

## **OsmoBSC VTY Reference**

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# Chapter 1

## VTY reference

The Virtual Tele Type (VTY) has the concept of nodes and commands. This chapter lists all nodes and the commands that are available within the node. Each command can consist out of several words followed by a variable number of parameters. There are common patterns for the parameters, these include IPv4 addresses, number ranges, a word, a line of text and choice. The following will explain the commonly used patterns.

| Pattern                   | Example          | Explanation                                  |
|---------------------------|------------------|--|
| A.B.C.D                   | 127.0.0.1        | A IPv4 address                               |
| TEXT                      | example01        | A single string without any spaces, tabs     |
| .TEXT                     | Some information | A line of text                               |
| (OptionA OptionB OptionC) | OptionA          | A choice between a list of available options |
| <0-10>                    | 5                | A number from a range                        |

Table 1.1: VTY Parameter Patterns

The application is configured through the VTY. For configuring a system one needs to enter the **enable** node and then enter the **configure terminal** command. Then the configuration can be made according to the available commands. After the system has been configured one can use the **write** command to write the new configuration to the configuration file. The new file will be used after the application has been restarted.

The following table lists the TCP port numbers of the VTY for the various Osmocom GSM related programs as used on sysmocom products:

| Port Number | Software            |
|-------------|---------------------|
| 4240        | osmo-pcu            |
| 4241        | osmo-bts            |
| 4242        | osmo-nitb, osmo-bsc |
| 4243        | osmo-bsc_mgcp       |
| 4244        | osmo-bsc_nat        |
| 4245        | osmo-sgsn           |
| 4246        | osmo-gbproxy        |

Table 1.2: VTY port numbers

### 1.1 Common Commands

These commands are available on all VTY nodes. They are listed here only once, to unclutter the VTY reference.

### 1.1.1 end

#### Command

```
end
```

#### Parameters

end

End current mode and change to enable mode.

### 1.1.2 exit

#### Command

```
exit
```

#### Parameters

exit

Exit current mode and down to previous mode

### 1.1.3 help

#### Command

```
help
```

#### Parameters

help

Description of the interactive help system

### 1.1.4 list [with-flags]

#### Command

```
list [with-flags]
```

#### Parameters

list

Print command list

[with-flags]

Also print the VTY attribute flags

---

### 1.1.5 show running-config

#### Command

```
show running-config
```

#### Parameters

##### show

Show running system information

##### running-config

running configuration

### 1.1.6 show vty-attributes

#### Command

```
show vty-attributes
```

#### Parameters

##### show

Show running system information

##### vty-attributes

List of VTY attributes

### 1.1.7 show vty-attributes (application|library|global)

#### Command

```
show vty-attributes (application|library|global)
```

#### Parameters

##### show

Show running system information

##### vty-attributes

List of VTY attributes

##### application

Application specific attributes only

##### library

Library specific attributes only

##### global

Global attributes only

---

### 1.1.8 write

Command

```
write
```

Parameters

write

Write running configuration to memory, network, or terminal

### 1.1.9 write file [PATH]

Command

```
write file [PATH]
```

Parameters

write

Write running configuration to memory, network, or terminal

file

Write to configuration file

[PATH]

Set file path to store the config, or replace if already exists

### 1.1.10 write memory

Command

```
write memory
```

Parameters

write

Write running configuration to memory, network, or terminal

memory

Write configuration to the file (same as write file)

### 1.1.11 write terminal

Command

```
write terminal
```

Parameters

write

Write running configuration to memory, network, or terminal

terminal

Write to terminal

## 1.2 view

The view node is the default node when connecting to the VTY interface. This node does not require any additional permission and allows to introspect the application.

### 1.2.1 enable [expert-mode]

Command

```
enable [expert-mode]
```

Parameters

enable

Turn on privileged mode command

[expert-mode]

Enable the expert mode (show hidden commands)

### 1.2.2 logging color (0|1)

Command

```
logging color (0|1)
```

Parameters

logging

Configure logging

color

Configure color-printing for log messages

0

Don't use color for printing messages

1

Use color for printing messages

### 1.2.3 logging disable

Command

```
logging disable
```

Parameters

logging

Configure logging

disable

Disables logging to this vty

### 1.2.4 logging enable

This command is required to make logging commands available on the telnet VTY.

Command

```
logging enable
```

Parameters

logging

Configure logging

enable

Enables logging to this vty

### 1.2.5 logging filter all (0|1)

Disable/enable general log output on a given target. Typically, 'logging filter all 1' allows to see the usual log output on a given target. Setting to '0' can be useful when logging to the telnet VTY console: mute all log output to allow typing VTY commands on the telnet prompt without interference from log output; 'logging filter all 1' then re-enables logging in the same log output configuration as before. Some applications provide more specific filters, e.g. to log a given IMSI only. To employ such filters, set 'logging filter all 0' to disable general logging, and then enable a more specific filter instead.

Command

```
logging filter all (0|1)
```

Parameters

logging

Configure logging

filter

Filter log messages

all

Do you want to log all messages?

0

Only print messages matched by other filters

1

Bypass filter and print all messages

### 1.2.6 logging filter imsi IMSI

Command

```
logging filter imsi IMSI
```

Parameters

---

**logging**

Configure logging

**filter**

Filter log messages

**imsi**

Filter log messages by IMSI

**IMSI**

IMSI to be used as filter

**1.2.7 logging level (rll|mm|rr|rs|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|c...****Command**

```
logging level (rll|mm|rr|rs|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts| ↵
as|cbs|lcs|asci|reset|loop|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats| ↵
lgsup|loap|lss7|lsccp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lndata|lnsignal| ↵
liuup|lpfcp|lcsn1|lio) (debug|info|notice|error|fatal)
```

**Parameters****logging**

Configure logging

**level**

Set the log level for a specified category

**rll**

A-bis Radio Link Layer (RLL)

**mm**

Layer3 Mobility Management (MM)

**rr**

Layer3 Radio Resource (RR)

**rs**

A-bis Radio Signalling Link (RSL)

**nm**

A-bis Network Management / O&amp;M (NM/OML)

**pag**

Paging Subsystem

**meas**

Radio Measurement Processing

**msc**

Mobile Switching Center

**ho**

Hand-Over Process

---

hodec  
    Hand-Over Decision

ref  
    Reference Counting

ctrl  
    Control interface

filter  
    BSC/NAT IMSI based filtering

pcu  
    PCU Interface

lcls  
    Local Call, Local Switch

chan  
    lchan FSM

ts  
    timeslot FSM

as  
    assignment FSM

cbs  
    Cell Broadcast System

lcs  
    Location Services

asci  
    Advanced Speech Call Items (VGCS/VBS)

reset  
    RESET/ACK on A and Lb interfaces

loop  
    Control loops

lglobal  
    Library-internal global log family

llapd  
    LAPD in libosmogsm

linp  
    A-bis Input Subsystem

lmux  
    A-bis B-Subchannel TRAU Frame Multiplex

lmi  
    A-bis Input Driver for Signalling

---



---

lmib  
A-bis Input Driver for B-Channels (voice)

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

lstats  
Statistics messages and logging

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lnsdata  
GPRS NS layer data PDU

lnsignal  
GPRS NS layer signal PDU

liuup  
Iu UP layer

---

|        |   |
|--------|---|
| lpfcp  | libosmo-pfcp Packet Forwarding Control Protocol |
| lcsn1  | libosmo-csn1 Concrete Syntax Notation 1 codec   |
| lio    | libosmocore IO Subsystem                        |
| debug  | Log debug messages and higher levels            |
| info   | Log informational messages and higher levels    |
| notice | Log noticeable messages and higher levels       |
| error  | Log error messages and higher levels            |
| fatal  | Log only fatal messages                         |

### 1.2.8 logging level force-all (debug|info|notice|error|fatal)

#### Command

```
logging level force-all (debug|info|notice|error|fatal)
```

#### Parameters

##### logging

Configure logging

##### level

Set the log level for a specified category

##### force-all

Globally force all logging categories to a specific level. This is released by the 'no logging level force-all' command. Note: any 'logging level <category> <level>' commands will have no visible effect after this, until the forced level is released.

##### debug

Log debug messages and higher levels

##### info

Log informational messages and higher levels

##### notice

Log noticeable messages and higher levels

##### error

Log error messages and higher levels

##### fatal

Log only fatal messages

### 1.2.9 logging level set-all (debug|info|notice|error|fatal)

#### Command

```
logging level set-all (debug|info|notice|error|fatal)
```

#### Parameters

##### logging

Configure logging

##### level

Set the log level for a specified category

##### set-all

Once-off set all categories to the given log level. There is no single command to take back these changes -- each category is set to the given level, period.

##### debug

Log debug messages and higher levels

##### info

Log informational messages and higher levels

##### notice

Log noticeable messages and higher levels

##### error

Log error messages and higher levels

##### fatal

Log only fatal messages

### 1.2.10 logging print category (0|1)

#### Command

```
logging print category (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### category

Configure log message

##### 0

Don't prefix each log message

##### 1

Prefix each log message with category/subsystem name

---

### 1.2.11 logging print category-hex (0|1)

#### Command

```
logging print category-hex (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### category-hex

Configure log message

0

Don't prefix each log message

1

Prefix each log message with category/subsystem nr in hex ('<000b>')

### 1.2.12 logging print extended-timestamp (0|1)

#### Command

```
logging print extended-timestamp (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### extended-timestamp

Configure log message timestamping

0

Don't prefix each log message

1

Prefix each log message with current timestamp with YYYYMMDDhhmmssnnn

### 1.2.13 logging print file (0|1|basename) [last]

#### Command

```
logging print file (0|1|basename) [last]
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### file

Configure log message

##### 0

Don't prefix each log message

##### 1

Prefix each log message with the source file and line

##### basename

Prefix each log message with the source file's basename (strip leading paths) and line

##### [last]

Log source file info at the end of a log line. If omitted, log source file info just before the log text.

### 1.2.14 logging print level (0|1)

#### Command

```
logging print level (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### level

Configure log message

##### 0

Don't prefix each log message

##### 1

Prefix each log message with the log level name

### 1.2.15 logging print thread-id (0|1)

#### Command

```
logging print thread-id (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### thread-id

Configure log message logging Thread ID

0

Don't prefix each log message

1

Prefix each log message with current Thread ID

### 1.2.16 logging set-log-mask MASK

#### Command

```
logging set-log-mask MASK
```

#### Parameters

##### logging

Configure logging

##### set-log-mask

Set the logmask of this logging target

##### MASK

List of logging categories to log, e.g. 'abc:mno:xyz'. Available log categories depend on the specific application, refer to the 'logging level' command. Optionally add individual log levels like 'abc,1:mno,3:xyz,5', where the level numbers are LOGL\_DEBUG=1 LOGL\_INFO=3 LOGL\_NOTICE=5 LOGL\_ERROR=7 LOGL\_FATAL=8

### 1.2.17 logging timestamp (0|1)

#### Command

```
logging timestamp (0|1)
```

#### Parameters

---

**logging**

Configure logging

**timestamp**

Configure log message timestamping

0

Don't prefix each log message

1

Prefix each log message with current timestamp

**1.2.18 logp (rll|mm|rr|rsl|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts|as...****Command**

```
logp (rll|mm|rr|rsl|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts|as|cbs| ↵
lcs|asci|reset|loop|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup| ↵
loap|lss7|lsccp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup| ↵
lpfcp|lcsn1|lio) (debug|info|notice|error|fatal) .LOGMESSAGE
```

**Parameters****logp**

Print a message on all log outputs; useful for placing markers in test logs

**rll**

A-bis Radio Link Layer (RLL)

**mm**

Layer3 Mobility Management (MM)

**rr**

Layer3 Radio Resource (RR)

**rsl**

A-bis Radio Signalling Link (RSL)

**nm**

A-bis Network Management / O&amp;M (NM/OML)

**pag**

Paging Subsystem

**meas**

Radio Measurement Processing

**msc**

Mobile Switching Center

**ho**

Hand-Over Process

**hodec**

Hand-Over Decision

---

ref  
Reference Counting

ctrl  
Control interface

filter  
BSC/NAT IMSI based filtering

pcu  
PCU Interface

lcls  
Local Call, Local Switch

chan  
lchan FSM

ts  
timeslot FSM

as  
assignment FSM

cbs  
Cell Broadcast System

lcs  
Location Services

asci  
Advanced Speech Call Items (VGCS/VBS)

reset  
RESET/ACK on A and Lb interfaces

loop  
Control loops

lglobal  
Library-internal global log family

llapd  
LAPD in libosmogsm

linp  
A-bis Input Subsystem

lmux  
A-bis B-Subchannel TRAU Frame Multiplex

lmi  
A-bis Input Driver for Signalling

lmib  
A-bis Input Driver for B-Channels (voice)

---



---

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

lstats  
Statistics messages and logging

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lnsdata  
GPRS NS layer data PDU

lnssignal  
GPRS NS layer signal PDU

liuup  
Iu UP layer

lpfcp  
libosmo-pfcp Packet Forwarding Control Protocol

---

lcsn1

libosmo-csn1 Concrete Syntax Notation 1 codec

lio

libosmocore IO Subsystem

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

.LOGMESSAGE

Arbitrary message to log on given category and log level

### 1.2.19 no logging level force-all

Command

```
no logging level force-all
```

Parameters

no

Negate a command or set its defaults

logging

Configure logging

level

Set the log level for a specified category

force-all

Release any globally forced log level set with 'logging level force-all <level>'

### 1.2.20 show alarms

Command

```
show alarms
```

Parameters

show

Show running system information

alarms

Show current logging configuration

### 1.2.21 show asciidoc counters

#### Command

```
show asciidoc counters
```

#### Parameters

show

Show running system information

asciidoc

Asciidoc generation

counters

Generate table of all registered counters

### 1.2.22 show bts <0-255> fail-rep [reset]

#### Command

```
show bts <0-255> fail-rep [reset]
```

#### Parameters

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

fail-rep

OML failure reports

[reset]

Clear the list of failure reports after showing them

### 1.2.23 show bts <0-255> neighbor arfcn <0-1023> bsic (<0-63>|any)

#### Command

```
show bts <0-255> neighbor arfcn <0-1023> bsic (<0-63>|any)
```

#### Parameters

show

Show running system information

---

bts

Display information about a BTS

<0-255>

BTS number

neighbor

Query which cell would be the target for this neighbor ARFCN+BSIC

arfcn

ARFCN of neighbor cell

<0-1023>

ARFCN value

bsic

BSIC of neighbor cell

<0-63>

BSIC value

any

for all BSICs / use any BSIC in this ARFCN

### 1.2.24 show bts <0-255> om2k-mo

Command

```
show bts <0-255> om2k-mo
```

Parameters

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

om2k-mo

OM2000 Managed Object information

### 1.2.25 show bts <0-255> smscb [(basic|extended)]

Command

```
show bts <0-255> smscb [(basic|extended)]
```

Parameters

---

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

smscb

SMS Cell Broadcast State

[basic]

Show only information related to CBCH BASIC

[extended]

Show only information related to CBCH EXTENDED

### 1.2.26 show bts [<0-255>]

Command

```
show bts [<0-255>]
```

Parameters

show

Show running system information

bts

Display information about a BTS

[<0-255>]

BTS number

### 1.2.27 show cbc

Command

```
show cbc
```

Parameters

show

Show running system information

cbc

Display state of CBC / CBSP

### 1.2.28 show conns

#### Command

```
show conns
```

#### Parameters

show

Show running system information

conns

Display currently active subscriber connections

### 1.2.29 show cpu-sched threads

#### Command

```
show cpu-sched threads
```

#### Parameters

show

Show running system information

cpu-sched

Show Sched section information

threads

Show information about running threads)

### 1.2.30 show cs7 (sua|m3ua|ipa) [<0-65534>]

#### Command

```
show cs7 (sua|m3ua|ipa) [<0-65534>]
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

[<0-65534>]

Port Number

---

### 1.2.31 show cs7 config

#### Command

```
show cs7 config
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

config

Currently running cs7 configuration

### 1.2.32 show cs7 instance <0-15> as (active|all|m3ua|sua)

#### Command

```
show cs7 instance <0-15> as (active|all|m3ua|sua)
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

as

Application Server (AS)

active

Display all active ASs

all

Display all ASs (default)

m3ua

Display all m3ua ASs

sua

Display all SUA ASs

---

### 1.2.33 show cs7 instance <0-15> asp

#### Command

```
show cs7 instance <0-15> asp
```

#### Parameters

##### show

Show running system information

##### cs7

ITU-T Signaling System 7

##### instance

An instance of the SS7 stack

##### <0-15>

An instance of the SS7 stack

##### asp

Application Server Process (ASP)

### 1.2.34 show cs7 instance <0-15> route

#### Command

```
show cs7 instance <0-15> route
```

#### Parameters

##### show

Show running system information

##### cs7

ITU-T Signaling System 7

##### instance

An instance of the SS7 stack

##### <0-15>

An instance of the SS7 stack

##### route

Routing Table

---



### 1.2.35 show cs7 instance <0-15> sccp addressbook

#### Command

```
show cs7 instance <0-15> sccp addressbook
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signalling Connection Control Part

addressbook

List all SCCP addressbook entries

### 1.2.36 show cs7 instance <0-15> sccp connections

#### Command

```
show cs7 instance <0-15> sccp connections
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signalling Connection Control Part

connections

Show List of active SCCP connections

---

### 1.2.37 show cs7 instance <0-15> sccp ssn <0-65535>

#### Command

```
show cs7 instance <0-15> sccp ssn <0-65535>
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signalling Connection Control Part

ssn

Find an SCCP User registered for the given SSN

<0-65535>

Subsystem Number (SSN)

### 1.2.38 show cs7 instance <0-15> sccp timers

#### Command

```
show cs7 instance <0-15> sccp timers
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signaling Connection Control Part

timers

Show List of SCCP timers

### 1.2.39 show cs7 instance <0-15> sccp users

#### Command

```
show cs7 instance <0-15> sccp users
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signalling Connection Control Part

users

Show List of SCCP Users registered

### 1.2.40 show cs7 instance <0-15> users

#### Command

```
show cs7 instance <0-15> users
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

users

User Table

---

### 1.2.41 show e1\_driver

#### Command

```
show e1_driver
```

#### Parameters

show

Show running system information

e1\_driver

Display information about available E1 drivers

### 1.2.42 show e1\_line [<0-255>] [stats]

#### Command

```
show e1_line [<0-255>] [stats]
```

#### Parameters

show

Show running system information

e1\_line

Display information about a E1 line

[<0-255>]

E1 Line Number

[stats]

Include statistics

### 1.2.43 show e1\_timeslot [<0-255>] [<0-31>]

#### Command

```
show e1_timeslot [<0-255>] [<0-31>]
```

#### Parameters

show

Show running system information

e1\_timeslot

Display information about a E1 timeslot

[<0-255>]

E1 Line Number

[<0-31>]

E1 Timeslot Number

### 1.2.44 show fsm NAME

#### Command

```
show fsm NAME
```

#### Parameters

##### show

Show running system information

##### fsm

Show information about finite state machines

##### NAME

Display information about a single named finite state machine

### 1.2.45 show fsm all

#### Command

```
show fsm all
```

#### Parameters

##### show

Show running system information

##### fsm

Show information about finite state machines

##### all

Display a list of all registered finite state machines

### 1.2.46 show fsm-instances NAME

#### Command

```
show fsm-instances NAME
```

#### Parameters

##### show

Show running system information

##### fsm-instances

Show information about finite state machine instances

##### NAME

Display a list of all FSM instances of the named finite state machine

---

### 1.2.47 show fsm-instances all

#### Command

```
show fsm-instances all
```

#### Parameters

show

Show running system information

fsm-instances

Show information about finite state machine instances

all

Display a list of all FSM instances of all finite state machine

### 1.2.48 show history

#### Command

```
show history
```

#### Parameters

show

Show running system information

history

Display the session command history

### 1.2.49 show lchan [<0-255>] [<0-255>] [<0-7>] [<0-7>]

#### Command

```
show lchan [<0-255>] [<0-255>] [<0-7>] [<0-7>]
```

#### Parameters

show

Show running system information

lchan

Display information about a logical channel

[<0-255>]

BTS Number

[<0-255>]

TRX Number

[<0-7>]

Timeslot Number

[<0-7>]

Logical Channel Number

---

### 1.2.50 show lchan summary [<0-255>] [<0-255>] [<0-7>] [<0-7>]

#### Command

```
show lchan summary [<0-255>] [<0-255>] [<0-7>] [<0-7>]
```

#### Parameters

##### show

Show running system information

##### lchan

Display information about a logical channel

##### summary

Short summary (used lchans)

##### [<0-255>]

BTS Number

##### [<0-255>]

TRX Number

##### [<0-7>]

Timeslot Number

##### [<0-7>]

Logical Channel Number

### 1.2.51 show lchan summary-all [<0-255>] [<0-255>] [<0-7>] [<0-7>]

#### Command

```
show lchan summary-all [<0-255>] [<0-255>] [<0-7>] [<0-7>]
```

#### Parameters

##### show

Show running system information

##### lchan

Display information about a logical channel

##### summary-all

Short summary (all lchans)

##### [<0-255>]

BTS Number

##### [<0-255>]

TRX Number

##### [<0-7>]

Timeslot Number

##### [<0-7>]

Logical Channel Number

### 1.2.52 show logging vty

#### Command

```
show logging vty
```

#### Parameters

##### show

Show running system information

##### logging

Show current logging configuration

##### vtty

Show current logging configuration for this vty

### 1.2.53 show mgw-pool

#### Command

```
show mgw-pool
```

#### Parameters

##### show

Show running system information

##### mgw-pool

Display information about the MGW-Pool

### 1.2.54 show mscc

#### Command

```
show mscc
```

#### Parameters

##### show

Show running system information

##### mscc

MSC Connections and State

---



### 1.2.55 show network

#### Command

```
show network
```

#### Parameters

##### show

Show running system information

##### network

Display information about a GSM NETWORK

### 1.2.56 show nri [<0-1000>]

#### Command

```
show nri [<0-1000>]
```

#### Parameters

##### show

Show running system information

##### nri

Mapping of Network Resource Indicators, for MSC pooling

##### [<0-1000>]

Optional MSC number to limit to

### 1.2.57 show online-help

#### Command

```
show online-help
```

#### Parameters

##### show

Show running system information

##### online-help

Online help

### 1.2.58 show paging [<0-255>]

#### Command

```
show paging [<0-255>]
```

#### Parameters

show

Show running system information

paging

Display information about paging requests of a BTS

[<0-255>]

BTS Number

### 1.2.59 show paging-group <0-255> IMSI

#### Command

```
show paging-group <0-255> IMSI
```

#### Parameters

show

Show running system information

paging-group

Display the paging group

<0-255>

BTS Number

IMSI

IMSI

### 1.2.60 show pid

#### Command

```
show pid
```

#### Parameters

show

Show running system information

pid

Displays the process ID

### 1.2.61 show position

#### Command

```
show position
```

#### Parameters

##### show

Show running system information

##### position

Position information of the BTS

### 1.2.62 show rate-counters [skip-zero]

#### Command

```
show rate-counters [skip-zero]
```

#### Parameters

##### show

Show running system information

##### rate-counters

Show all rate counters

##### [skip-zero]

Skip items with total count zero

### 1.2.63 show rejected-bts

#### Command

```
show rejected-bts
```

#### Parameters

##### show

Show running system information

##### rejected-bts

Display recently rejected BTS devices

---

### 1.2.64 show statistics

#### Command

```
show statistics
```

#### Parameters

##### show

Show running system information

##### statistics

Statistics about the BSC

### 1.2.65 show stats [skip-zero]

#### Command

```
show stats [skip-zero]
```

#### Parameters

##### show

Show running system information

##### stats

Show statistical values

##### [skip-zero]

Skip items with total count zero

### 1.2.66 show stats level (global|peer|subscriber) [skip-zero]

#### Command

```
show stats level (global|peer|subscriber) [skip-zero]
```

#### Parameters

##### show

Show running system information

##### stats

Show statistical values

##### level

Set the maximum group level

##### global

Show global groups only

---

peer

Show global and network peer related groups

subscriber

Show global, peer, and subscriber groups

[skip-zero]

Skip items with total count zero

### 1.2.67 show subscriber all

Command

```
show subscriber all
```

Parameters

show

Show running system information

subscriber

Display information about subscribers

all

All Subscribers

### 1.2.68 show talloc-context (application|global|all) (full|brief|DEPTH)

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH)
```

Parameters

show

Show running system information

talloc-context

Show talloc memory hierarchy

application

Application's context

global

Global context (OTC\_GLOBAL)

all

All contexts, if NULL-context tracking is enabled

full

Display a full talloc memory hierarchy

brief

Display a brief talloc memory hierarchy

DEPTH

Specify required maximal depth value

### 1.2.69 show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP

#### Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP
```

#### Parameters

##### show

Show running system information

##### talloc-context

Show talloc memory hierarchy

##### application

Application's context

##### global

Global context (OTC\_GLOBAL)

##### all

All contexts, if NULL-context tracking is enabled

##### full

Display a full talloc memory hierarchy

##### brief

Display a brief talloc memory hierarchy

##### DEPTH

Specify required maximal depth value

##### filter

Filter chunks using regular expression

##### REGEXP

Regular expression

### 1.2.70 show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS

#### Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS
```

#### Parameters

##### show

Show running system information

##### talloc-context

Show talloc memory hierarchy

##### application

Application's context

global

Global context (OTC\_GLOBAL)

all

All contexts, if NULL-context tracking is enabled

full

Display a full talloc memory hierarchy

brief

Display a brief talloc memory hierarchy

DEPTH

Specify required maximal depth value

tree

Display only a specific memory chunk

ADDRESS

Chunk address (e.g. 0xdeadbeef)

### 1.2.71 show timer [(net|mgw)] [TNNNN]

Command

```
show timer [(net|mgw)] [TNNNN]
```

Parameters

show

Show running system information

timer

Show timers

[net]

GSM network

[mgw]

MGW (Media Gateway) interface

[TNNNN]

T- or X-timer-number -- 3GPP compliant timer number of the format '1234' or 'T1234' or 't1234'; Osmocom-specific timer number of the format: 'X1234' or 'x1234'.

### 1.2.72 show timeslot [<0-255>] [<0-255>] [<0-7>]

Command

```
show timeslot [<0-255>] [<0-255>] [<0-7>]
```

Parameters

show

Show running system information

timeslot

Display information about a TS

[<0-255>]

BTS Number

[<0-255>]

TRX Number

[<0-7>]

Timeslot Number

### 1.2.73 show trx (connected|disconnected)

Command

```
show trx (connected|disconnected)
```

Parameters

show

Show running system information

trx

Display information about a TRX

connected

Show TRX with RSL connected

disconnected

Show TRX with RSL disconnected

### 1.2.74 show trx [<0-255>] [<0-255>]

Command

```
show trx [<0-255>] [<0-255>]
```

Parameters

show

Show running system information

trx

Display information about a TRX

[<0-255>]

BTS Number

[<0-255>]

TRX Number



### 1.2.75 show uptime

#### Command

```
show uptime
```

#### Parameters

##### show

Show running system information

##### uptime

Displays how long the program has been running

### 1.2.76 show version

#### Command

```
show version
```

#### Parameters

##### show

Show running system information

##### version

Displays program version

### 1.2.77 terminal length <0-512>

#### Command

```
terminal length <0-512>
```

#### Parameters

##### terminal

Set terminal line parameters

##### length

Set number of lines on a screen

##### <0-512>

Number of lines on screen (0 for no pausing)

---

### 1.2.78 terminal no length

#### Command

```
terminal no length
```

#### Parameters

##### terminal

Set terminal line parameters

##### no

Negate a command or set its defaults

##### length

Set number of lines on a screen

### 1.2.79 who

#### Command

```
who
```

#### Parameters

##### who

Display who is on vty

## 1.3 enable

The enable node is a privileged node, allowing to make changes to the configuration and to access further commands like 'configure'. All commands seen on the view node are also available here.

### 1.3.1 assignment any

#### Command

```
assignment any
```

#### Parameters

##### assignment

Manually trigger assignment (for debugging)

##### any

Pick any actively used TCH/F or TCH/H lchan and re-assign within the same BTS. This will fail if no lchans of the same type are available besides the used one.

