUISymbolP2": "4", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISlotP2
	DSUUUUDSUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISlotP2
	"numDISlot": "1", "numDISymbol": "6", "numUISlot": "4", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "1", "numDISymbolP2": "10", "numUISlotP2": "2", "numUISymbolP2": "0", "prachCfgIdx": "154",	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ ulBwpCfg/rachCfgInfo/rachGenCfg/ prachCfgIdx
	"DDSUUDDSUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ ulBwpCfg/rachCfgInfo/rachGenCfg/ prachCfgIdx
	"numDISlot": "2", "numDISymbol": "6", "numUISlot": "3", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "1", "numDISymbolP2": "10", "numUISlotP2": "2", "numUISymbolP2": "0", "prachCfgIdx": "154",	

Supported Configuration Management (CM) via Netconf Connection

Connection with 5GC and CU

Configuration Requirement		Value Example	ISC NETCONF XPATH
Cell	Type	n78_3500580_100: nrFreqBand=78 nDlCenterFreq=3500580 nUlCenterFreq=3500580 bSChannelBwDL=100MHZ bSChannelBwUL=100MHZ nDlBw=100 nUlBw=100 numRb=273 carrierBw=273 absFreqPointA=3451440 absArfcnPointA=630096 absFreqSsb=3459360 absArfcnSsb=630624 dlEarfcn=633372 arfcnDL=633372 arfcnUL=633372 arfcnSUL=633372 nDlFftSize=4096 nUlFftSize=4096 For others, refer to https://oran-git.pegatroncorp.com/-/project/886/uploads/09f5b6ff437d42f3c25652595f5a67e0/Skynet_Cybernet_Band_and_Frequency_ARFCN_Table_Rev05.xlsx	<pre>get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ multiBandInfo[id=0]/nrFreqBand get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ multiBandInfo[id=0]/nrFreqBand get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nDlCenterFreq get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nUlCenterFreq get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nDlBw get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nUlBw get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/TxPwrDbm get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ bSChannelBwDL get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ bSChannelBwUL get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlBwpCfg[bwpld=0]/ numRb get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulBwpCfg[bwpld=0]/ numRb get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ subCarrierCfg[offsetToCarrier=0]/carrierBw get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ subCarrierCfg[offsetToCarrier=0]/carrierBw get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ absFreqPointA get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ absFreqPointA get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ absArfcnPointA get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/absFreqSsb get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ absArfcnSsb get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/dlEarfcn get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ulEarfcn get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/arfcnDL get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/arfcnUL get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/arfcnSUL</pre>

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Configuration Requirement	Value Example	ISC NETCONF XPATH
Cell Id	1	<pre>get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/NRCellCU/id get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/NRCellDU/id</pre>
PCI	1	<pre>get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/nRPCI get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/pdcchDmrsScramblingID get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/pdschDataScramblingID get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/puschDataScramblingID get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsDICfg/scramblingID0DI get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsDICfg/scramblingID1DI get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/ulCfgrCmn/ulBwpCfg/ hoppingId get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsUICfg/ transPrecodingDisabledUI/scramblingID0 get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsUICfg/ transPrecodingDisabledUI/scramblingID1</pre>

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11.4. Netconf Operation

Besides chapter Netconf Server for CM, this chapter also describes other Netconf based operations, including:

- reboot
- lock/unlock cell.

Netconf Serve’s Enable/Disable status is directly associated to “AutoRun” enabled status in section “System”.

ISC Netconf Server information:

- IP: Both eth0 and eth1 interface’s IPv4 can be connected.
- Port: 832
- Account/Password: **padmin/Pega@2025**, which is directly inherited from Credential setting.

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11.5. Netconf Reboot

Netconf Client tool uses **netopeer2-cli 2.0.69** as a NetconfClient tool.

```
> connect --host 192.168.0.10 --login padmin --port 832
padmin@192.168.0.10 password:
ly WARNING: YANG version 1.1 expects all includes in main module, includes in
submodules (_3gpp_nr_nrm_nrrelclcu) are not necessary.
...
ly WARNING: YANG version 1.1 expects all includes in main module, includes in
submodules (_3gpp_nr_nrm_gnbdufunction) are not necessary.
...
>
> user-rpc --content ./xml/pega_reboot.xml --rpc-timeout 60
OK
> client_loop: send disconnect: Connection reset by peer
>
```

```
> connect --host 192.168.0.10 --login padmin --port 832
padmin@192.168.0.10 password:
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrrelclcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrrelclcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbdufunction) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbdufunction) are not necessary.
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>
> user-rpc --content ./xml/pega_reboot.xml --rpc-timeout 60
OK
> client_loop: send disconnect: Connection reset by peer
```

pega_reboot.xml:

```
<system-reboot xmlns="urn:pega:sc-manager:1.0"/>
```

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11.6. Netconf Cell Lock/Unlock

