

- NPU Counters Groups (per-NPU counters):
 - » NPU DATA port
 - » NPU MGMT port
 - » NPU CASCADE port
 - » AU ports
 - » NPU internal-management interface
 - » NPU external-management interface
 - » NPU local-management interface
 - » NPU bearer interface
 - » Service Flow Authorization functionality
 - » Data path functionality
 - » AAA client functionality
 - » Authenticator function
 - » Context function
 - » DHCP proxy functionality
 - » DHCP relay functionality
 - » DHCP server functionality
 - » MS state change functionality

- AU Counters Groups (per-BS counters)

- » De-Registration
- » Integrity
- » Mobility
- » Network Entry (NE)
- » Traffic
- » Utilization
- » “Idle Mode”
- » “Fast Feedback CQI Handling”
- » “Ack/Nack Channel Handling”
- » “End Transaction Update”
- » “DL Frame Data Zone Histograms”
- » “TxR1 Net Traffic”
- » “RxR1 Net Traffic”
- » “TxR1 Total Traffic”
- » “RxR1 Total Traffic”
- » “DL HARQ Sub-Bursts Drops”
- » “DL HARQ Transmissions”
- » General
- » All MS Basic Mode
- » Specific MS Advanced Mode

For details on the performance data counters collected for each group refer to the relevant 4Motion Performance Management document.

You can specify the group for which performance data is to be stored and collected.

The data is stored in an XML file called, `prf_<SiteID>_yyyymmddhhmm.xml.gz` in the path, `/tftpboot/management/performance`. The system maintains this data for a maximum of 24 hours after which it is deleted. It is recommended that you periodically make a backup of these files on an external server.

You can enable/disable collection of performance data for each group separately. This section describes:

- [“Enabling Collection and Storage of Historical Performance Data” on page 361](#)
- [“Disabling Collection and Storage of Performance Data” on page 366](#)
- [“Displaying the Status of Performance Data Collection” on page 368](#)

3.3.13.1 Enabling Collection and Storage of Historical Performance Data

4Motion collects and stores performance data for the a number of system groups (refer to [Section 3.3.13](#)). To enable collection and storage of performance data for a group, run the following command:

To enable collection and storage of performance data for an NPU counters group:

```
npu(config)# pm-group enable npu { BckhlPort | MgmtPort | CascPort |
AuPortTable | IntMgmtIf | ExtMgmtIf | LclMgmtIf | BearerIf | Sfa |
DatapathFn | AaaClient | Authenticator | ContextFn | ProxyDhcp |
RelayDhcp | ServerDhcp | MsStateChangeFn }
```

To enable collection and storage of performance data for an AU counters group:

```
npu(config)# pm-group enable au { BsDeRegistrationTable |
BsIntegrity | BsMobilityTable | BsNetworkEntryTable |
BsTrafficTable | BsUtilizationTable | BsIdleModeTable |
BsFastFeedbackCQIHandlingTable | BsAckNackChannelHandlingTable |
BsEndTransactionUpdateTable | BsDlDataZoneFrameHistogramsTable |
BsTxRlNetTrafficTable | BsRxRlNetTrafficTable |
BsTxRlTotalTrafficTable | BsRxRlTotalTrafficTable |
BsDLHARQsbdropsTable | BsDLHARQTransmissionTable | BsGeneral |
Bsallmsbasicmode | Bsspecificmsadvancedmode }
```

**NOTE**

Using this command, you can enable collection of performance data for only one group at a time. For example, run the following command if you want to enable performance data collection and storage for the data path function:

```
npu(config)# pm-group enable npu DatapathFn
```

You can display whether performance data collection is currently enabled or disabled for a particular group. For details, refer [Section 3.3.13.3](#).

The parameters in this command correspond to the groups listed in the following tables:

Table 3-25: NPU Counters Groups for which Performance Data can be Collected

| Parameter Name | Refers to... |
|------------------------|-----------------------------------|
| BckhlPort | NPU DATA port |
| MgmtPort | NPU MGMT port |
| CascPort | NPU CASCADE port |
| AuPortTable | AU ports |
| IntMgmtIf | NPU internal-management interface |
| ExtMgmtIf | NPU external-management interface |
| LclMgmtIf | NPU local-management interface |
| BearerIf | NPU bearer interface |
| Sfa | Service flow authorization |
| DatapathFn | Data path functionality |
| AaaClient | AAA client functionality |
| Authenticator | Authenticator function |
| ContextFn | Context function |
| ProxyDhcp | DHCP proxy functionality |
| RelayDhcp | DHCP relay functionality |
| ServerDhcp | DHCP server functionality |
| MsStateChangeFn | MS state change functionality |

Table 3-26: AU Counters Groups for which Performance Data can be Collected

| Parameter Name | Refers to... |
|------------------------------|-----------------|
| BsDeRegistrationTable | De-Registration |
| BsIntegrity | Integrity |

Table 3-26: AU Counters Groups for which Performance Data can be Collected

| Parameter Name | Refers to... |
|---|-------------------------------|
| BsMobilityTable | Mobility |
| BsNetworkEntryTable | Network Entry |
| BsTrafficTable | Traffic |
| BsUtilizationTable | Utilization |
| BsIdleModeTable | Idle Mode |
| BsFastFeedbackCQIHandlingTable | Fast Feedback CQI Handling |
| BsAckNackChannelHandlingTable | Ack/Nack Channel Handling |
| BsEndTransactionUpdateTable | End Transaction Update |
| BsDlDataZoneFrameHistogramsTable | DL Frame Data Zone Histograms |
| BsTxR1NetTrafficTable | TxR1 Net Traffic |
| BsRxR1NetTrafficTable | RxR1 Net Traffic |
| BsTxR1TotalTrafficTable | TxR1 Total Traffic |
| BsRxR1TotalTrafficTable | RxR1 Total Traffic |
| BsDLHARQSubBurstsDropTable | DL HARQ Sub-Bursts Drop |
| BsDLHARQTransmissionTable | DL HARQ Transmissions |
| BsGeneral | General |
| Bsallmsbasicmode | All MS Basic Modem |
| Bsspecificmsadvancedmode | Specific MS Advanced Mode |

For example, run the following command if you want to enable performance data collection for the NPU DATA port:

```
npu(config)# pm-group enable npu BckhlPort
```

When you run this command, collection and storage of performance data is enabled for the DATA port counters.



NOTE

When you enable collection of performance data collection, the data is stored in a file called, **prf_<SiteID>_yyyymmddhhmm.xml.gz** in the path, **/tftpboot/management/performance**. It is recommended that you periodically make a backup of these files on an external server.

After you have enabled collection and storage of performance data is fetched every quarter of an hour.

**IMPORTANT**

An error may occur if run this command when you are operating the NPU in the Transparent mode and want to enable performance data storage and collection for the following WiMAX signaling protocol groups:

- Service Flow Authorization functionality
- Data path functionality
- AAA client functionality
- Authenticator function
- Context function
- DHCP proxy functionality
- DHCP relay functionality
- DHCP server functionality
- MS state change functionality

Command Syntax

```
npu(config)# pm-group enable npu { BckhlPort | MgmtPort | CascPort |
AuPortTable | IntMgmtIf | ExtMgmtIf | LclMgmtIf | BearerIf | Sfa |
DatapathFn | AaaClient | Authenticator | ContextFn | ProxyDhcp |
RelayDhcp | ServerDhcp | MsStateChangeFn}

npu(config)# pm-group enable au { BsDeRegistrationTable | BsIntegrity
| BsMobilityTable | BsNetworkEntryTable | BsTrafficTable |
BsUtilizationTable | BsIdleModeTable |
BsFastFeedbackCQIHandlingTable | BsAckNackChannelHandlingTable |
BsEndTransactionUpdateTable | BsDlDataZoneFrameHistogramsTable |
BsTxRlNetTrafficTable | BsRxRlNetTrafficTable |
BsTxRlTotalTrafficTable | BsRxRlTotalTrafficTable |
BsDLHARQsbDropsTable | BsDLHARQTransmissionTable | BsGeneral |
Bsallmsbasicmode | Bsspecificmsadvancedmode}
```

Privilege Level 10

Syntax**Description****For NPU groups:**

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|-----------|---------------|---------------------------------------|
| { BckhlPort MgmtPort CascPort AuPortTable IntMgmtIf ExtMgmtIf LclMgmtIf BearerIf Sfa DatapathFn AaaClient Authenticator ContextFn ProxyDhcp RelayDhcp ServerDhcp MsStateChangeFn } | For a description of each parameter in this command, refer to Table 3-25 . | Mandatory | N/A | Refer to Table 3-25 . |
| { BsDeRegistrationTable BsIntegrity BsMobilityTable BsNetworkEntryTable BsTrafficTable BsUtilizationTable BsIdleModeTable BsFastFeedbackCQIHandlingTable BsAckNackChannelHandlingTable BsEndTransactionUpdateTable BsDlDataZoneFrameHistogramsTable BsTxRlNetTrafficTable BsRxRlNetTrafficTable BsTxRlTotalTrafficTable BsRxRlTotalTrafficTable BsDLHARQSBdropsTable BsDLHARQTransmissionTable BsGeneral Bsallmsbasicmode Bsspecificmsadvancedmode } | For a description of each parameter in this command, refer to Table 3-26 . | Mandatory | N/A | Refer to Table 3-26 . |

Command Modes

Global configuration mode

3.3.13.2 Disabling Collection and Storage of Performance Data

To disable collection and storage of performance data for one group, run the following command:

To disable collection and storage of performance data for an NPU counters group:

```
npu(config)# no pm-group enable npu {BckhlPort | MgmtPort |
  CascPort | AuPortTable | IntMgmtIf | ExtMgmtIf | LclMgmtIf |
  BearerIf | Sfa | DatapathFn | AaaClient | Authenticator | ContextFn
  | ProxyDhcp | RelayDhcp | ServerDhcp | MsStateChangeFn}
```

To disable collection and storage of performance data for an NPU counters group:

```
npu(config)# no pm-group enable au { BsDeRegistrationTable |
  BsIntegrity | BsMobilityTable | BsNetworkEntryTable |
  BsTrafficTable | BsUtilizationTable | BsIdleModeTable |
  BsFastFeedbackCQIHandlingTable | BsAckNackChannelHandlingTable |
  BsEndTransactionUpdateTable | BsDlDataZoneFrameHistogramsTable |
  BsTxRlNetTrafficTable | BsRxRlNetTrafficTable |
  BsTxRlTotalTrafficTable | BsRxRlTotalTrafficTable |
  BsDLHARQsbdropsTable | BsDLHARQTransmissionTable | BsGeneral |
  Bsallmsbasicmode | Bsspecificmsadvancedmode}
```



NOTE

Using this command, you can disable collection of performance data for only one group at a time. For more information about the group names in this command, refer to [Table 3-25](#).

For example, run the following command if you want to disable performance data collection and storage for the data path function:

```
npu(config)# no pm-group enable npu DatapathFn
```

Command Syntax

```
npu(config)# no pm-group enable npu {BckhlPort | MgmtPort | CascPort |
  AuPortTable | IntMgmtIf | ExtMgmtIf | LclMgmtIf | BearerIf | Sfa |
  DatapathFn | AaaClient | Authenticator | ContextFn | ProxyDhcp |
  RelayDhcp | ServerDhcp | MsStateChangeFn}
```

```
npu(config)# no pm-group enable au { BsDeRegistrationTable |
  BsIntegrity | BsMobilityTable | BsNetworkEntryTable | BsTrafficTable |
  BsUtilizationTable | BsIdleModeTable | BsFastFeedbackCQIHandlingTable |
  BsAckNackChannelHandlingTable | BsEndTransactionUpdateTable |
  BsDlDataZoneFrameHistogramsTable | BsTxRlNetTrafficTable |
  BsRxRlNetTrafficTable | BsTxRlTotalTrafficTable | BsRxRlTotalTrafficTable
  | BsDLHARQsbdropsTable | BsDLHARQTransmissionTable | BsGeneral |
  Bsallmsbasicmode | Bsspecificmsadvancedmode}
```


Privilege Level 10

Syntax Description

| | Parameter | Description | Presence | Default Value | Possible Values |
|-----------------------|--|--|-----------|---------------|---------------------------------------|
| For NPU groups | {BckhlPort MgmtPort CascPort AuPortTable IntMgmtIf ExtMgmtIf LclMgmtIf BearerIf Sfa DatapathFn AaaClient Authenticator ContextFn ProxyDhcp RelayDhcp ServerDhcp MsStateChangeFn} | For a description of each parameter in this command, refer Table 3-25 . | Mandatory | N/A | Refer to Table 3-25 |
| For AU groups | { BsDeRegistrationTable BsIntegrity BsMobilityTable BsNetworkEntryTable BsTrafficTable BsUtilizationTable BsIdleModeTable BsFastFeedbackCQIHandlingTable BsAckNackChannelHandlingTable BsEndTransactionUpdateTable BsDlDataZoneFrameHistogramsTable BsTxR1NetTrafficTable BsRxR1NetTrafficTable BsTxR1TotalTrafficTable BsRxR1TotalTrafficTable BsDLHARQsbDropsTable BsDLHARQTransmissionTable BsGeneral Bsallmsbasicmode Bsspecificmsadvancedmode } | For a description of each parameter in this command, refer to Table 3-26 | Mandatory | N/A | Refer to Table 3-26 . |

Command Modes Global configuration mode

3.3.13.3 Displaying the Status of Performance Data Collection

To display whether collection and storage of performance data is enabled/disabled for a group, run the following command:

To display the status for an NPU counters group:

```
npu# show npu pm-group status {BckhlPort | MgmtPort | CascPort |
AuPortTable | IntMgmtIf | ExtMgmtIf | LclMgmtIf | BearerIf | Sfa |
DatapathFn | AaaClient | Authenticator | ContextFn | ProxyDhcp |
RelayDhcp | ServerDhcp | MsStateChangeFn}
```

To display the status for an AU counters group:

```
npu# show au pm-group status { BsDeRegistrationTable | BsIntegrity
| BsMobilityTable | BsNetworkEntryTable | BsTrafficTable |
BsUtilizationTable | BsIdleModeTable |
BsFastFeedbackCQIHandlingTable | BsAckNackChannelHandlingTable |
BsEndTransactionUpdateTable | BsDlDataZoneFrameHistogramsTable |
BsTxRlNetTrafficTable | BsRxRlNetTrafficTable |
BsTxRlTotalTrafficTable | BsRxRlTotalTrafficTable |
BsDLHARQsbDropsTable | BsDLHARQTransmissionTable | BsGeneral |
Bsallmsbasicmode | Bsspecificmsadvancedmode}
```



IMPORTANT

An error may occur if run this command when you are operating the NPU in the Transparent mode and want to display performance data collection for the following WiMAX signaling protocol groups:

- Service Flow Authorization functionality
- Data path functionality
- AAA client functionality
- Authenticator function
- Context function
- DHCP proxy functionality
- DHCP relay functionality
- DHCP server functionality
- MS state change functionality

```

Command      npu# show npu pm-group status { BckhlPort | MgmtPort | CascPort |
Syntax      AuPortTable | IntMgmtIf | ExtMgmtIf | LclMgmtIf | BearerIf | Sfa |
                DatapathFn | AaaClient | Authenticator | ContextFn | ProxyDhcp |
                RelayDhcp | ServerDhcp | MsStateChangeFn}

                npu# show au pm-group status { BsDeRegistrationTable | BsIntegrity |
                BsMobilityTable | BsNetworkEntryTable | BsTrafficTable |
                BsUtilizationTable | BsIdleModeTable | BsFastFeedbackCQIHandlingTable |
                BsAckNackChannelHandlingTable | BsEndTransactionUpdateTable |
                BsDLDataZoneFrameHistogramsTable | BsTxRlNetTrafficTable |
                BsRxRlNetTrafficTable | BsTxRlTotalTrafficTable | BsRxRlTotalTrafficTable
                | BsDLHARQsbDropsTable | BsDLHARQTransmissionTable | BsGeneral |
                Bsallmsbasicmode | Bsspecificmsadvancedmode}
    
```

Privilege Level 1

Syntax Description

For NPU groups

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|-----------|---------------|-------------------------------------|
| { BckhlPort MgmtPort CascPort AuPortTable IntMgmtIf ExtMgmtIf LclMgmtIf BearerIf Sfa DatapathFn AaaClient Authenticator ContextFn ProxyDhcp RelayDhcp ServerDhcp MsStateChangeFn } | For a description of each parameter in this command, refer Table 3-25 . | Mandatory | N/A | Refer to Table 3-25 |

| | | | | | |
|----------------------|---|--|-----------|-----|---------------------------------------|
| For AU groups | <pre>{ BsDeRegistrationTable BsIntegrity BsMobilityTable BsNetworkEntryTable BsTrafficTable BsUtilizationTable BsIdleModeTable BsFastFeedbackCQIHandlingTable BsAckNackChannelHandlingTable BsEndTransactionUpdateTable BsDlDataZoneFrameHistogramsTable BsTxRlNetTrafficTable BsRxRlNetTrafficTable BsTxRlTotalTrafficTable BsRxRlTotalTrafficTable BsDLHARQsDropsTable BsDLHARQTransmissionTable BsGeneral Bsallmsbasicmode Bsspecificmsadvancedmode}</pre> | For a description of each parameter in this command, refer to Table 3-26 | Mandatory | N/A | Refer to Table 3-26 . |
|----------------------|---|--|-----------|-----|---------------------------------------|

Display Format <Group Name> <Status>

Command Modes Global command mode

3.3.14 Configuring the SNMP/Trap Manager

This section describes the commands for:

- “Configuring the SNMP Manager” on page 370
- “Configuring the Trap Manager” on page 373

3.3.14.1 Configuring the SNMP Manager

To enable 4Motion configuration over SNMP, you are required to first configure the SNMP Manager. You can configure up to five SNMP Manager entries for the

4Motion system, where each entry is uniquely identified by the pair of values for the Read Community and Write Community. This section describes the commands to be executed for:

- “Adding an SNMP Manager” on page 371
- “Deleting an Entry for the SNMP Manager” on page 372
- “Displaying Configuration Information for SNMP Managers” on page 373



NOTE

An existing SNMP Manager entry cannot be modify. To modify the parameters of an SNMP Manager, delete the entry and add a new entry with the required parameters.

3.3.14.1.1 Adding an SNMP Manager

You can configure upto five SNMP Managers. To add an SNMP Manager, run the following command:

```
npu(config)# snmp-mgr [ReadCommunity <string>] [ReadWriteCommunity <string>]
```

You can display configuration information for existing SNMP Managers. For details, refer [Section 3.3.14.1.3](#).



IMPORTANT

An error may occur if you have specified:

- More than five entries for the SNMP Manager
- Duplicate entries (an snmp-mgr entry is uniquely identified by values for "ReadCommunity" and "WriteCommunity")

| | |
|-----------------------|---|
| Command Syntax | <code>npu(config)# snmp-mgr [ReadCommunity <string>] [ReadWriteCommunity <string>]</code> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------------|---|----------|---------------|---|
| [ReadCommunity <string>] | The SNMP Read Community string allowing execution of SNMP Get operations. | Optional | public | String (up to 10 characters and case-sensitive) |
| [ReadWriteCommunity <string>] | The SNMP Read/Write Community string allowing execution of SNMP Set and Get operations. | Optional | private | String (up to 10 characters and case-sensitive) |

Command

Global configuration mode

Modes**3.3.14.1.2 Deleting an Entry for the SNMP Manager**

To delete an SNMP Manager entry, run the following command:

```
npu(config)# no snmp-mgr index <integer>
```

**IMPORTANT**

An error may occur if you provide an incorrect index number for the SNMP Manager to be deleted. To display the index numbers for configured SNMP Managers, refer [Section 3.3.14.1.3](#).

Command

```
npu(config)# no snmp-mgr index <integer>
```

Syntax**Privilege**

10

Level**Syntax****Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|---|-----------|---------------|-----------------|
| <integer> | Indicates the index number of the SNMP Manager to be deleted. Should be an index of an existing SNMP Manager. | Mandatory | N/A | 1-5 |

Command Modes Global configuration mode

3.3.14.1.3 Displaying Configuration Information for SNMP Managers

To display configuration information for all SNMP Managers, run the following command:

```
npu# show snmp-mgr
```



IMPORTANT

An error may occur if there is no existing SNMP Manager entry.

Command Syntax npu# show snmp-mgr

Privilege Level 10

Display Format

Snm Manager Table

```
-----
Manager Index:(1) Read Only Community:(<value>) Read WriteCommunity:
(<value>)
```

Command Modes Global command mode

3.3.14.2 Configuring the Trap Manager

The SNMP Agent can send traps to multiple Trap Managers, for which an entry exists in the 4Motion system. After you have created an entry for a Trap Manager, you are required to enable the Trap Manager. You can, at any time, disable a Trap Manager for the 4Motion system.

This section describes the commands for:

- [“Adding/Modifying a Trap Manager entry” on page 374](#)
- [“Deleting an Entry for the Trap Manager” on page 375](#)
- [“Enabling/Disabling the Trap Manager” on page 376](#)

- “Displaying Configuration Information for Trap Managers” on page 377
- “Displaying the Trap Rate Limit” on page 377

3.3.14.2.1 Adding/Modifying a Trap Manager entry

You can configure up to five Trap Manager entries for the 4Motion system. To add a Trap Manager entry, or to modify an existing entry, run the following command:

```
npu(config)# trap-mgr ip-source <ip_addr> [Port <(0-65535)>]
[TrapCommunity <string>] [EnableFlag <integer(1 for enable, 2 for
disable)>]
```

You can view configuration information for existing Trap Managers. For details, refer [Section 3.3.14.2.4](#).



IMPORTANT

An error may occur if :

- You have specified invalid values for the IP address, Trap Community or port.
- The IP address is already configured for another Trap Manager.
- You are trying to create more than five Trap Managers. (You can configure up to five Trap Managers for the 4Motion system.)

| | |
|----------------|--|
| Command | npu(config)# trap-mgr ip-source <ip_addr> [Port <(0-65535)>] |
| Syntax | [TrapCommunity <string>] [EnableFlag <integer(1 for enable, 2 for disable)>] |

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|---|-----------|---------------|------------------|
| <ip_addr> | Indicates the IP address of the Trap Manager to be added or modified. Must be unique (the same IP address cannot be assigned to more than one Manager) | Mandatory | N/A | Valid IP address |

| | | | | |
|--|--|----------|--------|--|
| [Port <(0-65535)>] | Indicates the port number on which the Trap Manager will listen for messages from the Agent. | Optional | 162 | 0-65535 |
| [TrapCommunity <string>] | Indicates the name of the community of the Trap Manager. | Optional | public | String (up to 10 characters and case-sensitive) |
| [EnableFlag<integer(1 for enable, 2 for disable)>] | Indicates whether traps sending to the Trap Manager is to be enabled. or disabled | Optional | 1 | <ul style="list-style-type: none"> ■ 1: Indicates enable ■ 2 Indicates disable |

Command Modes Global configuration mode



IMPORTANT

A route to forward traps to a configured Trap Manager IP address must exist. For details refer to “[Configuring Static Routes](#)” on page 167. .

3.3.14.2.2 Deleting an Entry for the Trap Manager

To delete a Trap Manager, run the following command:

```
npu(config)# no trap-mgr ip-source <ip_addr>
```



IMPORTANT

An error may occur if the IP address you have specified does not exist.

Command Syntax `npu(config)# no trap-mgr ip-source <ip_addr>`

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|---|-----------|---------------|------------------|
| <ip_addr> | Indicates the IP address of the Trap Manager to be deleted. | Mandatory | N/A | Valid IP address |

Command

Global configuration mode

Modes**3.3.14.2.3 Enabling/Disabling the Trap Manager**

Traps are sent to a particular Trap Manager only if it is enabled. Run the following commands to enable/disable the Trap Manager that you have created.

**NOTE**

By default, all Trap Managers are enabled.

```
npu(config)# trap-mgr enable ip-source <ip_addr>
```

```
npu (config)# trap-mgr disable ip-source <ip_addr>
```

**NOTE**

These enable/disable commands have functionality that is identical to the EnableFlag parameter (see [“Adding/Modifying a Trap Manager entry” on page 374](#)).

**IMPORTANT**

An error may occur if the IP address that you ave specified does not exist in the Trap Manager index.

Command

```
npu(config)# trap-mgr enable ip-source <ip_addr>
```

Syntax

```
npu (config)# trap-mgr disable ip-source <ip_addr>
```

Privilege

10

Level

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|--|-----------|---------------|------------------|
| <ip_addr> | Indicates the IP address of the Trap Manager to be enabled/disabled. | Mandatory | N/A | Valid IP Address |

Command

Global configuration mode

Modes**3.3.14.2.4 Displaying Configuration Information for Trap Managers**

To display configuration information for the configured Trap Managers, run the following command:

```
npu# show trap-mgr
```

**IMPORTANT**

An error may occur if no Trap Manager has been configured.

Command

```
npu# show trap-mgr
```

Syntax**Privilege Level**

10

Display Format

Trap Manager Table

```
Trap Manager Ip:(10.203.153.149) Port:(162) Community:(public) Control
Register: (Enable)
```

Command

Global command mode

Modes**3.3.14.2.5 Displaying the Trap Rate Limit**

The Trap Rate Limit is the hard-coded maximum rate at which the device can send traps. To display the trap rate limit, run the following command:

```
npu# show trap-rate-limit
```

Command Syntax `npu# show trap-rate-limit`

Privilege Level 1

Display Format Maximum number of traps sent is 20 traps per second.

Command Modes Global command mode

3.3.14.2.6 Displaying the Active Clear Timer and Event Rate Limit

The Active Clear Timer parameter indicates the hard-coded value for the suppression interval aimed at preventing too fast repetitions of alarm active-clear (alarm toggling). The Event Rate Limit is practically identical to the trap-rate-limit parameter (see previous section) indicating the hard-coded value for the maximum number of traps per second.

To display one of these parameters, run the following command:

```
npu# show {activeClearTimer | eventRateLimit}
```

Command Syntax `npu# show {activeClearTimer | eventRateLimit}`

Privilege Level 1

Display Format `activeClearTimer: <value>`
 or:
 `eventRateLimit: <value>`

Command Modes Global command mode

3.3.15 Configuring the 4Motion Shelf

The 4Motion shelf comprises the following components:

- NPU card: Serves as the shelf controller that manages and monitors all the shelf components. In addition, it provides backbone Ethernet connectivity via The DATA port. The shelf is designed to contain one active and one redundant NPU card.



IMPORTANT

NPU redundancy is not supported in the current release.

- AU: Is responsible for wireless network connection establishment and for bandwidth management. The shelf can contain up to 7 AUs, with a maximum of 6 operational AUs.
- PSU: A Power Supply Unit that accepts power from the PIU(s) and provides +5V,+3.3V, +/-12V DC outputs. The shelf can contain up to four PSUs providing N+1 redundancy.
- PIU: The PIU filters and stabilizes the input power and protects the system from power problems such as over voltage, surge pulses, reverse polarity connection and short circuits. It also filters high frequency interference (radiated emissions) and low frequency interference (conducted emissions) to the external power source. Each shelf contains two slots for an optional 1+1 PIU redundancy. One PIU is sufficient to support a fully populated shelf. Two PIU modules provide redundant power feeding (two input sources) while avoiding current flow between the two input sources.
- GPS: An external GPS receiver is used to synchronizes the air link frames of Intra-site and Inter-site located sectors to ensure that in all sectors the air frame will start at the same time, and that all sectors will switch from transmit (downlink) to receive (uplink) at the same time. This synchronization is necessary to prevent Intra-site and Inter-site sectors interference and saturation (assuming that all sectors are operating with the same frame size and with the same DL/UL ratio).
- AVU: Includes a 1U high integral chamber for inlet airflow and a 1U high fan tray with an internal alarm module. The AVU comprises 10 brush-less fans, where 9 fans are sufficient for cooling a fully loaded chassis.

- **Power Feeder:** The PIU can support a maximum current of 58 A (@-40.5 VDC). In certain installations with a relatively high number of ODUs this current may not be sufficient to power the shelf and all the ODUs. In such installations the ODU Power Feeder is used as an additional power source providing power (-48V DC) to ODUs. It transfers transparently all signals between the AU and the ODU, while injecting DC power received from an external source. Each ODU Power Feeder unit can serve up to four ODUs.

This section describes the commands to be used for:

- [“Configuring the PSU/PIU Modules” on page 380](#)
- [“Configuring the GPS” on page 383](#)
- [“Managing Power Feeders Configuration” on page 396](#)
- [“Managing Dry-contact Input Alarms” on page 398](#)
- [“Managing Dry-contact Output Alarms” on page 403](#)
- [“Displaying Configuration Information for Dry-contact Input/Output Alarms” on page 406](#)
- [“Managing the Site General Information for the 4Motion Shelf” on page 407](#)
- [“Managing the Unique Identifier for the 4Motion Shelf” on page 409](#)
- [“Displaying the Vendor Identifier” on page 411](#)

3.3.15.1 Configuring the PSU/PIU Modules

This section describes the commands to be used for:

- [“Enabling/Disabling the PSU, and PIU Modules” on page 380](#)
- [“Configuring the PIU Hardware Version” on page 382](#)

3.3.15.1.1 Enabling/Disabling the PSU, and PIU Modules

You can use the CLI to configure the administrative status of the PSU/PIU modules to enable or disable.

**IMPORTANT**

An alarm is raised if you enable a PSU or PIU that is already powered down, or you disable a PSU or PIU that is already powered up.

Run the following command to enable/disable the PSU/PIU modules:

```
npu(config)# enable {PSU | PIU} <slot id>
```

```
npu(config)# disable {PSU | PIU} <slot id>
```

Specify the slot ID of the PSU or PIU to be enabled. The following figure depicts the slot ID of the 4Motion shelf components:

Figure 3-1: Slot IDs of Shelf Components

| | | | | | | | | | | | |
|--------|--------|-------|-------|-------|-------|--------|--------|-------|-------|-------|--------|
| PIU #1 | PSU #1 | AU #1 | AU #2 | AU #3 | AU #4 | NPU #5 | NPU #6 | AU #7 | AU #8 | AU #9 | PSU #3 |
| PIU #2 | PSU #2 | | | | | | | | | | PSU #4 |

For example, if you want to enable PSU, slot# 3, and disable the PIU, slot# 1, run the following command:

```
npu(config)# enable PSU 3
```

```
npu(config)# disable PIU 1
```

**IMPORTANT**

An error may occur if you specify a PSU slot ID that is not in the range, 1-4, or a PIU slot ID that is not in the range 1-2.

Remember that a minimum AU-to-PSU/PIU ratio should always be maintained. The following table lists the required active AU-to-PSU ratio. Before disabling the PSU module, ensure that this ratio is maintained.

**IMPORTANT**

Ensure that the NPU to PSU/PIU ratio is also maintained. At least one PSU and PIU should always be active to support the NPU.

Table 3-27: Active AU-to-PSU Ratio

| If the number of Active AUs is... | Number of active PSUs should be... | Number of Active PIU |
|-----------------------------------|------------------------------------|----------------------|
| 1-4 | 2 | 1 |
| 5-7 | 3 | 1 |

Command Syntax `npu(config)# enable {PSU | PIU} <slot id>`
Syntax `npu(config)# disable {PSU | PIU} <slot id>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------|--|-----------|---------------|--|
| {PSU PIU} | Indicates whether the PSU or PIU slot is to be enabled or disabled. | Mandatory | N/A | <ul style="list-style-type: none"> ■ PSU ■ PIU |
| <slot id> | Indicates the slot ID of the PSU/PIU that you want to enable or disable. Refer Figure 3-1 for more information about the slot ID assigned to each PIU/PSU module on the 4Motion chassis. | Mandatory | N/A | <ul style="list-style-type: none"> ■ 1-4 for PSU slot ■ 1-2 for PIU slot |

Command Modes Global configuration mode

3.3.15.1.2 Configuring the PIU Hardware Version

You need to manually configure the PIU hardware version that should be currently in use. The system periodically checks whether the configured and actual hardware versions are identical. If there is a difference in the configured and actual versions, an alarm is raised.

The `hw_version` parameter indicates the current supply capability of the PIU: 58A (high-power PIU) or 35A.

To configure the PIU hardware version, run the following command:

```
npu(config)# PIU <slot id (1-2)> hw_version <version (5-6)>
```

Command Syntax npu(config)# PIU <slot id (1-2)> hw_version <version (5-6)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------------------|---|-----------|---------------|----------------------------|
| <slot id (1-2)> | Indicates the PIU slot ID for which the hardware version is to be configured. | Mandatory | N/A | 1-2 |
| hw_version <version (5-6)> | Indicates the hardware version to be configured for the PIU slot. 5 indicates a PIU that can support up to 58A. 6 indicates a PIU that can support up to 35A. | Mandatory | N/A | ■ 5 (58A) ■ 6 (35A) |

Command Modes Global configuration mode

3.3.15.2 Configuring the GPS

The GPS is used to synchronize the air link frames of Intra-site and Inter-site located sectors to ensure that in all sectors the air frame will start at the same time, and that all sectors will switch from transmit (downlink) to receive (uplink) at the same time. This synchronization is necessary to prevent Intra-site and Inter-site sectors interference. In addition, the GPS synchronizes frame numbers that are transmitted by the AU.



IMPORTANT

Implementation of GPS synchronization is based on the assumption that all sectors are operating with the same frame size and with the same DL/UL ratio.

The GPS clock generates a 1PPS signal and is connected to the 4Motion shelf via the GPS SYNC IN connector on the front panel of the NPU. The GPS clock requirements can be reached by an outdoor installed GPS unit when it is synchronized to a minimum number of (user-configurable) satellites.

This section describes the commands to be used for:

- [“Configuring the GPS Clocks” on page 384](#)
- [“Configuring General Configuration Parameters for the GPS” on page 387](#)
- [“Configuring the Date and Time” on page 388](#)
- [“Configuring the Position” on page 390](#)
- [“Configuring the Required Number of Satellites” on page 391](#)
- [“Displaying GPS Clocks Parameters” on page 392](#)
- [“Displaying GPS General Configuration Parameters” on page 393](#)
- [“Displaying the Date and Time Parameters” on page 394](#)
- [“Displaying the Position Parameters” on page 395](#)
- [“Displaying the Number of Satellite Parameters” on page 395](#)

3.3.15.2.1 Configuring the GPS Clocks

The GPS clock parameters determines the source for the main clocks in the system. To configure the GPS clock, you are required to enable/disable:

- **External 1PPS:** Determines the air-frame start time. Assuming that all systems use the same air-frame size and DL/UL Ratio, then, when the 1PPS clock is received from a GPS system, this mechanism ensures inter-site and intra-site synchronization among all sectors, preventing cross interference and saturation problems. When using the internal 1PPS clock (derived from the selected 16 MHz clock source), only intra-site synchronization among sectors can be achieved. You can either enable the external 1PPS clock source or use the internal 1PPS clock source derived from the selected 16 MHz clock. By default, the External IPPS clock is enabled. When using a GPS for synchronization, the 1PPS clock is received from the GPS receiver and must be enabled for proper operation.

**NOTE**

If the external 1PPS GPS clock is enabled:

- The concatenated slave NPU 16Mhz created from local 16MHz TCXO/OCXO at the NPU provides holdover when the GPS loses synchronization with its satellites.
- Configure the GPS parameters listed in section, [Section 3.3.15.2.2](#).
- **External 16MHz:** Generates all the main clocking signals in the system, including the internal 1PPS clock. Using an external, accurate 16 MHz clock source will enable better hold-over of the 1PPS clock upon temporary loss (or reduced reliability when receiving less than 4 satellites) of the external 1PPS clock. This will allow a longer time of continued operation before appearance of interferences due to clock drifts among BSs. You can either enable the external 16 MHz clock source or use the internal 16 MHz clock source. By default, the external 16MHz clock is disabled. In the current release external 16MHz clock must be disabled.

**IMPORTANT**

Reset the system for changes in the GPS clock configuration to be applied to the entire system.

To configure the GPS clock, run the following command:

```
npu(config)# set clock ([ External1PPS {Enable | Disable} ] [
External16MHz {Enable | Disable} ])
```

For example, to configure the internal 1PPS clock at the NPU to synchronize the air frames for inter-site and intra-site sectors:

```
npu(config)# set clock External1PPS Disable
```

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config)# set clock ([External1PPS {Enable Disable}] [External16MHz {Enable Disable}])</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------------------|---|----------|---------------|---|
| External1PPS {Enable Disable} | <p>Indicates whether the external 1PPS clock is enabled or disabled.</p> <p>If the External 1PPs clock is enabled, synchronization of air frames for inter-site and intra-site sectors should be managed by the external 1PPS GPS clock. If the External 1PPS clock is disabled, it indicates that the internal 1PPS at the NPU is used to synchronize air frames for inter-site and intra-site sectors.</p> <p>When using a GPS, External 1PPS clock must be enabled for proper operation of the system.</p> | Optional | Enable | <input checked="" type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable |
| External16MHz {Enable Disable} | <p>Indicates whether the External 16Mhz clock is enabled or disabled.</p> <p>If the external 16 MHz is enabled, the NPU should receive 16Mhz signal from the master NPU. This parameter should be enabled only if the NPU clock mode is slave. If the NPU clock mode is master, the MPU drives the 16Mhz signal towards the slave NPUs.</p> <p>In the current release External 16MHz clock must be disabled.</p> | Optional | Disable | <input checked="" type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable |

Command Modes

Global configuration mode

3.3.15.2.2 Configuring General Configuration Parameters for the GPS



IMPORTANT

Skip this section if you have selected the internal 1PPS clock. For more information about configuring the GPS clock, refer [Section 3.3.15.2.1](#).

The GPS general configuration parameters determine how the GPS should function with respect to the 4Motion system. Depending upon the values defined for these parameters, you can configure the GPS clock (external 1PPS and 16MHz), and the UTC time. Run the following command to configure the global configuration parameters for the GPS:

```
npu(config)# gps config ( [Type {Trimble |
None}] [HoldoverPassedTout <expiry_interval(0-2880)>]
[HoldoverPassTxOperationStop {True | False}][AlmanacUsableTime
<expiry_interval(0-4320)>] [EphemerisUsableTime
<expiry_interval(0-168)>] [IntervalToReadGPSTime{Hourly | Daily |
Monthly | Yearly}] [TimeToReadGPSTime <HH:MM:SS,DD/MM>]))
```



IMPORTANT

An error may occur if:

Time to read GPS time is not in valid format. Correct format is hh:mm:ss, dd/mm: Minute and Second should be within range of 0 to 60, Hour should be within the range of 0 to 23, days should be in the range 1 to 31 and Month should be within the range of 1 to 12, also day should be valid in accordance with month.

| | |
|-----------------------|--|
| Command Syntax | npu(config)# gps config gps config ([Type {Trimble None}] [HoldoverPassedTout <expiry_interval(0-2880)>] [HoldoverPassTxOperationStop {True False}][AlmanacUsableTime <expiry_interval(0-4320)>] [EphemerisUsableTime <expiry_interval(0-168)>] [IntervalToReadGPSTime{Hourly Daily Monthly Yearly}] [TimeToReadGPSTime <HH:MM:SS,DD/MM>])) |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | |
|---|--|----------|---------|--|
| Type {Trimble None}] | Indicates the type of GPS connected to 4Motion. | Optional | Trimble | <input type="checkbox"/> Trimble <input type="checkbox"/> None |
| [HoldoverTimeout <expiry_interval (0-2880)>] | Indicates the period, in minutes, for which the NPU provides holdover when the GPS loses synchronization with its satellites. | Optional | 720 | 0 - 2880 |
| [HoldoverPassThroughOperationStop {True False}] | Indicates whether the AU modules should stop data transmission if the GPS loses synchronization with its satellites and the holdover timeout has occurred. | Optional | True | <input type="checkbox"/> True <input type="checkbox"/> False |
| [AlmanacUsableTime <expiry_interval(0-4320)>] | Indicates the maximum period, in hours, for which the Almanac time is valid when the GPS is reset. | Optional | 720 | 0-4320 |
| [EphemerisUsableTime <expiry_interval(0-168)>] | Indicates the maximum period, in hours, for which the Ephemeris time is valid when the GPS is reset. | Optional | 4 | 0-168 |
| [IntervalToReadGPSTime {Hourly Daily Monthly Yearly}] | Indicates the interval after which the NPU should obtain the GPS time for frame synchronization, and send it to the AU. | Optional | Daily | <input type="checkbox"/> Hourly <input type="checkbox"/> Daily <input type="checkbox"/> Monthly <input type="checkbox"/> Yearly |
| [TimeToReadGPSTime <HH:MM:SS,DD/MM>] | Indicates the time when the NPU should obtain the GPS time for frame synchronization. . | Optional | 04:05 | HH:MM:SS,DD /MM |

Command Global configuration mode
Modes

3.3.15.2.3 Configuring the Date and Time

The UTC time is used to configure the following:

- Local time:** Differs from the UTC time with respect to the value you have specified for the `localUTCDiff` and `DST` parameters. The local time is equal to the sum of the UTC time, the value of the `localUTCDiff` parameter (local offset from UTC time) and `DST` (daylight saving time offset). For more

information about configuring this parameter, [“Configuring the GPS Clocks” on page 384](#). You can use the CLI to display the current local time. For details, refer the section, [“Displaying the Date and Time Parameters” on page 394](#).

- **System time:** Refers to the operating system (kernel) time that is identical to the UTC time when the system boots up. The system time is updated every hour with the time received from the GPS receiver.
- **Real Time Clock (RTC) time:** Refers to the time maintained by the board’s hardware clock. By default, the RTC time is set to 1st January, 1970. The RTC time is updated every hour with the UTC time that is received from the GPS receiver or that you have configured from the CLI. The RTC time is used for creating the timestamp for log and trace messages, performance data collection files, and for managing the interval after which a backup of the configuration file should be maintained and performance data should be collected.

Execute the following command to configure the date and time parameters. If the GPS is synchronized to its satellites and is connected to 4Motion, the UTC time is provided by the GPS. Otherwise the UTC time that you configure is used instead.

To configure the date and time parameters, run the following command:

```
npu(config)# set date [UTC <HH:MM:SS,DD/MM/YYYY>] [LocalUTCDiff
<+/-HH:MM>] [DST <(0-2)>]
```



IMPORTANT

An error may occur if :

- 1) UTC time is not in the valid format i.e. hh: mm: ss, dd/mm/yyyy.
- 2) Local UTCDiff is not valid format i.e. +/-hh:mm
- 3) Local UTC Diff is out of the range between -12 to +13 or it is not in steps of 30 minutes.
- 4) DST is out of range i.e between 0 to 2

| | |
|----------------|--|
| Command | <code>npu(config)# set date [UTC <HH:MM:SS,DD/MM/YYYY>] [LocalUTCDiff</code> |
| Syntax | <code><+/-HH:MM>] [DST <(0-2)>]</code> |

| | |
|------------------|----|
| Privilege | 10 |
| Level | |

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------------------------|--|----------|---------------|---|
| UTC <HH:MM:SS,DD/M M/YYYY> | Indicates the UTC time to be used for 4Motion if not available from GPS. | Optional | N/A | Use the format: HH:MM: SS, DD/MM/YYYY |
| LocalUTCDiff <+/-HH:MM> | The local offset from UTC | Optional | +00:00 | +/-HH:MM HH: -12 to +13 MM: 00 or 30 |
| DST <(0-2)> | Daylight Saving Time offset of the local clock | Optional | 0 | 0-2 |

Command

Global configuration mode

Modes**3.3.15.2.4 Configuring the Position**

The position configuration enables setting the location's parameters when GPS is not used (Type=None).

To configure the position parameters, run the following command:

```
npu(config)# set position ([Latitude <xxx.xxx,N/S>] [Longitude
<xxx.xxx,E/W>] [Altitude (-300.0 - 9000.0)])
```

**IMPORTANT**

An error may occur if :

- 1) Latitude, longitude and altitude are configured while GPS type is not "None".
- 2) Latitude is not in valid format i.e. lll.mmm,a where a is either N or S
- 3) Longitude is not in valid format i.e. lll.mmm,a where a is either E or W.
- 4) Altitude is not in valid range i.e. +300.0 to 9000.0.

Command

```
npu(config)# set position ([Latitude <xxx.xxx,N/S>] [Longitude
<xxx.xxx,E/W>] [Altitude (-300.0 - 9000.0)])
```

Syntax**Privilege**

10

Level

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|--------------------------------|---|----------|---------------|---|
| Latitude <xxx.xxx,N/S> | Indicates the latitude where the 4Motion shelf is currently positioned. Configure only if GPS Type is None. | Optional | 000.000.N | Use the format, Ill.mmm.a (where Ill.mmm is in degrees and the value of a is either N or S). Ill is between 000 to 089, mmm is between 000 to 999. |
| Longitude <xxx.xxx,E/W> | Indicates the longitude where the 4Motion shelf is currently positioned. Configure only if GPS Type is None. | Optional | 000.000.E | Use the format, Ill.mmm.a (where ll.mmm is in degrees and the value of a is either E or W). Ill is between 000 to 179, mmm is between 000 to 999. |
| Altitude (-300.0 - 9000.0)) | Indicates the altitude (in meters) where the 4Motion shelf is currently positioned. Configure only if GPS Type is None. | Optional | 0.0 | -300.0 to 9000.0 |

Command

Global configuration mode

Modes**3.3.15.2.5 Configuring the Required Number of Satellites**

The satellite parameter enables configured the minimum number of satellites required for maintaining synchronization and for renewing synchronization after synchronization loss.

To configure the satellite parameters, run the following command:

```
npu(config)# set satellite ([MinNumOfSatForHoldoverReturn <range (1-12)>] [MaxNumOfSatBeforeSyncLoss <range (0-11)>])
```



IMPORTANT

- 1) An error can occur while configuring MinNumOfSatForHoldoverReturn if Minimum number of satellite for holdover return is less than Maximum number of satellite before synchronization loss.
- 2) An error can occur while configuring MaxNumOfSatBeforeSyncLoss if Maximum number of satellite before synchronization is more than Minimum number of satellite for holdover return.

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config)# set satellite ([MinNumOfSatForHoldoverReturn <range (1-12)>] [MaxNumOfSatBeforeSyncLoss <range (0-11)>])</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|----------|---------------|-----------------|
| MinNumOfSatForHoldoverReturn <range (1-12)> | Indicates the minimum number of satellites that should be received for resuming synchronization (exiting holdover status) after loss of synchronization. | Optional | 2 | 1-12 |
| MaxNumOfSatBeforeSyncLoss <range (0-11)> | Indicates the minimum number of satellites required for maintaining synchronization. | Optional | 1 | 0-11 |

| | |
|----------------------|---------------------------|
| Command Modes | Global configuration mode |
|----------------------|---------------------------|

3.3.15.2.6 Displaying GPS Clocks Parameters

To display the GPS clock configuration parameters, run the following command:

```
npu# show clock status [{CurrentExternal1PPS | ConfiguredExternal1PPS | CurrentExtrnal16MHz | ConfiguredExternal16MHz}]
```

| | |
|---------------------------|--|
| Command Syntax | <code>npu# show clock status [{CurrentExternal1PPS ConfiguredExternal1PPS CurrentExternal16MHz ConfiguredExternal16MHz}]</code> |
| Privilege Level | 1 |
| Syntax Description | For a detailed description of each parameter in this command, refer the section, “Configuring the GPS Clocks” on page 384 . Both Current and Configured values for each clock are provided (the parameters are applied after reset) |
| Display Format | Configured External 1PPS Status :Enable/ Disable Current External 1PPS Status :Enable/ Disable Configured External 16MHz Status :Enable/ Disable Current External 16MHz Status :Enable/ Disable |
| Command Modes | Global command mode |

3.3.15.2.7 Displaying GPS General Configuration Parameters

To display the GPS general configuration parameters, run the following command:

```
npu# show gps config [{ Type | SoftwareVersion [{ Navigation | Signal }] | HoldoverPassedTout | HoldoverPassTxOperationStop | AlmanacUsableTime | EphemerisUsableTime | IntervalToReadGPSTime | TimeToReadGPSTime} ]
```

| | |
|---------------------------|---|
| Command Syntax | <code>npu# show gps config [{ Type SoftwareVersion [{ Navigation Signal }] HoldoverPassedTout HoldoverPassTxOperationStop AlmanacUsableTime EphemerisUsableTime IntervalToReadGPSTime TimeToReadGPSTime}]</code> |
| Privilege Level | 1 |
| Syntax Description | For a detailed description of each parameter in this command, refer the section, “Configuring General Configuration Parameters for the GPS” on page 387 . |

| | | |
|----------------|-------------------------------------|---|
| Display | Configured GPS Type | : |
| Format | GPS Navigation Processor SW Version | : |
| | GPS Signal Processor SW version | : |
| | Holdover Timeout | : |
| | HoldoverPassedTxOperationStop | : |
| | Almanac Usable Time | : |
| | Ephemeris Usable Time | : |
| | Interval To Read Gps Time | : |
| | Time To Read Gps Time | : |

Command Modes Global command mode

In addition to the configuration parameters, the SW Versions of the GPS Navigation and Signal Processors are also displayed (if available).

3.3.15.2.8 Displaying the Date and Time Parameters

To display the current date parameters, run the following command:

```
npu# show date [{Local | UTC | LocalUTCDiff | DST}]
```

Command Syntax npu# show date [{Local | UTC | LocalUTCDiff | DST}]

Privilege Level 1

Syntax Description For a detailed description of each parameter in this command, refer the section, [“Configuring the Date and Time”](#) on page 388.

| | | |
|----------------|----------------------|---|
| Display | Local Time | : |
| Format | UTC Time | : |
| | Local UTC Offset | : |
| | Daylight Saving Time | : |

Command Modes Global command mode

In addition to the configurable parameters, the calculated Local Time is also displayed.

3.3.15.2.9 Displaying the Position Parameters

To display the current position parameters, run the following command:

```
npu# show position [{Latitude | Longitude | Altitude}]
```

| | |
|---------------------------|---|
| Command Syntax | npu# show position [{Latitude Longitude Altitude}] |
| Privilege Level | 1 |
| Syntax Description | For a detailed description of each parameter in this command, refer the section, “Configuring the Position” on page 390 . |
| Display Format | Latitude : Longitude : Altitude : |
| Command Modes | Global command mode |

3.3.15.2.10 Displaying the Number of Satellite Parameters

To display the current satellite parameters, run the following command:

```
npu# show satellite [{MinNumOfSatForHoldoverReturn |  
MaxNumOfSatBeforeSyncLoss | NumOfSatelliteAvailable}]
```

| | |
|---------------------------|--|
| Command Syntax | npu# show satellite [{MinNumOfSatForHoldoverReturn MaxNumOfSatBeforeSyncLoss NumOfSatelliteAvailable}] |
| Privilege Level | 1 |
| Syntax Description | For a detailed description of each parameter in this command, refer the section, “Configuring the Required Number of Satellites” on page 391 . |

Display Max Satellites Before Sync Loss :

Format Min Satellites For Holdover Return :

Number of Satellites Acquired :

Command Modes Global command mode

In addition to the configurable parameters, the current number of satellites acquired by the GPS receiver is also displayed.

3.3.15.3 Managing Power Feeders Configuration

The Power Feeder configuration enables specifying the AU port connected to each Power Feeder port.

3.3.15.3.1 Configuring Power Feeders

To configure the AU ports connected to the ports of a specific Power Feeder, run the following command:

```
npu(config)# config pfUnitNo <pfunit no (1-4)> pfPortNo <pfport no (1-4)> AuSlotNo <AuslotNo (-1,1-4,7-9)> AuPortNo <AuPortNo (-1,1-4)>
```



IMPORTANT

An error can occur if the configured combination of AuPortNo and AuSlotNo already exists.

Command Syntax npu(config)# config pfUnitNo <pfunit no (1-4)> pfPortNo <pfport no (1-4)> AuSlotNo <AuslotNo (-1,1-4,7-9)> AuPort <AuPortNo (-1,1-4)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------------|-------------------------------|-----------|---------------|-----------------|
| pfUnitNo <pfunit no (1-4)> | The Power Feeder unit number. | Mandatory | N/A | 1-4 |

| | | | | |
|---|---------------------------------------|-----------|-----------|---------------------|
| <p>pfPortNo <pfport no (1-4)></p> <p>Each combination of Power Feeder Unit Number and Port Number can appear in a maximum of one Power Feeder instance</p> | The Power Feeder port number | Mandatory | N/A | 1-4 |
| <p>AuSlotNo <AuslotNo (-1,1-4,7-9)></p> | The AU Slot number. -1 means none. | Optional | -1 (none) | -1 (none), 1-4, 7-9 |
| <p>AuPortNo <AuPortNo (-1,1-4)></p> <p>Each combination of AU Slot Number and Port Number can appear in a maximum of one Power Feeder instance (excluding combinations with a none value).</p> | The AU Port number. -1 means none. | Optional | -1 (none) | -1 (none), 1-4 |

Command Modes Global configuration mode

3.3.15.3.2 Displaying Configuration Information for Power Feeders

To display configuration information for all defined Power Feeders, run the following command:

```
npu# show power-feeder configuration
```

Command Syntax npu# show power-feeder configuration

Privilege Level 1

Display PfUnitNo : <value>, PfPortNo : <value>, AuPortNo : <value>, AuSlotNo :
Format (for <value>
each
configured
instance)

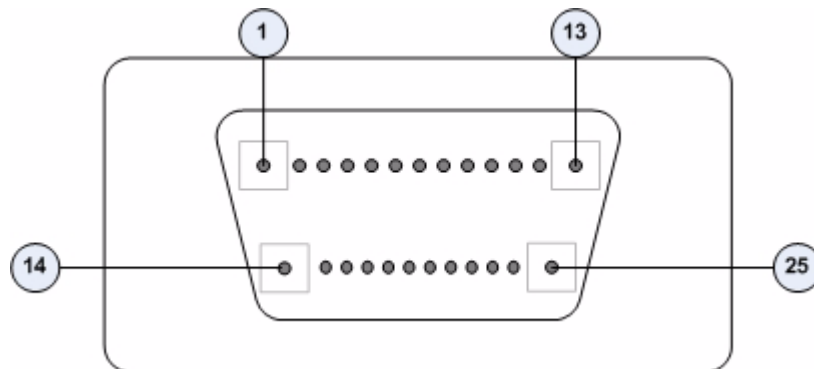
Command Modes Global command mode

3.3.15.4 Managing Dry-contact Input Alarms

Dry-contact input alarms are external devices that are connected to the 4Motion unit, and notify the system when there is a change in external conditions. When the system receives this notification, an SNMP trap is sent to the EMS. For example, a device such as a temperature sensor that is connected to the 4Motion unit, and configured to function as a dry-contact input alarm, can raise an alarm to the system when there is a sudden change in the room temperature. The system then sends an SNMP trap to the EMS, notifying the administrator of the change indicated by the external device.

Dry contact input alarms are connected to the 4Motion system via a 25-pin micro D-Type ALRM-IN/OUT connector on the NPU front panel. The following figure depicts the ALRM-IN/OUT connector, and the pin numbers assigned to each pin:

Figure 3-2: 25-pin Micro D-Type ALRM-IN/OUT Connector



You can configure up to eight dry contact input alarms, each mapping to a different pin number. This section describes the commands to be executed for:

- [“Mapping a Dry-contact Input Alarm to an Alarm Condition” on page 399](#)
- [“Disabling Dry-contact Input Alarms” on page 402](#)

3.3.15.4.1 Mapping a Dry-contact Input Alarm to an Alarm Condition

Dry contact alarms are connected to the 4Motion unit via the 25-pin micro D-Type ALRM-IN/OUT connector on the front panel of the NPU. You can configure up to eight dry contact input alarms, each connected to a different pin on the ALRM-IN/OUT connector. Each alarm can then map to any of the following alarm conditions. If the external dry-contact alarm detects that any of these conditions is fulfilled, an alarm is raised, and a corresponding trap is sent to the EMS.



IMPORTANT

Dry-contact input alarms are a means to raise a trap to the EMS when a change in conditions is notified by the external device. However, the trap may not reach the EMS because of trap rate limiting, network congestion or for reasons relating to the external equipment. Alvarion does not assume responsibility for traps that are lost.

- Commercial power failure
- Fire
- Enclosure door open
- High temperature
- Flood
- Low fuel
- Low battery threshold
- Generator failure
- Intrusion detection
- External equipment failure

To map the a dry contact alarm to an alarm condition, run the following command:

```
npu(config)# dry-contact IN <alarm_num (1-8)> alarm
{CommercialPowerFailure | Fire | EnclosureDoorOpen | HighTemperature
 | Flood | LowFuel | LowBatteryThreshold | GeneratorFailure |
IntrusionDetection | ExternalEquipmentFailure} [alarmPolarity
{RaiseOnClose | RaiseOnOpen }]
```

In this command, the `alarm_num` parameter maps to a pin on the ALRM IN-OUT connector.

