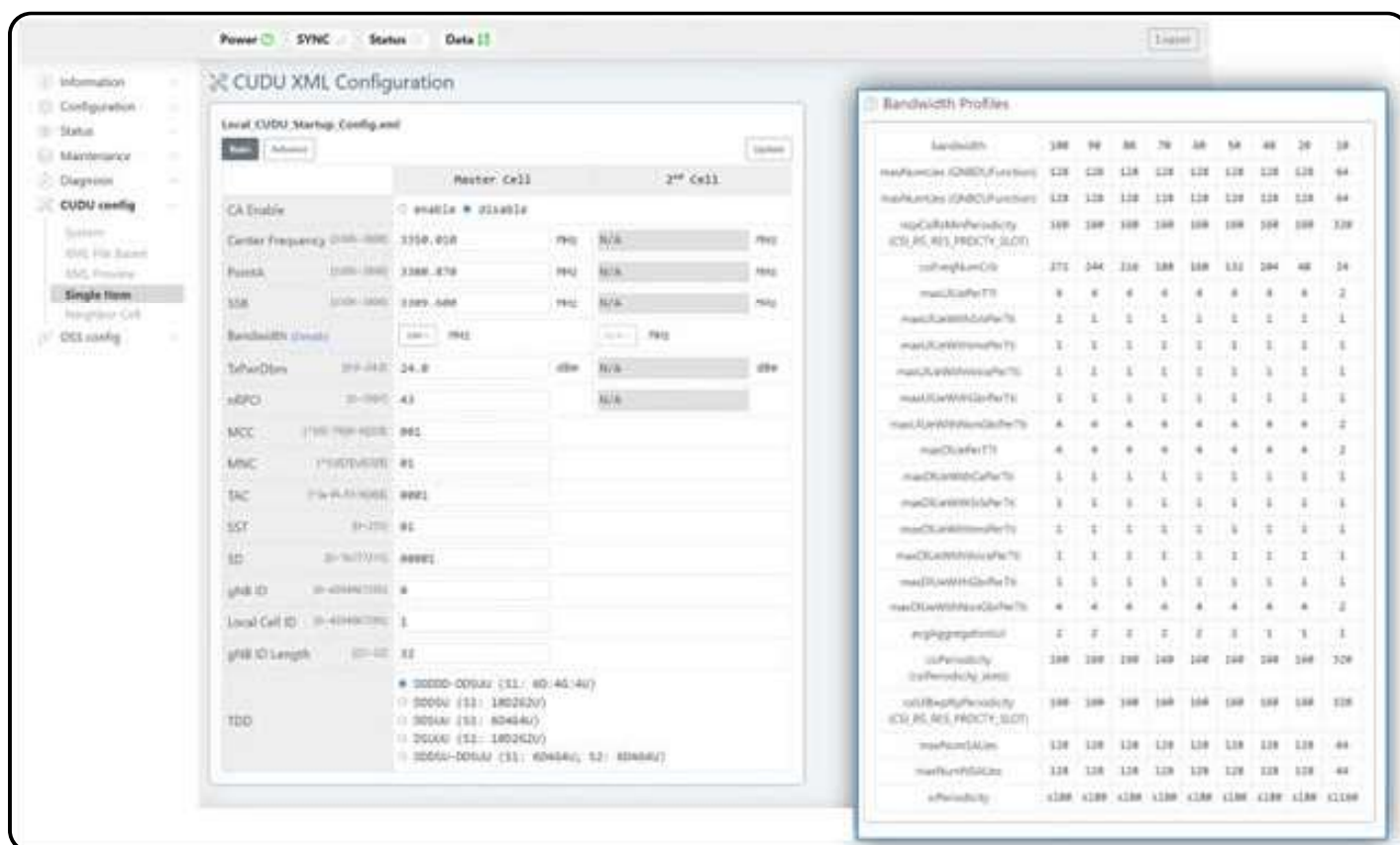


Different to XML file based configuration, this page provides single item configuration. The contents are showed/applied to running XML file selected in section XML file-based configuration.