---

### 1.3.2 **bts <0-255> c0-power-reduction <0-6>**

#### Command

```
bts <0-255> c0-power-reduction <0-6>
```

#### Parameters

bts

BTS Specific Commands

<0-255>

BTS Number

c0-power-reduction

BCCH carrier power reduction operation

<0-6>

Power reduction value (in dB, even numbers only)

### 1.3.3 **bts <0-255> om2000 class (trxc|tg|ts|tf|is|con|dp|mctr|cf|tx|rx) <0-255> <0-255>...**

#### Command

```
bts <0-255> om2000 class (trxc|tg|ts|tf|is|con|dp|mctr|cf|tx|rx) <0-255> <0-255> ↔  
    <0-255>
```

#### Parameters

bts

BTS related commands

<0-255>

BTS Number

om2000

Manipulate the OM2000 managed objects

class

Object Class

trxc

TRX Controller

tg

Trunk Group

ts

Timeslot

tf

Timing Function

is  
    Interface Switch

con  
    Abis Concentrator

dp  
    Digital Path

mctr  
    Multi Carrier Transceiver

cf  
    Central Function

tx  
    Transmitter

rx  
    Receiver

<0-255>  
    BTS Number

<0-255>  
    Associated SO Instance

<0-255>  
    Instance Number

### 1.3.4 **bts <0-255> om2000 class <0-255> <0-255> <0-255> <0-255>**

#### Command

```
bts <0-255> om2000 class <0-255> <0-255> <0-255> <0-255>
```

#### Parameters

bts  
    BTS related commands

<0-255>  
    BTS Number

om2000  
    Manipulate the OML managed objects

class  
    Object Class

<0-255>  
    Object Class

<0-255>  
    BTS Number

<0-255>

Associated SO Instance

<0-255>

Instance Number

### 1.3.5 **bts <0-255> oml class (site-manager|bts|radio-carrier|baseband-transceiver|chann...**

#### Command

```
bts <0-255> oml class (site-manager|bts|radio-carrier|baseband-transceiver|channel|adjc ↔  
|handover|power-contorl|btse|rack|test|envabtse|bport|gprs-nse|gprs-cell|gprs-nsvc| ↔  
siemenshw) instance <0-255> <0-255> <0-255>
```

#### Parameters

bts

BTS related commands

<0-255>

BTS Number

oml

Manipulate the OML managed objects

class

Object Class

site-manager

Site Manager Object

bts

BTS Object

radio-carrier

Radio Carrier Object

baseband-transceiver

Baseband Transceiver Object

channel

Channel (Timeslot) Object

adjc

Adjacent Object (Siemens)

handover

Handover Object (Siemens)

power-contorl

Power Control Object (Siemens)

btse

BTSE Object (Siemens)

rack  
Rack Object (Siemens)

test  
Test Object (Siemens)

envabtse  
ENVABTSE Object (Siemens)

bport  
BPORT Object (Siemens)

gprs-nse  
GPRS NSE Object (ip.access/osmo-bts)

gprs-cell  
GPRS Cell Object (ip.acecss/osmo-bts)

gprs-nsvc  
GPRS NSVC Object (ip.acecss/osmo-bts)

siemenshw  
SIEMENSHW Object (Siemens)

instance  
Object Instance

<0-255>  
BTS Number

<0-255>  
TRX Number

<0-255>  
TS Number

### 1.3.6 **bts <0-255> oml class <0-255> instance <0-255> <0-255> <0-255>**

#### Command

```
bts <0-255> oml class <0-255> instance <0-255> <0-255> <0-255>
```

#### Parameters

bts  
BTS related commands

<0-255>  
BTS Number

oml  
Manipulate the OML managed objects

class  
Object Class

<0-255>

Object Class

instance

Object Instance

<0-255>

BTS Number

<0-255>

TRX Number

<0-255>

TS Number

### 1.3.7 **bts <0-255> resend-power-control-defaults**

Command

```
bts <0-255> resend-power-control-defaults
```

Parameters

bts

BTS Specific Commands

<0-255>

BTS Number

resend-power-control-defaults

Re-generate + re-send default MS/BS Power control parameters

### 1.3.8 **bts <0-255> resend-system-information**

Command

```
bts <0-255> resend-system-information
```

Parameters

bts

BTS Specific Commands

<0-255>

BTS Number

resend-system-information

Re-generate + re-send BCCH SYSTEM INFORMATION

### 1.3.9 **bts** <0-255> **trx** <0-255> **timeslot** <0-7> (**sub-slot**|**vamos-sub-slot**) <0-7> (**activate**...

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> (sub-slot|vamos-sub-slot) <0-7> (activate| ↵
activate-vamos) (hr|fr|efr|amr|sig) [<0-7>]
```

#### Parameters

**bts**

BTS for manual command

<0-255>

BTS Number

**trx**

TRX for manual command

<0-255>

TRX Number

**timeslot**

Timeslot for manual command

<0-7>

Timeslot Number

**sub-slot**

Primary sub-slot

**vamos-sub-slot**

VAMOS secondary shadow subslot, range <0-1>, only valid for TCH type timeslots

<0-7>

Sub-slot Number

**activate**

Manual Channel Activation (e.g. for BER test)

**activate-vamos**

Manual Channel Activation, in VAMOS mode

**hr**

Half-Rate v1

**fr**

Full-Rate

**efr**

Enhanced Full Rate

**amr**

Adaptive Multi-Rate

**sig**

Signalling

[<0-7>]

AMR Mode



### 1.3.10 **bts <0-255> trx <0-255> timeslot <0-7> (sub-slot|vamos-sub-slot) <0-7> deactivate...**

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> (sub-slot|vamos-sub-slot) <0-7> deactivate
```

#### Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Primary sub-slot

vamos-sub-slot

VAMOS secondary shadow subslot, range <0-1>, only valid for TCH type timeslots

<0-7>

Sub-slot Number

deactivate

Manual Channel Deactivation (e.g. for BER test)

### 1.3.11 **bts <0-255> trx <0-255> timeslot <0-7> (sub-slot|vamos-sub-slot) <0-7> reassign-...**

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> (sub-slot|vamos-sub-slot) <0-7> reassign-to trx ↔  
    <0-255> timeslot <0-7> (sub-slot|vamos-sub-slot) <0-7> [tsc] [<1-4>] [<0-7>]
```

#### Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Primary sub-slot

vamos-sub-slot

VAMOS secondary shadow subslot, range <0-1>, only valid for TCH type timeslots

<0-7>

Sub-slot Number

reassign-to

Trigger Assignment to an unused lchan on the same cell

trx

Target TRX

<0-255>

TRX nr

timeslot

Target timeslot

<0-7>

timeslot nr

sub-slot

Primary sub-slot

vamos-sub-slot

VAMOS secondary shadow subslot, range <0-1>, only valid for TCH type timeslots

<0-7>

Sub-slot Number

[tsc]

Provide specific TSC Set and Training Sequence Code

[<1-4>]

TSC Set

[<0-7>]

Training Sequence Code

---

### 1.3.12 **bts <0-255> trx <0-255> timeslot <0-7> pdch (activate|deactivate)**

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> pdch (activate|deactivate)
```

#### Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

pdch

Packet Data Channel

activate

Activate Dynamic PDCH/TCH (-> PDCH mode)

deactivate

Deactivate Dynamic PDCH/TCH (-> TCH mode)

### 1.3.13 **bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> assignment**

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> assignment
```

#### Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Sub-slot for manual command

<0-7>

Sub-slot Number

assignment

Manually trigger assignment (for debugging)

### 1.3.14 **bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> handover <0-255>**

Command

```
bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> handover <0-255>
```

Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Sub-slot for manual command

<0-7>

Sub-slot Number

handover

Manually trigger handover (for debugging)

<0-255>

New BTS Number

### 1.3.15 **bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> mdcx A.B.C.D <0-65535>**

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> mdcx A.B.C.D <0-65535>
```

#### Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Sub-slot for manual command

<0-7>

Sub-slot Number

mdcx

Modify RTP Connection

A.B.C.D

MGW IP Address

<0-65535>

MGW UDP Port

### 1.3.16 **bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> modify (vamos|non-vamos) [...]**

#### Command

```
bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> modify (vamos|non-vamos) [tsc] ↔  
[<1-4>] [<0-7>]
```

#### Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Sub-slot for manual command

<0-7>

Sub-slot Number

modify

Manually send Channel Mode Modify (for debugging)

vamos

Enable VAMOS channel mode

non-vamos

Disable VAMOS channel mode

[tsc]

Provide specific TSC Set and Training Sequence Code

[<1-4>]

TSC Set

[<0-7>]

Training Sequence Code

### 1.3.17 **bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> ms-power <0-40> [verify]**

Command

```
bts <0-255> trx <0-255> timeslot <0-7> sub-slot <0-7> ms-power <0-40> [verify]
```

Parameters

bts

BTS for manual command

<0-255>

BTS Number

trx

TRX for manual command

<0-255>

TRX Number

timeslot

Timeslot for manual command

<0-7>

Timeslot Number

sub-slot

Sub-slot for manual command

<0-7>

Sub-slot Number

ms-power

Manually force MS Uplink Power Level in dBm on the lchan (for testing)

<0-40>

Set transmit power of the MS in dBm

[verify]

Check requested level against BAND and UE Power Class.

### 1.3.18 **bts <0-255> unblock-setup-ramping**

Command

```
bts <0-255> unblock-setup-ramping
```

Parameters

bts

BTS Specific Commands

<0-255>

BTS Number

unblock-setup-ramping

Unblock and allow to configure a BTS if kept back by BTS ramping

### 1.3.19 **configure [terminal]**

Command

```
configure [terminal]
```

Parameters

configure

Configuration from vty interface

[terminal]

Configuration terminal

### 1.3.20 copy running-config startup-config

#### Command

```
copy running-config startup-config
```

#### Parameters

##### copy

Copy configuration

##### running-config

Copy running config to...

##### startup-config

Copy running config to startup config (same as write file)

### 1.3.21 ctrl-interface generate-trap TRAP VALUE

#### Command

```
ctrl-interface generate-trap TRAP VALUE
```

#### Parameters

##### ctrl-interface

Commands related to the CTRL Interface

##### generate-trap

Generate a TRAP for test purpose

##### TRAP

Identity/Name of the TRAP variable

##### VALUE

Value of the TRAP variable

### 1.3.22 disable

#### Command

```
disable
```

#### Parameters

##### disable

Turn off privileged mode command



### 1.3.23 drop bts connection <0-65535> (oml|rsl)

#### Command

```
drop bts connection <0-65535> (oml|rsl)
```

#### Parameters

##### drop

Debug/Simulation command to drop Abis/IP BTS

##### bts

Debug/Simulation command to drop Abis/IP BTS

##### connection

Debug/Simulation command to drop Abis/IP BTS

##### <0-65535>

BTS NR

##### oml

Drop OML Connection

##### rsl

Drop RSL Connection

### 1.3.24 generate-location-state-trap <0-255>

#### Command

```
generate-location-state-trap <0-255>
```

#### Parameters

##### generate-location-state-trap

Generate location state report

##### <0-255>

BTS to report

### 1.3.25 handover any

#### Command

```
handover any
```

#### Parameters

##### handover

Manually trigger handover (for debugging)

##### any

Pick any actively used TCH/F or TCH/H lchan and handover to any other BTS. This is likely to fail if not all BTS are guaranteed to be reachable by the MS.

---

### 1.3.26 handover any to arfcn <0-1023> bsic (<0-63>|any)

#### Command

```
handover any to arfcn <0-1023> bsic (<0-63>|any)
```

#### Parameters

##### handover

Manually trigger handover (for debugging)

##### any

Pick any actively used TCH/F or TCH/H lchan to handover to another cell. This is likely to fail outside of a lab setup where you are certain that all MS are able to see the target cell.

##### to

'to'

##### arfcn

ARFCN of neighbor cell

##### <0-1023>

ARFCN value

##### bsic

BSIC of neighbor cell

##### <0-63>

BSIC value

##### any

for all BSICs / use any BSIC in this ARFCN

### 1.3.27 logging color (0|1)

#### Command

```
logging color (0|1)
```

#### Parameters

##### logging

Configure logging

##### color

Configure color-printing for log messages

##### 0

Don't use color for printing messages

##### 1

Use color for printing messages

---

### 1.3.28 logging disable

#### Command

```
logging disable
```

#### Parameters

##### logging

Configure logging

##### disable

Disables logging to this vty

### 1.3.29 logging enable

This command is required to make logging commands available on the telnet VTY.

#### Command

```
logging enable
```

#### Parameters

##### logging

Configure logging

##### enable

Enables logging to this vty

### 1.3.30 logging filter all (0|1)

Disable/enable general log output on a given target. Typically, 'logging filter all 1' allows to see the usual log output on a given target. Setting to '0' can be useful when logging to the telnet VTY console: mute all log output to allow typing VTY commands on the telnet prompt without interference from log output; 'logging filter all 1' then re-enables logging in the same log output configuration as before. Some applications provide more specific filters, e.g. to log a given IMSI only. To employ such filters, set 'logging filter all 0' to disable general logging, and then enable a more specific filter instead.

#### Command

```
logging filter all (0|1)
```

#### Parameters

##### logging

Configure logging

##### filter

Filter log messages

##### all

Do you want to log all messages?

##### 0

Only print messages matched by other filters

##### 1

Bypass filter and print all messages

### 1.3.31 logging filter imsi IMSI

#### Command

```
logging filter imsi IMSI
```

#### Parameters

##### logging

Configure logging

##### filter

Filter log messages

##### imsi

Filter log messages by IMSI

##### IMSI

IMSI to be used as filter

### 1.3.32 logging level (rll|mm|rr|rs|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|c...

#### Command

```
logging level (rll|mm|rr|rs|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts| ↵
as|cbs|lcs|asci|reset|loop|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats| ↵
lgsup|loap|lss7|lsccp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal| ↵
liuup|lpfcp|lcsn1|lio) (debug|info|notice|error|fatal)
```

#### Parameters

##### logging

Configure logging

##### level

Set the log level for a specified category

##### rll

A-bis Radio Link Layer (RLL)

##### mm

Layer3 Mobility Management (MM)

##### rr

Layer3 Radio Resource (RR)

##### rs

A-bis Radio Signalling Link (RSL)

##### nm

A-bis Network Management / O&M (NM/OML)

##### pag

Paging Subsystem

---

meas  
    Radio Measurement Processing

msc  
    Mobile Switching Center

ho  
    Hand-Over Process

hodec  
    Hand-Over Decision

ref  
    Reference Counting

ctrl  
    Control interface

filter  
    BSC/NAT IMSI based filtering

pcu  
    PCU Interface

lcls  
    Local Call, Local Switch

chan  
    lchan FSM

ts  
    timeslot FSM

as  
    assignment FSM

cbs  
    Cell Broadcast System

lcs  
    Location Services

asci  
    Advanced Speech Call Items (VGCS/VBS)

reset  
    RESET/ACK on A and Lb interfaces

loop  
    Control loops

lglobal  
    Library-internal global log family

llapd  
    LAPD in libosmogsm

---

---

linp  
A-bis Input Subsystem

lmux  
A-bis B-Subchannel TRAU Frame Multiplex

lmi  
A-bis Input Driver for Signalling

lmib  
A-bis Input Driver for B-Channels (voice)

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

lstats  
Statistics messages and logging

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

---

Insdata

GPRS NS layer data PDU

Inssignal

GPRS NS layer signal PDU

liuup

Iu UP layer

lpfcp

libosmo-pfcp Packet Forwarding Control Protocol

lcsn1

libosmo-csn1 Concrete Syntax Notation 1 codec

lio

libosmocore IO Subsystem

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.3.33 logging level force-all (debug|info|notice|error|fatal)

Command

```
logging level force-all (debug|info|notice|error|fatal)
```

Parameters

logging

Configure logging

level

Set the log level for a specified category

force-all

Globally force all logging categories to a specific level. This is released by the 'no logging level force-all' command. Note: any 'logging level <category> <level>' commands will have no visible effect after this, until the forced level is released.

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.3.34 logging level set-all (debug|info|notice|error|fatal)

Command

```
logging level set-all (debug|info|notice|error|fatal)
```

Parameters

logging

Configure logging

level

Set the log level for a specified category

set-all

Once-off set all categories to the given log level. There is no single command to take back these changes -- each category is set to the given level, period.

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.3.35 logging print category (0|1)

Command

```
logging print category (0|1)
```

Parameters

---



logging

Configure logging

print

Log output settings

category

Configure log message

0

Don't prefix each log message

1

Prefix each log message with category/subsystem name

### 1.3.36 logging print category-hex (0|1)

Command

```
logging print category-hex (0|1)
```

Parameters

logging

Configure logging

print

Log output settings

category-hex

Configure log message

0

Don't prefix each log message

1

Prefix each log message with category/subsystem nr in hex ('<000b>')

### 1.3.37 logging print extended-timestamp (0|1)

Command

```
logging print extended-timestamp (0|1)
```

Parameters

logging

Configure logging

print

Log output settings

#### extended-timestamp

Configure log message timestamping

0

Don't prefix each log message

1

Prefix each log message with current timestamp with YYYYMMDDhhmmssnnn

### 1.3.38 logging print file (0|1|basename) [last]

#### Command

```
logging print file (0|1|basename) [last]
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### file

Configure log message

0

Don't prefix each log message

1

Prefix each log message with the source file and line

##### basename

Prefix each log message with the source file's basename (strip leading paths) and line

##### [last]

Log source file info at the end of a log line. If omitted, log source file info just before the log text.

### 1.3.39 logging print level (0|1)

#### Command

```
logging print level (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

level

Configure log message

0

Don't prefix each log message

1

Prefix each log message with the log level name

### 1.3.40 logging print thread-id (0|1)

Command

```
logging print thread-id (0|1)
```

Parameters

logging

Configure logging

print

Log output settings

thread-id

Configure log message logging Thread ID

0

Don't prefix each log message

1

Prefix each log message with current Thread ID

### 1.3.41 logging set-log-mask MASK

Command

```
logging set-log-mask MASK
```

Parameters

logging

Configure logging

set-log-mask

Set the logmask of this logging target

MASK

List of logging categories to log, e.g. 'abc:mno:xyz'. Available log categories depend on the specific application, refer to the 'logging level' command. Optionally add individual log levels like 'abc,1:mno,3:xyz,5', where the level numbers are LOGL\_DEBUG=1 LOGL\_INFO=3 LOGL\_NOTICE=5 LOGL\_ERROR=7 LOGL\_FATAL=8

### 1.3.42 logging timestamp (0|1)

#### Command

```
logging timestamp (0|1)
```

#### Parameters

##### logging

Configure logging

##### timestamp

Configure log message timestamping

0

Don't prefix each log message

1

Prefix each log message with current timestamp

### 1.3.43 logp (rll|mm|rr|rs|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts|as...

#### Command

```
logp (rll|mm|rr|rs|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts|as|cbs| ↵
lcs|asci|reset|loop|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup| ↵
loap|lss7|lsccp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal|liuup| ↵
lpfcp|lcsn1|lio) (debug|info|notice|error|fatal) .LOGMESSAGE
```

#### Parameters

##### logp

Print a message on all log outputs; useful for placing markers in test logs

##### rll

A-bis Radio Link Layer (RLL)

##### mm

Layer3 Mobility Management (MM)

##### rr

Layer3 Radio Resource (RR)

##### rs

A-bis Radio Signalling Link (RSL)

##### nm

A-bis Network Management / O&M (NM/OML)

##### pag

Paging Subsystem

##### meas

Radio Measurement Processing

---

|         |                                       |
|---------|---------------------------------------|
| msc     | Mobile Switching Center               |
| ho      | Hand-Over Process                     |
| hodec   | Hand-Over Decision                    |
| ref     | Reference Counting                    |
| ctrl    | Control interface                     |
| filter  | BSC/NAT IMSI based filtering          |
| pcu     | PCU Interface                         |
| lcls    | Local Call, Local Switch              |
| chan    | lchan FSM                             |
| ts      | timeslot FSM                          |
| as      | assignment FSM                        |
| cbs     | Cell Broadcast System                 |
| lcs     | Location Services                     |
| asci    | Advanced Speech Call Items (VGCS/VBS) |
| reset   | RESET/ACK on A and Lb interfaces      |
| loop    | Control loops                         |
| lglobal | Library-internal global log family    |
| llapd   | LAPD in libosmogsm                    |
| linp    | A-bis Intput Subsystem                |

---

---

lmux  
A-bis B-Subchannel TRAU Frame Multiplex

lmi  
A-bis Input Driver for Signalling

lmib  
A-bis Input Driver for B-Channels (voice)

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

lstats  
Statistics messages and logging

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lndata  
GPRS NS layer data PDU

---

Inssignal

GPRS NS layer signal PDU

Iuup

Iu UP layer

lpfcp

libosmo-pfcp Packet Forwarding Control Protocol

lcsn1

libosmo-csn1 Concrete Syntax Notation 1 codec

lio

libosmocore IO Subsystem

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

.LOGMESSAGE

Arbitrary message to log on given category and log level

### 1.3.44 mgw <0-255> block

Command

```
mgw <0-255> block
```

Global attributes

Flag: !

This command applies immediately

Parameters

mgw

Configure MGCP connection to Media Gateway

<0-255>

reference number

block

block MGCP client so that it won't be used for new calls

### 1.3.45 mgw <0-255> reconnect

#### Command

```
mgw <0-255> reconnect
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

mgw

Configure MGCP connection to Media Gateway

<0-255>

reference number

reconnect

reconfigure and reconnect MGCP client

### 1.3.46 mgw <0-255> unblock

#### Command

```
mgw <0-255> unblock
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

mgw

Configure MGCP connection to Media Gateway

<0-255>

reference number

unblock

unblock MGCP client so that it will be available for new calls



### 1.3.47 msc <0-1000> bssmap reset

#### Command

```
msc <0-1000> bssmap reset
```

#### Parameters

msc

Query or manipulate a specific A-interface link

<0-1000>

MSC nr

bssmap

Query or manipulate BSSMAP layer of A-interface

reset

Flip this MSC to disconnected state and re-send BSSMAP RESET

### 1.3.48 no logging level force-all

#### Command

```
no logging level force-all
```

#### Parameters

no

Negate a command or set its defaults

logging

Configure logging

level

Set the log level for a specified category

force-all

Release any globally forced log level set with 'logging level force-all <level>'

### 1.3.49 restart-bts <0-65535>

#### Command

```
restart-bts <0-65535>
```

#### Parameters

restart-bts

Restart ip.access nanoBTS through OML

<0-65535>

BTS Number

### 1.3.50 show alarms

#### Command

```
show alarms
```

#### Parameters

show

Show running system information

alarms

Show current logging configuration

### 1.3.51 show asciidoc counters

#### Command

```
show asciidoc counters
```

#### Parameters

show

Show running system information

asciidoc

Asciidoc generation

counters

Generate table of all registered counters

### 1.3.52 show bts <0-255> fail-rep [reset]

#### Command

```
show bts <0-255> fail-rep [reset]
```

#### Parameters

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

fail-rep

OML failure reports

[reset]

Clear the list of failure reports after showing them

---

### 1.3.53 show bts <0-255> neighbor arfcn <0-1023> bsic (<0-63>|any)

#### Command

```
show bts <0-255> neighbor arfcn <0-1023> bsic (<0-63>|any)
```

#### Parameters

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

neighbor

Query which cell would be the target for this neighbor ARFCN+BSIC

arfcn

ARFCN of neighbor cell

<0-1023>

ARFCN value

bsic

BSIC of neighbor cell

<0-63>

BSIC value

any

for all BSICs / use any BSIC in this ARFCN

### 1.3.54 show bts <0-255> om2k-mo

#### Command

```
show bts <0-255> om2k-mo
```

#### Parameters

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

om2k-mo

OM2000 Managed Object information

### 1.3.55 show bts <0-255> smscb [(basic|extended)]

#### Command

```
show bts <0-255> smscb [ (basic|extended) ]
```

#### Parameters

show

Show running system information

bts

Display information about a BTS

<0-255>

BTS number

smscb

SMS Cell Broadcast State

[basic]

Show only information related to CBCH BASIC

[extended]

Show only information related to CBCH EXTENDED

### 1.3.56 show bts [<0-255>]

#### Command

```
show bts [<0-255>]
```

#### Parameters

show

Show running system information

bts

Display information about a BTS

[<0-255>]

BTS number

### 1.3.57 show cbc

#### Command

```
show cbc
```

#### Parameters

show

Show running system information

cbc

Display state of CBC / CBSP

### 1.3.58 show conns

#### Command

```
show conns
```

#### Parameters

show

Show running system information

conns

Display currently active subscriber connections

### 1.3.59 show cpu-sched threads

#### Command

```
show cpu-sched threads
```

#### Parameters

show

Show running system information

cpu-sched

Show Sched section information

threads

Show information about running threads)

### 1.3.60 show cs7 (sua|m3ua|ipa) [<0-65534>]

#### Command

```
show cs7 (sua|m3ua|ipa) [<0-65534>]
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

[<0-65534>]

Port Number

---

### 1.3.61 show cs7 config

#### Command

```
show cs7 config
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

config

Currently running cs7 configuration

### 1.3.62 show cs7 instance <0-15> as (active|all|m3ua|sua)

#### Command

```
show cs7 instance <0-15> as (active|all|m3ua|sua)
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

as

Application Server (AS)

active

Display all active ASs

all

Display all ASs (default)

m3ua

Display all m3ua ASs

sua

Display all SUA ASs

### 1.3.63 show cs7 instance <0-15> asp

#### Command

```
show cs7 instance <0-15> asp
```

#### Parameters

##### show

Show running system information

##### cs7

ITU-T Signaling System 7

##### instance

An instance of the SS7 stack

##### <0-15>

An instance of the SS7 stack

##### asp

Application Server Process (ASP)

### 1.3.64 show cs7 instance <0-15> route

#### Command

```
show cs7 instance <0-15> route
```

#### Parameters

##### show

Show running system information

##### cs7

ITU-T Signaling System 7

##### instance

An instance of the SS7 stack

##### <0-15>

An instance of the SS7 stack

##### route

Routing Table

---

### 1.3.65 show cs7 instance <0-15> sccp addressbook

#### Command

```
show cs7 instance <0-15> sccp addressbook
```

#### Parameters

##### show

Show running system information

##### cs7

ITU-T Signaling System 7

##### instance

An instance of the SS7 stack

##### <0-15>

An instance of the SS7 stack

##### sccp

Signalling Connection Control Part

##### addressbook

List all SCCP addressbook entries

### 1.3.66 show cs7 instance <0-15> sccp connections

#### Command

```
show cs7 instance <0-15> sccp connections
```

#### Parameters

##### show

Show running system information

##### cs7

ITU-T Signaling System 7

##### instance

An instance of the SS7 stack

##### <0-15>

An instance of the SS7 stack

##### sccp

Signalling Connection Control Part

##### connections

Show List of active SCCP connections

---



### 1.3.67 show cs7 instance <0-15> sccp ssn <0-65535>

#### Command

```
show cs7 instance <0-15> sccp ssn <0-65535>
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signalling Connection Control Part

ssn

Find an SCCP User registered for the given SSN

<0-65535>

Subsystem Number (SSN)

### 1.3.68 show cs7 instance <0-15> sccp timers

#### Command

```
show cs7 instance <0-15> sccp timers
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signaling Connection Control Part

timers

Show List of SCCP timers

### 1.3.69 show cs7 instance <0-15> sccp users

#### Command

```
show cs7 instance <0-15> sccp users
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

sccp

Signalling Connection Control Part

users

Show List of SCCP Users registered

### 1.3.70 show cs7 instance <0-15> users

#### Command

```
show cs7 instance <0-15> users
```

#### Parameters

show

Show running system information

cs7

ITU-T Signaling System 7

instance

An instance of the SS7 stack

<0-15>

An instance of the SS7 stack

users

User Table

### 1.3.71 show e1\_driver

#### Command

```
show e1_driver
```

#### Parameters

show

Show running system information

e1\_driver

Display information about available E1 drivers

### 1.3.72 show e1\_line [<0-255>] [stats]

#### Command

```
show e1_line [<0-255>] [stats]
```

#### Parameters

show

Show running system information

e1\_line

Display information about a E1 line

[<0-255>]

E1 Line Number

[stats]

Include statistics

### 1.3.73 show e1\_timeslot [<0-255>] [<0-31>]

#### Command

```
show e1_timeslot [<0-255>] [<0-31>]
```

#### Parameters

show

Show running system information

e1\_timeslot

Display information about a E1 timeslot

[<0-255>]

E1 Line Number

[<0-31>]