Single Cell

Example of using netopeer2-cli 2.0.69 as a NetconfClient tool.

```
> connect --host 192.168.0.10 --login padmin --port 832
The authenticity of the host '192.168.0.10' cannot be established.
ssh-rsa key fingerprint is 64:92:aa:9f:e1:01:4e:85:ed:fb:c0:ca:68:c4:58:12:b3:be:7e:d5.
Are you sure you want to continue connecting (yes/no)? yes
padmin@192.168.0.10 password:
ly WARNING: YANG version 1.1 expects all includes in main module, includes in
submodules (_3gpp_nr_nrm_nrccellcu) are not necessary.
...
ly WARNING: YANG version 1.1 expects all includes in main module, includes in
submodules (_3gpp_nr_nrm_gnbdfuncion) are not necessary.
...
>
> edit-config --target running --config= ./xml/locked.xml --rpc-timeout 60
OK
> edit-config --target running --config= ./xml/unlocked.xml --rpc-timeout 60
OK
```

```
> connect --host 192.168.0.10 --login padmin --port 832
padmin@192.168.0.10 password:
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrccellcu) are not necessary.
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ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbdfuncion) are not necessary.
> edit-config --target running --config= ./xml/locked.xml
OK
>
> edit-config --target running --config= ./xml/unlocked.xml
OK
>
```

Cell Lock/Unlock (cont.)

Single Cell (cont.)

Example of using netopeer2-cli 2.0.69 as a NetconfClient tool.

locked.xml

```
<ME xmlns="urn:3gpp:tsg:sa5:nrm:ngran" operation= "modify">
  <GNBDUFunction>
    <id>0</id>
    <NRCellIDU operation= "modify">
      <id>0</id>
      <administrativeState operation= "modify">Locked</administrativeState>
    </NRCellIDU>
  </GNBDUFunction>
</ME>
```

unlocked.xml

```
<ME xmlns="urn:3gpp:tsg:sa5:nrm:ngran" operation= "modify">
  <GNBDUFunction>
    <id>0</id>
    <NRCellIDU operation= "modify">
      <id>0</id>
      <administrativeState operation= "modify">Unlocked</administrativeState>
    </NRCellIDU>
  </GNBDUFunction>
</ME>
```

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Example of using **netopeer2-cli 2.0.69** as a NetconfClient tool.

```
> connect -host 192.168.0.10 --login pdmtn --port 832
pdmtn@192.168.0.10 password:
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_ncellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_ncellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_ncellcu) are not necessary.
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ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbdufunction) are not necessary.
>
> edit-config --target running --config=/xml/2cell_locked.xml
OK
>
> edit-config --target running --config=/xml/2cell_unlocked.xml
OK
```

Multiple Cell (cont.)

Example of using **netopeer2-cli 2.0.69** as a NetconfClient tool.

2cell_locked.xml

```

<ME xmlns="urn:3gpp:tsg:sa5:nrm:ngran" operation="modify">
  <GNBDUFunction>
    <id>0</id>
    <NRCellIDU operation="modify">
      <id>0</id>
      <administrativeState operation="modify">Locked</administrativeState>
    </NRCellIDU>
    <NRCellIDU operation="modify">
      <id>1</id>
      <administrativeState operation="modify">Locked</administrativeState>
    </NRCellIDU>
  </GNBDUFunction>
</ME>

```

2cell_unlocked.xml

```

<ME xmlns="urn:3gpp:tsg:sa5:nrm:ngran" operation="modify">
  <GNBDUFunction>
    <id>0</id>
    <NRCellIDU operation="modify">
      <id>0</id>
      <administrativeState operation="modify">Unlocked</administrativeState>
    </NRCellIDU>
    <NRCellIDU operation="modify">
      <id>1</id>
      <administrativeState operation="modify">Unlocked</administrativeState>
    </NRCellIDU>
  </GNBDUFunction>
</ME>

```

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