The following table lists the pin numbers of the 25-pin micro D-Type ALRM-IN/OUT connector corresponding to the alarm number you are configuring:

Table 3-28: Pin Numbers Corresponding to Dry Contact Input Alarm Numbers

| Pin Number | Alarm Number |
|------------|--------------|
| 3 and 15 | 1 |
| 4 and 16 | 2 |
| 5 and 17 | 3 |
| 6 and 18 | 4 |
| 7 and 19 | 5 |
| 8 and 20 | 6 |
| 9 and 21 | 7 |
| 10 and 22 | 8 |

Refer [Figure 3-2](#) for a diagrammatic representation of the 25-pin micro D-Type ALRM-IN/OUT connector and the numbers assigned to each pin.



NOTE

For more information about displaying the alarm conditions currently mapped to the micro D-Type ALRM-IN/OUT connector pins, refer [Section 3.3.15.6](#).

| | |
|----------------|---|
| Command | <code>npu(config)# dry-contact IN <alarm_num (1-8)> alarm</code> |
| Syntax | <code>{CommercialPowerFailure Fire EnclosureDoorOpen HighTemperature Flood LowFuel LowBatteryThreshold GeneratorFailure IntrusionDetection ExternalEquipmentFailure} [alarmPolarity {RaiseOnClose RaiseOnOpen }]</code> |

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|-----------|---------------|---|
| <alarm_num (1-8)> | Indicates the alarm number of the dry contact input alarm that is to be mapped to an alarm condition. This alarm number corresponds to a pin on the 25-pin micro D-Type jack . For more information about the pin numbers that correspond to the alarm number, refer Table 3-28 . | Mandatory | N/A | 1-8 |
| alarm {CommercialPowerFailure Fire EnclosureDoorOpen HighTemperature Flood LowFuel LowBatteryThreshold GeneratorFailure IntrusionDetection ExternalEquipmentFailure | Indicates the alarm condition to be mapped to a pin number. | Mandatory | N/A | <ul style="list-style-type: none"> ■ CommercialPowerFailure ■ Fire ■ EnclosureDoorOpen ■ HighTemperature ■ Flood ■ LowFuel ■ LowBatteryThreshold ■ GeneratorFailure ■ IntrusionDetection External ■ ExternalEquipmentFailure (can be used for defining a condition other than the ones specified by the other parameters in this command) |
| [alarmPolarity {RaiseOnClose RaiseOnOpen }] | Indicates whether alarm will be raised on closed or open circuit condition. | Optional | RaiseOnClose | <ul style="list-style-type: none"> ■ RaiseOnClose ■ RaiseOnOpen |

Command Global configuration mode
Modes

3.3.15.4.2 Disabling Dry-contact Input Alarms

To disable (block) a dry contact input alarm mapped to a specific alarm condition, run the following command:

```
npu(config)# no dry-contact IN <alarm_num (1-8)>
```



NOTE

For more information about mapping dry contact alarms to an alarm condition, refer to [“Mapping a Dry-contact Input Alarm to an Alarm Condition” on page 399](#). For more information about displaying the alarm condition currently mapped to an alarm, refer to [“Displaying Configuration Information for Dry-contact Input/Output Alarms” on page 406](#).

Command npu(config)# no dry-contact IN <alarm_num (1-8)>
Syntax

Privilege 10
Level

Syntax
Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------|--|-----------|---------------|-----------------|
| <alarm_num (1-8)> | Indicates the alarm number of the dry contact input alarm that is to be disabled. The value of this parameter should be between 1 and 8. For more information about the pin numbers that correspond to the alarm number, refer Table 3-28 . | Mandatory | N/A | 1-8 |

Command Global configuration mode
Modes

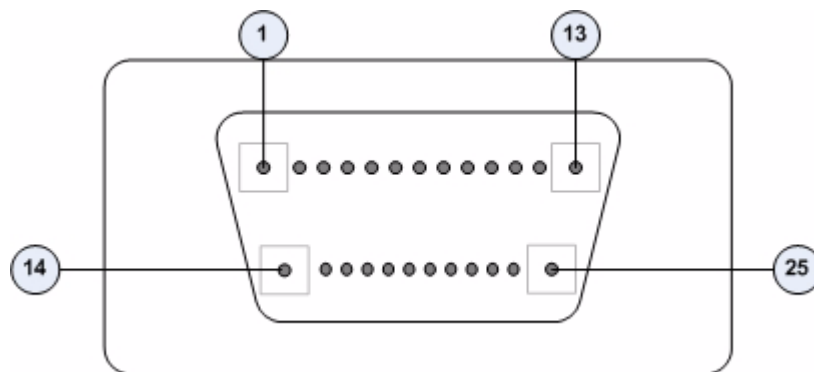
3.3.15.5 Managing Dry-contact Output Alarms

Dry-contact output alarms are raised by the system to notify an external device connected to the 4Motion unit about a change in the system state. The external monitoring entity may take the appropriate action after receiving the notification from the 4Motion system.

You can use the CLI to raise an alarm to the external entity that is connected to the dry contact output pin. After the system returns to its normal state, you can clear the dry contact output alarm that you had raised.

Dry contact output alarms are connected to the 4Motion system via a 25-pin micro D-Type ALRM-IN/OUT connector on the NPU front panel. The following figure depicts the ALRM-IN/OUT connector, and the pin numbers assigned to each pin:

Figure 3-3: 25-pin Micro D-Type ALRM-IN/OUT Connector



You can configure up to three dry contact output alarms, each mapping to a different pin number. This section describes the commands used for:

- [“Raising Dry-contact Output Alarms” on page 403](#)
- [“Clearing Dry-contact Output Alarms” on page 405](#)

3.3.15.5.1 Raising Dry-contact Output Alarms

You can raise a dry contact output alarm to any external entity that is connected to the 4Motion unit via the 25-pin micro D-Type jack on the NPU front panel. To raise a dry contact output alarm, run the following command:

```
npu(config)# dry-contact OUT <alarm_num (1-3)> alarm <alarm name >
```

In this command, the `alarm_num` parameter maps to a specific pin of the micro D-Type ALRM-IN/OUT connector. The following table lists the pin numbers of the

25-pin micro D-Type ALRM-IN/OUT connector corresponding to the alarm number you are configuring:

Table 3-29: Pin Numbers Corresponding to Dry Contact Output Alarm Numbers

| Pin Number | Corresponding Alarm Number |
|-----------------------------|----------------------------|
| 1(FIX) - 2(N.C) - 14(N.O) | 1 |
| 11(FIX)- 12(N.C) - 13(N.O) | 2 |
| 23(FIX) - 24(N.C) - 25(N.O) | 3 |

In this table, N.C denotes Normally Closed, and N.O denotes Normally Open.

Refer [Figure 3-3](#) for a diagrammatic representation of the 25-pin micro D-Type ALRM-IN/OUT connector and the numbers assigned to each pin.



NOTE

After you have raised an alarm, clear this alarm when the system state returns to its normal condition. For information, refer to, [“Clearing Dry-contact Output Alarms” on page 405](#). For more information about displaying configuration information about a dry contact output alarm, refer to [“Displaying Configuration Information for Dry-contact Input/Output Alarms” on page 406](#).

Command Syntax `npu(config)# dry-contact OUT <alarm_num (1-3)> alarm <alarm name >`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------|---|-----------|---------------|-----------------|
| <alarm_num (1-3)> | Indicates the alarm number of the dry contact output alarm that is to be configured. This alarm number corresponds to a pin on the 25-pin micro D-Type jack . For more information about pin numbers that correspond to the alarm number, refer Table 3-29 . | Mandatory | N/A | 1-3 |

| | | | | | |
|--|--------------------|---|-----------|-----|----------------------|
| | alarm <alarm name> | Indicates the name of the dry-contact alarm to be raised. | Mandatory | N/A | Up to 256 characters |
|--|--------------------|---|-----------|-----|----------------------|

Command Modes Global configuration mode

3.3.15.5.2 Clearing Dry-contact Output Alarms

After the system returns to its normal state, run the following command to clear the dry-contact output alarm that you had raised:

```
npu(config)# no dry-contact OUT <alarm_num (1-3)>
```

After you run this command, the alarm that you had raised is cleared.



NOTENOTE

For more information about raising a dry contact output alarm, refer to [“Raising Dry-contact Output Alarms” on page 403](#).

Command Syntax npu(config)# no dry-contact OUT <alarm_num (1-3)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------|--|-----------|---------------|-----------------|
| <alarm_num (1-3)> | Indicates the alarm number of the dry contact output alarm that is to be disabled. For more information about the pin numbers that correspond to the alarm number, refer Table 3-29 . | Mandatory | N/A | 1-3 |

Command Modes Global configuration mode

3.3.15.6 Displaying Configuration Information for Dry-contact Input/Output Alarms

To display configuration information for dry-contact input/output alarms, run the following command:

```
npu# show dry-contact {IN | OUT} [<alarm_num>]
```

If you want to display configuration information for input or output alarms, specify **IN** or **OUT**. You can also specify the pin number if you want to view configuration information for particular pin used for connecting an external device to the 4Motion unit.

For example, run the following command if you want to display configuration information for the dry contact input alarm connected to the 4Motion unit via pin# 8 on the NPU panel:

```
npu# show dry-contact IN 8
```

If you want to display configuration information for all dry contact alarms, run the following command:

```
npu# show dry-contact
```



NOTE

An error may occur if you have specified an incorrect pin number for a particular input/output alarm. For more information about the correct pin-to-alarm number mapping, refer [Table 3-28](#) and [Table 3-29](#).

Command Syntax npu# show dry-contact {IN | OUT} [<alarm_num>]

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------|--|----------|---------------|---|
| { IN OUT } | Indicates whether configuration information is to be displayed for input or output alarms. If you do not specify this value, configuration information is displayed for all input and output alarms. | Optional | N/A | <ul style="list-style-type: none"> ■ IN ■ OUT |
| [<alarm_num>] | Denotes the alarm number of the input or output alarm for which configuration information is to be displayed. Refer Figure 3-2 and Figure 3-3 for more information about the numbers assigned to the pins used for connecting dry contact alarms. | Optional | N/A | <ul style="list-style-type: none"> ■ 1-8 for input alarms ■ 1-3 for output alarms |

Display Format

Dry-Contact Input Alarm:

```
AlarmNumber AlarmName InputBlocking AlarmPolarity
<alarm num> <alarm name> <Yes or No> Raise On Close/Open
```

Dry-Contact Output Alarm:

```
AlarmNumber AlarmStatus AlarmName
<alarm num> <On or Off> <name>
```

Command Modes

Global command mode

3.3.15.7 Managing the Site General Information for the 4Motion Shelf

The site general parameters provide general information on the site.

This section describes the commands used for:

- [“Configuring the Site General Information for the 4Motion Shelf” on page 408](#)

- “Displaying the Site General Information Parameters” on page 409

3.3.15.7.1 Configuring the Site General Information for the 4Motion Shelf

Run the following command to configure the 4Motion shelf location information, such as the rack number and location:

```
npu(config)# site {Name <name (32)> | Address <address(70)> |
RackLocation <rack no. + position in rack (32)> | ContactPerson
<name (32)>}
```

For example, run the following command if you want to specify the site name:

```
npu(config)# site name Site 12
```



IMPORTANT

An error may occur if the length of any of these parameters exceeds the specified range. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

| | |
|-----------------------|---|
| Command Syntax | <pre>npu(config)# site (Name <name (32)> Address <address(70)> RackLocation <rack no. + position in rack (32)> ContactPerson <name (32)>)</pre> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|------------------------------|
| Name <name (256)>} | Indicates the name of the 4Motion shelf. | Optional | N/A | String (up to 32 characters) |
| Address <address (256)>} | Indicates the address of the 4Motion site. | Optional | N/A | String (up to 70 characters) |
| RackLocation <rack no. + position in rack (256)>} | Indicates the rack number and location of the 4Motion shelf. | Optional | N/A | String (up to 32 characters) |
| ContactPerson <name (256)> | Indicates the name of person who is administering the 4Motion shelf. | Optional | | String (up to 32 characters) |

Command Modes Global configuration mode

3.3.15.7.2 Displaying the Site General Information Parameters

To display configuration information for the site general information parameters, run the following command:

```
npu# show site [{Name | Address | RackLocation | ContactPerson
| ProductType}]
```

In addition to the configurable parameter (see [Section 3.3.15.7.1](#)), you can also display the Product Type.

If you want to display configuration information for one parameter, specify only the required parameter. If you want to display configuration information for all dry contact alarms, run the following command:

```
npu# show site
```

Command Syntax npu# show site [{Name | Address | RackLocation | ContactPerson | ProductType }]

Privilege Level 1

Display Format (for all parameters)

```
Name :
Address :
Rack Location :
Contact Person :
Product Type :
```

Command Modes Global command mode

3.3.15.8 Managing the Unique Identifier for the 4Motion Shelf

The Site Identifier (Site ID) is used by the management system as identifier of the site and must be unique in the managed network.

The default value 0 is not a valid Site Identifier: it indicates that the Site Identifier was not configured and a valid Site Identifier must be configured. A BTS with Site Identifier 0 will not be discovered by AlvariSTAR.

Since the Site Identifier is used by AlvariSTAR to identify the device, it is highly recommended not to modify it. If necessary, you must follow the Site Number Change process described in the AlvariSTAR Device Manager User Manual.

This section describes the commands used for:

[“Configuring the Unique Identifier for the 4Motion Shelf” on page 410](#)

[“Displaying the Unique Identifier for the 4Motion Shelf” on page 411](#)

3.3.15.8.1 Configuring the Unique Identifier for the 4Motion Shelf

To configure a unique identifier for the 4Motion shelf, run the following command:

```
npu(config)# site identifier <site id <0-999999>>
```



IMPORTANT

You must save the configuration (run the command `npu# write`) for a change in site identifier to take effect after next reset.

Since the site identifier (Site Number) is used by AlvariSTAR management system to identify the device, it is highly recommended not to modify it. If necessary, you must follow the Site Number Change process described in the Device Driver Manual.



NOTE

To display the 4Motion shelf identifier, refer to [“Displaying the Unique Identifier for the 4Motion Shelf” on page 411](#).

Command Syntax `npu(config)# site identifier <site id <0-999999>>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|-----------|---------------|-----------------|
| <code><site id <0-999999>></code> | Indicates the ID of the 4Motion shelf. | Mandatory | N/A | 0-999999 |

Command Modes Global configuration mode

3.3.15.8.2 Displaying the Unique Identifier for the 4Motion Shelf

To display the unique identifier for the 4Motion shelf, run the following command:

```
npu# show site identifier
```

Command Syntax npu# show site identifier

Privilege Level 1

Display Format Site Id :

Command Modes Global command mode

3.3.15.9 Displaying the Vendor Identifier

The Vendor Identifier, used as a unique identifier of the equipment vendor, can be configured only by the vendor. To display the vendor identifier, run the following command:

```
npu# show vendor identifier
```

Command Syntax npu# show vendor identifier

Privilege Level 1

Display Format Vendor Id :

Command Modes Global command mode

3.4 Managing MS in ASN-GW

This section describes the MS level commands.

- “Manual MS De-registration”
- “Displaying MS Information”

3.4.1 Manual MS De-registration

Run the following command to initiate the de-registration process of the MS with the specified NAI value or of all MSs.

```
npu(config)# de-reg ms {nai <nai-string> | all}
```



IMPORTANT

An error may occur if NAI value is not specified. Refer to the syntax description for more information about the appropriate values and format for configuring this parameter.

An error may occur also for “MS not found”, in case no MS with the specified NAI is registered at ASNGW.

Command Syntax

```
npu(config)# de-reg ms {nai <nai-string> | all}
```

Privilege Level

10

Syntax

Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------------|--|-----------|---------------|-----------------|
| de-reg ms {nai <nai-string> all} | Initiates the de-registration of the MS with the specified NAI value.If “all” is specified then, deregister all the MSs. | Mandatory | N/A | String |

Command Modes

Global configuration mode

3.4.2 Displaying MS Information

Run the following command to view the MS context information of the specified NAI/MSID.

```
npu# show ms info [{nai | msid}<nai/msid string>]
```



IMPORTANT

An error may occur if invalid NAI or invalid MSID is provided. Refer the syntax description for more information about the appropriate values and format for configuring this parameter.

| | |
|-----------------------|---|
| Command Syntax | npu# show ms info [{nai msid}<nai/msid string>] |
|-----------------------|---|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

| | |
|-----------------------|--|
| Display Format | <pre>MS context Info: NAI = <value> MS ID = <value> Serving BS ID = Serving Flow ID1 = <value> Serving Flow GRE key = <value> Serving Flow Direction = <Uplink Downlink> MS Flow Service Group IP = <value> Serving Flow IDn = <value> Serving Flow GRE key = <value> Serving Flow Direction = <Uplink Downlink> MS Flow Service Group IP = <value></pre> |
|-----------------------|--|

| | |
|----------------------|---------------------|
| Command Modes | Global command mode |
|----------------------|---------------------|

3.5 Managing AUs

Up to seven AU objects can be created and configured, corresponding to the AU cards that can be installed in slots 1-4, 7-9 of the shelf.



To configure an AU:

- 1 Enable the AU configuration mode for the selected AU (refer to [Section 3.5.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the parameters tables of the AU (refer to [Section 3.5.2](#))
 - » Restore the default values of parameters in one or more of the parameters tables of the AU (refer to [Section 3.5.3](#))
- 3 Terminate the AU configuration mode (refer to [Section 3.5.4](#))

In addition, you can, at any time, display configuration and status information for each of the parameters tables of the AU (refer to [Section 3.5.6](#)) or delete an existing AU object (refer to [Section 3.3.11.11.5](#)).



NOTE

The AU reserved parameters table enables configuring up to 9 parameters that are reserved for possible future use. In the current release none of the reserved parameters is being used. Therefore, the following commands are not applicable:

- Configure reserved parameters: `npu(config-au-<N>)# au-reserved [reserved-1 <string (32)>] [reserved-2 <string (32)>] [reserved-3 <string (32)>] [reserved-4 <string (32)>] [reserved-5 <string (32)>] [reserved-6 <string (32)>] [reserved-7 <string (32)>] [reserved-8 <string (32)>] [reserved-9 <string (32)>]`
- Restore default values of reserved parameters: `npu(config-au-<N>)# no au-reserved [reserved-1] [reserved-2] [reserved-3] [reserved-4] [reserved-5] [reserved-6] [reserved-7] [reserved-8] [reserved-9].`
- Display configured values of reserved parameters: `npu# show au-reserved au [<(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>].`

3.5.1 Enabling the AU Configuration Mode\Creating an AU Object

To configure the parameters of an AU, first enable the AU configuration mode for the specific AU. Run the following command to enable the AU configuration mode. You can also use this command to create a new AU object. A new AU object is created with default values for all parameters.

```
npu (config)# au <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>
```

Specify the slot ID of the AU to be configured/created. See [Figure 3-1](#) for slot assignment in the shelf.

For example, to configure the AU in slot# 1, run the following command:

```
npu (config)# au 1
```



IMPORTANT

An error occurs if you specify an AU slot ID that is not in the range, 1-4, or 7-9.

If you use this command to create a new AU, the configuration mode for this AU is automatically enabled, after which you can execute any of the following tasks:

- Configure one or more of the parameters tables of the AU (refer to [Section 3.5.2](#))
- Restore the default values of parameters in one or more of the parameters tables of the AU (refer to [Section 3.5.3](#))

After executing the above tasks, you can terminate the AU configuration mode (refer to [Section 3.5.4](#)) and return to the global configuration mode.

Command Syntax `npu (config)# au <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | |
|---|--|-----------|-----|--|
| <(1 to 4 StepSize 1) (7 to 9 StepSize 1)> | The slot ID of the AU to be configured | Mandatory | N/A | <ul style="list-style-type: none"> ■ 1-4 ■ 7-9 |
|---|--|-----------|-----|--|

Command Modes Global configuration mode



NOTE

The following examples are for au configuration mode for au-1 .

3.5.2 Configuring AU Parameters

After enabling the AU configuration mode you can configure the following parameters tables:

- Properties (refer to [Section 3.5.2.1](#))
- Control (refer to [Section 3.5.2.2](#))
- Connectivity (refer to [Section 3.5.2.3](#))

3.5.2.1 Configuring Properties

The properties table enables configuring the main properties of the required AU card and controlling the power on each of the AU's ODU ports.

To configure the properties parameters, run the following command:

```
npu(config-au-1)# properties [required-type <au4x4Modem | au2x2>]
[port-1-power {shutDown | noShutDown}] [port-2-power {shutDown |
noShutDown}] [port-3-power {shutDown | noShutDown}] [port-4-power
{shutDown | noShutDown}]
```



NOTE

You can display configuration information for the AU properties. For details, refer to [Section 3.5.6.1](#).



IMPORTANT

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

Command `npu(config-au-1)# properties [required-type <au4x4Modem | au2x2>]`
Syntax `[port-1-power {shutDown | noShutDown}] [port-2-power {shutDown | noShutDown}] [port-3-power {shutDown | noShutDown}] [port-4-power {shutDown | noShutDown}]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|--|
| [required-type <au4x4Modem au2x2>] | Defines the AU card configuration required : 4-ports or 2-ports.. 2-ports AU is applicable only for Macro Outdoor. | Optional | au4x4Modem | <input checked="" type="checkbox"/> au4x4Modem <input checked="" type="checkbox"/> au2x2 |
| [port-1-power {shutDown noShutDown}] | Controls power from AU card port 1 to ODU | Optional | No Shutdown | <input checked="" type="checkbox"/> shutDown <input checked="" type="checkbox"/> noShutDown |
| [port-2-power {shutDown noShutDown}] | Controls power from AU card port 2 to ODU. | Optional | No Shutdown | <input checked="" type="checkbox"/> shutDown <input checked="" type="checkbox"/> noShutDown |
| [port-3-power {shutDown noShutDown}] | Controls power from AU card port 3 to ODU. Not applicable for a 2-ports AU.. | Optional | No Shutdown | <input checked="" type="checkbox"/> shutDown <input checked="" type="checkbox"/> noShutDown |
| [port-4-power {shutDown noShutDown}] | Controls power from AU card port 4 to ODU. Not applicable for a 2-ports AU. | Optional | No Shutdown | <input checked="" type="checkbox"/> shutDown <input checked="" type="checkbox"/> noShutDown |

Command Modes au configuration mode

3.5.2.2 Configuring the Control Parameter

The control parameters enables controlling the operation of the AU.

To configure the control parameter, run the following command:

```
npu(config-au-1)# control shutdown-operation {normalOperation | reset | shutdown}
```

Command Syntax `npu(config-au-1)# control shutdown-operation {normalOperation | reset | shutdown}`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|-----------|------------------|---|
| shutdown-operation {normalOperation reset shutdown} | Controls the operation of the AU card: Normal Operation, Shutdown (disable power to card) or Reset. | Mandatory | normal Operation | <ul style="list-style-type: none"> <input type="checkbox"/> normalOperation <input type="checkbox"/> reset <input type="checkbox"/> shutdown |

Command Modes au configuration mode

3.5.2.3 Configuring AU Connectivity

The connectivity tables enables configuring the connectivity parameters for the Ethernet interface of the AU. In the current release the interface operates in 802.1q mode: In this mode, the interface accepts only VLAN-tagged packets. All packets received without VLAN tags are dropped.

The connectivity tables enable also configuring the parameters of the service interface (excluding the VLAN ID) used by the AU for uploading maintenance information to an external server (the same VLAN ID is used by all service interfaces - for details see [Section 3.3.3](#)).

To configure the connectivity parameters, run the following command:

```
npu(config-au-1)# connectivity [maxframesize <(1518 to 9000 StepSize 1)>] [bearervlanid <(9 to 9 StepSize 1) | (11 to 100 StepSize 1) | (110 to 4094 StepSize 1)>] [service-ip <ip address> ] [service-mask <ip address> ] [service-next-hop <ip address> ]
```

Command `npu (config-au-1)# connectivity [maxframesize <(1518 to 9000 StepSize 1)>] [bearervlanid <(9 to 9 StepSize 1) | (11 to 100 StepSize 1) |(110 to 4094 StepSize 1)>] [service-ip <ip address>] [service-mask <ip address>] [service-next-hop <ip address>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|---------------------|
| [maxframesize <(1518 to 9000 StepSize 1)>] | The maximum frame size (in Bytes) that can be accepted on the Ethernet interface of the AU. Larger packets will be dropped. In 802.1q encapsulation mode the actual minimal frame size (including VLAN tag) is 1522 bytes, which is also the default. Must be configured to the same value as the mtu parameter for this interface in the NPU. | Optional | 1522 | 1518 to 9000 |
| [bearervlanid <(9 to 9 StepSize 1) (11 to 100 StepSize 1) (110 to 4094 StepSize 1)>] | The VLAN ID of packets on the Ethernet interface of the AU. It must be configured to the same value as the if_vlan parameter of the bearer interface in the NPU. Note that VLAN 10 is used for internal management and cannot be used the bearer VLAN. | Optional | 11 | 9, 11-100, 110-4094 |
| [service-ip <ip address>] | The IP address of the service interface. Must be unique in the network. | Optional | 192.168.0.1 | IP address |
| [service-mask <ip address>] | The subnet mask of the service interface. | Optional | 255.255.255.0 | subnet mask |

| | | | | |
|-------------------------------------|--|----------|-------------------|------------|
| [service-next-hop <ip address>] | The default gateway IP address of the service interface. | Optional | 0.0.0.0 (none) | IP address |
|-------------------------------------|--|----------|-------------------|------------|

Command au-1 configuration mode
Modes

3.5.3 Restoring Default Values for AU Configuration Parameters

After enabling the AU configuration mode you can restore the default values for parameters in the following parameters tables:

- Properties (refer to [Section 3.5.3.1](#))
- Control (refer to [Section 3.5.3.2](#))
- Connectivity (refer to [Section 3.5.3.3](#))

3.5.3.1 Restoring the Default Values of Properties Parameters

To restore the some or all of the Properties parameters to their default value, run the following command:

```
npu(config-au-1)# no properties [required-type] [port-1-power]
[port-2-power] [port-3-power] [port-4-power]
```

You can restore only selected parameters to their default value by specifying only those parameter. For example, to restore only the port-1-power to the default value, run the following command:

```
npu(config-au-1)# no properties port-1-power
```

The parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all properties parameters to their default value, run the following command:

```
npu(config-au-1)# no properties
```



NOTE

Refer to [Section 3.5.2.1](#) for a description and default values of these parameters.

Command Syntax `npu(config-au-1)# no properties [required-type] [port-1-power] [port-2-power] [port-3-power] [port-4-power]`

Privilege Level 10

Command Modes au configuration mode

3.5.3.2 Restoring the Default Value of the Control Parameter

To restore the Control parameter to the default value (normalOperation), run the following command:

```
npu(config-au-1)# no control
```

Command Syntax `npu(config-au-1)# no control`

Privilege Level 10

Command Modes Global configuration mode

3.5.3.3 Restoring the Default Values of Connectivity Parameters

To restore Connectivity parameters do their default value, run the following command:

```
npu(config-au-1)# no connectivity [maxframesize] [bearervlanid] [service-ip] [service-mask] [service-next-hop]
```

You can restore only one of the parameters to its default value by specifying only that parameter. For example, to restore only the maximum frame size to the default (1522), run the following command:

```
npu(config-au-1)# no connectivity maxframesize
```

The maximum frame size will be restored to its default value, while the other parameters will remain unchanged.

To restore both parameters to their default value, run the following command:

```
npu(config-au-1)# no connectivity
```

**NOTE**

Refer to [Section 3.5.2.3](#) for a description and default values of these parameters.

| | |
|-----------------------|---|
| Command Syntax | <code>npu(config-au-1)# no connectivity [maxframesize] [bearervlanid] [service-ip] [service-mask] [service-next-hop]</code> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------|
| Command Modes | au configuration mode |
|----------------------|-----------------------|

3.5.4 Terminating the AU Configuration Mode

Run the following command to terminate the au configuration mode:

```
npu(config-au-1)# exit
```

| | |
|-----------------------|-------------------------------------|
| Command Syntax | <code>npu(config-au-1)# exit</code> |
|-----------------------|-------------------------------------|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-------------------------|
| Command Modes | au-1 configuration mode |
|----------------------|-------------------------|

3.5.5 Deleting an AU Object

Run the following command to delete an AU object:

```
npu(config)# no au <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>
```

**IMPORTANT**

An associated AU (specified in a Sector Association) cannot be deleted.

Command Syntax `npu(config)# no au <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|----------------------------|-----------|---------------|-----------------|
| <(1 to 4 StepSize 1) (7 to 9 StepSize 1)> | The slot ID of the AU card | Mandatory | N/A | 1-4, 7-9 |

Command Modes Global configuration mode

3.5.6 Displaying Configuration and Status Information for AU Parameters

You can display the current configuration and (where applicable) additional status information for the following parameters tables:

- Properties (refer to [Section 3.5.6.1](#))
- Control (refer to [Section 3.5.6.2](#))
- Connectivity (refer to [Section 3.5.6.3](#))

3.5.6.1 Displaying Configuration and Status Information for AU Properties

To display configuration and status information for the properties of a specific or all AU objects, run the following command:

npu# show properties au [<(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>]

Specify the au slot ID (1-4, 7-9) if you want to display configuration and status information for a particular AU. Do not specify a value for this parameter if you want to view configuration and status information for all existing AU objects.

Command Syntax **npu# show properties au** [(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|----------|---------------|-----------------|
| [(1 to 4 StepSize 1) (7 to 9 StepSize 1)>] | The slot ID of the AU Specify a value for this parameter if you want to display the properties of a specific AU. Do not specify a value for this parameter if you want to display the properties of all AUs. | Optional | N/A | 1-4, 7-9 |

Display Format

(for each existing AU object if requested for all AUs)

```
SlotNo.                :<value>
RequiredType           :<value>
InstalledStatus        :<value>
InstalledType          :<value> (0 for notinstalled AU)
HWVersion              :<value> (null for notinstalled AU)
HWRevision             :<value> (null for notinstalled AU)
SerialNo.              :<value> (null for notinstalled AU)
BootVersion            :<value> (null for notinstalled AU)
IFVersion              :<value> (null for notinstalled AU)
IFRevision             :<value> (null for notinstalled AU)
Port1PowertoODU        :<value>
Port2PowertoODU        :<value>
Port3PowertoODU        :<value>
Port4PowertoODU        :<value>
```

Command Modes Global command mode

In addition to the configurable parameters, the following status parameters are also displayed:

| Parameter | Description | Possible Values |
|-----------------|--|--|
| InstalledStatus | Indicates whether an AU card is installed in the slot. Following parameters are applicable only for installed AU. | <ul style="list-style-type: none"> ■ installed (1) ■ notinstalled (0) |
| InstalledType | The AU Type. | <ul style="list-style-type: none"> ■ auNotDetected (0) ■ au4x4Modem (4) ■ au2x2 (6) |
| HWVersion | AU HW Version number | <number> |
| HWRRevision | AU HW Revision number | <number> |
| SerialNo. | AU Serial number | <number> |
| BootVersion | AU Boot SW Version number | <string> |
| IFVersion | AU IF Version number | <number> |
| IFRevision | AU HW Revision number | <number> |

3.5.6.2 Displaying Configuration for AU Control

To display configuration for the Control parameter of a specific or all AU objects, run the following command:

```
npu# show control au [<(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>]
```

Specify the au slot ID (1-4, 7-9) if you want to display configuration information for a particular AU. Do not specify a value for this parameter if you want to view configuration information for all existing AU objects.

Command Syntax **npu# show control au** [<(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>]

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|-----------------|
| [<(1 to 4 StepSize 1) (7 to 9 StepSize 1)>] | The slot ID of the AU Specify a value for this parameter if you want to display the control parameter of a specific AU. Do not specify a value for this parameter if you want to display the control parameters of all AUs. | Optional | N/A | 1-4, 7-9 |

Display**Format**

SlotNo. :<value>

AUPowerControl :<value>

(for each existing AU object if requested for all AUs)

Command Modes

Global command mode

3.5.6.3 Displaying Configuration Information for AU Connectivity Parameters

To display configuration information for the connectivity parameters of a specific or all AU objects, run the following command:

npu# show connectivity au [<(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>]

Specify the au slot ID (1-4, 7-9) if you want to display configuration for a particular AU. Do not specify a value for this parameter if you want to view configuration for all existing AU objects.

The displayed information includes also configured values for relevant parameters that are configured for the internal management interface of the NPU.

Command Syntax

npu# show connectivity au [<(1 to 4 StepSize 1) | (7 to 9 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|-----------------|
| [<(1 to 4 StepSize 1) (7 to 9 StepSize 1)>] | The slot ID of the AU Specify a value for this parameter if you want to display the connectivity parameters of a specific AU. Do not specify a value for this parameter if you want to display the connectivity parameters of all AUs. | Optional | N/A | 1-4, 7-9 |

Display Format

(for each existing AU object if requested for all AUs)

```
SlotNo. :<value>
EncapsulationMode :vlanAwareBridging(0)
MaxFrameSize(Bytes) :<value>
InternalManagementVLANID :<value>
BearerVLANID :<value>
InternalManagementIPAddress :<value>
InternalManagementIPSubnetMask :<value>
ServiceInterfaceIPAddress :<value>
ServiceInterfaceIPSubnetMask :<value>
ServiceInterfaceIpnexthop :<value>
```

Command Modes

Global command mode

In addition to the configurable parameters, the following status parameters are also displayed:

| Parameter | Description | Possible Values |
|-----------|-------------|-----------------|
|-----------|-------------|-----------------|

| | | |
|--------------------------------|---|-----------------------|
| EncapsulationMode | The Ethernet encapsulation mode of the card's Ethernet port (hard coded in production). | vlanAwareBridging(0) |
| InternalManagementVLANID | The VLAN ID Management of the shelf.(hard coded in production) | 1-9, 11-100, 110-4094 |
| InternalManagementIPAddress | IP Address of the internal interface of the AU. Acquired via DHCP. | IP address |
| InternalManagementIPSubnetMask | Subnet Mask of the internal interface of the AU. Acquired via DHCP. | Subnet mask |

3.6 Managing ODUs

Up to 28 ODU objects can be created and configured, corresponding to up to 28 ODUs that can be installed. Up to four ODU Ports, numbered 1 to 4, can be created and configured for each ODU. However, for a 1by1 ODU only port number 1 is meaningful. For a 2by1 ODU only ports 1 and 2 are meaningful.

This section include:

- “Configuring ODUs”, [Section 3.6.1](#)
- “Configuring ODU Ports”, [Section 3.6.2](#)

3.6.1 Configuring ODUs



To configure an ODU:

- 1 Enable the ODU configuration mode for the selected ODU (refer to [Section 3.6.1.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the parameters tables of the ODU (refer to [Section 3.6.1.2](#))
 - » Restore the default values of parameters in one or more of the parameters tables of the ODU (refer to [Section 3.6.1.3](#))
- 3 Terminate the ODU configuration mode (refer to [Section 3.6.1.4](#))

In addition, you can, at any time, display configuration and status information for each of the parameters tables of the ODU (refer to [Section 3.6.1.6](#)) or delete an existing ODU object (refer to [Section 3.6.1.5](#)).

**NOTE**

The ODU reserved parameters table enables configuring up to 9 parameters that are reserved for possible future use. In the current release none of the reserved parameters is being used. Therefore, the following commands are not applicable:

- Configure reserved parameters: `npu(config-odu-params-<N>)# odu-reserved [reserved-1 <string (32)>] [reserved-2 <string (32)>] [reserved-3 <string (32)>] [reserved-4 <string (32)>] [reserved-5 <string (32)>] [reserved-6 <string (32)>] [reserved-7 <string (32)>] [reserved-8 <string (32)>] [reserved-9 <string (32)>].`
- Restore default values of reserved parameters: `npu(config-odu-params-<N>)# no odu-reserved [reserved-1] [reserved-2] [reserved-3] [reserved-4] [reserved-5] [reserved-6] [reserved-7] [reserved-8] [reserved-9].`
- Display configured values of reserved parameters: `npu# show odu-reserved [odu-no <(1 to 28 StepSize 1)>].`

3.6.1.1 Enabling the ODU Parameters Configuration Mode\Creating an ODU Object

To configure the parameters of an ODU, first enable the ODU parameters configuration mode for the specific ODU. Run the following command to enable the ODU parameters configuration mode for an existing ODU object:

```
npu (config)# odu-params <(1 to 28 StepSize 1)>
```

To create a new ODU object, the mandatory `required-odu-type` parameter must be specified. Run the following command to create a new ODU object and enable the parameters configuration mode for this ODU:

```
npu (config)# odu-params <(1 to 28 StepSize 1)> required-odu-type {<a list of ODU types>}
```

A new ODU object is created with default values for all parameters except to the mandatory `required-odu-type` parameter.

**IMPORTANT**

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

For example, to create an ODU 1 object and enable the parameters configuration mode for this ODU, where the required odu type is `oDU23002360000N361by1N0`, run the following command:

```
npu (config)# odu-params 1 required-odu-type oDU23002360000N361by1N0
```


After enabling the parameters configuration mode for an ODU you can execute any of the following tasks:

- Configure one or more of the parameters tables of the ODU (refer to [Section 3.6.1.2](#))
- Restore the default values of parameters in one or more of the parameters tables of the ODU (refer to [Section 3.6.1.3](#))

After executing the above tasks, you can terminate the ODU parameters configuration mode (refer to [Section 3.6.1.4](#)) and return to the global configuration mode.

Command Syntax `npu (config)# odu-params <(1 to 28 StepSize 1)> [required-odu-type {<a list of ODU types>}`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|--------------------------------|---------------|---|
| <(1 to 28 StepSize 1)> | The ODU number | Mandatory | N/A | 1-28 |
| required-odu-type {<a list of ODU types>} | The required ODU type (see details below). | Mandatory for a new ODU object | N/A | Any of the listed ODU types. See details below. |

Command Modes Global configuration mode

ODU Type = oDUAAAABBBBZZZWPPRbyTCS, where:
 AAAA = Lower bound of frequency band in MHz, rounded up to the nearest integer.
 BBBB = Upper bound of frequency band in MHz, rounded down.
 ZZZ = 000 in TDD systems.
 W = N in TDD systems.
 PP = maximum transmit power in dBm, rounded down.
 R = number of receive channels.
 T = number of transmit channels.

C = Y if cavity filter is present, N if not.
S = Reserved (0).



NOTE

- 1 The list includes ODUs that are not available yet.
- 2 For oDU2305236000N361by1Y0 that includes a WCS filter, the actually supported frequency band is 2305 - 2317, 2348 - 2360 MHz.
- 3 For the oDU2485269000N384by2NO the maximum supported transmit power in the 2485-2495 MHz band is 37 dBm.



NOTE

The following examples are for odu-1 parameters configuration mode.

3.6.1.2 Configuring ODU Parameters

After enabling the ODU parameters configuration mode you can configure the General ODU parameters.

The general ODU parameters table enables configuring the main properties of the required ODU.

To configure the general ODU parameters, run the following command:

```
npu(config-odu-params-1)# odu-general [external-cavity-filter-existence
{TRUE | FALSE} ] [required-odu-type {<a list of ODU types>} ]
```



NOTE

You can display configuration information for the ODU general parameters. For details, refer to [Section 3.6.1.6](#).



IMPORTANT

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

Command Syntax

```
npu(config-odu-params-1)# odu-general
[external-cavity-filter-existence {TRUE | FALSE} ]
[required-odu-type {<a list of ODU types>} ]
```

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------------------------|---|
| [external-cavity-filter-existence {TRUE FALSE}] | Informational parameter indicating whether an external cavity filter for the ODU exists. | Optional | FALSE | <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE |
| [required-odu-type {...}] | The required ODU type. For more details refer to Section 3.6.1.1 | Optional | The previously configured value | For details refer to Section 3.6.1.1 |

Command Modes odu-params configuration mode

3.6.1.3 Restoring Default Values for ODU Configuration Parameters

After enabling the ODU parameters configuration mode you can restore the default values for the external-cavity-filter-existence parameter.

To restore the general external-cavity-filter-existence parameter to the default value, run the following command:

```
npu(config-odu-params-1)# no odu-general
[external-cavity-filter-existence]
```

The parameter will be restored to its default value, while the other parameters will remain unchanged.



NOTE

Refer to [Section 3.6.1.2](#) for a description and default value of this parameter.

Command Syntax npu(config-odu-params-1)# no odu-general
[external-cavity-filter-existence]

Privilege Level 10

Command Modes odu-params configuration mode

3.6.1.4 Terminating the ODU Parameters Configuration Mode

Run the following command to terminate the ODU Parameters configuration mode:

npu(config-odu-params-1)# exit

Command Syntax npu(config-odu-params-1)# exit

Privilege Level 10

Command Modes odu-params configuration mode

3.6.1.5 Deleting an ODU Object

Run the following command to delete an ODU object:

npu(config)# no odu-params <(1 to 28 StepSize 1)>



IMPORTANT

An associated ODU (specified in a Sector Association) cannot be deleted.

Command Syntax npu(config)# no odu-params <(1 to 28 StepSize 1)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------|----------------|-----------|---------------|-----------------|
| <(1 to 28 StepSize 1)> | The ODU number | Mandatory | N/A | 1-28 |

Command Modes Global configuration mode

3.6.1.6 Displaying Configuration and Status Information for ODU Parameters

You can display the current configuration and (where applicable) additional status information for the ODU general parameters.

To display configuration and status information for the general parameters of a specific or all ODU objects, run the following command:

```
npu# show odu-general [odu-no <(1 to 28 StepSize 1)>]
```

Specify the ODU number (1-28) if you want to display configuration and status information for a particular ODU. Do not specify a value for this parameter if you want to view configuration and status information for all existing ODU objects.

Command Syntax `npu# show odu-general [odu-no <(1 to 28 StepSize 1)>]`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------------------------|---|----------|---------------|-----------------|
| [odu-no <(1 to 28 StepSize 1)>] | The number of the ODU Specify a value for this parameter if you want to display the general parameters of a specific ODU. Do not specify a value for this parameter if you want to display the general parameters of all ODUs. | Optional | N/A | 1-28 |

| | | |
|--|-------------------------------|--|
| Display | ODUNo. | :<value> |
| Format | ExternalCavityFilterExistence | :<value> or (0) if object does not exist |
| (for each existing ODU object if requested for all ODUs) | RequiredODUType | :<value> or (0) if object does not exist |
| | InstalledODUType | :<value> or (0) if ODU is not installed |
| | SerialNumber | :<value> or null if ODU is not installed |

Command Modes Global command mode

In addition to the configurable parameters, the following status parameters are also displayed:

| Parameter | Description | Possible Values |
|------------------|-------------------------|--|
| InstalledODUType | The installed ODU Type. | <ul style="list-style-type: none"> ■ A valid ODU type ■ odunotDetected (97) ■ odutypeUnknown (98) ■ odunotAssociated to sector (0) |
| SerialNumber | The ODU serial number | <number> |

3.6.2 Configuring ODU Ports

Up to four ODU Ports, numbered 1 to 4, can be created and configured for each ODU. However, for a 1by1 ODU only port number 1 is meaningful.



To configure an ODU Port:

- 1 Enable the ODU Port configuration mode for the selected ODU Port (refer to [Section 3.6.2.1](#))

- 2 You can now execute any of the following tasks:
 - » Configure one or more of the ODU Port parameters (refer to [Section 3.6.2.2](#))
 - » Restore the default value of the txpower-onoff parameter (refer to [Section 3.6.2.3](#))
- 3 Terminate the ODU Port configuration mode (refer to [Section 3.6.2.4](#))

In addition, you can, at any time, display configuration and status information for each or all of the ODU Ports (refer to [Section 3.6.2.6](#)) or delete an existing ODU Port (refer to [Section 3.6.2.5](#)).

3.6.2.1 Enabling the ODU Port Configuration Mode\Creating an ODU Port

To configure the parameters of an ODU Port, first enable the ODU Port configuration mode for the specific ODU Port. Run the following command to enable the ODU Port configuration mode for an existing ODU Port:

```
npu (config)# odu-port <(1 to 28 StepSize 1)> <(1 to 4 StepSize 1)>
```

To create a new ODU Port, the mandatory txpower parameter must be specified. Run the following command to create a new ODU Port and enable the configuration mode for this ODU Port:

```
npu (config)# odu-port <(1 to 28 StepSize 1)> <(1 to 4 StepSize 1)> txpower  
<(0 to 46 StepSize 0.1)>
```

A new ODU Port is created with default values for the txpower-onoff parameter. For example, to create Port 1 in ODU 1 with a configured Tx Power of 34 dBm, and enable the parameters configuration mode for this ODU Port run the following command:

```
npu (config)# odu-port 1 1 txpower 34
```

After enabling the configuration mode for an ODU Port you can execute any of the following tasks:

- Configure one or more of the parameters of the ODU Port (refer to [Section 3.6.2.2](#))
- Restore the default value of the txpower-onoff parameter (refer to [Section 3.6.2.3](#))

After executing the above tasks, you can terminate the ODU Port configuration mode (refer to [Section 3.6.2.4](#)) and return to the global configuration mode.

Command Syntax `npu (config)# odu-port <(1 to 28 StepSize 1)> <(1 to 4 StepSize 1)> [txpower <(0 to 46 StepSize 0.1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------------|---|------------------------------|---------------|------------------------------|
| <(1 to 28 StepSize 1)> | The ODU number | Mandatory | N/A | 1-28 |
| <(1 to 4 StepSize 1)> | The Port number. | Mandatory | N/A | 1-4 |
| [txpower <(0 to 46 StepSize 0.1)>] | The required tx power at the specified ODU Port, in dBm. The actually available range depends on ODU Type: The upper limit is set by the Maximum Tx Power supported by the ODU . The control range for all ODUs is 10dBm, except to the following ODUs whose control range is 6dBm: oDU23002360000N361by1N0, oDU23402400000N361by1N0, oDU24962602000N361by1N0, oDU25902690000N361by1N0, oDU23052360000N361by1Y0 | Mandatory for a new ODU Port | N/A | 0 to 46 in increments of 0.1 |

Command Modes Global configuration mode



NOTE

The following examples are for odu-1, port-1 configuration mode.

3.6.2.2 Configuring ODU Port Parameters

After enabling the ODU Port configuration mode you can configure the transmit power parameters of the port.

To configure the ODU Port parameters, run the following command:

```
npu(config-odu-port-1-1)# params [txpower <(0 to 46 StepSize 0.1)> ]
[txpower-onoff {on | off} ]
```



NOTE

You can display configuration information for the ODU Port parameters. For details, refer to [Section 3.6.2.6](#).



IMPORTANT

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-odu-port-1-1)# params [txpower <(0 to 46 StepSize 0.1)>] [txpower-onoff {on off}]</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------------|---|----------|--------------------------|---|
| [txpower <(0 to 46 StepSize 0.1)>] | The transmit power at the ODU Port, in dBm. | Optional | As configured previously | 0 to 46 in increments of 0.1 Actual range depends on ODU type. |
| [txpower-onoff {on off}] | Enables or disables transmissions on this port. | Optional | on | <input type="checkbox"/> on <input type="checkbox"/> off |

| | |
|----------------------|-----------------------------|
| Command Modes | odu-port configuration mode |
|----------------------|-----------------------------|



IMPORTANT

Do not disable transmission on any of the ODU ports. If needed, transmission can be disabled by shutting down the applicable AU port (see [Section 3.5.2.1](#)).

3.6.2.3 Restoring Default Values for ODU Port Parameters

After enabling the ODU Port configuration mode you can restore the default values for the txpower-onoff parameter:

To restore the default values for the txpower-onoff parameter, run the following command:

```
npu(config-odu-port-1-1)# no params
```

The txpower-onoff parameter will be restored to its default value (on), while the mandatory txpower parameter will remain unchanged.

| | |
|-----------------------|--|
| Command Syntax | npu(config-odu-port-1-1)# no params |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------------|
| Command Modes | odu-port configuration mode |
|----------------------|-----------------------------|

3.6.2.4 Terminating the ODU Port Configuration Mode

Run the following command to terminate the ODU Port configuration mode:

```
npu(config-odu-port-1-1)# exit
```

| | |
|-----------------------|---------------------------------------|
| Command Syntax | npu(config-odu-port-1-1)# exit |
|-----------------------|---------------------------------------|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------------|
| Command Modes | odu-port configuration mode |
|----------------------|-----------------------------|

3.6.2.5 Deleting an ODU Port

Run the following command to delete an ODU Port:

```
npu(config)# no odu-port <(1 to 28 StepSize 1)> <(1 to 4 StepSize 1)>
```

**IMPORTANT**

An associated ODU Port (specified in a Sector Association) cannot be deleted.

Command Syntax `npu(config)# no odu-params <(1 to 28 StepSize 1)> <(1 to 4 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------|-----------------|-----------|---------------|-----------------|
| <(1 to 28 StepSize 1)> | The ODU number | Mandatory | N/A | 1-28 |
| <(1 to 4 StepSize 1)> | The Port number | Mandatory | N/A | 1-4 |

Command Modes Global configuration mode

3.6.2.6 Displaying Configuration and Status Information for ODU Ports

To display configuration and status information of a specific or all ODU Ports, run the following command:

npu# show odu-port [odu-no <(1 to 28 StepSize 1)> port-no <(1 to 4 StepSize 1)>]

Specify the ODU number (1-28) and Port number (1-4) if you want to display configuration and status information for a particular ODU Port. Do not specify values for these parameters if you want to view configuration and status information for all existing ODU Ports.

Command Syntax `npu# show odu-port [odu-no <(1 to 28 StepSize 1)> port-no <(1 to 4 StepSize 1)>]`

Privilege Level 1

Syntax

Description

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------------------------|---|----------|---------------|-----------------|
| [odu-no <(1 to 28 StepSize 1)>] | The number of the ODU Specify a value for this parameter if you want to display the parameters of a specific ODU Port. Do not specify a value for this parameter if you want to display the general parameters of all ODU Ports. | Optional | N/A | 1-28 |
| [port-no <(1 to 4 StepSize 1)>] | The number of the Port Specify a value for this parameter if you want to display the parameters of a specific ODU Port. Do not specify a value for this parameter if you want to display the general parameters of all ODU Portss. | Optional | N/A | 1-4 |

Display

Format

(for each existing ODU Port if requested for all ODU Ports)

| | |
|----------------|----------|
| ODUNo . | :<value> |
| ODUPortNo | :<value> |
| TxPower (dBm) | :<value> |
| TxEnable | :<value> |
| HWVersion | :<value> |
| HWRevision | :<value> |
| HPACard | :<value> |
| HPAHWVersion | :<value> |
| HC08SWVersion | :<value> |
| CPLDSWVersion | :<value> |
| SerialNumber | :<value> |
| txpower-status | :<value> |

Command Modes

Global command mode

In addition to the configurable parameters, the following status parameters are also displayed:

| Parameter | Description | Possible Values |
|----------------|--|--|
| HWVersion | HW version no. of ODU basic card connected to this port | <number> |
| HWRevision | HW revision no. of ODU basic card connected to this port | <number> |
| HPACard | Indicates whether the port is connected to an HPA card | <input checked="" type="checkbox"/> installed (1) <input type="checkbox"/> notInstalled (0) |
| HPAHWVersion | HW version no. of HPA connected to this port (relevant only if HPACard is installed) | <number> |
| HC08SWVersion | SW version of HC08 controlling card connected to this port | <string> |
| CPLDSWVersion | SW version of CPLD controlling card connected to this port | <string> |
| SerialNumber | Serial number of ODU basic card connected to this port | <number> |
| txpower-status | The operation status of the port | <enabled/disabled> |

3.7 Managing Antennas

Up to 28 Antenna objects, identified by the Antenna number (1-28), can be created and configured.



To configure an Antenna:

- 1 Enable the Antenna configuration mode for the selected Antenna (refer to [Section 3.7.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the Antenna parameters ([Section 3.7.2](#))
 - » Restore the default value of some or all of the Antenna parameters (refer to [Section 3.7.3](#))
- 3 Terminate the Antenna configuration mode (refer to [Section 3.7.4](#))

In addition, you can, at any time, display configuration information for one or all of the Antennas (refer to [Section 3.7.6](#)) or delete an existing Antenna (refer to [Section 3.7.5](#)).

3.7.1 Enabling the Antenna Configuration Mode\Creating an Antenna

To configure the parameters of an Antenna, first enable the Antenna configuration mode for the specific Antenna. Run the following command to enable the Antenna configuration mode for an Antenna:

```
npu (config)# antenna <(1 to 28 StepSize 1)>
```

When using this command to create a new Antenna, a new Antenna object is created with default values for all parameters.



IMPORTANT

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

After enabling the configuration mode for an Antenna you can execute any of the following tasks:

- Configure one or more of the parameters of the Antenna (refer to [Section 3.7.2](#))
- Restore the default value of the non-mandatory parameters parameter (refer to [Section 3.7.3](#))

After executing the above tasks, you can terminate the Antenna configuration mode (refer to [Section 3.7.4](#)) and return to the global configuration mode.

Command Syntax `npu (config)# antenna <(1 to 28 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------|--------------------|-----------|---------------|-----------------|
| <(1 to 28 StepSize 1)> | The Antenna number | Mandatory | N/A | 1-28 |

Command Modes Global configuration mode



NOTE

The following examples are for antenna-1 configuration mode.

3.7.2 Configuring Antenna Parameters

After enabling the Antenna configuration mode you can configure the Antenna parameters.

To configure the Antenna parameters, run the following command:

npu(config-antenna-1)# params [antenna-type <string (32)>] [no-of-ports <(1 to 8 StepSize 1)>] [mechanical-downtilt <(-90 to 90 StepSize 0.1)>] [electrical-downtilt <(-90 to 90 StepSize 0.1)>] [longitude <longitude>] [latitude <latitude>] [tower-height <(0 to 500 StepSize 1)>] [heading <(0 to 359 StepSize 1)>] [cable-loss

<(0 to 20 StepSize 0.1)>] [antenna-product-id {<a list of default and standard antennas> }]

**NOTE**

The no-of-ports parameter is not relevant since the number of ports is derived from the antenna-type.

Command Syntax

```
npu(config-antenna-1)# params [antenna-type <string (32)> ]
[no-of-ports <(1 to 8 StepSize 1)> ] [mechanical-downtilt <(-90 to 90 StepSize 0.1)> ] [electrical-downtilt <(-90 to 90 StepSize 0.1)> ] [longitude <longitude> ] [latitude <latitude> ] [tower-height <(0 to 500 StepSize 1)> ] [heading <(0 to 359 StepSize 1)> ] [cable-loss <(0 to 20 StepSize 0.1)> ] [antenna-product-id {<a list of default and standard antennas>} ]
```

Privilege Level

10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|--|
| [antenna-type <string (32)>] | Antenna type to be populated manually for inventory information only | Optional | N/A | String (up to 32 printable characters) |
| [no-of-ports <(1 to 8 StepSize 1)>] | The number of antenna ports. Not relevant since the number of ports is derived from the antenna-type. | Optional | 1 | 1-8 |
| [mechanical-downtilt <(-90 to 90 StepSize 0.1)>] | Downwards mechanical tilt of the antenna (in degrees) as opposed to the electrical tilt already integrated in the antenna (and thus taken as reference; instead of the horizontal plane) | Optional | 0 | -90.0 to 90.0 in steps of 0.1 |
| [electrical-downtilt <(-90 to 90 StepSize 0.1)>] | Downwards electrical tilt of the antenna, in degrees | Optional | 0 | -90.0 to 90.0 in steps of 0.1 |

| | | | | |
|---|---|----------|--------------------|---|
| [longitude <longitude>] | The longitude of the antenna. The recommended format is Ill.mmm.a where Ill.mmm is the longitude in degrees (Ill - between 000 and 179, mmm - between 000 and 999), a is E (East) or W (West). | Optional | 000.000; E | String |
| [latitude <latitude>] | The latitude of the antenna. The recommended format is Ill.mmm.a where Ill.mmm is the longitude in degrees (Ill - between 000 and 89, mmm - between 000 and 999), a is N (North) or S (South). | Optional | 000.000; N | String |
| [tower-height <(0 to 500 StepSize 1)>] | Defines the height of the antenna above the ground in meters. | Optional | 0 | 0-500 |
| [heading <(0 to 359 StepSize 1)>] | Indicates the azimuth angle (in degrees) between the center of the horizontal antenna beamwidth and the true north; counting clockwise. | Optional | | 0-359 |
| [cable-loss <(0 to 20 StepSize 0.1)>] | The attenuation (in dB) of the cable between the ODU port and antenna port (informative only) | Optional | 0.5 | 0-20 in steps of 0.1 |
| [antenna-product-id {<a list of default and standard antennas>}] | The product id of the antenna. All parameters required by the system are taken from a file that includes the parameters for all supported antennas. | Optional | Default2 PortDS | one of the options in the list of default and standard antennas |

Command antenna configuration mode
Modes

**NOTE**

You can display configuration information for the Antenna parameters. For details, refer to [Section 3.7.6](#).

**IMPORTANT**

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

3.7.3 Restoring Default Values for Antenna Parameters

After enabling the Antenna configuration mode you can restore the default values for some or all of the parameters (excluding the mandatory heading parameter).