E1 Timeslot Number

### 1.3.74 show fsm NAME

#### Command

```
show fsm NAME
```

#### Parameters

##### show

Show running system information

##### fsm

Show information about finite state machines

##### NAME

Display information about a single named finite state machine

### 1.3.75 show fsm all

#### Command

```
show fsm all
```

#### Parameters

##### show

Show running system information

##### fsm

Show information about finite state machines

##### all

Display a list of all registered finite state machines

### 1.3.76 show fsm-instances NAME

#### Command

```
show fsm-instances NAME
```

#### Parameters

##### show

Show running system information

##### fsm-instances

Show information about finite state machine instances

##### NAME

Display a list of all FSM instances of the named finite state machine

---

### 1.3.77 show fsm-instances all

#### Command

```
show fsm-instances all
```

#### Parameters

show

Show running system information

fsm-instances

Show information about finite state machine instances

all

Display a list of all FSM instances of all finite state machine

### 1.3.78 show history

#### Command

```
show history
```

#### Parameters

show

Show running system information

history

Display the session command history

### 1.3.79 show lchan [<0-255>] [<0-255>] [<0-7>] [<0-7>]

#### Command

```
show lchan [<0-255>] [<0-255>] [<0-7>] [<0-7>]
```

#### Parameters

show

Show running system information

lchan

Display information about a logical channel

[<0-255>]

BTS Number

[<0-255>]

TRX Number

[<0-7>]

Timeslot Number

[<0-7>]

Logical Channel Number

---

### 1.3.80 show lchan summary [<0-255>] [<0-255>] [<0-7>] [<0-7>]

#### Command

```
show lchan summary [<0-255>] [<0-255>] [<0-7>] [<0-7>]
```

#### Parameters

##### show

Show running system information

##### lchan

Display information about a logical channel

##### summary

Short summary (used lchans)

##### [<0-255>]

BTS Number

##### [<0-255>]

TRX Number

##### [<0-7>]

Timeslot Number

##### [<0-7>]

Logical Channel Number

### 1.3.81 show lchan summary-all [<0-255>] [<0-255>] [<0-7>] [<0-7>]

#### Command

```
show lchan summary-all [<0-255>] [<0-255>] [<0-7>] [<0-7>]
```

#### Parameters

##### show

Show running system information

##### lchan

Display information about a logical channel

##### summary-all

Short summary (all lchans)

##### [<0-255>]

BTS Number

##### [<0-255>]

TRX Number

##### [<0-7>]

Timeslot Number

##### [<0-7>]

Logical Channel Number

### 1.3.82 show logging vty

#### Command

```
show logging vty
```

#### Parameters

##### show

Show running system information

##### logging

Show current logging configuration

##### vtty

Show current logging configuration for this vty

### 1.3.83 show mgw-pool

#### Command

```
show mgw-pool
```

#### Parameters

##### show

Show running system information

##### mgw-pool

Display information about the MGW-Pool

### 1.3.84 show mscc

#### Command

```
show mscc
```

#### Parameters

##### show

Show running system information

##### mscc

MSC Connections and State

### 1.3.85 show network

#### Command

```
show network
```

#### Parameters

##### show

Show running system information

##### network

Display information about a GSM NETWORK

### 1.3.86 show nri [<0-1000>]

#### Command

```
show nri [<0-1000>]
```

#### Parameters

##### show

Show running system information

##### nri

Mapping of Network Resource Indicators, for MSC pooling

##### [<0-1000>]

Optional MSC number to limit to

### 1.3.87 show online-help

#### Command

```
show online-help
```

#### Parameters

##### show

Show running system information

##### online-help

Online help



### 1.3.88 show paging [<0-255>]

#### Command

```
show paging [<0-255>]
```

#### Parameters

show

Show running system information

paging

Display information about paging requests of a BTS

[<0-255>]

BTS Number

### 1.3.89 show paging-group <0-255> IMSI

#### Command

```
show paging-group <0-255> IMSI
```

#### Parameters

show

Show running system information

paging-group

Display the paging group

<0-255>

BTS Number

IMSI

IMSI

### 1.3.90 show position

#### Command

```
show position
```

#### Parameters

show

Show running system information

position

Position information of the BTS

### 1.3.91 show rate-counters [skip-zero]

#### Command

```
show rate-counters [skip-zero]
```

#### Parameters

##### show

Show running system information

##### rate-counters

Show all rate counters

##### [skip-zero]

Skip items with total count zero

### 1.3.92 show rejected-bts

#### Command

```
show rejected-bts
```

#### Parameters

##### show

Show running system information

##### rejected-bts

Display recently rejected BTS devices

### 1.3.93 show startup-config

#### Command

```
show startup-config
```

#### Parameters

##### show

Show running system information

##### startup-config

Contentes of startup configuration

---

### 1.3.94 show statistics

#### Command

```
show statistics
```

#### Parameters

##### show

Show running system information

##### statistics

Statistics about the BSC

### 1.3.95 show stats [skip-zero]

#### Command

```
show stats [skip-zero]
```

#### Parameters

##### show

Show running system information

##### stats

Show statistical values

##### [skip-zero]

Skip items with total count zero

### 1.3.96 show stats level (global|peer|subscriber) [skip-zero]

#### Command

```
show stats level (global|peer|subscriber) [skip-zero]
```

#### Parameters

##### show

Show running system information

##### stats

Show statistical values

##### level

Set the maximum group level

##### global

Show global groups only

---

peer

Show global and network peer related groups

subscriber

Show global, peer, and subscriber groups

[skip-zero]

Skip items with total count zero

### 1.3.97 show subscriber all

Command

```
show subscriber all
```

Parameters

show

Show running system information

subscriber

Display information about subscribers

all

All Subscribers

### 1.3.98 show talloc-context (application|global|all) (full|brief|DEPTH)

Command

```
show talloc-context (application|global|all) (full|brief|DEPTH)
```

Parameters

show

Show running system information

talloc-context

Show talloc memory hierarchy

application

Application's context

global

Global context (OTC\_GLOBAL)

all

All contexts, if NULL-context tracking is enabled

full

Display a full talloc memory hierarchy

brief

Display a brief talloc memory hierarchy

DEPTH

Specify required maximal depth value

### 1.3.99 show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP

#### Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) filter REGEXP
```

#### Parameters

##### show

Show running system information

##### talloc-context

Show talloc memory hierarchy

##### application

Application's context

##### global

Global context (OTC\_GLOBAL)

##### all

All contexts, if NULL-context tracking is enabled

##### full

Display a full talloc memory hierarchy

##### brief

Display a brief talloc memory hierarchy

##### DEPTH

Specify required maximal depth value

##### filter

Filter chunks using regular expression

##### REGEXP

Regular expression

### 1.3.100 show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS

#### Command

```
show talloc-context (application|global|all) (full|brief|DEPTH) tree ADDRESS
```

#### Parameters

##### show

Show running system information

##### talloc-context

Show talloc memory hierarchy

##### application

Application's context

global

Global context (OTC\_GLOBAL)

all

All contexts, if NULL-context tracking is enabled

full

Display a full talloc memory hierarchy

brief

Display a brief talloc memory hierarchy

DEPTH

Specify required maximal depth value

tree

Display only a specific memory chunk

ADDRESS

Chunk address (e.g. 0xdeadbeef)

### 1.3.101 show timer [(net|mgw)] [TNNNN]

Command

```
show timer [(net|mgw)] [TNNNN]
```

Parameters

show

Show running system information

timer

Show timers

[net]

GSM network

[mgw]

MGW (Media Gateway) interface

[TNNNN]

T- or X-timer-number -- 3GPP compliant timer number of the format '1234' or 'T1234' or 't1234'; Osmocom-specific timer number of the format: 'X1234' or 'x1234'.

### 1.3.102 show timeslot [<0-255>] [<0-255>] [<0-7>]

Command

```
show timeslot [<0-255>] [<0-255>] [<0-7>]
```

Parameters

show

Show running system information

timeslot

Display information about a TS

[<0-255>]

BTS Number

[<0-255>]

TRX Number

[<0-7>]

Timeslot Number

### 1.3.103 show trx (connected|disconnected)

Command

```
show trx (connected|disconnected)
```

Parameters

show

Show running system information

trx

Display information about a TRX

connected

Show TRX with RSL connected

disconnected

Show TRX with RSL disconnected

### 1.3.104 show trx [<0-255>] [<0-255>]

Command

```
show trx [<0-255>] [<0-255>]
```

Parameters

show

Show running system information

trx

Display information about a TRX

[<0-255>]

BTS Number

[<0-255>]

TRX Number

### 1.3.105 show version

#### Command

```
show version
```

#### Parameters

##### show

Show running system information

##### version

Displays program version

### 1.3.106 shutdown

#### Command

```
shutdown
```

#### Parameters

##### shutdown

Request a shutdown of the program

### 1.3.107 stats report

#### Command

```
stats report
```

#### Parameters

##### stats

Stats related commands

##### report

Manurally trigger reporting of stats

### 1.3.108 stats reset

#### Command

```
stats reset
```

#### Parameters

##### stats

Stats related commands

##### reset

Reset all rate counter stats

---



### 1.3.109 terminal length <0-512>

#### Command

```
terminal length <0-512>
```

#### Parameters

##### terminal

Set terminal line parameters

##### length

Set number of lines on a screen

##### <0-512>

Number of lines on screen (0 for no pausing)

### 1.3.110 terminal monitor

#### Command

```
terminal monitor
```

#### Parameters

##### terminal

Set terminal line parameters

##### monitor

Copy debug output to the current terminal line

### 1.3.111 terminal no length

#### Command

```
terminal no length
```

#### Parameters

##### terminal

Set terminal line parameters

##### no

Negate a command or set its defaults

##### length

Set number of lines on a screen

### 1.3.112 terminal no monitor

#### Command

```
terminal no monitor
```

#### Parameters

##### terminal

Set terminal line parameters

##### no

Negate a command or set its defaults

##### monitor

Copy debug output to the current terminal line

### 1.3.113 who

#### Command

```
who
```

#### Parameters

##### who

Display who is on vty

## 1.4 config

The config node is the root for all configuration commands, which are identical to the config file format. Changes made on the telnet VTY can be made persistent with the 'write file' command.

### 1.4.1 banner motd default

#### Command

```
banner motd default
```

#### Parameters

##### banner

Set banner string

##### motd

Strings for motd

##### default

Default string

---

### 1.4.2 banner motd file [FILE]

#### Command

```
banner motd file [FILE]
```

#### Parameters

##### banner

Set banner

##### motd

Banner for motd

##### file

Banner from a file

##### [FILE]

Filename

### 1.4.3 bsc

#### Command

```
bsc
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### bsc

Configure BSC

### 1.4.4 cbc

#### Command

```
cbc
```

#### Parameters

##### cbc

Configure CBSP Link to Cell Broadcast Centre

---

### 1.4.5 cpu-sched

#### Command

```
cpu-sched
```

#### Parameters

cpu-sched

Configure CPU Scheduler related settings

### 1.4.6 cs7 instance <0-15>

#### Command

```
cs7 instance <0-15>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

cs7

ITU-T Signaling System 7

instance

Configure a SS7 Instance

<0-15>

An instance of the SS7 stack

### 1.4.7 ctrl

#### Command

```
ctrl
```

#### Parameters

ctrl

Configure the Control Interface

---

### 1.4.8 e1\_input

#### Command

```
e1_input
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1\_input

Configure E1/T1/J1 TDM input

### 1.4.9 enable password (8|) WORD

#### Command

```
enable password (8|) WORD
```

#### Parameters

enable

Modify enable password parameters

password

Assign the privileged level password

8

Specifies a HIDDEN password will follow

dummy string

WORD

The HIDDEN 'enable' password string

### 1.4.10 enable password LINE

#### Command

```
enable password LINE
```

#### Parameters

enable

Modify enable password parameters

password

Assign the privileged level password

LINE

The UNENCRYPTED (cleartext) 'enable' password

---

### 1.4.11 hostname WORD

#### Command

```
hostname WORD
```

#### Parameters

##### hostname

Set system's network name

##### WORD

This system's network name

### 1.4.12 line vty

#### Command

```
line vty
```

#### Parameters

##### line

Configure a terminal line

##### vtty

Virtual terminal

### 1.4.13 log alarms <2-32700>

#### Command

```
log alarms <2-32700>
```

#### Parameters

##### log

Configure logging sub-system

##### alarms

Logging alarms to osmo\_strrb

##### <2-32700>

Maximum number of messages to log

---

#### 1.4.14 log file FILENAME [blocking-io]

##### Command

```
log file FILENAME [blocking-io]
```

##### Parameters

log

Configure logging sub-system

file

Logging to text file

FILENAME

Filename

[blocking-io]

Use blocking, synchronous I/O

#### 1.4.15 log gsmtap [HOSTNAME]

##### Command

```
log gsmtap [HOSTNAME]
```

##### Parameters

log

Configure logging sub-system

gsmtap

Logging via GSMTAP

[HOSTNAME]

Host name to send the GSMTAP logging to (UDP port 4729)

#### 1.4.16 log stderr [blocking-io]

##### Command

```
log stderr [blocking-io]
```

##### Parameters

log

Configure logging sub-system

stderr

Logging via STDERR of the process

[blocking-io]

Use blocking, synchronous I/O

---

### 1.4.17 log syslog (authpriv|cron|daemon|ftp|lpr|mail|news|user|uucp)

#### Command

```
log syslog (authpriv|cron|daemon|ftp|lpr|mail|news|user|uucp)
```

#### Parameters

log

Configure logging sub-system

syslog

Logging via syslog

authpriv

Security/authorization messages facility

cron

Clock daemon (cron/at) facility

daemon

General system daemon facility

ftp

Ftp daemon facility

lpr

Line printer facility

mail

Mail facility

news

News facility

user

Generic facility

uucp

UUCP facility

### 1.4.18 log syslog local <0-7>

#### Command

```
log syslog local <0-7>
```

#### Parameters

log

Configure logging sub-system

syslog

Logging via syslog



local

Syslog LOCAL facility

<0-7>

Local facility number

### 1.4.19 log systemd-journal [raw]

Command

```
log systemd-journal [raw]
```

Parameters

log

Configure logging sub-system

systemd-journal

Logging to systemd-journal

[raw]

Offload rendering of the meta information (location, category) to systemd

### 1.4.20 msc [<0-1000>]

Command

```
msc [<0-1000>]
```

Global attributes

Flag: !

This command applies immediately

Parameters

msc

Configure MSC details

[<0-1000>]

MSC connection to configure

### 1.4.21 network

#### Command

```
network
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

network

Configure the GSM network

### 1.4.22 no banner motd

#### Command

```
no banner motd
```

#### Parameters

no

Negate a command or set its defaults

banner

Set banner string

motd

Strings for motd

### 1.4.23 no enable password

#### Command

```
no enable password
```

#### Parameters

no

Negate a command or set its defaults

enable

Modify enable password parameters

password

Assign the privileged level password

---

### 1.4.24 no hostname [HOSTNAME]

#### Command

```
no hostname [HOSTNAME]
```

#### Parameters

no

Negate a command or set its defaults

hostname

Reset system's network name

[HOSTNAME]

Host name of this router

### 1.4.25 no log alarms

#### Command

```
no log alarms
```

#### Parameters

no

Negate a command or set its defaults

log

Configure logging sub-system

alarms

Logging alarms to osmo\_strrb

### 1.4.26 no log file FILENAME

#### Command

```
no log file FILENAME
```

#### Parameters

no

Negate a command or set its defaults

log

Configure logging sub-system

file

Logging to text file

FILENAME

Filename

### 1.4.27 no log gsmtap [HOSTNAME]

#### Command

```
no log gsmtap [HOSTNAME]
```

#### Parameters

no

Negate a command or set its defaults

log

Configure logging sub-system

gsmtap

Logging via GSMTAP

[HOSTNAME]

Host name to send the GSMTAP logging to (UDP port 4729)

### 1.4.28 no log stderr

#### Command

```
no log stderr
```

#### Parameters

no

Negate a command or set its defaults

log

Configure logging sub-system

stderr

Logging via STDERR of the process

### 1.4.29 no log syslog

#### Command

```
no log syslog
```

#### Parameters

no

Negate a command or set its defaults

log

Configure logging sub-system

syslog

Logging via syslog

---

### 1.4.30 no log systemd-journal

#### Command

```
no log systemd-journal
```

#### Parameters

no

Negate a command or set its defaults

log

Configure logging sub-system

systemd-journal

Logging to systemd-journal

### 1.4.31 no service advanced-vty

#### Command

```
no service advanced-vty
```

#### Parameters

no

Negate a command or set its defaults

service

Set up miscellaneous service

advanced-vty

Enable advanced mode vty interface

### 1.4.32 no service terminal-length [<0-512>]

#### Command

```
no service terminal-length [<0-512>]
```

#### Parameters

no

Negate a command or set its defaults

service

Set up miscellaneous service

terminal-length

System wide terminal length configuration

[<0-512>]

Number of lines of VTY (0 means no line control)

---

### 1.4.33 no stats reporter log [NAME]

#### Command

```
no stats reporter log [NAME]
```

#### Parameters

no

Negate a command or set its defaults

stats

Configure stats sub-system

reporter

Configure a stats reporter

log

Report to the logger

[NAME]

Name of the reporter

### 1.4.34 no stats reporter statsd [NAME]

#### Command

```
no stats reporter statsd [NAME]
```

#### Parameters

no

Negate a command or set its defaults

stats

Configure stats sub-system

reporter

Configure a stats reporter

statsd

Report to a STATSD server

[NAME]

Name of the reporter

### 1.4.35 password (8|) WORD

#### Command

```
password (8|) WORD
```

#### Parameters

##### password

Assign the terminal connection password

##### 8

Specifies a HIDDEN password will follow

##### dummy string

##### WORD

The HIDDEN line password string

### 1.4.36 password LINE

#### Command

```
password LINE
```

#### Parameters

##### password

Assign the terminal connection password

##### LINE

The UNENCRYPTED (cleartext) line password

### 1.4.37 service advanced-vty

#### Command

```
service advanced-vty
```

#### Parameters

##### service

Set up miscellaneous service

##### advanced-vty

Enable advanced mode vty interface

---

### 1.4.38 service terminal-length <0-512>

#### Command

```
service terminal-length <0-512>
```

#### Parameters

##### service

Set up miscellaneous service

##### terminal-length

System wide terminal length configuration

##### <0-512>

Number of lines of VTY (0 means no line control)

### 1.4.39 show history

#### Command

```
show history
```

#### Parameters

##### show

Show running system information

##### history

Display the session command history

### 1.4.40 stats interval <0-65535>

#### Command

```
stats interval <0-65535>
```

#### Parameters

##### stats

Configure stats sub-system

##### interval

Set the reporting interval

##### <0-65535>

Interval in seconds (0 disables the reporting interval)

---



### 1.4.41 stats reporter log [NAME]

#### Command

```
stats reporter log [NAME]
```

#### Parameters

stats

Configure stats sub-system

reporter

Configure a stats reporter

log

Report to the logger

[NAME]

Name of the reporter

### 1.4.42 stats reporter statsd [NAME]

#### Command

```
stats reporter statsd [NAME]
```

#### Parameters

stats

Configure stats sub-system

reporter

Configure a stats reporter

statsd

Report to a STATSD server

[NAME]

Name of the reporter

### 1.4.43 stats-tcp batch-size <1-65535>

#### Command

```
stats-tcp batch-size <1-65535>
```

#### Parameters

stats-tcp

Configure stats sub-system

batch-size

Set the number of tcp sockets that are processed per stats polling interval

<1-65535>

Number of sockets per interval

### 1.4.44 stats-tcp interval <0-65535>

#### Command

```
stats-tcp interval <0-65535>
```

#### Parameters

##### stats-tcp

Configure stats sub-system

##### interval

Set the tcp socket stats polling interval

##### <0-65535>

Interval in seconds (0 disables the polling interval)

## 1.5 config-log

The log node is commonly available in all Osmocom programs and allows configuring logging to stderr and/or log files, including logging category and level filtering as well as output formatting options. Note that the 'logging enable' command is required to make logging commands available on the telnet VTY.

### 1.5.1 logging color (0|1)

#### Command

```
logging color (0|1)
```

#### Parameters

##### logging

Configure logging

##### color

Configure color-printing for log messages

##### 0

Don't use color for printing messages

##### 1

Use color for printing messages

---

### 1.5.2 logging filter all (0|1)

Disable/enable general log output on a given target. Typically, 'logging filter all 1' allows to see the usual log output on a given target. Setting to '0' can be useful when logging to the telnet VTY console: mute all log output to allow typing VTY commands on the telnet prompt without interference from log output; 'logging filter all 1' then re-enables logging in the same log output configuration as before. Some applications provide more specific filters, e.g. to log a given IMSI only. To employ such filters, set 'logging filter all 0' to disable general logging, and then enable a more specific filter instead.

#### Command

```
logging filter all (0|1)
```

#### Parameters

##### logging

Configure logging

##### filter

Filter log messages

##### all

Do you want to log all messages?

##### 0

Only print messages matched by other filters

##### 1

Bypass filter and print all messages

### 1.5.3 logging filter imsi IMSI

#### Command

```
logging filter imsi IMSI
```

#### Parameters

##### logging

Configure logging

##### filter

Filter log messages

##### imsi

Filter log messages by IMSI

##### IMSI

IMSI to be used as filter

---

### 1.5.4 logging level (rll|mm|rr|rsl|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|c...

#### Command

```
logging level (rll|mm|rr|rsl|nm|pag|meas|msc|ho|hodec|ref|ctrl|filter|pcu|lcls|chan|ts| ↵
as|cbs|lcs|asci|reset|loop|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats| ↵
lgsup|loap|lss7|lscdp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lnsdata|lnssignal| ↵
liuup|lpfcp|lcsn1|lio) (debug|info|notice|error|fatal)
```

#### Parameters

##### logging

Configure logging

##### level

Set the log level for a specified category

##### rll

A-bis Radio Link Layer (RLL)

##### mm

Layer3 Mobility Management (MM)

##### rr

Layer3 Radio Resource (RR)

##### rsl

A-bis Radio Signalling Link (RSL)

##### nm

A-bis Network Management / O&M (NM/OML)

##### pag

Paging Subsystem

##### meas

Radio Measurement Processing

##### msc

Mobile Switching Center

##### ho

Hand-Over Process

##### hodec

Hand-Over Decision

##### ref

Reference Counting

##### ctrl

Control interface

##### filter

BSC/NAT IMSI based filtering

---

pcu  
PCU Interface

lcls  
Local Call, Local Switch

chan  
lchan FSM

ts  
timeslot FSM

as  
assignment FSM

cbs  
Cell Broadcast System

lcs  
Location Services

asci  
Advanced Speech Call Items (VGCS/VBS)

reset  
RESET/ACK on A and Lb interfaces

loop  
Control loops

lglobal  
Library-internal global log family

llapd  
LAPD in libosmogsm

linp  
A-bis Input Subsystem

lmux  
A-bis B-Subchannel TRAU Frame Multiplex

lmi  
A-bis Input Driver for Signalling

lmib  
A-bis Input Driver for B-Channels (voice)

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

---

lstats

Statistics messages and logging

lgsup

Generic Subscriber Update Protocol

loap

Osmocom Authentication Protocol

lss7

libosmo-sigtran Signalling System 7

lsccp

libosmo-sigtran SCCP Implementation

lsua

libosmo-sigtran SCCP User Adaptation

lm3ua

libosmo-sigtran MTP3 User Adaptation

lmgcp

libosmo-mgcp Media Gateway Control Protocol

ljibuf

libosmo-netif Jitter Buffer

lrspro

Remote SIM protocol

lns

GPRS NS layer

lbssgp

GPRS BSSGP layer

lnsdata

GPRS NS layer data PDU

lnssignal

GPRS NS layer signal PDU

liuup

Iu UP layer

lpfcp

libosmo-pfcp Packet Forwarding Control Protocol

lcsn1

libosmo-csn1 Concrete Syntax Notation 1 codec

lio

libosmocore IO Subsystem

debug

Log debug messages and higher levels

---

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.5.5 logging level force-all (debug|info|notice|error|fatal)

Command

```
logging level force-all (debug|info|notice|error|fatal)
```

Parameters

logging

Configure logging

level

Set the log level for a specified category

force-all

Globally force all logging categories to a specific level. This is released by the 'no logging level force-all' command. Note: any 'logging level <category> <level>' commands will have no visible effect after this, until the forced level is released.

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.5.6 logging level set-all (debug|info|notice|error|fatal)

Command

```
logging level set-all (debug|info|notice|error|fatal)
```

Parameters

---

## logging

Configure logging

## level

Set the log level for a specified category

## set-all

Once-off set all categories to the given log level. There is no single command to take back these changes -- each category is set to the given level, period.

## debug

Log debug messages and higher levels

## info

Log informational messages and higher levels

## notice

Log noticeable messages and higher levels

## error

Log error messages and higher levels

## fatal

Log only fatal messages

### 1.5.7 logging print category (0|1)

#### Command

```
logging print category (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### category

Configure log message

##### 0

Don't prefix each log message

##### 1

Prefix each log message with category/subsystem name



### 1.5.8 logging print category-hex (0|1)

#### Command

```
logging print category-hex (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### category-hex

Configure log message

0

Don't prefix each log message

1

Prefix each log message with category/subsystem nr in hex ('<000b>')

### 1.5.9 logging print extended-timestamp (0|1)

#### Command

```
logging print extended-timestamp (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### extended-timestamp

Configure log message timestamping

0

Don't prefix each log message

1

Prefix each log message with current timestamp with YYYYMMDDhhmmssnnn

### 1.5.10 logging print file (0|1|basename) [last]

#### Command

```
logging print file (0|1|basename) [last]
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### file

Configure log message

##### 0

Don't prefix each log message

##### 1

Prefix each log message with the source file and line

##### basename

Prefix each log message with the source file's basename (strip leading paths) and line

##### [last]

Log source file info at the end of a log line. If omitted, log source file info just before the log text.

### 1.5.11 logging print level (0|1)

#### Command

```
logging print level (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### level

Configure log message

##### 0

Don't prefix each log message

##### 1

Prefix each log message with the log level name

### 1.5.12 logging print thread-id (0|1)

#### Command

```
logging print thread-id (0|1)
```

#### Parameters

##### logging

Configure logging

##### print

Log output settings

##### thread-id

Configure log message logging Thread ID

0

Don't prefix each log message

1

Prefix each log message with current Thread ID

### 1.5.13 logging timestamp (0|1)

#### Command

```
logging timestamp (0|1)
```

#### Parameters

##### logging

Configure logging

##### timestamp

Configure log message timestamping

0

Don't prefix each log message

1

Prefix each log message with current timestamp

### 1.5.14 no logging level force-all

#### Command

```
no logging level force-all
```

#### Parameters

---

no

Negate a command or set its defaults

logging

Configure logging

level

Set the log level for a specified category

force-all

Release any globally forced log level set with 'logging level force-all <level>'

## 1.6 config-stats

### 1.6.1 disable

Command

```
disable
```

Parameters

disable

Disable the reporter

### 1.6.2 enable

Command

```
enable
```

Parameters

enable

Enable the reporter

### 1.6.3 flush-period <0-65535>

Command

```
flush-period <0-65535>
```

Parameters

flush-period

Configure stats sub-system

<0-65535>

Send all stats even if they have not changed (i.e. force the flush) every N-th reporting interval. Set to 0 to disable regular flush (default).