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.



10. Software Section WebGUI - CU and DU configurations

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)

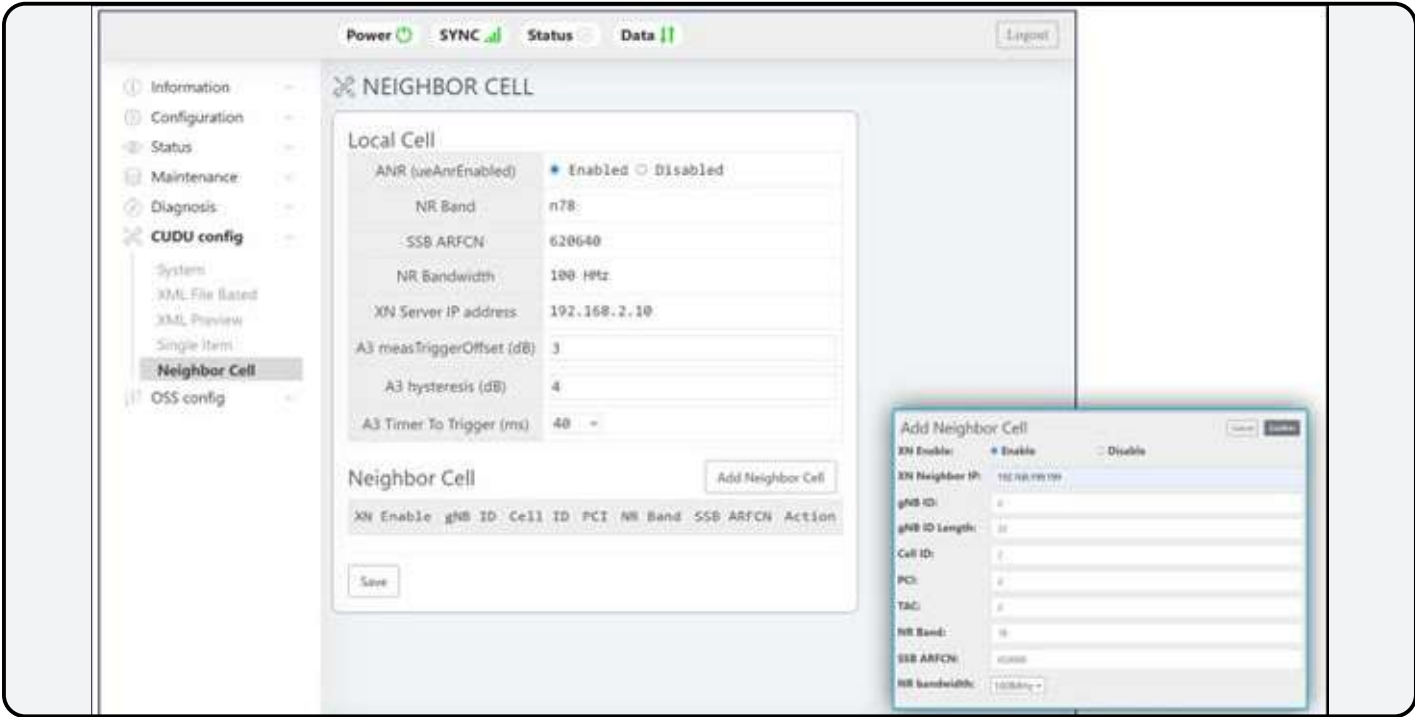


TOC
2 DOC
3 SPEC
4 PACK
4 ANT
4 KIT POLE
4 KIT WALL
5 PORT
5 LED
6 ANT SPEC
7 INST REQ
7 WALL FIX
7 POLE FIX
7 GND
7 ANT CONN
8 CONN TAPE
9 CON NECT
10 FW UP
10 WEB GUI
10 FW UP 2
11 MAN AGE