To restore one or several Antenna parameters do their default value, run the following command:

```
npu(config-antenna-1)# no params [antenna-type] [no-of-ports]
[mechanical-downtilt] [electrical-downtil] [longitude] [latitude]
[tower-height] [heading] [cable-loss] [antenna-product-id]
```

You can restore one or several parameters to the default value(s) by specifying only those parameter. For example, to restore only the mechanical-downtilt and electrical-downtilt to their default values, run the following command:

```
npu(config-antenna-1)# no params mechanical-downtilt
electrical-downtil
```

The mechanical-downtilt and electrical-downtilt will be restored to their default values, while all other parameters will remain unchanged.

To restore all parameters to their default value, run the following command:

```
npu(config-antenna-1)# no params
```

**NOTE**

Refer to [Section 3.7.2](#) for a description and default values of these parameters.

Command Syntax

```
npu(config-antenna-1)# no params [antenna-type] [no-of-ports]
[mechanical-downtilt] [electrical-downtil] [longitude] [latitude]
[tower-height] [heading] [cable-loss] [antenna-product-id]
```

Privilege Level 10

Command Modes antenna configuration mode

3.7.4 Terminating the Antenna Configuration Mode

Run the following command to terminate the Antenna configuration mode:

npu(config-antenna-1)# exit

Command Syntax npu(config-antenna-1)# exit

Privilege Level 10

Command Modes antenna configuration mode

3.7.5 Deleting an Antenna

Run the following command to delete an Antenna:

npu(config)# no antenna <(1 to 28 StepSize 1)>



IMPORTANT

An associated Antenna (specified in a Sector Association) cannot be deleted.

Command Syntax npu(config)# no antenna <(1 to 28 StepSize 1)>

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------|--------------------|-----------|---------------|-----------------|
| <(1 to 28 StepSize 1)> | The Antenna number | Mandatory | N/A | 1-28 |

Command

Global configuration mode

Modes

3.7.6 Displaying Configuration Information for Antennas

To display configuration information of a specific or all Antennas, run the following command:

npu# show antenna [antenna-no <(1 to 28 StepSize 1)>]

Specify the Antenna number (1-28) if you want to display configuration information for a particular Antenna. Do not specify values for this parameter if you want to view configuration information for all existing Antennas.

Command

npu# show antenna [antenna-no <(1 to 28 StepSize 1)>]

Syntax**Privilege**

1

Level**Syntax****Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|--------------------------------------|---|----------|---------------|-----------------|
| [antenna-no <(1 to 28 StepSize 1)>] | The number of the Antenna Specify a value for this parameter if you want to display the parameters of a specific Antenna. Do not specify a value for this parameter if you want to display the parameters of all Antennas. | Optional | N/A | 1-28 |

| | | |
|---|-----------------------------|----------|
| Display | AntennaNo. | :<value> |
| Format | AntennaType | :<value> |
| (for each existing Antenna if requested for all Antennas) | No.ofPorts | :<value> |
| | MechanicalDownTilt(degrees) | :<value> |
| | ElectricalDownTilt(degrees) | :<value> |
| | Longitude | :<value> |
| | Latitude | :<value> |
| | TowerHeight(meters) | :<value> |
| | AntennaHeading(degrees) | :<value> |
| | CableLoss(dB) | :<value> |
| | ProductId | :<value> |

Command Modes Global command mode

3.8 Managing BSs

Up to 28 different BSs can be defined.

The full configuration of each BS includes multiple components (tables). Many of these tables include one or more mandatory parameters (parameters with no default value). The creation of a new BS is not completed until all mandatory parameters have been configured.

Due to the complicated structure of the BS object and the high number of mandatory parameters in different tables, a special **apply** command must be executed for properly completing the configuration of certain tables. The **apply** command must be executed before exiting the applicable configuration mode. Failure to execute the **apply** command will result in loss of the newly configured parameters. Wherever required, the need to use the **apply** command will be indicated in the manual.

The following table lists the tasks for configuring a BS, indicating the applicable mandatory parameters and the need to execute the **apply** command where applicable. When configuring a new BS, verify that all mandatory parameters have been configured (otherwise a trial to associate the BS to a Sector will fail):

Table 3-30: Tasks for Configuring a BS

| Task | Mandatory Parameters | apply required |
|---|----------------------|----------------|
| “Enabling the BS Configuration Mode \ Creating a BS Object” on page 456 | bs id | No |
| “Managing BS General Parameters” on page 458 | | No |
| “Managing BS Services” on page 463 | service name (type) | Yes |

Table 3-30: Tasks for Configuring a BS

| Task | Mandatory Parameters | apply required |
|---|--|----------------|
| “Managing Service Mapping Rules” on page 471 | service mapping rule index srvc (service-name) order r1 profile parameters: <ul style="list-style-type: none"> ■ datadelivery-type ■ priority ■ mir ■ cir ■ jitter ■ latency ■ grant-interval | Yes |
| “Managing Power Control Levels” on page 491 | | No* |
| “Managing BS Feedback Allocation Parameters” on page 504 | | No |
| “Managing Neighbor Advertisement Parameters” on page 508 | | No |
| “Managing Triggers Parameters” on page 510 | | No |
| “Managing Trigger Setup Parameters” on page 514 | | No |
| “Managing Scan Negotiation Parameters” on page 517 | | No |
| “Managing Handover Negotiation at TBS Parameters” on page 520 | | No |

Table 3-30: Tasks for Configuring a BS

| Task | Mandatory Parameters | apply required |
|---|--|----------------|
| “Managing Neighbor BSs” on page 523 | General Parameters: <ul style="list-style-type: none"> ■ eirp ■ bw ■ feedbackzone-permbase ■ ucd-configchangeount ■ dcd-configchangeount ■ frequency ■ preamble-idx | Yes |
| “Managing the RF Frequency Parameter” on page 552 | frequency | No |
| “Managing the Baseband Bandwidth Parameter” on page 554 | bandwidth | No |
| “Managing Airframe Structure Parameters” on page 557 | General Parameters: <ul style="list-style-type: none"> ■ cell-id ■ segment ■ frame-offset ■ ul-dl-allocation Map Zone Parameters: <ul style="list-style-type: none"> ■ majorgrps Uplink Feedback Zone Parameters: <ul style="list-style-type: none"> ■ permbase Downlink Data Zone: <ul style="list-style-type: none"> ■ permbase | Yes |
| “Managing BS Bearer Interface Parameters” on page 587 | ip-address ip-subnetmask dfft-gw | No |

Table 3-30: Tasks for Configuring a BS

| Task | Mandatory Parameters | apply required |
|--|--|----------------|
| “Managing Authentication Relay Parameters” on page 591 | dflt-auth-ip-address | No |
| “Managing Bearer Traffic QoS Marking Rules” on page 597 | enable-srvflow-mediaflowtype srvflow-mediaflowtype (if enable-srvflow-mediaflowtype is set to True) | Yes |
| “Managing Control Traffic QoS Marking Rules” on page 605 | | No* |
| “Managing ID-IP Mapping Parameters” on page 614 | nw-node-id (Next Hop BS ID) nw-node-ip | No |
| “Managing Ranging Parameters” on page 617 | | No* |
| “Managing Alarm Threshold Parameters” on page 621 | | No |
| “Managing BS Reserved Parameters” on page 627 | | No |
| “Managing the BS Keep-Alive Functionality” on page 627 | | No |
| “Managing the BS Idle Mode Parameters” on page 633 | | No |
| “Managing Scheduler Parameters” on page 637 | | No |

* After configuring at least one general BS parameter (see [“Managing BS General Parameters” on page 458](#)), even when configured to its default value, all tables with no mandatory parameters are created automatically, with all parameters set to their default value. Otherwise, for each of the following tables you must enter the configuration mode and execute the Apply command before exiting the configuration mode:

- Power Control Levels and Policies
- Control Traffic QoS Marking Rules
- Ranging Parameters

3.8.1 Enabling the BS Configuration Mode\Creating a BS Object

To configure the parameters of a BU, first enable the BS configuration mode for the specific BS. Run the following command to enable the BS configuration mode. You can also use this command to create a new BS object. Note that for a new object this command only defines the BS ID, and that the BS is not fully created until completing configuration of all mandatory parameters.

The BS ID is the unique identifier of the BS in the access network. The BS ID used in the system is in the format A.B.C where A, B, C are from 0 to 255. The BS ID used in the CLI is an integer that is calculated by the formula $A*65536+B*256+C$. For example, a BS ID of 1.2.5 is translated to $1*65536+2*256+5=66053$.

```
npu(config)# bs <(1 to 16777215 StepSize 1)>
```

For example, to configure BS 66053, run the following command:

```
npu (config)# bs 66053
```



IMPORTANT

An error occurs if you specify BS ID that is not in the range, 1-16777215.

If you use this command to create a new BS, the configuration mode for this BS is automatically enabled, after which you can execute any of the following tasks:

- Configure one or more of the parameters tables of the BS
- Restore the default values for the non-mandatory parameters of one or more of the parameters tables of the BS

After executing the above tasks, you can terminate the BS configuration mode (refer to [Section 3.5.4](#)) and return to the global configuration mode. From the global configuration mode you can delete an existing BS (refer to). You can display configuration information for selected tables from the global command mode.

| | |
|-----------------------|---|
| Command Syntax | <code>npu(config)# bs <(1 to 16777215 StepSize 1)></code> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|--|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The unique ID (BSIDLSB) of the BS. Must be unique in the radio access network. A number in the range from 1 to 16,777,215 (a 24-bit value that can be represented as A.B.C where A, B, C are from 0 to 255). | Mandatory | N/A | 1 to 16777215 |

Command

Global configuration mode

Modes**NOTE**

The following examples are for bs configuration mode for bs-66053 .

3.8.2 Deleting a BS

Run the following command to delete a BS:

```
npu(config)# no bs <(1 to 16777215 StepSize 1)>
```

**IMPORTANT**

An associated bs (specified in an associated sector) cannot be deleted.

Command

```
npu(config)# no bs <(1 to 16777215 StepSize 1)>
```

Syntax**Privilege**

10

Level**Syntax****Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|------------------------------------|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The unique ID (BSIDLSB) of the BS. | Mandatory | N/A | 1 to 16777215 |

| | |
|----------------|---------------------------|
| Command | Global configuration mode |
| Modes | |

3.8.3 Managing BS General Parameters

The general parameters of a BS include the Operator ID and the BS Name.

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the general parameters (refer to [Section 3.8.3.1](#)).
- Restore the default values of one or all of the general parameters (refer to [Section 3.8.3.2](#)).

You can display configuration information for the general parameters of a selected or all existing BSs (refer to [Section 3.8.3.3](#)).

3.8.3.1 Configuring BS General Parameters



To configure the BS General Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# general [operator-id <(1 to 16777215 StepSize 1)>]
[bs-name <string (32)>] [dl-def-rate {ctcQpskOneOverTwoTimesSix |
ctcQpskOneOverTwoTimesFour | ctcQpskOneOverTwoTimesTwo |
ctcQpskOneOverTwo | ctcQpskThreeOverFour | ctcQamSixteenOneOverTwo
| ctcQamSixteenThreeOverFour | ctcQamSixtyFourOneOverTwo |
ctcQamSixtyFourTwoOverThree | ctcQamSixtyFourThreeOverFour |
ctcQamSixtyFourFiveOverSix} ] [ul-def-rate
{ctcQpskOneOverTwoTimesSix | ctcQpskOneOverTwoTimesFour |
ctcQpskOneOverTwoTimesTwo | ctcQpskOneOverTwo |
ctcQpskThreeOverFour | ctcQamSixteenOneOverTwo |
ctcQamSixteenThreeOverFour | ctcQamSixtyFourOneOverTwo |
ctcQamSixtyFourTwoOverThree | ctcQamSixtyFourThreeOverFour |
ctcQamSixtyFourFiveOverSix} ]
```



NOTE

After configuring at least one general BS parameter (see “Managing BS General Parameters” on page 555), even when configured to its default value, all tables with no mandatory parameters are created automatically, with all parameters set to their default value. Otherwise, for each of the following tables you must enter the configuration mode and execute the Apply command before exiting the configuration mode:

- Power Control Levels and Policies
- Control Traffic QoS Marking Rules
- Ranging Parameters

```

Command Syntax
npu(config-bs-66053)# general [operator-id <(1 to 16777215 StepSize 1)> ] [bs-name <string (32)> ] [ul-def-rate {ctcQpskOneOverTwoTimesSix | ctcQpskOneOverTwoTimesFour | ctcQpskOneOverTwoTimesTwo | ctcQpskOneOverTwo | ctcQpskThreeOverFour | ctcQamSixteenOneOverTwo | ctcQamSixteenThreeOverFour | ctcQamSixtyFourOneOverTwo | ctcQamSixtyFourTwoOverThree | ctcQamSixtyFourThreeOverFour | ctcQamSixtyFourFiveOverSix} ] [dl-def-rate {ctcQpskOneOverTwoTimesSix | ctcQpskOneOverTwoTimesFour | ctcQpskOneOverTwoTimesTwo | ctcQpskOneOverTwo | ctcQpskThreeOverFour | ctcQamSixteenOneOverTwo | ctcQamSixteenThreeOverFour | ctcQamSixtyFourOneOverTwo | ctcQamSixtyFourTwoOverThree | ctcQamSixtyFourThreeOverFour | ctcQamSixtyFourFiveOverSix} ]
    
```

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|----------|---------------|-----------------|
| [operator-id <(1 to 16777215 StepSize 1)>] | A unique operator identifier. The same Operator ID must be used throughout the radio access network. (a 24-bit value that can be represented as A.B.C where A, B, C are from 0 to 255) | Optional | 16773929 | 1 to 16777215 |

| | | | | |
|---|------------------------|----------|-------------------|---|
| [bs-name <string (32)>] | BS name | Optional | empty string | A string of up to 32 printable characters. |
| [ul-def-rate {ctcQpskOneOverTwoTimesSix ctcQpskOneOverTwoTimesFour ctcQpskOneOverTwoTimesTwo ctcQpskOneOverTwo ctcQpskThreeOverFour ctcQamSixteenOneOverTwo ctcQamSixteenThreeOverFour ctcQamSixtyFourOneOverTwo ctcQamSixtyFourTwoOverThree ctcQamSixtyFourThreeOverFour ctcQamSixtyFourFiveOverSix}] | The uplink basic rate. | Optional | ctcQpskOneOverTwo | <ul style="list-style-type: none"> ■ ctcQpskOneOverTwoTimesSix ■ ctcQpskOneOverTwoTimesFour ■ ctcQpskOneOverTwoTimesTwo ■ ctcQpskOneOverTwo ■ ctcQpskThreeOverFour ■ ctcQamSixteenOneOverTwo ■ ctcQamSixteenThreeOverFour ■ ctcQamSixtyFourOneOverTwo ■ ctcQamSixtyFourTwoOverThree ■ ctcQamSixtyFourThreeOverFour ■ ctcQamSixtyFourFiveOverSix} |

| | | | | |
|--|--|-----------------|----------------------------------|---|
| <pre>[dl-def-rate {ctcQpskOneOverTwoTimesSix ctcQpskOneOverTwoTimesFour ctcQpskOneOverTwoTimesTwo ctcQpskOneOverTwo ctcQpskThreeOverFour ctcQamSixteenOneOverTwo ctcQamSixteenThreeOverFour ctcQamSixtyFourOneOverTwo ctcQamSixtyFourTwoOverThree ctcQamSixtyFourThreeOverFour ctcQamSixtyFourFiveOverSix}]</pre> | <p>The downlink basic rate for unicast and broadcast management.</p> | <p>Optional</p> | <p>ctcQpskOneOverTwoTimesSix</p> | <ul style="list-style-type: none"> ■ ctcQpskOneOverTwoTimesSix ■ ctcQpskOneOverTwoTimesFour ■ ctcQpskOneOverTwoTimesTwo ■ ctcQpskOneOverTwo ■ ctcQpskThreeOverFour ■ ctcQamSixteenOneOverTwo ■ ctcQamSixteenThreeOverFour ■ ctcQamSixtyFourOneOverTwo ■ ctcQamSixtyFourTwoOverThree ■ ctcQamSixtyFourThreeOverFour ■ ctcQamSixtyFourFiveOverSix} |
|--|--|-----------------|----------------------------------|---|

Command Modes bs configuration mode

3.8.3.2 Restoring Default Values for BS General Parameters

After enabling the BS configuration mode you can restore the default values for one or all of the general BS parameters.

To restore one or all general BS parameters do their default value, run the following command:

```
npu(config-bs-66053)# no general [operator-id] [bs-name]
[ul-def-rate] [dl-def-rate]
```

You can restore one parameter to its default value by specifying only that parameter. For example, to restore only the operator-id to its default value, run the following command:

```
npu(config-bs-66053)# no general operator-id
```

The operator-id will be restored to its default value, while the other parameters will remain unchanged.

To restore all parameters to their default value, run the following command:

```
npu(config-bs-66053)# no general
```



NOTE

Refer to [Section 3.8.3.1](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | <pre>npu(config-bs-66053)# no general [operator-id] [bs-name] [ul-def-rate] [dl-def-rate]</pre> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------|
| Command Modes | bs configuration mode |
|----------------------|-----------------------|

3.8.3.3 Displaying Configuration Information for BS General Parameters

To display configuration information of the general parameters of a specific or all BSs, run the following command:

```
npu# show general bs [(1 to 16777215 StepSize 1)>]
```

Specify the BS ID (1-16777215) of an existing BS if you want to display configuration information for a particular BS. Do not specify values for this parameter if you want to view configuration information for all existing BSs.

| | |
|-----------------------|--|
| Command Syntax | <pre>npu# show general bs [(1 to 16777215 StepSize 1)>]</pre> |
|-----------------------|--|

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------|---|----------|---------------|-----------------|
| [<(1 to 16777215 StepSize 1)>] | The BS ID Specify a value for this parameter if you want to display the general parameters of a specific BS. Do not specify a value for this parameter if you want to display the general parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

(for each existing BS if requested for all BSs)

```
BSIDLSB                :<value>
OperatorID             :<value>
BSName                 :<value>
Defaultuplinkbasicrate :<value>
Defaultdownlinkbasicrate :<value>
```

Command Modes Global command mode

3.8.4 Managing BS Services

The BS Service parameters affect the properties of the HARQ mechanism and relevant Idle Mode parameters for each Service.

3.8.4.1 Enabling the BS Service Configuration Mode\Creating a BS Service

To configure the parameters of a BS Service, first enable the BS service configuration mode for the specific service. Run the following command to enable the BS service configuration mode. You can also use this command to create a new service with default values.

```
npu(config-bs-66053)# service <(string (32))>
```

For example, to define a new service named video, or to enable the configuration mode for an existing service named video, run the following command:

```
npu(config-bs-66053)# service video
```

If you use this command to create a new service, the configuration mode for this service is automatically enabled, after which you can execute any of the following tasks:

- Configure the parameters of the service (refer to [Section 3.8.4.2](#))
- Restore the default values for the non-mandatory parameters of the service (refer to [Section 3.8.4.3](#))

After executing the above tasks, you can terminate the BS Service configuration mode (refer to [Section 3.8.4.4](#)) and return to the BS configuration mode. From the BS configuration mode you can delete an existing service (refer to [Section 3.8.4.5](#)). You can display configuration information for BS services from the global command mode (refer to [Section 3.8.4.6](#)).

Note that for properly completing the configuration of a service the **apply** command must be executed prior to exiting the BS Service configuration mode.

Command Syntax `npu(config-bs-66053)# service <(string (32))>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------|--------------------------|-----------|---------------|---------------------------------|
| <(string (32))> | The Service name (type). | Mandatory | N/A | A string of 1 to 32 characters. |

Command Modes bs configuration mode

3.8.4.2 Configuring BS Service Parameters



To configure the BS Service Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053-service-video)# def [max-dl-rtx <(0 to 15
StepSize1)> ] [max-ul-rtx <(0 to 15 StepSize 1)> ] [max-subburst
<(0 to 20000 StepSize 1)> ] [trgt-err-rate <(0.1 to 10 StepSize
0.1)> ] [paging-cycle <(6 to 1000 StepSize 1)> ] [paging-offset <(0
to 1000 StepSize 1)> ] [lm-traffic-idle-period <(50 to 60000
StepSize 50)> ] [dl-def-rate {ctcQpskOneOverTwoTimesSix |
ctcQpskOneOverTwoTimesFour | ctcQpskOneOverTwoTimesTwo |
ctcQpskOneOverTwo | ctcQpskThreeOverFour | ctcQamSixteenOneOverTwo
| ctcQamSixteenThreeOverFour | ctcQamSixtyFourOneOverTwo |
ctcQamSixtyFourTwoOverThree | ctcQamSixtyFourThreeOverFour |
ctcQamSixtyFourFiveOverSix} ]
```



NOTE

The max-subbursts parameter is not relevant.

An attempt to configure the trgt-err-rate parameter will be ignored. The value of this parameter is set by internal logic.

Command Syntax

```
npu(config-bs-66053-service-video)# def [max-dl-rtx <(0 to 15
StepSize1)> ] [max-ul-rtx <(0 to 15 StepSize 1)> ] [max-subburst
<(0 to 20000 StepSize 1)> ] [trgt-err-rate <(0.1 to 10 StepSize
0.1)> ] [paging-cycle <(6 to 1000 StepSize 1)> ] [paging-offset
<(0 to 1000 StepSize 1)> ] [lm-traffic-idle-period <(50 to 60000
StepSize 50)> ] [dl-def-rate {ctcQpskOneOverTwoTimesSix |
ctcQpskOneOverTwoTimesFour | ctcQpskOneOverTwoTimesTwo |
ctcQpskOneOverTwo | ctcQpskThreeOverFour | ctcQamSixteenOneOverTwo
| ctcQamSixteenThreeOverFour | ctcQamSixtyFourOneOverTwo |
ctcQamSixtyFourTwoOverThree | ctcQamSixtyFourThreeOverFour |
ctcQamSixtyFourFiveOverSix} ]
```

Privilege Level

10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|---------------------------|
| [max-dl-rtx <(0 to 15 StepSize1)>] | The maximal number of downlink retransmissions of an HARQ sub-burst for this servic | Optional | 5 | 0 -15i |
| [max-ul-rtx <(0 to 15 StepSize 1)>] | The maximal number of uplink retransmissions of an HARQ sub-burst for this service | Optional | 5 | 0 - 15 |
| [max-subburst <(0 to 20000 StepSize 1)>] | The maximal size of a sub-burst in bytes for this service. In the current release this parameter is not relevant. | Optional | 2500 | 0 - 20000 |
| [trgt-err-rate <(0.1 to 10 StepSize 0.1)>] | The target sub-burst error rate for this service. In the current release the value is set by internal logic. An attempt to change it will be ignored. | Optional | 1 | 0.1 to 10 in steps of 0.1 |
| [paging-cycle <(6 to 1000 StepSize 1)>] | Per-Service type policy parameter in PA used to determine Paging Cycle value (in frames) for the MS during IM Entry and MS Paging. | Optional | 60 | 6 - 1000 |
| [paging-offset <(0 to 1000 StepSize 1)>] | Per-Service type parameter in PA used to determine Paging Offset value (in frames) for the MS during IM Entry and Paging. Paging Offset value shall not exceed the chosen Paging Cycle value | Optional | 0 | 0 - 1000 |
| [Im-traffic-idle-period <(50 to 60000 StepSize 50)>] | Traffic Idle period in milliseconds - per Service type. | Optional | 300 | 50 - 60000 is steps of 50 |

| | | | | |
|--|---------------------------------|-----------------|----------------------------------|---|
| <pre>[dl-def-rate {ctcQpskOneOverTwoTimesSix ctcQpskOneOverTwoTimesFour ctcQpskOneOverTwoTimesTwo ctcQpskOneOverTwo ctcQpskThreeOverFour ctcQamSixteenOneOverTwo ctcQamSixteenThreeOverFour ctcQamSixtyFourOneOverTwo ctcQamSixtyFourTwoOverThree ctcQamSixtyFourThreeOverFour ctcQamSixtyFourFiveOverSix}]</pre> | <p>The downlink basic rate.</p> | <p>Optional</p> | <p>ctcQpskOneOverTwoTimesSix</p> | <ul style="list-style-type: none"> ■ ctcQpskOneOverTwoTimesSix ■ ctcQpskOneOverTwoTimesFour ■ ctcQpskOneOverTwoTimesTwo ■ ctcQpskThreeOverFour ■ ctcQamSixteenOneOverTwo ■ ctcQamSixteenThreeOverFour ■ ctcQamSixtyFourOneOverTwo ■ ctcQamSixtyFourTwoOverThree ■ ctcQamSixtyFourThreeOverFour ■ ctcQamSixtyFourFiveOverSix |
|--|---------------------------------|-----------------|----------------------------------|---|

Command bs service configuration mode
Modes

3.8.4.3 Restoring Default Values for BS Service Parameters

After enabling the BS Service configuration mode you can restore the default values for some or all of the non-mandatory parameters.

To restore one or several BS Service parameters do their default value, run the following command:

```
npu(config-bs-66053-service-video)# no def [max-dl-rtx ]
[max-ul-rtx ] [max-subburst ] [trgt-err-rate ] [paging-cycle ]
[paging-offset ] [lm-traffic-idle-period ] [dl-def-rate ]
```



NOTE

The max-subburst parameter is not relevant.

An attempt to restore the default value of the trgt-err-rate parameter will be ignored. The value of this parameter is set by internal logic.

You can restore one or several parameters to the default value(s) by specifying only those parameter. For example, to restore only the max-dl-rtx and max-ul-rtx parameters to their default values, run the following command:

```
npu(config-bs-66053-service-video)# no def max-dl-rtx max-ul-rtx
```

The max-dl-rtx and max-ul-rtx parameters will be restored to their default values, while all other parameters will remain unchanged.

To restore all parameters to their default value, run the following command:

```
npu(config-bs-66053-service-video)# no def
```



NOTE

Refer to [Section 3.8.4.2](#) for a description and default values of these parameters.

Command Syntax npu(config-bs-66053-service-video)# no def [max-dl-rtx]
[max-ul-rtx] [max-subburst] [trgt-err-rate] [paging-cycle]
[paging-offset] [lm-traffic-idle-period] [dl-def-rate]

Privilege Level 10

Command bs service configuration mode
Modes

3.8.4.4 Terminating the BS Service Configuration Mode

Run the following command to terminate the BS Service configuration mode:

```
npu(config-bs-66053-service-video)# exit
```



IMPORTANT

Do not forget to execute the `apply` command before terminating the BS Service configuration mode:

```
npu(config-bs-66053-service-video)# apply
```

Command **npu(config-bs-66053-service-video)# exit**
Syntax

Privilege 10
Level

Command bs service configuration mode
Modes

3.8.4.5 Deleting a BS Service

Run the following command from the BS configuration mode to delete a BS Service:

```
npu(config-bs 66053)# no service <string (32)>
```

Command **npu(config-bs 66053)# no service <string (32)>**
Syntax

Privilege 10
Level

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------|------------------|-----------|---------------|-----------------|
| <string (32)> | The Service name | Mandatory | N/A | String |

Command

bs service configuration mode

Modes

3.8.4.6 Displaying Configuration Information for BS Service

To display configuration information of a specific or all BS Services, run the following command:

npu# show service bs [(1 to 16777215 StepSize 1)> service-name <string (32)>]

Specify the BS ID and Service name if you want to display configuration information for a particular Service. Do not specify values for these parameter if you want to view configuration information for all existing BS Services.

Command

npu# show service bs [(1 to 16777215 StepSize 1)> service-name <string (32)>]

Syntax**Privilege**

1

Level**Syntax****Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the parameters of a specific BS Service. Do not specify a value for this parameter if you want to display the parameters of all BS Services. | Optional | N/A | 1-16777215 |

| | | | | | |
|--|---------------|---|----------|-----|--------|
| | <string (32)> | <p>The Service name</p> <p>Specify a value for this parameter if you want to display the parameters of a specific BS Service. Do not specify a value for this parameter if you want to display the parameters of all BS Services.</p> | Optional | N/A | String |
|--|---------------|---|----------|-----|--------|

| | | |
|---|--------------------------------|----------|
| <p>Display Format</p> <p>(for each existing Antenna if requested for all Antennas)</p> | BSIDLSB | :<value> |
| | ServiceName | :<value> |
| | MaximumDownlinkRetransmissions | :<value> |
| | MaximumUplinkRetransmissions | :<value> |
| | MaximumSub-BurstSize(bytes) | :<value> |
| | TargetPacketErrorRate(%) | :<value> |
| | Pagingcycle | :<value> |
| | pagingoffset | :<value> |
| | TrafficIdlePeriod | :<value> |
| | Defaultdownlinkbasicrate | :<value> |
| Defaultuplinkbasicrate | :<value> | |

| | |
|-----------------------------|---------------------|
| <p>Command Modes</p> | Global command mode |
|-----------------------------|---------------------|

3.8.5 Managing Service Mapping Rules

Up to 255 Service Mapping Rule may be defined.



To configure a Service Mapping Rule:

- 1 Enable the BS Service Mapping Rule configuration mode for the selected Service Mapping Rule (refer to [Section 3.8.5.1](#))

- 2 You can now execute any of the following tasks:
 - » Configure one or more of the parameters tables of the Service Mapping Rule (refer to [Section 3.8.5.2](#))
 - » Restore the default values of parameters in one or more of the parameters tables of the Service Mapping Rule (refer to [Section 3.8.5.3](#))
 - » Terminate the Service Mapping Rule configuration mode (refer to [Section 3.8.5.4](#))

In addition, you can, at any time, display configuration information for each of the parameters tables of the Service Mapping Rule (refer to [Section 3.8.5.6](#)) or delete an existing Service Mapping Rule (refer to [Section 3.8.5.5](#)).

3.8.5.1 Enabling the Service Mapping Rule Configuration Mode\Creating a Service Mapping Rule

To configure the parameters of a Service Mapping Rule, first enable the BS Service Mapping Rule configuration mode for the specific Service Mapping Rule. Run the following command to enable the BS Service Mapping Rule configuration mode. You can also use this command to create a new Service Mapping Rule.

Note that for a new Service Mapping Rule this command only defines the Service Mapping Rule index, and that the Service Mapping Rule is not fully created until completing configuration of all mandatory parameters and executing the **apply** command (must be executed before exiting the BS Service Mapping Rule configuration mode). Also when updating an existing Service Mapping Rule, the **apply** command must be executing prior to termination the Service Mapping Rule configuration mode.

```
npu(config-bs-66053)# srvcmaprule <(1 to 255 StepSize 1)
```

For example, to define a new Service Mapping Rule index 1, or to enable the configuration mode for Service Mapping Rule 1, run the following command:

```
npu(config-bs-66053)# srvcmaprule 1
```

If you use this command to create a new Service Mapping Rule, the configuration mode for this Service Mapping Rule is automatically enabled, after which you can execute any of the following tasks:

- Configure one or more of the parameters tables of the Service Mapping Rule (refer to [Section 3.8.5.2](#))

- Restore the default values of parameters in one or more of the parameters tables of the Service Mapping Rule (refer to [Section 3.8.5.3](#))

After executing the above tasks, you can terminate the Service Mapping Rule configuration mode (refer to [Section 3.8.5.4](#)) and return to the BS configuration mode.

Note that for properly completing the configuration of a Service Mapping Rule the **apply** command must be executed prior to exiting the BS Service Mapping Rule configuration mode.

Command Syntax `npu(config-bs-66053)# srvcmaprule <(1 to 255 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--------------------------------|-----------|---------------|-----------------|
| <code>srvcmaprule <(1 to 255 StepSize 1)></code> | The Service Mapping Rule index | Mandatory | | 1 - 255 |

Command Modes BS configuration mode

For example, to define Service Mapping Rule 1 for BS 66053, run the following command:

```
npu(config-bs-66053)# srvcmaprule 1
```



NOTE

The following examples are for BS Service Mapping Rule configuration mode for bs-66053, service mapping rule (srvcmaprule)-1.

3.8.5.2 Configuring Service Mapping Rule Parameters

After enabling the Service Mapping Rule configuration mode you can configure the following parameters tables:

- General (refer to [Section 3.8.5.2.1](#))
- Order (refer to [Section 3.8.5.2.2](#))
- R1 Profile (refer to [Section 3.8.5.2.3](#))
- R6 Profile (refer to [Section 3.8.5.2.4](#))



IMPORTANT

After completing the Service Mapping Rule configuration, do not forget to execute the apply command before exiting the BS Service Mapping Rule configuration mode:

```
npu(config-bs-66053-srvcmaprul-1)# apply
```

3.8.5.2.1 Configuring General Service Mapping Rule Parameters

The General Service Mapping Parameters table enables associating the Service Mapping Rule to a specific Service.

To configure the General Service Mapping Rule parameters, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# general srvc <string (32)>
```



IMPORTANT

When creating a new Service Mapping Rule, the mandatory srvc parameters must be configured.

Command Syntax npu(config-bs-66053-srvcmaprul-1)# general srvc <string (32)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | | |
|--|-----------------------|--|-----------|--|---|
| | [srvc <string (32)>] | <p>The service type to which the connection will be mapped.</p> <p>Must be the same as the name (type) configured for the relevant service (refer to Section 3.8.4).</p> <p>All service with the same R1 data delivery type (see Section 3.8.5.2.3) must be mapped to services with the same HARQ properties (max-dl-rtx, max-ul-rtx, max-subburst, trgt-err-rate). For details see Section 3.8.4.2.</p> | Mandatory | | A string of 1 to 32 printable characters. |
|--|-----------------------|--|-----------|--|---|

Command bs service mapping rule configuration mode
Modes

3.8.5.2.2 Configuring the Order Parameters

The Order Parameters table enables configuring the look-up-order parameter that defines the order in which conceptual rows of the table are checked to find a match.

To configure the Order parameters, run the following command:

```
npu(config-bs-66053-srvcmaprle-1)# order look-up-order <(1 to 255 StepSize 1)>
```



IMPORTANT

When creating a new Service Mapping Rule, the mandatory order parameter must be configured.

Command Syntax `npu(config-bs-66053-srvcmaprle-1)# order [look-up-order <(1 to 255 StepSize 1)>]`

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|-----------|---------------|-----------------|
| [look-up-order <(1 to 255 StepSize 1)>] | Defines the order in which the conceptual rows of the table are checked to find a match. Note: The value of this parameter must be different for each conceptual row instance | Mandatory | | 1 to 255 |

Command

bs service mapping rule configuration mode

Modes**3.8.5.2.3 Configuring R1 Profile Parameters**

To configure mapping rules to R1 Profile parameters, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# r1prof [modify-serviceqos
{TRUE | FALSE} ] [dfltpriority <(0 to 7 StepSize 1)> ]
[datadeliverytype {uGS | rTVR | nRTVR | bE | eRTVR} ] [priority <(0
to 7 StepSize 1)> ] [mir <(0 to 40000 StepSize 1)> ] [cir <(0 to
40000 StepSize 1)> ] [jitter <(0 to 5000 StepSize 1)> ] [latency
<(0 to 5000 StepSize 1)> ] [grant-interval <(0 to 5000 StepSize 1)>
]
```

**IMPORTANT**

When creating a new Service Mapping Rule, all mandatory parameters must be configured.

Command**Syntax**

```
npu(config-bs-66053-srvcmaprul-1)# r1prof [modify-serviceqos
{TRUE | FALSE} ] [dfltpriority <(0 to 7 StepSize 1)> ]
[datadeliverytype {uGS | rTVR | nRTVR | bE | eRTVR} ] [priority
<(0 to 7 StepSize 1)> ] [mir <(0 to 40000 StepSize 1)> ] [cir <(0
to 40000 StepSize 1)> ] [jitter <(0 to 5000 StepSize 1)> ]
[latency <(0 to 5000 StepSize 1)> ] [grant-interval <(0 to 5000
StepSize 1)> ]
```

Privilege

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Level

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|---|---------------|--|
| [modify-serviceqos {TRUE FALSE}] | Indicates whether to modify service QoS parameters using internal R1 profile parameters. | Optional | FALSE | <ul style="list-style-type: none"> <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE |
| [dfllpriority <(0 to 7 StepSize 1)>] | Relevant only if modify-serviceqos is FALSE. Indicates the traffic priority to be used when it is missing in R6 request. | Optional | 0 | 0 to 7 |
| [datadeliverytype {uGS rTVR nRTVR bE eRTVR}] | Relevant only if modify-serviceqos is TRUE. An internal R1 profile parameter, specifying the type of data delivery (service type). | Mandatory when creating a new Service Mapping Rule. | N/A | <ul style="list-style-type: none"> <input type="checkbox"/> uGS <input type="checkbox"/> rTVR <input type="checkbox"/> nRTVR <input type="checkbox"/> bE <input type="checkbox"/> eRTVR |
| [priority <(0 to 7 StepSize 1)>] | Relevant only if modify-serviceqos is TRUE and the datadeliverytype is rTVR, nRTVR, eRTVR or bE. An internal R1 profile parameter specifying the traffic priority. | Mandatory when creating a new Service Mapping Rule. | N/A | 0 to 7 |
| [mir <(0 to 40000 StepSize 1)>] | Relevant only if modify-serviceqos is TRUE and the datadeliverytype is rTVR, nRTVR, bE or eRTVR. An internal R1 profile parameter specifying the maximum sustained traffic rate in Kbps. | Mandatory when creating a new Service Mapping Rule. | N/A | 0 - 40000 |
| [cir <(0 to 40000 StepSize 1)>] | Relevant only if modify-serviceqos is TRUE and the datadeliverytype is uGS, rTVR, nRTVR or eRTVR. An internal R1 profile parameter specifying the minimum reserved traffic rate in Kbps. | Mandatory when creating a new Service Mapping Rule. | N/A | 0 - 40000 |

| | | | | |
|--|--|---|-----|----------|
| [jitter <(0 to 5000 StepSize 1)>] | Relevant only if modify-serviceqos is TRUE and the datadeliverytype is uGS or eRTVR. An internal R1 profile parameter specifying maximum tolerated jitter in milliseconds. | Mandatory when creating a new Service Mapping Rule. | N/A | 0 - 5000 |
| [latency <(0 to 5000 StepSize 1)>] | Relevant only if modify-serviceqos is TRUE and the datadeliverytype is uGS or eRTVR. An internal R1 profile parameter specifying maximum latency in milliseconds. | Mandatory when creating a new Service Mapping Rule. | N/A | 0 - 5000 |
| [grant-interval <(0 to 5000 StepSize 1)>] | Relevant only if modify-serviceqos is TRUE and the datadeliverytype is uGS or eRTVR. An internal R1 profile parameter specifying the grant interval in milliseconds. | Mandatory when creating a new Service Mapping Rule. | N/A | 0 - 5000 |

Command bs service mapping rule configuration mode
Modes



IMPORTANT

Note that when creating a new Service Mapping Rule all mandatory parameters must be configured, including those that may not be relevant for the Service Mapping Rule.

3.8.5.2.4 Configuring R6 Profile Parameters

To configure mapping rules to R6 Profile parameters, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# r6prof [datadeliverytype {uGS |
rTVR | nRTVR | bE | eRTVR | any}] [priority <(-1 to -1 StepSize 1) | (0 to 7
StepSize 1)> ] [mediaflowtype <string (32)> ] [use-mediaflowtype {TRUE | FALSE}]
[mir <(-1 to -1 StepSize 1) | (0 to 40000 StepSize 1)> ] [cir <(-1 to -1 StepSize 1) |
(0 to 40000 StepSize 1)> ] [latency <(-1 to -1 StepSize 1) | (0 to 5000 StepSize 1)>].
```


Command `npu(config-bs-66053-srvcmaprul-2)# r6prof [datadeliverytype {uGS | rTVR | nRTVR | bE | eRTVR | any}] [priority <(-1 to -1 StepSize 1) | (0 to 7 StepSize 1)>] [mediaflowtype <string (32)>] [use-mediaflowtype {TRUE | FALSE}] [mir <(-1 to -1 StepSize 1) | (0 to 40000 StepSize 1)>] [cir <(-1 to -1 StepSize 1) | (0 to 40000 StepSize 1)>] [latency <(-1 to -1 StepSize 1) | (0 to 5000 StepSize 1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|--|
| [datadeliverytype {uGS rTVR nRTVR bE eRTVR any}] | An R6 parameter entry in the lookup table specifying the data delivery type (service type). | Optional | any | <ul style="list-style-type: none"> ■ uGS ■ rTVR ■ nRTVR ■ bE ■ eRTVR ■ any |
| [priority <(-1 to -1 StepSize 1) (0 to 7 StepSize 1)>] | An R6 parameter entry in the lookup table specifying the traffic priority. A value of -1 means any. | Optional | -1 | <ul style="list-style-type: none"> ■ -1 ■ 0 - 7 |
| [mediaflowtype <string (32)>] | An R6 parameter entry in the lookup table that is relevant only if the use-mediaflowtype parameter is defined as TRUE | Optional | blank string | A string of up to 32 printable characters. |

| | | | | |
|---|---|----------|-------|---|
| [use-mediaflowtype {TRUE FALSE}] | If this parameter has a value TRUE, the service lookup function will try to match the R6 media flow type with the mediaFlowType entry in the table. If FALSE the service lookup function will ignore the R6 media flow type. | Optional | FALSE | <ul style="list-style-type: none"> ■ TRUE ■ FALSE |
| [mir <(-1 to -1 StepSize 1) (0 to 40000 StepSize 1)>] | An R6 parameter entry in the lookup table specifying the maximum sustained traffic rate in Kbps. A value of -1 means any. | Optional | -1 | <ul style="list-style-type: none"> ■ -1 ■ 0 - 40000 |
| [cir <(-1 to -1 StepSize 1) (0 to 40000 StepSize 1)>] | An R6 parameter entry in the lookup table specifying the minimum reserved traffic rate in Kbps. A value of -1 means any. | Optional | -1 | <ul style="list-style-type: none"> ■ -1 ■ 0 - 40000 |
| [latency <(-1 to -1 StepSize 1) (0 to 5000 StepSize 1)>] | An R6 parameter entry in the lookup table specifying tolerated latency in milliseconds. A value of -1 means any. | Optional | -1 | <ul style="list-style-type: none"> ■ -1 ■ 0 - 5000 |

Command bs service mapping rule configuration mode
Modes

3.8.5.3 Restoring Default Values for Service Mapping Rule Configuration Parameters

After enabling the Service Mapping Rule configuration mode you can restore the default values for non-mandatory parameters in the following parameters tables:

- R1 Profile (refer to [Section 3.8.5.3.1](#))
- R6 Profile (refer to [Section 3.8.5.3.2](#))

3.8.5.3.1 Restoring the Default Values of R1 Profile Parameters

To restore some or all of R1 Profile non-mandatory parameters to their default values, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# no r1prof [modify-serviceqos ]
[dfpriority ]
```

You can restore only one or several parameters to the default values by specifying only those parameters. For example, to restore only the `dfltpriority` to the default value, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# no r1prof dfltpriority
```

The parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all R1 Profile non-mandatory parameters to their default value, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# no r1prof
```



NOTE

Refer to [Section 3.8.5.2.3](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-bs-66053-srvcmaprul-1)# no r1prof [modify-serviceqos] [dfltpriority]</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--|
| Command Modes | bs service mapping rule configuration mode |
|----------------------|--|

3.8.5.3.2 Restoring the Default Values of R6 Profile Parameters

To restore some or all of R6 Profile parameters to their default values, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# no r6prof [datadeliverytype ] [priority ] [mediaflowtype ] [use-mediaflowtype] [mir ] [cir ] [latency ]
```

You can restore only one or several parameters to the default values by specifying only those parameters. For example, to restore only the `mir` and `cir` to the default values, run the following command:

```
npu(config-bs-66053-srvcmaprul-1)# no r6prof mir cir
```

These parameter will be restored to their default values, while all other parameters will remain unchanged.

To restore all R6 Profile parameters to their default value, run the following command:

```
npu(config-bs-66053-srvcmaprule-1)# no r6prof
```



NOTE

Refer to [Section 3.8.5.2.4](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-bs-66053-srvcmaprule-1)# no r6prof [datadeliverytype] [priority] [mediaflowtype] [use-mediaflowtype] [mir] [cir] [latency]</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--|
| Command Modes | bs service mapping rule configuration mode |
|----------------------|--|

3.8.5.4 Terminating the Service Mapping Rule Configuration Mode

Run the following command to terminate the Service Mapping Rule configuration mode:

```
npu(config-bs-66053-srvcmaprule-1)# exit
```



IMPORTANT

Do not forget to execute the apply command before terminating the BS Service Mapping Rule configuration mode:

```
npu(config-bs-66053-srvcmaprule-1)# apply
```

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-bs-66053-srvmaprule-1)# exit</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--|
| Command Modes | bs service mapping rule configuration mode |
|----------------------|--|

3.8.5.5 Deleting a Service Mapping Rule

Run the following command from the BS configuration mode to delete a Service Mapping Rule:

```
npu(config-bs 66053)# no srvcmaprule <(1 to 255 StepSize 1)>
```

Command Syntax **npu(config-bs 66053)# no srvcmaprule** <(1 to 255 StepSize 1)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------|--------------------------------|-----------|---------------|-----------------|
| <(1 to 255 StepSize 1)> | The Service Mapping Rule index | Mandatory | N/A | 1-255 |

Command Modes bs configuration mode

3.8.5.6 Displaying Configuration Information for Service Mapping Rules

You can display the current configuration information for the following parameters tables:

- General (refer to [Section 3.8.5.6.1](#))
- Order (refer to [Section 3.8.5.6.2](#))
- R1 Profile (refer to [Section 3.8.5.6.3](#))
- R6 Profile (refer to [Section 3.8.5.6.4](#))
- All (refer to [Section 3.8.5.6.5](#))

3.8.5.6.1 Displaying Configuration Information for General Service Mapping Rule Parameters

To display configuration for the general parameters of a specific or all Service Mapping Rules, run the following command:

```
npu# show srvcmaprule-general bs [(1 to 16777215 StepSize 1)> rule-index (1 to 255 StepSize 1)>]
```

Specify the BS ID and Service Mapping Rule index if you want to display configuration for a particular Service Mapping Rule. For example, to display the General parameters of Service Mapping Rule 1 in BS 66053, run the following command:

```
npu# show srvcmaprule-general bs 66053 rule-index 1
```

Do not specify these parameters if you want to view configuration information for all existing Service Mapping Rules. To display information for all Service Mapping Rules, run the following command:

```
npu# show srvcmaprule-general bs
```

| | |
|-----------------------|--|
| Command Syntax | npu# show srvcmaprule-general bs [(1 to 16777215 StepSize 1)> rule-index (1 to 255 StepSize 1)>] |
|-----------------------|--|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the general parameters of a specific Service Mapping Rule. Do not specify a value for this parameter if you want to display the general parameters of all Service Mapping Rules. | Optional | N/A | 1-16777215 |

| | | | | |
|--------------------------------------|---|----------|-----|-------|
| rule-index <(1 to 255 StepSize 1)>] | The Service Mapping Rule index. To be used only if you want to display the general parameters of a specific Service Mapping Rule. | Optional | N/A | 1-255 |
|--------------------------------------|---|----------|-----|-------|

| | | |
|---|------------------|----------|
| Display | BSIDLSB | :<value> |
| Format | MappingRuleIndex | :<value> |
| (for each existing Service Mapping Rule if requested for all Service Mapping Rules) | ServiceName | :<value> |

Command Modes Global command mode

3.8.5.6.2 Displaying Configuration Information for Service Mapping Rule Order Parameters

To display configuration for the order parameters of a specific or all Service Mapping Rules, run the following command:

```
np# show srvcmaprule-order bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]
```

Specify the BS ID and Service Mapping Rule index if you want to display configuration for a particular Service Mapping Rule. For example, to display the order parameters of Service Mapping Rule 1 in BS 66053, run the following command:

```
np# show srvcmaprule-order bs 66053 rule-index 1
```

Do not specify these parameters if you want to view configuration information for all existing Service Mapping Rules. To display information for all Service Mapping Rules, run the following command:

```
np# show srvcmaprule-order bs
```

Command Syntax npu# show srvcmaprule-order bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the order parameters of a specific Service Mapping Rule. Do not specify a value for this parameter if you want to display the order parameters of all Service Mapping Rules. | Optional | N/A | 1-16777215 |
| rule-index <(1 to 255 StepSize 1)>] | The Service Mapping Rule index. To be used only if you want to display the order parameters of a specific Service Mapping Rule. | Optional | N/A | 1-255 |

Display Format

```

BSIDL$B           :<value>
MappingRuleIndex  :<value>
(for each existing Service Mapping Rule if requested for all Service Mapping Rules)
LookUpOrder       :<value>

```

Command Modes Global command mode

3.8.5.6.3 Displaying Configuration Information for Service Mapping Rule R1 Profile Parameters

To display configuration for the R1 Profile parameters of a specific or all Service Mapping Rules, run the following command:

```
npu# show srvcmaprule-r1prof bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]
```

Specify the BS ID and Service Mapping Rule index if you want to display configuration for a particular Service Mapping Rule. For example, to display the R1 Profile parameters of Service Mapping Rule 1 in BS 66053, run the following command:

```
npu# show srvcmaprule-r1prof bs 66053 rule-index 1
```

Do not specify these parameters if you want to view configuration information for all existing Service Mapping Rules. To display information for all Service Mapping Rules, run the following command:

```
npu# show srvcmaprule-r1prof bs
```

| | |
|-----------------------|---|
| Command Syntax | npu# show srvcmaprule-r1prof bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>] |
|-----------------------|---|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the R1 Profile parameters of a specific Service Mapping Rule. Do not specify a value for this parameter if you want to display the R1 Profile parameters of all Service Mapping Rules. | Optional | N/A | 1-16777215 |

| | | | | |
|-------------------------------------|--|----------|-----|-------|
| rule-index <(1 to 255 StepSize 1)>] | The Service Mapping Rule index. To be used only if you want to display the R1 Profile parameters of a specific Service Mapping Rule. | Optional | N/A | 1-255 |
|-------------------------------------|--|----------|-----|-------|

| | | |
|--|----------------------------|----------|
| Display Format (for each existing Service Mapping Rule if requested for all Service Mapping Rules) | BSIDLSB | :<value> |
| | MappingRuleIndex | :<value> |
| | ModifyServiceQoSParameters | :<value> |
| | DefaultPriority | :<value> |
| | DataDeliveryTypeR1Profile | :<value> |
| | PriorityR1Profile | :<value> |
| | MIRR1Profile | :<value> |
| | CIRR1Profile | :<value> |
| | Jitter | :<value> |
| | LatencyR1Profile | :<value> |
| GrantInterval | :<value> | |

| | |
|----------------------|---------------------|
| Command Modes | Global command mode |
|----------------------|---------------------|

3.8.5.6.4 Displaying Configuration Information for Service Mapping Rule R6 Profile Parameters

To display configuration for the R6 Profile parameters of a specific or all Service Mapping Rules, run the following command:

```
npu# show srvcmaprule-r6prof bs [(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]
```

Specify the BS ID and Service Mapping Rule index if you want to display configuration for a particular Service Mapping Rule. For example, to display the R6 Profile parameters of Service Mapping Rule 1 in BS 66053, run the following command:

```
npu# show srvcmaprule-r6prof bs 66053 rule-index 1
```

Do not specify these parameters if you want to view configuration information for all existing Service Mapping Rules. To display information for all Service Mapping Rules, run the following command:

```
npu# show srvcmaprule-r6prof bs
```

Command Syntax `npu# show srvcmaprule-r6prof bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------------------|--|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the R6 Profile parameters of a specific Service Mapping Rule. Do not specify a value for this parameter if you want to display the general parameters of all Service Mapping Rules. | Optional | N/A | 1-16777215 |
| rule-index <(1 to 255 StepSize 1)>] | The Service Mapping Rule index. To be used only if you want to display the R6 Profile parameters of a specific Service Mapping Rule. | Optional | N/A | 1-255 |

Display Format

| | |
|---|-----------|
| BSID LSB | : <value> |
| MappingRuleIndex | : <value> |
| (for each existing Service Mapping Rule if requested for all Service Mapping Rules) | |
| DataDeliveryTypeR6Profile | : <value> |
| PriorityR6Profile | : <value> |
| MediaFlowType | : <value> |
| UseMediaFlowType | : <value> |
| CIRR6Profile | : <value> |
| MIRR6Profile | : <value> |
| LatencyR6Profile | : <value> |

Command Global command mode
Modes

3.8.5.6.5 Displaying Configuration Information for All Service Mapping Profile Parameters

To display all configuration parameters of a specific or all Service Mapping Rules, run the following command:

npu# show srvcmaprule-all bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]

Specify the BS ID and Service Mapping Rule index if you want to display configuration for a particular Service Mapping Rule. For example, to display all parameters of Service Mapping Rule 1 in BS 66053, run the following command:

npu# show srvcmaprule-all bs 66053 rule-index 1

Do not specify these parameters if you want to view configuration information for all existing Service Mapping Rules. To display information for all Service Mapping Rules, run the following command:

npu# show srvcmaprule-all bs

Command Syntax npu# show srvcmaprule-all bs [<(1 to 16777215 StepSize 1)> rule-index <(1 to 255 StepSize 1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display all parameters of a specific Service Mapping Rule. Do not specify a value for this parameter if you want to display all parameters of all Service Mapping Rules. | Optional | N/A | 1-16777215 |

| | | | | |
|-------------------------------------|---|----------|-----|-------|
| rule-index <(1 to 255 StepSize 1)>] | The Service Mapping Rule index. To be used only if you want to display all parameters of a specific Service Mapping Rule. | Optional | N/A | 1-255 |
|-------------------------------------|---|----------|-----|-------|

Command Modes Global command mode

3.8.6 Managing Power Control Levels



To configure the Power Control Levels:

- 1 Enable the Power Control configuration mode (refer to [Section 3.8.6.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the Power Control parameters tables (refer to [Section 3.8.6.2](#))
 - » Restore the default values of parameters in one or more of the Power Control parameters tables (refer to [Section 3.8.6.3](#))
 - » Terminate the Power Control configuration mode (refer to [Section 3.8.6.4](#))

In addition, you can, at any time, display configuration information for each of the parameters tables (refer to [Section 3.8.6.5](#)).

3.8.6.1 Enabling the Power Control Configuration Mode

To configure the Power Control parameters, first enable the Power Control configuration mode. Run the following command to enable the Power Control configuration mode.