### 1.6.4 level (global|peer|subscriber)

#### Command

```
level (global|peer|subscriber)
```

#### Parameters

##### level

Set the maximum group level

##### global

Report global groups only

##### peer

Report global and network peer related groups

##### subscriber

Report global, peer, and subscriber groups

### 1.6.5 local-ip ADDR

#### Command

```
local-ip ADDR
```

#### Parameters

##### local-ip

Set the IP address to which we bind locally

##### ADDR

IP Address

### 1.6.6 mtu <100-65535>

#### Command

```
mtu <100-65535>
```

#### Parameters

##### mtu

Set the maximum packet size

##### <100-65535>

Size in byte

---

### 1.6.7 no local-ip

#### Command

```
no local-ip
```

#### Parameters

no

Negate a command or set its defaults

local-ip

Set the IP address to which we bind locally

### 1.6.8 no mtu

#### Command

```
no mtu
```

#### Parameters

no

Negate a command or set its defaults

mtu

Set the maximum packet size

### 1.6.9 no prefix

#### Command

```
no prefix
```

#### Parameters

no

Negate a command or set its defaults

prefix

Set the item name prefix

### 1.6.10 prefix PREFIX

#### Command

```
prefix PREFIX
```

#### Parameters

prefix

Set the item name prefix

PREFIX

The prefix string

---

### 1.6.11 remote-ip ADDR

#### Command

```
remote-ip ADDR
```

#### Parameters

##### remote-ip

Set the remote IP address to which we connect

##### ADDR

IP Address

### 1.6.12 remote-port <1-65535>

#### Command

```
remote-port <1-65535>
```

#### Parameters

##### remote-port

Set the remote port to which we connect

##### <1-65535>

Remote port number

## 1.7 config-line

### 1.7.1 bind A.B.C.D [<0-65535>]

#### Command

```
bind A.B.C.D [<0-65535>]
```

#### Parameters

##### bind

Accept VTY telnet connections on local interface

##### A.B.C.D

Local interface IP address (default: 127.0.0.1)

##### [<0-65535>]

Local TCP port number

---

### 1.7.2 login

#### Command

```
login
```

#### Parameters

login

Enable password checking

### 1.7.3 no login

#### Command

```
no login
```

#### Parameters

no

Negate a command or set its defaults

login

Enable password checking

## 1.8 config-e1\_input

### 1.8.1 e1\_line <0-255> connect-timeout <0-60>

#### Command

```
e1_line <0-255> connect-timeout <0-60>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

connect-timeout

Set connect timeout

<0-60>

Connect timeout in seconds (0 to disable)

---



### 1.8.2 e1\_line <0-255> driver (misdn|misdn\_lapd|dahdi|e1d|ipa|unixsocket)

#### Command

```
e1_line <0-255> driver (misdn|misdn_lapd|dahdi|e1d|ipa|unixsocket)
```

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

driver

Set driver for this line

misdn

mISDN supported E1 Card (kernel LAPD)

misdn\_lapd

mISDN supported E1 Card (userspace LAPD)

dahdi

DAHDI supported E1/T1/J1 Card

e1d

osmo-e1d supported E1 interface

ipa

IPA TCP/IP input

unixsocket

Unix socket input

### 1.8.3 e1\_line <0-255> ipa-keepalive <1-300> <1-300>

#### Command

```
e1_line <0-255> ipa-keepalive <1-300> <1-300>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

**ipa-keepalive**

Enable IPA PING/PONG keep-alive

<1-300>

Idle interval in seconds before probes are sent

<1-300>

Time to wait for PONG response

**1.8.4 e1\_line <0-255> keepalive****Command**

```
e1_line <0-255> keepalive
```

**Library specific attributes**

Flag: I

This command applies on IPA link establishment

**Parameters**

**e1\_line**

Configure E1/T1/J1 Line

<0-255>

Line Number

**keepalive**

Enable keep-alive probing

**1.8.5 e1\_line <0-255> keepalive <1-300> <1-20> <1-300>****Command**

```
e1_line <0-255> keepalive <1-300> <1-20> <1-300>
```

**Library specific attributes**

Flag: I

This command applies on IPA link establishment

**Parameters**

**e1\_line**

Configure E1/T1/J1 Line

<0-255>

Line Number

keepalive

Enable keep-alive probing

<1-300>

Idle interval in seconds before probes are sent

<1-20>

Number of probes to sent

<1-300>

Delay between probe packets in seconds

### 1.8.6 e1\_line <0-255> name .LINE

Command

```
e1_line <0-255> name .LINE
```

Global attributes

Flag: !

This command applies immediately

Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

name

Set name for this line

.LINE

Human readable name

### 1.8.7 e1\_line <0-255> pcap .FILE

Command

```
e1_line <0-255> pcap .FILE
```

Global attributes

Flag: !

This command applies immediately

Parameters

---

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

pcap

Setup a pcap recording of E1 traffic for line

.FILE

Filename to save the packets to

### 1.8.8 e1\_line <0-255> port <0-255>

Command

```
e1_line <0-255> port <0-255>
```

Library specific attributes

Flag: L

This command applies on E1 line update

Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

port

Set physical port/span/card number

<0-255>

E1/T1 Port/Span/Card number

### 1.8.9 e1\_line <0-255> socket .SOCKET

Command

```
e1_line <0-255> socket .SOCKET
```

Library specific attributes

Flag: L

This command applies on E1 line update

Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

socket

Set socket path for unixsocket

.SOCKET

socket path

### 1.8.10 ipa bind A.B.C.D

Command

```
ipa bind A.B.C.D
```

Library specific attributes

Flag: L

This command applies on E1 line update

Parameters

ipa

ipa driver config

bind

Set ipa local bind address

A.B.C.D

Listen on this IP address (default 0.0.0.0)

### 1.8.11 ipa ip-dscp (oml|rs1) <0-63>

Command

```
ipa ip-dscp (oml|rs1) <0-63>
```

Library specific attributes

Flag: I

This command applies on IPA link establishment

Parameters

ipa

ipa driver config

ip-dscp

Set IP DSCP value for outbound packets

oml

Set IP DSCP for OML link

rsl

Set IP DSCP for RSL link

<0-63>

IP DSCP Value to use

### 1.8.12 ipa socket-priority (oml|rsl) <0-255>

Command

```
ipa socket-priority (oml|rsl) <0-255>
```

Library specific attributes

Flag: I

This command applies on IPA link establishment

Parameters

ipa

ipa driver config

socket-priority

Set socket priority value for outbound packets

oml

Set socket priority for OML link

rsl

Set socket priority for RSL link

<0-255>

socket priority value to use (>6 requires CAP\_NET\_ADMIN)

### 1.8.13 no e1\_line <0-255> ipa-keepalive

Command

```
no e1_line <0-255> ipa-keepalive
```

Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

ipa-keepalive

Enable IPA PING/PONG keep-alive

### 1.8.14 no e1\_line <0-255> keepalive

#### Command

```
no e1_line <0-255> keepalive
```

#### Library specific attributes

Flag: I

This command applies on IPA link establishment

#### Parameters

no

Negate a command or set its defaults

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

keepalive

Enable keep-alive probing

### 1.8.15 no e1\_line <0-255> pcap

#### Command

```
no e1_line <0-255> pcap
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

---

no

Negate a command or set its defaults

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

pcap

Disable pcap recording of E1 traffic for line

## 1.9 config-ctrl

### 1.9.1 bind A.B.C.D [<0-65535>]

Command

```
bind A.B.C.D [<0-65535>]
```

Parameters

bind

Set bind address to listen for Control connections

A.B.C.D

Local IP address (default 127.0.0.1)

[<0-65535>]

Local TCP port number

## 1.10 config-cs7

### 1.10.1 as NAME (sua|m3ua|ipa)

Command

```
as NAME (sua|m3ua|ipa)
```

Global attributes

Flag: !

This command applies immediately

Parameters

as

Configure an Application Server

---



**NAME**

Name of the Application Server

**sua**

SCCP User Adaptation

**m3ua**

MTP3 User Adaptation

**ipa**

IPA Multiplex (SCCP Lite)

**1.10.2 asp NAME <0-65535> <0-65535> (sua|m3ua|ipa)****Command**

```
asp NAME <0-65535> <0-65535> (sua|m3ua|ipa)
```

**Global attributes****Flag: @**

This command applies on VTY node exit

**Parameters****asp**

Configure Application Server Process

**NAME**

Name of ASP

**<0-65535>**

Remote SCTP port number

**<0-65535>**

Local SCTP port number

**sua**

SCCP User Adaptation

**m3ua**

MTP3 User Adaptation

**ipa**

IPA Multiplex (SCCP Lite)

### 1.10.3 description .TEXT

#### Command

```
description .TEXT
```

#### Parameters

##### description

Save human-readable description of the object

##### .TEXT

Text until the end of the line

### 1.10.4 network-indicator (international | national | reserved | spare)

#### Command

```
network-indicator (international | national | reserved | spare)
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### network-indicator

Configure the Network Indicator

##### international

International Network

##### national

National Network

##### reserved

Reserved Network

##### spare

Spare Network

### 1.10.5 no as NAME

#### Command

```
no as NAME
```

#### Global attributes

---

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

as

Disable Application Server

NAME

Name of AS

### 1.10.6 no asp NAME

Command

```
no asp NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

asp

Disable Application Server Process

NAME

Name of ASP

### 1.10.7 no sccp-address NAME

Command

```
no sccp-address NAME
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

sccp-address

Delete an SCCP addressbook entry

NAME

Name of the SCCP Address

### 1.10.8 point-code POINT\_CODE

#### Command

```
point-code POINT_CODE
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

point-code

Configure the local Point Code

POINT\_CODE

Point Code

### 1.10.9 point-code delimiter (default|dash)

#### Command

```
point-code delimiter (default|dash)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

point-code

Point Code

delimiter

Configure Point Code Delimiter

default

Use dot as delimiter

dash

User dash as delimiter

### 1.10.10 point-code format <1-24> [<1-23>] [<1-22>]

#### Command

```
point-code format <1-24> [<1-23>] [<1-22>]
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

point-code

Point Code

format

Configure Point Code Format

<1-24>

Length of first PC component

[<1-23>]

Length of second PC component

[<1-22>]

Length of third PC component

### 1.10.11 point-code format default

#### Command

```
point-code format default
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

point-code

Point Code

format

Configure Point Code Format

default

Default Point Code Format (3.8.3)

### 1.10.12 sccp max-optional-data (<0-999999>|standard)

#### Command

```
sccp max-optional-data (<0-999999>|standard)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

sccp

Configure SCCP behavior

max-optional-data

Adjust the upper bound for the optional data length (the payload) for CR, CC, CREF and RLSD messages. For any Optional Data part larger than this value in octets, send CR, CC, CREF and RLSD messages without any payload, and send the data payload in a separate Data Form 1 message. ITU-T Q.713 sections 4.2 thru 4.5 define a limit of 130 bytes for the 'Data' parameter. This limit can be adjusted here. May be useful for interop with nonstandard SCCP peers.

<0-999999>

Set a non-standard maximum allowed number of bytes

standard

Use the ITU-T Q.713 4.2 to 4.5 standard value of 130

### 1.10.13 sccp-address NAME

#### Command

```
sccp-address NAME
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

sccp-address

Create/Modify an SCCP addressbook entry

NAME

Name of the SCCP Address

---

### 1.10.14 sccp-timer (conn\_est|ias|iar|rel|repeat\_rel|int|guard|reset|reassembly) <1-99999...

#### Command

```
sccp-timer (conn_est|ias|iar|rel|repeat_rel|int|guard|reset|reassembly) <1-999999>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### sccp-timer

Configure SCCP timer values, see ITU-T Q.714

##### conn\_est

Waiting for connection confirm message, 1 to 2 minutes (default: 60)

##### ias

Send keep-alive: on an idle connection, delay before sending an Idle Timer message, 5 to 10 minutes (default: 420)

##### iar

Receive keep-alive: on an idle connection, delay until considering a connection as stale, 11 to 21 minutes (default: 900)

##### rel

Waiting for release complete message, 10 to 20 seconds (default: 10)

##### repeat\_rel

Waiting for release complete message; or to repeat sending released message after the initial expiry, 10 to 20 seconds (default: 10)

##### int

Waiting for release complete message; or to release connection resources, freeze the LRN and alert a maintenance function after the initial expiry, extending to 1 minute (default: 60)

##### guard

Waiting to resume normal procedure for temporary connection sections during the restart procedure, 23 to 25 minutes (default: 1380)

##### reset

Waiting to release temporary connection section or alert maintenance function after reset request message is sent, 10 to 20 seconds (default: 10)

##### reassembly

Waiting to receive all the segments of the remaining segments, single segmented message after receiving the first segment, 10 to 20 seconds (default: 10)

##### <1-999999>

Timer value, in seconds

---

### 1.10.15 xua rkm routing-key-allocation (static-only|dynamic-permitted)

#### Command

```
xua rkm routing-key-allocation (static-only|dynamic-permitted)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

xua

SIGTRAN xxxUA related

rkm

Routing Key Management

routing-key-allocation

Routing Key Management Allocation Policy

static-only

Only static (pre-configured) Routing Keys permitted

dynamic-permitted

Dynamically allocate Routing Keys for what ASPs request

## 1.11 config-cs7-as

### 1.11.1 asp NAME

#### Command

```
asp NAME
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

asp

Specify that a given ASP is part of this AS

NAME

Name of ASP to be added to AS



### 1.11.2 description .TEXT

#### Command

```
description .TEXT
```

#### Parameters

##### description

Save human-readable description of the object

##### .TEXT

Text until the end of the line

### 1.11.3 no asp NAME

#### Command

```
no asp NAME
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### no

Negate a command or set its defaults

##### asp

Specify ASP to be removed from this AS

##### NAME

Name of ASP to be removed

### 1.11.4 no traffic-mode

#### Command

```
no traffic-mode
```

#### Parameters

##### no

Negate a command or set its defaults

##### traffic-mode

Remove explicit traffic mode of operation of this AS

---

### 1.11.5 point-code override dpc PC

#### Command

```
point-code override dpc PC
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

point-code

Point Code Specific Features

override

Override (force) a point-code to hard-coded value

dpc

Override Source Point Code

PC

Override Destination Point Code

### 1.11.6 point-code override patch-sccp (disabled|both)

#### Command

```
point-code override patch-sccp (disabled|both)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

point-code

Point Code Specific Features

override

Override (force) a point-code to hard-coded value

patch-sccp

Patch point code values into SCCP called/calling address

disabled

Don't patch any point codes into SCCP called/calling address

both

Patch both origin and destination point codes into SCCP called/calling address

---

### 1.11.7 qos-class <0-255>

#### Command

```
qos-class <0-255>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

qos-class

Specity QoS Class of AS

<0-255>

QoS Class of AS

### 1.11.8 recovery-timeout <1-2000>

#### Command

```
recovery-timeout <1-2000>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

recovery-timeout

Specifies the recovery timeout value in milliseconds

<1-2000>

Recovery Timeout in Milliseconds

### 1.11.9 routing-key RCONTEXT DPC

#### Command

```
routing-key RCONTEXT DPC
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### routing-key

Define a routing key

##### RCONTEXT

Routing context number

##### DPC

Destination Point Code

### 1.11.10 routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup)

#### Command

```
routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup)
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### routing-key

Define a routing key

##### RCONTEXT

Routing context number

##### DPC

Destination Point Code

##### si

Match on Service Indicator

##### aal2

ATM Adaption Layer 2

##### bicc

Bearer Independent Call Control

##### b-isup

Broadband ISDN User Part

##### h248

H.248

##### isup

ISDN User Part

##### sat-isup

Sattelite ISDN User Part

##### sccp

Signalling Connection Control Part

##### tup

Telephony User Part

### 1.11.11 routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup) ssn S...

#### Command

```
routing-key RCONTEXT DPC si (aal2|bicc|b-isup|h248|isup|sat-isup|sccp|tup) ssn SSN
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

routing-key

Define a routing key

RCONTEXT

Routing context number

DPC

Destination Point Code

si

Match on Service Indicator

aal2

ATM Adaption Layer 2

bicc

Bearer Independent Call Control

b-isup

Broadband ISDN User Part

h248

H.248

isup

ISDN User Part

sat-isup

Sattelite ISDN User Part

sccp

Signalling Connection Control Part

tup

Telephony User Part

ssn

Match on Sub-System Number

SSN

Sub-System Number to match on

---

### 1.11.12 routing-key RCONTEXT DPC ssn SSN

#### Command

```
routing-key RCONTEXT DPC ssn SSN
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

routing-key

Define a routing key

RCONTEXT

Routing context number

DPC

Destination Point Code

ssn

Match on Sub-System Number

SSN

Sub-System Number to match on

### 1.11.13 traffic-mode (broadcast | loadshare | roundrobin | override)

#### Command

```
traffic-mode (broadcast | loadshare | roundrobin | override)
```

#### Parameters

traffic-mode

Specifies traffic mode of operation of the ASP within the AS

broadcast

Broadcast to all ASP within AS

loadshare

Share Load among all ASP within AS

roundrobin

Round-Robin between all ASP within AS

override

Override

## 1.12 config-cs7-asp

### 1.12.1 block

Command

```
block
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

block

Allows a SCTP Association with ASP, but doesn't let it become active

### 1.12.2 description .TEXT

Command

```
description .TEXT
```

Parameters

description

Save human-readable description of the object

.TEXT

Text until the end of the line

### 1.12.3 local-ip (A.B.C.D|X:X::X:X) [primary]

Command

```
local-ip (A.B.C.D|X:X::X:X) [primary]
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

local-ip

Specify Local IP Address from which to contact ASP

A.B.C.D

Local IPv4 Address from which to contact of ASP

X:X::X:X

Local IPv6 Address from which to contact of ASP

[primary]

Signal the SCTP peer to use this address as Primary Address

---

### 1.12.4 no local-ip (A.B.C.D|X:X::X:X)

#### Command

```
no local-ip (A.B.C.D|X:X::X:X)
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

no

Negate a command or set its defaults

local-ip

Specify Local IP Address from which to contact ASP

A.B.C.D

Local IPv4 Address from which to contact of ASP

X:X::X:X

Local IPv6 Address from which to contact of ASP

### 1.12.5 no quirk (no\_notify|daud\_in\_asp|snm\_inactive)

#### Command

```
no quirk (no_notify|daud_in_asp|snm_inactive)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

quirk

Disable quirk to work around interop issues

no\_notify

Peer SG doesn't send NTFY(AS-INACTIVE) after ASP-UP

daud\_in\_asp

Allow Rx of DAUD in ASP role

snm\_inactive

Allow Rx of [S]SNM in AS-INACTIVE state



### 1.12.6 no remote-ip (A.B.C.D|X:X::X:X)

#### Command

```
no remote-ip (A.B.C.D|X:X::X:X)
```

#### Global attributes

#### Flag: @

This command applies on VTY node exit

#### Parameters

##### no

Negate a command or set its defaults

##### remote-ip

Specify Remote IP Address of ASP

##### A.B.C.D

Remote IPv4 Address of ASP

##### X:X::X:X

Remote IPv6 Address of ASP

### 1.12.7 no sctp-param init (num-ostreams|max-instreams|max-attempts|timeout)

#### Command

```
no sctp-param init (num-ostreams|max-instreams|max-attempts|timeout)
```

#### Global attributes

#### Flag: @

This command applies on VTY node exit

#### Parameters

##### no

Negate a command or set its defaults

##### sctp-param

Configure SCTP parameters

##### init

Configure INIT related parameters

##### num-ostreams

Configure INIT Number of Outbound Streams

##### max-instreams

Configure INIT Maximum Inboud Streams

##### max-attempts

Configure INIT Maximum Attempts

##### timeout

Configure INIT Timeout (milliseconds)

---

### 1.12.8 qos-class <0-255>

#### Command

```
qos-class <0-255>
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

qos-class

Specify QoS Class of ASP

<0-255>

QoS Class of ASP

### 1.12.9 quirk (no\_notify|daud\_in\_asp|snm\_inactive)

#### Command

```
quirk (no_notify|daud_in_asp|snm_inactive)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

quirk

Enable quirk to work around interop issues

no\_notify

Peer SG doesn't send NTFY(AS-INACTIVE) after ASP-UP

daud\_in\_asp

Allow Rx of DAUD in ASP role

snm\_inactive

Allow Rx of [S]SNM in AS-INACTIVE state

### 1.12.10 remote-ip (A.B.C.D|X:X::X:X) [primary]

#### Command

```
remote-ip (A.B.C.D|X:X::X:X) [primary]
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

remote-ip

Specify Remote IP Address of ASP

A.B.C.D

Remote IPv4 Address of ASP

X:X::X:X

Remote IPv6 Address of ASP

[primary]

Set remote address as SCTP Primary Address

### 1.12.11 role (sg|asp|ipsp)

#### Command

```
role (sg|asp|ipsp)
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

role

Specify the xUA role for this ASP

sg

SG (Signaling Gateway)

asp

ASP (Application Server Process)

ipsp

IPSP (IP Signalling Point)

### 1.12.12 sctp-param init (num-ostreams|max-instreams|max-attempts|timeout) <0-65535>

#### Command

```
sctp-param init (num-ostreams|max-instreams|max-attempts|timeout) <0-65535>
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

sctp-param

Configure SCTP parameters

init

Configure INIT related parameters

num-ostreams

Configure INIT Number of Outbound Streams

max-instreams

Configure INIT Maximum Inboud Streams

max-attempts

Configure INIT Maximum Attempts

timeout

Configure INIT Timeout (milliseconds)

<0-65535>

Value of the parameter

### 1.12.13 sctp-role (client|server)

#### Command

```
sctp-role (client|server)
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

sctp-role

Specify the SCTP role for this ASP

client

Operate as SCTP client; connect to a server

server

Operate as SCTP server; wait for client connections

---

### 1.12.14 shutdown

#### Command

```
shutdown
```

#### Global attributes

Flag: @

This command applies on VTY node exit

#### Parameters

shutdown

Terminates SCTP association; New associations will be rejected

### 1.12.15 timer lm (wait\_asp\_up|wait\_notify|wait\_notify\_rkm|wait\_rk\_reg\_resp) <1-999999>

#### Command

```
timer lm (wait_asp_up|wait_notify|wait_notify_rkm|wait_rk_reg_resp) <1-999999>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

timer

Configure ASP default timer values

lm

Configure ASP default lm timer values

wait\_asp\_up

Restart ASP after timeout waiting for ASP UP (SG role) / ASP UP ACK (ASP role) (s) (default: 20)

wait\_notify

Restart ASP after timeout waiting for NOTIFY (s) (default: 2)

wait\_notify\_rkm

Restart ASP after timeout waiting for NOTIFY after RKM registration (s) (default: 20)

wait\_rk\_reg\_resp

Restart ASP after timeout waiting for RK\_REG\_RESP (s) (default: 10)

<1-999999>

Timer value, in seconds

---

## 1.13 config-cs7-sccpaddr

### 1.13.1 global-title

Command

```
global-title
```

Global attributes

Flag: !

This command applies immediately

Parameters

global-title

Add/Modify Global Title

### 1.13.2 no global-title

Command

```
no global-title
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

global-title

Remove Global Title

### 1.13.3 no point-code

Command

```
no point-code
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

point-code

Remove point-code Number

### 1.13.4 no subsystem-number

#### Command

```
no subsystem-number
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### no

Negate a command or set its defaults

#### subsystem-number

Remove Subsystem Number

### 1.13.5 point-code POINT\_CODE

#### Command

```
point-code POINT_CODE
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### point-code

Add point-code Number

#### POINT\_CODE

PC

### 1.13.6 routing-indicator (GT|PC|IP)

#### Command

```
routing-indicator (GT|PC|IP)
```

#### Global attributes

#### Flag: !

This command applies immediately

---

#### Parameters

routing-indicator

Add Routing Indicator

GT

by global-title

PC

by point-code

IP

by ip-address

### 1.13.7 subsystem-number <0-4294967295>

#### Command

```
subsystem-number <0-4294967295>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

subsystem-number

Add Subsystem Number

<0-4294967295>

SSN

## 1.14 config-cs7-sccpaddr-gt

### 1.14.1 digits DIGITS

#### Command

```
digits DIGITS
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

digits

Set Global Title Digits

DIGITS

Number digits



### 1.14.2 global-title-indicator <0-15>

#### Command

```
global-title-indicator <0-15>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

global-title-indicator

Set Global Title Indicator

<0-15>

GTI

### 1.14.3 nature-of-address-indicator <0-127>

#### Command

```
nature-of-address-indicator <0-127>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

nature-of-address-indicator

Set Global Title Nature of Address Indicator

<0-127>

NAI

### 1.14.4 numbering-plan-indicator <0-15>

#### Command

```
numbering-plan-indicator <0-15>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

numbering-plan-indicator

Set Global Title Numbering Plan Indicator

<0-15>

NPI

---

### 1.14.5 translation-type <0-255>

#### Command

```
translation-type <0-255>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

translation-type

Set Global Title Translation Type

<0-255>

TT

## 1.15 config-cpu-sched

### 1.15.1 cpu-affinity (self|all|<0-4294967295>|THREADNAME) CPUHEXMASK [delay]

#### Command

```
cpu-affinity (self|all|<0-4294967295>|THREADNAME) CPUHEXMASK [delay]
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

cpu-affinity

Set CPU affinity mask on a (group of) thread(s)

self

Set CPU affinity mask on thread running the VTY

all

Set CPU affinity mask on all process' threads

<0-4294967295>

Set CPU affinity mask on a thread with specified PID

THREADNAME

Set CPU affinity mask on a thread with specified thread name

CPUHEXMASK

CPU affinity mask

[delay]

If set, delay applying the affinity mask now and let the app handle it at a later point

---

### 1.15.2 policy rr <1-32>

#### Command

```
policy rr <1-32>
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### policy

Set the scheduling policy to use for the process

##### rr

Use the SCHED\_RR real-time scheduling algorithm

##### <1-32>

Set the SCHED\_RR real-time priority

## 1.16 config-net

### 1.16.1 allow-unusable-timeslots

#### Command

```
allow-unusable-timeslots
```

#### Parameters

##### allow-unusable-timeslots

Don't refuse to start with mutually exclusive codec settings

### 1.16.2 bts <0-255>

#### Command

```
bts <0-255>
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### bts

Select a BTS to configure

##### <0-255>

BTS Number

---

### 1.16.3 encryption a5 <0-4> [<0-4>] [<0-4>] [<0-4>] [<0-4>]

#### Command

```
encryption a5 <0-4> [<0-4>] [<0-4>] [<0-4>] [<0-4>]
```

#### Application specific attributes

##### Flag: !

This command applies for newly created lchans

#### Parameters

##### encryption

Encryption options

##### a5

GSM A5 Air Interface Encryption

##### <0-4>

A5/n Algorithm Number

##### [<0-4>]

A5/n Algorithm Number

##### [<0-4>]

A5/n Algorithm Number

##### [<0-4>]

A5/n Algorithm Number

##### [<0-4>]

A5/n Algorithm Number

### 1.16.4 handover (0|1|default)

#### Command

```
handover (0|1|default)
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### handover

Handover general config

##### 0

Disable in-call handover

##### 1

Enable in-call handover

##### default

Enable/disable handover: Use default (0), remove explicit setting on this node

### 1.16.5 handover algorithm (1|2|default)

#### Command

```
handover algorithm (1|2|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover

Handover general config

##### algorithm

Choose algorithm for handover decision

##### 1

Algorithm 1: trigger handover based on comparing current cell and neighbor RxLev and RxQual, only.

##### 2

Algorithm 2: trigger handover on RxLev/RxQual, and also to balance the load across several cells. Consider available codecs. Prevent repeated handover by penalty timers.