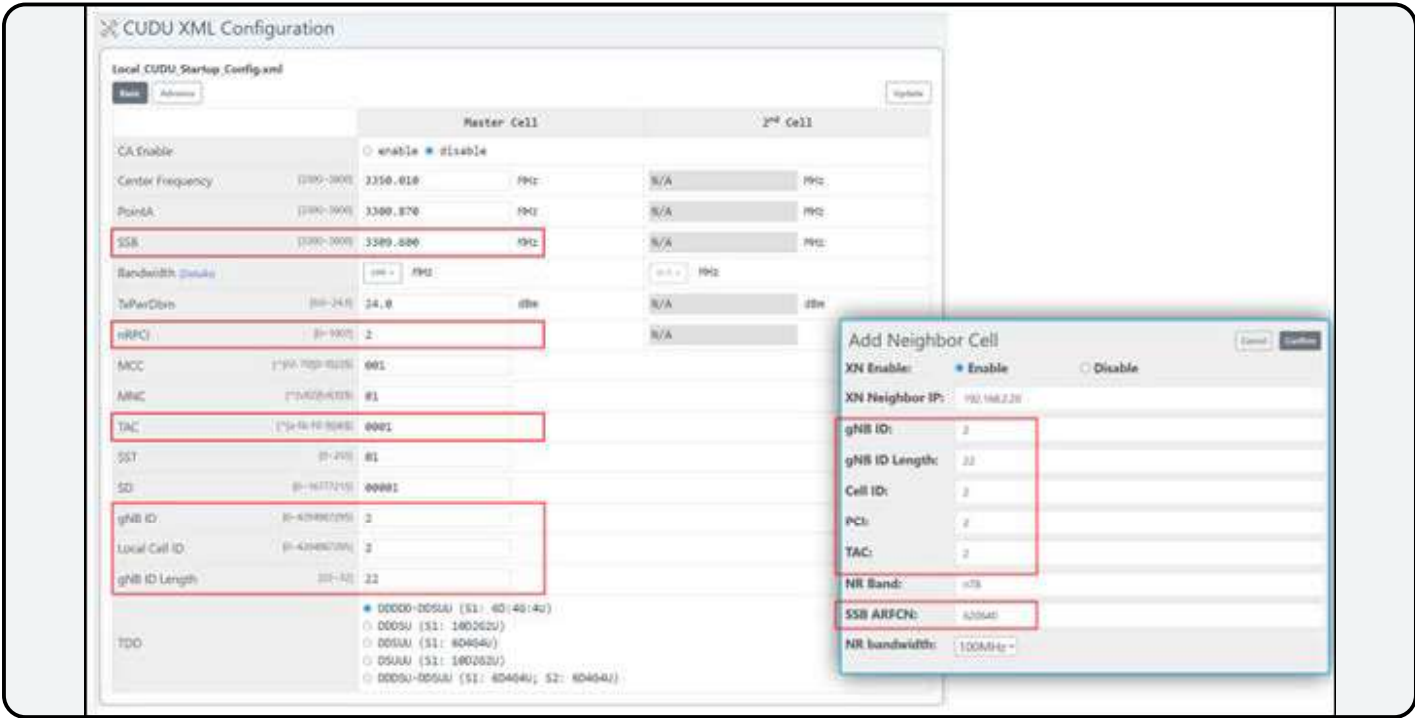
10. Software Section WebGUI - CU and DU configurations

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.



TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

10. Software Section WebGUI - CU and DU configurations

Neighbor Cell Configuration (cont.)