```
npu(config-bs-66053)# pwrctrl
```

The Power Control configuration mode is enabled, after which you can execute any of the following tasks:

- Configure one or more of the Power Control parameters tables (refer to [Section 3.8.6.2](#))

- Restore the default values of parameters in one or more of the parameters tables (refer to [Section 3.8.6.3](#))

After executing the above tasks, you can terminate the Power Control configuration mode (refer to [Section 3.8.6.4](#)) and return to the BS configuration mode.

Command Syntax `npu(config-bs-66053)# pwrctrl`

Privilege Level 10

Command Modes bs configuration mode

3.8.6.2 Configuring Power Control Parameters

After enabling the Power Control configuration mode you can configure the following parameters tables:

- Target Noise and Interference Level (refer to [Section 3.8.6.2.1](#))
- Required C/N Level (refer to [Section 3.8.6.2.2](#))



NOTE

In the current release, the command for configuring Maximum EIRxP parameter, `npu(config-bs-66053-pwrctrl)# maxeirxp`, is not applicable and should not be used. An attempt to configure a value using this command will be ignored (value is taken from vendor file).

3.8.6.2.1 Configuring Power Control Target Noise and Interference Level Parameters

The Target Noise and Interference Level table enables defining the target limits for various noise and interference levels.

To configure the Target Noise and Interference Levels, run the following command:

```
npu(config-bs-66053-pwrctrl)# nilevels [cqi-ack-ranging <(-150 to -22.5 StepSize 0.5)>] [pusc <(-130 to -110 StepSize 0.5)>] [power-control-correction-factor <(-20 to 30 StepSize 0.1)>]
```

**NOTE**

An attempt to configure the `cqi-ack-ranging` parameter will be ignored. The value of this parameter is set by internal logic.

Command Syntax `npu(config-bs-66053-pwrctrl)# nilevels [cqi-ack-ranging <(-150 to -22.5 StepSize 0.5)>] [pusc <(-130 to -110 StepSize 0.5)>] [power-control-correction-factor <(-20 to 30 StepSize 0.1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|-------------------------------|
| <code>[cqi-ack-ranging <(-150 to -22.5 StepSize 0.5)>]></code> | Target Noise and interference level for the CQI, ACK and periodic ranging regions, in dBm. In the current release the value is set by internal logic. An attempt to set a different value will be ignored. | Optional | -128 | -150 to -22.5 in steps of 0.5 |
| <code>[pusc <(-130 to -110 StepSize 0.5)>]</code> | Target Noise and interference level for the PUSC zone, in dBm. | Optional | -127 | -130 to -110 in steps of 0.5 |
| <code>[power-control-correction-factor <(-20 to 30 StepSize 0.1)>]</code> | Correction (in dB) of max allowed UL SINR given DL SINR measurement. The higher the correction factor is, the higher is the allowed UL Tx Power. | Optional | 10 | -20 to 30 in steps of 0.1. |

Command Modes `bs power control configuration mode`

3.8.6.2.2 Configuring the Power Control Required C/N Level Parameters

The Required C/N Levels table enables defining the Carrier to Noise Ratios required for various types of transmissions.

To configure the Required C/N Levels, run the following command:

```
npu(config-bs-66053-pwrctrl)# requiredcnr [ack <(-20 to 50 StepSize 1)>] [cqi <(-20 to 50 StepSize 1)>] [cdma <(-20 to 50 StepSize 1)>] [qpsk-1by2 <(-20 to 50 StepSize 1)>] [qpsk-3by4 <(-20 to 50 StepSize 1)>] [qam16-1by2 <(-20 to 50 StepSize 1)>] [qam16-3by4 <(-20 to 50 StepSize 1)>] [qam64-1by2 <(-20 to 50 StepSize 1)>] [qam64-2by3 <(-20 to 50 StepSize 1)>] [qam64-3by4 <(-20 to 50 StepSize 1)>] [qam64-5by6 <(-20 to 50 StepSize 1)>]
```

Command Syntax

```
npu(config-bs-66053-pwrctrl)# requiredcnr [ack <(-20 to 50 StepSize 1)> ] [cqi <(-20 to 50 StepSize 1)> ] [cdma <(-20 to 50 StepSize 1)> ] [qpsk-1by2 <(-20 to 50 StepSize 1)> ] [qpsk-3by4 <(-20 to 50 StepSize 1)> ] [qam16-1by2 <(-20 to 50 StepSize 1)> ] [qam16-3by4 <(-20 to 50 StepSize 1)> ] [qam64-1by2 <(-20 to 50 StepSize 1)> ] [qam64-2by3 <(-20 to 50 StepSize 1)> ] [qam64-3by4 <(-20 to 50 StepSize 1)> ] [qam64-5by6 <(-20 to 50 StepSize 1)> ]
```

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------|--|----------|---------------|-----------------|
| [ack <(-20 to 50 StepSize 1)>] | The C/N in dB required for sending ACK, reported to the MS for power control purposes. | Optional | 12 | -20 to 50 |
| [cqi <(-20 to 50 StepSize 1)>] | The C/N in dB required for sending CQI, reported to the MS for power control purposes. Must be in the range from requiredcnr-ack - 8 to requiredcnr-ack + 7 (see ack parameter above) | Optional | 12 | -20 to 50 |

| | | | | |
|--|--|----------|----|-----------|
| [cdma <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting CDMA, reported to the MS for power control purposes. Must be in the range from requiredcnr-cqi - 8 to requiredcnr-cqi + 7 (see cqi parameter above) | Optional | 8 | -20 to 50 |
| [qpsk-1by2 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using QPSK 1/2, reported to the MS for power control purposes. Must be in the range from requiredcnr-cdma - 16 to requiredcnr-cdma + 14 (see cdma parameter above) | Optional | 14 | -20 to 50 |
| [qpsk-3by4<(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using QPSK 3/4, reported to the MS for power control purposes. Must be in the range from requiredcnr-qpsk-1by2 - 16 to requiredcnr-qpsk-1by2 + 14 (see qpsk-1by2 parameter above) | Optional | 16 | -20 to 50 |
| [qam16-1by2 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 16QAM 1/2, reported to the MS for power control purposes. Must be in the range from requiredcnr-qpsk-3by4 - 8 to requiredcnr-qpsk-3by4 + 7 (see qpsk-3by4 parameter above) | Optional | 18 | -20 to 50 |
| [qam16-3by4 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 16QAM 3/4, reported to the MS for power control purposes. Must be in the range from requiredcnr-qam16-1by2 - 16 to requiredcnr-qam16-1by2 + 14 (see qam16-1by2 parameter above) | Optional | 22 | -20 to 50 |

| | | | | |
|--|--|----------|----|-----------|
| [qam64-1by2 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 1/2, reported to the MS for power control purposes. Must be in the range from requiredcnr-qam16-3by4 - 16 to requiredcnr-qam16-3by4 + 14 (see qam16-3by4 parameter above) | Optional | 24 | -20 to 50 |
| [qam64-2by3 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 2/3, reported to the MS for power control purposes. Must be in the range from requiredcnr-qam64-1by2 - 8 to requiredcnr-qam64-1by2 + 7 (see qam64-1by2 parameter above) | Optional | 25 | -20 to 50 |
| [qam64-3by4 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 3/4, reported to the MS for power control purposes. Must be in the range from requiredcnr-qam64-2by3 - 8 to requiredcnr-qam54-2by3 + 7 (see qam54-2by3 parameter above) | Optional | 25 | -20 to 50 |
| [qam64-5by6 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 5/6, reported to the MS for power control purposes. Must be in the range from requiredcnr-qam64-3by4 - 8 to requiredcnr-qam64-3by4 + 7 (see qam64-3by4 parameter above) | Optional | 25 | -20 to 50 |

Command bs power control configuration mode
Modes

3.8.6.3 Restoring Default Values for Power Control Configuration Parameters

After enabling the Power Control configuration mode you can restore the default values for parameters in the following parameters tables:

- Noise and Interference Level (refer to [Section 3.8.6.3.1](#))
- Required C/N Level (refer to [Section 3.8.6.3.2](#))



NOTE

In the current release, the command for restoring the default value for the Maximum EIRxP parameter, `npu(config-bs-66053-pwrctrl)# no maxeirxp`, is not applicable and should not be used. An attempt to restore the value to a default value using this command will be ignored (value is taken from vendor file).

3.8.6.3.1 Restoring the Default Values of Power Control Target Noise and Interference Level Parameters

To restore one or all of the Target Noise and Interference Level parameters to their default values, run the following command:

```
npu(config-bs-66053-pwrctrl)# no nilevels [cqi-ack-ranging] [pusc]
[power-control-correction-factor]
```

You can restore only one parameter to its default values by specifying only that parameter. For example, to restore only the `pusc` to the default value, run the following command:

```
npu(config-bs-66053-pwrctrl)# no nilevels pusc
```

The parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all Target Noise and Interference Level parameters to their default value, run the following command:

```
npu(config-bs-66053-pwrctrl)# no nilevels
```



NOTE

Refer to [Section 3.8.6.2.1](#) for a description and default values of these parameters.

| | |
|-----------------------|---|
| Command Syntax | <pre>npu(config-bs-66053-pwrctrl)# no nilevels [cqi-ack-ranging] [pusc] [power-control-correction-factor]</pre> |
|-----------------------|---|

Privilege Level 10

Command Modes bs power control configuration mode

3.8.6.3.2 Restoring the Default Values of Power Control Required C/N Level Parameters

To restore some or all of the Required C/N Levels parameters to their default values, run the following command:

```
npu(config-bs-66053-pwrctrl)# no requiredcnr [ack] [cqi] [cdma] [qpsk-1by2]
[qpsk-3by4] [qam16-1by2] [qam16-3by4] [qam64-1by2] [qam64-2by3]
[qam64-3by4] [qam64-5by6]
```

You can restore only some parameters to their default values by specifying only those parameter. For example, to restore only the ack and cqi parameters to the default values, run the following command:

```
npu(config-bs-66053-pwrctrl)# no requiredcnr ack cqi
```

These parameters will be restored to their default value, while the other parameters will remain unchanged.

To restore all Required C/N Levels parameters to their default value, run the following command:

```
npu(config-bs-66053-pwrctrl)# no requiredcnr
```



NOTE

Refer to [Section 3.8.6.2.2](#) for a description and default values of these parameters.

Command Syntax **npu(config-bs-66053-pwrctrl)# no requiredcnr** [ack] [cqi] [cdma]
[qpsk-1by2] [qpsk-3by4] [qam16-1by2] [qam16-3by4] [qam64-1by2]
[qam64-2by3] [qam64-3by4] [qam64-5by6]

Privilege Level 10

Command Modes bs power control configuration mode

3.8.6.4 Terminating the Power Control Configuration Mode

Run the following command to terminate the Power Control configuration mode:

```
npu(config-bs-66053-pwrctrl)# exit
```

| | |
|------------------------|---|
| Command Syntax | npu(config-bs-66053-pwrctrl)# exit |
| Privilege Level | 10 |
| Command Modes | bs power control configuration mode |

3.8.6.5 Displaying Configuration Information for Power Control Parameters

You can display the current configuration information for the following parameters tables:

- Noise and Interference Level (refer to [Section 3.8.6.5.1](#))
- Maximum EIRxP (refer to [Section 3.8.6.5.2](#))
- Required C/N Level (refer to [Section 3.8.6.5.3](#))
- All (refer to [Section 3.8.6.5.4](#))

3.8.6.5.1 Displaying Configuration Information for Power Control Target Noise and Interference Level Parameters

To display configuration for the Power Control Target Noise and Interference Level parameters, run the following command:

```
npu# show pwrctrl-nilevels bs [(1 to 16777215 StepSize 1)]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Power Control Target Noise and Interference Level parameters of BS 66053, run the following command:

```
npu# show pwrctrl-nilevels bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show pwrctrl-nilevels bs

Command Syntax npu# show pwrctrl-nilevels bs [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Target Noise and Interference Level parameters of a specific BS. Do not specify a value for this parameter if you want to display the Target Noise and Interference Level parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|---|----------|
| BSIDLSB | :<value> |
| NoiseandInterferenceLevelforCQI&ACKRegion | :<value> |
| (for each existing BS if requested for all BSs) | |
| NoiseandInterferenceLevelforPUSCZone | :<value> |
| PowerControlCorrectionFactor | :<value> |

Command Modes Global command mode

3.8.6.5.2 Displaying Configuration Information for Power Control Maximum EIRxP

The Maximum EIRxP parameter defines the maximum effective isotropic received power at the BS for Initial ranging..

In the current release this parameter cannot be configured and is set by the value in the vendor parameters file.

To display configuration for the Power Control Maximum EIRxP parameter, run the following command:

```
npu# show pwrctrl-maxeirxp bs [<(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Power Control Maximum EIRxP parameter of BS 66053, run the following command:

```
npu# show pwrctrl-maxeirxp bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show pwrctrl-maxeirxp bs
```

| | |
|-----------------------|---|
| Command Syntax | npu# show pwrctrl-maxeirxp bs [<(1 to 16777215 StepSize 1) |
|-----------------------|---|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Maximum EIRxP parameter of a specific BS. Do not specify a value for this parameter if you want to display the Maximum EIRxP parameter of all BSs. | Optional | N/A | 1-16777215 |

| | | |
|---|----------|----------|
| Display Format | BSIDLSB | :<value> |
| | MaxEIRxP | :<value> |
| (for each existing BS if requested for all BSs) | | |

Command Modes Global command mode

3.8.6.5.3 Displaying Configuration Information for Power Control Required C/N Level Parameters

To display configuration for the Power Control Required C/N Level parameters, run the following command:

npu# show pwrctrl-requiredcnr bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Power Control Required C/N Level parameters of BS 66053, run the following command:

npu# show pwrctrl-requiredcnr bs 66053

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show pwrctrl-requiredcnr bs

Command Syntax npu# show pwrctrl-requiredcnr bs [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Required C/N Level parameters of a specific BS. Do not specify a value for this parameter if you want to display the Required C/N Level parameters of all BSs. | Optional | N/A | 1-16777215 |

| | | |
|---|------------------------|-----------|
| Display | BSIDLSB | : <value> |
| Format | RequiredCNRforACK | : <value> |
| (for each existing BS if requested for all BSs) | RequiredCNRforCQI | : <value> |
| | RequiredCNRforCDMA | : <value> |
| | RequiredCNRforQPSK1/2 | : <value> |
| | RequiredCNRforQPSK3/4 | : <value> |
| | RequiredCNRfor16QAM1/2 | : <value> |
| | RequiredCNRfor16QAM3/4 | : <value> |
| | RequiredCNRfor64QAM1/2 | : <value> |
| | RequiredCNRfor64QAM2/3 | : <value> |
| | RequiredCNRfor64QAM3/4 | : <value> |
| | RequiredCNRfor64QAM5/6 | : <value> |
| Command Modes | Global command mode | |

3.8.6.5.4 Displaying Configuration Information for All Power Control Parameters

To display configuration for all Power Control parameters, run the following command:

```
npu# show pwrctrl-all bs [<(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display all Power Control parameters of BS 66053, run the following command:

```
npu# show pwrctrl-all bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show pwrctrl-all bs
```

| | |
|-----------------------|--|
| Command Syntax | npu# show pwrctrl-all bs [<(1 to 16777215 StepSize 1) |
|-----------------------|--|

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display all Power Control parameters of a specific BS. Do not specify a value for this parameter if you want to display all Power Control parameters of all BSs. | Optional | N/A | 1-16777215 |

Command Modes Global command mode

3.8.7 Managing BS Feedback Allocation Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Feedback Allocation parameters (refer to [Section 3.8.7.1](#)).
- Restore the default values of one or all of the Feedback Allocation parameters (refer to [Section 3.8.7.2](#)).

You can display configuration information for the Feedback Allocation parameters of a selected or all existing BSs (refer to [Section 3.8.7.3](#)).

3.8.7.1 Configuring Feedback Allocation Parameters



To configure the Feedback Allocation Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# feedbackalloc [ir-cdma <(0 to 12000 StepSize 1)> ] [max-cqi <(0 to 29 StepSize 1)> ]
```

**NOTE**

An attempt to configure the max-cqi parameter will be ignored. The value of this parameter is set by the value configured in the vendor parameters file.

Command Syntax `npu(config-bs-66053)# feedbackalloc [ir-cdma <(0 to 12000 StepSize 1)>] [max-cqi <(0 to 29 StepSize 1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--------------------------------------|--|-----------------------------------|---------------|---|
| [ir-cdma <(0 to 12000 StepSize 1)>] | The period of IR CDMA allocations, in frames. Actual valid values are 1, 2, 4, 6, 8, 10. If a different value is configured-the highest valid value that is lower than the configured value will be set (for example, for a configured value higher than 10 the actual value will be 10. For a configured value of 7 the actual value will be 6). | Optional | 2 | 0 - 12000 |
| [max-cqi <(0 to 29 StepSize 1)>] | The maximum size allowed for the CQI region, in subchannels. In the current release the value set to this parameter is ignored. The value is provided by the vendor parameters file. The default for a bandwidth of 5 MHz is 7. For 7 or 10 MHz the default is 21. | Mandatory when creating a new BS. | N/A* | <ul style="list-style-type: none"> ■ 0-11 for bw=5MHz ■ 0-29 for bw=7 or 10 MHz |

Command Modes bs configuration mode

3.8.7.2 Restoring the Default Values of Feedback Allocation Parameters

To restore the ir-cdma non-mandatory parameter to the default values, run the following command:

```
npu(config-bs-66053)# no feedbackalloc [ir-cdma]
```

You can restore only one parameter to the default value by specifying only this parameter. For example, to restore only the ir-cdma parameter to the default value, run the following command:

```
npu(config-bs-66053)# no feedbackalloc ir-cdma
```

This parameter will be restored to the default value, while the other parameter will remain unchanged.

To restore all Feedback Allocation non-mandatory parameters to their default value, run the following command:

```
npu(config-bs-66053)# no feedbackalloc
```



NOTE

Refer to [Section 3.8.7.1](#) for a description and default values of these parameters.

Command Syntax `npu(config-bs-66053)# no feedbackalloc [ir-cdma]`

Privilege Level 10

Command Modes bs configuration mode

3.8.7.3 Displaying Configuration Information for Feedback Allocation Parameters

To display configuration information for Feedback Allocation parameters, run the following command:

npu# show feedbackalloc bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Feedback Allocation parameters of BS 66053, run the following command:

npu# show feedbackalloc bs 66053

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show feedbackalloc bs

Command Syntax **npu# show feedbackalloc bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Feedback Allocation parameters of a specific BS. Do not specify a value for this parameter if you want to display Feedback Allocation parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format BSIDLSB :<value>
IRCDMAAllocationsPeriod(frames) :<value>
(for each existing BS if requested for all BSs) MaximumCQIRegionSize(subchannels) :<value>

Command Modes Global command mode

3.8.8 Managing Neighbor Advertisement Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Neighbor Advertisement parameters (refer to [Section 3.8.8.1](#)).
- Restore the default values of one or all of the Neighbor Advertisement parameters (refer to [Section 3.8.8.2](#)).

You can display configuration information for the Neighbor Advertisement parameters of a selected or all existing BSs (refer to [Section 3.8.8.3](#)).

3.8.8.1 Configuring Neighbor Advertisement Parameters



To configure the Neighbor Advertisement Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# nbradvertise [triggersetup <(0 to 100 StepSize 0.1)>]
```

Command Syntax `npu(config-bs-66053)# nbradvertise` [triggersetup <(0 to 100 StepSize 0.1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|-------------------------|
| [triggersetup <(0 to 100 StepSize 0.1)>] | The periodic NBRADV transmission interval, in seconds | Optional | 10 | 0 - 100 in steps of 0.1 |

Command Modes bs configuration mode

3.8.8.2 Restoring the Default Values of Neighbor Advertisement Parameter

Since there is only one Neighbor Advertisement parameter, run any of the following commands to restore it to the default value:

```
npu(config-bs-66053)# no nbradvertise
```

```
npu(config-bs-66053)# no nbradvertise triggersetup
```



NOTE

Refer to [Section 3.8.8.1](#) for a description and default values of these parameters.

Command Syntax

```
npu(config-bs-66053)# no nbradvertise [triggersetup]
```

Privilege Level

10

Command Modes

bs configuration mode

3.8.8.3 Displaying Configuration Information for Neighbor Advertisement Parameters

To display configuration information for the Neighbor Advertisement parameter, run the following command:

```
npu# show nbradvertise bs [<(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Neighbor Advertisement parameters of BS 66053, run the following command:

```
npu# show nbradvertise bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show nbradvertise bs
```

Command Syntax `npu# show nbradvertise bs [<(1 to 16777215 StepSize 1)`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Neighbour Advertisement parameters of a specific BS. Do not specify a value for this parameter if you want to display Neighbour Advertisement parameters of all BSs. | Optional | N/A | 1-16777215 |

| | | |
|-----------------------|-------------------------------|-----------------------------|
| Display Format | <code>BSIDLSB</code> | <code>:<value></code> |
| | <code>PeriodicInterval</code> | <code>:<value></code> |

(for each existing BS if requested for all BSs)

Command Modes Global command mode

3.8.9 Managing Triggers Parameters

After enabling the BS configuration mode, you can configure one or more of the Triggers parameters (refer to [Section 3.8.9.1](#)).

You can display configuration information for the Triggers parameters of a selected or all existing BSs (refer to [Section 3.8.9.2](#)).

3.8.9.1 Configuring Triggers Parameters



To configure the Triggers Parameters:

From the BS configuration mode, run the following command:

npu(config-bs-66053)# triggers-*<trigger-name>* *<trigger-range>*

Each Trigger is configured separately. This is the general structure of the command.

Command Syntax **npu(config-bs-66053)# triggers-*<trigger-name>* *<trigger-range>***

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|--|-----------|---------------|---------------------------------------|
| <i><trigger-name></i> | The Trigger name. | Mandatory | N/A | See Table 3-3 1 below |
| <i><trigger-value></i> | Defines the threshold value for the Trigger. | Mandatory | N/A | See Table 3-3 1 below |

Command Modes bs configuration mode

Table 3-31: Trigger Names and Possible Value Ranges

| Trigger Name | Trigger Condition | Action | Possible Values |
|----------------------------|--|------------------|--|
| triggers-scnreq-cinr-min | The C/N at the Serving BS is below the Trigger threshold (in dB) | Scan Request | -64 to 63.5 in steps of 0.5 |
| triggers-scnreq-rssi-min | The RSSI at the Serving BS is below the Trigger threshold (in dBm) | | -103.75 to -40 in steps of 0.25 |
| triggers-scnreq-rtd-max | The Serving BS distance from the MS (calculated by measuring the round trip delay) is above the Trigger threshold (in meter) | | 0-3400 in steps of 50 if BS BW is 10 MHz, 0-6800 in steps of 50 if BS BW is 5 MHz, 0-4800 in steps of 50 if BS BW is 7 MHz |
| triggers-horeq-cinr-margin | The C/N at the Neighbour BS minus the C/N at the Serving BS is above the Trigger threshold (in dB) | Handover Request | -64 to 63.5 in steps of 0.5 |
| triggers-horeq-cinr-max | The C/N at the Neighbour BS is above the Trigger threshold (in dB) | | -64 to 63.5 in steps of 0.5 |
| triggers-horeq-cinr-min | The C/N at the Serving BS is below the Trigger threshold (in dB) | | -64 to 63.5 in steps of 0.5 |
| triggers-horeq-rssi-margin | The RSSI at the Neighbour BS minus the RSSI at the Serving BS is above the Trigger threshold (in dBm) | | -32 to 31.75 in steps of 0.25 |
| triggers-horeq-rssi-max | The RSSI at the Neighbour BS is above the Trigger threshold (in dBm) | | -103.75 to -40 in steps of 0.25 |
| triggers-horeq-rssi-min | The RSSI at the Serving BS is below the Trigger threshold (in dBm) | | -103.75 to -40 in steps of 0.25 |
| triggers-horeq-rtd-max | The Serving BS distance from the MS (calculated by measuring the round trip delay) is above the Trigger threshold (in meter) | | 0-3400 in steps of 50 if BS BW is 10 MHz, 0-6800 in steps of 50 if BS BW is 5 MHz, 0-4800 in steps of 50 if BS BW is 7 MHz |

3.8.9.2 Displaying Configuration Information for Triggers Parameters

To display configuration information for Triggers parameters, run the following command:

npu# show triggers bs [<(1 to 16777215 StepSize 1)> TrigName {scnReqCinrMin | scnReqRssiMin | scnReqRtdMax | hoReqCinrMaxNbs | hoReqRssiMaxNbs | hoReqCinrMargin | hoReqRssiMargin | hoReqRtdMax | hoReqCinrMinSbs | hoReqRssiMinSbs}]

Specify the BS ID and Trigger name if you want to display configuration for a particular Trigger. For example, to display the scnReqCinrMin parameters of BS 66053, run the following command:

npu# show triggers bs 66053 TrigName scnReqCinrMin

Do not specify these parameters if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show triggers bs

| | |
|-----------------------|--|
| Command Syntax | npu# show triggers bs [<(1 to 16777215 StepSize 1)> TrigName {scnReqCinrMin scnReqRssiMin scnReqRtdMax hoReqCinrMaxNbs hoReqRssiMaxNbs hoReqCinrMargin hoReqRssiMargin hoReqRtdMax hoReqCinrMinSbs hoReqRssiMinSbs}] |
|-----------------------|--|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|--|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display a specific Trigger of a specific BS. Do not specify a value for this parameter if you want to display all Triggers parameters of all BSs. | Optional | N/A | 1-16777215 |

| | | | |
|---|---|--|--|
| TrigName {scnReqCinrMin scnReqRssiMin scnReqRtdMax hoReqCinrMaxNbs hoReqRssiMaxNbs hoReqCinrMargin hoReqRssiMargin hoReqRtdMax hoReqCinrMinSbs hoReqRssiMinSbs}] | The Trigger name Specify only if you want to display a specific Trigger of a specific BS. Do not specify if you want to display all Triggers parameters of all BSs | | <ul style="list-style-type: none"> ■ scnReqCinrMin ■ scnReqRssiMin ■ scnReqRtdMax ■ hoReqCinrMaxNbs ■ hoReqRssiMaxNbs ■ hoReqCinrMargin ■ hoReqRssiMargin ■ hoReqRtdMax ■ hoReqCinrMinSbs ■ hoReqRssiMinSbs} |
|---|---|--|--|

Display BSIDLSB :<value>
Format scnReqRssiMin :<value>
 (for a selected Trigger)

Command Modes Global command mode

3.8.10 Managing Trigger Setup Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Trigger Setup parameters (refer to [Section 3.8.10.1](#)).
- Restore the default values of one or all of the Trigger Setup parameters (refer to [Section 3.8.10.2](#)).

You can display configuration information for the Trigger Setup parameters of a selected or all existing BSs (refer to [Section 3.8.10.3](#)).

3.8.10.1 Configuring Trigger Setup Parameters



To configure the Trigger Setup Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# triggersetup [avgduration-rssi <(0 to 255 StepSize 1)>]
[avgduration-cinr <(0 to 255 StepSize 1)>] [avgduration-rtd <(0 to 255 StepSize
1)>]
```

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053)# triggersetup [avgduration-rssi <(0 to 255 StepSize 1)>] [avgduration-cinr <(0 to 255 StepSize 1)>] [avgduration-rtd <(0 to 255 StepSize 1)>] |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|-----------------|
| [avgduration-rssi <(0 to 255 StepSize 1)>] | The default RSSI average duration for triggers, in milliseconds | Optional | 50 | 0 - 255 |
| [avgduration-cinr <(0 to 255 StepSize 1)>] | The default CINR average duration for triggers, in milliseconds | Optional | 50 | 0 - 255 |
| [avgduration-rtd <(0 to 255 StepSize 1)>] | The default RTD average duration for triggers, in milliseconds | Optional | 50 | 0 - 255 |

| | |
|----------------------|-----------------------|
| Command Modes | bs configuration mode |
|----------------------|-----------------------|

3.8.10.2 Restoring the Default Values of Trigger Setup Parameters

To restore one or all of the Trigger Setup parameters to their default values, run the following command:

```
npu(config-bs-66053)# no triggersetup [avgduration-rssi] [avgduration-cinr]
[avgduration-rtd]
```

You can restore only some parameters to their default values by specifying only those parameters. For example, to restore only the `avgduration-cinr` parameter to the default value, run the following command:

```
npu(config-bs-66053)# no triggersetup avgduration-cinr
```

This parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all Trigger Setup parameters to their default value, run the following command:

```
npu(config-bs-66053)# no triggersetup
```



NOTE

Refer to [Section 3.8.10.1](#) for a description and default values of these parameters.

| | |
|-----------------------|---|
| Command Syntax | npu(config-bs-66053)# no triggersetup [avgduration-rssi] [avgduration-cinr] [avgduration-rtd] |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------|
| Command Modes | bs configuration mode |
|----------------------|-----------------------|

3.8.10.3 Displaying Configuration Information for Trigger Setup Parameters

To display configuration information for Trigger Setup parameters, run the following command:

```
npu# show triggersetup bs [(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Trigger Setup parameters of BS 66053, run the following command:

```
npu# show triggersetup bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show triggersetup bs
```

Command Syntax `npu# show triggersetup bs [<(1 to 16777215 StepSize 1)>`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Trigger Setup parameters of a specific BS. Do not specify a value for this parameter if you want to display Trigger Setup parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|---|-----------|
| BSIDLBSB | : <value> |
| AverageDurationofDefaultRSSI(msec) | : <value> |
| (for each existing BS if requested for all BSs) | |
| AverageDurationofDefaultCINR(msec) | : <value> |
| AverageDurationofDefaultRTD(msec) | : <value> |

Command Modes Global command mode

3.8.11 Managing Scan Negotiation Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Scan Negotiation parameters (refer to [Section 3.8.11.1](#)).
- Restore the default values of some or all of the Scan Negotiation parameters (refer to [Section 3.8.11.2](#)).

You can display configuration information for the Scan Negotiation parameters of a selected or all existing BSs (refer to [Section 3.8.11.3](#)).

3.8.11.1 Configuring Scan Negotiation Parameters



To configure the Scan Negotiation Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# scanning [enable-modify {true | false}]
```

Command Syntax **npu(config-bs-66053)# scanning** [enable-modify {true | false}]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------|--|----------|---------------|---|
| [enable-modify {TRUE FALSE}] | Determines whether the BS will modify unfeasible scan profiles requested by MSs. Note: If TRUE the BS will modify unfeasible scan profile requests and if FALSE the BS will deny the requests. | Optional | true | <ul style="list-style-type: none"> <input type="checkbox"/> true <input type="checkbox"/> false |

Command Modes bs configuration mode

3.8.11.2 Restoring the Default Value of Scan Negotiation Parameters

To restore the Scan Negotiation enable-modify parameter to the default value, run the following command:

```
npu(config-bs-66053)# no scanning [enable-modify]
```


**NOTE**

Refer to [Section 3.8.11.1](#) for a description and default value of this parameter.

Command Syntax **npu(config-bs-66053)# no scanning** [enable-modify]]

Privilege Level 10

Command Modes bs configuration mode

3.8.11.3 Displaying Configuration Information for Scan Negotiation Parameters

To display configuration information for Scan Negotiation parameters, run the following command:

npu# show scanning bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Scan Negotiation parameters of BS 66053, run the following command:

npu# show scanning bs 66053

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show scanning bs

Command Syntax **npu# show scanning bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Scan Negotiation parameters of a specific BS. Do not specify a value for this parameter if you want to display Scan Negotiation parameters of all BSs. | Optional | N/A | 1-16777215 |

Display**Format**

BSIDLSB

:<value>

EnableModifyProfile

:<true/false>

(for each existing BS if requested for all BSs)

Command Modes

Global command mode

3.8.12 Managing Handover Negotiation at TBS Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Handover Negotiation at TBS parameters (refer to [Section 3.8.12.1](#)).
- Restore the default values of some or all of the Handover Negotiation at TBS parameters (refer to [Section 3.8.12.2](#)).

You can display configuration information for the Handover Negotiation at TBS parameters of a selected or all existing BSs (refer to [Section 3.8.12.3](#)).

3.8.12.1 Configuring Handover Negotiation at TBS Parameters



To configure the Handover Negotiation at TBS Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# honegotiation-tbs [defaultactiontime <(0 to 255 StepSize 1)>] [fastrangingalloc <(0 to 255 StepSize 1)>]
```

Command Syntax **npu(config-bs-66053)# honegotiation-tbs** [defaultactiontime <(0 to 255 StepSize 1)>] [fastrangingalloc <(0 to 255 StepSize 1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|-----------------|
| defaultactiontime <(0 to 255 StepSize 1)> | The number of frames until allocation of non-contention based ranging opportunity at target BS. | Optional | 9 | 0 - 255 |
| fastrangingalloc <(0 to 255 StepSize 1)> | The number of consecutive fast ranging opportunities the target BS will allocate to an incoming HO MS. | Optional | 2 | 0 - 255 |

Command Modes bs configuration mode

3.8.12.2 Restoring the Default Values of Handover Negotiation at TBS Parameters

To restore some or all of the Handover Negotiation at TBS parameters to their default values, run the following command:

```
npu(config-bs-66053)# no honegotiation-tbs [defaultactiontime] [fastrangingalloc]
```

You can restore only one parameter to the default values by specifying only that parameters. For example, to restore only the `fastrangingalloc` parameter to the default value, run the following command:

```
npu(config-bs-66053)# no honegotiation-tbs fastrangingalloc
```

This parameter will be restored to its default value, while the other parameter will remain unchanged.

To restore all Handover Negotiation at TBS parameters to their default value, run the following command:

```
npu(config-bs-66053)# no honegotiation-tbs
```



NOTE

Refer to [Section 3.8.12.1](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053)# no honegotiation-stbs [defaultactiontime] [fastrangingalloc] |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------|
| Command Modes | bs configuration mode |
|----------------------|-----------------------|

3.8.12.3 Displaying Configuration Information for Handover Negotiation at TBS Parameters

To display configuration information for Handover Negotiation at TBS parameters, run the following command:

```
npu# show honegotiation-tbs bs [(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Handover Negotiation at TBS parameters of BS 66053, run the following command:

```
npu# show honegotiation-tbs bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show honegotiation-tbs bs
```

Command Syntax `npu# show honegotiation-tbs bs [<(1 to 16777215 StepSize 1)`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Handover Negotiation at TBS parameters of a specific BS. Do not specify a value for this parameter if you want to display Handover Negotiation at TBS parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|---|----------|
| BSIDLSB | :<value> |
| DefaultActionTime(frames) | :<value> |
| FastRangingallocations (for each existing BS if requested for all BSs) | :<value> |

Command Modes Global command mode

3.8.13 Managing Neighbor BSs



To configure a Neighbor BS:

- 1 Enable the Neighbour BS configuration mode for the selected Neighbour BS (refer to [Section 3.8.13.1](#))

- 2 You can now execute any of the following tasks:
 - » Configure one or more of the parameters tables of the Neighbor BS (refer to [Section 3.8.13.2](#))
 - » Restore the default values of parameters in one or more of the parameters tables of the Neighbor BS (refer to [Section 3.8.13.3](#))
 - » Terminate the Neighbor BS configuration mode (refer to [Section 3.8.13.5](#))

In addition, you can, at any time, display configuration information for each of the parameters tables of the Neighbour BS (refer to [Section 3.8.13.7](#)) or delete an existing Neighbor BS (refer to [Section 3.8.13.6](#)).

3.8.13.1 Enabling the Neighbor BS Configuration Mode\Creating a Neighbor BS

To configure the parameters of a Neighbour BS, first enable the Neighbour BS configuration mode for the specific Neighbour BS. Run the following command to enable the Neighbour BS configuration mode. You can also use this command to create a new Neighbour BS.

```
npu(config-bs-66053)# nbr <(1 to 16777215 StepSize 1)>
```

Note that for a new Neighbour BS this command only defines the Neighbour BS ID, and that the Neighbour BS is not fully created until completing configuration of all mandatory parameters and executing the **apply** command (must be executed before exiting the Neighbour BS configuration mode). Also when updating an existing Neighbour BS, the **apply** command must be executing prior to termination the Neighbour BS configuration mode.

For example, to define a new Neighbour BS with a BS ID 66055, or to enable the configuration mode for Neighbour BS 66055, run the following command:

```
npu(config-bs-66053)# nbr 66055
```

If you use this command to create a new Neighbour BS, the configuration mode for this Neighbour BS is automatically enabled, after which you can execute any of the following tasks:

- Configure one or more of the parameters tables of the Neighbour BS (refer to [Section 3.8.13.2](#))
- Restore the default values of parameters in one or more of the parameters tables of the Neighbour BS (refer to [Section 3.8.13.3](#))

After executing the above tasks, you can terminate the Neighbour BS configuration mode (refer to [Section 3.8.13.5](#)) and return to the BS configuration mode.

Note that for properly completing the configuration of a Neighbour BS the **apply** command must be executed prior to exiting the Neighbour BS configuration mode.

Command Syntax `npu(config-bs-66053)# nbr <(1 to 16777215 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|-----------|---------------|-----------------|
| <code>nbr <(1 to 16777215 StepSize 1)></code> | The BS ID (BSIDLSB) of the Neighbour BS | Mandatory | | 1 - 16777215 |

Command Modes bs configuration mode

For example, to define Neighbor BS 66055 for bs-68000, run the following command:

```
npu(config-bs-66053)# nbr 68000
```



NOTE

The following examples are for Neighbour BS configuration mode for bs-66053, neighbour bs (nbr) 68000.

3.8.13.2 Configuring Neighbor BS Parameters

After enabling the Neighbor BS configuration mode you can configure the following parameters tables:

- General (refer to [Section 3.8.13.2.1](#))
- Required C/N Level (refer to [Section 3.8.13.2.2](#))
- Trigger Setup (refer to [Section 3.8.13.2.3](#))

- Triggers (refer to [Section 3.8.13.2.4](#))
- Specific BS Triggers (refer to [Section 3.8.13.2.5](#))



IMPORTANT

After completing the Neighbour BS configuration, do not forget to execute the apply command before exiting the Neighbour BS configuration mode:

```
npu(config-bs-66053-nbr-68000)# apply
```

3.8.13.2.1 Configuring General Neighbor BS Parameters

The General Neighbor BS Parameters table enables defining the general parameters of the Neighbor BS.

To configure the General Neighbor BS parameters, run the following command:

```
npu(config-bs-66053-nbr-68000)# general [syncind {unsynchronized |
timeSynchronized | timeAndFrequencySynchronized}] [eirp <(-128 to 127
StepSize 1)>] [srvcsupport <hex-string>] [bw {fiveMHz | tenMHz | sevenMHz}]
[feedbackzone-permbase <(0 to 69 StepSize 1)>] [ucd-configchangecount <(0 to
255 StepSize 1)>] [dcd-configchangecount <(0 to 255 StepSize 1)>] [eirx-pir-max
<(-140 to -40 StepSize 1)>] [frequency <(2022.5 to 2217.5 StepSize 0.125) |
(2302.5 to 2397.5 StepSize 0.125) | (2487.5 to 2687.5 StepSize 0.125) | (3302.5
to 3397.5 StepSize 0.125) | (3402.5 to 3597.5 StepSize 0.125) | (3602.5 to 3797.5
StepSize 0.125)>] [preamble-idx <(0 to 255 StepSize 1)>] [paging-grp-id <(0 to
65535 StepSize 1)> ] [nbr-stprt-rng-codes <(0 to 255 StepSize 1)> ]
```



IMPORTANT

When creating a new Neighbour BS, all mandatory Neighbour BS General parameters must be configured.

Command Syntax `npu(config-bs-66053-nbr-68000)# general [syncind {unsynchronized | timeSynchronized | timeAndFrequencySynchronized}] [eirp <(-128 to 127 StepSize 1)>] [srvcsupport <hex-string>] [bw {fiveMHz | tenMHz | sevenMHz}] [feedbackzone-permbase <(0 to 69 StepSize 1)>] [ucd-configchangeount <(0 to 255 StepSize 1)>] [dcd-configchangeount <(0 to 255 StepSize 1)>] [eirx-pir-max <(-140 to -40 StepSize 1)>] [frequency <(2022.5 to 2217.5 StepSize 0.125) | (2302.5 to 2397.5 StepSize 0.125) | (2487.5 to 2687.5 StepSize 0.125) | (3302.5 to 3397.5 StepSize 0.125) | (3402.5 to 3597.5 StepSize 0.125) | (3602.5 to 3797.5 StepSize 0.125)>] [preamble-idx <(0 to 255 StepSize 1)>] [paging-grp-id <(0 to 65535 StepSize 1)>] [nbr-strt-rng-codes <(0 to 255 StepSize 1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|--|------------------------------|--|
| [syncind {unsynchronized timeSynchronized timeAndFrequencySynchronized}] | Time/Frequency synchronization indicator. In the current release should always be set to timeAndFrequencySynchronized. | Optional | timeAndFrequencySynchronized | <ul style="list-style-type: none"> <input type="checkbox"/> unsynchronized <input type="checkbox"/> timeSynchronized <input checked="" type="checkbox"/> timeAndFrequencySynchronized |
| [eirp <(-128 to 127 StepSize 1)>] | Neighbour BS EIRP | Mandatory When creating a new Neighbour BS. | N/A | -128 to 127 |

| | | | | |
|--|---|--|---|---|
| [srvcsupport <hex-string>] | <p>Scheduling Service Support. Two hexadecimal digits that can be presented as 8 bits where tbits 5-7 are always 0. Bits 0-4 indicate whether specific services are supported, where a value of 1 means that the service is supported: UGS (0), RT-PS(1), NRT-PS(2), BE(3), ERT-PS(4).</p> <p>Should be taken from the displayed information for Handover Control (hoctrl) in the relevant BS (see Section 3.8.20).</p> | Optional | c8 (11001000, meaning that the BS supports UGS, RT-PS and ERT-PS scheduling services). | Two hexadecimal digits. |
| [bw {fiveMHz tenMHz sevenMHz}] | <p>The bandwidth of neighbour BS.</p> <p>Should be taken from Baseband bandwidth parameter of the relevant BS (see Section 3.8.15.2)</p> | Mandatory When creating a new Neighbour BS. | N/A | <ul style="list-style-type: none"> ■ fiveMHz ■ tenMHz ■ sevenMHz |
| [feedbackzone-permbase <(0 to 69 StepSize 1)>] | <p>The first uplink zone permutation base of the neighbor BS.</p> <p>In current release this equals the feedback zone permutation base (see Section 3.8.16.5.4)</p> | Mandatory When creating a new Neighbour BS. | N/A | 0 - 69 |
| [ucd-configchange count <(0 to 255 StepSize 1)>] | <p>UCD configuration change count of neighbor BS</p> <p>In the current release must be set to 0.</p> | Mandatory When creating a new Neighbour BS. | N/A | 0 - 255 must be set to 0 |

| | | | | |
|--|---|--|------|--|
| [dcd-configchange-count <(0 to 255 StepSize 1)>] | DCD configuration change count of neighbor BS In the current release must be set to 0. | Mandatory When creating a new Neighbour BS. | N/A | 0 - 255 must be set to 0 |
| eirx-pir-max <(-140 to -40 StepSize 1)> | The required effective isotropic received power at the Neighbor BS for Initial ranging, in dBm. Should be taken from Power Control maxeirxp (see Section 3.8.6.5.2) | Optional | -124 | -140 to -40 |
| [frequency <(2022.5 to 2217.5 StepSize 0.125) (2302.5 to 2397.5 StepSize 0.125) (2487.5 to 2687.5 StepSize 0.125) (3302.5 to 3397.5 StepSize 0.125) (3402.5 to 3597.5 StepSize 0.125) (3602.5 to 3797.5 StepSize 0.125)>] | Downlink center frequency of neighbor BS. Should be taken from RF frequency parameter of the relevant BS (see Section 3.8.14.2) | Mandatory When creating a new Neighbour BS. | N/A | <ul style="list-style-type: none"> ■ 2022.5 to 2217.5 in steps of 0.125 ■ 2302.5 to 2397.5 in steps of 0.125 ■ 2487.5 to 2687.5 in steps of 0.125 ■ 3302.5 to 3397.5 in steps of 0.125 ■ 3402.5 to 3597.5 in steps of 0.125 ■ 3602.5 to 3797.5 in steps of 0.125 |

| | | | | |
|--|---|--|-----|-----------|
| [preamble-idx <(0 to 113 StepSize 1)>] | Neighbour BS Preamble Index. When translated to an 8 bits binary string, bits 0-6 of this parameter are used to indicate the neighbour BS preamble index. Bit 7 is used to indicate the neighbour BS reuse type for CINR measurement for handover purposes Bits 0-6 should be the same as preamble-idx in displayed information of Airframe General parameters of the relevant BS (see Section 3.8.16.5.1) | Mandatory When creating a new Neighbour BS. | N/A | 0 - 255 |
| [paging-grp-id <(0 to 65535 StepSize 1)>] | The neighbour BS Paging Group Id Should be taken from Idle Mode paging-group-id parameter of the relevant BS (see Section 3.8.28) | Optional | 0 | 0 - 65535 |
| [nbr-strtrng-codes <(0 to 255 StepSize 1)>] | The neighbor BS starting number; S; of the group of codes used for this uplink. Should be taken from Ranging General, start-of-rng-codes parameters of the relevant BS (see Section 3.8.23.2) | Optional | 0 | 0 - 255 |

Command bs neighbour bs configuration mode

Modes

3.8.13.2.2 Configuring the Neighbor BS Required C/N Level Parameters

The Neighbor BS Required C/N Levels table enables defining the Carrier to Noise Ratios required for various types of transmissions.

The configured values should be the same as those defined for the applicable Power Control Required C/N Level parameters (see [Section 3.8.6.5.3](#)) in the neighbor BS.

To configure the Neighbor BS Required C/N Levels, run the following command:

```
npu(config-bs-66053-nbr-68000)# requiredcnr [ack <(-20 to 50 StepSize 1)>]
[cqi <(-20 to 50 StepSize 1)>] [cdma <(-20 to 50 StepSize 1)>] [qpsk-1by2 <(-20 to
50 StepSize 1)>] [qpsk-3by4 <(-20 to 50 StepSize 1)>] [qam16-1by2 <(-20 to 50
StepSize 1)>] [qam16-3by4 <(-20 to 50 StepSize 1)>] [qam64-1by2 <(-20 to 50
StepSize 1)>] [qam64-2by3 <(-20 to 50 StepSize 1)>] [qam64-3by4 <(-20 to 50
StepSize 1)>] [qam64-5by6 <(-20 to 50 StepSize 1)>]
```

| | |
|-----------------------|--|
| Command Syntax | <pre>npu(config-bs-66053-nbr-68000)# requiredcnr [ack <(-20 to 50 StepSize 1)>] [cqi <(-20 to 50 StepSize 1)>] [cdma <(-20 to 50 StepSize 1)>] [qpsk-1by2 <(-20 to 50 StepSize 1)>] [qpsk-3by4 <(-20 to 50 StepSize 1)>] [qam16-1by2 <(-20 to 50 StepSize 1)>] [qam16-3by4 <(-20 to 50 StepSize 1)>] [qam64-1by2 <(-20 to 50 StepSize 1)>] [qam64-2by3 <(-20 to 50 StepSize 1)>] [qam64-3by4 <(-20 to 50 StepSize 1)>] [qam64-5by6 <(-20 to 50 StepSize 1)>]</pre> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|---------------------------|--|
| Syntax Description | |
|---------------------------|--|

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------------------------|--|----------|---------------|-----------------|
| [ack <(-20 to 50 StepSize 1)>] | The C/N in dB required for sending ACK, reported by the Neighbour BS to the MS for power control purposes. | Optional | 7 | -20 to 50 |
| [cqi <(-20 to 50 StepSize 1)>] | The C/N in dB required for sending CQI, reported by the Neighbour BS to the MS for power control purposes. | Optional | 0 | -20 to 50 |
| [cdma <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting CDMA, reported by the Neighbour BS to the MS for power control purposes. | Optional | 0 | -20 to 50 |

| | | | | |
|--|---|----------|----|-----------|
| [qpsk-1by2 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using QPSK 1/2, reported by the Neighbour BS to the MS for power control purposes. | Optional | 14 | -20 to 50 |
| [qpsk-3by4<(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using QPSK 3/4, reported by the Neighbour BS to the MS for power control purposes. | Optional | 16 | -20 to 50 |
| [qam16-1by2 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 16QAM 1/2, reported by the Neighbour BS to the MS for power control purposes. | Optional | 18 | -20 to 50 |
| [qam16-3by4 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 16QAM 3/4, reported by the Neighbour BS to the MS for power control purposes. | Optional | 22 | -20 to 50 |
| qam64-1by2 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 1/2, reported by the Neighbour BS to the MS for power control purposes. | Optional | 23 | -20 to 50 |
| [qam64-2by3 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 2/3, reported by the Neighbour BS to the MS for power control purposes. | Optional | 23 | -20 to 50 |
| [qam64-3by4 <(-20 to 50 StepSize 1)>] | The C/N in dB required for transmitting using 64QAM 3/4, reported by the Neighbour BS to the MS for power control purposes. | Optional | 23 | -20 to 50 |
| [qam64-5by6 <(-20 to 50 StepSize 1)>] | he C/N in dB required for transmitting using 64QAM 5/6, reported by the Neighbour BS to the MS for power control purposes. | Optional | 23 | -20 to 50 |

Command Modes bs neighbour bs configuration mode

3.8.13.2.3 Configuring Trigger Setup Parameters

To configure the Neighbor BS Trigger Setup parameters, run the following command:

```
npu(config-bs-66053-nbr-68000)# triggersetup [avgduration-rssi <(0 to 255 StepSize 1)>] [avgduration-cinr <(0 to 255 StepSize 1)>] [avgduration-rttd <(0 to 255 StepSize 1)>]
```

The configured values should be the same as those defined for the applicable Trigger Setup parameters (see [Section 3.8.10.3](#)) in the neighbor BS.

| | |
|-----------------------|---|
| Command Syntax | <code>npu(config-bs-66053-nbr-68000)# triggersetup</code> [avgduration-rssi <(0 to 255 StepSize 1)>] [avgduration-cinr <(0 to 255 StepSize 1)>] [avgduration-rttd <(0 to 255 StepSize 1)>] |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|---------------------------|---|
| Syntax Description | Refer to Section 3.8.10.1 |
|---------------------------|---|

| | |
|----------------------|------------------------------------|
| Command Modes | bs neighbour bs configuration mode |
|----------------------|------------------------------------|

3.8.13.2.4 Configuring Neighbor BS Triggers Parameters

To configure the Neighbor BS Triggers parameters, run the following command:

```
npu(config-bs-66053-nbr-68000)# triggers-<trigger-name> <trigger-range>
```

Each Trigger is configured separately. This is the general structure of the command.

The configured trigger names and values should be the same as those defined for the applicable Triggers parameters (see [Section 3.8.9.2](#)) in the neighbor BS.



IMPORTANT

When creating a new Neighbour BS, at least one of the Neighbour BS Triggers parameters must be configured.

Command Syntax **npu(config-bs-66053-nbr-68000)# triggers-<trigger-name> <trigger-range>**

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------|--|-----------|---------------|---------------------------------|
| <trigger-name> | The Trigger name. | Mandatory | N/A | See Table 3-3 1 |
| <trigger-value> | Defines the threshold value for the Trigger. | Mandatory | N/A | See Table 3-3 1 |

Command Modes bs neighbour bs configuration mode

3.8.13.2.5 Configuring Neighbor BS Specific BS Triggers Parameters

The Specific BS Triggers can be configured to define the conditions for initiating an handover request action to the specific neighbor BS (in addition to the general Triggers defined for the BS).

To configure the Neighbor BS Specific BS Triggers parameters, run the following command:

npu(config-bs-66053-nbr-68000)# -<specific-trigger-name> <trigger-range>

Each Trigger is configured separately. This is the general structure of the command.

Command Syntax **npu(config-bs-66053-nbr-68000)# <specific-trigger-name> <trigger-range>**

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------|--|-----------|---------------|---------------------------------|
| <specific-trigger-name> | The Specific Trigger name. | Mandatory | N/A | See Table 3-3 2 |
| <trigger-value> | Defines the threshold value for the Trigger. | Mandatory | N/A | See Table 3-3 2 |

Command

bs neighbour bs configuration mode

Modes**Table 3-32: Neighbor Specific Trigger Names and Possible Value Ranges**

| Trigger Name | Trigger Condition | Action | Possible Values |
|--------------------------------|--|------------------|---------------------------------|
| nbrspecific-horeq-cinr-max-nbs | The C/N at the Serving BS is below the Trigger threshold (in dB) | Handover Request | -64 to 63.5 in steps of 0.5 |
| nbrspecific-horeq-rssi-max-nbs | The RSSI at the Serving BS is below the Trigger thresholdd (in Bm) | | -103.75 to -40 in steps of 0.25 |
| nbrspecific-horeq-cinr-margin | The C/N at the Neighbour BS minus the C/N at the Serving BS is above the Trigger threshold (in dB) | | -64 to 63.5 in steps of 0.5 |
| nbrspecific-horeq-rssi-margin | The RSSI at the Neighbour BS minus the RSSI at the Serving BS is above the Trigger threshold (in dB) | | --32 to 31.75 in steps of 0.25 |

3.8.13.3 Restoring Default Values for Neighbor BS Configuration Parameters

After enabling the Neighbor BS configuration mode you can restore the default values for non-mandatory parameters in the following parameters tables:

- General (refer to [Section 3.8.13.3.1](#))
- Required C/N Level (refer to [Section 3.8.13.3.2](#))

- Trigger Setup (refer to [Section 3.8.13.3.3](#))

3.8.13.3.1 Restoring the Default Values of Neighbor BS General Parameters

To restore one or all of the Neighbor BS non-mandatory General parameters to their default values, run the following command:

```
npu(config-bs-66053-nbr-68000)# no general [syncind] [srvcsupport]
[eirx-pir-max] [paging-grp-id ] [nbr-strt-rng-codes ]
```

You can restore only some parameters to the default values by specifying only those parameters. For example, to restore only the syncind to the default value, run the following command:

```
npu(config-bs-66053-nbr-68000)# no general syncind
```

The parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all non-mandatory parameters to their default value, run the following command:

```
npu(config-bs-66053-nbr-68000)# no general
```



NOTE

Refer to [Section 3.8.13.2.1](#) for a description and default values of these parameters.

Command Syntax

```
npu(config-bs-66053-nbr-68000)# no general [syncind ]
[srvcsupport][eirx-pir-max ][paging-grp-id ][nbr-strt-rng-codes ]
```

Privilege Level

10

Command Modes

bs neighbour bs configuration mode

3.8.13.3.2 Restoring the Default Values of Neighbor BS Required C/N Level Parameters

To restore some or all of the Neighbor BS Required C/N Levels parameters to their default values, run the following command:

```
npu(config-bs-66053-bs-68000)# no requiredcnr [ack] [cqi] [cdma] [qpsk-1by2]
[qpsk-3by4] [qam16-1by2] [qam16-3by4] [qam64-1by2] [qam64-2by3]
[qam64-3by4] [qam64-5by6]
```

You can restore only some parameters to their default values by specifying only those parameter. For example, to restore only the ack and cqi parameters to the default values, run the following command:

```
npu(config-bs-66053-nbr-68000)# no requiredcnr ack cqi
```

These parameters will be restored to their default value, while the other parameters will remain unchanged.

To restore all Neighbor BS Required C/N Levels parameters to their default value, run the following command:

```
npu(config-bs-66053-nbr-68000)# no requiredcnr
```



NOTE

Refer to [Section 3.8.13.2.2](#) for a description and default values of these parameters.

| | |
|-----------------------|---|
| Command Syntax | npu(config-bs-66053-nbr-68000)# no requiredcnr [ack] [cqi] [cdma] [qpsk-1by2] [qpsk-3by4] [qam16-1by2] [qam16-3by4] [qam64-1by2] [qam64-2by3] [qam64-3by4] [qam64-5by6] |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|------------------------------------|
| Command Modes | bs neighbour bs configuration mode |
|----------------------|------------------------------------|

3.8.13.3.3 Restoring the Default Values of Neighbor BS Trigger Setup Parameters

To restore some or all of the Neighbor BS Trigger Setup parameters to their default values, run the following command:

```
npu(config-bs-66053-nbr-68000)# no triggersetup [avgduration-rssi] [avgduration-cinr] [avgduration-rtd]
```

You can restore only some parameters to their default values by specifying only those parameters. For example, to restore only the avgduration-cinr parameter to the default value, run the following command:

```
npu(config-bs-66053-nbr-68000)# no triggersetup avgduration-cinr
```

This parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all Neighbor BS Trigger Setup parameters to their default value, run the following command:

```
npu(config-bs-66053-nbr-68000)# no triggersetup
```



NOTE

Refer to [Section 3.8.13.2.3](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053-nbr-68000)# no triggersetup [avgduration-rssi] [avgduration-cinr] [avgduration-rttd] |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|------------------------------------|
| Command Modes | bs neighbour bs configuration mode |
|----------------------|------------------------------------|

3.8.13.4 Deleting Neighbor BS Triggers/Specific BS Triggers

After enabling the Neighbor BS configuration mode you can delete previously configured triggers or specific BS triggers:

3.8.13.4.1 Deleting Neighbor BS Triggers

To delete an entry from the neighbor BS triggers table run the following command:

```
npu(config-bs-66053-nbr-68000)# no <trigger-name>
```



NOTE

Refer to [Table 3-31](#) for a description and possible values of the triggers.

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053-nbr-68000)# no <trigger-name> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|------------------------------------|
| Command Modes | bs neighbour bs configuration mode |
|----------------------|------------------------------------|

3.8.13.4.2 Deleting Neighbor BS Specific BS Triggers

To delete an entry from the neighbor BS specific BS triggers table run the following command:

```
npu(config-bs-66053-nbr-68000)# no <specific-trigger-name>
```



NOTE

Refer to [Table 3-32](#) for a description and possible values of the triggers.

Command Syntax

```
npu(config-bs-66053-nbr-68000)# no <specific-trigger-name>
```

Privilege Level

10

Command Modes

bs neighbour bs configuration mode

3.8.13.5 Terminating the Neighbor BS Configuration Mode

Run the following command to terminate the Neighbor BS configuration mode:

```
npu(config-bs-66053-nbr-68000)# exit
```



IMPORTANT

Do not forget to execute the apply command before terminating the Neighbour BS configuration mode: **npu(config-bs-66053-nbr-68000)# apply**

Command Syntax

```
npu(config-bs-66053-nbr-68000)# exit
```

Privilege Level

10

Command Modes

bs neighbour bs configuration mode

3.8.13.6 Deleting a Neighbor BS

Run the following command from the BS configuration mode to delete a Neighbor BS:

```
npu(config-bs 66053)# no nbr <(1 to 16777215 StepSize 1)>
```

Command Syntax **npu(config-bs 66053)# no nbr** <(1 to 16777215 StepSize 1)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---------------------------------|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The Neighbour BS ID (bs-id-lsb) | Mandatory | N/A | 1-16777215 |

Command Modes bs configuration mode

3.8.13.7 Displaying Configuration Information for Neighbor BS Parameters

You can display the current configuration information for the following Neighbor BS parameters tables:

- General (refer to [Section 3.8.13.7.1](#))
- Required C/N Level (refer to [Section 3.8.13.7.2](#))
- Trigger Setup (refer to [Section 3.8.13.7.3](#))
- Triggers (refer to [Section 3.8.13.7.4](#))
- All (refer to [Section 3.8.13.7.6](#))

3.8.13.7.1 Displaying Configuration Information for Neighbor BS General Parameters

To display configuration for the Neighbor BS General parameters, run the following command:

```
npu# show nbr-general bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]
```

Specify the BS ID and the Neighbor BS ID (bs-id-lsb) if you want to display configuration for a particular Neighbor BS in a particular BS. For example, to display the General parameters of Neighbor BS 68000 in BS 66503, run the following command:

```
npu# show nbr-general bs 66053 bs-id-lsb 68000
```

Do not specify these parameters if you want to view configuration information for all existing Neighbor BSs in all existing BSs. To display information for all Neighbor BSs in all BSs, run the following command:

```
npu# show nbr-general bs
```

Command Syntax **npu# show nbr-general bs** [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the General parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the General parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |

| | | | | | |
|--|--|--|----------|-----|------------|
| | bs-id-lsb <(1 to 16777215 StepSize 1)> | The Neighbour BS ID. Specify a value for this parameter if you want to display the General parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the General parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |
|--|--|--|----------|-----|------------|

| | |
|--|---|
| Display Format (for each existing Neighbour BS in each of the existing BSs if requested for all) | BSIDLBSB : <value> |
| | NeighborBSIDLBSB : <value> |
| | SynchronizationIndicator : <value> |
| | EIRP : <value> |
| | SchedulingServiceSupport : <value> |
| | Bandwidth(MHz) : <value> |
| | UplinkFeedbackZonePermutationBase : <value> |
| | PreambleIndex : <value> |
| | UCDConfigurationChangeCount : <value> |
| | DCDConfigurationChangeCount : <value> |
| | IsotropicrecpwrforInitrang : <value> |
| | CenterFrequency(MHz) : <value> |
| | PagingGroupId : <value> |
| | NeighbourStartRangeCodes : <value> |

Command Modes Global command mode

3.8.13.7.2 Displaying Configuration Information for Neighbor BS Required C/N Level Parameters

To display configuration for the Neighbor BS Required C/N Level parameters, run the following command:

```
npu# show nbr-requiredcnr bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]
```


Specify the BS ID and the Neighbor BS ID (bs-id-lsb) if you want to display configuration for a particular Neighbor BS in a particular BS. For example, to display the Required C/N Level parameters of Neighbor BS 68000 in BS 66503, run the following command:

npu# show nbr-requiredcnr bs 66053 bs-id-lsb 68000

Do not specify these parameters if you want to view configuration information for all existing Neighbor BSs in all existing BSs. To display information for all Neighbor BSs in all BSs, run the following command:

npu# show nbr-requiredcnr bs

Command Syntax **npu# show nbr-requiredcnr bs** [(1 to 16777215 StepSize 1)> bs-id-lsb [(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Required C/N Level parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the Required C/N Level parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |

| | | | | | |
|--|--|--|----------|-----|------------|
| | bs-id-lsb <(1 to 16777215 StepSize 1)> | The Neighbour BS ID. Specify a value for this parameter if you want to display the Required C/N Level parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the Required C/N Level parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |
|--|--|--|----------|-----|------------|

| | |
|--|----------------------------------|
| Display Format (for each existing Neighbour BS in each of the existing BSs if requested for all) | BSIDLBSB : <value> |
| | NeighborBSIDLBSB : <value> |
| | RequiredCNRforACK : <value> |
| | RequiredCNRforCQI : <value> |
| | RequiredCNRforCDMA : <value> |
| | RequiredCNRforQPSK1/2 : <value> |
| | RequiredCNRforQPSK3/4 : <value> |
| | RequiredCNRfor16QAM1/2 : <value> |
| | RequiredCNRfor16QAM3/4 : <value> |
| | RequiredCNRfor64QAM1/2 : <value> |
| | RequiredCNRfor64QAM2/3 : <value> |
| | RequiredCNRfor64QAM3/4 : <value> |
| RequiredCNRfor64QAM5/6 : <value> | |

Command Modes Global command mode

3.8.13.7.3 Displaying Configuration Information for Neighbor BS Trigger Setup Parameters

To display configuration for the Neighbor BS Trigger Setup parameters, run the following command:

```
npu# show nbr-triggersetup bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]
```

Specify the BS ID and the Neighbor BS ID (bs-id-lsb) if you want to display configuration for a particular Neighbor BS in a particular BS. For example, to

display the Trigger Setup parameters of Neighbor BS 68000 in BS 66503, run the following command:

npu# show nbr-triggersetup bs 66053 bs-id-lsb 68000

Do not specify these parameters if you want to view configuration information for all existing Neighbor BSs in all existing BSs. To display information for all Neighbor BSs in all BSs, run the following command:

npu# show nbr-triggersetup bs

Command Syntax **npu# show nbr-triggersetup bs** [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Trigger Setup parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the Trigger Setup parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |
| bs-id-lsb <(1 to 16777215 StepSize 1)> | The Neighbour BS ID. Specify a value for this parameter if you want to display the Trigger Setup parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the Trigger Setup parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |

| | | |
|---|------------------------------------|-----------|
| Display | BSIDLSB | : <value> |
| Format | NeighborBSIDLSB | : <value> |
| (for each existing Neighbour BS in each of the existing BSs if requested for all) | AverageDurationofDefaultRSSI(msec) | : <value> |
| | AverageDurationofDefaultCINR(msec) | : <value> |
| | AverageDurationofDefaultRTD(msec) | : <value> |
| Command Modes | Global command mode | |

3.8.13.7.4 Displaying Configuration Information for Neighbor BS Triggers Parameters

To display configuration information for Neighbor BS Triggers parameters, run the following command:

```
npu# show nbr-triggers bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)> TrigName {scnReqCinrMin | scnReqRssiMin | scnReqRtdMax | scnRepCinrMaxNbs | scnRepRssiMaxNbs | scnRepCinrMargin | scnRepRssiMargin | scnRepRtdMax | scnRepCinrMinSbs | scnRepRssiMinSbs | hoReqCinrMaxNbs | hoReqRssiMaxNbs | hoReqCinrMargin | hoReqRssiMargin | hoReqRtdMax | hoReqCinrMinSbs | hoReqRssiMinSbs}]
```

Specify the BS ID, Neighbour BS ID (bs-id-lsb) and Trigger name if you want to display configuration for a particular Trigger. For example, to display the scnReqCinrMin parameters of BS Neighbour 68000 in BS 66053, run the following command:

```
npu# show nbr-triggers bs 66053 bs-id-lsb 68000 TrigName scnReqCinrMin
```

Do not specify these parameters if you want to view configuration information for all existing Neighbour BSs in all BSs. To display information for all Neighbour BSs in all BSs, run the following command:

```
npu# show nbr-triggers bs
```

| | |
|-----------------------|---|
| Command Syntax | npu# show nbr-triggers bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)> TrigName {scnReqCinrMin scnReqRssiMin scnReqRtdMax hoReqCinrMaxNbs hoReqRssiMaxNbs hoReqCinrMargin hoReqRssiMargin hoReqRtdMax hoReqCinrMinSbs hoReqRssiMinSbs}] |
|-----------------------|---|

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display a specific Trigger in a specific Neighbour BS of a specific BS. Do not specify a value for this parameter if you want to display the Triggers of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |
| bs-id-lsb <(1 to 16777215 StepSize 1)> | The Neighbour BS ID. Specify a value for this parameter if you want to display a specific Trigger in a specific Neighbour BS of a specific BS. Do not specify a value for this parameter if you want to display the Triggers of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |

| | | | | |
|---|--|--|--|--|
| TrigName {scnReqCinrMin scnReqRssiMin scnReqRtdMax hoReqCinrMaxNbs hoReqRssiMaxNbs hoReqCinrMargin hoReqRssiMargin hoReqRtdMax hoReqCinrMinSbs hoReqRssiMinSbs}] | The Trigger name Specify only if you want to display a specific Trigger of a specific Neighbour BS in a specific BS. Do not specify if you want to display all Triggers parameters of all Neighbour BSs in all BSs | | | <ul style="list-style-type: none"> ■ scnReqCinrMin ■ scnReqRssiMin ■ scnReqRtdMax ■ hoReqCinrMaxNbs ■ hoReqRssiMaxNbs ■ hoReqCinrMargin ■ hoReqRssiMargin ■ hoReqRtdMax ■ hoReqCinrMinSbs ■ hoReqRssiMinSbs} |
|---|--|--|--|--|

| | | |
|--------------------------------|---------------|----------|
| Display | BSIDLSB | :<value> |
| Format | BSIDLSB | :value> |
| (for a selected Trigger) | scnReqCinrMin | :value> |

| | |
|----------------|---------------------|
| Command | Global command mode |
| Modes | |

3.8.13.7.5 Displaying Configuration Information for Neighbor BS Specific BS Triggers Parameters

To display configuration information for Neighbor BS Specific BS Triggers parameters, run the following command:

```
npu# show nbr-specific bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)> TrigName {hoReqCinrMaxNbs | hoReqRssiMaxNbs | hoReqCinrMargin | hoReqRssiMargin} ]
```

Specify the BS ID, Neighbour BS ID (bs-id-lsb) and Specific BS Trigger name if you want to display configuration for a particular Trigger. For example, to display the hoReqRssiMaxNbs parameters of BS Neighbour 68000 in BS 66053, run the following command:

```
npu# show nbr-specific bs 66053 bs-id-lsb 68000 TrigName  
hoReqRssiMaxNbs
```

Do not specify these parameters if you want to view configuration information for all existing Neighbour BSs in all BSs. To display information for all Neighbour BSs in all BSs, run the following command:

npu# show nbr-triggers bs

Command **npu# show nbr-specific bs** [(1 to 16777215 StepSize 1)> bs-id-lsb (1 to 16777215 StepSize 1)> TrigName {hoReqCinrMaxNbs | hoReqRssiMaxNbs | hoReqCinrMargin | hoReqRssiMargin}]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display a specific Specific BS Trigger in a specific Neighbour BS of a specific BS. Do not specify a value for this parameter if you want to display the Specific BS Triggers of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |

| | | | | |
|---|---|-----------------|------------|--|
| <p>bs-id-lsb <(1 to 16777215 StepSize 1)></p> | <p>The Neighbour BS ID. Specify a value for this parameter if you want to display a specific Specific BS Trigger in a specific Neighbour BS of a specific BS. Do not specify a value for this parameter if you want to display the Specific BS Triggers of all Neighbour BSs in all BSs.</p> | <p>Optional</p> | <p>N/A</p> | <p>1-16777215</p> |
| <p>TrigName {hoReqCinrMaxNbs hoReqRssiMaxNbs hoReqCinrMargin hoReqRssiMargin}]</p> | <p>The Trigger name Specify only if you want to display a specific Specific BS Trigger of a specific Neighbour BS in a specific BS. Do not specify if you want to display all Specific BS Triggers parameters of all Neighbour BSs in all BSs</p> | | | <ul style="list-style-type: none"> ■ {hoReqCinrMaxNbs ■ hoReqRssiMaxNbs ■ hoReqCinrMargin ■ hoReqRssiMargin} |

| | | |
|--------------------------|-----------------|----------|
| Display Format | BSIDLBSB | :<value> |
| (for a selected Trigger) | hoReqRssiMaxNbs | :value> |

Command Modes Global command mode

3.8.13.7.6 Displaying Configuration Information for All Neighbour BS Parameters

To display configuration for the all Neighbour BS parameters, run the following command:

npu# show nbr-all bs [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]

Specify the BS ID and the Neighbour BS ID (bs-id-lsb) if you want to display configuration for a particular Neighbour BS in a particular BS. For example, to display all parameters of Neighbour BS 68000 in BS 66503, run the following command:

npu# show nbr-all bs 66053 bs-id-lsb 68000

Do not specify these parameters if you want to view configuration information for all existing Neighbour BSs in all existing BSs. To display information for all Neighbour BSs in all BSs, run the following command:

npu# show nbr-all bs

Command Syntax **npu# show nbr-all bs** [<(1 to 16777215 StepSize 1)> bs-id-lsb <(1 to 16777215 StepSize 1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Trigger Setup parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the Trigger Setup parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |

| | | | | | |
|--|--|--|----------|-----|------------|
| | bs-id-lsb <(1 to 16777215 StepSize 1)> | The Neighbour BS ID. Specify a value for this parameter if you want to display the Trigger Setup parameters of a specific Neighbour BS in a specific BS. Do not specify a value for this parameter if you want to display the Trigger Setup parameters of all Neighbour BSs in all BSs. | Optional | N/A | 1-16777215 |
|--|--|--|----------|-----|------------|

Command Modes Global command mode

3.8.14 Managing the RF Frequency Parameter

After enabling the BS configuration mode, you can configure the RF frequency parameter (refer to [Section 3.8.14.1](#)).

You can display configuration information for the RF frequency parameter of a selected or all existing BSs (refer to [Section 3.8.14.2](#)).

3.8.14.1 Configuring the RF Frequency Parameter



To configure the RF frequency parameter:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# rf [frequency <(2022.5 to 2217.5 StepSize 0.125) | (2302.5 to 2397.5 StepSize 0.125) | (2487.5 to 2687.5 StepSize 0.125) | (3302.5 to 3397.5 StepSize 0.125) | (3402.5 to 3597.5 StepSize 0.125) | (3602.5 to 3797.5 StepSize 0.125)>]
```

Command Syntax **npu(config-bs-66053)# rf** [frequency <((2022.5 to 2217.5 StepSize 0.125) | (2302.5 to 2397.5 StepSize 0.125) | (2487.5 to 2687.5 StepSize 0.125) | (3302.5 to 3397.5 StepSize 0.125) | (3402.5 to 3597.5 StepSize 0.125) | (3602.5 to 3797.5 StepSize 0.125)>]

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|-----------|---------------|--|
| [frequency <(2022.5 to 2217.5 StepSize 0.125) (2302.5 to 2397.5 StepSize 0.125) (2487.5 to 2687.5 StepSize 0.125) (3302.5 to 3397.5 StepSize 0.125) (3402.5 to 3597.5 StepSize 0.125) (3602.5 to 3797.5 StepSize 0.125)>] | <p>The center of the frequency band in which the BS will transmit, in MHz.</p> <p>Must be within the valid range of the relevant ODU.</p> <p>The indicated Possible Values are for a bandwidth of fiveMhz. For a different bandwidth, the actually valid values are from $f1+1/2BW$ to $f2-1/2BW$, where $f1$ is the lowest frequency of the ODU's radio band. Note that</p> <p>oDU2305236000N361by1Y0 (16) includes two bands: 2305-2320, 2345-2360 MHz.), $f2$ is the highest frequency of the ODU's band, and BW is the configured bandwidth (see “Configuring the Baseband Bandwidth Parameter” on page 555).</p> | Mandatory | N/A | <ul style="list-style-type: none"> ■ 2022.5 to 2217.5 in steps of 0.125 ■ 2302.5 to 2397.5 in steps of 0.125 ■ 2487.5 to 2687.5 in steps of 0.125 ■ 3302.5 to 3397.5 in steps of 0.125 ■ 3402.5 to 3597.5 in steps of 0.125 ■ 3602.5 to 3797.5 in steps of 0.125 |

Command Modes

bs configuration mode

**IMPORTANT**

When creating a new BS, the mandatory frequency parameter must be configured.

3.8.14.2 Displaying Configuration Information for the RF Frequency Parameter

To display configuration information of the RF frequency parameter, run the following command:

```
npu# show rf bs [(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display information for a particular BS. For example, to display the RF frequency of BS 66053, run the following command:

```
npu# show rf bs 66053
```

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

npu# show rf bs

Command Syntax **npu# show rf bs** [<(1 to 16777215 StepSize 1)>

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the RF frequency parameter of a specific BS. Do not specify a value for this parameter if you want to display the RF frequency parameter of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|-----------|----------|
| BSIDLSB | :<value> |
| Frequency | :<value> |

(for each existing BS if requested for all BSs)

Command Modes Global command mode

3.8.15 Managing the Baseband Bandwidth Parameter

After enabling the BS configuration mode, you can configure the Baseband bandwidth parameter (refer to [Section 3.8.15.1](#)).

You can display configuration information for the Baseband bandwidth parameter of a selected or all existing BSs (refer to [Section 3.8.15.2](#)).

3.8.15.1 Configuring the Baseband Bandwidth Parameter



To configure the Baseband bandwidth parameter:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# baseband [bandwidth {fiveMHz | tenMHz | sevenMHz}]
```

Command Syntax `npu(config-bs-66053)# baseband` [bandwidth {fiveMHz | tenMHz | sevenMHz}]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|----------------------|-----------|---------------|---|
| [bandwidth {fiveMHz tenMHz sevenMHz}] | BS channel bandwidth | Mandatory | N/A | <ul style="list-style-type: none"> ■ fiveMHz ■ tenMHz ■ sevenMHz |

Command Modes bs configuration mode



IMPORTANT

When creating a new BS, the mandatory frequency parameter must be configured.

Note that the valid value ranges (and in some cases also default value) of certain parameters are affected by the value configured for the bandwidth parameter. If you change the bandwidth, verify that these parameters are configured properly:

| Table | Parameters |
|--|------------|
| RF (see Section 3.8.14.1) | frequency |

| | |
|--|---|
| Airframe Structure, General (see Section 3.8.16.2.1) | ul-dl-allocation |
| Airframe Structure, Map Zone (see Section 3.8.16.2.2) | majorgrps |
| Airframe Structure, Uplink Data Zone (see Section 3.8.16.2.6) | subchannels |
| Triggers (see Section 3.8.9.1) | triggers-scnreq-rtd-max triggers-horeq-rtd-max |

3.8.15.2 Displaying Configuration Information for the Baseband Bandwidth Parameter

To display configuration information of the Baseband bandwidth parameter, run the following command:

```
npu# show baseband bs [<(1 to 16777215 StepSize 1)
```

Specify the BS ID if you want to display information for a particular BS. For example, to display the Baseband bandwidth of BS 66053, run the following command:

```
npu# show baseband bs 66053
```

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show baseband bs
```

Command Syntax **npu# show baseband bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Baseband bandwidth parameter of a specific BS. Do not specify a value for this parameter if you want to display the Baseband bandwidth parameter of all BSs. | Optional | N/A | 1-16777215 |

Display Format

BSIDLSB

:<value>

Bandwidth

:<value>

(for each existing BS if requested for all BSs)

Command Modes

Global command mode

3.8.16 Managing Airframe Structure Parameters



To configure Airframe Structure parameters:

- 1 Enable the Airframe configuration mode (refer to [Section 3.8.16.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the Airframe parameters tables (refer to [Section 3.8.16.2](#))
 - » Restore the default values of parameters in one or more of the Airframe parameters tables (refer to [Section 3.8.16.3](#))
 - » Terminate the Airframe configuration mode (refer to [Section 3.8.16.4](#))

In addition, you can, at any time, display configuration information for each of the Airframe parameters tables (refer to [Section 3.8.16.5](#)).

3.8.16.1 Enabling the Airframe Configuration Mode

To configure the Airframe parameters, first enable the Airframe configuration mode. Run the following command to enable the Airframe configuration mode.

```
npu(config-bs-66053)# airframe
```

After enabling the Airframe configuration mode, you can execute any of the following tasks:

- Configure one or more of the Airframe parameters tables (refer to [Section 3.8.16.2](#))
- Restore the default values of parameters in one or more of the Airframe parameters tables (refer to [Section 3.8.16.3](#))

After executing the above tasks, you can terminate the Airframe configuration mode (refer to [Section 3.8.16.4](#)) and return to the BS configuration mode.

Note that for properly completing the Airframe configuration the **apply** command must be executed prior to exiting the Airframe configuration mode.

| | |
|-----------------------|--------------------------------|
| Command Syntax | npu(config-bs-66053)# airframe |
|-----------------------|--------------------------------|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|-----------------------|
| Command Modes | bs configuration mode |
|----------------------|-----------------------|

3.8.16.2 Configuring Airframe Parameters

After enabling the Airframe configuration mode you can configure the following parameters tables:

- General (refer to [Section 3.8.16.2.1](#))
- Map Zone (refer to [Section 3.8.16.2.2](#))

- Downlink Diversity (refer to [Section 3.8.16.2.3](#))
- Uplink Feedback Zone (refer to [Section 3.8.16.2.4](#))
- Downlink Data Zone (refer to [Section 3.8.16.2.5](#))
- Uplink Data Zone (refer to [Section 3.8.16.2.6](#))
- Dynamic Permutation (refer to [Section 3.8.16.2.7](#))
- Mimo (refer to [Section 3.8.16.2.8](#))



IMPORTANT

After completing the Airframe configuration, do not forget to execute the apply command before exiting the Airframe configuration mode:

```
npu(config-bs-66053-airframe)# apply
```

3.8.16.2.1 Configuring Airframe General Parameters

To configure the Airframe General parameters, run the following command:

```
npu(config-bs-66053-airframe)# general [cell-id <(0 to 31 StepSize 1)>]
[pre-amble-grp <(1 to 2 StepSize 1)>] [segment <(0 to 2 StepSize 1)>] [frame-offset
<(0 to 15 StepSize 1)>] [ul-duration <(3 to 7 StepSize 1)>]
```



IMPORTANT

When creating a new BS, all mandatory Neighbor BS General parameters must be configured.

Command Syntax

```
npu(config-bs-66053-airframe)# general [cell-id <(0 to 31 StepSize 1)> ]
[pre-amble-grp <(1 to 2 StepSize 1)>] [segment <(0 to 2 StepSize 1)> ]
[frame-offset <(0 to 15 StepSize 1)> ] [ul-duration <(3 to 7 StepSize 1)> ]
```

Privilege Level

10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | |
|--|--|-----------------------------------|-----|--------|
| [cell-id <(0 to 31 StepSize 1)>] | The Cell ID (IDCell) used for preamble selection. | Mandatory when creating a new BS. | N/A | 0 - 31 |
| [preamble-grp <(1 to 2 StepSize 1)>] | The preamble group. A value of 2 is available only for the following combinations of segment and cell-id values: segment=0, cell-id=0, 3, 6, 9, 12, 15. segment=1, cell-id=1, 4, 7, 10, 13, 16. segment=2, cell-id=2, 5, 8, 11, 14, 17. | Optional | 1 | 1 - 2 |
| [segment <(0 to 2 StepSize 1)>] | The segment (BS) number in a three sector BS (0-2). This number influences the preamble selection and the major group used for the FDC transmission. | Mandatory when creating a new BS. | N/A | 0 - 2 |
| [frame-offset <(0 to 15 StepSize 1)>] | Controls the offset applied between the internal frame count and the reported frame number | Mandatory when creating a new BS. | N/A | 0 - 15 |
| [ul-duration <(3 to 7 StepSize 1)>] | The total duration of the uplink in a frame, in slots. (one slot equals 3 symbols). The range is 4-7 for bandwidth = 5 or 10MHz, 3-5 for bandwidth = 7MHz. To avoid BS-BS interference, the ul-duration must be identical in all BSs in a geographical region. | Mandatory when creating a new BS. | N/A | 3 - 7 |

Command Modes bs airframe configuration mode

3.8.16.2.2 Configuring Airframe Map Zone Parameters

To configure the Airframe Map Zone parameters, run the following command:

```
npu(config-bs-66053-airframe)# mapzone [size <(-1 to -1 StepSize 1) | (2 to 16 StepSize 2)>] [majorgrps <hex-string>] [repetition <(1 to 1 StepSize 1) | (2 to 6 StepSize 2)>]
```



IMPORTANT

When creating a new BS, the mandatory Airframe Map Zone majorgrps parameter must be configured.

Command Syntax **npu(config-bs-66053-airframe)# mapzone** [size <(-1 to -1 StepSize 1) | (2 to 16 StepSize 2)>] [majorgrps <hex-string>] [repetition <(1 to 1 StepSize 1) | (2 to 6 StepSize 2)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|---------------------------------|
| size <(-1 to -1 StepSize 1) (2 to 16 StepSize 2)> | The map zone size in symbols. A value of "-1" means the map zone size will be dynamic. | Optional | 6 | -1, 2, 4, 6, 8, 10, 12, 14, 16. |

| | | | | |
|--|--|-----------------------------------|-----|--------------------------------------|
| majorgrps <hex-string> | <p>The Major groups allocated to the BS for maps transmission.</p> <p>Two hexadecimal numbers representing 8 bits numbered 0 to 7 (left to right). Bits 0 to 5 indicate whether Subchannel Groups 0 to 5 (respectively) are allocated. Bit 6 and 7 are set to 0.</p> <p>If BW=5 MHz, bits 1, 3 and 5 are not relevant ("don't care").</p> <p>If segment (see Section 3.8.16.2.1) = 0, then bit #0 should be set. If segment = 1, then bit #2 should be set. If segment = 2, then bit #4 should be set.</p> | Mandatory when creating a new BS. | N/A | a string of two hexadecimal numbers. |
| repetition <(1 to 1 StepSize 1) (2 to 6 StepSize 2)> | The basic repetition used in the transmission of the maps using QPSK 1/2 (1 means no repetitions). | Optional | 6 | 1, 2, 4, 6 |

Command bs airframe configuration mode

Modes

3.8.16.2.3 Configuring the Airframe Downlink Diversity Mode Parameter

To configure the Airframe Downlink Diversity mode parameter, run the following command:

```
npu(config-bs-66053-airframe)# dldiversity [mode <none | matrixA | matrixAorB>]
```



IMPORTANT

When creating a new BS, the Airframe Downlink Diversity mode parameter must be configured (even if configured to the default value).

Command Syntax **npu(config-bs-66053-airframe)# dldiversity** [mode <none | matrixA | matrixAorB>]

Privilege Level 10

Syntax

Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------------------------|---|----------|---------------|---|
| mode <none matrixA matrixAorB> | The diversity mode used in downlink transmissions . | Optional | matrixAorB | <ul style="list-style-type: none"> ■ none ■ matrixA ■ matrixAorB |

Command Modes bs airframe configuration mode

3.8.16.2.4 Configuring Airframe Uplink Feedback Zone Parameters

To configure the Airframe Uplink Feedback Zone parameters, run the following command:

```
npu(config-bs-66053-airframe)# ulfeedbackzone [subchannels <(1 to 35 StepSize 1)>] [permbase <(0 to 69 StepSize 1)>]
```



NOTE

An attempt to configure the subchannels parameter will be ignored. The value of this parameter is set by internal logic according to the configured bandwidth.



IMPORTANT

When creating a new BS, the Airframe Structure Uplink Feedback Zone mandatory permbase parameter must be configured.

Command Syntax **npu(config-bs-66053-airframe)# ulfeedbackzone** [subchannels <(11 to 35 StepSize 1)>] [permbase <(0 to 69 StepSize 1)>]

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------------|--|-----------------------------------|---------------|-----------------|
| [subchannels <(1 to 35 StepSize 1)>] | The number of subchannels used in the uplink feedback zone. In the current release the value is set internally: If bandwidth=7MHz or 10MHz, value is set to 35. If bandwidth=5MHz, value is set to 17. An attempt to set a different value will be ignored. | Optional | 35 | 11-35 |
| [permbase <(0 to 69 StepSize 1)>] | The permutation base used in the feedback zone | Mandatory when creating a new BS. | N/A | 0 - 69 |

Command

bs airframe configuration mode

Modes**3.8.16.2.5 Configuring Airframe Downlink Data Zone Parameters**

To configure the Airframe Downlink Data Zone parameters, run the following command:

```
npu(config-bs-66053-airframe)# dldatazone [subchannels <(1 to 30 StepSize 1)>] [permbase <(0 to 31 StepSize 1)>]
```

**NOTE**

An attempt to configure the subchannels parameter will be ignored. The value of this parameter is set by internal logic according to the configured bandwidth.

**IMPORTANT**

When creating a new BS, the Airframe Uplink Feedback Zone mandatory parameters must be configured.

Command

```
npu(config-bs-66053-airframe)# dldatazone [subchannels <(1 to 30 StepSize 1)> ] [permbase <(0 to 31 StepSize 1)> ]
```

Syntax

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------------|--|-----------------------------------|---------------|-----------------|
| [subchannels <(1 to 30 StepSize 1)>] | The number of subchannels used in the downlink data zone. In the current release the value is set internally: If bandwidth=7MHz or 10MHz, value is set to 30. If bandwidth=5MHz, value is set to 15. An attempt to set a different value will be ignored. | Mandatory when creating a new BS. | N/A | 1-30 |
| [permbase <(0 to 31 StepSize 1)>] | The permutation base used in the downlink data zone | Mandatory when creating a new BS. | N/A | 0 - 31 |

Command Modes bs airframe configuration mode

3.8.16.2.6 Configuring Airframe Uplink Data Zone Parameters

To configure the Airframe Uplink Data Zone parameters, run the following command:

```
npu(config-bs-66053-airframe)# uldatazone [permbase <(0 to 69 StepSize 1)>]
[startallocation <(0 to 209 StepSize 1)>] [subchannels-number <(1 to 35 StepSize 1)>]
```



NOTE

An attempt to configure the subchannels-number or startallocation parameters will be ignored. The value of subchannels-number is set by internal logic according to the configured bandwidth. The value of startallocation is hardcoded to 0.



IMPORTANT

When creating a new BS, the Airframe Structure Uplink Data Zone mandatory permbase parameter must be configured.

Command `npu(config-bs-66053-airframe)# uldatazone [permbase <(0 to 69 StepSize 1)>] [startallocation <(0 to 209 StepSize 1)>] [subchannels-number <(1 to 35 StepSize 1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|----------|--|------------------------|
| [permbase <(0 to 69 StepSize 1)>] | The permutation base used in the uplink datazone | Optional | | 0 to 69 in steps of 1 |
| [startallocation <(0 to 209 StepSize 1)>] | The start allocation for the uplink datazone in slots. In the current release the value is hard-coded (0). An attempt to set a different value will be ignored. | Optional | 0 | 0 to 209 in steps of 1 |
| [subchannels-number <(1 to 35 StepSize 1)>] | The number of subchannels used in the uplink datazone. In the current release the value is set internally: If bandwidth=7MHz or 10MHz, value is set to 35. If bandwidth=5MHz, value is set to 17. An attempt to set a different value will be ignored. | Optional | 35 default value=35 (7 , 10 MHz) or 17 (5MHz) | 1- 35 |

Command Modes bs airframe configuration mode

3.8.16.2.7 Configuring Airframe Dynamic Permutation Parameters

To configure the Airframe Dynamic Permutation parameters, run the following command:

npu(config-bs-66053-airframe)# dynamicperm [dl-permbase {TRUE | FALSE}] [ul-permbase {TRUE | FALSE}]

**IMPORTANT**

When creating a new BS, the Airframe Dynamic Permutation mandatory permbase parameter must be configured.

Command Syntax `npu(config-bs-66053-airframe)# dynamicperm [dl-permbase {TRUE | FALSE}] [ul-permbase {TRUE | FALSE}]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------------------------|--|----------|---------------|---|
| dl-permbase {TRUE FALSE} | The Downlink Permutation Base. If TRUE we use the same Permutation Base over all frames (Static). If FALSE the Permutation Base changes from frame to frame (Dynamic). | Optional | True | <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE |
| ul-permbase {TRUE FALSE} | The Uplink Permutation Base. If TRUE we use the same Permutation Base over all frames. If FALSE the Permutation Base changes from frame to frame. | Optional | True | <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE |

Command Modes bs airframe configuration mode

3.8.16.2.8 Configuring Airframe MIMO Parameters

The DL MIMO feature provides a TX diversity gain or, when physical conditions allow, data rate gain (double rate).

The gain is allowed thanks to two transmitting antennas at the BS side, two receiving antennas at the MS side, and encoding/decoding capabilities of both MS and BS.

TX diversity gain is achieved when MS works at matrix A/STC, space time coding, AKA STTD (vertical encoding) mode.

Data rate gain is achieved when MS works at matrix B/SM, spatial multiplexing MIMO mode.

It is assumed that either all MSs support MIMO (not necessary both modes) or all MSs don't support MIMO (SIMO support only).

The DL MIMO feature influences several system elements such as frame structure, rate adaptation and feedback zone.

To configure the Airframe MIMO parameters, run the following command:

```
npu(config-bs-66053-airframe)# mimo [first-zone-min-size <(-1 to -1 StepSize 1) | (2 to 34 StepSize 2)> ] [first-zone-max-size <(-1 to -1 StepSize 1) | (2 to 34 StepSize 2)> ] [max-map-size <(-1 to -1 StepSize 1) | (10 to 300 StepSize 10)> ] [bcast-msgzone-loc {nonSTCzoneOnly | stcZone} ]
```



NOTE

An attempt to configure the bcast-msgzone-loc parameter will be ignored. The value of this parameter is set to nonSTCzoneOnly.

Command Syntax

```
npu(config-bs-66053-airframe)# mimo [first-zone-min-size <(-1 to -1 StepSize 1) | (2 to 34 StepSize 2)> ] [first-zone-max-size <(-1 to -1 StepSize 1) | (2 to 34 StepSize 2)> ] [max-map-size <(-1 to -1 StepSize 1) | (10 to 300 StepSize 10)> ] [bcast-msgzone-loc {nonSTCzoneOnly | stcZone} ]
```

Privilege Level

10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|--------------------|--|
| [first-zone-min-size <(-1 to -1 StepSize 1) (2 to 34 StepSize 2)>] | Determines the initial size (in OFDMA symbols) of the first zone. When reuse 3 is used within first zone, this parameter should be equal across all BSs within deployment. See recommended values in Table 3-33 below. Other values should be avoided. | Optional | -1 (no limitation) | -1 (no limitation) or 2xN where N=1 to 17. |

| | | | | |
|--|--|-----------------|---------------------------|--|
| <pre>[first-zone-max-size <(-1 to -1 StepSize 1) (2 to 34 StepSize 2)>]</pre> | <p>Maximum size (in OFDMA symbols) for first zone. Used mainly for performance control capability within frame.</p> <p>Cannot be lower than first-zone-min-size.</p> | <p>Optional</p> | <p>-1 (no limitation)</p> | <p>-1 (no limitation) or 2xN where N=1 to 17.</p> |
| <pre>[max-map-size <(-1 to -1 StepSize 1) (10 to 300 StepSize 10)>]</pre> | <p>Limits the maximum size of maps (in slots)</p> | <p>Optional</p> | <p>-1 (no limitation)</p> | <p>-1 (no limitation) or 10 to 300 in steps of 10.</p> |
| <pre>[bcast-msgzone-loc {nonSTCzoneOnly stcZone}]</pre> | <p>Location of broadcast messages within DL sub-frame. If all MSs supporting MIMO and has the capability of read broadcast messages within STC zone, messages can be transmitted in STC zone using matrix A.</p> <p>In the current release the value is hard-coded to nonSTCZoneOnly. An attempt to set a different value will be ignored.</p> | <p>Optional</p> | <p>nonSTCZoneOnly</p> | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> nonSTCzone Only <input checked="" type="checkbox"/> stcZone |

Command Modes bs airframe configuration mode

Recommended values for First Zone Minimum Size and Maximum Size:

Table 3-33: First Zone Minimum Size Recommended Value Range

| Bandwidth (MHz) | First Zone Scheme* | Basic Map Repetition | Minimum Size (symbols) (up to a maximum of Y as defined below) |
|-----------------|--------------------|----------------------|--|
| 7/10 | Full Loading | 6 | No Limitation or $8+2N$ |
| | | 4 | No Limitation or $6+2N$ |
| | | 2 | No Limitation or $4+2N$ |
| | | 1 | No Limitation or $4+2N$ |
| | Reuse 1/3 | 6 | N/A (non trivial configuration) |
| | | 4 | $8+2N$ |
| | | 2 | $6+2N$ |
| | | 1 | $6+2N$ |
| 5 MHz | Full Loading | 6 | N/A (non trivial configuration) |
| | | 4 | No Limitation or $8+2N$ |
| | | 2 | No Limitation or $6+2N$ |
| | | 1 | No Limitation or $4+2N$ |
| | Reuse 1/3 | 6 | N/A (non trivial configuration) |
| | | 4 | N/A (non trivial configuration) |
| | | 2 | N/A (non trivial configuration) |
| | | 1 | N/A (non trivial configuration) |

* First Zone Scheme is being determined by the selected Map Major Groups:

- For 7/10 MHz Full Loading means all Major Groups (0-5) are selected.
- For 5MHz Full Loading means that all relevant Major Groups (0, 2, 4) are selected.

For First Zone Maximum Size the values are:

- If First Zone Minimum Size is set to No Limitations, the value range for Maximum Size is the same as for Minimum Size.
- Else, the value range is No Limitations or First Zone Minimum Size+ $2N$, up to a maximum of Y as defined below.

The value of Y that sets the upper limit for the Minimum and Maximum Size parameters depends on the Maximum Cell Radius and Total Uplink Duration parameters, using the following formula:

$$Y = A - 3 * (\text{Total Uplink Duration}) - (\text{Extra TTG}),$$

where A=46 for BW of 5 or 10 MHz, and 32 for BW of 7 MHz.

Table 3-34: Calculating the Upper Limit Value (Y) for Minimum and Maximum Size

| Bandwidth (MHz) | Maximum Cell Radius | Total Uplink Duration (slots) | Extra TTG (symbols) |
|-----------------|------------------------|-------------------------------|---------------------|
| 5/10 | 1, 2, 4, 8 | 4, 6 | 0 |
| | 1, 2, 4, 8, 15, 23 | 5, 7 | 1 |
| | 15, 23, 30 | 4, 6 | 2 |
| | 30 | 5, 7 | 3 |
| 7 | 1, 2, 4, 8, 15, 23 | 4 | 0 |
| | 1, 2, 4, 8, 15, 23, 30 | 3, 5 | 1 |
| | 30 | 4 | 2 |

3.8.16.3 Restoring Default Values for Airframe Configuration Parameters

After enabling the Airframe configuration mode you can restore the default values for non-mandatory parameters in the following parameters tables:

- General (refer to [Section 3.8.16.3.1](#))
- Map Zone (refer to [Section 3.8.16.3.2](#))
- Downlink Diversity (refer to [Section 3.8.16.3.3](#))
- Dynamic Permutation (refer to [Section 3.8.16.3.4](#))
- Mimo (refer to [Section 3.8.16.3.5](#))

3.8.16.3.1 Restoring the Default Values of Airframe General Parameters

To restore one or all of the Airframe non-mandatory General parameter to the default value, run the following command:

```
npu(config-bs-66053-airframe)# no general [preamble-grp]
```

**NOTE**

Refer to [Section 3.8.16.2.1](#) for a description and default values of the parameter.

Command Syntax

npu(config-bs-66053-airframe)# no general [preamble-grp]

Privilege Level

10

Command Modes

bs airframe configuration mode

3.8.16.3.2 Restoring the Default Values of Airframe Map Zone Parameters

To restore one or all of the Airframe Map Zone non-mandatory parameters to their default values, run the following command:

npu(config-bs-66053-airframe)# no mapzone [size] [repetition]

You can restore only one parameter to the default value by specifying only that parameter. For example, to restore only the size parameter to the default value, run the following command:

npu(config-bs-66053-airframe)# no mapzone size

The parameter will be restored to its default value, while the other parameter will remain unchanged.

To restore all non-mandatory parameters to their default value, run the following command:

npu(config-bs-66053-airframe)# no mapzone

**NOTE**

Refer to [Section 3.8.16.2.2](#) for a description and default values of these parameters.

Command Syntax

npu(config-bs-66053-airframe)# no mapzone [size] [repetition]

Privilege Level 10

Command Modes bs airframe configuration mode

3.8.16.3.3 Restoring the Default Value of Airframe Downlink Diversity Mode Parameter

To restore the Airframe Downlink Diversity mode parameter to its default value, run the following command:

```
npu(config-bs-66053-airframe)# no dldiversity mode
```

Since the Downlink Diversity table contains a single parameter, it is sufficient to run the following command:

```
npu(config-bs-66053-airframe)# no dldiversity
```



NOTE

Refer to [Section 3.8.16.2.3](#) for a description and default values of these parameters.

Command Syntax **npu(config-bs-66053-airframe)# no dldiversity** [mode]

Privilege Level 10

Command Modes bs airframe configuration mode

3.8.16.3.4 Restoring the Default Values of Airframe Dynamic Permutation Parameters

To restore one or all of the Airframe Dynamic Permutation parameters to their default values, run the following command:

```
npu(config-bs-66053-airframe)# no dynamicperm [dl-permbase] [ul-permbase]
```

You can restore only one parameter to the default value by specifying only that parameter. For example, to restore only the dl-permbase to the default value, run the following command:

npu(config-bs-66053-airframe)# no dynamicperm dl-permbase

The parameter will be restored to its default value, while the other parameter will remain unchanged.

To restore all non-mandatory parameters to their default value, run the following command:

npu(config-bs-66053-airframe)# no dynamicperm**NOTE**

Refer to [Section 3.8.16.2.7](#) for a description and default values of these parameters.

Command Syntax

npu(config-bs-66053-airframe)# no dynamicperm [dl-permbase]
[ul-permbase]

Privilege Level

10

Command Modes

bs airframe configuration mode

3.8.16.3.5 Restoring the Default Values of Airframe MIMO Parameters

To restore one or all of the Airframe MIMO parameters to their default values, run the following command:

npu(config-bs-66053-airframe)# no mimo [first-zone-min-size]
[first-zone-max-size] [max-map-size] [bcast-msgzone-loc]

**NOTE**

bcast-msgzone-loc always set to nonSTCZoneOnly.

To restore all MIMO parameters to their default values, run the following command:

npu(config-bs-66053-airframe)# no mimo**NOTE**

Refer to [Section 3.8.16.2.8](#) for a description and default values of these parameters.

| | |
|----------------|--|
| Command | npu(config-bs-66053-airframe)# no mimo [first-zone-min-size] |
| Syntax | [first-zone-max-size] [max-map-size] [bcast-msgzone-loc] |

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--------------------------------|
| Command Modes | bs airframe configuration mode |
|----------------------|--------------------------------|

3.8.16.4 Terminating the Airframe Configuration Mode

Run the following command to terminate the Airframe configuration mode:

npu(config-bs-66053-airframe)# exit



IMPORTANT

Do not forget to execute the apply command before terminating the Airframe configuration mode:

npu(config-bs-66053-airframe)# apply

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053-airframe)# exit |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--------------------------------|
| Command Modes | bs airframe configuration mode |
|----------------------|--------------------------------|

3.8.16.5 Displaying Configuration Information for Airframe Parameters

You can display the current configuration information for the following Airframe parameters tables:

- General (refer to [Section 3.8.16.5.1](#))
- Map Zone (refer to [Section 3.8.16.5.2](#))
- Downlink Diversity (refer to [Section 3.8.16.5.3](#))

- Uplink Feedback Zone (refer to [Section 3.8.16.5.4](#))
- Downlink Data Zone (refer to [Section 3.8.16.5.5](#))
- Uplink Data Zone (refer to [Section 3.8.16.5.6](#))
- Dynamic Permutation (refer to [Section 3.8.16.5.7](#))
- Mimo (refer to [Section 3.8.16.5.8](#))
- All (refer to [Section 3.8.16.5.9](#))

3.8.16.5.1 Displaying Configuration Information for Airframe General Parameters

To display configuration for the Airframe General parameters, run the following command:

```
npu# show airframe-general bs [<(1 to 16777215 StepSize 1)>]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe General parameters of BS 66503, run the following command:

```
npu# show airframe-general bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show airframe-general bs
```

| | |
|-----------------------|--|
| Command Syntax | npu# show airframe-general bs [<(1 to 16777215 StepSize 1)>] |
|-----------------------|--|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe General parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe General parameters of all BSs. | Optional | N/A | 1-16777215 |

Display**Format**

(for each existing Neighbour BS in each of the existing BSs if requested for all)

| | |
|----------------------------|-----------|
| BSIDLBS | : <value> |
| CellID | : <value> |
| PreambleGroup | : <value> |
| SegmentNumber | : <value> |
| FrameNumberOffset | : <value> |
| TotalUplinkDuration(slots) | : <value> |

Command Modes

Global command mode

3.8.16.5.2 Displaying Configuration Information for Airframe Map Zone Parameters

To display configuration for the Airframe Map Zone parameters, run the following command:

```
np# show airframe-mapzone bs [<(1 to 16777215 StepSize 1)>]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe Map Zone parameters of BS 66503, run the following command:

```
np# show airframe-mapzone bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
np# show airframe-mapzone bs
```

Command Syntax `npu# show airframe-mapzone bs [(1 to 16777215 StepSize 1)>]`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Map Zone parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Map Zone parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|---|-----------|
| BSIDLSB | : <value> |
| MapZoneSize (symbols) | : <value> |
| (for each existing Neighbour BS in each of the existing BSs if requested for all) | |
| MapMajorGroups | : <value> |
| BasicMapRepetitions | : <value> |

Command Modes Global command mode

3.8.16.5.3 Displaying Configuration Information for Airframe Downlink Diversity Parameters

To display configuration for the Airframe Downlink Diversity parameters, run the following command:

`npu# show airframe-dldiversity bs [(1 to 16777215 StepSize 1)>]`

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe Downlink Diversity parameters of BS 66503, run the following command:

```
npu# show airframe-dldiversity bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show airframe-dldiversity bs
```

Command Syntax **npu# show airframe-dldiversity bs** [<(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Downlink Diversity parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Downlink Diversity parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format BSIDLSB :<value>
DownlinkDataDiversityMode :<value>

(for each existing Neighbour BS in each of the existing BSs if requested for all)

Command Global command mode
Modes

3.8.16.5.4 Displaying Configuration Information for Airframe Uplink Feedback Zone Parameters

To display configuration for the Airframe Uplink Feedback Zone parameters, run the following command:

npu# show airframe-ulfeedbackzone bs [<(1 to 16777215 StepSize 1)>]

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe Uplink Feedback Zone parameters of BS 66503, run the following command:

npu# show airframe-ulfeedbackzone bs 66053

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show airframe-ulfeedbackzone bs

Command Syntax **npu# show airframe-ulfeedbackzone bs** [<(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Uplink Feedback Zone parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Uplink Feedback Zone parameters of all BSs. | Optional | N/A | 1-16777215 |

| | | |
|---|------------------------------------|-----------|
| Display | BSIDLSB | : <value> |
| Format | ULFeedbackZoneNumberOfSub-Channels | : <value> |
| (for each existing Neighbour BS in each of the existing BSs if requested for all) | ULFeedbackZonePermutationBase | : <value> |
| Command Modes | Global command mode | |

3.8.16.5.5 Displaying Configuration Information for Airframe Downlink Data Zone Parameters

To display configuration for the Airframe Downlink Data Zone parameters, run the following command:

```
npu# show airframe-dldatazone bs [<(1 to 16777215 StepSize 1)>]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe Downlink Data Zone parameters of BS 66503, run the following command:

```
npu# show airframe-dldatazone bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show airframe-dldatazone bs
```

| | |
|------------------------|---|
| Command Syntax | npu# show airframe-dldatazone bs [<(1 to 16777215 StepSize 1)>] |
| Privilege Level | 1 |

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Downlink Data Zone parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Downlink Data Zone parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

(for each existing Neighbour BS in each of the existing BSs if requested for all)

| | |
|--------------------------------|-----------|
| BSIDLSB | : <value> |
| DLDATAZoneNumberOfSub-Channels | : <value> |
| DLDATAZonePermutationBase | : <value> |

Command Modes

Global command mode

3.8.16.5.6 Displaying Configuration Information for Airframe Uplink Data Zone Parameters

To display configuration for the Airframe Uplink Data Zone parameters, run the following command:

```
np# show airframe-uldatazone bs [(1 to 16777215 StepSize 1)>]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe Uplink Data Zone parameters of BS 66503, run the following command:

```
np# show airframe-uldatazone bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show airframe-uldatazone bs

Command Syntax **npu# show airframe-uldatazone bs** [<(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Uplink Data Zone parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Uplink Data Zone parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|---|----------|
| BSIDLSB | :<value> |
| ULDATAPermutationBase | :<value> |
| (for each existing Neighbour BS in each of the existing BSs if requested for all) | |
| StartAllocation(Slots) | :<value> |
| ULDATAZoneNumberOfSub-Channels | :<value> |

Command Modes Global command mode

3.8.16.5.7 Displaying Configuration Information for Airframe Dynamic Permutation Parameters

To display configuration for the Airframe Dynamic Permutation parameters, run the following command:

npu# show airframe-dynamicperm bs [<(1 to 16777215 StepSize 1)>]

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe Dynamic Permutation parameters of BS 66503, run the following command:

npu# show airframe-dynamicperm bs 66053

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show airframe-dynamicperm bs

Command Syntax **npu# show airframe-dynamicperm bs** [<(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Dynamic Permutation parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Dynamic Permutation parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|-------------------------|----------|
| BSIDLSB | :<value> |
| DownlinkPermutationBase | :<value> |
| UplinkPermutationBase | :<value> |

(for each existing Neighbour BS in each of the existing BSs if requested for all)

Command Global command mode
Modes

3.8.16.5.8 Displaying Configuration Information for Airframe MIMO Parameters

To display configuration for the Airframe MIMO parameters, run the following command:

```
npu# show airframe-mimo bs [(1 to 16777215 StepSize 1)>]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Airframe MIMO parameters of BS 66503, run the following command:

```
npu# show airframe-mimo bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show airframe-mimo bs
```

Command Syntax **npu# show airframe-mimo bs** [(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Airframe Dynamic Permutation parameters of a specific BS. Do not specify a value for this parameter if you want to display the Airframe Dynamic Permutation parameters of all BSs. | Optional | N/A | 1-16777215 |

| | | |
|---|---------------------|-----------|
| Display | BSIDLSB | : <value> |
| Format | firstzoneminsize | : <value> |
| (for each existing Neighbour BS in each of the existing BSs if requested for all) | firstzonemaxsize | : <value> |
| | maxmapsize | : <value> |
| | bcastmsgzneloc | : <value> |
| Command Modes | Global command mode | |

3.8.16.5.9 Displaying Configuration Information for All Airframe Parameters

To display configuration for all Airframe parameters, run the following command:

```
npu# show airframe-all bs [<(1 to 16777215 StepSize 1)>]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display all Airframe parameters of BS 66503, run the following command:

```
npu# show airframe-all bs 66053
```

Do not specify the BS ID if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show airframe-all bs
```

| | | |
|------------------------|--|--|
| Command Syntax | npu# show airframe-all bs [<(1 to 16777215 StepSize 1)>] | |
| Privilege Level | 10 | |

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display all Airframe parameters of a specific BS. Do not specify a value for this parameter if you want to display all Airframe parameters of all BSs. | Optional | N/A | 1-16777215 |

Command

Global command mode

Modes

3.8.17 Managing BS Bearer Interface Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Bearer Interface parameters (refer to [Section 3.8.17.1](#)).
- Restore the default values of some or all of the Bearer Interface parameters (refer to [Section 3.8.17.2](#)).

You can display configuration information for the Bearer Interface parameters of a selected or all existing BSs (refer to [Section 3.8.17.3](#)).

3.8.17.1 Configuring Bearer Interface Parameters



To configure the Bearer Interface Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# bearer [ip-address <ip address>] [ip-subnetmask <ip address>] [dflt-gw <ip address>] [mtu-size <(1500 to 9000 StepSize 1)>] [linkusage-hardthrhld <(1 to 100 StepSize 1)>] [bearer-vlan <(9 to 9 StepSize 1) | (11 to 100 StepSize 1) |(110 to 4094 StepSize 1)> ]
```

Command `npu(config-bs-66053)# bearer [ip-address <ip address>]`
Syntax `[ip-subnetmask <ip address>] [dflt-gw <ip address>] [mtu-size <(1500 to 9000 StepSize 1)>] [linkusage-hardthrshld <(1 to 100 StepSize 1)>] [bearer-vlan <(9 to 9 StepSize 1) | (11 to 100 StepSize 1) | (110 to 4094 StepSize 1)>]`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|-----------------------------------|---------------|-----------------|
| [ip-address <ip address>] | The IP address of the bearer interface of the BS. Must be unique in the network. All BS bearer interfaces of the unit should be in the same subnet, together with the NPU's bearer interface (if applicable). | Mandatory when creating a new BSI | N/A | IP address |
| [ip-subnetmask <ip address>] | The IP subnet mask of the bearer interface of the BS | Mandatory when creating a new BSI | N/A | Subnet mask |
| [dflt-gw <ip address>] | The IP address of the default gateway of the bearer interface of the BS. Must be in the same subnet with the BS bearer ip interface. | Mandatory when creating a new BSI | N/A | IP address |
| [mtu-size <(1500 to 9000 StepSize 1)>] | MTU size (in bytes) of the bearer interface of the BS | Optional | 1500 | 1500 - 9000 |
| [linkusage-hardthrshld <(1 to 100 StepSize 1)>] | The BS backplane usage hard limit threshold, in percents. An alarm is sent if either uplink or downlink backplane link usage exceeds the threshold. | Optional | 80 | 1 - 100 |

| | | | | | |
|--|---|---|----------|----|----------------------|
| | [bearer-vlan <(9 to 9 StepSize 1) (11 to 100 StepSize 1) (110 to 4094 StepSize 1)>] | The VLAN ID of the bearer interface of the BS. Must be equal to the VLAN ID of the Bearer interface (see Section 3.3.2.3.5) | Optional | 11 | 9, 11-100, 110-4094. |
|--|---|---|----------|----|----------------------|

Command Modes bs configuration mode



IMPORTANT

When creating a new BS, the Bearer Interface mandatory parameters must be configured.

3.8.17.2 Restoring the Default Values of Bearer Interface Parameters

To restore the default values of some or all of the Bearer Interface parameters, run the following command:

```
npu(config-bs-66053)# no bearer [mtu-size] [linkusage-hardthrshld]
[bearer-vlan]
```

You can restore only one or two parameters to the default values by specifying only these parameters. For example, to restore only the mtu-size parameter to the default value, run the following command:

```
npu(config-bs-66053)# no bearer mtu-size
```

This parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all Bearer Interface parameters to their default value, run the following command:

```
npu(config-bs-66053)# no bearer
```



NOTE

Refer to [Section 3.8.17.1](#) for a description and default values of these parameters.

Command Syntax **npu(config-bs-66053)# no bearer** [mtu-size] [linkusage-hardthrshld]
[bearer-vlan]

Privilege Level 10

Command Modes bs configuration mode

3.8.17.3 Displaying Configuration Information for Bearer Interface Parameters

To display configuration information of Bearer Interface parameters, run the following command:

```
npu# show bearer bs [(1 to 16777215 StepSize 1)]
```

Specify the BS ID if you want to display information for a particular BS. For example, to display the Bearer Interface parameters of BS 66053, run the following command:

```
npu# show bearer bs 66053
```

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show bearer bs
```

Command Syntax npu# show bearer bs [(1 to 16777215 StepSize 1)]

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Bearer Interface parameters of a specific BS. Do not specify a value for this parameter if you want to display Bearer Interface parameters of all BSs. | Optional | N/A | 1-16777215 |

Display**Format**

(for each existing BS if requested for all BSs)

| | |
|---------------------------|----------|
| BSIDLsb | :<value> |
| IPAddress | :<value> |
| IPSubnetMask | :<value> |
| DefaultGateway | :<value> |
| MTUSize | :<value> |
| LinkUsageHardThreshold(%) | :<value> |
| BearerVLANID | :<value> |

Command**Modes**

Global command mode

3.8.18 Managing Authentication Relay Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Authentication parameters (refer to [Section 3.8.18.1](#)).
- Restore the default values of some or all of the Authentication non-mandatory parameters (refer to [Section 3.8.18.2](#)).

You can display configuration information for the Authentication parameters of a selected or all existing BSs (refer to [Section 3.8.18.3](#)).

3.8.18.1 Configuring Authentication Parameters



To configure the Authentication parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# auth-general [dflt-auth-ip-address <ip address>]
[suspendedeapprocthrshld <(0 to 10000 StepSize 1)>] [activemsthrshld <(0 to
1024 StepSize 1)>] [maxeaproundsthrshld <(0 to 100 StepSize 1)>]
```

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053)# auth-general [dflt-auth-ip-address <ip address>] [suspendedeapprocthrshld <(0 to 10000 StepSize 1)>] [activemsthrshld <(0 to 1024 StepSize 1)>] [maxeaproundsthrshld <(0 to 100 StepSize 1)>]] |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| Syntax Description | <table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> <th>Presence</th> <th>Default Value</th> <th>Possible Values</th> </tr> </thead> <tbody> <tr> <td>[dflt-auth-ip-address <ip address>]</td> <td>Identifier (IP address) of “default” authenticator ASN GW.</td> <td>Mandatory when creating a new BS.</td> <td>N/A</td> <td>IPv4 address</td> </tr> <tr> <td>[suspendedeapprocthrshld <(0 to 10000 StepSize 1)>]</td> <td>Suspended EAP authentication process threshold. It is used to set an alarm. A value of 0 means that the alarm is disabled.</td> <td>Optional</td> <td>10000</td> <td>0 to 10000</td> </tr> <tr> <td>[activemsthrshld <(0 to 1024 StepSize 1)>]</td> <td>Threshold for the number of MSs in active operation state (not Idle) served by the BS. Exceeding this threshold will set the alarm “Excessive MS number”. A value of 0 means that the alarm is disabled.</td> <td>Optional</td> <td>1024</td> <td>0 to 1024</td> </tr> </tbody> </table> | Parameter | Description | Presence | Default Value | Possible Values | [dflt-auth-ip-address <ip address>] | Identifier (IP address) of “default” authenticator ASN GW. | Mandatory when creating a new BS. | N/A | IPv4 address | [suspendedeapprocthrshld <(0 to 10000 StepSize 1)>] | Suspended EAP authentication process threshold. It is used to set an alarm. A value of 0 means that the alarm is disabled. | Optional | 10000 | 0 to 10000 | [activemsthrshld <(0 to 1024 StepSize 1)>] | Threshold for the number of MSs in active operation state (not Idle) served by the BS. Exceeding this threshold will set the alarm “Excessive MS number”. A value of 0 means that the alarm is disabled. | Optional | 1024 | 0 to 1024 |
|--|--|-----------------------------------|---------------|-----------------|---------------|-----------------|--------------------------------------|--|-----------------------------------|-----|--------------|--|---|----------|-------|------------|---|---|----------|------|-----------|
| Parameter | Description | Presence | Default Value | Possible Values | | | | | | | | | | | | | | | | | |
| [dflt-auth-ip-address <ip address>] | Identifier (IP address) of “default” authenticator ASN GW. | Mandatory when creating a new BS. | N/A | IPv4 address | | | | | | | | | | | | | | | | | |
| [suspendedeapprocthrshld <(0 to 10000 StepSize 1)>] | Suspended EAP authentication process threshold. It is used to set an alarm. A value of 0 means that the alarm is disabled. | Optional | 10000 | 0 to 10000 | | | | | | | | | | | | | | | | | |
| [activemsthrshld <(0 to 1024 StepSize 1)>] | Threshold for the number of MSs in active operation state (not Idle) served by the BS. Exceeding this threshold will set the alarm “Excessive MS number”. A value of 0 means that the alarm is disabled. | Optional | 1024 | 0 to 1024 | | | | | | | | | | | | | | | | | |

| | | | | |
|--|--|----------|-----|----------|
| [maxeaproundsthrshld <(0 to 100 StepSize 1)>] | Threshold for the number of EAP rounds in one direction in the same EAP session. When exceeding this threshold; alarm is set. May be used to protect the system from hazard EAP sessions with extreme number of messaging round trips. A value of "0" means the alarm is disabled. A value of 0 means that the alarm is disabled. | Optional | 100 | 0 to 100 |
|--|--|----------|-----|----------|

Command Modes bs configuration mode



IMPORTANT

When creating a new BS, the Authentication `dfilt-auth-ip-address` mandatory parameter must be configured.