##### default

Use default (1), remove explicit setting on this node

### 1.16.6 handover1 maximum distance (<0-9999>|default)

#### Command

```
handover1 maximum distance (<0-9999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### maximum

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### distance

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### <0-9999>

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### default

Use default (9999), remove explicit setting on this node

### 1.16.7 handover1 power budget hysteresis (<0-999>|default)

#### Command

```
handover1 power budget hysteresis (<0-999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

##### hysteresis

How many dB stronger must a neighbor be to become a HO candidate

##### <0-999>

Neighbor's strength difference in dB

##### default

Use default (3), remove explicit setting on this node

### 1.16.8 handover1 power budget interval (<1-99>|default)

#### Command

```
handover1 power budget interval (<1-99>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

interval

How often to check for a better cell (SACCH frames)

<1-99>

Check for stronger neighbor every N number of SACCH frames

default

Use default (6), remove explicit setting on this node

### 1.16.9 handover1 window rxlev averaging (<1-10>|default)

Command

```
handover1 window rxlev averaging (<1-10>|default)
```

Global attributes

Flag: !

This command applies immediately

Parameters

handover1

Handover options for handover decision algorithm 1

window

Measurement averaging settings

rxlev

Received-Level averaging

averaging

How many RxLev measurements to use for averaging

<1-10>

RxLev averaging: Number of values to average over

default

Use default (10), remove explicit setting on this node

### 1.16.10 handover1 window rxlev neighbor averaging (<1-10>|default)

Command

```
handover1 window rxlev neighbor averaging (<1-10>|default)
```

Global attributes

Flag: !

This command applies immediately

## Parameters

### handover1

Handover options for handover decision algorithm 1

### window

Measurement averaging settings

### rxlev

Received-Level averaging

### neighbor

How many Neighbor RxLev measurements to use for averaging

### averaging

How many Neighbor RxLev measurements to use for averaging

### <1-10>

Neighbor RxLev averaging: Number of values to average over

### default

Use default (10), remove explicit setting on this node

## 1.16.11 handover1 window rxqual averaging (<1-10>|default)

## Command

```
handover1 window rxqual averaging (<1-10>|default)
```

## Global attributes

### Flag: !

This command applies immediately

## Parameters

### handover1

Handover options for handover decision algorithm 1

### window

Measurement averaging settings

### rxqual

Received-Quality averaging

### averaging

How many RxQual measurements to use for averaging

### <1-10>

RxQual averaging: Number of values to average over

### default

Use default (1), remove explicit setting on this node



### 1.16.12 handover2 afs-bias rxlev (<0-20>|default)

#### Command

```
handover2 afs-bias rxlev (<0-20>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### afs-bias

Configure bias to prefer AFS (AMR on TCH/F) over other codecs

##### rxlev

RxLev improvement bias for AFS over other codecs

##### <0-20>

Virtual RxLev improvement (dB)

##### default

Use default (0), remove explicit setting on this node

### 1.16.13 handover2 afs-bias rxqual (<0-7>|default)

#### Command

```
handover2 afs-bias rxqual (<0-7>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### afs-bias

Configure bias to prefer AFS (AMR on TCH/F) over other codecs

##### rxqual

RxQual improvement bias for AFS over other codecs

##### <0-7>

Virtual RxQual improvement

##### default

Use default (0), remove explicit setting on this node

### 1.16.14 handover2 assignment (0|1|default)

#### Command

```
handover2 assignment (0|1|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### assignment

Enable or disable in-call channel re-assignment within the same cell

##### 0

Disable in-call assignment

##### 1

Enable in-call assignment

##### default

Use default (0), remove explicit setting on this node

### 1.16.15 handover2 congestion-check (disabled|<1-999>|now)

#### Command

```
handover2 congestion-check (disabled|<1-999>|now)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### congestion-check

Configure congestion check interval

##### disabled

Disable congestion checking, do not handover based on cell load. Note: there is one global congestion check interval, i.e. contrary to other handover2 settings, this is not configurable per individual cell.

##### <1-999>

Congestion check interval in seconds (default 10)

##### now

Manually trigger a congestion check to run right now

### 1.16.16 handover2 max-handovers (<1-9999>|default)

#### Command

```
handover2 max-handovers (<1-9999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### max-handovers

Maximum number of concurrent handovers allowed per cell

<1-9999>

Number

##### default

Use default (9999), remove explicit setting on this node

### 1.16.17 handover2 maximum distance (<0-9999>|default)

#### Command

```
handover2 maximum distance (<0-9999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### maximum

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### distance

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

<0-9999>

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### default

Use default (9999), remove explicit setting on this node

### 1.16.18 handover2 min rxlev (<-110--50>|default)

#### Command

```
handover2 min rxlev (<-110--50>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min

Minimum Level/Quality thresholds before triggering HO

##### rxlev

How weak may RxLev of an MS become before triggering HO

##### <-110--50>

minimum RxLev (dBm; note: negative values)

##### default

Use default (-100), remove explicit setting on this node

### 1.16.19 handover2 min rxqual (<0-7>|default)

#### Command

```
handover2 min rxqual (<0-7>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min

Minimum Level/Quality thresholds before triggering HO

##### rxqual

How bad may RxQual of an MS become before triggering HO, where 0 is the best quality (bit error rate < 0.2%) and 7 is the worst quality (bit error rate > 12.8%), see 3GPP TS 45.008 8.2.4.

##### <0-7>

worst acceptable RxQual

##### default

Use default (5), remove explicit setting on this node

### 1.16.20 handover2 min-free-slots tch/f (<0-9999>|default)

#### Command

```
handover2 min-free-slots tch/f (<0-9999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min-free-slots

Minimum free TCH timeslots before cell is considered congested

##### tch/f

Minimum free TCH/F timeslots before cell is considered congested

<0-9999>

Number of TCH/F slots

##### default

Use default (0), remove explicit setting on this node

### 1.16.21 handover2 min-free-slots tch/h (<0-9999>|default)

#### Command

```
handover2 min-free-slots tch/h (<0-9999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min-free-slots

Minimum free TCH timeslots before cell is considered congested

##### tch/h

Minimum free TCH/H timeslots before cell is considered congested

<0-9999>

Number of TCH/H slots

##### default

Use default (0), remove explicit setting on this node

### 1.16.22 handover2 penalty-time failed-assignment (<0-99999>|default)

#### Command

```
handover2 penalty-time failed-assignment (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### failed-assignment

Time to suspend handover for a subscriber after a failed re-assignment within this cell; see also 'handover2 retries'

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.16.23 handover2 penalty-time failed-ho (<0-99999>|default)

#### Command

```
handover2 penalty-time failed-ho (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### failed-ho

Time to suspend handover for a subscriber after a failed handover into this cell; see also 'handover2 retries'

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.16.24 handover2 penalty-time low-rxqual-assignment (<0-99999>|default)

#### Command

```
handover2 penalty-time low-rxqual-assignment (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### low-rxqual-assignment

Time to suspend re-assignment after an lchan was re-assigned because of low RxQual

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.16.25 handover2 penalty-time low-rxqual-ho (<0-99999>|default)

#### Command

```
handover2 penalty-time low-rxqual-ho (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### low-rxqual-ho

Time to suspend handover back to a cell after bad RxQual caused handover away from it

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.16.26 handover2 penalty-time max-distance (<0-99999>|default)

#### Command

```
handover2 penalty-time max-distance (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### max-distance

Time to suspend handover for a subscriber after leaving this cell due to exceeding max distance; see also 'handover2 retries'

##### <0-99999>

Seconds

##### default

Use default (300), remove explicit setting on this node

### 1.16.27 handover2 power budget hysteresis (<0-999>|default)

#### Command

```
handover2 power budget hysteresis (<0-999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

##### hysteresis

How many dB stronger must a neighbor be to become a HO candidate

##### <0-999>

Neighbor's strength difference in dB

##### default

Use default (3), remove explicit setting on this node



### 1.16.28 handover2 power budget interval (<1-99>|default)

#### Command

```
handover2 power budget interval (<1-99>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

##### interval

How often to check for a better cell (SACCH frames)

##### <1-99>

Check for stronger neighbor every N number of SACCH frames

##### default

Use default (6), remove explicit setting on this node

### 1.16.29 handover2 retries (<0-9>|default)

#### Command

```
handover2 retries (<0-9>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### retries

Number of times to immediately retry a failed handover/assignment, before a penalty time is applied

##### <0-9>

Number of retries

##### default

Use default (0), remove explicit setting on this node

---

### 1.16.30 handover2 tdma-measurement (auto|full|subset|default)

#### Command

```
handover2 tdma-measurement (auto|full|subset|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### tdma-measurement

Define measurement set of TDMA frames

##### auto

Use full set when DTX is not in use, use subset when DTX is in use, as indicated by each Measurement Report

##### full

Full set of 102/104 TDMA frames

##### subset

Sub set of 4 TDMA frames (SACCH)

##### default

Use default (subset), remove explicit setting on this node

### 1.16.31 handover2 window rxlev averaging (<1-10>|default)

#### Command

```
handover2 window rxlev averaging (<1-10>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### window

Measurement averaging settings

##### rxlev

Received-Level averaging

---

averaging

How many RxLev measurements to use for averaging

<1-10>

RxLev averaging: Number of values to average over

default

Use default (10), remove explicit setting on this node

### 1.16.32 handover2 window rxlev neighbor averaging (<1-10>|default)

Command

```
handover2 window rxlev neighbor averaging (<1-10>|default)
```

Global attributes

Flag: !

This command applies immediately

Parameters

handover2

Handover options for handover decision algorithm 2

window

Measurement averaging settings

rxlev

Received-Level averaging

neighbor

How many Neighbor RxLev measurements to use for averaging

averaging

How many Neighbor RxLev measurements to use for averaging

<1-10>

Neighbor RxLev averaging: Number of values to average over

default

Use default (10), remove explicit setting on this node

### 1.16.33 handover2 window rxqual averaging (<1-10>|default)

Command

```
handover2 window rxqual averaging (<1-10>|default)
```

Global attributes

---

Flag: !

This command applies immediately

Parameters

handover2

Handover options for handover decision algorithm 2

window

Measurement averaging settings

rxqual

Received-Quality averaging

averaging

How many RxQual measurements to use for averaging

<1-10>

RxQual averaging: Number of values to average over

default

Use default (1), remove explicit setting on this node

### 1.16.34 meas-feed destination ADDR <0-65535>

Command

```
meas-feed destination ADDR <0-65535>
```

Global attributes

Flag: !

This command applies immediately

Parameters

meas-feed

Measurement Report export

destination

Where to forward Measurement Report feeds

ADDR

address or hostname

<0-65535>

port number

### 1.16.35 meas-feed scenario NAME

#### Command

```
meas-feed scenario NAME
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

meas-feed

Measurement Report export

scenario

Set a name to include in the Measurement Report feeds

NAME

Name string, up to 31 characters

### 1.16.36 meas-feed write-queue-max-length <1-65535>

#### Command

```
meas-feed write-queue-max-length <1-65535>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

meas-feed

Measurement Report export

write-queue-max-length

Set the maximum length of the message write queue towards the UDP socket

<1-65535>

Maximum number of messages to be queued waiting for transmission

---

### 1.16.37 mgw <0-255>

#### Command

```
mgw <0-255>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

mgw

Select a MGCP client config to setup

<0-255>

reference number

### 1.16.38 mobile network code <0-999>

#### Command

```
mobile network code <0-999>
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

mobile

Set the GSM mobile network code

network

Network Commands

code

Code commands

<0-999>

Mobile Network Code to use

### 1.16.39 neci (0|1)

#### Command

```
neci (0|1)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### neci

New Establish Cause Indication

#### 0

Don't set the NECI bit

#### 1

Set the NECI bit

### 1.16.40 neighbor-resolution bind (A.B.C.D|X:X::X:X) [<0-65535>]

#### Command

```
neighbor-resolution bind (A.B.C.D|X:X::X:X) [<0-65535>]
```

#### Parameters

#### neighbor-resolution

Manage local and remote-BSS neighbor cells

#### bind

Bind Neighbor Resolution Service (CTRL interface) to given ip and port

#### A.B.C.D

IP information

#### X:X::X:X

IPv6 information

#### [<0-65535>]

Port to bind the service to [defaults to 4248 if not provided]

---

### 1.16.41 network country code <1-999>

#### Command

```
network country code <1-999>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### network

Set the GSM network country code

##### country

Country commands

##### code

Code commands

##### <1-999>

Network Country Code to use

### 1.16.42 no mgw <0-255>

#### Command

```
no mgw <0-255>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### no

Negate a command or set its defaults

##### mgw

Select a MGCP client config to remove

##### <0-255>

reference number



### 1.16.43 no pcu-socket

#### Command

```
no pcu-socket
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

pcu-socket

Disable BSC co-located PCU

### 1.16.44 no periodic location update

#### Command

```
no periodic location update
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

no

Negate a command or set its defaults

periodic

Periodic Location Updating Interval

location

Periodic Location Updating Interval

update

Periodic Location Updating Interval

### 1.16.45 no timezone

#### Command

```
no timezone
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

timezone

Disable network timezone override, use system tz

### 1.16.46 nri bitlen <1-15>

#### Command

```
nri bitlen <1-15>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

nri

Mapping of Network Resource Indicators, for MSC pooling

bitlen

Set number of bits that an NRI has, to extract from TMSI identities (always starting just after the TMSI's most significant octet).

<1-15>

bit count (default: 10)

---

### 1.16.47 nri null add <0-32767> [<0-32767>]

#### Command

```
nri null add <0-32767> [<0-32767>]
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

nri

Mapping of Network Resource Indicators, for MSC pooling

null

Define NULL-NRI values that cause re-assignment of an MS to a different MSC, for MSC pooling.

add

Add NULL-NRI value (or range)

<0-32767>

First value of the NRI value range, should not surpass the configured 'nri bitlen'.

[<0-32767>]

Last value of the NRI value range, should not surpass the configured 'nri bitlen' and be larger than the first value; if omitted, apply only the first value.

### 1.16.48 nri null del <0-32767> [<0-32767>]

#### Command

```
nri null del <0-32767> [<0-32767>]
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

nri

Mapping of Network Resource Indicators, for MSC pooling

null

Define NULL-NRI values that cause re-assignment of an MS to a different MSC, for MSC pooling.

del

Remove NRI value or range from the NRI mapping

<0-32767>

First value of the NRI value range, should not surpass the configured 'nri bitlen'.

[<0-32767>]

Last value of the NRI value range, should not surpass the configured 'nri bitlen' and be larger than the first value; if omitted, apply only the first value.

---

### 1.16.49 paging any use tch (0|1)

#### Command

```
paging any use tch (0|1)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### paging

Assign a TCH when receiving a Paging Any request

##### any

Any Channel

##### use

Use

##### tch

TCH

##### 0

Do not use TCH for Paging Request Any

##### 1

Do use TCH for Paging Request Any

### 1.16.50 pcu-socket PATH

#### Command

```
pcu-socket PATH
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### pcu-socket

PCU Socket Path for using OsmoPCU co-located with BSC

##### PATH

Path in the file system for the unix-domain PCU socket

---

### 1.16.51 **pcu-socket-wqueue-length <1-2147483646>**

#### Command

```
pcu-socket-wqueue-length <1-2147483646>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

pcu-socket-wqueue-length

Configure the PCU socket queue length

<1-2147483646>

Queue length

### 1.16.52 **periodic location update <6-1530>**

#### Command

```
periodic location update <6-1530>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

periodic

Periodic Location Updating Interval

location

Periodic Location Updating Interval

update

Periodic Location Updating Interval

<6-1530>

Periodic Location Updating Interval in Minutes

---

### 1.16.53 timer [(net|mgw)] [TNNNN] [(<0-2147483647>|default)]

#### Command

```
timer [(net|mgw)] [TNNNN] [(<0-2147483647>|default)]
```

#### Parameters

##### timer

Configure or show timers

##### [net]

GSM network

##### [mgw]

MGW (Media Gateway) interface

##### [TNNNN]

T- or X-timer-number -- 3GPP compliant timer number of the format '1234' or 'T1234' or 't1234'; Osmocom-specific timer number of the format: 'X1234' or 'x1234'.

##### [<0-2147483647>]

New timer value

##### [default]

Set to default timer value

### 1.16.54 timezone <-19-19> (0|15|30|45)

#### Command

```
timezone <-19-19> (0|15|30|45)
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### timezone

Set the Timezone Offset of the network

##### <-19-19>

Timezone offset (hours)

##### 0

Timezone offset (00 minutes)

##### 15

Timezone offset (15 minutes)

##### 30

Timezone offset (30 minutes)

##### 45

Timezone offset (45 minutes)

---

## 1.16.55 **timezone** <-19-19> (0|15|30|45) <0-2>

### Command

```
timezone <-19-19> (0|15|30|45) <0-2>
```

### Global attributes

Flag: !

This command applies immediately

### Parameters

#### timezone

Set the Timezone Offset of the network

<-19-19>

Timezone offset (hours)

0

Timezone offset (00 minutes)

15

Timezone offset (15 minutes)

30

Timezone offset (30 minutes)

45

Timezone offset (45 minutes)

<0-2>

DST offset (hours)

## 1.17 **config-mgw**

### 1.17.1 **description** .TEXT

### Command

```
description .TEXT
```

### Parameters

#### description

Save human-readable description of the object

.TEXT

Text until the end of the line

---

### 1.17.2 endpoint-domain NAME

#### Command

```
endpoint-domain NAME
```

#### Parameters

##### endpoint-domain

Set the domain name to send in MGCP messages, e.g. the part 'foo' in 'rtpbridge/\*@foo'.

##### NAME

Domain name, should be alphanumeric.

### 1.17.3 keepalive request-endpoint NAME

#### Command

```
keepalive request-endpoint NAME
```

#### Parameters

##### keepalive

Monitor if the MGCP link against MGW is still usable

##### request-endpoint

Use a given endpoint name when sending an MGCP command to the MGW for keepalive purposes

##### NAME

The name of the endpoint to use

### 1.17.4 keepalive request-interval <0-4294967295>

#### Command

```
keepalive request-interval <0-4294967295>
```

#### Parameters

##### keepalive

Monitor if the MGCP link against MGW is still usable

##### request-interval

Send an MGCP command to the MGW at given interval if no other commands are sent

##### <0-4294967295>

The interval at which send MGCP commands (s), 0 to disable

---



### 1.17.5 **keepalive timeout <0-4294967295>**

#### Command

```
keepalive timeout <0-4294967295>
```

#### Parameters

##### keepalive

Monitor if the MGCP link against MGW is still usable

##### timeout

Consider the link to the MGW to be down after time without receiving any message from it

<0-4294967295>

The timeout (s), 0 to disable

### 1.17.6 **local-ip (A.B.C.D|X:X::X:X)**

#### Command

```
local-ip (A.B.C.D|X:X::X:X)
```

#### Parameters

##### local-ip

local bind to connect to MGW from

##### A.B.C.D

local bind IPv4 address

##### X:X::X:X

local bind IPv6 address

### 1.17.7 **local-port <0-65535>**

#### Command

```
local-port <0-65535>
```

#### Parameters

##### local-port

local port to connect to MGW from

<0-65535>

local bind port

---

### 1.17.8 no reset-endpoint NAME

#### Command

```
no reset-endpoint NAME
```

#### Parameters

no

Negate a command or set its defaults

reset-endpoint

remove an endpoint name from the reset-endpoint list, e.g. 'rtpbridge/\*'

NAME

Endpoint name, e.g. 'rtpbridge/\*' or 'ds/e1-0/s-3/su16-4'.

### 1.17.9 remote-ip (A.B.C.D|X:X::X:X)

#### Command

```
remote-ip (A.B.C.D|X:X::X:X)
```

#### Parameters

remote-ip

remote IP address to reach the MGW at

A.B.C.D

remote IPv4 address

X:X::X:X

remote IPv6 address

### 1.17.10 remote-port <0-65535>

#### Command

```
remote-port <0-65535>
```

#### Parameters

remote-port

remote port to reach the MGW at

<0-65535>

remote port

---

### 1.17.11 reset-endpoint NAME

#### Command

```
reset-endpoint NAME
```

#### Parameters

##### reset-endpoint

Add an endpoint name that should be reset (DLCX) on connect to the reset-endpoint list, e.g. 'rtpbridge/\*'

##### NAME

Endpoint name, e.g. 'rtpbridge/\*' or 'ds/e1-0/s-3/su16-4'.

## 1.18 config-net-bts

### 1.18.1 (bs-power-control|ms-power-control)

#### Command

```
(bs-power-control | ms-power-control)
```

#### Parameters

##### bs-power-control

BS (Downlink) power control parameters

##### ms-power-control

MS (Uplink) power control parameters

### 1.18.2 abis-lower-transport (single-timeslot|super-channel)

#### Command

```
abis-lower-transport (single-timeslot | super-channel)
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### abis-lower-transport

Configure the Abis Lower Transport

##### single-timeslot

Single Timeslot (classic Abis)

##### super-channel

SuperChannel (Packet Abis)

---

### 1.18.3 access-control-class-ramping

#### Command

```
access-control-class-ramping
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

access-control-class-ramping

Enable Access Control Class ramping

### 1.18.4 access-control-class-ramping-chan-load <0-100> <0-100>

#### Command

```
access-control-class-ramping-chan-load <0-100> <0-100>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

access-control-class-ramping-chan-load

Configure Access Control Class ramping channel load thresholds

<0-100>

Lower Channel load threshold (%) below which subset size of allowed broadcast ACCs can be increased

<0-100>

Upper channel load threshold (%) above which subset size of allowed broadcast ACCs can be decreased

### 1.18.5 access-control-class-ramping-step-interval (<5-600>|dynamic)

#### Command

```
access-control-class-ramping-step-interval (<5-600>|dynamic)
```

#### Global attributes

#### Flag: !

This command applies immediately

---

#### Parameters

access-control-class-ramping-step-interval

Configure Access Control Class ramping step interval

<5-600>

Set a fixed step interval (in seconds)

dynamic

Use dynamic step interval based on BTS channel load (deprecated, don't use, ignored)

### 1.18.6 access-control-class-ramping-step-size (<1-10>)

#### Command

```
access-control-class-ramping-step-size (<1-10>)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

access-control-class-ramping-step-size

Configure Access Control Class ramping step size

<1-10>

Set the number of Access Control Classes to enable per ramping step

### 1.18.7 access-control-class-rotate <0-10>

#### Command

```
access-control-class-rotate <0-10>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

access-control-class-rotate

Enable Access Control Class allowed subset rotation

<0-10>

Size of the rotating allowed ACC 0-9 subset (default=10, no subset)

---

### 1.18.8 access-control-class-rotate-quantum <1-65535>

#### Command

```
access-control-class-rotate-quantum <1-65535>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

access-control-class-rotate-quantum

Time between rotation of ACC 0-9 generated subsets

<1-65535>

Time in seconds (default=20)

### 1.18.9 amr tch-f hysteresis (ms|bts) <0-15>

#### Command

```
amr tch-f hysteresis (ms|bts) <0-15>
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

amr

Adaptive Multi Rate settings

tch-f

Full Rate

hysteresis

Hysteresis value(s) to obtain the higher threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-15>

Hysteresis between codec mode 1 and 2 (in 0.5 dB steps)

---

### 1.18.10 amr tch-f hysteresis (ms|bts) <0-15> <0-15>

#### Command

```
amr tch-f hysteresis (ms|bts) <0-15> <0-15>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

##### hysteresis

Hysteresis value(s) to obtain the higher threshold(s) for switching between codec modes

##### ms

MS side

##### bts

BTS side

##### <0-15>

Hysteresis between codec mode 1 and 2 (in 0.5 dB steps)

##### <0-15>

Hysteresis between codec mode 2 and 3 (in 0.5 dB steps)

### 1.18.11 amr tch-f hysteresis (ms|bts) <0-15> <0-15> <0-15>

#### Command

```
amr tch-f hysteresis (ms|bts) <0-15> <0-15> <0-15>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

---

hysteresis

Hysteresis value(s) to obtain the higher threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-15>

Hysteresis between codec mode 1 and 2 (in 0.5 dB steps)

<0-15>

Hysteresis between codec mode 2 and 3 (in 0.5 dB steps)

<0-15>

Hysteresis between codec mode 3 and 4 (in 0.5 dB steps)

### 1.18.12 amr tch-f modes (0|1|2|3|4|5|6|7)

Command

```
amr tch-f modes (0|1|2|3|4|5|6|7)
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

amr

Adaptive Multi Rate settings

tch-f

Full Rate

modes

Codec modes to use with AMR codec

0

4,75k

1

5,15k

2

5,90k

3

6,70k

4

7,40k



|   |       |
|---|-------|
| 5 | 7,95k |
| 6 | 10,2k |
| 7 | 12,2k |

### 1.18.13 amr tch-f modes (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7)

#### Command

```
amr tch-f modes (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

##### modes

Codec modes to use with AMR codec

|   |       |
|---|-------|
| 0 | 4,75k |
| 1 | 5,15k |
| 2 | 5,90k |
| 3 | 6,70k |
| 4 | 7,40k |
| 5 | 7,95k |
| 6 | 10,2k |
| 7 | 12,2k |

|   |       |
|---|-------|
| 0 | 4,75k |
| 1 | 5,15k |
| 2 | 5,90k |
| 3 | 6,70k |
| 4 | 7,40k |
| 5 | 7,95k |
| 6 | 10,2k |
| 7 | 12,2k |

#### 1.18.14 amr tch-f modes (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7)

##### Command

```
amr tch-f modes (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7)
```

##### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

##### modes

Codec modes to use with AMR codec

|   |       |
|---|-------|
| 0 | 4,75k |
| 1 | 5,15k |
| 2 | 5,90k |

3  
6,70k  
4  
7,40k  
5  
7,95k  
6  
10,2k  
7  
12,2k  
0  
4,75k  
1  
5,15k  
2  
5,90k  
3  
6,70k  
4  
7,40k  
5  
7,95k  
6  
10,2k  
7  
12,2k  
0  
4,75k  
1  
5,15k  
2  
5,90k  
3  
6,70k  
4  
7,40k  
5  
7,95k

6  
10,2k

7  
12,2k

### 1.18.15 **amr tch-f modes (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7) (0|1|2|3|4...**

#### Command

```
amr tch-f modes (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7) (0|1|2|3|4|5|6|7)
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

amr

Adaptive Multi Rate settings

tch-f

Full Rate

modes

Codec modes to use with AMR codec

0  
4,75k

1  
5,15k

2  
5,90k

3  
6,70k

4  
7,40k

5  
7,95k

6  
10,2k

7  
12,2k

0  
4,75k

- 1
  - 5,15k
- 2
  - 5,90k
- 3
  - 6,70k
- 4
  - 7,40k
- 5
  - 7,95k
- 6
  - 10,2k
- 7
  - 12,2k
- 0
  - 4,75k
- 1
  - 5,15k
- 2
  - 5,90k
- 3
  - 6,70k
- 4
  - 7,40k
- 5
  - 7,95k
- 6
  - 10,2k
- 7
  - 12,2k
- 0
  - 4,75k
- 1
  - 5,15k
- 2
  - 5,90k
- 3
  - 6,70k

- 4  
7,40k
- 5  
7,95k
- 6  
10,2k
- 7  
12,2k

### 1.18.16 amr tch-f start-mode (auto|1|2|3|4)

#### Command

```
amr tch-f start-mode (auto|1|2|3|4)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

##### start-mode

Initial codec mode to use with AMR

##### auto

Automatically

##### 1

First mode

##### 2

Second mode

##### 3

Third mode

##### 4

Fourth mode

### 1.18.17 amr tch-f threshold (ms|bts) <0-63>

#### Command

```
amr tch-f threshold (ms|bts) <0-63>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

##### threshold

Lower threshold(s) for switching between codec modes

##### ms

MS side

##### bts

BTS side

##### <0-63>

Threshold between codec mode 1 and 2 (in 0.5 dB steps)

### 1.18.18 amr tch-f threshold (ms|bts) <0-63> <0-63>

#### Command

```
amr tch-f threshold (ms|bts) <0-63> <0-63>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-f

Full Rate

##### threshold

Lower threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-63>

Threshold between codec mode 1 and 2 (in 0.5 dB steps)

<0-63>

Threshold between codec mode 2 and 3 (in 0.5 dB steps)

### 1.18.19 amr tch-f threshold (ms|bts) <0-63> <0-63> <0-63>

Command

```
amr tch-f threshold (ms|bts) <0-63> <0-63> <0-63>
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

amr

Adaptive Multi Rate settings

tch-f

Full Rate

threshold

Lower threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-63>

Threshold between codec mode 1 and 2 (in 0.5 dB steps)

<0-63>

Threshold between codec mode 2 and 3 (in 0.5 dB steps)

<0-63>

Threshold between codec mode 3 and 4 (in 0.5 dB steps)



### 1.18.20 amr tch-h hysteresis (ms|bts) <0-15>

#### Command

```
amr tch-h hysteresis (ms|bts) <0-15>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-h

Half Rate

##### hysteresis

Hysteresis value(s) to obtain the higher threshold(s) for switching between codec modes

##### ms

MS side

##### bts

BTS side

##### <0-15>

Hysteresis between codec mode 1 and 2 (in 0.5 dB steps)

### 1.18.21 amr tch-h hysteresis (ms|bts) <0-15> <0-15>

#### Command

```
amr tch-h hysteresis (ms|bts) <0-15> <0-15>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-h

Half Rate

##### hysteresis

Hysteresis value(s) to obtain the higher threshold(s) for switching between codec modes

---

ms

MS side

bts

BTS side

<0-15>

Hysteresis between codec mode 1 and 2 (in 0.5 dB steps)

<0-15>

Hysteresis between codec mode 2 and 3 (in 0.5 dB steps)

### 1.18.22 amr tch-h hysteresis (ms|bts) <0-15> <0-15> <0-15>

Command

```
amr tch-h hysteresis (ms|bts) <0-15> <0-15> <0-15>
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

amr

Adaptive Multi Rate settings

tch-h

Half Rate

hysteresis

Hysteresis value(s) to obtain the higher threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-15>

Hysteresis between codec mode 1 and 2 (in 0.5 dB steps)

<0-15>

Hysteresis between codec mode 2 and 3 (in 0.5 dB steps)

<0-15>

Hysteresis between codec mode 3 and 4 (in 0.5 dB steps)

### 1.18.23 amr tch-h modes (0|1|2|3|4|5)

#### Command

```
amr tch-h modes (0|1|2|3|4|5)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-h

Half Rate

##### modes

Codec modes to use with AMR codec

0

4,75k

1

5,15k

2

5,90k

3

6,70k

4

7,40k

5

7,95k

### 1.18.24 amr tch-h modes (0|1|2|3|4|5) (0|1|2|3|4|5)

#### Command

```
amr tch-h modes (0|1|2|3|4|5) (0|1|2|3|4|5)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