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

NR Band: n78

NR APN: 5GNET

NR Bandwidth: 100 MHz

NR Server IP address: 192.168.2.10

AI userTriggerOffset (dB): 0

AI SystemInfo (dB): 0

AI Timer To Trigger (ms): 100

Neighbor Cell

NR Neighbor: gNB ID: CELL ID: PCI: NR Band: 5GNET

NR Neighbor ID: 1

NR Neighbor PCI: 1

NR Neighbor Band: 5GNET

NR Neighbor APN: 5GNET

NR Neighbor Server IP: 192.168.2.20

NR Neighbor AI userTriggerOffset (dB): 0

NR Neighbor AI SystemInfo (dB): 0

NR Neighbor AI Timer To Trigger (ms): 100

NR Neighbor Add Neighbor Cell

NR Neighbor Save

Add Neighbor Cell

XN Enable: ☒ Enable ☐ Disable

XN Neighbor IP: 192.168.2.20

NGC/NGU Configuration

Interface: n78

Bandwidth: 100 MHz

AI userTriggerOffset (dB): 0

AI SystemInfo (dB): 0

AI Timer To Trigger (ms): 100

NR Neighbor ID: 1

NR Neighbor PCI: 1

NR Neighbor Band: 5GNET

NR Neighbor APN: 5GNET

NR Neighbor Server IP: 192.168.2.20

NR Neighbor AI userTriggerOffset (dB): 0

NR Neighbor AI SystemInfo (dB): 0

NR Neighbor AI Timer To Trigger (ms): 100

NR Neighbor Add Neighbor Cell

NR Neighbor Save

Serving Cell and Configuration

BH binding interface: eth0

N2 IP: 192.168.2.10

Xn Server IP: 192.168.2.10

eth0

NEIGHBOR CELL

Local Cell

NR Band: n78

NR APN: 5GNET

NR Bandwidth: 100 MHz

NR Server IP address: 192.168.2.20

AI userTriggerOffset (dB): 0

AI SystemInfo (dB): 0

AI Timer To Trigger (ms): 100

Neighbor Cell

NR Neighbor: gNB ID: CELL ID: PCI: NR Band: 5GNET

NR Neighbor ID: 1

NR Neighbor PCI: 1

NR Neighbor Band: 5GNET

NR Neighbor APN: 5GNET

NR Neighbor Server IP: 192.168.2.10