3.8.18.2 Restoring the Default Values of Authentication Parametes

To restore the default values of some or all of the Authentication parameters, run the following command:

```
npu(config-bs-66053)# no auth-general [suspendedeapprocthrshld]
[activemsthrshld] [maxeaproundsthrshld]
```

You can restore only some parameters to their default values by specifying only those parameters. For example, to restore only the `activemsthrshld` and `maxeaproundsthrshld` parameters to the default values, run the following command:

```
npu(config-bs-66053)# no auth-general activemsthrshld
maxeaproundsthrshld
```

These parameters will be restored to their default values, while the other parameters will remain unchanged.

To restore all Authentication parameters to their default value, run the following command:

```
npu(config-bs-66053)# no auth-general
```

**NOTE**

Refer to [Section 3.8.18.1](#) for a description and default values of these parameters.

Command Syntax **npu(config-bs-66053)# no auth-general** [suspendedapprocthrshld]
[activemsthrshld] [maxeaproundsthrshld]

Privilege Level 10

Command Modes bs configuration mode

3.8.18.3 Displaying Configuration Information for Authentication Parameters

To display configuration information of Authentication parameters, run the following command:

npu# show auth-general bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display information for a particular BS. For example, to display the Authentication parameters of BS 66053, run the following command:

npu# show auth-general bs 66053

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

npu# show auth-general bs

Command Syntax **npu# show auth-general bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Authentication parameters of a specific BS. Do not specify a value for this parameter if you want to display Authentication parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

BSIDLSB

:<value>

(for each existing BS if requested for all BSs)

Command Modes

Global command mode

3.8.19 Displaying Status Information for Handover Control Parameters

After enabling the BS configuration mode, you can display information for the Handover Control parameters of a selected or all existing BSs (refer to [Section 3.8.20](#)).

To display configuration and status information of Handover Control parameters, run the following command:

```
npu# show hoctrl bs [(1 to 16777215 StepSize 1)]
```

Specify the BS ID if you want to display information for a particular BS. For example, to display the Handover Control parameters of BS 66053, run the following command:

```
npu# show hoctrl bs 66053
```

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

npu# show hoctrl bs

Command Syntax npu# show hoctrl bs [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Handover Control parameters of a specific BS. Do not specify a value for this parameter if you want to display Handover Control parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format BSIDL SB : <value>
 SchedulingServiceSupport : <value>
 (for each existing BS if requested for all BSs) CINRR reuse : <value>

Command Modes Global command mode

The following status parameters related to Handover Control are displayed:

| Parameter | Description | Possible Values |
|-----------|-------------|-----------------|
|-----------|-------------|-----------------|

| | | |
|--------------------------|---|--|
| SchedulingServiceSupport | <p>Scheduling Service Support. A string of two hexadecimal digits that can be presented as 8 bits where bits 5-7 are always 0. Bits 0-4 indicate whether specific services are supported, where a value of 1 means that the service is supported: UGS (0), RT-PS(1), NRT-PS(2), BE(3), ERT-PS(4).</p> <p>This parameter is available for populating the srvcsupport parameter in the relevant Neighbour BS General parameters tables.</p> | A string of two hexadecimal digits. |
| CINRRReuse | The reuse type (calculated by the BS) to be advertised for this BS in NBR-ADV messages. | <ul style="list-style-type: none"> ■ reuse1 ■ reuse3 |

3.8.20 Managing Bearer Traffic QoS Marking Rules

Up to 16383 Bearer Traffic QoS Marking Rules may be defined.



To configure a Bearer Traffic QoS Marking Rule:

- 1 Enable the BS Bearer Traffic QoS Marking Rule configuration mode for the selected Bearer Traffic QoS Marking Rule (refer to [Section 3.8.20.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure the parameters of the Bearer Traffic QoS Marking Rule (refer to [Section 3.8.20.2](#))
 - » Restore the default values of Bearer Traffic QoS Marking Rule non-mandatory parameters (refer to [Section 3.8.20.3](#))
 - » Terminate the Bearer Traffic QoS Marking Rule configuration mode (refer to [Section 3.8.20.4](#))

In addition, you can, at any time, display configuration information for Bearer Traffic QoS Marking Rules (refer to [Section 3.8.20.6](#)) or delete an existing Bearer Traffic QoS Marking Rule (refer to [Section 3.8.20.5](#)).

3.8.20.1 Enabling the Bearer Traffic QoS Marking Rule Configuration Mode\Creating a Bearer Traffic QoS Marking Rule

To configure the parameters of a Bearer Traffic QoS Marking Rule, first enable the BS Bearer Traffic QoS Marking Rule configuration mode for the specific Bearer Traffic QoS Marking Rule. Run the following command to enable the BS Bearer Traffic QoS Marking Rule configuration mode. You can also use this command to create a new Bearer Traffic QoS Marking Rule.

Note that for a new Bearer Traffic QoS Marking Rule this command only defines the Bearer Traffic QoS Marking Rule number, and that the Bearer Traffic QoS Marking Rule is not fully created until completing configuration of all mandatory parameters and executing the **apply** command (must be executed before exiting the Bearer Traffic QoS Marking Rule configuration mode). Also when updating an existing Bearer Traffic QoS Marking Rule, the **apply** command must be executed prior to termination the Bearer Traffic QoS Marking Rule configuration mode.

```
npu(config-bs-66053)# bearertrafficqos <(1 to 16383 StepSize 1)>
```

For example, to define a new Bearer Traffic QoS Marking Rule number 1, or to enable the configuration mode for Bearer Traffic QoS Marking Rule 1, run the following command:

```
npu(config-bs-66053)# bearertrafficqos 1
```

If you use this command to create a new Bearer Traffic QoS Marking Rule, the configuration mode for this Bearer Traffic QoS Marking Rule is automatically enabled, after which you can execute any of the following tasks:

- Configure one or more of the parameters of the Bearer Traffic QoS Marking Rule (refer to [Section 3.8.20.2](#))
- Restore the default values of Bearer Traffic QoS Marking Rule non-mandatory parameters (refer to [Section 3.8.20.3](#))

After executing the above tasks, you can terminate the Bearer Traffic QoS Marking Rule configuration mode (refer to [Section 3.8.20.4](#)) and return to the BS configuration mode.

Command Syntax

```
npu(config-bs-66053)# bearertrafficqos <(1 to 16383 StepSize 1)>
```

Privilege Level

10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|-----------|---------------|-----------------|
| bearertrafficqos <(1 to 16383 StepSize 1)> | The Bearer Traffic QoS Marking Rule number | Mandatory | | 1 - 16383 |

Command

BS configuration mode

Modes

For example, to define Bearer Traffic QoS Marking Rule 1 for BS 66053, run the following command:

```
npu(config-bs-66053)# bearertrafficqos 1
```

**NOTE**

The following examples are for BS Bearer Traffic QoS Marking Rule configuration mode for bs-66053, bearer traffic qos marking rule (bearertrafficqos)-1.

3.8.20.2 Configuring Bearer Traffic QoS Marking Rule Parameters

To configure the Bearer Traffic QoS Marking Rule parameters, run the following command:

```
npu(config-bs-66053-bearertrafficqos-1)# mrkngrule [rule-status {Enable | Disable}] [rule-name <string (32)>] [srvflow-datadeliverytype {uGS | rTVR | nRTVR | bE | eRTVR | any}] [srvflow-trafficpriority <(0 to 7 StepSize 1) | (255 to 255 StepSize 1)>] [srvflow-mediaflowtype <string (32)>] [enable-srvflow-mediaflowtype {TRUE | FALSE}] [outerdscp <(0 to 63 StepSize 1)>] [bp8021p <(0 to 7 StepSize 1)>]
```

**IMPORTANT**

When creating a new Bearer Traffic QoS Marking Rule Rule, the mandatory parameters must be configured.

Command Syntax **npu(config-bs-66053-bearertrafficqos-1)# mrkngrule** [rule-status {Enable | Disable}] [rule-name <string (32)>] [srvcfow-datadeliverytype {uGS | rTVR | nRTVR | bE | eRTVR | any}] [srvcfow-trafficpriority <(0 to 7 StepSize 1) | (255 to 255 StepSize 1)>] [srvcfow-mediaflowtype <string (32)>] [enable-srvcfow-mediaflowtype {TRUE | FALSE}] [outerdscp <(0 to 63 StepSize 1)>] [bp8021p <(0 to 7 StepSize 1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|--|
| rule-status {Enable Disable} | The Bearer Traffic QoS Marking Rule status | Optional | Enable | <ul style="list-style-type: none"> <input type="checkbox"/> Enable <input type="checkbox"/> Disable |
| rule-name <string (32)> | The Bearer Traffic QoS Marking Rule name (descriptor). | Optional | null | A string of up to 32 characters |
| srvcfow-datadelivery type {uGS rTVR nRTVR bE eRTVR any} | Service Flow Type of data delivery services. | Optional | any | <ul style="list-style-type: none"> <input type="checkbox"/> uGS <input type="checkbox"/> rTVR <input type="checkbox"/> nRTVR <input type="checkbox"/> bE <input type="checkbox"/> eRTVR <input type="checkbox"/> any |
| srvcfow-trafficpriority <(0 to 7 StepSize 1) (255 to 255 StepSize 1)> | Service Flow Traffic Priority. A value of 255 means "ANY" | Optional | 255 | 0-7 or 255 |

| | | | | |
|---|---|--|-----|---|
| svcfow-mediaflowtype <string (32)> | One of key entries into the traffic marking rules table. Media Flow Type should be defined in ASN-GW or AAA server. Only relevant if enable-svcflow-mediaflowtype (see below) is TRUE. | Mandatory when creating a new rule (if relevant) | N/A | A string of up to 32 characters |
| enable-svcflow-mediaflowtype {TRUE FALSE} | If TRUE, the svcflow-mediaflowtype (see above) will be considered. If FALSE it will not be considered. | Mandatory when creating a new rule | | <input checked="" type="checkbox"/> TRUE <input checked="" type="checkbox"/> FALSE |
| outerdscp <(0 to 63 StepSize 1)> | DSCP value to be used for marking of outer IP header (IP/GRE). | Optional | 0 | 0 - 63 |
| bp8021p <(0 to 7 StepSize 1)> | 802.1p priority to be used for marking of traffic | Optional | 0 | 0 - 7 |

Command Modes bs bearer traffic qos marking rule configuration mode

3.8.20.3 Restoring Default Values for Bearer Traffic QoS Marking Rule Configuration Parameters

After enabling the Bearer Traffic QoS Marking Rule configuration mode you can restore the default values for non-mandatory parameters.

To restore some or all of the Bearer Traffic QoS Marking Rule non-mandatory parameters to their default values, run the following command:

```
npu(config-bs-66053-bearertrafficqos-1)# no mrkngrule [rule-status]
[rule-name] [svcfow-datadeliverytype [svcfow-trafficpriority] [outerdscp]
[bp8021p]
```

You can restore only one or several parameters to the default values by specifying only those parameters. For example, to restore only the outerdscp to the default value, run the following command:

```
npu(config-bs-66053-bearertrafficqos-1)# no mrkngrule outerdscp
```

The parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all Bearer Traffic QoS Marking Rule non-mandatory parameters to their default value, run the following command:

```
npu(config-bs-66053-bearertrafficqos-1)# no mrkngrule
```



NOTE

Refer to [Section 3.8.20.2](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053-bearertrafficqos-1)# no mrkngrule [rule-status] [rule-name] [srvcfldatadelivertype [srvcfldatadelpriority] [outerdscp] [bp8021p] |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|---|
| Command Modes | bs bearer traffic qos marking rule configuration mode |
|----------------------|---|

3.8.20.4 Terminating the Bearer Traffic QoS Marking Rule Configuration Mode

Run the following command to terminate the Bearer Traffic QoS Marking Rule configuration mode:

```
npu(config-bs-66053-bearertrafficqos-1)# exit
```

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053-bearertrafficqos-1)# exit |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|---|
| Command Modes | bs bearer traffic qos marking rule configuration mode |
|----------------------|---|

3.8.20.5 Deleting a Bearer Traffic QoS Marking Rule

Run the following command from the BS configuration mode to delete a Bearer Traffic QoS Marking Rule:

```
npu(config-bs 66053)# no bearertrafficqos <(1 to 16383 StepSize 1)>
```

Command Syntax `npu(config-bs 66053)# no bearertrafficqos <(1 to 16383 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------|--|-----------|---------------|-----------------|
| <(1 to 16383 StepSize 1)> | The Bearer Traffic QoS Marking Rule number | Mandatory | N/A | 1-16383 |

Command Modes bs configuration mode

3.8.20.6 Displaying Configuration Information for Bearer Traffic QoS Marking Rules

To display configuration for the parameters of a specific or all Bearer Traffic QoS Marking Rules, run the following command:

npu# show bearertrafficqos bs [<(1 to 16777215 StepSize 1)> number <(1 to 16383 StepSize 1)>]

Specify the BS ID and Bearer Traffic QoS Marking Rule number if you want to display configuration for a particular Bearer Traffic QoS Marking Rule. For example, to display the parameters of Bearer Traffic QoS Marking Rule 1 in BS 66053, run the following command:

npu# show bearertrafficqos bs 66053 number 1

Do not specify these parameters if you want to view configuration information for all existing Bearer Traffic QoS Marking Rules. To display information for all Bearer Traffic QoS Marking Rules, run the following command:

npu# show bearertrafficqos bs

Command Syntax `npu# show bearertrafficqos bs [<(1 to 16777215 StepSize 1)> number <(1 to 16383 StepSize 1)>]`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the parameters of a specific Bearer Traffic QoS Marking Rule. Do not specify a value for this parameter if you want to display the parameters of all Bearer Traffic QoS Marking Rules. | Optional | N/A | 1-16777215 |
| number <(1 to 16383 StepSize 1)>] | The Bearer Traffic QoS Marking Rule number. To be used only if you want to display the parameters of a specific Bearer Traffic QoS Marking Rule. | Optional | N/A | 1-16383 |

Display Format

| | |
|---|----------|
| BSIDLSB | :<value> |
| RuleNumber | :<value> |
| (for each existing Service Mapping Rule if requested for all Service Mapping Rules) | |
| RuleStatus | :<value> |
| RuleName | :<value> |
| ServiceFlowMediaFlowType | :<value> |
| ServiceFlowTrafficPriority(255meansany) | :<value> |
| ServiceFlowMediaFlowType | :<value> |
| EnableServiceFlowMediaFlowType | :<value> |
| OuterDSCP | :<value> |
| 802.lpPriority | :<value> |

Command Modes Global command mode

3.8.21 Managing Control Traffic QoS Marking Rules

Control Traffic QoS Marking Rules are used to define the DSCP and VLAN Priority (802.1p) value to be used for marking of internal management traffic (management traffic to/from the AUs) and intra-ASN (R8/R6) management traffic.



To configure the Control Traffic QoS Marking Rules:

- 1 Enable the Control Traffic QoS Marking Rules configuration mode (refer to [Section 3.8.21.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the Control Traffic QoS Marking Rules parameters tables (refer to [Section 3.8.21.2](#))
 - » Restore the default values of parameters in one or more of the Control Traffic QoS Marking Rules parameters tables (refer to [Section 3.8.21.3](#))
 - » Terminate the Control Traffic QoS Marking Rules configuration mode (refer to [Section 3.8.21.4](#))

In addition, you can, at any time, display configuration information for each of the parameters tables (refer to [Section 3.8.21.5](#)).

3.8.21.1 Enabling the Control Traffic QoS Marking Rules Configuration Mode

To configure the Control Traffic QoS Marking Rules parameters, first enable the Control Traffic QoS Marking Rules configuration mode. Run the following command to enable the Control Traffic QoS Marking Rules configuration mode.

```
npu(config-bs-66053)# ctrltrafficqos
```

The configuration mode for the Control Traffic QoS Marking Rules is enabled, after which you can execute any of the following tasks:

- Configure one or more of the Control Traffic QoS Marking Rules parameters tables (refer to [Section 3.8.21.2](#))
- Restore the default values of parameters in one or more of the parameters tables (refer to [Section 3.8.21.3](#))

After executing the above tasks, you can terminate the Control Traffic QoS Marking Rules configuration mode (refer to [Section 3.8.21.4](#)) and return to the BS configuration mode.

Command Syntax `npu(config-bs-66053)# ctrltrafficqos`

Privilege Level 10

Command Modes bs configuration mode

3.8.21.2 Configuring Control Traffic QoS Marking Rules Parameters

After enabling the Control Traffic QoS Marking Rules configuration mode you can configure the following parameters tables:

- Internal Management (refer to [Section 3.8.21.2.1](#))
- Intra ASN (refer to [Section 3.8.21.2.2](#))

3.8.21.2.1 Configuring Internal Management Traffic QoS Marking Rules Parameters

To configure the Internal Management Traffic QoS Marking Rules, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# intmngmnt [dscp <(0 to 63 StepSize 1)>]
[inter8021p <(0 to 7 StepSize 1)>]
```

Command Syntax `npu(config-bs-66053-ctrltrafficqos)# intmngmnt` [dscp <(0 to 63 StepSize 1)>] [inter8021p <(0 to 7 StepSize 1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | |
|----------------------------------|---|----------|---|--------|
| dscp <(0 to 63 StepSize 1)> | DSCP priority value to be used for marking of internal management traffic | Optional | 0 | 0 - 63 |
| inter8021p <(0 to 7 StepSize 1)> | 802.1p priority value to be used for marking of internal management traffic | Optional | 0 | 0 - 7 |

Command Modes bs control traffic qos marking rules (ctrltrafficqos) configuration mode

3.8.21.2.2 Configuring the Intra ASN Traffic QoS Marking Rules

To configure the Intra ASN Traffic QoS Marking Rules parameters, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# intraasn [dscp <(0 to 63 StepSize 1)>]
[intra8021p <(0 to 7 StepSize 1)>]
```

Command Syntax **npu(config-bs-66053-ctrltrafficqos)# intraasn** [dscp <(0 to 63 StepSize 1)>] [intra8021p <(0 to 7 StepSize 1)>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------------------------|---|----------|---------------|-----------------|
| dscp <(0 to 63 StepSize 1)> | DSCP priority value to be used for marking of intra-ASN (R8/R6) traffic | Optional | 0 | 0 - 63 |
| intra8021p <(0 to 7 StepSize 1)> | 802.1p priority value to be used for marking of intra-ASN (R8/R6) traffic | Optional | 0 | 0 - 7 |

Command Modes bs control traffic qos marking rules (ctrltrafficqos) configuration mode

3.8.21.3 Restoring Default Values for Control Traffic QoS Marking Rules Configuration Parameters

After enabling the Control Traffic QoS Marking Rules configuration mode you can restore the default values for parameters in the following parameters tables:

- Internal Management (refer to [Section 3.8.21.3.1](#))
- Intra ASN (refer to [Section 3.8.21.3.2](#))

3.8.21.3.1 Restoring the Default Values of Internal Management Traffic QoS Marking Rules Parameters

To restore one or all of the Internal Management Traffic QoS Marking Rules parameters to their default values, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# no intmngmnt [dscp] [inter8021p]
```

You can restore only one parameter to its default values by specifying only that parameter. For example, to restore only dscp to the default value, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# no intmngmnt dscp
```

The parameter will be restored to its default value, while the other parameter will remain unchanged.

To restore all Internal Management Traffic QoS Marking Rules parameters to their default value, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# no intmngmnt
```



NOTE

Refer to [Section 3.8.21.2.1](#) for a description and default values of these parameters.

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-bs-66053-ctrltrafficqos)# no intmngmnt [dscp] [inter8021p]</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--|
| Command Modes | bs control traffic qos marking rules (ctrltrafficqos) configuration mode |
|----------------------|--|

3.8.21.3.2 Restoring the Default Values of Intra ASN Traffic QoS Marking Rules Parameters

To restore one or all of the Intra ASN Traffic QoS Marking Rules parameters to their default values, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# no intraasn [dscp] [intra8021p]
```

You can restore only one parameter to its default values by specifying only that parameter. For example, to restore only dscp to the default value, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# no intraasn dscp
```

The parameter will be restored to its default value, while the other parameter will remain unchanged.

To restore all Intra ASN Traffic QoS Marking Rules parameters to their default value, run the following command:

```
npu(config-bs-66053-ctrltrafficqos)# no intraasn
```



NOTE

Refer to [Section 3.8.21.2.2](#) for a description and default values of these parameters.

| | |
|-----------------------|---|
| Command Syntax | <code>npu(config-bs-66053-ctrltrafficqos)# no intraasn [dscp] [intra8021p]</code> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | |
|----------------------|--|
| Command Modes | bs control traffic qos marking rules (ctrltrafficqos) configuration mode |
|----------------------|--|

3.8.21.4 Terminating the Control Traffic QoS Marking Rules Configuration Mode

Run the following command to terminate the Control Traffic QoS Marking Rules configuration mode:

```
npu(config-bs-66053-ctrltrafficqos)# exit
```

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-bs-66053-ctrltrafficqos)# exit</code> |
|-----------------------|--|

Privilege Level 10

Command Modes bs control traffic qos marking rules (ctrltrafficqos) configuration mode

3.8.21.5 Displaying Configuration Information for Control Traffic QoS Marking Rules Parameters

You can display the current configuration information for the following parameters tables:

- Internal Management (refer to [Section 3.8.21.5.1](#))
- Intra ASN (refer to [Section 3.8.21.5.2](#))
- All (refer to [Section 3.8.21.5.3](#))

3.8.21.5.1 Displaying Configuration Information for Internal Management Traffic QoS Marking Rules Parameters

To display configuration for the Internal Management Traffic QoS Marking Rules parameters, run the following command:

npu# show ctrltrafficqos-intmngmnt bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Internal Management Traffic QoS Marking Rules parameters of BS 66053, run the following command:

npu# show ctrltrafficqos-intmngmnt bs 66053

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show ctrltrafficqos-intmngmnt bs

Command Syntax **npu# show ctrltrafficqos-intmngmnt bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Internal Management Traffic QoS Marking Rules parameters of a specific BS. Do not specify a value for this parameter if you want to display the Internal Management Traffic QoS Marking Rules parameters of all BSs. | Optional | N/A | 1-16777215 |

Display**Format**

(for each existing BS if requested for all BSs)

```

BSIDLSB                               :<value>
InternalManagementDSCP                 :<value>
InternalManagement802.1pPriority       :<value>

```

Command Modes

Global command mode

3.8.21.5.2 Displaying Configuration Information for Intra ASN Traffic QoS Marking Rules Parameters

To display configuration for the Intra ASN Traffic QoS Marking Rules parameters, run the following command:

```
npu# show ctrltrafficqos-intraasn bs [(1 to 16777215 StepSize 1)]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Intra ASN Traffic QoS Marking Rules parameters of BS 66053, run the following command:

```
npu# show ctrltrafficqos-intraasn bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show ctrltrafficqos-intraasn bs
```

Command Syntax **npu# show ctrltrafficqos-intraasn bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Intra ASN Traffic QoS Marking Rules parameters of a specific BS. Do not specify a value for this parameter if you want to display the Intra ASN Traffic QoS Marking Rules parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format BSIDL SB :<value>

IntraASNDSCP :<value>

(for each existing BS if requested for all BSs) IntraASN802.lpPriority :<value>

Command Modes Global command mode

3.8.21.5.3 Displaying Configuration Information for All Control Traffic QoS Marking Rules Parameters

To display configuration for all Control Traffic QoS Marking Rules parameters, run the following command:

npu# show ctrltrafficqos-all bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display configuration for a particular BS. For example, to display all Control Traffic QoS Marking Rules parameters of BS 66053, run the following command:

npu# show ctrltrafficqos-all bs 66053

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show ctrltrafficqos-all bs

Command Syntax **npu# show ctrltrafficqos-all bs** [(1 to 16777215 StepSize 1)]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display all Control Traffic QoS Marking Rules parameters of a specific BS. Do not specify a value for this parameter if you want to display all Control Traffic QoS Marking Rules parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|---|----------|
| BSIDLSB | :<value> |
| IntraASNDSCP | :<value> |
| (for each existing BS if requested for all BSs) | |
| IntraASN802.1pPriority | :<value> |
| InternalManagementDSCP | :<value> |
| InternalManagement802.1pPriority | :<value> |

Command Modes Global command mode

3.8.22 Managing ID-IP Mapping Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more ID-IP Mapping entry (refer to [Section 3.8.22.1](#)).
- Delete one or more ID-IP Mapping entries (refer to [Section 3.8.22.2](#)).

You can display configuration information for the ID-IP Mapping of a selected or all existing BSs (refer to [Section 3.8.22.3](#)).

3.8.22.1 Configuring ID-IP Mapping Entries



To configure ID-IP Mapping entries:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# idip <(1 to 16777215 StepSize 1)> [nw-node-ip <ip address>]
```

Command Syntax **npu(config-bs-66053)# idip** <(1 to 16777215 StepSize 1)> [nw-node-ip <ip address>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The Next Hop (Network Node) BS ID | Mandatory | N/A | 1 - 16777215 |
| nw-node-ip <ip address> | The Next Hop (Network Node) BS IP Address | Mandatory | N/A | IP address |

Command Modes bs configuration mode



IMPORTANT

When creating a new BS, at least one ID-IP Mapping entry must be configured.

3.8.22.2 Deleting an ID-IP Mapping Entry

Run the following command from the BS configuration mode to delete an ID-IP Mapping entry:

```
npu(config-bs 66053)# no idip <(1 to 16777215 StepSize 1)>
```

Command Syntax `npu(config-bs 66053)# no idip <(1 to 16777215 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|-----------------------------------|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The Next Hop (Network Node) BS ID | Mandatory | N/A | 1 - 16777215 |

Command Modes bs configuration mode

3.8.22.3 Displaying Configuration Information for ID-IP Mapping Entries

To display configuration information of ID-IP Mapping entries, run the following command:

```
npu# show idip bs [(1 to 16777215 StepSize 1)> nw-node-id (1 to 16777215 StepSize 1)>]
```

Specify the BS ID and Next Hop (Network Node) BS ID (nw-node-id) if you want to display information for a particular ID-IP Mapping entry. For example, to display the ID-IP Mapping of BS 66053 and Network Node 66055, run the following command:

```
npu# show idip bs 66053 nw-node-id 66055
```

Do not specify these parameters if you want to view information of ID-IP Mapping entries in all existing BSs. To display information for all BSs, run the following command:

```
npu# show idip bs
```

Command Syntax **npu# show idip bs** [<(1 to 16777215 StepSize 1)> nw-node-id <(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to displayspecific ID-IP Mapping entry in a specific BS. Do not specify a value for this parameter if you want to display all ID-IP Mapping entries of all BSs. | Optional | N/A | 1-16777215 |
| nw-node-id <(1 to 16777215 StepSize 1)> | The Next Hop (Network Node) BS ID. Specify a value for this parameter if you want to display a specific ID-IP Mapping entry in a specific BS. Do not specify a value for this parameter if you want to display all ID-IP Mapping entries of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|----------------------|----------|
| BSID LSB | :<value> |
| NetworkNodeID | :<value> |
| NetworkNodeIPAddress | :<value> |

(for each entry if requested for all)

Command Modes Global command mode

3.8.23 Managing Ranging Parameters



To configure the Ranging parameters:

- 1 Enable the Ranging configuration mode (refer to [Section 3.8.23.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure the Ranging General parameters (refer to [Section 3.8.23.2](#))
 - » Restore the default values of one or more of the Ranging General parameters (refer to [Section 3.8.23.3](#))
 - » Terminate the Ranging configuration mode (refer to [Section 3.8.23.4](#))

In addition, you can, at any time, display configuration information for the Ranging General parameters (refer to [Section 3.8.23.5](#)).

3.8.23.1 Enabling the Ranging Configuration Mode

To configure the Ranging parameters, first enable the Ranging configuration mode. Run the following command to enable the Ranging configuration mode.

```
npu(config-bs-66053)# ranging
```

The Ranging configuration mode is enabled, after which you can execute any of the following tasks:

- Configure one or more of the Ranging General parameters (refer to [Section 3.8.23.2](#))
- Restore the default values of one or more of the Ranging General parameters (refer to [Section 3.8.23.3](#))

After executing the above tasks, you can terminate the Ranging configuration mode (refer to [Section 3.8.23.4](#)) and return to the BS configuration mode.

| | |
|-----------------------|--|
| Command Syntax | <code>npu(config-bs-66053)# ranging</code> |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Command Modes bs configuration mode

3.8.23.2 Configuring Ranging Parameters

To configure the Ranging General parameters, run the following command:

```
npu(config-bs-66053-ranging)# general [start-of-rng-codes <(0 to 255 StepSize 1)>] [max-cellradius {one | two | four | eight | fifteen | twentyThree | thirty}]
```

Command Syntax **npu(config-bs-66053-ranging)# general** [start-of-rng-codes <(0 to 255 StepSize 1)>] [max-cellradius {one | two | four | eight | fifteen | twentyThree | thirty}]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|--|----------|---------------|-----------------|
| start-of-rng-codes <(0 to 255 StepSize 1)> | <p>Start of Ranging Codes: The starting number S of the group of codes used for this uplink.</p> <p>Actual valid values are 0, 64, 128, 192. If a different value is configured-the highest valid value that is lower than the configured value will be set (for example, for a configured value of 140 the actual value will be 128).</p> | Optional | 0 | 0 - 255 |

| | | | | |
|--|------------------------------------|----------|-----|--|
| max-cellradius {one two four eight fifteen twentyThree thirty} | The Maximum Cell Radius (in km) | Optional | two | <input type="checkbox"/> one <input type="checkbox"/> two <input type="checkbox"/> four <input type="checkbox"/> eight <input type="checkbox"/> fifteen <input type="checkbox"/> twentyThree <input type="checkbox"/> thirty |
|--|------------------------------------|----------|-----|--|

Command bs ranging configuration mode
Modes

3.8.23.3 Restoring Default Values for Ranging Configuration Parameters

To restore one or all of the Ranging General parameters to their default values, run the following command:

```
npu(config-bs-66053-ranging)# no general [start-of-rng-codes] [max-cellradius]
```

You can restore only one parameter to its default values by specifying only this parameter. For example, to restore only max-cellradius to the default value, run the following command:

```
npu(config-bs-66053-ranging)# no general max-cellradius
```

The parameter will be restored to its default value, while the other parameter will remain unchanged.

To restore all Ranging General parameters to their default value, run the following command:

```
npu(config-bs-66053-ranging)# no general
```



NOTE

Refer to [Section 3.8.23.2](#) for a description and default values of these parameters.

Command Syntax **npu(config-bs-66053-ranging)# no general** [start-of-rng-codes]
[max-cellradius]

Privilege Level 10

Command Modes bs ranging configuration mode

3.8.23.4 Terminating the Ranging Configuration Mode

Run the following command to terminate the Ranging configuration mode:

```
npu(config-bs-66053-ranging)# exit
```



IMPORTANT

If you did not configure any of the BS General parameters, do not forget to execute the apply command before terminating the CRanging configuration mode:

```
npu(config-bs-66053-ranging)# apply
```

Command Syntax npu(config-bs-66053-ranging)# exit

Privilege Level 10

Command Modes bs ranging configuration mode

3.8.23.5 Displaying Configuration Information for Ranging Parameters

To display configuration for the Ranging General parameters, run the following command:

```
npu# show ranging-general bs [(1 to 16777215 StepSize 1)]
```

Specify the BS ID if you want to display configuration for a particular BS. For example, to display the Ranging General parameters of BS 66053, run the following command:

```
npu# show ranging-general bs 66053
```

Do not specify this parameter if you want to view configuration information for all existing BSs. To display information for all BSs, run the following command:

npu# show ranging-general bs

Command Syntax `npu# show ranging-general bs` [<(1 to 16777215 StepSize 1)]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Ranging General parameters of a specific BS. Do not specify a value for this parameter if you want to display the Ranging General parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

| | |
|-------------------------------------|----------|
| <code>BSIDLBS</code> | :<value> |
| <code>StartofRangingCodes</code> | :<value> |
| <code>MaximumCellRadius (km)</code> | :<value> |

(for each existing BS if requested for all BSs)

Command Modes Global command mode

3.8.24 Managing Alarm Threshold Parameters

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Alarm Threshold parameters (refer to [Section 3.8.24.1](#)).
- Restore the default values of some or all of the Alarm Threshold parameters (refer to [Section 3.8.24.2](#)).

You can display configuration and status information for the Alarm Threshold parameters of a selected or all existing BSs (refer to [Section 3.8.24.3](#)).

3.8.24.1 Configuring Alarm Threshold Parameters



To configure the Alarm Threshold parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# alm-thrshld [ul-mednoise <(-135 to -100 StepSize 1)>]
[ul-99prcntnoise <(-135 to -100 StepSize 1)>] [Be-exc-dl-drop-thr <(1 to 1000
StepSize 1)> ] [rt-exc-dl-drop-thr <(1 to 1000 StepSize 1)> ] [nrt-exc-dl-drop-thr
<(1 to 1000 StepSize 1)> ] [ugs-exc-dl-drop-thr <(1 to 1000 StepSize 1)> ]
[ert-exc-dl-drop-thr <(1 to 1000 StepSize 1)> ]
```

Command Syntax

```
npu(config-bs-66053)# alm-thrshld [ul-mednoise <(-135 to -100
StepSize 1)> ] [ul-99prcntnoise <(-135 to -100 StepSize 1)> ]
[Be-exc-dl-drop-thr <(1 to 1000 StepSize 1)> ] [rt-exc-dl-drop-thr
<(1 to 1000 StepSize 1)> ] [nrt-exc-dl-drop-thr <(1 to 1000
StepSize 1)> ] [ugs-exc-dl-drop-thr <(1 to 1000 StepSize 1)> ]
[ert-exc-dl-drop-thr <(1 to 1000 StepSize 1)> ]
```

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | |
|--|--|----------|------|--------------|
| <code>ul-mednoise <(-10 to 30 StepSize 1)></code> | The uplink median noise level represents the median value of the noise floor histogram.If the uplink median noise level exceeds the value calculated as the target noise and interference level for the PUSC zone (pusc parameter, see Section 3.8.6.2.1) plus the value of the ul-mednoise parameter, an excessive uplink median noise alarm will be generated. The value is in dBm. | Optional | -122 | -135 to -100 |
| <code>ul-99prcntnoise <(-10 to 30 StepSize 1)></code> | The uplink 99% noise level represents the 99% value of the noise floor histogram.If the uplink 99% noise level exceeds the value calculated as the target noise and interference level for the PUSC zone (pusc parameter, see Section 3.8.6.2.1) plus the value of the ul-99prcntnoise parameter, an excessive uplink 99% percentile noise alarm will be generated. The value is in dBm. | Optional | -125 | -135 to -100 |
| <code>[Be-exc-dl-dro p-thr <(1 to 1000 StepSize 1)>]</code> | Threshold for Excessive DL Dropped Packets Ratio for Best Effort (in promils) | Optional | 1000 | 1 - 1000 |
| <code>[rt-exc-dl-dro p-thr <(1 to 1000 StepSize 1)>]</code> | Threshold for Excessive DL Dropped Packets Ratio for Real Time(in promils) | Optional | 1000 | 1 - 1000 |

| | | | | |
|---|--|----------|------|----------|
| [nrt-exc-dl-drop-thr <(1 to 1000 StepSize 1)>] | Threshold for Excessive DL Dropped Packets Ratio for Non Real Time(in promils) | Optional | 1000 | 1 - 1000 |
| [ugs-exc-dl-drop-thr <(1 to 1000 StepSize 1)>] | Threshold for Excessive DL Dropped Packets Ratio for UGS(in promils) | Optional | 1000 | 1 - 1000 |
| [ert-exc-dl-drop-thr <(1 to 1000 StepSize 1)>] | Threshold for Excessive DL Dropped Packets Ratio for ERT(in promils) | Optional | 1000 | 1 - 1000 |

Command bs configuration mode
Modes

3.8.24.2 Restoring the Default Values of Alarm Threshold Parametes

To restore the default values of some or all of the Alarm Threshold parameters, run the following command:

```
npu(config-bs-66053)# no alrm-thrshld [ul-mednoise] [ul-99prcntnoise]
[Be-exc-dl-drop-thr ] [rt-exc-dl-drop-thr ] [nrt-exc-dl-drop-thr ]
[ugs-exc-dl-drop-thr ] [ert-exc-dl-drop-thr ]
```

You can restore only some parameters to the default values by specifying only those parameter. For example, to restore only the ul-mednoise parameter to the default value, run the following command:

```
npu(config-bs-66053)# no alrm-thrshld ul-mednoise
```

This parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all Alarm Threshold parameters to their default value, run the following command:

```
npu(config-bs-66053)# no alrm-thrshld
```



NOTE

Refer to [Section 3.8.24.1](#) for a description and default values of these parameters.

Command **npu(config-bs-66053)# no alarm-thrshld** [ul-mednoise] [ul-99prcntnoise] [Be-exc-dl-drop-thr] [rt-exc-dl-drop-thr] [nrt-exc-dl-drop-thr] [ugs-exc-dl-drop-thr] [ert-exc-dl-drop-thr]

Syntax

Privilege Level 10

Command Modes bs configuration mode

3.8.24.3 Displaying Configuration Information for Alarm Threshold Parameters

To display configuration information of Alarm Threshold parameters, run the following command:

npu# show alarm-thrshld bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display information for a particular BS. For example, to display the Alarm Threshold parameters of BS 66053, run the following command:

npu# show alarm-thrshld bs 66053

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

npu# show alarm-thrshld bs

Command Syntax **npu# show alarm-thrshld bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax

Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display Alarm Threshold parameters of a specific BS. Do not specify a value for this parameter if you want to display Alarm Threshold parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format

(for each existing BS if requested for all BSs)

```

BSIDLBS                               : <value>
UplinkMedNoise
Uplink99%Noise(dBm)                   : <value>
ThresholdforExcessiveDLDroppedPacketsRatioBestEffort: <value>
ThresholdforExcessiveDLDroppedPacketsRatioRealTime: <value>
ThresholdforExcessiveDLDroppedPacketsRatioNonRealTime: <value>
ThresholdforExcessiveDLDroppedPacketsRatioUgs      : <value>
ThresholdforExcessiveDLDroppedPacketsRatioErt     : <value>
    
```

Command Modes

Global command mode

3.8.25 Managing BS Reserved Parameters



NOTE

The BS reserved parameters table enables configuring up to 21 parameters that are reserved for possible future use. In the current release none of the reserved parameters is being used. Therefore, the following commands are not applicable:

- Configure reserved parameters: `npu (config-bs-<N>)# bs-reserved [reserved-1 <string (32)>] [reserved-2 <string (32)>] [reserved-3 <string (32)>] [reserved-4 <string (32)>] [reserved-5 <string (32)>] [reserved-6 <string (32)>] [reserved-7 <string (32)>] [reserved-8 <string (32)>] [reserved-9 <string (32)>] [reserved-10 <string (32)>] [reserved-11 <string (32)>] [reserved-12 <string (32)>] [reserved-13 <string (32)>] [reserved-14 <string (32)>] [reserved-15 <string (32)>] [reserved-16 <string (32)>] [reserved-17 <string (32)>] [reserved-18 <string (32)>] [reserved-19 <string (32)>] [reserved-20 <string (32)>] [reserved-21 <string (32)>]`.
- Restore default values of reserved parameters: `npu(config-bs-<N>)# no bs-reserved [reserved-1] [reserved-2] [reserved-3] [reserved-4] [reserved-5] [reserved-6] [reserved-7] [reserved-8] [reserved-9] [reserved-10] [reserved-11] [reserved-12] [reserved-13] [reserved-14] [reserved-15] [reserved-16] [reserved-17] [reserved-18] [reserved-19] [reserved-20] [reserved-21]`.
- Display configured values of reserved parameters: `npu# show bs-reserved bs [<(1 to 16777215 StepSize 1)`.

3.8.26 Managing the BS Keep-Alive Functionality

Once an MS enters the network, its context is stored in ASN entities (BS, ASN-GW). Dynamically, MS context could be transferred/updated (during HO and re-authentication) to other entities or duplicated to other entities (separation between anchor functions such as Authenticator, Data Path and Relay Data Path).

In certain cases, such as entity reset, other entities are not aware of service termination of an MS in that entity, and keep maintaining the MS context. This may result in service failure, excessive consumption of memory resources and accounting mistakes.

The keep-alive mechanism should be used to clear MS context from all network entities when it is de-attached from the BS, and de-register MS from the network when its context becomes unavailable in one of its serving function locations.

When the keep-alive mechanism is enabled the BS periodically polls other ASN-GW entities-of-interest and waits for their responses. In case of no keep-alive response, the BS shall make further actions, such as graceful de-registration of applicable MS(s) and clearing the applicable MS(s) context.

The BS builds a list of ASN-GW-of-Interest, which it must poll. The list is dynamically updated; when a new MS is attached to the BS, or MS performs CSN mobility (data-path relocation) and in its context there is an ASN-GW identifier unknown to this BS, it shall add it to the ASN-GW-of-interest list. When the last MS(s) with specific ASN-GW identifier exits the network, the BS shall remove the ASN-GW from the list. The BS shall include in the ASN-GW-of-interest list also Relay Data-path ASN-GW(s) (UL next hop IP address). This is applicable when hierarchical data-path establishment takes place during inter-ASN HO.

The BS periodically polls the ASN-GW(s) for keep-alive. The polling mechanism is independent and unrelated for every ASN-GW-of-interest the BS polls.

The keep-alive mechanism uses configurable retry timer and retries counter. Upon expiration of the retry timer, the BS resends the BS Keep-Alive request message. Upon expiration of the retries counter, the BS assumes failure of the polled ASN-GW and clears the contexts of all MS(s) served by that ASN-GW.

In addition, the BS verifies that for each polled entity that the “Last-Reset-Time” UTC value of poll N+1 is equal to the value of poll N. If the “Last-Reset-Time” UTC value of poll N+1 is higher than the value of poll N, this mean that the ASN-GW went through reset state during the interval between two consecutive polls. In this case, the BS shall de-register all MS(s) served by that specific ASN-GW and clear their contexts.

When keep-alive fails, the BS generates an alarm and log the event.

Regardless of the enable/disable status of the keep-alive mechanism in the BS, it replies to BS_Keep_Alive_Req received from ASN-GWs with BS_Keep_Alive_Rsp. that includes also its “Last-Reset-Time”. It responds only if all its functions operate properly. In case one of the functions fails, the BS shall not respond to the keep-alive poll.

3.8.26.1 Configuring BS Keep-Alive Parameters

To configure one or several keep-alive parameters, run the following command:

```
npu(config-bs-66053)# keep-alive [asn-ka {enable | disable} ] [period <(10 to 1000 StepSize 1)> ] [rtx-cnt <(0 to 10 StepSize 1)> ] [rtx-time <(100 to 10000 StepSize 1)> ]
```



IMPORTANT

An error may occur if you provide configuration values that do not satisfy following condition:
 'period*1000 >= rtx-time * (rtx-cnt + 1)'

Command `npu(config-bs-66053)# keep-alive [asn-ka {enable | disable}] [period`
Syntax `<(10 to 1000 StepSize 1)>] [rtx-cnt <(0 to 10 StepSize 1)>] [rtx-time`
 `<(100 to 10000 StepSize 1)>]`

Privilege 10
Level

Syntax
Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|---|
| [asn-ka {enable disable}] | Enable/Disable the BS keep-alive mechanism. | Optional | disable | <input type="checkbox"/> enable <input type="checkbox"/> disable |
| [period <(10 to 1000 StepSize 1)>] | The period in seconds between polling sessions. period x 1000 (value in milliseconds) cannot be lower than (rtx-cnt) x rtx-time+1). | Optional | 60 | 10-1000 |
| [rtx-cnt <(0 to 10 StepSize 1)>] | Maximum number of retries if rtx-time has expired without getting a response. | Optional | 5 | 1-10 |
| [rtx-time <(100 to 10000 StepSize 1)>] | Time in milliseconds to wait for a response before initiating another polling attempt or reaching a decision that the polled entity has failed (if the maximum number of retries set by rtx-cnt has been reached). | Optional | 1500 | 100-10000 |

Command bs configuration mode
Modes

3.8.26.2 Displaying Configuration Information for BS Keep-Alive Parameters

To display the BS keep-alive parameters, run the following command:

`npu# show keep-alive bs [<(1 to 16777215 StepSize 1)`

Command Syntax `npu# show keep-alive bs (<(1 to 16777215 StepSize 1)`

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display the Keep-Alive parameters of a specific BS. Do not specify a value for this parameter if you want to display the Keep-Alive parameters of all BSs. | Optional | N/A | 1-16777215 |

Display Format BSIDLSB Keep Alive Configuration

ASN-KA : <enable/disable>

Period (sec) : <value>

Retransmissions Count : <value>

Retransmission Time : <value>

Command Modes Global command mode

3.8.27 Managing MSs for Specific MS Advanced Mode Data Collection

The performance data collection feature (see [Section 3.3.13](#)) enables collecting data from specific MSs using 1 minute resolution when the Specific MS Advanced Mode option is enabled. Data from up to 10 MSs per BS can be collected

This section includes:

- [“Configuring an MS entry in the Advanced Mode Collection List” on page 631](#)

- “Deleting an MS from the Advanced Mode Collection List” on page 631
- “Displaying the MSs in the Advanced Mode Collection List” on page 632

3.8.27.1 Configuring an MS entry in the Advanced Mode Collection List

From the BS configuration mode, run the following command to add an MS to the advanced mode collection list or to modify an existing entry:

```
npu(config-bs-66053)# ms-pm-mac <(1 to 10 StepSize 1)> [Mac-addr
<Mac-addr> ]
```

For example, to add MS 2 with MAC address 0e-10-e7-11-22-ff to the list (or to modify an existing entry for MS 2)), run the following command:

```
npu(config-bs-66053)# ms-pm-mac 2 Mac-addr 0e10e71122ff
```

Command Syntax **npu(config-bs-66053)# ms-pm-mac** <(1 to 10 StepSize 1)> [**Mac-addr** <Mac-addr>]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------|---------------------------------------|-----------|---------------|--|
| <(1 to 10 StepSize 1)> | The index of the MS MAC address entry | Mandatory | N/A | 1 - 10 |
| Mac-addr <Mac-addr>] | The MAC address of the MS's entry | Mandatory | | MAC address in the format xxxxxxxxxxxx x = 0-f. |

Command Modes bs configuration mode

3.8.27.2 Deleting an MS from the Advanced Mode Collection List

To delete an MS from the list, run the following command:

```
npu(config-bs-66053)# no ms-pm-mac <(1 to 10 StepSize 1)>
```

Command Syntax **npu(config-bs-66053)# no ms-pm-mac** <(1 to 10 StepSize 1)>

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------|--|-----------|---------------|-----------------|
| <(1 to 10 StepSize 1)> | The index of the entry to be deleted. Must be an index of an existing entry. | Mandatory | N/A | 1 - 10 |

Command Modes bs configuration mode

3.8.27.3 Displaying the MSs in the Advanced Mode Collection List

To display configuration information of MSs in the Advanced Mode Collection List, run the following command:

```
npu# show ms-pm-mac bs [<(1 to 16777215 StepSize 1)> index <(1 to 10 StepSize 1)> ]
```

Specify the BS ID and index if you want to display information for a particular entry in a particular BS.

For example, to see the configuration of entry 2 in BS 66053 run the command:

```
npu# show ms-pm-mac bs 66053 index 3
```

Do not specify these parameters if you want to view information for all existing BSs. To display information for all BSs, run the following command:

```
npu# show ms-pm-mac bs
```

Command Syntax **npu# show ms-pm-mac bs** [<(1 to 16777215 StepSize 1)> index <(1 to 10 StepSize 1)>]

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display configuration details for a specific BS. Do not specify a value for this parameter if you want to display configuration details of all BSs. | Optional | N/A | 1-16777215 |
| index <(1 to 10 StepSize 1)> | The index of the entry. Specify a value for this parameter if you want to display configuration details for a specific entry. Do not specify a value for this parameter if you want to display configuration details of all BSs. | Optional | N/A | 1 - 10 |

Display

BSIDLSB

:<value>

Format

Index

:<value>

(for each existing entry in each existing BS if requested for all BSs and indexed)

MACaddress

:<value>

Command Modes

Global command mode

3.8.28 Managing the BS Idle Mode Parameters

The single sector Idle Mode capability provides the benefits of MS power savings and manageable total sector active and non active users , together with reduced overhead on the backhaul network.

Idle Mode (IM) mechanism allows an MS to become unavailable on the air interface, and thus freeing operational resources and preserving MS power. During IM operation, an MS switch off its transmission and reception capabilities, and becomes available for DL broadcast control messaging, i.e., MS Paging, in a periodically manner. Using paging broadcast, BS can indicate (if necessary) the MS to exit from IM and return into normal operation mode. The paging control message is sent over the DL of a set of BSs simultaneously. This set is called Paging group (PG). In the current release, each Paging Group includes a single BS.

During IM, MS performs location updates when moving from one PG to another. While in the same PG, MS does not need to transmit in the UL and can be paged in the DL if there is traffic targeted at it.

After enabling the BS configuration mode, you can execute the following tasks:

- Configure the Idle Mode parameters (refer to [Section 3.8.28.1](#)).
- Restore the default value of the Idle Mode parameters (refer to [Section 3.8.28.2](#)).

You can display configuration information for the Idle Mode parameter of a selected or all existing BSs (refer to [Section 3.8.28.3](#)).