---

amr

Adaptive Multi Rate settings

tch-h

Half Rate

modes

Codec modes to use with AMR codec

0

4,75k

1

5,15k

2

5,90k

3

6,70k

4

7,40k

5

7,95k

0

4,75k

1

5,15k

2

5,90k

3

6,70k

4

7,40k

5

7,95k

#### 1.18.25 amr tch-h modes (0|1|2|3|4|5) (0|1|2|3|4|5) (0|1|2|3|4|5)

Command

```
amr tch-h modes (0|1|2|3|4|5) (0|1|2|3|4|5) (0|1|2|3|4|5)
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

- amr
  - Adaptive Multi Rate settings
- tch-h
  - Half Rate
- modes
  - Codec modes to use with AMR codec
- 0
  - 4,75k
- 1
  - 5,15k
- 2
  - 5,90k
- 3
  - 6,70k
- 4
  - 7,40k
- 5
  - 7,95k
- 0
  - 4,75k
- 1
  - 5,15k
- 2
  - 5,90k
- 3
  - 6,70k
- 4
  - 7,40k
- 5
  - 7,95k
- 0
  - 4,75k
- 1
  - 5,15k
- 2
  - 5,90k
- 3
  - 6,70k

4  
7,40k

5  
7,95k

### 1.18.26 amr tch-h modes (0|1|2|3|4|5) (0|1|2|3|4|5) (0|1|2|3|4|5) (0|1|2|3|4|5)

#### Command

```
amr tch-h modes (0|1|2|3|4|5) (0|1|2|3|4|5) (0|1|2|3|4|5) (0|1|2|3|4|5)
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

amr

Adaptive Multi Rate settings

tch-h

Half Rate

modes

Codec modes to use with AMR codec

0  
4,75k

1  
5,15k

2  
5,90k

3  
6,70k

4  
7,40k

5  
7,95k

0  
4,75k

1  
5,15k

2  
5,90k

|   |       |
|---|-------|
| 3 | 6,70k |
| 4 | 7,40k |
| 5 | 7,95k |
| 0 | 4,75k |
| 1 | 5,15k |
| 2 | 5,90k |
| 3 | 6,70k |
| 4 | 7,40k |
| 5 | 7,95k |
| 0 | 4,75k |
| 1 | 5,15k |
| 2 | 5,90k |
| 3 | 6,70k |
| 4 | 7,40k |
| 5 | 7,95k |

### 1.18.27 amr tch-h start-mode (auto|1|2|3|4)

Command

```
amr tch-h start-mode (auto|1|2|3|4)
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

amr

Adaptive Multi Rate settings

tch-h

Half Rate

start-mode

Initial codec mode to use with AMR

auto

Automatically

1

First mode

2

Second mode

3

Third mode

4

Fourth mode

### 1.18.28 amr tch-h threshold (ms|bts) <0-63>

#### Command

```
amr tch-h threshold (ms|bts) <0-63>
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

amr

Adaptive Multi Rate settings

tch-h

Half Rate

threshold

Lower threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-63>

Threshold between codec mode 1 and 2 (in 0.5 dB steps)

---



### 1.18.29 amr tch-h threshold (ms|bts) <0-63> <0-63>

#### Command

```
amr tch-h threshold (ms|bts) <0-63> <0-63>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-h

Half Rate

##### threshold

Lower threshold(s) for switching between codec modes

##### ms

MS side

##### bts

BTS side

##### <0-63>

Threshold between codec mode 1 and 2 (in 0.5 dB steps)

##### <0-63>

Threshold between codec mode 2 and 3 (in 0.5 dB steps)

### 1.18.30 amr tch-h threshold (ms|bts) <0-63> <0-63> <0-63>

#### Command

```
amr tch-h threshold (ms|bts) <0-63> <0-63> <0-63>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### amr

Adaptive Multi Rate settings

##### tch-h

Half Rate

---

threshold

Lower threshold(s) for switching between codec modes

ms

MS side

bts

BTS side

<0-63>

Threshold between codec mode 1 and 2 (in 0.5 dB steps)

<0-63>

Threshold between codec mode 2 and 3 (in 0.5 dB steps)

<0-63>

Threshold between codec mode 3 and 4 (in 0.5 dB steps)

### 1.18.31 band BAND

Command

```
band BAND
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

band

Set the frequency band of this BTS

BAND

Frequency band

### 1.18.32 base\_station\_id\_code <0-63>

Command

```
base_station_id_code <0-63>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

base\_station\_id\_code

Set the Base Station Identity Code (BSIC) of this BTS

<0-63>

BSIC of this BTS

### 1.18.33 ccch load-indication-period <0-255>

#### Command

```
ccch load-indication-period <0-255>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

ccch

Common Control Channel

load-indication-period

Period of time at which BTS sends RSL CCCH LOAD IND

<0-255>

CCCH Load Indication Period in seconds (Default: 1)

### 1.18.34 ccch load-indication-threshold <0-100>

#### Command

```
ccch load-indication-threshold <0-100>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

ccch

Common Control Channel

load-indication-threshold

Percentage of CCCH load at which BTS sends RSL CCCH LOAD IND

<0-100>

CCCH Load Threshold in percent (Default: 10)

---

### 1.18.35 cell bar qualify (0|1)

#### Command

```
cell bar qualify (0|1)
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

cell

Cell Parameters

bar

Cell Bar Qualify

qualify

Cell Bar Qualify

0

Set CBQ to 0

1

Set CBQ to 1

### 1.18.36 cell barred (0|1)

#### Command

```
cell barred (0|1)
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

cell

Should this cell be barred from access?

barred

Should this cell be barred from access?

0

Cell should NOT be barred

1

Cell should be barred

---

### 1.18.37 cell reselection hysteresis <0-14>

#### Command

```
cell reselection hysteresis <0-14>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### cell

Cell Parameters

#### reselection

Cell re-selection parameters

#### hysteresis

Cell Re-Selection Hysteresis in dB

#### <0-14>

Cell Re-Selection Hysteresis in dB

### 1.18.38 cell reselection offset <0-126>

#### Command

```
cell reselection offset <0-126>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### cell

Cell Parameters

#### reselection

Cell Re-Selection Parameters

#### offset

Cell Re-Selection Offset (CRO) in dB

#### <0-126>

Cell Re-Selection Offset (CRO) in dB

### 1.18.39 cell\_identity <0-65535>

#### Command

```
cell_identity <0-65535>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### cell\_identity

Set the Cell identity of this BTS

#### <0-65535>

Cell Identity

### 1.18.40 channel\_allocator avoid-interference (0|1)

#### Command

```
channel_allocator avoid-interference (0|1)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### channel

Channel Allocator

#### allocator

Channel Allocator

#### avoid-interference

Configure whether reported interference levels from RES IND are used in channel allocation

#### 0

Ignore interference levels (default). Always assign lchans in a deterministic order.

#### 1

In channel allocation, prefer lchans with less interference.

---

### 1.18.41 channel allocator dynamic-param c0-chan-load thresh <0-100>

#### Command

```
channel allocator dynamic-param c0-chan-load thresh <0-100>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

channel

Channel Allocator

allocator

Channel Allocator

dynamic-param

Parameters for dynamic channel allocation mode

c0-chan-load

C0 (BCCH carrier) channel load

thresh

Channel load threshold

<0-100>

Channel load threshold (in %)

### 1.18.42 channel allocator dynamic-param sort-by-trx-power (0|1)

#### Command

```
channel allocator dynamic-param sort-by-trx-power (0|1)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

channel

Channel Allocator

allocator

Channel Allocator

dynamic-param

Parameters for dynamic channel allocation mode

---

sort-by-trx-power

Whether to sort TRX instances by their respective power levels

0

Do not sort, use the same order as in the configuration file

1

Sort TRX instances by their power levels in descending order

### 1.18.43 channel allocator dynamic-param ul-rxlev thresh <0-63> avg-num <1-10>

Command

```
channel allocator dynamic-param ul-rxlev thresh <0-63> avg-num <1-10>
```

Global attributes

Flag: !

This command applies immediately

Parameters

channel

Channel Allocator

allocator

Channel Allocator

dynamic-param

Parameters for dynamic channel allocation mode

ul-rxlev

Uplink RxLev

thresh

Uplink RxLev threshold

<0-63>

Uplink RxLev threshold

avg-num

Minimum number of RxLev samples for averaging

<1-10>

Minimum number of RxLev samples for averaging

---



### 1.18.44 channel allocator mode (set-all|chan-req|assignment|handover|vgcs-vbs) (ascending| ↔ descending)

#### Command

```
channel allocator mode (set-all|chan-req|assignment|handover|vgcs-vbs) (ascending| ↔  
descending)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

channel

Channel Allocator

allocator

Channel Allocator

mode

Channel allocation mode

set-all

Set a single mode for all variants

chan-req

Channel allocation for CHANNEL REQUEST (RACH)

assignment

Channel allocation for assignment

handover

Channel allocation for handover

vgcs-vbs

Channel allocation for VGCS/VBS

ascending

Allocate Timeslots and Transceivers in ascending order

descending

Allocate Timeslots and Transceivers in descending order

### 1.18.45 channel allocator mode assignment dynamic

#### Command

```
channel allocator mode assignment dynamic
```

#### Global attributes

---

Flag: !

This command applies immediately

#### Parameters

channel

Channel Allocator

allocator

Channel Allocator

mode

Channel allocation mode

assignment

Channel allocation for assignment

dynamic

Dynamic lchan selection based on configured parameters

### 1.18.46 channel allocator tch-signalling-policy (never|emergency|voice|always)

#### Command

```
channel allocator tch-signalling-policy (never|emergency|voice|always)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

channel

Channel Allocator

allocator

Channel Allocator

tch-signalling-policy

Configure when TCH/H or TCH/F channels can be used to serve signalling if SDCCHs are exhausted

never

Never allow TCH for signalling purposes

emergency

Only allow TCH for signalling purposes when establishing an emergency call

voice

Allow TCH for signalling purposes when establishing any voice call

always

Always allow TCH for signalling purposes (default)

---

### 1.18.47 channel-description attach (0|1)

#### Command

```
channel-description attach (0|1)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### channel-description

Channel Description

#### attach

Set if attachment is required

0

Attachment is NOT required

1

Attachment is required (standard)

### 1.18.48 channel-description bs-ag-blks-res <0-7>

#### Command

```
channel-description bs-ag-blks-res <0-7>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### channel-description

Channel Description

#### bs-ag-blks-res

Set number of blocks reserved for access grant

<0-7>

Number of blocks reserved for access grant

### 1.18.49 channel-description bs-pa-mfrms <2-9>

#### Command

```
channel-description bs-pa-mfrms <2-9>
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### channel-description

Channel Description

##### bs-pa-mfrms

Set number of multiframe periods for paging groups

##### <2-9>

Number of multiframe periods for paging groups

### 1.18.50 codec-support fr

#### Command

```
codec-support fr
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

#### Parameters

##### codec-support

Codec Support settings

##### fr

Fullrate

### 1.18.51 codec-support fr (hr|efr|amr)

#### Command

```
codec-support fr (hr|efr|amr)
```

#### Application specific attributes

---

Flag: 1

This command applies for newly created lchans

Parameters

codec-support

Codec Support settings

fr

Fullrate

hr

Half Rate

efr

Enhanced Full Rate

amr

Adaptive Multirate

### 1.18.52 codec-support fr (hr|efr|amr) (hr|efr|amr)

Command

```
codec-support fr (hr|efr|amr) (hr|efr|amr)
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

codec-support

Codec Support settings

fr

Fullrate

hr

Half Rate

efr

Enhanced Full Rate

amr

Adaptive Multirate

hr

Half Rate

efr

Enhanced Full Rate

amr

Adaptive Multirate

### 1.18.53 codec-support fr (hr|efr|amr) (hr|efr|amr) (hr|efr|amr)

#### Command

```
codec-support fr (hr|efr|amr) (hr|efr|amr) (hr|efr|amr)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### codec-support

Codec Support settings

##### fr

Fullrate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

### 1.18.54 **codec-support fr (hr|efr|amr) (hr|efr|amr) (hr|efr|amr) (hr|efr|amr)**

#### Command

```
codec-support fr (hr|efr|amr) (hr|efr|amr) (hr|efr|amr) (hr|efr|amr)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### codec-support

Codec Support settings

##### fr

Fullrate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

##### hr

Half Rate

##### efr

Enhanced Full Rate

##### amr

Adaptive Multirate

### 1.18.55 con-connection-group <1-31>

#### Command

```
con-connection-group <1-31>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### con-connection-group

Configure a CON (Concentrator) Connection Group

#### <1-31>

CON Connection Group Number

### 1.18.56 del-connection-group <1-31>

#### Command

```
del-connection-group <1-31>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### del-connection-group

Delete a CON (Concentrator) Connection Group

#### <1-31>

CON Connection Group Number

### 1.18.57 depends-on-bts <0-255>

#### Command

```
depends-on-bts <0-255>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### depends-on-bts

This BTS can only be started if another one is up

#### <0-255>

BTS Number

---



### 1.18.58 description .TEXT

#### Command

```
description .TEXT
```

#### Parameters

##### description

Save human-readable description of the object

##### .TEXT

Text until the end of the line

### 1.18.59 dtx downlink

#### Command

```
dtx downlink
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### dtx

Configure discontinuous transmission

##### downlink

Enable Downlink DTX for this BTS

### 1.18.60 dtx uplink [force]

#### Command

```
dtx uplink [force]
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### dtx

Configure discontinuous transmission

##### uplink

Enable Uplink DTX for this BTS

##### [force]

MS 'shall' use DTXu instead of 'may' use (might not be supported by older phones).

---

### 1.18.61 early-classmark-sending (allowed|forbidden)

#### Command

```
early-classmark-sending (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### early-classmark-sending

Early Classmark Sending

#### allowed

Early Classmark Sending is allowed

#### forbidden

Early Classmark Sending is forbidden

### 1.18.62 early-classmark-sending-3g (allowed|forbidden)

#### Command

```
early-classmark-sending-3g (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### early-classmark-sending-3g

3G Early Classmark Sending

#### allowed

3G Early Classmark Sending is allowed

#### forbidden

3G Early Classmark Sending is forbidden

### 1.18.63 force-combined-si

#### Command

```
force-combined-si
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### force-combined-si

Force the generation of a single SI (no ter/bis)

### 1.18.64 gprs ccn-active (0|1|default)

#### Command

```
gprs ccn-active (0|1|default)
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### gprs

GPRS Packet Network

##### ccn-active

Set CCN\_ACTIVE in the GPRS Cell Options IE on the BCCH (SI13)

##### 0

Disable

##### 1

Enable

##### default

Default based on BTS type support

---

### 1.18.65 gprs cell bvci <2-65535>

#### Command

```
gprs cell bvci <2-65535>
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### gprs

GPRS Packet Network

##### cell

GPRS Cell Settings

##### bvci

GPRS BSSGP VC Identifier

##### <2-65535>

GPRS BSSGP VC Identifier

### 1.18.66 gprs cell timer (blocking-timer|blocking-retries|unblocking-retries|reset-timer|...

#### Command

```
gprs cell timer (blocking-timer|blocking-retries|unblocking-retries|reset-timer|reset- ↔  
retries|suspend-timer|suspend-retries|resume-timer|resume-retries|capability-update ↔  
-timer|capability-update-retries) <0-255>
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### gprs

GPRS Packet Network

##### cell

Cell / BSSGP

##### timer

Cell/BSSGP Timer

##### blocking-timer

Tbvc-block timeout

blocking-retries  
    Tbvc-block retries

unblocking-retries  
    Tbvc-unblock retries

reset-timer  
    Tbvc-reset timeout

reset-retries  
    Tbvc-reset retries

suspend-timer  
    Tbvc-suspend timeout

suspend-retries  
    Tbvc-suspend retries

resume-timer  
    Tbvc-resume timeout

resume-retries  
    Tbvc-resume retries

capability-update-timer  
    Tbvc-capa-update timeout

capability-update-retries  
    Tbvc-capa-update retries

<0-255>  
    Timer Value

### 1.18.67 gprs control-ack-type-rach

Command

```
gprs control-ack-type-rach
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

gprs

GPRS Packet Network

control-ack-type-rach

Set GPRS Control Ack Type for PACKET CONTROL ACKNOWLEDGMENT message to four access bursts format instead of default RLC/MAC control block

### 1.18.68 gprs egprs-packet-channel-request

#### Command

```
gprs egprs-packet-channel-request
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### gprs

GPRS Packet Network

#### egprs-packet-channel-request

EGPRS Packet Channel Request support

### 1.18.69 gprs mode (none|gprs|egprs)

#### Command

```
gprs mode (none|gprs|egprs)
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

#### gprs

GPRS Packet Network

#### mode

GPRS Mode for this BTS

#### none

GPRS Disabled on this BTS

#### gprs

GPRS Enabled on this BTS

#### egprs

EGPRS (EDGE) Enabled on this BTS

### 1.18.70 gprs network-control-order (nc0|nc1|nc2)

#### Command

```
gprs network-control-order (nc0|nc1|nc2)
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### gprs

GPRS Packet Network

##### network-control-order

GPRS Network Control Order

##### nc0

MS controlled cell re-selection, no measurement reporting

##### nc1

MS controlled cell re-selection, MS sends measurement reports

##### nc2

Network controlled cell re-selection, MS sends measurement reports

### 1.18.71 gprs ns timer (tns-block|tns-block-retries|tns-reset|tns-reset-retries|tns-test|...

#### Command

```
gprs ns timer (tns-block|tns-block-retries|tns-reset|tns-reset-retries|tns-test|tns- ↵  
alive|tns-alive-retries|tnsns-prov) <0-255>
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### gprs

GPRS Packet Network

##### ns

Network Service

##### timer

Network Service Timer

tns-block

(un)blocking Timer (Tns-block) timeout

tns-block-retries

(un)blocking Timer (Tns-block) number of retries

tns-reset

Reset Timer (Tns-reset) timeout

tns-reset-retries

Reset Timer (Tns-reset) number of retries

tns-test

Test Timer (Tns-test) timeout

tns-alive

Alive Timer (Tns-alive) timeout

tns-alive-retries

Alive Timer (Tns-alive) number of retries

tsns-prov

SNS Provision Timer (Tsns-prov) timeout

<0-255>

Timer Value

### 1.18.72 gprs nsei <0-65535>

Command

```
gprs nsei <0-65535>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

gprs

GPRS Packet Network

nsei

GPRS NS Entity Identifier

<0-65535>

GPRS NS Entity Identifier



### 1.18.73 gprs nsvc <0-1> local udp port <0-65535>

#### Command

```
gprs nsvc <0-1> local udp port <0-65535>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

gprs

GPRS Packet Network

nsvc

Network Service Virtual Connection (NS-VC)

<0-1>

NSVC Logical Number

local

GPRS NS Local UDP Port

udp

GPRS NS Local UDP Port

port

GPRS NS Local UDP Port

<0-65535>

GPRS NS Local UDP Port Number

### 1.18.74 gprs nsvc <0-1> nsvci <0-65535>

#### Command

```
gprs nsvc <0-1> nsvci <0-65535>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

gprs

GPRS Packet Network

nsvc

Network Service Virtual Connection (NS-VC)

<0-1>

NSVC Logical Number

nsvci

NS Virtual Connection Identifier

<0-65535>

GPRS NS VC Identifier

### 1.18.75 **gprs nsvc <0-1> remote ip (A.B.C.D|X:X::X:X)**

Command

```
gprs nsvc <0-1> remote ip (A.B.C.D|X:X::X:X)
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

gprs

GPRS Packet Network

nsvc

Network Service Virtual Connection (NS-VC)

<0-1>

NSVC Logical Number

remote

GPRS NS Remote IP Address

ip

GPRS NS Remote IP Address

A.B.C.D

GPRS NS Remote IPv4 Address

X:X::X:X

GPRS NS Remote IPv6 Address

### 1.18.76 **gprs nsvc <0-1> remote udp port <0-65535>**

Command

```
gprs nsvc <0-1> remote udp port <0-65535>
```

Application specific attributes

---

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

gprs

GPRS Packet Network

nsvc

Network Service Virtual Connection (NS-VC)

<0-1>

NSVC Logical Number

remote

GPRS NS Remote UDP Port

udp

GPRS NS Remote UDP Port

port

GPRS NS Remote UDP Port

<0-65535>

GPRS NS Remote UDP Port Number

### 1.18.77 gprs power-control alpha <0-10>

#### Command

```
gprs power-control alpha <0-10>
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

gprs

GPRS Packet Network

power-control

GPRS Global Power Control Parameters IE (SI13)

alpha

Set alpha

<0-10>

alpha for MS output power control in units of 0.1 (defaults to 0)

### 1.18.78 gprs routing area <0-255>

#### Command

```
gprs routing area <0-255>
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### gprs

GPRS Packet Network

##### routing

GPRS Routing Area Code

##### area

GPRS Routing Area Code

##### <0-255>

GPRS Routing Area Code

### 1.18.79 handover (0|1|default)

#### Command

```
handover (0|1|default)
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### handover

Handover general config

##### 0

Disable in-call handover

##### 1

Enable in-call handover

##### default

Enable/disable handover: Use default (0), remove explicit setting on this node

### 1.18.80 handover algorithm (1|2|default)

#### Command

```
handover algorithm (1|2|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover

Handover general config

##### algorithm

Choose algorithm for handover decision

##### 1

Algorithm 1: trigger handover based on comparing current cell and neighbor RxLev and RxQual, only.

##### 2

Algorithm 2: trigger handover on RxLev/RxQual, and also to balance the load across several cells. Consider available codecs. Prevent repeated handover by penalty timers.

##### default

Use default (1), remove explicit setting on this node

### 1.18.81 handover1 maximum distance (<0-9999>|default)

#### Command

```
handover1 maximum distance (<0-9999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### maximum

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### distance

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### <0-9999>

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### default

Use default (9999), remove explicit setting on this node

### 1.18.82 handover1 power budget hysteresis (<0-999>|default)

#### Command

```
handover1 power budget hysteresis (<0-999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

##### hysteresis

How many dB stronger must a neighbor be to become a HO candidate

##### <0-999>

Neighbor's strength difference in dB

##### default

Use default (3), remove explicit setting on this node

### 1.18.83 handover1 power budget interval (<1-99>|default)

#### Command

```
handover1 power budget interval (<1-99>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

interval

How often to check for a better cell (SACCH frames)

<1-99>

Check for stronger neighbor every N number of SACCH frames

default

Use default (6), remove explicit setting on this node

#### 1.18.84 handover1 window rxlev averaging (<1-10>|default)

Command

```
handover1 window rxlev averaging (<1-10>|default)
```

Global attributes

Flag: !

This command applies immediately

Parameters

handover1

Handover options for handover decision algorithm 1

window

Measurement averaging settings

rxlev

Received-Level averaging

averaging

How many RxLev measurements to use for averaging

<1-10>

RxLev averaging: Number of values to average over

default

Use default (10), remove explicit setting on this node

#### 1.18.85 handover1 window rxlev neighbor averaging (<1-10>|default)

Command

```
handover1 window rxlev neighbor averaging (<1-10>|default)
```

Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### window

Measurement averaging settings

##### rxlev

Received-Level averaging

##### neighbor

How many Neighbor RxLev measurements to use for averaging

##### averaging

How many Neighbor RxLev measurements to use for averaging

##### <1-10>

Neighbor RxLev averaging: Number of values to average over

##### default

Use default (10), remove explicit setting on this node

### 1.18.86 handover1 window rxqual averaging (<1-10>|default)

#### Command

```
handover1 window rxqual averaging (<1-10>|default)
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### handover1

Handover options for handover decision algorithm 1

##### window

Measurement averaging settings

##### rxqual

Received-Quality averaging

##### averaging

How many RxQual measurements to use for averaging

##### <1-10>

RxQual averaging: Number of values to average over

##### default

Use default (1), remove explicit setting on this node



### 1.18.87 handover2 afs-bias rxlev (<0-20>|default)

#### Command

```
handover2 afs-bias rxlev (<0-20>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### afs-bias

Configure bias to prefer AFS (AMR on TCH/F) over other codecs

##### rxlev

RxLev improvement bias for AFS over other codecs

##### <0-20>

Virtual RxLev improvement (dB)

##### default

Use default (0), remove explicit setting on this node

### 1.18.88 handover2 afs-bias rxqual (<0-7>|default)

#### Command

```
handover2 afs-bias rxqual (<0-7>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### afs-bias

Configure bias to prefer AFS (AMR on TCH/F) over other codecs

##### rxqual

RxQual improvement bias for AFS over other codecs

##### <0-7>

Virtual RxQual improvement

##### default

Use default (0), remove explicit setting on this node

### 1.18.89 handover2 assignment (0|1|default)

#### Command

```
handover2 assignment (0|1|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### assignment

Enable or disable in-call channel re-assignment within the same cell

##### 0

Disable in-call assignment

##### 1

Enable in-call assignment

##### default

Use default (0), remove explicit setting on this node

### 1.18.90 handover2 max-handovers (<1-9999>|default)

#### Command

```
handover2 max-handovers (<1-9999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### max-handovers

Maximum number of concurrent handovers allowed per cell

##### <1-9999>

Number

##### default

Use default (9999), remove explicit setting on this node

---

### 1.18.91 handover2 maximum distance (<0-9999>|default)

#### Command

```
handover2 maximum distance (<0-9999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### maximum

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### distance

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### <0-9999>

Maximum Timing-Advance value (i.e. MS distance) before triggering HO

##### default

Use default (9999), remove explicit setting on this node

### 1.18.92 handover2 min rxlev (<-110--50>|default)

#### Command

```
handover2 min rxlev (<-110--50>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min

Minimum Level/Quality thresholds before triggering HO

##### rxlev

How weak may RxLev of an MS become before triggering HO

##### <-110--50>

minimum RxLev (dBm; note: negative values)

##### default

Use default (-100), remove explicit setting on this node

### 1.18.93 handover2 min rxqual (<0-7>|default)

#### Command

```
handover2 min rxqual (<0-7>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min

Minimum Level/Quality thresholds before triggering HO

##### rxqual

How bad may RxQual of an MS become before triggering HO, where 0 is the best quality (bit error rate < 0.2%) and 7 is the worst quality (bit error rate > 12.8%), see 3GPP TS 45.008 8.2.4.