NR Neighbor AI userTriggerOffset (dB): 0

NR Neighbor AI SystemInfo (dB): 0

NR Neighbor AI Timer To Trigger (ms): 100

NR Neighbor Add Neighbor Cell

NR Neighbor Save

Add Neighbor Cell

XN Enable: ☒ Enable ☐ Disable

XN Neighbor IP: 192.168.2.10

NGC/NGU Configuration

Interface: n78

Bandwidth: 100 MHz

AI userTriggerOffset (dB): 0

AI SystemInfo (dB): 0

AI Timer To Trigger (ms): 100

NR Neighbor ID: 1

NR Neighbor PCI: 1

NR Neighbor Band: 5GNET

NR Neighbor APN: 5GNET

NR Neighbor Server IP: 192.168.2.10

NR Neighbor AI userTriggerOffset (dB): 0

NR Neighbor AI SystemInfo (dB): 0

NR Neighbor AI Timer To Trigger (ms): 100

NR Neighbor Add Neighbor Cell

NR Neighbor Save

Neighbor Cell and Configuration

BH binding interface: eth0

N2 IP: 192.168.2.20

Xn Server IP: 192.168.2.20

eth0

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

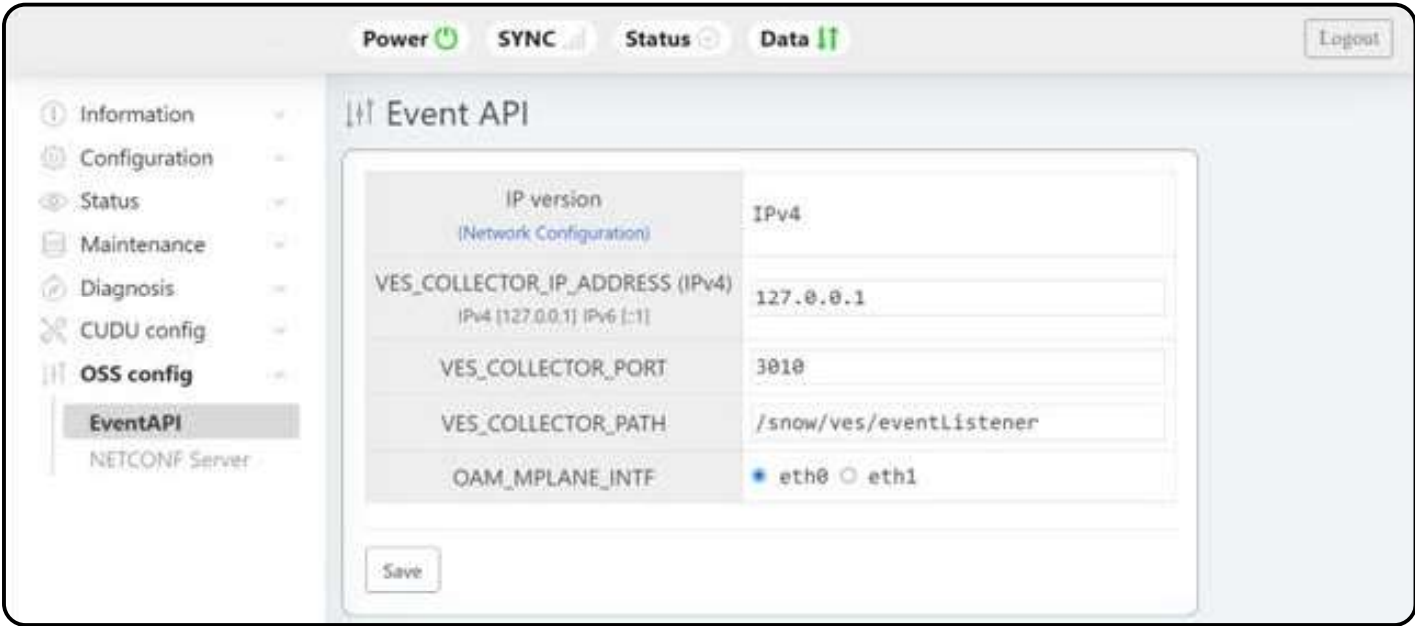
10.15. OSS configurations

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.



TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

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

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

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

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

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	drbPdcpsduVolUI	DRB.PdcpsduVolumeUI_5QI1~9
		DRB.PdcpsduVolumeUI_QCI1~9
4	Mobility	MM.HoPrepInterReq
		MM.HoPrepInterSucc
		MM.HoExeInterReq
		MM.HoExeInterReq
5	PRB utilization- DL	RRU.PrbUsedDL
		RRU.PrbAvailDL
6	PRB utilization- UL	RRU.PrbUsedUI
		RRU.PrbAvailUI
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