3.8.28.1 Configuring the BS Idle Mode Parameters



To configure the BS Idle Mode Parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# idle-mode [paging-group-id <(0 to 65535 StepSize 1)> ]
[idle-Mode-ms-initiated-for-ugs {disable | enable} ]
```

| | |
|-----------------------|--|
| Command Syntax | npu(config-bs-66053)# idle-mode [paging-group-id <(0 to 65535 StepSize 1)>] [idle-Mode-ms-initiated-for-ugs {disable enable}] |
|-----------------------|--|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

| | | | | | |
|---------------------------|------------------|--------------------|-----------------|----------------------|------------------------|
| Syntax Description | Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------|------------------|--------------------|-----------------|----------------------|------------------------|

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------|-------------|----------|---------------|-----------------|
| | | | | |

| | | | | |
|--|--|-----------|---------|---|
| [paging-group-id <(0 to 65535 StepSize 1)>] | <p>The Paging Group ID of the BS.</p> <p>0 means that Idle Mode is disabled.</p> <p>If other than 0 (disable), should be unique in the network (different paging-group for each BS).</p> | Mandatory | 0 | 0 to 65535 |
| [idle-Mode-ms-initiated-for-ugs {disable enable}] | <p>The parameter defines whether BS allows MS to enter idle mode initiated by the MS, when there is a UGS connection available.</p> <p>If it is disabled - BS shall always reject MS initiation and request to enter idle mode.</p> <p>If it is enabled - BS would approve MS to enter the idle mode without being able to guarantee the required QoS for UGS.</p> | Optional | disable | <input type="checkbox"/> disable <input type="checkbox"/> enable |

Command bs configuration mode
Modes

3.8.28.2 Restoring Default Values for the BS Idle Mode Parameters

After enabling the BS configuration mode you can restore the default values for the BS Idle Mode idle-Mode-ms-initiated-for-ugs parameter.

To restore the BS Idle Mode idle-Mode-ms-initiated-for-ugs parameter to its default value, run the following command:

```
npu(config-bs-66053)# no idle-mode
[idle-Mode-ms-initiated-for-ugs]
```



NOTE

Refer to [Section 3.8.28.1](#) for a description and default value of this parameter.

Command `npu(config-bs-66053)# no idle-mode`
Syntax `[idle-Mode-ms-initiated-for-ugs]`

Privilege Level 10

Command Modes bs configuration mode

3.8.28.3 Displaying Configuration Information for the BS Idle Mode Parameters

To display configuration information of the BS Idle Mode parameters of a specific or all BSs, run the following command:

npu# show idle-mode bs [<(1 to 16777215 StepSize 1)>]

Specify the BS ID (1-16777215) of an existing BS if you want to display configuration information for a particular BS. Do not specify values for this parameter if you want to view configuration information for all existing BSs.

Command Syntax `npu# show idle-mode bs` [<(1 to 16777215 StepSize 1)>]

Privilege Level 1

Syntax

Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------|---|----------|---------------|-----------------|
| [<(1 to 16777215 StepSize 1)>] | The BS ID Specify a value for this parameter if you want to display the Idle Mode Paging Group ID Parameter of a specific BS. Do not specify a value for this parameter if you want to display the Idle Mode Paging Group ID Parameter of all BSs. | Optional | N/A | 1-16777215 |

| | | |
|---|---------------------------|-------------------|
| Display | BSIDLSB | :<value> |
| Format | PagingGrpId | :<value> |
| (for each existing BS if requested for all BSs) | IdleModeMSInitiatedForUGS | :<disable/enable> |
| Command Modes | Global command mode | |

3.8.29 Managing Scheduler Parameters

Scheduling uncommitted traffic (above the maximum reserved rate) can be done using one of the following options:

- Equal Time (ET) scheduling mode, in which air resources are being scheduled in a fair manner proportional to the users' excess traffic (maximum sustained rate - maximum reserved rate) SLAs.
- Equal Rate (ER) scheduling mode, in which air resources are allocated to users aiming at ensuring data rate fairness between users proportional to their excess traffic SLAs.

Assuming a sector with diversity (different channels conditions) of active users, ET scheme enables higher aggregate sector throughput at the expense of data-rate fairness among users, while ER scheduling scheme ensures maximum data-rate fairness among users at the expense of lower aggregate sector throughput.

Using ER scheduling scheme exposes the system to excessive allocation of air resources to highly active users having relatively poorer channel conditions. To ensure data-rate fairness, more resources will to be allocated to these users compared to users with relatively good channel conditions. The effect of a small number of such users within the sector will be reflected by reduced aggregate sector throughput as well as degradation of achievable rates for all users.

To protect against “abusing” users, an instantaneous rate threshold can be defined within the scheduling scheme in which the amount of air resources for users with continuous instantaneous rate below the threshold is being limited. The more the abusing users' instantaneous rate is below the threshold, the more resource allocations limitation is applied.

Three levels of dynamic protection are available:

- No protection.
- Low protection level - protection against users with very poor channel conditions. Should be used where the abusing users instantaneous rates are far below the average instantaneous rate within the sector.
- Medium protection - protection against users with relatively poor or very poor channel conditions. Should be used where the abusing users instantaneous rates are below or far below the average instantaneous rate within sector.

A dynamic protection mechanism is implemented, in which the mechanism of limiting resource allocations is automatically and dynamically activated when needed.

After enabling the BS configuration mode, you can execute the following tasks:

- Configure one or more of the Scheduler parameters (refer to [Section 3.8.29.1](#)).
- Restore the default values of some or all of the Scheduler parameters (refer to [Section 3.8.29.2](#)).

You can display configuration and status information for the Scheduler parameters of a selected or all existing BSs (refer to [Section 3.8.29.3](#)).

3.8.29.1 Configuring Scheduler Parameters



To configure the Scheduler parameters:

From the BS configuration mode, run the following command:

```
npu(config-bs-66053)# scheduler [scheduler-mode {equalRate | equalTime} ]
[dl-abuse-protection-level {none | low | medium} ] [ul-abuse-protection-level
{none | low | medium} ]
```

To apply the changes, run the following command:

```
npu(config-bs-66053)# scheduler-apply
```

| | |
|-----------------------|---|
| Command Syntax | <pre>npu(config-bs-66053)# scheduler [scheduler-mode {equalRate equalTime}] [dl-abuse-protection-level {none low medium}] [ul-abuse-protection-level {none low medium}]</pre> |
|-----------------------|---|

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|----------|------------------------|---|
| <code>scheduler-mode</code> { <code>equalRate</code> <code>equalTime</code> }] | The scheduling scheme for uncommitted data. | Optional | <code>equalRate</code> | <input type="checkbox"/> <code>equalRate</code> <input type="checkbox"/> <code>equalTime</code> |
| <code>dl-abuse-protection-level</code> { <code>none</code> <code>low</code> <code>medium</code> } | The protection level for the downlink for <code>equalRate</code> scheduling mode. | Optional | <code>none</code> | <input type="checkbox"/> <code>none</code> <input type="checkbox"/> <code>low</code> <input type="checkbox"/> <code>medium</code> |
| <code>ul-abuse-protection-level</code> { <code>none</code> <code>low</code> <code>medium</code> } | The protection level for the uplink for <code>equalRate</code> scheduling mode. | Optional | <code>none</code> | <input type="checkbox"/> <code>none</code> <input type="checkbox"/> <code>low</code> <input type="checkbox"/> <code>medium</code> |

Command Modes bs configuration mode

3.8.29.2 Restoring the Default Values of Scheduler Parameters

To restore the default values of some or all of the Scheduler parameters, run the following command:

```
npu(config-bs-66053)# no scheduler [scheduler-mode ]
[dl-abuse-protection-level ] [ul-abuse-protection-level ]
```

You can restore only some parameters to the default values by specifying only those parameter. For example, to restore only the `ul-abuse-protection-level` parameter to the default value, run the following command:

```
npu(config-bs-66053)# no scheduler ul-abuse-protection-level
```

This parameter will be restored to its default value, while the other parameters will remain unchanged.

To restore all parameters to their default value, run the following command:

```
npu(config-bs-66053)# no scheduler
```

To apply the changes, run the following command:

npu(config-bs-66053)# scheduler-apply



NOTE

Refer to [Section 3.8.29.1](#) for a description and default values of these parameters.

Command Syntax **npu(config-bs-66053)# no scheduler** [scheduler-mode]
[dl-abuse-protection-level] [ul-abuse-protection-level]

Privilege Level 10

Command Modes bs configuration mode

3.8.29.3 Displaying Configuration Information for Scheduler Parameters

To display configuration information of Scheduler parameters, run the following command:

npu# show scheduler bs [<(1 to 16777215 StepSize 1)

Specify the BS ID if you want to display information for a particular BS. For example, to display the Scheduler parameters of BS 66053, run the following command:

npu# show scheduler bs 66053

Do not specify this parameter if you want to view information for all existing BSs. To display information for all BSs, run the following command:

npu# show scheduler bs

Command Syntax **npu# show scheduler bs** [<(1 to 16777215 StepSize 1)

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------|---|----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | The BS ID Specify a value for this parameter if you want to display parameters of a specific BS. Do not specify a value for this parameter if you want to display parameters of all BSs. | Optional | N/A | 1-16777215 |

Display**Format**

(for each existing BS if requested for all BSs)

```

BSIDLSB                               :<value>
scheduler-mode                          : <equalRate| equalTime>
dl-abuse-protection-level               : <none | low | medium>
ul-abuse-protection-level               : <none | low | medium>

```

Command Modes

Global command mode

3.9 Managing Sectors

Up to 6 Sector objects can be created and configured. The Sector's configuration includes the association of all the objects that form a sector, including BS, AU/AU-Port, ODU/ODU-Port and Antenna/Antenna Port.

This section include:

- “Configuring Sector Parameters”, Section 3.9.1
- “Configuring Sector Association Entries”, Section 3.9.2

3.9.1 Configuring Sector Parameters



To configure Sector Parameters:

- 1 Enable the Sector Parameters configuration mode for the selected Sector (refer to [Section 3.9.1.1](#))
- 2 You can now execute any of the following tasks:
 - » Configure one or more of the parameters tables of the Sector (refer to [Section 3.9.1.2](#))
 - » Restore the default values of parameters in one or more of the parameters tables of the Sector (refer to [Section 3.9.1.3](#))
- 3 Terminate the Sector Parameters configuration mode (refer to [Section 3.9.1.4](#))

In addition, you can, at any time, display configuration information for each of the parameters tables of the Sector (refer to [Section 3.9.1.6](#)) or delete an existing Sector object (refer to [Section 3.9.1.5](#)).

3.9.1.1 Enabling the Sector Parameters Configuration Mode\Creating a Sector Object

To configure the parameters of a Sector, first enable the Sector Parameters configuration mode for the specific Sector. Run the following command to enable the Sector Parameters configuration mode for an existing Sector object:

```
npu (config)# sector-params <(1 to 6 StepSize 1)>
```

To create a new Sector object, the width parameter must be specified. Run the following command to create a new Sector object and enable the parameters configuration mode for this ODU:

```
npu (config)# sector-params <(1 to 6 StepSize 1)> [width <(0 to 359 StepSize 1)>]
```

A new Sector object is created with default values for all parameters except to the mandatory width parameter.



IMPORTANT

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

For example, to create Sector 1 object and enable the parameters configuration mode for this Sector, where the width is 90 degrees, run the following command:

```
npu (config)# sector-params 1 width 90
```

After enabling the Sector Parameters configuration mode for a Sector you can execute any of the following tasks:

- Configure one or more of the parameters tables of the Sector (refer to [Section 3.9.1.2](#))
- Restore the default values of non-mandatory parameters in one or more of the parameters tables of the Sector (refer to [Section 3.9.1.3](#))

After executing the above tasks, you can terminate the Sector Parameters configuration mode (refer to [Section 3.9.1.4](#)) and return to the global configuration mode.

| | | | | | |
|---------------------------|---|--------------------|-----------------|----------------------|------------------------|
| Command Syntax | npu (config)# sector-params <(1 to 6 StepSize 1)> [width <(0 to 359 StepSize 1)>] | | | | |
| Privilege Level | 10 | | | | |
| Syntax Description | Parameter | Description | Presence | Default Value | Possible Values |
| | | | | | |

| | | | | |
|-------------------------------|--|--------------------------------------|-----|---------|
| <(1 to 6 StepSize 1)> | The Sector ID | Mandatory | N/A | 1-6 |
| width <(0 to 359 StepSize 1)> | The planned sector coverage, in degrees. | Mandatory when creating a new Sector | N/A | 0 - 359 |

Command Modes Global configuration mode



NOTE

The following examples are for sector-1 parameters configuration mode.

3.9.1.2 Configuring Sector Parameters

After enabling the Sector Parameters configuration mode you can configure the following parameters tables:

- Sector Definition (refer to [Section 3.9.1.2.1](#))
- Sector Reserved (refer to [Section 3.9.1.2.2](#))

3.9.1.2.1 Configuring Sector Definition Parameters

The Sector Definition table enables configuring the main properties of the Sector.

To configure the Sector Definition parameters, run the following command:

```
npu(config-sector-params-1)# sector-definition [sector-name <string (32)>]
[heading <(0 to 359 StepSize 1)>] [width <(0 to 359 StepSize 1)>]
```



IMPORTANT

An error may occur if you provide an invalid value for any of these parameters. Refer the syntax description for more information about the appropriate values and format for configuring these parameters.

Command Syntax **npu(config-sector-params-1)# sector-definition** [sector-name <string (32)>] [heading <(0 to 359 StepSize 1)>] [width <(0 to 359 StepSize 1)>]

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------|--|----------|---|---------------------------------|
| sector-name <string (32)> | The sector name (description). Must be unique in the site (shelf). | Optional | null (empty string) | A string of up to 32 characters |
| heading <(0 to 359 StepSize 1)> | The sector heading (The center angle of the sector), in degrees. | Optional | 0 | 0 - 359 |
| width <(0 to 359 StepSize 1)> | The planned sector coverage, in degrees. | Optional | Configured previously during sector creation. | 0 - 359 |

Command

sector-params configuration mode

Modes**3.9.1.2.2 Configuring Sector Reserved Parameters**

As the name implies, the reserved parameters table enables configuring up to 4 parameters that are reserved for possible future use. In the current release none of the reserved parameters is being used.

To configure the Sector Reserved parameters, run the following command:

```
npu(config-sector-params-1)# sector-reserved [reserved-1 <string (32)>] [reserved-2 <string (32)>] [reserved-3 <string (32)>] [reserved-4 <string (32)>].
```

Command Syntax

```
npu (config-sector-params-1)# sector-reserved [reserved-1 <string (32)>] [reserved-2 <string (32)>] [reserved-3 <string (32)>] [reserved-4 <string (32)>]
```

Privilege Level

10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|------------------------------------|-----------------------------|----------|------------------------|--------------------------------------|
| [reserved-N <string (32)>] (N=1-4) | Reserved parameter number N | Optional | null (an empty string) | A string of 32 printable characters. |

Command

sector-params configuration mode

Modes

3.9.1.3 Restoring Default Values for Sector Configuration Parameters

After enabling the Sector Parameters configuration mode you can restore the default values for parameters in the following parameters tables:

- Sector Definition (refer to [Section 3.9.1.3.1](#))
- Sector Reserved (refer to [Section 3.9.1.3.2](#))

3.9.1.3.1 Restoring the Default Values of Sector Definition Parameters

To restore the one or all of the non-mandatory parameters to the default values, run the following command:

```
npu(config-sector-params-1)# no sector-definition [sector-name] [heading]
```

Run the following command to restore the sector definition parameters to the default values:

```
npu(config-sector-params-1)# no sector-definition
```

**NOTE**

Refer to [Section 3.9.1.2.1](#) for a description and default values of these parameter.

Command**Syntax**

```
npu(config-sector-params-1)# no sector-definition [sector-name]  
[heading]
```

Privilege Level

10

Command Modes sector-params configuration mode

3.9.1.3.2 Restoring the Default Values of Sector Reserved Parameters

To restore Sector Reserved parameters to their default value, run the following command:

```
npu(config-sector-params-1)# no sector-reserved [reserved-1] [reserved-2]
[reserved-3] [reserved-4]
```

You can restore only selected parameters to their default value by specifying only those parameter. For example, to restore only the reserved-1 parameter to its default values, run the following command:

```
npu(config-sector-params-1)# no sector-reserved reserved-1
```

This parameter will be restored to the default value, while the other parameters will remain unchanged.

To restore all parameters to their default value, run the following command:

```
npu(config-sector-params-1)# no sector-reserved
```



NOTE

Refer to [Section 3.9.1.2.2](#) for a description and default values of these parameters.

Command Syntax `npu(config-sector-params-1)# no sector-reserved` [reserved-1] [reserved-2] [reserved-3] [reserved-4]

Privilege Level 10

Command Modes sector-params configuration mode

3.9.1.4 Terminating the Sector Parameters Configuration Mode

Run the following command to terminate the Sector Parameters configuration mode:

```
npu(config-sector-params-1)# exit
```

Command Syntax `npu(config-sector-params-1)# exit`

Privilege Level 10

Command Modes sector-params configuration mode

3.9.1.5 Deleting a Sector Object

Run the following command to delete a Sector object:

`npu(config)# no sector-params <(1 to 6 StepSize 1)>`



IMPORTANT

An associated Sector (specified in a Sector Association) cannot be deleted.

Command Syntax `npu(config)# no sector-params <(1 to 6 StepSize 1)>`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------------|---------------|-----------|---------------|-----------------|
| <(1 to 6 StepSize 1)> | The Sector ID | Mandatory | N/A | 1-6 |

Command Modes Global configuration mode

3.9.1.6 Displaying Configuration Information for Sector Parameters

You can display the current configuration and (where applicable) additional status information for the following parameters tables:

- Sector Definition (refer to [Section 3.9.1.6.1](#))

- Sector Reserved (refer to [Section 3.9.1.6.2](#))

3.9.1.6.1 Displaying Configuration Information for Sector Definition Parameters

To display configuration information for the Sector Definition parameters of a specific or all Sector objects, run the following command:

npu# show sector-definition [sector-id <(1 to 6 StepSize 1)>]

Specify the Sector ID (1-6) if you want to display configuration information for a particular Sector. Do not specify a value for this parameter if you want to view configuration information for all existing Sector objects.

Command Syntax **npu# show sector-definition** [sector-id <(1 to 6 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------------------|---|----------|---------------|-----------------|
| sector-id <(1 to 6 StepSize 1)> | The Sector ID Specify a value for this parameter if you want to display the Sector Definition parameters of a specific Sector. Do not specify a value for this parameter if you want to display the parameters of all Sectors. | Optional | N/A | 1-6 |

Display Format

| | |
|--|----------|
| SectorID | :<value> |
| SectorName | :<value> |
| (for each existing ODU object if requested for all ODUs) | |
| SectorHeading(degrees) | :<value> |
| SectorWidth(degrees) | :<value> |

Command Global command mode
Modes

3.9.1.6.2 Displaying Configuration Information for Sector Reserved Parameters

To display configuration information for the reserved parameters of a specific or all Sector objects, run the following command:

npu# show sector-reserved [sector-id <(1 to 6 StepSize 1)>]

Specify the Sector ID (1-6) if you want to display configuration for a particular Sector. Do not specify a value for this parameter if you want to view configuration for all existing Sector objects.

Command Syntax npu# show sector-reserved [sector-id <(1 to 6 StepSize 1)>]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------------|--|----------|---------------|-----------------|
| <(1 to 6 StepSize 1)> | The Sector ID. Specify a value for this parameter if you want to display the reserved parameters of a specific Sector. Do not specify a value for this parameter if you want to display the reserved parameters of all Sectors. | Optional | N/A | 1-6 |

Display Format

| | |
|--|----------|
| SectorID | :<value> |
| ReservedParameter1 | :<value> |
| (for each existing ODU object if requested for all ODUs) | |
| ReservedParameter2 | :<value> |
| ReservedParameter3 | :<value> |
| ReservedParameter4 | :<value> |

Command Global command mode
Modes

3.9.2 Configuring Sector Association Entries

The Sector Association entry defines all the components that together form a Sector. Because of the unique functionality of Sector Association entries, they can only be created: An existing Sector Association entry cannot be modified (to modify an entry, it must first be deleted and then created again with the modified values). For details on creating a new Sector Association entry, refer to [Section 3.9.2.1](#).

You can, at any time, display configuration information for each or all of the Sector Association entries (refer to [Section 3.9.2.3](#)) or delete an existing Sector Association entry (refer to [Section 3.9.2.2](#)).

3.9.2.1 Creating a Sector Association Entry

A Sector Association entry is identified by the BS ID, AU Slot ID and AU Port Number.

To create a new Sector Association entry, all the entry's parameters must be specified. Run the following command to create a new Sector Association entry:

```
npu (config)# sector-assoc <(1 to 16777215 StepSize 1)> <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)> <(1 to 4 StepSize 1)> sector-id <(1 to 6 StepSize 1)> odu-no <(1 to 28 StepSize 1)> antenna-no <(1 to 28 StepSize 1)> odu-port-no <1 to 4 StepSize 1> antenna-port-no <1 to 8 StepSize 1>
```

A new Sector Association entry is created with the specified values. For example, to create a Sector Association entry identified by BS ID 66053, AU Slot No. 2 and AU Port No. and with association to Sector ID 3, ODU No. 4, Antenna No. 5, ODU Port No. 1 and Antenna Port No. 1, run the following command:

```
npu (config)# sector-assoc 66053 2 1 sector-id 3 odu-no 4 antenna-no 5 odu-port-no 1 antenna-port-no 1
```

Command Syntax **npu (config)# sector-assoc** <(1 to 16777215 StepSize 1)> <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)> <(1 to 4 StepSize 1)> sector-id <(1 to 6 StepSize 1)> odu-no <(1 to 28 StepSize 1)> antenna-no <(1 to 28 StepSize 1)> odu-port-no <1 to 4 StepSize 1> antenna-port-no <1 to 8 StepSize 1>

Privilege Level 10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---------------------|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | BS ID (bs-id-lsb) | Mandatory | N/A | 1-16777215 |
| <(1 to 4 StepSize 1) (7 to 9 StepSize 1)> | AU Slot ID | Mandatory | N/A | 1-4, 7-9 |
| <(1 to 4 StepSize 1)> | AU Port Number | Mandatory | N/A | 1-4 |
| sector-id <(1 to 6 StepSize 1)> | Sector ID | Mandatory | N/A | 1-6 |
| odu-no <(1 to 28 StepSize 1)> | ODU Number | Mandatory | N/A | 1-28 |
| antenna-no <(1 to 28 StepSize 1)> | Antenna Number | Mandatory | N/A | 1-28 |
| odu-port-no <1 to 4 StepSize 1> | ODU Port Number | Mandatory | N/A | 1-4 |
| antenna-port-no <1 to 8 StepSize 1> | Antenna Port Number | Mandatory | N/A | 1-4 |

Command Modes

Global configuration mode

Creation of a new Sector Association entry will succeed only if all the following conditions are met:

- The specified BS object exists and is properly configured (see also [Section 3.8](#)):
 - » All mandatory parameters have been configured properly.
 - » The configured frequency is within the valid range defined by the required ODU type in the specified ODU object and the bandwidth parameter.
 - » The Operator ID is the same as Operator ID configured for previously associated BSs.
 - » In all tables that includes only non-mandatory parameters at least one parameter has been configured.
 - » Wherever needed, the apply command has been executed.

- The specified AU object exists (see [Section 3.5](#)).
- The specified ODU object exists (the mandatory parameters required-type and txpower for port 1 have been configured). The configured txpower is within the valid range for the required ODU type (see [Section 3.6](#)).
- The Antenna object exists (the mandatory heading parameter has been configured). The specified Antenna Port No. is within the range defined by the no-of-ports parameter (see [Section 3.7](#)).
- The Sector object exists (mandatory width parameter have been configured). The defined sector-name is unique in the site (shelf).
- An ODU Port (combination of ODU No. and ODU Port No.) cannot appear in more than one entry.
- An AU Port (combination of AU Slot No. and AU Port No.) cannot appear in more than one entry.
- An Antenna Port (combination of Antenna No. and Antenna Port No.) cannot appear in more than one entry.
- A specific Antenna can only be associated with a single Sector.
- In the current release, a specific BS can only be associated with a single AU, and vice versa (If BS 66053 is associated with AU 1, BS 66053 cannot be associated with another AU, and AU 1 cannot be associated with another BS).

3.9.2.2 Deleting a Sector Association Entry

Run the following command to delete a Sector Association entry:

```
npu (config)# no sector-assoc <(1 to 16777215 StepSize 1)> <(1 to 4 StepSize 1) | (7 to 9 StepSize 1)> <(1 to 4 StepSize 1)>
```

**Command
Syntax**

```
npu (config)# no sector-assoc <(1 to 16777215 StepSize 1)> <(1 to 4 StepSize 1)  
| (7 to 9 StepSize 1)> <(1 to 4 StepSize 1)>
```

**Privilege
Level**

10

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|-------------------|-----------|---------------|-----------------|
| <(1 to 16777215 StepSize 1)> | BS ID (bs-id-lsb) | Mandatory | N/A | 1-16777215 |
| <(1 to 4 StepSize 1) (7 to 9 StepSize 1)> | AU Slot ID | Mandatory | N/A | 1-4, 7-9 |
| <(1 to 4 StepSize 1)> | AU Port Number | Mandatory | N/A | 1-4 |

Command

Global configuration mode

Modes

Note that if all Sector Association entries with a particular BS are deleted (meaning the BS is no longer in use), this BS should be removed from all relevant Neighbour BS lists of other BSs.

3.9.2.3 Displaying Configuration Information for Sector Association Entries

To display configuration information of a specific or all Sector Association entries, run the following command:

```
npu# show sector-assoc [bs-id-lsb <(1 to 16777215 StepSize 1)> au-slot-no <(1 to 4StepSize 1) | (7 to 9 StepSize 1)> au-port-no <(1 to 4 StepSize 1)>]
```

Specify the BS ID (bs-id-lsb), AU Slot No. (au-slot-no) and AU Port number (au-port-no) if you want to display configuration information for a particular Sector Association entry. Do not specify values for these parameters if you want to view configuration information for all existing Sector Association entries.

Command**Syntax**

```
npu# show sector-assoc [bs-id-lsb <(1 to 16777215 StepSize 1)> au-slot-no <(1 to 4StepSize 1) | (7 to 9 StepSize 1)> au-port-no <(1 to 4 StepSize 1)> ]
```

Privilege

1

Level

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|-----------------|
| <bs-id-lsb (1 to 16777215 StepSize 1)> | BS ID Specify only if you want to display configuration of a particular Sector Association entry. | Optional | N/A | 1-16777215 |
| <(1 to 4 StepSize 1) (7 to 9 StepSize 1)> | AU Slot ID Specify only if you want to display configuration of a particular Sector Association entry. | Optional | N/A | 1-4, 7-9 |
| <(1 to 4 StepSize 1)> | AU Port Number Specify only if you want to display configuration of a particular Sector Association entry. | Optional | N/A | 1-4 |

Display**Format**

(for each existing

ODU Port if requested for all ODU Ports)

| | |
|----------------|-----------|
| BSIDLsb | : <value> |
| AUSlotNo. | : <value> |
| AUPortNo. | : <value> |
| SectorID | : <value> |
| ODUNo. | : <value> |
| ODUPortNo. | : <value> |
| AntennaNo. | : <value> |
| AntennaPortNo. | : <value> |

Command Modes

Global command mode

3.10 Monitoring Performance of Hardware and Software Components

This section describes the procedures for:

- “Monitoring Hardware Components” on page 656
- “Monitoring Software Components” on page 662
- “Displaying Statistics for Physical and IP Interfaces” on page 663
- “Displaying System Files” on page 664

3.10.1 Monitoring Hardware Components

You can use the CLI to monitor performance of the following hardware components with respect to:

- “Displaying the Card Types Installed in Shelf Slots 1 - 9” on page 656
- “Displaying the Current Status of Shelf Components” on page 657
- “Displaying Utilization of CPU and Memory Resources for the NPU” on page 659
- “Displaying Packets Discarded Via Rate Limiting” on page 660

3.10.1.1 Displaying the Card Types Installed in Shelf Slots 1 - 9

To view the types of cards that are currently installed in slots 1-9 of the shelf run the following command:

npu# show shelf-view

| | |
|-----------------------|----------------------|
| Command Syntax | npu# show shelf-view |
|-----------------------|----------------------|

| | |
|------------------------|---|
| Privilege Level | 1 |
|------------------------|---|

| Display Format | Slot# | Card Type |
|----------------|-------|---------------------------------|
| | 1 | <notInstalled/au4x4Modem/other> |
| | 2 | <notInstalled/au4x4Modem/other> |
| | 3 | <notInstalled/au4x4Modem/other> |
| | 4 | <notInstalled/au4x4Modem/other> |
| | 5 | npu |
| | 6 | notInstalled |
| | 7 | <notInstalled/au4x4Modem/other> |
| | 8 | <notInstalled/au4x4Modem/other> |
| | 9 | <notInstalled/au4x4Modem/other> |

Command Modes Global command mode

3.10.1.2 Displaying the Current Status of Shelf Components

You can view the current status of the following shelf components:

- NPU
- PSU
- PIU
- AVU or (specific fan)

To view the current status of all shelf components, run the following command:

```
npu# show shelf status [{NPU [<slot id>] | PSU [<slot id (1-4)>]
| PIU [<slot id (1-2)>] | AVU | Fan [<fan_num (1-10)>]}]
```



NOTE

Refer [Figure 3-1](#) for more information about the slot IDs assigned to each shelf component.

For example, run the following command to view the status of the PSU, slot# 4:

```
npu# show shelf status PSU 4
```

To view the status of all the shelf components, run the following command:

```
npu# show shelf status
```

Command `npu# show shelf status [{NPU [<slot id>] | PSU [<slot id (1-4)>] | PIU
Syntax [<slot id (1-2)>] | AVU | Fan [<fan_num (1-10)>]}`

**Privilege
Level** 1

**Syntax
Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|----------|---------------|---|
| [{NPU [<slot id>] PSU [<slot id (1-4)>] PIU [<slot id (1-2)>] AVU Fan [<fan_num (1-10)>]} | Indicates the shelf components for which you want to display the current status. Do not specify any component to view the status of all components. | Optional | N/A | <ul style="list-style-type: none"> ■ NPU ■ PSU ■ PIU ■ AVU ■ Fan<(1-10)> |

The displayed information includes the following details:

- NPU:
 - » Slot#: 5
 - » PrsntState: Installed
 - » HWVersion:
 - » HWRevision:
 - » SerialNum

- AVU
 - » PrsntState: Installed/Not Installed
 - » HlthState:Healthy/Faulty

- FAN:
 - » FAN#: (1-10)
 - » HlthState:Healthy/Faulty

- PIU
 - » Slot# (1-2)
 - » AdmnState: Yes/No
 - » ReqHWVer: The configured HW Version- 5 (58A) or 6 (35A)
 - » PrsntState: Installed/Not Installed
 - » HlthState:Healthy/Faulty
 - » OperState: Active/Non-active
 - » InstHWVer: The installed HW Version- 5 (58A,) 6 (35A) or 7 (not installed)

- PSU
 - » Slot# (1-4)
 - » AdmnState: Yes/No
 - » PrsntState: Installed/Not Installed
 - » HlthState:Healthy/Faulty
 - » OperState: Running/Down

3.10.1.3 Displaying Utilization of CPU and Memory Resources for the NPU

To display the utilization of CPU and memory resources for the NPU, run the following command:

```
npu# show resource usage
```

After you run this command, the current CPU and memory usage is displayed.

**NOTE**

For more information about setting thresholds for CPU and memory usage, refer to [“Displaying CPU and Memory Utilization Limits for the NPU” on page 148](#).

Command Syntax `npu# show resource usage`

Privilege Level 1

Display Format

| Resource | Usage[in %] |
|----------|-------------|
| CPU | <value> |
| Memory | 7<value> |

Command Modes Global command mode

3.10.1.4 Displaying Packets Discarded Via Rate Limiting

To retrieve the number of packets discarded because of rate limiting for a specific or all applications (pre-defined, user-defined or all), run the following command:

```
npu# show rate-limit counters {ftp | telnet | tftp | ssh | icmp | snmp | R4-R6 | igmp | eap | arp | all-others | <user-defined-app> | all}
```

**NOTE**

For more information about configuring rate limiting, refer to [“Rate Limiting for the NPU” on page 149](#).

Command Syntax `npu# show rate-limit counters {ftp | telnet | tftp | ssh | icmp | snmp | R4-R6 | igmp | eap | arp | all-others | <user-defined-app> | all}`

Privilege Level 1

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|----------|---------------|--|
| {ftp telnet tftp ssh icmp snmp R4-R6 igmp eap arp all-others <user-defined-app> all} | Indicates the application for which packets discarded by rate limiting are to be displayed. | Optional | N/A | <ul style="list-style-type: none"> ■ ftp ■ telnet ■ tftp ■ ssh ■ icmp ■ snmp ■ R4-R6 ■ igmp ■ eap ■ arp ■ all-others: Refers to all other applications that may send packets to the CPU, and are not in the list of pre-defined or user-defined applications. ■ <user defined> ■ all: Refers to all applications that may attempt to send packets to the CPU. |

```

Display
Format
RATELIMIT COUNTERS: Pre-defined applications
-----
Application      Packets discarded
<Application>   <Number of Packets Discarded>
<Application>   <Number of Packets Discarded> SSH
<Application>   <Number of Packets Discarded> SNMP
RATELIMIT COUNTERS: User-defined applications
-----
Application      Packets discarded
<Application>   <Number of Packets Discarded>

```

```

Command
Modes
Global command mode

```

3.10.2 Monitoring Software Components



IMPORTANT

The software components listed in this section are available only if you are operating the NPU in the ASN-GW mode. Skip this section if you are operating the NPU in the transparent mode.

You can display statistics counters for different functions of the ASN-GW. For more details on the displayed counters refer to the Performance Management document. The following table lists the relevant commands:

Table 3-35: Commands for Displaying Software Components Statistics

| Function | Command for Displaying Counters |
|------------------|---|
| SFA | npu# show sfa statistics |
| Data Path | npu# show datapath statistics |
| AAA Client | npu# show radius statistics |
| Authenticator | npu# show authenticator statistics |
| Context Function | npu# show contextfn statistics |
| DHCP Proxy | npu# show dhcp-proxy statistics |
| DHCP Relay | npu# show dhcp-relay statistics |
| DHCP Server | npu# show dhcp-server statistics |

Table 3-35: Commands for Displaying Software Components Statistics

| | |
|-------------------------------|------------------------------------|
| MS State Change Functionality | npu# show msscfn statistics |
|-------------------------------|------------------------------------|

The following table lists the commands for clearing statistics counters of a selected counters group:

Table 3-36: Commands for Clearing Software Components Statistics*

| Function | Command for Resetting Counters |
|-------------|--|
| SFA | npu# clear sfa statistics |
| AAA Client | npu# clear radius statistics |
| DHCP Proxy | npu# clear dhcp-proxy statistics |
| DHCP Relay | npu# clear dhcp-relay statistics |
| DHCP Server | npu# clear dhcp-server statistics |

* Note that the user can clear statistics counters only for software components that are configurable by the user.

3.10.3 Displaying Statistics for Physical and IP Interfaces

You can display statistics counters for the physical and IP interfaces. For more details on the displayed counters refer to the Performance Management document. The following table lists the commands for displaying statistics counters for the physical and IP interfaces:

Table 3-37: Commands for Displaying Statistics for All Physical and IP Interfaces

| | Example |
|---------------------------|--|
| AU#1 Internal Port | npu# show interface fastethernet 0/1 counters |
| AU#2 Internal Port | npu# show interface fastethernet 0/2 counters |
| AU#3 Internal Port | npu# show interface fastethernet 0/3 counters |
| AU#4 Internal Port | npu# show interface fastethernet 0/4 counters |
| AU#5 Internal Port | npu# show interface fastethernet 0/5 counters |
| AU#6 Internal Port | npu# show interface fastethernet 0/6 counters |
| AU#7 Internal Port | npu# show interface fastethernet 0/7 counters |
| Management Port | npu# show interface fastethernet 0/8 counters |
| Cascade Port | npu# show interface gigabitethernet 0/9 counters |

Table 3-37: Commands for Displaying Statistics for All Physical and IP Interfaces

| | Example |
|-------------------------------|--|
| Data Port | <code>npu# show interface gigabitethernet 0/10 counters</code> |
| Internal Management Interface | <code>npu# show interface internal-mgmt counters</code> |
| External Management Interface | <code>npu# show interface external-mgmt counters</code> |
| Bearer Interface | <code>npu# show interface bearer counters</code> |
| Local Management Interface | <code>npu# show interface local-mgmt counters</code> |

3.10.4 Displaying System Files

The following system files reside in the TFTP boot directory of the NPU:

- Performance data files: Contain performance counters for system modules. (For more information about the modules for which you can configure collection and storage of performance data, refer [Section 3.3.13](#). These files are available in the path, `/tftpboot/management/performance`.
- System log: Contain log and trace messages. (For more information about configuring logging and tracing, refer [Section 3.11.1](#) and [Section 3.3.12](#). These files are available in the path, `/tftpboot/management/system_logs/`.
- Active alarms: Contain a list of currently active alarms. These files are residing in the path, `/tftpboot/management/fault`.
- User history files: Contain information about the commands/tasks executed by the user. These files are available in the path, `/tftpboot/management/user_log`.

To display a list of performance data, system log, active alarms, or user history files, run the following command:

```
npu# show saved {Performance | Active-alarm | Log | User-history}
files [recent <1-65535>]
```

For example, if you want to view the 30 most recently saved log files, residing in the TFTP boot directory of the NPU, run the following command:

```
npu# show saved Log files recent 30
```

| | |
|-----------------------|---|
| Command Syntax | <code>npu# show saved {Performance Active-alarm Log User-history} files [recent <1-65535>]</code> |
|-----------------------|---|

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|-----------|---------------|--|
| Performance Active-alarm Log User-history | Indicates the type of system files that are to be displayed: | Mandatory | N/A | <ul style="list-style-type: none"> <input type="checkbox"/> Performance <input type="checkbox"/> Active-alarm <input type="checkbox"/> Log <input type="checkbox"/> User-history |
| [recent <1-65535>] | Indicates the number of files to be displayed. The most recently saved files are displayed. If you do not specify a value for this parameter, all the files of a particular type are displayed. | Optional | N/A | 1-65535 |

Command Modes Global command mode

3.11 Troubleshooting

3.11.1 Configuring Tracing

The system can generate traces to be used for tracing the execution sequence of a module and determining the actual cause of an erroneous condition. Traces are recorded for events that occur with respect to the following system modules:

- System startup procedures: Refers to all procedures/events that occur during system startup.
- NPU/AU upgrade procedures: Refers to all the procedures executed while upgrading the NPU/AU.
- Fault management procedures: Refers to internal processes that are executed for monitoring erroneous conditions or fault conditions.
- System performance procedures: Refers to internal processes that are executed for monitoring system performance.
- Shelf management procedures: Refers to internal processes that are executed for monitoring the health and temperature of all hardware components (other than the NPU) such as the AU, PIU and PSU.
- WiMAX signaling protocols: Refers to all the protocols that implement the ASN-GW functionality.
- User interface: Refers to the command line or remote management interface used for executing all user-initiated events such as system shut down or reset.
- AU Manager: Refers to all internal processes used for fault, configuration, and performance management for AU.

The system stores a maximum of 1000 trace and log messages, after which the oldest messages are overwritten. First configure system-level tracing, and then configure tracing separately for each module. This section describes the commands to be used for:

- [“Managing System-level Tracing” on page 667](#)
- [“Configuring Module-level Tracing” on page 670](#)

3.11.1.1 Managing System-level Tracing

System-level tracing refers all the procedures to be executed for managing tracing for the entire system. To manage system-level tracing:

- Enable/disable logging for the entire system and specify the destination (file or console) where traces are to be maintained.
- Make periodic backups of trace files

You can, at any time, view the current destination to where traces are maintained. After you have enabled/disabled system-level logging and specified the destination for storing log messages, you can configure logging separately for each module.

This section describes the commands to be used for:

- “Enabling System-level Tracing” on page 667
- “Disabling System-level Tracing” on page 668
- “Displaying the Current Status of Trace Destinations” on page 669

3.11.1.1.1 Enabling System-level Tracing

You can enable traces for all modules across the system and specify the destination where traces should be written. The destination can be either a file stored on the local system or console. To view whether tracing to file or console is enabled or disabled, refer [Section 3.11.1.1.3](#).



NOTE

By default, system-level tracing to file is disabled. If you enable tracing to file, traces are written to the same file that contains log messages. This file is not maintained after system reset. It is recommended that you periodically make a backup of this file on the NPU flash. For details, refer to [Section 3.3.12.1.5](#).

To enable system-level tracing, run the following command:

```
npu(config)# trace destination {file|console}
```

The system maintains a maximum of 1000 trace and log messages, after which the oldest messages are overwritten.

**NOTE**

After you have enabled system-level tracing, you can configure the types of traces (brief or detailed) to be generated for each module. By default, module-level tracing is disabled. To configure tracing for each module, refer to [Section 3.11.1.2](#).

**IMPORTANT**

An error may occur if:

- Tracing is already enabled for the requested destination (file or console).
- An internal error has occurred.

Command Syntax `npu(config)# trace destination {file|console}`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------|--|-----------|---------------|--|
| {file console} | Indicates whether tracing to a file or console is to be enabled for the entire system. | Mandatory | N/A | <ul style="list-style-type: none"> ■ file: Indicates that system-level traces are to be written to a file. ■ console: Indicates that the system-level traces are to be written to a console. |

Command Modes Global configuration mode

3.11.1.1.2 Disabling System-level Tracing

To disable tracing at the system-level, run the following command:

```
npu(config)# no trace destination {file|console}
```



IMPORTANT

An error may occur if:

- Tracing is already disabled for the requested destination (file or console).
- An internal error has occurred.

Command Syntax

```
npu(config)# no trace destination {file|console}
```

Privilege Level

10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|----------------|---|-----------|---------------|--|
| {file console} | Indicates whether tracing to file or console is to be disabled for the entire system. | Mandatory | N/A | <ul style="list-style-type: none"> ■ file: Indicates that tracing to file is to be disabled. ■ console: Indicates that tracing to console is to be disabled. |

Command Modes

Global configuration mode

3.11.1.1.3 Displaying the Current Status of Trace Destinations

To view the current status of trace destinations, that is, whether the system is enabled/disabled for tracing to file or console, run the following command:

```
npu(config)# show trace destination
```

**IMPORTANT**

This command may not be successfully executed if an internal error occurs while processing the result.

Command Syntax `npu(config)# show trace destination`

Privilege Level 1

Display Format `Tracefile(<file name>) : Enabled/Disabled`
 `Console(<console>) : Enabled/Disabled`

Command Modes Global command mode

3.11.1.2 Configuring Module-level Tracing

After configuring module-level tracing, you can specify whether brief or detailed traces should be recorded for the following modules:

- System startup procedures
- NPU/AU upgrade procedures
- Fault management procedures
- System performance procedures
- Shelf Management procedures
- WiMAX signaling protocols
- User interface
- AU Management procedures

You can also disable tracing for a particular module. This section describes the commands to be used for:

- “Configuring Trace Levels” on page 671
- “Disabling Module-level Tracing” on page 672
- “Displaying Trace Levels” on page 673

**NOTE**

By default, module-level tracing is disabled.

3.11.1.2.1 Configuring Trace Levels

To specify the trace level (brief or detailed) for each module, run the following command:

```
npu(config)# trace level
[ {StartupMgr | SWDownload | FaultMgr | PerfMgr | ShelfMgr | SIGASN | UserIF | AU
Mgr} ] {Brief | Detailed}
```

The parameters in this command correspond to the system modules/procedures listed in the following table:

Table 3-38: Modules for which Tracing can be Enabled

| Parameter | Refers to... |
|------------|---|
| StartupMgr | System startup procedures |
| SWDownload | Software upgrade procedures |
| FaultMgr | Fault management procedures |
| ShelfMgr | Shelf management procedures |
| SIGASN | WiMAX signaling protocols |
| UserIF | User-initiated procedures |
| AUMgr | Internal processes used for managing AU |
| PerfMgr | Performance management procedures |

Specify the module name if you want to configure the trace level separately for this module. If you do not specify the name of the module, the trace level that you configure in this command is applied to all modules.

For example, run the following command if you want logs to be created for WiMAX signaling protocols when the trace level configured to Detailed:

```
npu(config)# trace level SIGASN Detailed
```

Command `npu(config)# trace level`
Syntax `[{ StartupMgr | SWDownload | FaultMgr | PerfMgr | ShelfMgr | SIGASN | UserIF | AUMgr }]`
 `{ Brief | Detailed }`

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|--|---|-----------|---------------|--|
| <code>[{ StartupMgr SWDownload FaultMgr PerfMgr ShelfMgr SIGASN UserIF AUMgr }]</code> | Indicates the name of the module for which the trace level is to be configured. If you do not specify any value for this parameter, the same trace level is applied to all modules. For more information about these parameters, refer Table 3-38 . | Optional | N/A | <ul style="list-style-type: none"> ■ StartupMgr ■ SWDownload ■ FaultMgr ■ PerfMgr ■ ShelfMgr ■ SIGASN ■ UserIF ■ AUMgr |
| <code>{ Brief Detailed }</code> | Indicates the trace level to be applied for a particular or all modules. | Mandatory | N/A | <ul style="list-style-type: none"> ■ Brief ■ Detailed |

Command Modes Global configuration mode

3.11.1.2.2 Disabling Module-level Tracing

To disable tracing for one or all modules, run the following command:

```
npu(config)# no trace level
[ { StartupMgr | SWDownload | FaultMgr | PerfMgr | ShelfMgr | SIGASN | UserIF | AUMgr } ]
```

Specify the module if you want to disable tracing for that module. If you do not specify the name of the module, tracing is disabled for all modules.

For example, run the following command if you want to disable tracing for WiMAX signaling protocols:

```
npu(config)# no trace level SIGASN
```

Command npu(config)# no trace level
Syntax [{StartupMgr | SWDownload | FaultMgr | PerfMgr | ShelfMgr | SIGASN | UserIF | AUMgr}]

Privilege Level 10

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|---|
| [{StartupMgr SWDownload FaultMgr PerfMgr ShelfMgr SIGASN UserIF AUMgr}] | Indicates the name of the module for which tracing is to be disabled. If you do not specify any value for this parameter, tracing is disabled for all functionalities. For more information about these parameters, refer Table 3-38 . | Optional | N/A | <ul style="list-style-type: none"> ■ StartupMgr ■ SWDownload ■ FaultMgr ■ PerfMgr ■ ShelfMgr ■ SIGASN ■ UserIF ■ AUMgr\ |

Command Modes Global configuration mode

3.11.1.2.3 Displaying Trace Levels

To view the trace levels configured for one or more modules, run the following command:

```
npu(config)# show trace level
[ {StartupMgr | SWDownload | FaultMgr | PerfMgr | ShelfMgr | SIGASN | UserIF | AUMgr} ]
```

Specify the module for which you want to view the configured trace level. If you do not specify the name of the module, the trace levels configured for all modules is displayed.

Command npu(config)# show trace level
Syntax [{StartupMgr | SWDownload | FaultMgr | PerfMgr | ShelfMgr | SIGASN | UserIF | AUMgr}]

Privilege Level 1

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|--|----------|---------------|--|
| [{StartupMgr SWDownload FaultMgr PerfMgr ShelfMgr SIGASN UserIF AUMgr}] | Indicates the name of the module for which you want to display the configured trace levels. If you do not specify any value for this parameter, the trace levels for all modules are displayed. For more information about these parameters, refer Table 3-38 . | Optional | N/A | <ul style="list-style-type: none"> ■ StartupMgr ■ SWDownload ■ FaultMgr ■ PerfMgr ■ ShelfMgr ■ SIGASN ■ UserIF ■ AUMgr |

Display Format
 Module Name : Trace level
 <module name> : <Trace Level>

Command Modes Global command mode

3.11.2 Configuring Port Monitoring

The port monitoring feature enables you to mirror all incoming and outgoing traffic on an interface to another interface. You can configure one interface as the destination interface to which traffic from multiple interfaces can be mirrored. This section describes the commands to be executed for enabling/disabling port monitoring for source and destination interfaces or displaying configuration information for a particular interface.

To enable port monitoring, you are required to configure:

- **Source interfaces:** Refers to the FastEthernet or GigabitEthernet interface for which incoming, outgoing or both types of traffic is to be monitored. You can configure port monitoring for one or more source interfaces.
- **Destination interface:** Refers to the interface where the packets are sent for analysis.
- **Direction of the traffic** that is to be monitored

The following table lists the interfaces that can be mirrored, and the port numbers mapping to these interfaces:

Table 3-39: Interface to Ethernet Port Mapping

| Ethernet Port | Interface Type | Interface ID |
|---------------|------------------|--------------|
| AU1 | Fast Ethernet | 0/1 |
| AU2 | Fast Ethernet | 0/2 |
| AU3 | Fast Ethernet | 0/3 |
| AU4 | Fast Ethernet | 0/4 |
| AU5 | Fast Ethernet | 0/5 |
| AU6 | Fast Ethernet | 0/6 |
| AU7 | Fast Ethernet | 0/7 |
| MGMT | Fast Ethernet | 0/8 |
| CASCD | Gigabit Ethernet | 0/9 |

This section describes the commands to be used for:

- [“Enabling the Port Monitoring Session” on page 675](#)
- [“Disabling a Port Monitoring Session” on page 678](#)
- [“Displaying Configuration Information for Source and Destination Interfaces” on page 680](#)

3.11.2.1 Enabling the Port Monitoring Session

The port monitoring session refers to the association of a destination interface with one or more source interfaces. You can monitor incoming, outgoing or both types of traffic that is mirrored from the source interface to the destination interface.

**NOTE**

For the current release, only one monitor session can be set up. This means that only one destination can be configured for one or more source interfaces.

Run the following command to enable port monitoring for a source or destination interface:

```
npu(config)# monitor session { source interface <interface-type>
<interface-id> [{ rx | tx | both }] | destination interface
<interface-type > <interface-id>}
```

For example, to configure the Gigabit Ethernet 0/9 interface as the destination interface, you can run the following command:

```
monitor session destination interface gigabitethernet 0/9
```

You can now run the following commands to mirror incoming traffic for the source interfaces, Fast Ethernet 0/1 and Fast Ethernet 0/3:

```
npu(config)# monitor session source interface fastethernet 0/1 rx
```

```
npu(config)# monitor session source interface fastethernet 0/3 rx
```

All incoming and outgoing traffic for the 0/1 and 0/3 interfaces will be mirrored to the 0/9 interface.

**IMPORTANT**

An error may occur if:

- The interface ID of the source or destination port you have specified is invalid. Refer [Table 3-39](#) for the interface ID corresponding to each interface type.
- The port specified as the source interface is already specified as the destination interface for another port or vice versa.

| | |
|-----------------------|---|
| Command Syntax | <pre>npu(config)# monitor session { source interface <interface-type> <interface-id> [{ rx tx both }] destination interface <interface-type > <interface-id>}</pre> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax
Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|-----------|---------------|--|
| <pre>{source interface <interface-type> e> <interface-id> destination interface <interface-type> e > <interface-id> }</pre> | Indicates whether port monitoring is to be enabled for a source or destination interface. Specify the interface type and interface ID for the interface to be configured. | Mandatory | N/A | Interface type: <ul style="list-style-type: none"> <input type="checkbox"/> fastethernet <input type="checkbox"/> gigabitetherne Interface ID: <ul style="list-style-type: none"> <input type="checkbox"/> 0/1 (for Fast Ethernet AU 1 port) <input type="checkbox"/> 0/2 (for Fast Ethernet AU 2 port) <input type="checkbox"/> 0/3 (for Fast Ethernet AU 3 port) <input type="checkbox"/> 0/4 (for Fast Ethernet AU 4 port) <input type="checkbox"/> 0/5 (for Fast Ethernet AU 5 port) <input type="checkbox"/> 0/6 (for Fast Ethernet AU 6 port) <input type="checkbox"/> 0/7 (for Fast Ethernet AU 7 port) <input type="checkbox"/> 0/8 (for Fast Ethernet MGMT port) <input type="checkbox"/> 0/9 (for Gigabit Ethernet CSCD port) |
| <pre>{ rx tx both }</pre> | Indicates whether the incoming, outgoing or both types of traffic is to be mirrored for the source interface. | Optional | Both | <ul style="list-style-type: none"> <input type="checkbox"/> rx <input type="checkbox"/> tx <input type="checkbox"/> both |

Command Global configuration mode
Modes

3.11.2.2 Disabling a Port Monitoring Session

You can disable a port monitoring session for a source or destinations interface for which port monitoring is enabled. Run the following command to disable port monitoring for a source or destination interface:

```
npu(config)# no monitor session [{source interface <interface-type>
<interface-id> [{ rx | tx | both }]|destination interface
<interface-type > < interface-id >}]
```



IMPORTANT

An error may occur if:

- The interface ID of the source or destination port you have specified is invalid. Refer [Table 3-39](#) for the interface ID corresponding to each interface type.
- Port monitoring is not enabled for the source or destination interface for which you are trying to disable port monitoring.

| | |
|-----------------------|---|
| Command Syntax | <pre>npu(config)# no monitor session [{source interface <interface-type> <interface-id> [{ rx tx both }] destination interface <interface-type > < interface-id >}]</pre> |
|-----------------------|---|

| | |
|------------------------|----|
| Privilege Level | 10 |
|------------------------|----|

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Values |
|---|---|-----------|---------------|---|
| <pre>[{source interface <interface-type> e> <interface-id> destination interface <interface-type> e > < interface-id }>}]</pre> | <p>Indicates whether port monitoring is to be disabled for a source or destination interface. Specify the interface type and interface ID for the interface to be configured.</p> <p>If source/destination interface types/id are not specified then all enabled port monitoring sessions will be disabled.</p> | Mandatory | N/A | <p>Interface type:</p> <ul style="list-style-type: none"> ■ fastethernet ■ gigabitetherne <p>Interface ID:</p> <ul style="list-style-type: none"> ■ 0/1 (for Fast Ethernet) ■ 0/2 (for Fast Ethernet) ■ 0/3 (for Fast Ethernet) ■ 0/4 (for Fast Ethernet) ■ 0/5 (for Fast Ethernet) ■ 0/6 (for Fast Ethernet) ■ 0/7 (for Fast Ethernet) ■ 0/8 (for Fast Ethernet) ■ 0/9 (for Gigabit Ethernet) |
| <pre>{ rx tx both }</pre> | <p>Indicates whether the incoming, outgoing or both types of traffic is to be disabled for mirroring for the source interface.</p> | Optional | Both | <ul style="list-style-type: none"> ■ rx ■ tx ■ both |

Command

Global configuration mode

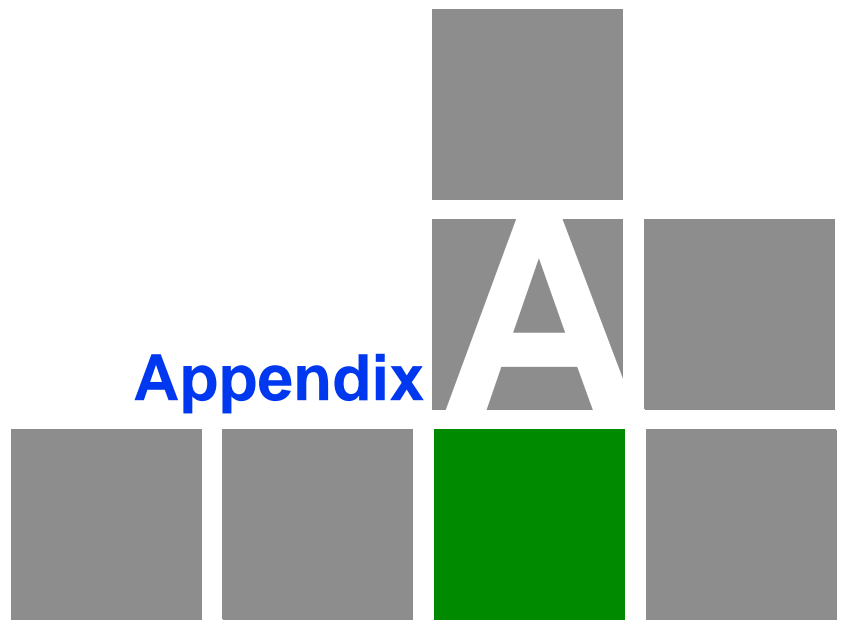
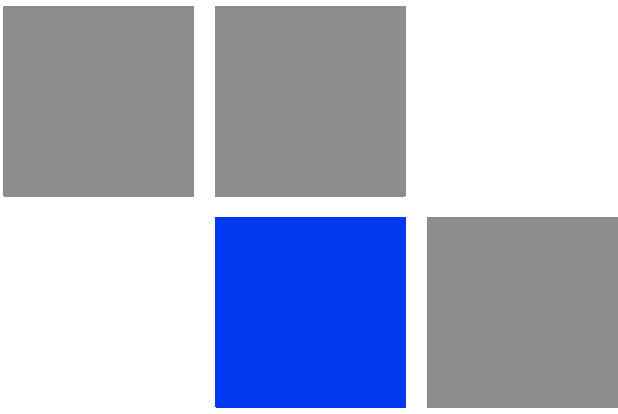
Modes

3.11.2.3 Displaying Configuration Information for Source and Destination Interfaces

To display configuration information for port monitoring, that is, the source and destination interfaces for which this feature is enabled, run the following command:

```
npu# show port-monitoring
```

| | |
|------------------------|---|
| Command Syntax | npu# show port-monitoring |
| Privilege Level | 1 |
| Display Format | Port Monitoring: enabled Monitor Port: Gi0/9 Port Ingress-Monitoring Egress-Monitoring ---- ----- ----- Fa0/1 <status> <status> Fa0/2 <status> <status> Fa0/3 <status> <status> Fa0/4 <status> <status> Fa0/5 <status> <status> Fa0/6 <status> <status> Fa0/7 <status> <status> Fa0/8 <status> <status> Gi0/9 <status> <status> |
| Command Modes | Global configuration mode |



Appendix

Antenna Configurations

In this Appendix:

- [“Introduction” on page 683](#)
- [“Antenna Configurations” on page 684](#)
- [“Antenna Down-Tilt Guidelines” on page 687](#)

A.1 Introduction

The 4Motion Access Units implement four transmit/receive channels and are hardware-capable of supporting adaptive beam-forming and MIMO Matrix B technologies in all possible configurations (only MIMO Matrix B, only beam-forming, both beam-forming and MIMO Matrix B in different zones, and combined beam-forming and MIMO Matrix B). The operation mode is selected via software, giving the maximal flexibility to select the appropriate mode for each scenario and for each user.

The following sections explain the proposed antenna configurations that support the different available diversity scenarios and are prepared for supporting beam-forming and MIMO Matrix B techniques that are not available in the current release.

A.2 Antenna Configurations

A.2.1 Second Order Diversity Configurations

For this scenario, it is proposed to use one of the following configurations:

A.2.1.1 Two-Element Wide Slant (10λ)

This configuration consists of two dual-slant antennas separated by at least 10 wavelengths, when only one antenna element of each is connected, with different polarizations.

This configuration is ready for upgrade to a four-element wide dual-slant array as described in section [Section A.2.2.1](#) by connecting the additional two elements.

This configuration is suitable for supporting future MIMO Matrix B techniques.

A.2.1.2 Two-Element Dual-Slant (X)

This configuration consists of a single dual-slant antenna. This configuration is suitable for supporting future MIMO Matrix B techniques.

A.2.2 Fourth Order Diversity Configurations

For this scenario, the following configuration is proposed:

A.2.2.1 Four-Element Wide Dual-Slant (10λ)

This configuration consists of two dual-slant antennas separated by at least 10 wavelengths. This configuration is suitable for supporting future MIMO Matrix B techniques.

A.2.3 Beam-Forming/MIMO Configurations

This section provides guidelines for future antenna diversity configurations supporting beam-forming/MIMO Matrix B techniques (not available in current release).

In the receive direction, it is always recommended to use four receive branches. In the transmit direction, it is recommended to use two transmit branches for MIMO Matrix B configurations, and four transmit branches for beam-forming and beam-forming plus MIMO Matrix B configurations.

A.2.3.1 Four-Element Wide Double Dual-Slant (10λ)

This configuration consists of two pairs of dual-slant antennas separated by at least 10 wavelengths, when only one antenna element of each is connected, with

different polarizations in each side. This configuration is suitable for combined beam-forming plus MIMO Matrix B operation. This configuration also provides second order diversity.

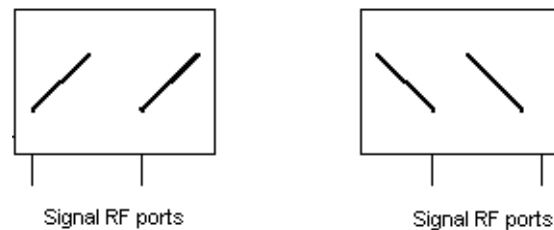


Figure A-1: Four-Element Wide Double Dual-Slant

A.2.3.2 Narrow Double Dual-Slant Array (XX)

A closely spaced dual-slant pair also allows for MIMO Matrix B operation combined with beam-forming, providing second order diversity as well.

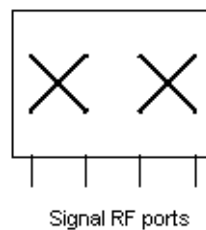


Figure A-2: Narrow Double Dual-Slant Array

A.2.3.3 Wide Double Dual-Slant Array ($X \sim 10\lambda \sim X$)

A widely spaced dual-slant pair allows for MIMO Matrix B operation combined with beam-forming, providing at the same time fourth order diversity. The beam-forming gain in this configuration is lower than in the configurations previously described.



Figure A-3: Wide Double Dual-Slant Array

The 4Motion solution can accommodate a wide spectrum of antenna arrays besides the ones described above.

A.3 Antenna Down-Tilt Guidelines

Antennas may support mechanical down tilt (MDT), electrical down tilt (EDT) and remote electrical tilt (RET). Typical adjustment ranges for MDT and EDT are 0 to -10 degrees.

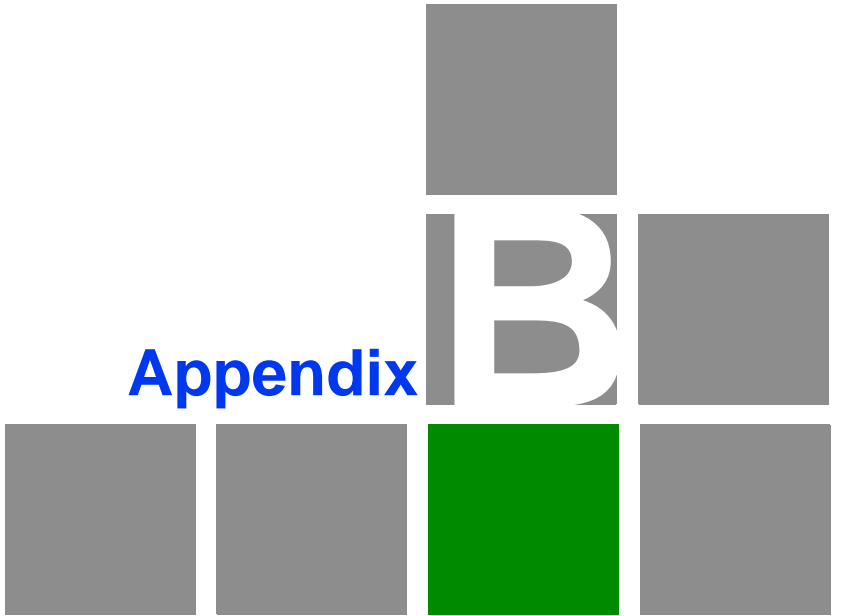
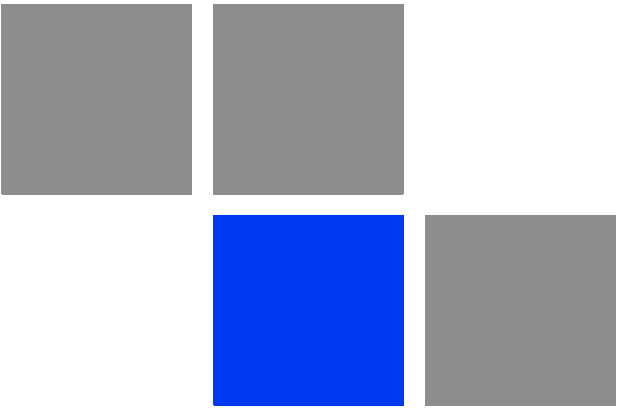
As a ground rule it is recommended to minimize the usage of MDT, preferring EDT instead.

The degree of tilt to be used is highly dependant on sector configuration and specific environment considerations and conditions. It also depends on network rollout stage - in the initial stage, when not many sites are deployed in a specific area, a certain tilt is be applied to maximize the coverage footprint of the existing sites, and at a later stage, when more sites are built, the degree of tilt per sector may be increased to control the inter-site interference.

Table A-1 shows typical numbers provided only as a reference for initial site deployment.

Table A-1: Typical EDT Values

| Environment | EDT (degrees) |
|-------------|---------------|
| Dense urban | 6 |
| Urban | 6 |
| Suburban | 4 |
| Rural | 2 |



Appendix

Software Upgrade

In This Appendix:

- [“Before You Start” on page 690](#)
- [“Upgrading the NPU” on page 691](#)
- [“Upgrading the AU” on page 698](#)

B.1 Before You Start

To load new NPU/AU software files to the unit's flash memory, you are required to execute a simple loading procedure using a TFTP application.

Before performing the upgrade procedure, ensure that you have the most recent instructions, and that the correct software files are available on your computer.

The NPU flash stores two software files that can be used for NPU upgrade, and three software files to be used for AU software upgrade. When you download a new software file to the NPU flash, the oldest file is overwritten with the newly downloaded file.



NOTE

To view the current NPU software files, refer to [“Displaying the Operational, Shadow, and Running Versions” on page 695](#).

To view the current AU software files, refer to [“Displaying the Shadow, Running, and Operational Versions” on page 705](#). To delete an existing AU file, refer to [“Displaying Images Residing in the AU Flash” on page 710](#).

B.2 Upgrading the NPU

To upgrade the NPU, first configure the TFTP server that you want to use for the software version download, and then download the image to the NPU flash. You can then reboot the NPU with the downloaded image. After you have tested and verified that the NPU is functioning properly with the shadow image, you can make the shadow image as the operational image.



NOTE

The operational image is the default image used for rebooting the NPU after system reset. The shadow image is the downloaded image that you can use to boot up the NPU. However, the next time the system is reset, it is the operational image that is used to boot up the NPU.

B.2.1 Executing the Upgrade Procedure



To execute the upgrade procedure:

- “Step 1: Configuring the TFTP Server”
- “Step 2: Triggering Software Download”
- “Step 3: Resetting and Booting the NPU Using the Shadow Image”
- “Step 4: Making the Shadow Version Operational”

B.2.1.1 Step 1: Configuring the TFTP Server

To initiate the NPU software upgrade procedure, start with configuring the TFTP server to be used for the software version download.

To configure the TFTP server, run the following command:

```
npu(config)# software version server <server ip>
```



IMPORTANT

An error may occur if you execute this command when another software download is already in progress.

Command Syntax `npu(config)# software version server <server ip>`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------|---|-----------|---------------|------------------|
| <server ip> | Denotes the IP address of the TFTP server to be used for the software version download. | Mandatory | N/A | Valid IP address |

Command Modes Global configuration mode



NOTE

After you have configured the TFTP server, you can, at any time, view the TFTP server configuration information. For more details, refer to [“Displaying the TFTP Configuration Information” on page 696](#).

B.2.1.2 Step 2: Triggering Software Download

After the TFTP server is configured, run the following command to trigger the download of the shadow image to be used for software upgrade:

```
npu(config)# load to shadow <shadow image name>
```

After you execute this command, the shadow image is downloaded to the NPU flash, and the shadow image that is currently residing in the flash is overwritten.

**IMPORTANT**

An error may occur if you execute this command when:

- Another software download is already in progress.
- The shadow image to be downloaded is already residing in the NPU flash as the shadow or operational image.
- The TFTP server is not configured. For more information about configuring the TFTP server, refer to [“Step 1: Configuring the TFTP Server” on page 691](#).
- The name of the shadow image to be downloaded is incorrect or the format of the file name is incorrect. Because the file to be downloaded is a compressed file, always be suffix the file name with **.tgz**.
- The NPU is running with the shadow image.
- The system does not have enough memory available for software download.

Command Syntax `npu(config)# load to shadow <shadow image name>`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|---------------------|--|-----------|---------------|-------------------------------|
| <shadow image name> | Denotes the name of the shadow image that is to be downloaded to the NPU flash. The name of this file should always be suffixed with .tgz . | Mandatory | N/A | <Valid shadow image name>.tgz |

Command Modes Global configuration mode

**NOTE**

After you have triggered the download procedure, you can at any time, obtain information about the download status. For more details, refer to [“Displaying the Download Status Information” on page 696](#).

B.2.1.3 Step 3: Resetting and Booting the NPU Using the Shadow Image

After the shadow image is downloaded to the NPU flash, run the following command to reboot the NPU with the downloaded shadow image:

```
npu(config)# reboot from shadow [<shadow image name>]
```

In the above command, you can specify the shadow image name that is to be used for NPU reboot. If you do not specify a value for the shadow image name parameter, the shadow image that was last downloaded is used for rebooting the NPU.

Command Syntax `npu(config)# reboot from shadow [<shadow image name>]`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Value |
|---------------------|---|----------|---------------|-------------------------|
| <shadow image name> | Denotes the name of the shadow image that is to be used for rebooting the NPU. If you do not specify a value for this parameter, the last downloaded shadow image is used for rebooting the NPU. | Optional | N/A | Valid shadow image name |

Command Modes Global configuration mode

B.2.1.4 Step 4: Making the Shadow Version Operational

After you reset the NPU with the shadow image, and ensure that the NPU is functioning correctly with the shadow image, you can make the shadow version as the operational version. The next time you reset the system, the shadow image that you make operational is used for rebooting the NPU.

To make the shadow version as the operational version, run the following command.