##### <0-7>

worst acceptable RxQual

##### default

Use default (5), remove explicit setting on this node

### 1.18.94 handover2 min-free-slots tch/f (<0-9999>|default)

#### Command

```
handover2 min-free-slots tch/f (<0-9999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### min-free-slots

Minimum free TCH timeslots before cell is considered congested

##### tch/f

Minimum free TCH/F timeslots before cell is considered congested

##### <0-9999>

Number of TCH/F slots

##### default

Use default (0), remove explicit setting on this node

### 1.18.95 handover2 min-free-slots tch/h (<0-9999>|default)

#### Command

```
handover2 min-free-slots tch/h (<0-9999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

handover2

Handover options for handover decision algorithm 2

min-free-slots

Minimum free TCH timeslots before cell is considered congested

tch/h

Minimum free TCH/H timeslots before cell is considered congested

<0-9999>

Number of TCH/H slots

default

Use default (0), remove explicit setting on this node

### 1.18.96 handover2 penalty-time failed-assignment (<0-99999>|default)

#### Command

```
handover2 penalty-time failed-assignment (<0-99999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

handover2

Handover options for handover decision algorithm 2

penalty-time

Set penalty times to wait between repeated handovers

failed-assignment

Time to suspend handover for a subscriber after a failed re-assignment within this cell; see also 'handover2 retries'

<0-99999>

Seconds

default

Use default (60), remove explicit setting on this node

### 1.18.97 handover2 penalty-time failed-ho (<0-99999>|default)

#### Command

```
handover2 penalty-time failed-ho (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### failed-ho

Time to suspend handover for a subscriber after a failed handover into this cell; see also 'handover2 retries'

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.18.98 handover2 penalty-time low-rxqual-assignment (<0-99999>|default)

#### Command

```
handover2 penalty-time low-rxqual-assignment (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### low-rxqual-assignment

Time to suspend re-assignment after an lchan was re-assigned because of low RxQual

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.18.99 handover2 penalty-time low-rxqual-ho (<0-99999>|default)

#### Command

```
handover2 penalty-time low-rxqual-ho (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### low-rxqual-ho

Time to suspend handover back to a cell after bad RxQual caused handover away from it

##### <0-99999>

Seconds

##### default

Use default (60), remove explicit setting on this node

### 1.18.100 handover2 penalty-time max-distance (<0-99999>|default)

#### Command

```
handover2 penalty-time max-distance (<0-99999>|default)
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### penalty-time

Set penalty times to wait between repeated handovers

##### max-distance

Time to suspend handover for a subscriber after leaving this cell due to exceeding max distance; see also 'handover2 retries'

##### <0-99999>

Seconds

##### default

Use default (300), remove explicit setting on this node

### 1.18.101 handover2 power budget hysteresis (<0-999>|default)

#### Command

```
handover2 power budget hysteresis (<0-999>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

##### hysteresis

How many dB stronger must a neighbor be to become a HO candidate

##### <0-999>

Neighbor's strength difference in dB

##### default

Use default (3), remove explicit setting on this node

### 1.18.102 handover2 power budget interval (<1-99>|default)

#### Command

```
handover2 power budget interval (<1-99>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### power

Neighbor cell power triggering

##### budget

Neighbor cell power triggering

---



interval

How often to check for a better cell (SACCH frames)

<1-99>

Check for stronger neighbor every N number of SACCH frames

default

Use default (6), remove explicit setting on this node

### 1.18.103 handover2 retries (<0-9>|default)

Command

```
handover2 retries (<0-9>|default)
```

Global attributes

Flag: !

This command applies immediately

Parameters

handover2

Handover options for handover decision algorithm 2

retries

Number of times to immediately retry a failed handover/assignment, before a penalty time is applied

<0-9>

Number of retries

default

Use default (0), remove explicit setting on this node

### 1.18.104 handover2 tdma-measurement (auto|full|subset|default)

Command

```
handover2 tdma-measurement (auto|full|subset|default)
```

Global attributes

Flag: !

This command applies immediately

Parameters

handover2

Handover options for handover decision algorithm 2

---

**tdma-measurement**

Define measurement set of TDMA frames

**auto**

Use full set when DTX is not in use, use subset when DTX is in use, as indicated by each Measurement Report

**full**

Full set of 102/104 TDMA frames

**subset**

Sub set of 4 TDMA frames (SACCH)

**default**

Use default (subset), remove explicit setting on this node

### 1.18.105 **handover2 window rxlev averaging (<1-10>|default)**

**Command**

```
handover2 window rxlev averaging (<1-10>|default)
```

**Global attributes****Flag: !**

This command applies immediately

**Parameters****handover2**

Handover options for handover decision algorithm 2

**window**

Measurement averaging settings

**rxlev**

Received-Level averaging

**averaging**

How many RxLev measurements to use for averaging

**<1-10>**

RxLev averaging: Number of values to average over

**default**

Use default (10), remove explicit setting on this node

### 1.18.106 handover2 window rxlev neighbor averaging (<1-10>|default)

#### Command

```
handover2 window rxlev neighbor averaging (<1-10>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### window

Measurement averaging settings

##### rxlev

Received-Level averaging

##### neighbor

How many Neighbor RxLev measurements to use for averaging

##### averaging

How many Neighbor RxLev measurements to use for averaging

##### <1-10>

Neighbor RxLev averaging: Number of values to average over

##### default

Use default (10), remove explicit setting on this node

### 1.18.107 handover2 window rxqual averaging (<1-10>|default)

#### Command

```
handover2 window rxqual averaging (<1-10>|default)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

##### handover2

Handover options for handover decision algorithm 2

##### window

Measurement averaging settings

---

rxqual

Received-Quality averaging

averaging

How many RxQual measurements to use for averaging

<1-10>

RxQual averaging: Number of values to average over

default

Use default (1), remove explicit setting on this node

### 1.18.108 immediate-assignment (post-chan-ack|pre-chan-ack|pre-ts-ack)

Command

```
immediate-assignment (post-chan-ack|pre-chan-ack|pre-ts-ack)
```

Global attributes

Flag: !

This command applies immediately

Parameters

immediate-assignment

Configure time of Immediate Assignment after ChanRqd RACH (Abis optimization)

post-chan-ack

Send the Immediate Assignment after the Channel Activation ACK (normal sequence)

pre-chan-ack

Send the Immediate Assignment directly after Channel Activation (early), without waiting for the ACK; This may help with double allocations on high latency Abis links

pre-ts-ack

EXPERIMENTAL: If a dynamic timeslot switch is necessary, send the Immediate Assignment even before the timeslot is switched, i.e. even before the Channel Activation is sent (very early)

### 1.18.109 interference-meas avg-period <1-31>

Command

```
interference-meas avg-period <1-31>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

---

interference-meas

Interference measurement parameters

avg-period

Averaging period (Intave)

<1-31>

Number of SACCH multiframes

### 1.18.110 interference-meas level-bounds <-120-0> <-120-0> <-120-0> <-120-0> <-120-0> <-12...

Command

```
interference-meas level-bounds <-120-0> <-120-0> <-120-0> <-120-0> <-120-0> <-120-0>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

interference-meas

Interference measurement parameters

level-bounds

Interference level Boundaries. 3GPP do not specify whether these should be in ascending or descending order (3GPP TS 48.058 9.3.21 / 3GPP TS 52.021 9.4.25). OsmoBSC supports either ordering, but possibly some BTS models only return meaningful interference levels with one specific ordering.

<-120-0>

Interference boundary 0 (dBm)

<-120-0>

Interference boundary X1 (dBm)

<-120-0>

Interference boundary X2 (dBm)

<-120-0>

Interference boundary X3 (dBm)

<-120-0>

Interference boundary X4 (dBm)

<-120-0>

Interference boundary X5 (dBm)

### 1.18.111 ipa rsl-ip A.B.C.D

#### Command

```
ipa rsl-ip A.B.C.D
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

ipa

Abis/IP specific options

rsl-ip

Set the IPA RSL IP Address of the BSC

A.B.C.D

Destination IP address for RSL connection

### 1.18.112 ipa unit-id <0-65534> <0-255>

#### Command

```
ipa unit-id <0-65534> <0-255>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

ipa

Abis/IP specific options

unit-id

Set the IPA BTS Unit ID

<0-65534>

Unit ID (Site)

<0-255>

Unit ID (BTS)

### 1.18.113 is-connection-list (add|del) <0-2047> <0-2047> <0-255>

#### Command

```
is-connection-list (add|del) <0-2047> <0-2047> <0-255>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

is-connection-list

Interface Switch Connection List

add

Add to IS list

del

Delete from IS list

<0-2047>

ICP1

<0-2047>

ICP2

<0-255>

Contiguity Index

### 1.18.114 location\_area\_code (<0-65535>|<0x0000-0xffff>)

#### Command

```
location_area_code (<0-65535>|<0x0000-0xffff>)
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

location\_area\_code

Set the Location Area Code (LAC) of this BTS

<0-65535>

LAC in decimal format

<0x0000-0xffff>

LAC in hexadecimal format

### 1.18.115 mgw pool-target <0-255> [strict]

#### Command

```
mgw pool-target <0-255> [strict]
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### mgw

MGW configuration for this specific BTS

##### pool-target

Pin BTS to use a single MGW in the pool

##### <0-255>

Reference Number of the MGW (in the config) to pin to

##### [strict]

Strictly prohibit use of other MGWs if the pinned one is not available

### 1.18.116 ms max power <0-40>

#### Command

```
ms max power <0-40>
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### ms

MS Options

##### max

Maximum transmit power of the MS

##### power

Maximum transmit power of the MS

##### <0-40>

Maximum transmit power of the MS in dBm



### 1.18.117 ncc-permitted <1-8> [<1-8>] [<1-8>] [<1-8>] [<1-8>] [<1-8>] [<1-8>]

#### Command

```
ncc-permitted <1-8> [<1-8>] [<1-8>] [<1-8>] [<1-8>] [<1-8>] [<1-8>]
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### ncc-permitted

Set permitted NCCs

#### <1-8>

Network Colour Code

#### [<1-8>]

Network Colour Code

#### [<1-8>]

Network Colour Code

#### [<1-8>]

Network Colour Code

#### [<1-8>]

Network Colour Code

#### [<1-8>]

Network Colour Code

#### [<1-8>]

Network Colour Code

### 1.18.118 ncc-permitted all

#### Command

```
ncc-permitted all
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### ncc-permitted

Set permitted NCCs

#### all

Permit all NCCs (default)

---

### 1.18.119 nch-position num-blocks <1-7> first-block <0-6>

#### Command

```
nch-position num-blocks <1-7> first-block <0-6>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### nch-position

NCH (Notification Channel) position within CCCH

##### num-blocks

Number of blocks reserved for NCH

##### <1-7>

Number of blocks reserved for NCH

##### first-block

First block reserved for NCH

##### <0-6>

First block reserved for NCH

### 1.18.120 neighbor bts <0-255>

#### Command

```
neighbor bts <0-255>
```

#### Parameters

##### neighbor

Manage local and remote-BSS neighbor cells

##### bts

Add Neighbor cell by local BTS number

##### <0-255>

BTS number

**1.18.121 neighbor cgi <0-999> <0-999> <0-65535> <0-65535>**

## Command

```
neighbor cgi <0-999> <0-999> <0-65535> <0-65535>
```

## Parameters

## neighbor

Manage local and remote-BSS neighbor cells

## cgi

Add Neighbor cell by cgi

<0-999>

MCC

<0-999>

MNC

<0-65535>

LAC

<0-65535>

CI

**1.18.122 neighbor cgi <0-999> <0-999> <0-65535> <0-65535> arfcn <0-1023> bsic (<0-63>|any...**

## Command

```
neighbor cgi <0-999> <0-999> <0-65535> <0-65535> arfcn <0-1023> bsic (<0-63>|any)
```

## Parameters

## neighbor

Manage local and remote-BSS neighbor cells

## cgi

Add Neighbor cell by cgi

<0-999>

MCC

<0-999>

MNC

<0-65535>

LAC

<0-65535>

CI

## arfcn

ARFCN of neighbor cell

&lt;0-1023&gt;

ARFCN value

bsic

BSIC of neighbor cell

&lt;0-63&gt;

BSIC value

any

for all BSICs / use any BSIC in this ARFCN

**1.18.123 neighbor cgi-ps <0-999> <0-999> <0-65535> <0-255> <0-65535>**

Command

```
neighbor cgi-ps <0-999> <0-999> <0-65535> <0-255> <0-65535>
```

Parameters

neighbor

Manage local and remote-BSS neighbor cells

cgi-ps

Add Neighbor cell by cgi (Packet Switched, with RAC)

&lt;0-999&gt;

MCC

&lt;0-999&gt;

MNC

&lt;0-65535&gt;

LAC

&lt;0-255&gt;

RAC

&lt;0-65535&gt;

CI

**1.18.124 neighbor cgi-ps <0-999> <0-999> <0-65535> <0-255> <0-65535> arfcn <0-1023> bsic ...**

Command

```
neighbor cgi-ps <0-999> <0-999> <0-65535> <0-255> <0-65535> arfcn <0-1023> bsic ↵
(<0-63>|any)
```

Parameters

neighbor

Manage local and remote-BSS neighbor cells

cgi-ps

Add Neighbor cell by cgi (Packet Switched, with RAC)

<0-999>

MCC

<0-999>

MNC

<0-65535>

LAC

<0-255>

RAC

<0-65535>

CI

arfcn

ARFCN of neighbor cell

<0-1023>

ARFCN value

bsic

BSIC of neighbor cell

<0-63>

BSIC value

any

for all BSICs / use any BSIC in this ARFCN

### 1.18.125 neighbor lac <0-65535>

Command

```
neighbor lac <0-65535>
```

Parameters

neighbor

Manage local and remote-BSS neighbor cells

lac

Add Neighbor cell by LAC

<0-65535>

LAC

**1.18.126 neighbor lac <0-65535> arfcn <0-1023> bsic (<0-63>|any)**

## Command

```
neighbor lac <0-65535> arfcn <0-1023> bsic (<0-63>|any)
```

## Parameters

## neighbor

Manage local and remote-BSS neighbor cells

## lac

Add Neighbor cell by LAC

<0-65535>

LAC

## arfcn

ARFCN of neighbor cell

<0-1023>

ARFCN value

## bsic

BSIC of neighbor cell

<0-63>

BSIC value

## any

for all BSICs / use any BSIC in this ARFCN

**1.18.127 neighbor lac-ci <0-65535> <0-65535>**

## Command

```
neighbor lac-ci <0-65535> <0-65535>
```

## Parameters

## neighbor

Manage local and remote-BSS neighbor cells

## lac-ci

Add Neighbor cell by LAC and CI

<0-65535>

LAC

<0-65535>

CI

### 1.18.128 neighbor lac-ci <0-65535> <0-65535> arfcn <0-1023> bsic (<0-63>|any)

#### Command

```
neighbor lac-ci <0-65535> <0-65535> arfcn <0-1023> bsic (<0-63>|any)
```

#### Parameters

##### neighbor

Manage local and remote-BSS neighbor cells

##### lac-ci

Add Neighbor cell by LAC and CI

<0-65535>

LAC

<0-65535>

CI

##### arfcn

ARFCN of neighbor cell

<0-1023>

ARFCN value

##### bsic

BSIC of neighbor cell

<0-63>

BSIC value

##### any

for all BSICs / use any BSIC in this ARFCN

### 1.18.129 neighbor-list (add|del) arfcn <0-1023>

#### Command

```
neighbor-list (add|del) arfcn <0-1023>
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### neighbor-list

Neighbor List

##### add

Add to manual neighbor list

del

Delete from manual neighbor list

arfcn

ARFCN of neighbor

<0-1023>

ARFCN of neighbor

### 1.18.130 neighbor-list mode (automatic|manual|manual-si5)

Command

```
neighbor-list mode (automatic|manual|manual-si5)
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

neighbor-list

Neighbor List

mode

Mode of Neighbor List generation

automatic

Automatically from all BTS in this BSC

manual

Manual

manual-si5

Manual with different lists for SI2 and SI5

### 1.18.131 no (bs-power-control|ms-power-control)

Command

```
no (bs-power-control|ms-power-control)
```

Application specific attributes

Flag: l

This command applies for newly created lchans

Parameters

no

Negate a command or set its defaults

bs-power-control

BS (Downlink) power control parameters

ms-power-control

MS (Uplink) power control parameters



### 1.18.132 no access-control-class-ramping

#### Command

```
no access-control-class-ramping
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### no

Negate a command or set its defaults

#### access-control-class-ramping

Disable Access Control Class ramping

### 1.18.133 no depends-on-bts <0-255>

#### Command

```
no depends-on-bts <0-255>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### no

Negate a command or set its defaults

#### depends-on-bts

This BTS can only be started if another one is up

#### <0-255>

BTS Number

### 1.18.134 no description

#### Command

```
no description
```

#### Parameters

#### no

Negate a command or set its defaults

#### description

Remove description of the object

---

### 1.18.135 no dtx downlink

#### Command

```
no dtx downlink
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### no

Negate a command or set its defaults

##### dtx

Configure discontinuous transmission

##### downlink

Disable Downlink DTX for this BTS

### 1.18.136 no dtx uplink

#### Command

```
no dtx uplink
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### no

Negate a command or set its defaults

##### dtx

Configure discontinuous transmission

##### uplink

Disable Uplink DTX for this BTS

### 1.18.137 no force-combined-si

#### Command

```
no force-combined-si
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### no

Negate a command or set its defaults

##### force-combined-si

Force the generation of a single SI (no ter/bis)

### 1.18.138 no gprs control-ack-type-rach

#### Command

```
no gprs control-ack-type-rach
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### no

Negate a command or set its defaults

##### gprs

GPRS Packet Network

##### control-ack-type-rach

Set GPRS Control Ack Type for PACKET CONTROL ACKNOWLEDGMENT message to default RLC/MAC control block

### 1.18.139 no gprs egprs-packet-channel-request

#### Command

```
no gprs egprs-packet-channel-request
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### no

Negate a command or set its defaults

##### gprs

GPRS Packet Network

##### egprs-packet-channel-request

EGPRS Packet Channel Request support

### 1.18.140 no mgw pool-target

#### Command

```
no mgw pool-target
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

#### Parameters

##### no

Negate a command or set its defaults

##### mgw

MGW configuration for this specific BTS

##### pool-target

Avoid pinning the BTS to any specific MGW (default)

### 1.18.141 no nch-position

#### Command

```
no nch-position
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### no

Negate a command or set its defaults

##### nch-position

Disable NCH in this BTS

### 1.18.142 no neighbor arfcn <0-1023> bsic (<0-63>|any)

#### Command

```
no neighbor arfcn <0-1023> bsic (<0-63>|any)
```

#### Parameters

##### no

Negate a command or set its defaults

##### neighbor

Remove local or remote-BSS neighbor cell

##### arfcn

ARFCN of neighbor cell

##### <0-1023>

ARFCN value

##### bsic

BSIC of neighbor cell

##### <0-63>

BSIC value

##### any

for all BSICs / use any BSIC in this ARFCN

### 1.18.143 no neighbor bts <0-255>

#### Command

```
no neighbor bts <0-255>
```

#### Parameters

no

Negate a command or set its defaults

neighbor

Remove local or remote-BSS neighbor cell

bts

Neighbor cell by local BTS number

<0-255>

BTS number

### 1.18.144 no neighbor cgi <0-999> <0-999> <0-65535> <0-65535>

#### Command

```
no neighbor cgi <0-999> <0-999> <0-65535> <0-65535>
```

#### Parameters

no

Negate a command or set its defaults

neighbor

Remove local or remote-BSS neighbor cell

cgi

Neighbor cell by cgi

<0-999>

MCC

<0-999>

MNC

<0-65535>

LAC

<0-65535>

CI

---

**1.18.145 no neighbor cgi-ps <0-999> <0-999> <0-65535> <0-255> <0-65535>**

## Command

```
no neighbor cgi-ps <0-999> <0-999> <0-65535> <0-255> <0-65535>
```

## Parameters

no

Negate a command or set its defaults

neighbor

Remove local or remote-BSS neighbor cell

cgi-ps

Neighbor cell by cgi (Packet Switched, with RAC)

&lt;0-999&gt;

MCC

&lt;0-999&gt;

MNC

&lt;0-65535&gt;

LAC

&lt;0-255&gt;

RAC

&lt;0-65535&gt;

CI

**1.18.146 no neighbor lac <0-65535>**

## Command

```
no neighbor lac <0-65535>
```

## Parameters

no

Negate a command or set its defaults

neighbor

Remove local or remote-BSS neighbor cell

lac

Neighbor cell by LAC

&lt;0-65535&gt;

LAC

### 1.18.147 no neighbor lac-ci <0-65535> <0-65535>

#### Command

```
no neighbor lac-ci <0-65535> <0-65535>
```

#### Parameters

no

Negate a command or set its defaults

neighbor

Remove local or remote-BSS neighbor cell

lac-ci

Neighbor cell by LAC and CI

<0-65535>

LAC

<0-65535>

CI

### 1.18.148 no neighbors

#### Command

```
no neighbors
```

#### Parameters

no

Negate a command or set its defaults

neighbors

Remove all local and remote-BSS neighbor config for this cell. Note that this falls back to the legacy behavior of regarding all local cells as neighbors.

### 1.18.149 no overpower dl-acch

#### Command

```
no overpower dl-acch
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

---



no

Negate a command or set its defaults

overpower

Temporary ACCH overpower

dl-acch

Disable ACCH overpower for this BTS

### 1.18.150 no repeat (ul-sacch|dl-sacch)

Command

```
no repeat (ul-sacch|dl-sacch)
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

no

Negate a command or set its defaults

repeat

FACCH/SACCH repetition

ul-sacch

Disable UL-SACCH repetition for this BTS

dl-sacch

Disable DL-SACCH repetition for this BTS

### 1.18.151 no repeat dl-facch

Command

```
no repeat dl-facch
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

no

Negate a command or set its defaults

repeat

FACCH/SACCH repetition

dl-facch

Disable DL-FACCH repetition for this BTS

### 1.18.152 no rf-lock-exclude

#### Command

```
no rf-lock-exclude
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

rf-lock-exclude

Exclude this BTS from the global RF Lock

### 1.18.153 no system-information unused-send-empty

#### Command

```
no system-information unused-send-empty
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

no

Negate a command or set its defaults

system-information

System Information Messages

unused-send-empty

Avoid sending BCCH Info with empty 'Full BCCH Info' TLV to notify disabled SI. Some nanoBTS fw versions are known to fail upon receipt of these messages.

---

### 1.18.154 no timer-dynamic TNNNN

#### Command

```
no timer-dynamic TNNNN
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

timer-dynamic

Set given timer to non-dynamic and use the default or user provided fixed value

TNNNN

T-number, optionally preceded by 't' or 'T'

### 1.18.155 nokia\_site bts-reset-timer <15-100>

#### Command

```
nokia_site bts-reset-timer <15-100>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

nokia\_site

Nokia \*Site related commands

bts-reset-timer

The amount of time between BTS\_RESET is sent and the BTS is being bootstrapped

<15-100>

Timer value (in seconds, default 15)

---

### 1.18.156 nokia\_site no-local-rel-conf (0|1)

#### Command

```
nokia_site no-local-rel-conf (0|1)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

nokia\_site

Nokia \*Site related commands

no-local-rel-conf

Do not wait for RELease CONFirm message when releasing channel locally

0

Wait for RELease CONFirm

1

Do not wait for RELease CONFirm

### 1.18.157 nokia\_site skip-reset (0|1)

#### Command

```
nokia_site skip-reset (0|1)
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

nokia\_site

Nokia \*Site related commands

skip-reset

Skip the reset step during bootstrap process of this BTS

0

Do NOT skip the reset

1

Skip the reset

### 1.18.158 om2000 sync-source (internal|external)

#### Command

```
om2000 sync-source (internal|external)
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

om2000

Configure OM2K specific parameters

sync-source

TF Synchronization Source

internal

Use Internal (E1)

external

Use External (GPS)

### 1.18.159 om2000 version-limit (oml|rsl) gen <0-99> rev <0-99>

#### Command

```
om2000 version-limit (oml|rsl) gen <0-99> rev <0-99>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

om2000

Configure OM2K specific parameters

version-limit

Configure optional maximum protocol version to negotiate

oml

Limit OML IWD version

rsl

Limit RSL IWD version

gen

Generation limit

<0-99>

Generation number to limit to (inclusive)

rev

Revision limit

<0-99>

Revision number to limit to (inclusive)

### 1.18.160 oml e1 line E1\_LINE timeslot <1-31> sub-slot (0|1|2|3|full)

Command

```
oml e1 line E1_LINE timeslot <1-31> sub-slot (0|1|2|3|full)
```

Parameters

oml

Organization & Maintenance Link

e1

OML E1/T1 Configuration

line

E1/T1 line number to be used for OML

E1\_LINE

E1/T1 line number to be used for OML

timeslot

E1/T1 timeslot to be used for OML

<1-31>

E1/T1 timeslot to be used for OML

sub-slot

E1/T1 sub-slot to be used for OML

0

Use E1/T1 sub-slot 0

1

Use E1/T1 sub-slot 1

2

Use E1/T1 sub-slot 2

3

Use E1/T1 sub-slot 3

full

Use full E1 slot 3

### 1.18.161 oml e1 tei <0-63>

#### Command

```
oml e1 tei <0-63>
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### oml

Organization & Maintenance Link

##### e1

OML E1/T1 Configuration

##### tei

Set the TEI to be used for OML

##### <0-63>

TEI Number

### 1.18.162 oml ipa stream-id <0-255> line E1\_LINE

#### Command

```
oml ipa stream-id <0-255> line E1_LINE
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### oml

Organization & Maintenance Link

##### ipa

A-bis/IP Specific Options

##### stream-id

Set the ipa Stream ID of the OML link of this BTS

##### <0-255>

Stream Identifier

##### line

Virtual E1 Line Number

##### E1\_LINE

Virtual E1 Line Number

---

### 1.18.163 osmux (on|off|only)

#### Command

```
osmux (on|off|only)
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

osmux

RTP multiplexing

on

Enable OSMUX

off

Disable OSMUX

only

Only use OSMUX

### 1.18.164 overpower (dl-acch|dl-sacch|dl-facch) <1-4>

#### Command

```
overpower (dl-acch|dl-sacch|dl-facch) <1-4>
```

#### Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

overpower

Temporary ACCH overpower

dl-acch

Enable overpower for both SACCH and FACCH

dl-sacch

Enable overpower for SACCH only

dl-facch

Enable overpower for FACCH only

<1-4>

Overpower value in dB

---



### 1.18.165 overpower chan-mode (speech-amr|any)

#### Command

```
overpower chan-mode (speech-amr|any)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### overpower

Temporary ACCH overpower

##### chan-mode

Allow temporary overpower for specific Channel mode(s)

##### speech-amr

Speech channels using AMR codec (default)

##### any

Any kind of channel mode

### 1.18.166 overpower rxqual (0|1|2|3|4|5|6|7)

#### Command

```
overpower rxqual (0|1|2|3|4|5|6|7)
```

#### Application specific attributes

##### Flag: 1

This command applies for newly created lchans

#### Parameters

##### overpower

Temporary ACCH overpower

##### rxqual

Set RxQual (BER) threshold (default 4)

##### 0

BER >= 0% (always on)

##### 1

BER >= 0.2%

##### 2

BER >= 0.4%

- 3  
BER >= 0.8%
- 4  
BER >= 1.6% (default)
- 5  
BER >= 3.2%
- 6  
BER >= 6.4%
- 7  
BER >= 12.8%

### 1.18.167 **paging free <-1-1024>**

Command

```
paging free <-1-1024>
```

Global attributes

Flag: !