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

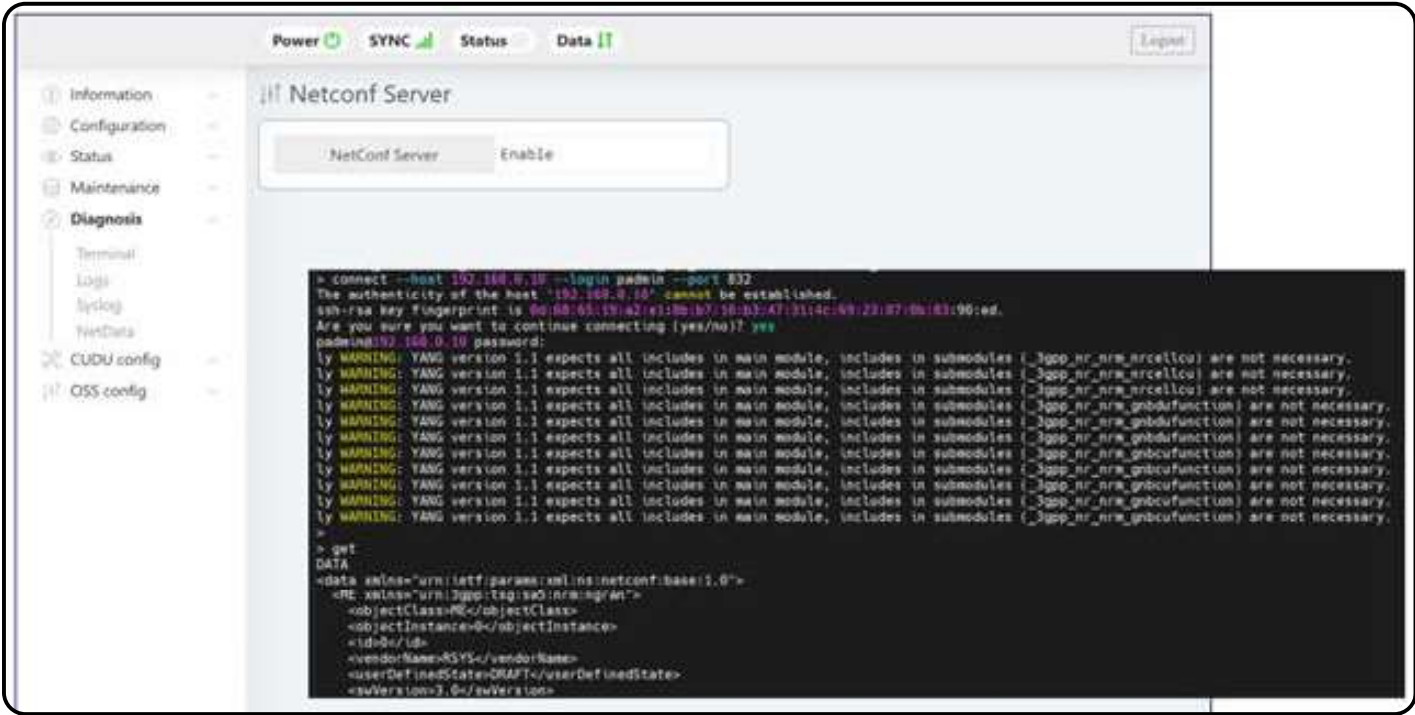
11.3. Netconf Server for CM

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.



TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

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/GNBDUFunction[id=0]/ NRCellDU[id=0]/pLMNIdList/MCC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[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/GNBDUFunction[id=0]/ NRCellDU[id=0]/pLMNIdList/MNC
			get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[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/GNBDUFunction[id=0]/ NRCellDU[id=0]/nRTAC

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

Supported Configuration Management (CM) via Netconf Connection

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/ GNBDUFunction[id=0]/ NRCellDU[id=0]/pLMNIdList/ sNSSAList/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/ GNBDUFunction[id=0]/ NRCellDU[id=0]/pLMNIdList/ sNSSAList/sD
NGC	IP address	<localIpAddress> 5.5.5.68 </localIpAddress>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/ EP_NgC[id=0]/localIpAddress
		<remoteAddress> 5.5.5.19 </remoteAddress>	

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

Supported Configuration Management (CM) via Netconf Connection

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> <gNBIdLength>22 </gNBIdLength> <gNBIdLength>32 </gNBIdLength>	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBCUFunction[id=0]/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

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

Supported Configuration Management (CM) via Netconf Connection

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	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBCUFunction[id=0]/ NRCellCU[id=0]/CipheringAlgorithm
		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	

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

Supported Configuration Management (CM) via Netconf Connection

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	

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

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	dlModulation= QAM64, QAM256 dlMcs=0~31	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dlModulation get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dlMcs
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: dlRank=4 dlNumAntPorts=4 ulRank=1 ulNumOfAntPorts=4	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/NRCellDU[id=0]/macCfgCmn/dlRank 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