```
npu(config)# switchover npu
```

After you run this command, the operational image is swapped with the shadow image. The next time you reset the NPU, the system boots up with the swapped image.

**IMPORTANT**

If you reset the NPU before running this command, the NPU boots up with the image that is currently the operational image.

**IMPORTANT**

An error may occur if you run this command when the NPU is not running with the shadow image.

Command Syntax `npu(config)# switchover npu`

Command Modes Global configuration mode

B.2.2 Displaying the Operational, Shadow, and Running Versions

You can, at any time (during or after the software download procedure), run the following command to view the operational, shadow, and running versions of the NPU software:

```
npu# show software version npu
```

**NOTE**

The operational version is the default software version that is used for rebooting the NPU after system reset.

The shadow version is the downloaded software version that you can use to boot up the NPU. However, it is the operational software version that is used to boot up the NPU after the next system reset.

The running version is the software version (can be either the operational or shadow version) that is currently running on the system.

Command Syntax `npu# show software version npu`

Display Format

```
Mananged Object   : NPU
Operational Version : <Operational Version>
Shadow Version     : <Shadow Version>
Running Version    : <Shadow Version>
```

Command Modes Global command mode

B.2.3 Displaying the TFTP Configuration Information

You can, at any time (during or after the download procedure), run the following command to view the configuration information about the TFTP server that is used for the NPU software upgrade:

```
npu# show software version server
```



IMPORTANT

An error may occur if configuration information is requested for a TFTP server that is not configured. For more information about configuring the TFTP server to be used for software download, refer to [“Step 1: Configuring the TFTP Server” on page 691](#).

Command Syntax npu# show software version server

Display Format Software version server <Server IP Address>

Command Modes Global command mode

B.2.4 Displaying the Download Status Information

After initiating software download, you can, at any time, view the download progress for the NPU image. The progress of the image download procedure can be in any of the following stages:

- Downloading
- Decompressing
- Validating
- Copying
- Writing to flash

- Download complete

An error may occur while:

- Downloading the software image from the TFTP server
- Decompressing the downloaded file
- Validating the downloaded file
- Copying of the software image to the NPU flash

Run the following command to view the download status:

```
npu# show download status npu
```

After you run the above command, the TFTP server address, image name and version, download status, and the number of bytes that have been downloaded, are displayed.



IMPORTANT

An error may occur if you execute this command when no download procedure is in progress.

Command Syntax `npu# show download status npu`

Display Format

| | | |
|-------------------------|---|-----------------------------|
| Mananged Object | : | NPU |
| Image Name | : | <Downloaded Image Name> |
| Software version server | : | <IP Address of TFTP Server> |
| Download Status | : | <Download Status> |
| Download Bytes | : | <Bytes Downloaded> |

Command Modes Global command mode

B.3 Upgrading the AU

To upgrade the AU software, first configure the TFTP server that you want to use for software version download, and then download the image to the NPU flash. You can store up to three images to be used for AU upgrade. You are required to create a mapping between the AU slot and the image residing in the NPU flash. Each time the AU is reset or if you are inserting/re-inserting the AU card in the AU slot for, the AU boots up using the AU-to-image mapping that you specify.

You can specify separate AU-to-image mappings for each AU slot. In addition, you are required to create a mapping that is to be used as the default mapping. This default mapping is used for boot up all AU slots for which a mapping does not exist. After you have created the mapping, download the mapped image from the NPU flash to the AU flash (for the AU slot for which the mapping is created). You can then reboot the AU using the downloaded image.

If the image that you have used to reboot the AU is not the image currently mapped to this AU slot, the AU-to-image mapping for that AU slot is updated with this image (provided you have not deleted this image from the NPU flash before rebooting the AU).



IMPORTANT

Before inserting an AU card, ensure that an AU-to-image mapping exists, which is to be used for booting the AU. If you insert the AU card when there is no existing mapping, the AU is immediately shut down. For more information about creating a (default) AU-to-image mapping, refer [“Step 3: Creating the AU-to-Image Mapping” on page 701](#).

After you create the AU-to-image mapping, execute the following command (for details refer [Section B.3.1.5](#)).

```
npu(config)# reboot au [<au slot-id>] shadow [<shadow image name>]
```

After you execute this command, the AU boots up with the mapped image.

B.3.1 Procedure for Upgrading the AU



To execute the AU upgrade procedure:

- [“Step 1: Configuring the TFTP Server” on page 699](#)
- [“Step 2: Downloading the AU Image to the NPU Flash” on page 700](#)
- [“Step 3: Creating the AU-to-Image Mapping” on page 701](#)

- [“Step 4: Downloading the Image to the AU Flash” on page 702](#)
- [“Step 5: Resetting and Rebooting the AU with the Shadow Image” on page 703](#)



IMPORTANT

If you are inserting/re-inserting the AU card, you are required to execute this procedure before inserting and powering up the AU card. If an error occurs while booting up of the AU, it is reset upto three times, after which it is completely shut down.

B.3.1.1 Step 1: Configuring the TFTP Server

To create an AU-to-image mapping, you need to first configure the TFTP server to be used for downloading the image to the NPU flash.



IMPORTANT

The same TFTP server is used for downloading the software image to be used for upgrading the NPU/AU. For detailed information about the configuring the TFTP server, refer [Section B.2.1.1](#).

Run the following command to configure the TFTP server to be used for software version download.

```
npu(config)# software version server <server ip>
```



IMPORTANT

An error may occur if you execute this command when another software download is already in progress.

Command Syntax `npu(config)# software version server <server ip>`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-------------|---|-----------|---------------|------------------|
| <server ip> | Denotes the IP address of the TFTP server to be used for the software version download. | Mandatory | N/A | Valid IP address |

Command Modes Global configuration mode

B.3.1.2 Step 2: Downloading the AU Image to the NPU Flash

After the TFTP server is configured, run the following command to download the AU image (to be used for software upgrade) to the NPU flash:

```
npu(config)# Download AU image <AU image name>
```



IMPORTANT

The NPU flash can store a maximum of three AU images. If you download a new AU image to the NPU flash, the oldest image (that is not used for any mapping) is overwritten. To delete an AU image that is used for mapping, you must first delete the AU-to-image mapping. For details, refer to [“Deleting the AU-to-Image Mapping” on page 708](#). It is recommended that you frequently delete AU images that are no longer required, from the NPU flash. For details, refer to [“Displaying Images Residing in the AU Flash” on page 710](#).

After you execute this command, the AU image is downloaded to the NPU flash.



IMPORTANT

An error may occur if you execute this command when:

- Another software download is already in progress.
- The AU image to be downloaded is already residing in the NPU flash.
- The TFTP server is not configured. For more information about configuring the TFTP server, refer to [“Step 1: Configuring the TFTP Server” on page 699](#).
- The shadow image name that you have specified does not exist.
- All the AU images residing in the NPU flash are mapped to an AU slot. Any image that is mapped to an AU slot cannot be deleted or overwritten.

Command Syntax

```
npu(config)# Download AU image <AU image name>
```

Syntax

Description

| Parameter | Description | Presence | Default Value | Possible Values |
|-----------------|--|-----------|---------------|------------------|
| <AU image name> | Denotes the name of the AU image that is to be downloaded from the TFTP server to the NPU flash. | Mandatory | N/A | Valid image name |

Command Global configuration mode
Modes

B.3.1.3 Step 3: Creating the AU-to-Image Mapping

After you have downloaded the AU image to the NPU flash, you can map this image to a specific AU slot. You can also use this image to create the default AU-to-image mapping.



IMPORTANT

If you are inserting/re-inserting the AU card, run this command before inserting and powering up the AU card.

To create an AU slot ID-to-image mapping, run the following command:

```
npu(config)# map au {<au slot-id|default>} <image name>
```

Specify the slot ID if you want to map the image to a specific AU slot. Specify **default** if you want to use this as the default mapping for all AU cards for which a mapping does not exist.



IMPORTANT

Always create a default AU-to-image mapping to be used for booting one or more AU cards, before inserting/re-inserting the AU card.

Command Syntax `npu(config)# map au {<au slot-id|default>} <image name>`

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Value |
|---|--|-----------|---------------|---|
| <code><au slot-id/default></code> | Indicates the AU to which the image is to be mapped. | Mandatory | N/A | <ul style="list-style-type: none"> ■ 1, 2, 3, 4, 7, 8, 9 (valid slot ID) ■ default: if you want to create a default AU-to-image mapping that can be used by all AUs for which a mapping does not exist. |
| <code><image name></code> | Denotes the name of the image to be mapped to the AU slot. | Mandatory | N/A | Valid image name |

Command Modes

Global configuration mode

B.3.1.4 Step 4: Downloading the Image to the AU Flash

The AU flash can store two AU images: shadow and operational. The operational image is the image that is currently mapped to the AU slot, and is used for booting the AU when the AU is reset. The shadow image is the image that is downloaded from the NPU flash.

After you have created the AU-to-image mapping for a particular AU slot, download the image from the NPU flash to the AU flash. To download the image to the AU flash, run the following command.

```
npu(config)# load to au [au slot-id] shadow <shadow image name>
```




IMPORTANT

An error may occur if:

- The AU image is not present in the NPU flash
- You execute this command immediately after inserting the AU card, and it is still registering itself with the 4Motion system.
- An AU image is currently being downloaded to the AU flash.
- The AU software image version is incompatible with the AU hardware.

Command Syntax `npu(config)# load to au [<au slot-id>] shadow <shadow image name>`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Value |
|-----------------------------------|--|----------|---------------|-------------------------------------|
| [<au slot-id>] | Indicates the slot ID of the AU to which the image is to be downloaded from the NPU flash. | Optional | N/A | 1, 2, 3, 4, 7, 8, 9 (Valid slot ID) |
| shadow <shadow image name> | Denotes the name of the shadow image to be downloaded from the NPU to the AU flash. | Optional | N/A | Valid image name |

Command Modes Global configuration mode

B.3.1.5 Step 5: Resetting and Rebooting the AU with the Shadow Image

After you have downloaded the image to the AU flash, you can run the following command to reset the system and boot the AU with the shadow image. After you run the following command, the shadow image is used to boot the AU after it is reset.

If the AU is successfully rebooted with the shadow image, then this image becomes the operational image for AU. If an error occurs in booting up the AU with the shadow image, the AU boots up with the operational image instead.

However, the AU is immediately shut down after it boots up with the operational image.

```
npu(config)# reboot au [<au slot-id>] shadow [<shadow image name>]
```

Specify the image name that you have used for creating the mapping in, “[Step 3: Creating the AU-to-Image Mapping](#)” on page 701. If you define another image name in this command, the AU-to-image mapping is updated with this image (provided this image is also residing in the NPU flash). Specify the slot ID if you want to reboot a specific AU slot with this image. If you want to reboot all the AU slots with this image, do not specify any slot ID. In addition, the mappings for all AUs are updated with this image.

After you run this command, the software version that is used to reboot the AU is the operational version. This version will be used for rebooting after the next AU reset.



IMPORTANT

An error may occur if:

- The AU image is not present in the NPU flash.
- You execute this command immediately after inserting the AU card, and it is still registering itself with the 4Motion system.
- The software image version is incompatible with the hardware.
- Rebooting the AU with the shadow image has failed. (The AU boots up with the operational image, and then initiates self-shut down.)



IMPORTANT

Do not delete this image from the NPU flash because this image is used to boot up the AU the next time it is reset. If you delete this image from the NPU flash, the default AU-to-image mapping will be used to reboot the AU.

Command Syntax

```
npu(config)# reboot au [<au slot-id>] shadow <shadow image name>
```

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Value |
|---------------------|--|-----------|---------------|-------------------------|
| [<au slot-id>] | Denotes the slot ID of the AU to be rebooted with the image residing in the AU flash. If you do not specify a value for this parameter, the image is used to reboot all AUs. | Optional | N/A | 1, 2, 3 4, 7, 8, 9 |
| <shadow image name> | Denotes the name of the AU image to be used for rebooting the AU. If you do not specify the name of the shadow image, the AU reboots with the shadow image residing in the AU flash. | Mandatory | N/A | Valid shadow image name |

Command Modes

Global configuration mode

B.3.2 Displaying the Shadow, Running, and Operational Versions

You can, at any time (during or after the software download procedure), run the following command to view the shadow, running, and operational versions used for the AU:

```
npu# show software version au [<au slot-id>]
```

Specify the AU slot ID, if you want to view the software version for a specific AU slot. Do not specify the AU slot ID if you want to view the software versions used for all AU slots.

**NOTE**

The operational version is the default software version that is used for rebooting the AU after AU reset.

The shadow version is the downloaded software version that you can use to boot the AU. However, the next time the system is reset, it is the operational software version that is used to boot the NPU.

The running version is the software version (is either the operational or shadow version) that is currently running on the system.

Command Syntax `npu# show software version au [<au slot-id>]`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Value |
|----------------|---|----------|---------------|---------------------|
| [<au slot-id>] | Indicates the AU slot ID for which information about the shadow, operational, and running images is to be displayed. If you do not specify a value for this parameter, information about the shadow, operational, and running images for all AUs is displayed. | Optional | N/A | 1, 2, 3, 4, 7, 8, 9 |

Command Modes Global command mode

Display Format

```

Managed Object      :  AU
AU Slot-ID          :  <au slot-d>
Operational Version :  <oper_ver>
Shadow Version      :  <shaow_ver>
Running Version     :  <running_ver>

```

B.3.3 Displaying the Download Status Information

After initiating software download, you can, at any time, view the download progress for the AU image to the NPU flash. The progress of image download can be in any of the following stages:

- Downloading
- Validating
- Copying

- Writing to flash
- Download complete

An error may occur while:

- Downloading the software image from the TFTP server
- Validating the downloaded file
- Copying of the software image to the NPU flash

Run the following command to view the download status of the AU image to NPU flash:

```
npu# show software download status au
```



IMPORTANT

An error may occur if you execute this command when no download procedure is in progress.

Command Syntax `npu# show software download status au`

Display Format

```
Mananged Object           : AU
Image Name                 : <Downloaded Image Name>
Software version server   : <Server IP address>
Download Status           : <Download Status>
Download Bytes            : <Download bytes>
```

Command Modes Global command mode

B.3.4 Displaying the AU-to-Image Mapping

You can run the following command to view the AU-to-image mapping for a particular AU slot:

```
npu# show au [{<au slot-id|default>}] mapping
```

Specify the AU slot ID to display the AU-to-image mapping for a specific AU slot. If you want to view the default AU-to-image mapping, specify **default**. If you do not specify the slot ID or default, all the AU-to-image mappings are displayed.

Command Syntax `npu# show au [{<au slot-id|default>}] mapping`

Syntax Description

| Parameter | Description | Presence | Default Value | Possible Value |
|----------------------|--|-----------|---------------|--|
| <au slot-id default> | Indicates the AU for which the AU slot to image mapping is to be displayed. If you do not specify a value for this parameter, all the AU-to-image mappings are displayed. | Mandatory | N/A | <ul style="list-style-type: none"> ■ 1, 2, 3, 4, 7, 8, 9 (Valid slot ID) ■ default: if you want to display the default AU-to-image mapping |

Command Modes Global command mode

Display Format AU slot id Software image
 <AU slot-id> <Image Name>

B.3.5 Deleting the AU-to-Image Mapping

Run the following command to delete an existing AU-to-image mapping:

```
npu(config)# delete au <au slot-id> mapping
```

Specify the AU slot ID for which you want to delete the existing mapping. After you delete this mapping, the AU boots up using the default AU-to-image mapping after the next AU reset.

Command Syntax `npu(config)# delete au <au slot-id> mapping`

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Value |
|--------------|--|-----------|---------------|----------------|
| <au slot-id> | Denotes the slot ID of the AU for which the AU slot to image mapping is to be deleted. | Mandatory | N/A | Valid slot ID |

Command

Global configuration mode

Modes

B.3.6 Deleting AU Images from the NPU Flash

The NPU flash can store a maximum of three AU images. When you download a new AU image to the NPU flash, the oldest image (that is not mapped to any AU) is overwritten. It is recommended that you frequently delete AU images that are no longer required in the NPU flash.

**NOTE**

You cannot delete any image that is already mapped to a particular AU. To delete an image, you are required to first delete the corresponding mapping, and then delete the image from the NPU flash. For more information about deleting an AU-to-image mapping, refer to [“Deleting the AU-to-Image Mapping” on page 708](#).

To delete an AU image from the NPU flash, run the following command:

```
npu(config)# erase au image <au image name>
```

**NOTE**

An error may occur if:

- The image to be deleted is not residing in the NPU flash
- The image is mapped to a particular AU slot.

Command

```
npu(config)# erase au image <au image name>
```

Syntax

Syntax**Description**

| Parameter | Description | Presence | Default Value | Possible Value |
|-----------------|--|-----------|---------------|------------------|
| <au image name> | Denotes the name of the AU image that is to be deleted from the NPU flash. | Mandatory | N/A | Valid image name |

Command

Global configuration mode

Modes

B.3.7 Displaying Images Residing in the AU Flash

To display the images residing in the AU flash, run the following command:

```
npu# show au image repository
```

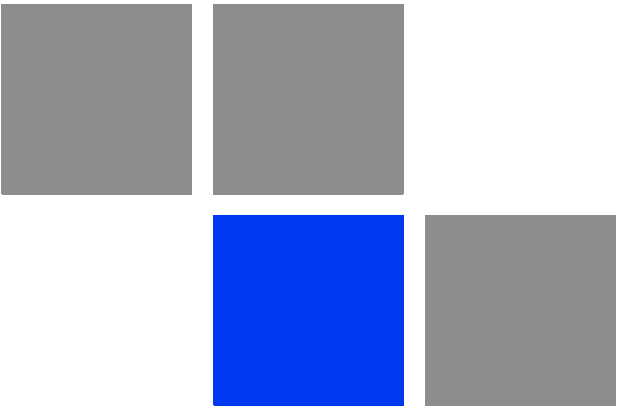
Command

```
npu# show au image repository
```

Syntax**Command**

Global command mode

Modes



Glossary

| | |
|-------------------|--|
| 10Base-T | An Ethernet cabling standard where data is transmitted in baseband spectrum of a twisted pair cable (i.e. Cat 3 or better, Cat 5 in most networks) with data rate of 10 Mbps. (10 for 10Mbps, Base for baseband, T for twisted pair). 10Base-T implementation uses star topology. |
| 100Base-T | An Ethernet cabling standard where data is transmitted in baseband spectrum of a twisted pair cable (i.e. Cat 5 or better), with data rate of 100 Mbps. 100Base-T implementation uses star topology. 100Base-T is also known as Fast Ethernet. |
| 1000Base-T | An Ethernet cabling standard where data is transmitted in baseband spectrum of a twisted pair cable (Cat 5E or better), with data rate of 1000 Mbps. 1000Base-T implementation uses star topology. 1000Base-T is also known as Gigabit Ethernet. |
| 3G | Third generation wireless service, designed to provide high data speeds, always-on data access, and greater voice capacity.. |
| AAA | Authentication, Authorization, and Accounting (pronounced "triple a."). A system (or several systems) that controls what resources users have access to, and keeps track of the activity of users over the network. |
| AAS | Adaptive Antenna System, also called Advanced Antenna System, is a technology to enable the network operators to increase the wireless network capacity. In addition, adaptive antenna systems offer the potential of increased spectrum efficiency, extended range of coverage and higher rate of frequency reuse. Adaptive antenna systems consist of multiple antenna elements at the transmitting and/or receiving side of the communication link, whose signals are processed adaptively in order to exploit the spatial dimension of the mobile radio channel. Depending on whether the processing is performed at the transmitter, receiver, or both ends of the communication link, the adaptive antenna technique is defined as multiple-input single-output (MISO), single-input multiple-output (SIMO), or multiple-input multiple-output (MIMO). |
| ACL | Access Control List. A filtering mechanism used by many access IP routers that controls which traffic may be received or transmitted on an interface or port. |
| AISG | Antenna Interface Standards Group. The objective of the group is to facilitate the introduction of base station antennas with remotely adjustable tilt by agreeing open standards for the associated data transmission system. |
| ANSI | American National Standards Institute. A voluntary organization composed of corporate, government, and other members that coordinates standards-related activities, approves U.S. national standards, and develops positions for the United States in international standards organizations. |
| ARP | Address Resolution Protocol. Internet protocol used to map an IP address to a MAC address. Defined in RFC 826. |
| ARQ | Automatic Repeat reQuest. A communication technique in which the receiving device detects errors and requests retransmissions. |
| ASCII | American Standard Code for Information Interchange. A code for representing English characters as numbers, with each letter assigned a number from 0 to 127. |

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| ASN | Access Service Network. An ASN is defined as a complete set of network functions needed to provide radio access to a WiMAX subscriber. An ASN is comprised of network elements such as one or more Base Stations (BS) and one or more ASN gateways (ASN-GW). An ASN may be shared by more than one Connectivity Service Network (CSN). |
| ASN-GW | Access Service Network Gateway. The ASN-GW is a network entity that acts as a gateway between the ASN and CSN. The ASN functions hosted in an ASN-GW may be viewed as consisting of two groups - the decision point (DP) that provides control functionality and enforcement point (EP) that provides bearer transport. |
| ASP | Application Service Provider. A third-party entity that manages and distributes software-based services and solutions to customers across a wide area network from a central data center. |
| AU | Access Unit |
| AVU | Air Ventilation Unit |
| AWG | An electronics industry acronym for American Wire Gauge. AWG is a measure of the thickness of copper, aluminum and other wiring. |
| AWGN | Additive White Gaussian Noise. Also known as WGN. Constant spectral energy at all frequencies with a probability histogram that follows a Gaussian bell shaped curve. |
| BE | Best Effort. Service supporting applications with no strict rate or delay requirements. |
| BS | Base Station. The WiMAX BS is an entity that implements the WiMAX MAC and PHY in compliance with the IEEE 802.16e standard. A BS operates on one frequency assignment, and incorporates scheduler functions for uplink and downlink resources. |
| BTS | Base Transceiver Station. A wireless network element that provides the radio interface of the network. The BTS comprises the radio transmission and reception devices, and also manages the signal processing related to the air interface. |
| BW | Bandwidth |
| BWA | Broadband Wireless Access |
| CALEA | The Communications Assistance for Law Enforcement Act is a United States wiretapping law passed in 1994. In its own words, the purpose of CALEA is: To amend title 18, United States Code, to make clear a telecommunications carrier's duty to cooperate in the interception of communications for Law Enforcement purposes, and for other purposes. CALEA was intended to preserve the ability of law enforcement agencies to conduct electronic surveillance by requiring that telecommunications carriers and manufacturers of telecommunications equipment modify and design their equipment, facilities, and services to ensure that they have the necessary surveillance capabilities. |

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| CDMA | Code Division Multiple Access is a second generation (2G) cellular technology defined by Qualcomm in IS-95 and IS-2000. A coding scheme, used as a modulation technique, in which multiple channels are independently coded for transmission over a single wideband channel. In some communication systems, CDMA is used as an access method that permits carriers from different stations to use the same transmission equipment by using a wider bandwidth than the individual carriers. On reception, each carrier can be distinguished from the others by means of a specific modulation code, thereby allowing for the reception of signals that were originally overlapping in frequency and time. Thus, several transmissions can occur simultaneously within the same bandwidth, with the mutual interference reduced by the degree of orthogonality of the unique codes used in each transmission. |
| CE | The CE-marking is a European Union regulatory community sign. It symbolizes the compliance of the product with all essential requirements relating to safety, public health, consumer protection. |
| CINR | Carrier-to-Interference plus Noise Ratio (expressed in dB) |
| CIR | Committed Information Rate. The rate (in bits per second) at which a network guarantees to transfer information under normal conditions, averaged over a minimum increment of time. |
| CLI | Command Line Interface. A user interface that accepts typed commands to instruct the managed device on the task to perform. |
| cPCI | Compact Peripheral Component Interface. a standard for computer backplane architecture and peripheral integration, defined and developed by the peripheral component interconnect (PCI) industrial computers manufacturers group (PICMG). Designed to provide rugged, high-density systems. |
| CPU | Central Processing Unit. |
| CQI | Channel Quality Information |
| CS | Convergence Sublayer. Particular protocols that are responsible for gathering and formatting higher layer information so it can be processed by the lower layers. |
| CSMA/CD | Carrier Sense Multiple Access with Collision Detection. Media-access mechanisms wherein devices ready to transmit data first check the channel for a carrier. If no carrier is sensed for a specific period of time, a device can transmit. If two devices transmit at once, a collision occurs and is detected by all colliding devices. This collision subsequently delays retransmissions from those devices for some random length of time. Ethernet and IEEE 802.3 use CSMA/CD access. |
| CSN | Connectivity Service Network. A CSN is defined as a set of network functions that provide IP connectivity services to WiMAX subscribers and all the IP core network functions. A CSN is comprised of network elements such as routers, proxy/servers, user databases, and inter-working gateway devices. |
| CTC | Convolutional Turbo Code is a type of turbo codes with some of the convolutional schemes used. For its high-performance error correction nature, CTC is the iterative decoding scheme of choice as evidenced by their wide adoption in standards bodies. |
| DCD | Downlink Channel Descriptor. |

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| DHCP | Dynamic Host Configuration Protocol. A protocol for dynamically assigning IP addresses from a pre-defined list to nodes on a network. Using DHCP to manage IP addresses simplifies client configuration and efficiently utilizes IP addresses. |
| DL | Down Link |
| DSCP | Differentiated Service Code Point, AKA DiffServ: An alternate use for the ToS byte in IP packets. Six bits of this byte are being reallocated for use as the DSCP field where each DSCP specifies a particular per-hop behavior that is applied to the packet. |
| DNS | Domain Naming System. A system that stores information about hostnames and domain names. DNS provides an IP address for each hostname, and lists the e-mail exchange servers accepting e-mail addresses for each domain. |
| DoS | Denial of Service |
| DSL | Digital Subscriber Line. A technology that exploits unused frequencies on copper telephone lines to transmit traffic typically at multi-megabit speeds. DSL can allow voice and high-speed data to be sent simultaneously over the same line. Because the service is 'always available,' end-users don't need to dial in or wait for call set-up. |
| EAP | Extensible Authentication Protocol, A protocol used between a user station and an authenticator or authentication server. It acts as a transport for authentication methods or types. It, in turn may be encapsulated in other protocols, such as 802.1x and RADIUS. EAP is defined by RFC 2284. |
| EDT | Electrical Down-Tilt |
| EIRP | Equivalent Isotropic Radiated Power. The apparent power transmitted towards the receiver, if it is assumed that the signal is radiated equally in all directions. The EIRP is equal to the power (in dBm) at the antenna port, plus the power gained from the directivity of the antenna (in dBi). |
| EMC | Electro-Magnetic Compatibility. The capability of equipment or systems to be used in their intended environment within designed efficiency levels without causing or receiving degradation due to unintentional EMI (Electro Magnetic Interference). EMC generally encompasses all of the electromagnetic disciplines. |
| EMS | Element Management System. An element management system (EMS) manages one or more of a specific type of telecommunications network element (NE). Typically, the EMS manages the functions and capabilities within each NE but does not manage the traffic between different NEs in the network. |
| EN | Abbreviation for "European Norm". |
| ERT-VR | Extended Real-Time Variable Rate. Service supporting real-time applications with variable bit rates that require guaranteed data rate, delay and low jitter, such as voice. |
| ETS | European Telecommunications Standard |

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| ETSI | European Telecommunications Standards Institute. A non-profit organization producing voluntary telecommunications standards used throughout Europe, some of which have been adopted by the EC as the technical base for Directives or Regulations. |
| FA | Foreign Agent. A mobility agent on the foreign network that can assist the mobile node in receiving datagrams delivered to the care-of address. (The foreign network is the network to which the mobile node is attached when it is not attached to its home network, and on which the care-of-address is reachable from the rest of the Internet). See also HA (Home Agent). |
| FCC | Federal Communications Commission. A U.S. government agency that supervises, licenses, and controls electronic and electromagnetic transmission standards. |
| FEC | Forward Error Correction. A method of communicating data that can correct errors in transmission on the receiving end. Prior to transmission, the data is put through a predetermined algorithm that adds extra bits specifically for error correction to any character or code block. If the transmission is received in error, the correction bits are used to check and repair the data. |
| FFT | Fast Fourier Transform. An algorithm for converting data from the time domain to the frequency domain; often used in signal processing. |
| FTP | File Transfer Protocol. A protocol for exchanging files over the Internet. FTP uses the Internet's TCP/IP protocols to enable data transfer. |
| GMT | Greenwich Mean Time. On January 1, 1972, GMT was replaced as the international time reference by Coordinated Universal Time (UTC), maintained by an ensemble of atomic clocks around the world. |
| GPS | Global Positioning System. A system that uses satellites, receivers and software to allow users to determine their precise geographic position. |
| GRE | General Routing Encapsulation. A method or technique of adding an IP standard header and trailer to a message that does not follow IP protocols. The encapsulated message is sent over a public network while received messages are stripped of the wrapper and processed. This permits non-standard data and totally encrypted messages to use the Internet. The technology is an important element in Virtual Private Network (VPN) offerings. |
| HA | Home Agent. A node on the home network (the network at which the mobile node seems reachable, to the rest of the Internet, by virtue of its assigned IP address) that effectively causes the mobile node to be reachable at its home address even when the mobile node is not attached to its home network. |
| HARQ | Hybrid Automatic Repeat reQuest (Hybrid ARQ) is a scheme wherein information blocks are encoded for partial error correction at receiver and additional, uncorrected errors are retransmitted. |
| HO | Hand-Over. |
| HP | Abbreviation for "Horizontal Pitch" or standard width measurement which defines the width for plug-in modules in the 19" construction system. One HP equals 5.08 mm. |

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| IANA | Internet Assigned Numbers Authority. A regulatory group that maintains all assigned and registered Internet numbers, such as IP and multicast addresses. |
| ICMP | Internet Control Message Protocol is a protocol designed to allow hosts to send error and control messages to other network devices. Basically ICMP provides communication between the Internet Protocol (IP) software on network devices. The short ICMP messages use IP packets and are usually processed by the IP software, rather than presented to the user at the application level. |
| IEC | The International Electro-Technical Commission. an international organization that writes standards for safety for electrical and other equipment. Many IEC standards were adopted from the German VDE, which was the main historical standards-writing body in Europe. One goal of the IEC is to harmonize differing standards between European countries to facilitate free trade. The U.S. Underwriters Laboratories (UL) and the Canadian CSA are members of the IEC. |
| IEEE | Institute of Electrical and Electronics Engineers. IEEE (pronounced I-triple-E) is an organization composed of engineers, scientists, and students. The IEEE is best known for developing standards for the computer and electronics industry. In particular, the IEEE 802 standards for local-area networks are widely followed. |
| IEEE 802.16 | Also known as WiMAX. A group of broadband wireless communications standards for metropolitan area networks (MANs) developed by a working group of the IEEE. |
| IEEE 802.16e | 802.16e, also known as 802.16-2005, is an IEEE standard addressing mobility of wireless broadband (WiMax). IEEE 802.16e is sometimes called Mobile WiMAX, after the WiMAX forum for interoperability. 802.16e, based on an existing WiMAX standard 802.16a, adds WiMAX mobility in the 2-to-6 GHz-licensed bands. 802.16e allows for fixed wireless and mobile Non Line of Sight (NLOS) applications primarily by enhancing the OFDMA (Orthogonal Frequency Division Multiple Access). |
| IEEE 802.1p | A QoS method - A three-bit value that can be placed inside an 802.1Q frame tag. |
| IEEE 802.1q | The IEEE 802.1q standard defines the operation of VLAN Bridges that permit the definition, operation and administration of Virtual LAN topologies within a Bridged LAN infrastructure. The 802.1q specification establishes a standard method for inserting VLAN membership information into Ethernet frames. A tag field containing VLAN (and/or 802.1p priority) information can be inserted into an Ethernet frame, carrying VLAN membership information. |
| IEEE 802.3 | A Local Area Network protocol suite commonly known as Ethernet. Ethernet uses Carrier Sense Multiple Access bus with Collision Detection CSMA/CD. This method allows users to share the network cable. However, only one station can use the cable at a time. A variety of physical medium dependent protocols are supported. |
| IF | Intermediate Frequency. Radio communications systems modulate a carrier frequency with a baseband signal in order to achieve radio transmission. In many cases, the carrier is not modulated directly. Instead, a lower IF signal is modulated and processed. At a later circuit stage, the IF signal is converted up to the transmission frequency band. |

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| IGMP | <p>Internet Group Membership Protocol) is protocol used by IP hosts to report their host group memberships to any immediately neighboring multicast routers.</p> <p>The use of IP multicasting in TCP/IP networks is defined as a TCP/IP standard in RFC 1112. In addition to defining address and host extensions for how IP hosts support multicasting, this RFC also defines the IGMP version 1. Version 2 of IGMP is defined in RFC 2236. Both versions of IGMP provide a protocol to exchange and update information about host membership in specific multicast groups.</p> |
| IP | <p>Internet Protocol. The standard that defines how data is transmitted over the Internet. IP bundles data, including e-mail, faxes, voice calls and messages, and other types, into "packets", in order to transmit it over public and private networks.</p> |
| IPv4 | <p>Internet Protocol version 4 is still the most commonly used Internet Protocol (IP) version, initially deployed in 1983. IPv4 addresses are 32-bit numbers often expressed as 4 octets in "dotted decimal" notation (for example, 192.0.32.67). IPv6 is the newer version of the Internet Protocol (deployment began in 1999) that offers many improvements over IPv4, such as 128-bit IP addresses, and will eventually completely replace IPv4.</p> |
| ISP | <p>Internet Service Provider. A company that provides access to the Internet.</p> |
| KEK | <p>Key Encryption Key. Key that encrypts or decrypts other key for transmission or storage.</p> |
| LED | <p>Light Emitting Diode.</p> |
| MAC | <p>Media Access Control. The lower of the two sub-layers of the data link layer defined by the IEEE. The MAC sub-layer handles access to shared media, such as whether token passing or contention will be used.</p> |
| MAC Address | <p>Standardized data link layer address that is required for every port or device that connects to a LAN. Other devices in the network use these addresses to locate specific ports in the network and to create and update routing tables and data structures. MAC addresses are 6bytes long and are controlled by the IEEE.</p> |
| MDT | <p>Mechanical Down-Tilt</p> |
| MIB | <p>Management Information Base. A database of objects that can be monitored by a network management system. SNMP uses standardized MIB formats that allow any SNMP tools to monitor any device defined by a MIB.</p> |
| MIMO | <p>Multiple Input, Multiple Output. A technique for faster wireless communication. MIMO allows for the use of multiple transmitter and receiver antennas to increase throughput and range.</p> |
| MIP | <p>Mobile IP. A protocol used to provide IP mobility to IPv4-based nodes, defined in RFC-2002.</p> |
| MIR | <p>Maximum Information Rate. Specifies the maximum rate of information that can be available to a user. The MIR is used by the traffic policing mechanism to prevent users from sending excess traffic to the network.</p> |

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| MTU | Maximum Transmission Unit. This is the greatest amount of data that can be transferred in one physical frame on the network. If a packet that has a smaller MTU than the packet's frame length is sent, fragmentation will occur. For TCP MTU can range from 68 to 1500 bytes. Larger MTUs provide for lower overhead (fewer headers). |
| MS | Mobile Station. The equipment used by the end user to access the WiMAX network. |
| NAI | Network Address Identifier. Used to create a new unique subscriber identifier, when a subscriber enters the network without a user name. |
| NAP | Network Access Provider. A NAP is a business entity that provides WiMAX radio access infrastructure to one or more Network Service Providers (NSPs). An NAP implements this infrastructure using one or more ASNs. |
| NAS | Network Access Server. A Network Access Server operates as a client of RADIUS. The client is responsible for passing user information to designated RADIUS server(s), and then acting on the response. |
| NMS | Network Management System. A system responsible for managing at least part of a network. An NMS is generally a reasonably powerful and well-equipped computer, such as an engineering workstation. NMSs communicate with agents to help keep track of network statistics and resources. |
| NOC | Network Operations Center. The physical space from which a typically large telecommunications network is managed, monitored and supervised. |
| NPU | Network Processing Unit |
| NRT-VR | Non Real Time - Variable Rate. Service supporting non-real-time applications with variable bit rates that require guaranteed data rate and are delay-tolerant such as file transfers |
| NSP | Network Service Provider. An NSP is a business entity that provides IP connectivity and WiMAX services to WiMAX subscribers compliant with the established service level agreement. The NSP concept is an extension of the Internet service provider (ISP) concept, providing network services beyond Internet access. To provide these services, an NSP establishes contractual agreements with one or more NAPs. An NSP may also establish roaming agreements with other NSPs and contractual agreements with third-party application providers (e.g. ASP, ISP) for the delivery of WiMAX services to subscribers. From a WiMAX subscriber standpoint, an NSP may be classified as a home or visited NSP. |
| NWG | Network Working Group. The WiMAX Forum's Network Working Group (NWG) is responsible for developing the end-to-end network requirements, architecture, and protocols for WiMAX, using IEEE 802.16e-2005 as the air interface. |
| OA&M | Operation, Administration & Maintenance. Provides the facilities and the personnel required to manage a network. |
| OCXO | Oven-Controlled crystal oscillator often used in navigation system clocks, frequency standards, MTI radars, wireless base stations, telecom timing modules and precision test equipment. |
| ODU | Outdoor Unit |

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| OFDM | Orthogonal Frequency Division Multiplexing: A method for multiplexing signals, which divides the available bandwidth into a series of frequencies known as tones. Orthogonal tones do not interfere with each other when the peak of one tone corresponds with the null. The rapid switching, frequency-hopping technique is intended to allow more robust data service. |
| OFDMA | Orthogonal Frequency Division Multiple Access. It's a logical extension of OFDM and a modulation/multiple access technique. OFDMA divides a signal into sub-channels (i.e. groups of carriers), with each sub-channel (or several sub-channels) being allocated to a different subscriber. |
| OOB | Out-Of-Band. Out-of-band management is a method wherein management information exchanged between the network element and its associated management application is carried on a separate communications path from the user data that is coming to/from the network element. Conversely, in-band (IB) management is management data that is carried across the same interface as user data. |
| OSPF | Open Shortest Path First. A link-state IGP (Interior gateway protocol) that makes routing decisions based on the shortest-path-first (SPF) algorithm (also referred to as the Dijkstra algorithm). |
| OSS | Operations Support Systems. A system that processes telecommunications information supporting various management functions, such as billing, customer care, network management, inventory control, maintenance, trouble ticket reporting, surveillance and service provisioning; not considered a network element or part of the network itself. |
| PDA | Personal Digital Assistant. A handheld computing device. |
| PDU | Protocol Data Unit. The concept of a PDU is used in the OSI reference model. From the perspective of a protocol layer, a PDU consists of information from the layer above plus the protocol information appended to the data by that layer. . For example, a frame is a PDU of the Data Link Layer, and a packet is a PDU of the Network Layer. |
| PEP | Policy Enforcement Point is an entity in a policy-based system where decisions are enacted. |
| PER | Packet Error Rate. In a digital transmission, PER is the percentage of packets with errors divided by the total number of packets that have been transmitted, received or processed over a given time period. |
| PHS | Payload Header Suppression. PHS is a technique used to mask redundant cell, frame, or packet header information when one or more of the same type of higher layer data PDU's are transported as the payload of an 802.16 MAC PDU. |
| PHY | PHYSical Layer. The physical, or lowest, layer of the OSI Network Model. In a wireless network, the PHY defines parameters such as data rates, modulation method, signaling parameters, transmitter/receiver synchronization, etc. Within an actual radio implementation, the PHY corresponds to the radio front end and baseband signal processing sections. |

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| PICMG | The PCI Industrial Computers Manufacturer's Group is a consortium of over 450 industrial computer product vendors. PICMG's charter is to develop specifications for PCI-based systems and boards for use in industrial computing applications. PICMG 2.x series is a specification for PCI-based equipment that combines the power of low cost PCI silicon and software with the rugged Eurocard packaging. |
| PIM | Protocol Independent Multicast. A protocol-independent multicast routing protocol. PIM sparse mode routes to multicast groups that might span wide-area and interdomain internets. PIM dense mode is a flood-and-prune protocol. |
| PIU | Power Interface Unit |
| PKM | Privacy Key Management. The key management protocol used in 802.16 to obtain the needed authorization to use the media. PKM protocol operates in two phases: AK (Authorization Key) phase, and TEK (Traffic Encryption Keys). AK represents the secret key used to obtain TEK in the exchanges between MS and BS in subsequent phases. |
| PSU | Power Supply Unit |
| PUSC | Partial Usage of Sub-Channels |
| QAM | Quadrature Amplitude Modulation. A technique used in wireless applications to double the available bandwidth by combining two amplitude-modulated signals. The two combined signals differ in phase by 90 degrees; this technique doubles the bandwidth by combining the two signals at the source before transmission, transmitting digital data at a rate of 4 bits per signal change. |
| QoS | Quality of Service. Measure of performance for a transmission system that reflects its transmission quality and service availability. |
| QPSK | Quadrature Phase Shift Keying. A data transfer technique used in coaxial cable networks that sends data using modulating signals. Four different phases represent data, with each signal's information determined by the signal before it. For example, if a phase stays the same from one signal to the other, the information has not changed. |
| RADIUS | Remote Authentication Dial-In User Service, an authentication and accounting system used by many Internet Service Providers (ISPs). When you connect to the system you must enter your username and password. This information is passed to a RADIUS server, which checks that the information is correct, and then authorizes access to the system. |
| RET | Remote Electrical Tilt |
| RF | Radio frequency. An AC signal of high enough frequency to be used for wireless communications. |
| RFC | Request For Comments. The name of the result and the process for creating a standard on the Internet. New standards are proposed and published on the Internet, as a Request For Comments. The proposal is reviewed by the Internet Engineering Task Force. |
| RoHS | Restriction of the use of certain Hazardous Substances in electrical and electronic equipment, reference EC Directive 2002/95/EC of 27 January 2003. |

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| RS-232 | A serial interface published by the EIA (Electronic Industries Association) for asynchronous data communication over distances up to a few hundred feet. Characterized by a single-ended (not differential) physical layer, it uses one signal wire for transmission, another for reception, and a common wire (ground), plus some timing and control signals. |
| RS-422 | RS-422 is a serial interface standard in which data is sent in a differential pair (two wires, or twisted pair cable), which allows greater distances and higher data rates than non-differential serial schemes such as RS-232. |
| RSSI | Received Signal Strength Indicator. A signal or circuit that indicates the strength of the incoming (received) signal in a receiver. |
| R&TTE | Radio & Telecommunications Terminal Equipment. The R&TTE Directive 1999/5/EC governs the marketing and use of R&TTE equipment. With the exception of a few categories of equipment, the Directive covers all equipment, which uses the radio frequency spectrum. It also covers all terminal equipment attached to public telecommunication networks. |
| RTC | Real Time Clock. |
| RTD | Round Trip Delay. |
| RTP | Real Time Protocol. An Internet protocol for transmitting real-time data such as audio and video. RTP itself does not guarantee real-time delivery of data, but it does provide mechanisms for the sending and receiving applications to support streaming data. Typically, RTP runs on top of the UDP protocol, although the specification is general enough to support other transport protocols. |
| RT-VR | Real Time - Variable Rate. Service supporting real-time applications with variable bit rates that require guaranteed data rate and delay such as streaming video. |
| Rx | Receive |
| SBS | Serving Base Station |
| SDU | Service Data Unit. A set of data that is sent by a user of services of a given layer, and is transmitted to a peer service user semantically unchanged. The SDU is the data that a certain layer will pass to the layer below. |
| SFA | Service Flow Authorization. |
| SFM | The Service Flow Manager (SFM) located in the BS is responsible for the creation, admission, activation, modification, and deletion of IEEE 802.16e-2005 service flows. It consists of an Admission Control (AC) function, data path function and the associated local resource information. AC decides whether a new service flow can be admitted to the system. |

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| SNMP | Simple Network Management Protocol. A network management protocol that provides a means to monitor and control network devices, and to manage configurations, statistics collection, performance, and security. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters. |
| SSH | Secure Shell is a protocol for secure remote login and other secure network services over an insecure network. |
| TBS | Target Base Station |
| TCP | Transmission Control Protocol. Connection-oriented transport layer protocol that provides reliable full-duplex data transmission. TCP is the part of the TCP/IP suite of protocols that is responsible for forming data connections between nodes that are reliable, as opposed to IP, which is connectionless and unreliable. |
| TCXO | Temperature-Compensated crystal oscillator often used for frequency control in tactical radios, telecom timing modules (Stratum 3 Type), wireless systems, and reference oscillators. |
| TDD | Time Division Duplex is a duplexing technique dividing a radio channel in time to allow downlink operation during part of the frame period and uplink operation in the remainder of the frame period. |
| TEK | Traffic Encryption Key - a symmetric key that is used to encrypt/decrypt messages. |
| TFTP | Trivial File Transfer Protocol. Simplified version of FTP that allows files to be transferred from one computer to another over a network, usually without the use of client authentication. |
| ToS | Type of service. The method of handling traffic using information extracted from the fields in the ToS byte to differentiate packet flows. |
| Tx | Transmit |
| TÜV | TÜV is a safety-testing laboratory with headquarters in Germany. TÜV can test products for compliance with IEC or VDE requirements. Products that have the TÜV insignia have been tested by TÜV for compliance with applicable standards for sale in the European market. |
| U | Abbreviation for "Unit" or standard height measurement which defines the vertical height for plug-in modules in the 19" construction system. One U equals 44.5 mm. |
| UCD | Uplink Channel Descriptor. |
| UDP | User Datagram Protocol. Connectionless transport layer protocol in the TCP/IP protocol stack. UDP is a simple protocol that exchanges datagrams without acknowledgments or guaranteed delivery, requiring that error processing and retransmission be handled by other protocols. UDP is defined in RFC 768. |
| UGS | Unsolicited Grant Service. Service supporting real-time applications generating fixed-rate data such as voice over IP without silence suppression. |

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| UL | <p>1. Abbreviation for "Underwriters' Laboratory". The UL is an independent organization which conducts safety tests and product certifications.</p> <p>2. Up Link</p> |
| UTC | <p>Coordinated Universal Time. The reference for the official time used by all countries in the world, maintained by an ensemble of atomic clocks around the world, and it is independent from the time zones. The modern implementation of Greenwich Mean Time.</p> |
| VLAN | <p>Virtual Local Area Network. A group of devices on one or more LANs that are configured with the same VLAN ID so that they can communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Used also to create separation between different user groups.</p> |
| VoIP | <p>Voice over Internet Protocol. Provides an advanced digital communications network that bypasses the traditional public switched telephone system and uses the Internet to transmit voice communication. VoIP enables people to use the Internet as the transmission medium for telephone calls by sending voice data in packets using IP rather than by traditional circuit switched transmissions of the PSTN.</p> |
| WCS | <p>Wireless Communications Service is defined by the Federal Communications Commission as radio communications that may provide fixed, mobile, radio location, or satellite communication services to individuals and businesses within their assigned spectrum block and geographical area. The WCS is in the 2.3 GHz band from 2,305 to 2,320 MHz and 2,345 to 2,360 MHz..</p> |
| WEEE | <p>Waste Electronic and Electrical Equipment. The purpose of Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) is, as a first priority, the prevention of waste electrical and electronic equipment (WEEE), and in addition, the reuse, recycling and other forms of recovery of such wastes so as to reduce the disposal of waste. It also seeks to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment, e.g. producers, distributors and consumers and in particular those operators directly involved in the treatment of waste electrical and electronic equipment.</p> |
| Wi-Fi | <p>Wi-Fi (short for wireless fidelity and pronounced 'why-fye') is a term for certain types of wireless local area network that use specifications in the IEEE 802.11 family. The term Wi-Fi was created by an organization called the Wi-Fi Alliance, which oversees tests that certify product interoperability.</p> |
| WiMAX | <p>WiMAX is an acronym that stands for Worldwide Interoperability for Microwave Access. WiMAX is a standards-based technology enabling the delivery of last mile wireless broadband access as an alternative to cable and DSL. WiMAX provides fixed, nomadic, portable, and mobile wireless broadband connectivity without the need for direct line-of-sight to a base station.</p> |
| XML | <p>Extensible Markup Language. Language used for defining a set of markers, called tags, that define the function and hierarchical relationships of the parts of a document or data set. It is a flexible way to create common information formats and share both the format and the data, most commonly on the web. It generally similar to HTML and helps share information in a consistent way. XML is "extensible" because, unlike HTML, the markup symbols are unlimited and self-defining.</p> |