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

Supported Configuration Management (CM) via Netconf Connection

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
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "2", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "4", "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/ numDISymbol
	"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/p2Pres
	"DDDSU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISymbol
	"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/ numDISlotP2
	"DDDSUU DSUU"	get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/ GNBDUFunction[id=0]/ NRCellDU[id=0]/cfgCmn/ numUISymbolP2
	"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]/ulCfgCmn/ ulBwpCfg/rachCfgInfo/rachGenCfg/ prachCfgIdx
	"DDSUU"	
	"numDISlot": "2", "numDISymbol": "6", "numUISlot": "2", "numUISymbol": "4", "p2Pres": "0", "numDISlotP2": "0", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	
	"DSUUU"	
	"numDISlot": "1", "numDISymbol": "10", "numUISlot": "3", "numUISymbol": "2", "p2Pres": "0", "numDISlotP2": "0", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	
	"DDDSUUUDD"	
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "4", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "2", "numDISymbolP2": "0", "numUISlotP2": "0", "numUISymbolP2": "0", "prachCfgIdx": "154",	
	"DDDSUDDSUU"	
	"numDISlot": "3", "numDISymbol": "6", "numUISlot": "1", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "2", "numDISymbolP2": "6", "numUISlotP2": "2", "numUISymbolP2": "4", "prachCfgIdx": "154",	
	DSUUUUDSUU"	
	"numDISlot": "1", "numDISymbol": "6", "numUISlot": "4", "numUISymbol": "4", "p2Pres": "1", "numDISlotP2": "1", "numDISymbolP2": "10", "numUISlotP2": "2", "numUISymbolP2": "0", "prachCfgIdx": "154",	
	"DDSUUUDSUU"	
	"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 ulEarfcn=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_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ multiBandInfo[id=0]/nrFreqBand get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ multiBandInfo[id=0]/nrFreqBand get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nDlCenterFreq get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nUlCenterFreq get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nDlBw get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/nUlBw get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/l1-CfgInfo/TxPwrDbm get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ bSChannelBwDL get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ bSChannelBwUL get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlBwpCfg[bwpld=0]/ numRb get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulBwpCfg[bwpld=0]/ numRb get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ subCarrierCfg[offsetToCarrier=0]/carrierBw get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ subCarrierCfg[offsetToCarrier=0]/carrierBw get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ absFreqPointA get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ absFreqPointA get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ absArfcnPointA get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ absArfcnSsb get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/dlCfgCmn/dlFreqInfo/ dlEarfcn get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/ulCfgCmn/ulFreqInfo/ ulEarfcn get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/arfcnDL get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/arfcnUL get-config --source running --filter-xpath /_3gpp_nr_nm:ME/ GNBDUFunction[id=0]/NRCellDU[id=0]/arfcnSUL </pre>

Supported Configuration Management (CM) via Netconf Connection

Connection with 5GC and CU

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]/dmrsDlCfg/scramblingID0Dl get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsDlCfg/scramblingID1Dl get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/ulCfgCmn/ulBwpCfg/ hoppingId get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsUlCfg/ transPrecodingDisabledUl/scramblingID0 get-config --source running --filter-xpath /_3gpp_nr_nrm:ME/GNBDUFunction[id=0]/ NRCellDU[id=0]/dmrsUlCfg/ transPrecodingDisabledUl/scramblingID1</pre>

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.

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

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_nrcellcu) 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_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrcellcu) 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.
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.
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.
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
```

pega_reboot.xml:

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

TOC

2

DOC

3

SPEC

4

PACK

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

UP2

11

MAN

AGE

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_nrcellcu) are not necessary.

...

ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) 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_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_gnbcufunction) are not necessary.
>
> edit-config --target running --config=./xml/locked.xml
OK
>
> edit-config --target running --config=./xml/unlocked.xml
OK
>
```

TOC

2

DOC

3

SPEC

4

PACK

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

11

MAN

AGE

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>
```

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

Example of using **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_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrcellcu) are not necessary.
ly WARNING: YANG version 1.1 expects all includes in main module, includes in submodules (_3gpp_nr_nrm_nrcellcu) 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.
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.
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.
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>
    <NRCellDU operation="modify">
      <id>0</id>
      <administrativeState operation="modify">Locked</administrativeState>
    </NRCellDU>
    <NRCellDU operation="modify">
      <id>1</id>
      <administrativeState operation="modify">Locked</administrativeState>
    </NRCellDU>
  </GNBDUFunction>
</ME>

```

2cell_unlocked.xml

```

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

```

TOC
2 DOC
3 SPEC
4 PACK
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
11 MAN AGE

PEGATRON Corporation

Address: 76 Ligong Street, Beitou District, Taipei City, Taiwan, 11259
Website: 5g.pegatroncorp.com
Email: 5gsupport@pegatroncorp.com