This command applies immediately

Parameters

paging

Paging options

free

Only page when having a certain amount of free slots

<-1-1024>

amount of required free paging slots. -1 to disable

### 1.18.168 **penalty time <20-620>**

Command

```
penalty time <20-620>
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

penalty

Cell selection penalty time

time

Cell selection penalty time

<20-620>

Cell selection penalty time in seconds (by 20s increments)

### 1.18.169 penalty time reserved

#### Command

```
penalty time reserved
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### penalty

Cell selection penalty time

#### time

Cell selection penalty time

#### reserved

Set cell selection penalty time to reserved value 31, (indicate that CELL\_RESELECT\_OFFSET is subtracted from C2 and TEMPORARY\_OFFSET is ignored)

### 1.18.170 rach access-control-class (0|1|2|3|4|5|6|7|8|9|11|12|13|14|15) (barred|allowed)

#### Command

```
rach access-control-class (0|1|2|3|4|5|6|7|8|9|11|12|13|14|15) (barred|allowed)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### rach

Random Access Control Channel

#### access-control-class

Set access control class

#### 0

Access control class 0

#### 1

Access control class 1

#### 2

Access control class 2

- 3  
Access control class 3
- 4  
Access control class 4
- 5  
Access control class 5
- 6  
Access control class 6
- 7  
Access control class 7
- 8  
Access control class 8
- 9  
Access control class 9
- 11  
Access control class 11 for PLMN use
- 12  
Access control class 12 for security services
- 13  
Access control class 13 for public utilities (e.g. water/gas suppliers)
- 14  
Access control class 14 for emergency services
- 15  
Access control class 15 for PLMN staff
- barred  
barred to use access control class
- allowed  
allowed to use access control class

### 1.18.171 rach call-reestablishment allowed (0|1)

#### Command

```
rach call-reestablishment allowed (0|1)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

---

rach

Random Access Control Channel

call-reestablishment

Resume calls after radio link failure

allowed

Resume calls after radio link failure

0

Forbid MS to reestablish calls

1

Allow MS to try to reestablish calls

### 1.18.172 rach emergency call allowed (0|1)

Command

```
rach emergency call allowed (0|1)
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

rach

Random Access Control Channel

emergency

Should this cell allow emergency calls?

call

Should this cell allow emergency calls?

allowed

Should this cell allow emergency calls?

0

Do NOT allow emergency calls

1

Allow emergency calls

### 1.18.173 rach max transmission (1|2|4|7)

#### Command

```
rach max transmission (1|2|4|7)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### rach

Random Access Control Channel

#### max

Set the maximum number of RACH burst transmissions

#### transmission

Set the maximum number of RACH burst transmissions

#### 1

Maximum number of 1 RACH burst transmissions

#### 2

Maximum number of 2 RACH burst transmissions

#### 4

Maximum number of 4 RACH burst transmissions

#### 7

Maximum number of 7 RACH burst transmissions

### 1.18.174 rach max-delay <1-127>

#### Command

```
rach max-delay <1-127>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### rach

Random Access Control Channel

#### max-delay

Set the max Access Delay IE value to accept in CHANnel ReQuireD

#### <1-127>

Maximum Access Delay IE value to accept in CHANnel ReQuireD

---

### 1.18.175 rach nm busy threshold <0-255>

#### Command

```
rach nm busy threshold <0-255>
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### rach

Random Access Control Channel

##### nm

Network Management

##### busy

Set the NM Busy Threshold

##### threshold

Set the NM Busy Threshold

##### <0-255>

NM Busy Threshold in dB

### 1.18.176 rach nm load average <0-65535>

#### Command

```
rach nm load average <0-65535>
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### rach

Random Access Control Channel

##### nm

Network Management

##### load

Set the NM Loadaverage Slots value

##### average

Set the NM Loadaverage Slots value

##### <0-65535>

NM Loadaverage Slots value

---

### 1.18.177 rach tx integer <0-15>

#### Command

```
rach tx integer <0-15>
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### rach

Random Access Control Channel

#### tx

Set the raw tx integer value in RACH Control parameters IE

#### integer

Set the raw tx integer value in RACH Control parameters IE

#### <0-15>

Raw tx integer value in RACH Control parameters IE

### 1.18.178 radio-link-timeout <4-64>

#### Command

```
radio-link-timeout <4-64>
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

#### radio-link-timeout

Radio link timeout criterion (BTS side)

#### <4-64>

Radio link timeout value (lost SACCH block)



### 1.18.179 radio-link-timeout infinite

#### Command

```
radio-link-timeout infinite
```

#### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

#### radio-link-timeout

Radio link timeout criterion (BTS side)

#### infinite

Infinite Radio link timeout value (use only for BTS RF testing)

### 1.18.180 repeat (ul-sacch|dl-sacch)

#### Command

```
repeat (ul-sacch|dl-sacch)
```

#### Application specific attributes

#### Flag: l

This command applies for newly created lchans

#### Parameters

#### repeat

FACCH/SACCH repetition

#### ul-sacch

Enable UL-SACCH repetition for this BTS

#### dl-sacch

Enable DL-SACCH repetition for this BTS

### 1.18.181 repeat dl-facch (command|all)

#### Command

```
repeat dl-facch (command|all)
```

#### Application specific attributes

---

Flag: 1

This command applies for newly created lchans

Parameters

repeat

FACCH/SACCH repetition

dl-facch

Enable DL-FACCH repetition for this BTS

command

command LAPDm frames only

all

all LAPDm frames

### 1.18.182 repeat rxqual (0|1|2|3|4|5|6|7)

Command

```
repeat rxqual (0|1|2|3|4|5|6|7)
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

Parameters

repeat

FACCH/SACCH repetition

rxqual

Set RxQual (BER) threshold (default 4)

0

BER >= 0% (always on)

1

BER >= 0.2%

2

BER >= 0.4%

3

BER >= 0.8%

4

BER >= 1.6% (default)

5

BER >= 3.2%

6

BER >= 6.4%

7

BER >= 12.8%

### 1.18.183 rf-lock-exclude

#### Command

```
rf-lock-exclude
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rf-lock-exclude

Exclude this BTS from the global RF Lock

### 1.18.184 rxlev access min <0-63>

#### Command

```
rxlev access min <0-63>
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

rxlev

Minimum RxLev needed for cell access

access

Minimum RxLev needed for cell access

min

Minimum RxLev needed for cell access

<0-63>

Minimum RxLev needed for cell access (better than -110dBm)

### 1.18.185 si2quater neighbor-list add earfcn <0-65535> thresh-hi <0-31> thresh-lo <0-32> p...

#### Command

```
si2quater neighbor-list add earfcn <0-65535> thresh-hi <0-31> thresh-lo <0-32> prio ↔  
<0-8> qrxlv <0-32> meas <0-8>
```

#### Application specific attributes

---

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

si2quarter

SI2quarter Neighbor List

neighbor-list

SI2quarter Neighbor List

add

Add to manual SI2quarter neighbor list

earfcn

EARFCN of neighbor

<0-65535>

EARFCN of neighbor

thresh-hi

threshold high bits

<0-31>

threshold high bits

thresh-lo

threshold low bits

<0-32>

threshold low bits (32 means NA)

prio

priority

<0-8>

priority (8 means NA)

qrxlv

QRXLEVMIN

<0-32>

QRXLEVMIN (32 means NA)

meas

measurement bandwidth

<0-8>

measurement bandwidth (8 means NA)

---

### 1.18.186 si2quater neighbor-list add uarfcn <0-16383> <0-511> <0-1>

#### Command

```
si2quater neighbor-list add uarfcn <0-16383> <0-511> <0-1>
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### si2quater

SI2quater Neighbor List

##### neighbor-list

SI2quater Neighbor List

##### add

Add to manual SI2quater neighbor list

##### uarfcn

UARFCN of neighbor

##### <0-16383>

UARFCN of neighbor

##### <0-511>

scrambling code

##### <0-1>

diversity bit

### 1.18.187 si2quater neighbor-list del earfcn <0-65535>

#### Command

```
si2quater neighbor-list del earfcn <0-65535>
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### si2quater

SI2quater Neighbor List

##### neighbor-list

SI2quater Neighbor List

---

del

Delete from SI2quater manual neighbor list

earfcn

EARFCN of neighbor

<0-65535>

EARFCN

### 1.18.188 si2quater neighbor-list del uarfcn <0-16383> <0-511>

Command

```
si2quater neighbor-list del uarfcn <0-16383> <0-511>
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

si2quater

SI2quater Neighbor List

neighbor-list

SI2quater Neighbor List

del

Delete from SI2quater manual neighbor list

uarfcn

UARFCN of neighbor

<0-16383>

UARFCN

<0-511>

scrambling code

### 1.18.189 si5 neighbor-list (add|del) arfcn <0-1023>

Command

```
si5 neighbor-list (add|del) arfcn <0-1023>
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

si5

SI5 Neighbor List

neighbor-list

SI5 Neighbor List

add

Add to manual SI5 neighbor list

del

Delete from SI5 manual neighbor list

arfcn

ARFCN of neighbor

<0-1023>

ARFCN of neighbor

### 1.18.190 **srvcc fast-return (allow|forbid)**

#### Command

```
srvcc fast-return (allow|forbid)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

srvcc

SRVCC Configuration

fast-return

Allow or forbid Fast Return to 4G on Channel Release in this BTS

allow

Allow

forbid

Forbid

**1.18.191 system-information (1|2|3|4|5|6|7|8|9|10|13|16|17|18|19|20|2bis|2ter|2quater|5bi...**

## Command

```
system-information (1|2|3|4|5|6|7|8|9|10|13|16|17|18|19|20|2bis|2ter|2quater|5bis|5ter) ↔  
mode (static|computed)
```

## Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

## Parameters

## system-information

System Information Messages

- 1  
System Information Type 1
- 2  
System Information Type 2
- 3  
System Information Type 3
- 4  
System Information Type 4
- 5  
System Information Type 5
- 6  
System Information Type 6
- 7  
System Information Type 7
- 8  
System Information Type 8
- 9  
System Information Type 9
- 10  
System Information Type 10
- 13  
System Information Type 13
- 16  
System Information Type 16
- 17  
System Information Type 17



|          |                                 |
|----------|---------------------------------|
| 18       | System Information Type 18      |
| 19       | System Information Type 19      |
| 20       | System Information Type 20      |
| 2bis     | System Information Type 2bis    |
| 2ter     | System Information Type 2ter    |
| 2quater  | System Information Type 2quater |
| 5bis     | System Information Type 5bis    |
| 5ter     | System Information Type 5ter    |
| mode     | System Information Mode         |
| static   | Static user-specified           |
| computed | Dynamic, BSC-computed           |

### 1.18.192 system-information (1|2|3|4|5|6|7|8|9|10|13|16|17|18|19|20|2bis|2ter|2quater|5bi...

#### Command

```
system-information (1|2|3|4|5|6|7|8|9|10|13|16|17|18|19|20|2bis|2ter|2quater|5bis|5ter) ↔
static HEXSTRING
```

#### Application specific attributes

##### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### system-information

System Information Messages

##### 1

System Information Type 1

---

|         |                                 |
|---------|---------------------------------|
| 2       | System Information Type 2       |
| 3       | System Information Type 3       |
| 4       | System Information Type 4       |
| 5       | System Information Type 5       |
| 6       | System Information Type 6       |
| 7       | System Information Type 7       |
| 8       | System Information Type 8       |
| 9       | System Information Type 9       |
| 10      | System Information Type 10      |
| 13      | System Information Type 13      |
| 16      | System Information Type 16      |
| 17      | System Information Type 17      |
| 18      | System Information Type 18      |
| 19      | System Information Type 19      |
| 20      | System Information Type 20      |
| 2bis    | System Information Type 2bis    |
| 2ter    | System Information Type 2ter    |
| 2quater | System Information Type 2quater |
| 5bis    | System Information Type 5bis    |

---

5ter

System Information Type 5ter

static

Static System Information filling

HEXSTRING

Static user-specified SI content in HEX notation

### 1.18.193 system-information unused-send-empty

Command

```
system-information unused-send-empty
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

system-information

System Information Messages

unused-send-empty

Send BCCH Info with empty 'Full BCCH Info' TLV to notify disabled SI. Some nanoBTS fw versions are known to fail upon receipt of these messages.

### 1.18.194 temporary offset <0-60>

Command

```
temporary offset <0-60>
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

temporary

Cell selection temporary negative offset

offset

Cell selection temporary negative offset

<0-60>

Cell selection temporary negative offset in dB

### 1.18.195 temporary offset infinite

#### Command

```
temporary offset infinite
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

##### temporary

Cell selection temporary negative offset

##### offset

Cell selection temporary negative offset

##### infinite

Sets cell selection temporary negative offset to infinity

### 1.18.196 timer-dynamic TNNNN

#### Command

```
timer-dynamic TNNNN
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### timer-dynamic

Calculate T3113 dynamically based on channel config and load (default)

##### TNNNN

T-number, optionally preceded by 't' or 'T'

### 1.18.197 trx <0-255>

#### Command

```
trx <0-255>
```

#### Global attributes

---

Flag: !

This command applies immediately

Parameters

trx

Radio Transceiver

<0-255>

Select a TRX to configure

### 1.18.198 type (unknown|bs11|nanobts|rbs2000|nokia\_site|osmo-bts)

Command

```
type (unknown|bs11|nanobts|rbs2000|nokia_site|osmo-bts)
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

type

BTS Vendor/Type

unknown

Unknown BTS Type

bs11

Siemens BTS (BS-11 or compatible)

nanobts

ip.access nanoBTS or compatible

rbs2000

Ericsson RBS2000 Series

nokia\_site

Nokia {Metro,Ultra,In}Site

osmo-bts

Osmocom Base Transceiver Station

## 1.19 config-net-bts-trx

### 1.19.1 arfcn <0-1023>

#### Command

```
arfcn <0-1023>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

arfcn

Set the ARFCN for this TRX

<0-1023>

Absolute Radio Frequency Channel Number

### 1.19.2 description .TEXT

#### Command

```
description .TEXT
```

#### Parameters

description

Save human-readable description of the object

.TEXT

Text until the end of the line

### 1.19.3 max\_power\_red <0-100>

#### Command

```
max_power_red <0-100>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

max\_power\_red

Reduction of maximum BS RF Power (relative to nominal power)

<0-100>

Reduction of maximum BS RF Power in dB

### 1.19.4 no description

#### Command

```
no description
```

#### Parameters

no

Negate a command or set its defaults

description

Remove description of the object

### 1.19.5 nominal power <-20-100>

#### Command

```
nominal power <-20-100>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

nominal

Nominal TRX RF Power in dBm

power

Nominal TRX RF Power in dBm

<-20-100>

Nominal TRX RF Power in dBm

### 1.19.6 om2000 rx-diversity-mode (a|ab|b)

#### Command

```
om2000 rx-diversity-mode (a|ab|b)
```

#### Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

---

om2000

Configure OM2K specific parameters

rx-diversity-mode

RX Diversity

a

Antenna TX/RX (A)

ab

Both Antennas

b

Antenna RX (B)

### 1.19.7 rf\_locked (0|1)

Command

```
rf_locked (0|1)
```

Global attributes

Flag: !

This command applies immediately

Parameters

rf\_locked

Set or unset the RF Locking (Turn off RF of the TRX)

0

TRX is NOT RF locked (active)

1

TRX is RF locked (turned off)

### 1.19.8 rsl e1 line E1\_LINE timeslot <1-31> sub-slot (0|1|2|3|full)

Command

```
rsl e1 line E1_LINE timeslot <1-31> sub-slot (0|1|2|3|full)
```

Parameters

rsl

RSL Parameters

e1

E1/T1 interface to be used for RSL



line

E1/T1 interface to be used for RSL

E1\_LINE

E1/T1 Line Number to be used for RSL

timeslot

E1/T1 Timeslot to be used for RSL

<1-31>

E1/T1 Timeslot to be used for RSL

sub-slot

E1/T1 Sub-slot to be used for RSL

0

E1/T1 Sub-slot 0 is to be used for RSL

1

E1/T1 Sub-slot 1 is to be used for RSL

2

E1/T1 Sub-slot 2 is to be used for RSL

3

E1/T1 Sub-slot 3 is to be used for RSL

full

E1/T1 full timeslot is to be used for RSL

### 1.19.9 rsl e1 tei <0-63>

Command

```
rsl e1 tei <0-63>
```

Application specific attributes

Flag: r

This command applies on A-bis RSL link (re)establishment

Parameters

rsl

RSL Parameters

e1

Set the TEI to be used for RSL

tei

Set the TEI to be used for RSL

<0-63>

TEI to be used for RSL

### 1.19.10 timeslot <0-7>

#### Command

```
timeslot <0-7>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

timeslot

Select a Timeslot to configure

<0-7>

Timeslot number

## 1.20 config-net-bts-trx-ts

### 1.20.1 e1 line E1\_LINE timeslot <1-31> sub-slot (0|1|2|3|full)

#### Command

```
e1 line E1_LINE timeslot <1-31> sub-slot (0|1|2|3|full)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1

E1/T1 channel connected to this on-air timeslot

line

E1/T1 channel connected to this on-air timeslot

E1\_LINE

E1/T1 line connected to this on-air timeslot

timeslot

E1/T1 timeslot connected to this on-air timeslot

<1-31>

E1/T1 timeslot connected to this on-air timeslot

sub-slot

E1/T1 sub-slot connected to this on-air timeslot

- 0  
E1/T1 sub-slot 0 connected to this on-air timeslot
- 1  
E1/T1 sub-slot 1 connected to this on-air timeslot
- 2  
E1/T1 sub-slot 2 connected to this on-air timeslot
- 3  
E1/T1 sub-slot 3 connected to this on-air timeslot
- full  
Full E1/T1 timeslot connected to this on-air timeslot

### 1.20.2 hopping arfcn add <0-1023>

#### Command

```
hopping arfcn add <0-1023>
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### hopping

Configure frequency hopping

##### arfcn

Configure hopping ARFCN list

##### add

Add an entry to the hopping ARFCN list

##### <0-1023>

ARFCN

### 1.20.3 hopping arfcn del <0-1023>

#### Command

```
hopping arfcn del <0-1023>
```

#### Application specific attributes

##### Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### hopping

Configure frequency hopping

##### arfcn

Configure hopping ARFCN list

##### del

Delete an entry to the hopping ARFCN list

<0-1023>

ARFCN

### 1.20.4 hopping arfcn del-all

#### Command

```
hopping arfcn del-all
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### hopping

Configure frequency hopping

##### arfcn

Configure hopping ARFCN list

##### del-all

Delete all previously configured entries

### 1.20.5 hopping enabled (0|1)

#### Command

```
hopping enabled (0|1)
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

##### hopping

Configure frequency hopping

---

enabled

Enable or disable frequency hopping

0

Disable frequency hopping

1

Enable frequency hopping

### 1.20.6 hopping maio <0-63>

Command

```
hopping maio <0-63>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

hopping

Configure frequency hopping

maio

Which hopping MAIO to use for this channel

<0-63>

Mobile Allocation Index Offset (MAIO)

### 1.20.7 hopping sequence-number <0-63>

Command

```
hopping sequence-number <0-63>
```

Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

Parameters

hopping

Configure frequency hopping

sequence-number

Which hopping sequence to use for this channel

<0-63>

Hopping Sequence Number (HSN)

## 1.20.8 phys\_chan\_config (none|ccch|ccch+sdccch4|tch/f|tch/h|sdccch8|pdch|dynamic/ipaccess...

### Command

```
phys_chan_config (none|ccch|ccch+sdccch4|tch/f|tch/h|sdccch8|pdch|dynamic/ipaccess| ↔
unknown|ccch+sdccch4+cbch|sdccch8+cbch|dynamic/osmocom|tch/f_pdch|tch/f_tch/ ↔
h_sdccch8_pdch)
```

### Application specific attributes

#### Flag: o

This command applies on A-bis OML link (re)establishment

### Parameters

#### phys\_chan\_config

Physical Channel Combination

#### none

Physical Channel not configured

#### ccch

FCCH + SCH + BCCH + CCCH (Comb. IV)

#### ccch+sdccch4

FCCH + SCH + BCCH + CCCH + 4 SDCCH + 2 SACCH (Comb. V)

#### tch/f

TCH/F + FACCH/F + SACCH (Comb. I)

#### tch/h

2 TCH/H + 2 FACCH/H + 2 SACCH (Comb. II)

#### sdccch8

8 SDCCH + 4 SACCH (Comb. VII)

#### pdch

Packet Data Channel for GPRS/EDGE

#### dynamic/ipaccess

Dynamic TCH/F or GPRS PDCH (dynamic/ipaccess is an alias for tch/f\_pdch)

#### unknown

Unknown / Unsupported channel combination

#### ccch+sdccch4+cbch

FCCH + SCH + BCCH + CCCH + CBCH + 3 SDCCH + 2 SACCH (Comb. V)

#### sdccch8+cbch

7 SDCCH + 4 SACCH + CBCH (Comb. VII)

#### dynamic/osmocom

Dynamic TCH/F or TCH/H or SDCCH/8 or GPRS PDCH (dynamic/osmocom is an alias for tch/f\_tch/h\_sdccch8\_pdch)

#### tch/f\_pdch

Dynamic TCH/F or GPRS PDCH (dynamic/ipaccess is an alias for tch/f\_pdch)

#### tch/f\_tch/h\_sdccch8\_pdch

Dynamic TCH/F or TCH/H or SDCCH/8 or GPRS PDCH (dynamic/osmocom is an alias for tch/f\_tch/h\_sdccch8\_pdch)

### 1.20.9 training\_sequence\_code <0-7>

#### Command

```
training_sequence_code <0-7>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

training\_sequence\_code

Training Sequence Code of the Timeslot

<0-7>

TSC

## 1.21 oml

### 1.21.1 change-adm-state (locked|unlocked|shutdown|null)

#### Command

```
change-adm-state (locked|unlocked|shutdown|null)
```

#### Parameters

change-adm-state

Change the Administrative State

locked

Locked

unlocked

Unlocked

shutdown

Shutdown

null

NULL

### 1.21.2 opstart

#### Command

```
opstart
```

#### Parameters

opstart

Send an OPSTART message to the object

---

## 1.22 config-msc

This node allows to configure the MSC connection related settings.

### 1.22.1 allow-attach

Command

```
allow-attach
```

Global attributes

Flag: !

This command applies immediately

Parameters

allow-attach

Allow this MSC to attach new subscribers (default).

### 1.22.2 allow-emergency (allow|deny)

Command

```
allow-emergency (allow|deny)
```

Global attributes

Flag: !

This command applies immediately

Parameters

allow-emergency

Allow CM ServiceRequests with type emergency

allow

Allow

deny

Deny



### 1.22.3 amr-config 10\_2k (allowed|forbidden)

#### Command

```
amr-config 10_2k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 10\_2k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.4 amr-config 12\_2k (allowed|forbidden)

#### Command

```
amr-config 12_2k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 12\_2k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.5 amr-config 4\_75k (allowed|forbidden)

#### Command

```
amr-config 4_75k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 4\_75k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.6 amr-config 5\_15k (allowed|forbidden)

#### Command

```
amr-config 5_15k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 5\_15k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.7 amr-config 5\_90k (allowed|forbidden)

#### Command

```
amr-config 5_90k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 5\_90k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.8 amr-config 6\_70k (allowed|forbidden)

#### Command

```
amr-config 6_70k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 6\_70k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.9 amr-config 7\_40k (allowed|forbidden)

#### Command

```
amr-config 7_40k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 7\_40k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.10 amr-config 7\_95k (allowed|forbidden)

#### Command

```
amr-config 7_95k (allowed|forbidden)
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### amr-config

AMR Multirate Configuration

#### 7\_95k

Bitrate

#### allowed

Allowed

#### forbidden

Forbidden

### 1.22.11 amr-payload (octet-aligned|bandwidth-efficient)

#### Command

```
amr-payload (octet-aligned|bandwidth-efficient)
```

#### Application specific attributes

#### Flag: 1

This command applies for newly created lchans

#### Parameters

#### amr-payload

Set AMR payload framing mode

#### octet-aligned

payload fields aligned on octet boundaries

#### bandwidth-efficient

payload fields packed (AoIP)

### 1.22.12 asp-protocol (m3ua|sua|ipa)

#### Command

```
asp-protocol (m3ua|sua|ipa)
```

#### Parameters

#### asp-protocol

A interface protocol to use for this MSC)

#### m3ua

MTP3 User Adaptation

#### sua

SCCP User Adaptation

#### ipa

IPA Multiplex (SCCP Lite)

### 1.22.13 bsc-addr NAME

#### Command

```
bsc-addr NAME
```

#### Parameters

#### bsc-addr

Calling Address (local address of this BSC)

#### NAME

SCCP address name

---

### 1.22.14 codec-list .LIST

#### Command

```
codec-list .LIST
```

#### Application specific attributes

#### Flag: r

This command applies on A-bis RSL link (re)establishment

#### Parameters

#### codec-list

Set the allowed audio codecs and their order of preference

#### .LIST

List of audio codecs in order of preference, e.g. 'codec-list fr3 fr2 fr1 hr3 hr1'. (fr3: AMR-FR, hr3: AMR-HR, fr2: GSM-EFR, fr1: GSM-FR, hr1: GSM-HR)

### 1.22.15 core-mobile-country-code <1-999>

#### Command

```
core-mobile-country-code <1-999>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### core-mobile-country-code

Use this country code for the core network

#### <1-999>

MCC value

### 1.22.16 core-mobile-network-code <1-999>

#### Command

```
core-mobile-network-code <1-999>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### core-mobile-network-code

Use this network code for the core network

#### <1-999>

MNC value

### 1.22.17 **keepalive request-endpoint NAME**

#### Command

```
keepalive request-endpoint NAME
```

#### Parameters

##### keepalive

Monitor if the MGCP link against MGW is still usable

##### request-endpoint

Use a given endpoint name when sending an MGCP command to the MGW for keepalive purposes

##### NAME

The name of the endpoint to use

### 1.22.18 **keepalive request-interval <0-4294967295>**

#### Command

```
keepalive request-interval <0-4294967295>
```

#### Parameters

##### keepalive

Monitor if the MGCP link against MGW is still usable

##### request-interval

Send an MGCP command to the MGW at given interval if no other commands are sent

##### <0-4294967295>

The interval at which send MGCP commands (s), 0 to disable

### 1.22.19 **keepalive timeout <0-4294967295>**

#### Command

```
keepalive timeout <0-4294967295>
```

#### Parameters

##### keepalive

Monitor if the MGCP link against MGW is still usable

##### timeout

Consider the link to the MGW to be down after time without receiving any message from it

##### <0-4294967295>

The timeout (s), 0 to disable

---

### 1.22.20 lcls-codec-mismatch (allowed|forbidden)

#### Command

```
lcls-codec-mismatch (allowed|forbidden)
```

#### Application specific attributes

#### Flag: 1

This command applies for newly created lchans

#### Parameters

##### lcls-codec-mismatch

Allow 3GPP LCLS (Local Call, Local Switch) when call legs use different codec/rate

##### allowed

Allow LCLS only for calls that use the same codec/rate on both legs

##### forbidden

Do not Allow LCLS for calls that use a different codec/rate on both legs

### 1.22.21 lcls-mode (disabled|mgw-loop|bts-loop)

#### Command

```
lcls-mode (disabled|mgw-loop|bts-loop)
```

#### Application specific attributes

#### Flag: 1

This command applies for newly created lchans

#### Parameters

##### lcls-mode

Configure 3GPP LCLS (Local Call, Local Switch)

##### disabled

Disable LCLS for all calls of this MSC

##### mgw-loop

Enable LCLS with looping traffic in MGW

##### bts-loop

Enable LCLS with looping traffic between BTS



### 1.22.22 mgw x-osmo-ign call-id

#### Command

```
mgw x-osmo-ign call-id
```

#### Application specific attributes

#### Flag: 1

This command applies for newly created lchans

#### Parameters

##### mgw

Configure MGCP connection to Media Gateway

##### x-osmo-ign

Set a (non-standard) X-Osmo-IGN header in all CRCX messages for RTP streams associated with this MSC, useful for A/SCCP lite MSCs, since osmo-bsc cannot know the MSC's chosen CallID. This is enabled by default for A/SCCP lite connections, disabled by default for all others.

##### call-id

Send 'X-Osmo-IGN: C' to ignore CallID mismatches. See OsmoMGW.

### 1.22.23 msc-addr NAME

#### Command

```
msc-addr NAME
```

#### Parameters

##### msc-addr

Called Address (remote address of the MSC)

##### NAME

SCCP address name

### 1.22.24 no allow-attach

#### Command

```
no allow-attach
```

#### Global attributes

#### Flag: !

This command applies immediately

---

#### Parameters

no

Negate a command or set its defaults

allow-attach

Do not assign new subscribers to this MSC. Useful if an MSC in an MSC pool is configured to off-load subscribers. The MSC will still be operational for already IMSI-Attached subscribers, but the NAS node selection function will skip this MSC for new subscribers

### 1.22.25 no mgw x-osmo-ign

#### Command

```
no mgw x-osmo-ign
```

Application specific attributes

Flag: 1

This command applies for newly created lchans

#### Parameters

no

Negate a command or set its defaults

mgw

Configure MGCP connection to Media Gateway

x-osmo-ign

Do not send X-Osmo-IGN MGCP header to this MSC

### 1.22.26 nri add <0-32767> [<0-32767>]

#### Command

```
nri add <0-32767> [<0-32767>]
```

Global attributes

Flag: !

This command applies immediately

#### Parameters

nri

Mapping of Network Resource Indicators, for MSC pooling

add

Add NRI value or range to the NRI mapping for this MSC

<0-32767>

First value of the NRI value range, should not surpass the configured 'nri bitlen'.

[<0-32767>]

Last value of the NRI value range, should not surpass the configured 'nri bitlen' and be larger than the first value; if omitted, apply only the first value.

### 1.22.27 nri del <0-32767> [<0-32767>]

#### Command

```
nri del <0-32767> [<0-32767>]
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

nri

Mapping of Network Resource Indicators, for MSC pooling

del

Remove NRI value or range from the NRI mapping for this MSC

<0-32767>

First value of the NRI value range, should not surpass the configured 'nri bitlen'.

[<0-32767>]

Last value of the NRI value range, should not surpass the configured 'nri bitlen' and be larger than the first value; if omitted, apply only the first value.

### 1.22.28 osmux (on|off|only)

#### Command

```
osmux (on|off|only)
```

#### Application specific attributes

Flag: l

This command applies for newly created lchans

#### Parameters

osmux

RTP multiplexing

on

Enable OSMUX

off

Disable OSMUX

only

Only use OSMUX

## 1.22.29 show nri

### Command

```
show nri
```

### Parameters

#### show

Show running system information

#### nri

Mapping of Network Resource Indicators, for MSC pooling

## 1.23 om2k

### 1.23.1 arbitrary <0-65535> [HEXSTRING]

### Command

```
arbitrary <0-65535> [HEXSTRING]
```

### Parameters

#### arbitrary

Send arbitrary OM2k message

#### <0-65535>

Command identifier

#### [HEXSTRING]

Hex Encoded payload

### 1.23.2 capabilities-request

### Command

```
capabilities-request
```

### Parameters

#### capabilities-request

Request MO capabilities

### 1.23.3 configuration-request

#### Command

```
configuration-request
```

#### Parameters

configuration-request

Send the configuration request for current MO

### 1.23.4 connect-command

#### Command

```
connect-command
```

#### Parameters

connect-command

Connect the MO

### 1.23.5 disable-request

#### Command

```
disable-request
```

#### Parameters

disable-request

Disable the MO

### 1.23.6 disconnect-command

#### Command

```
disconnect-command
```

#### Parameters

disconnect-command

Disconnect the MO

---

### 1.23.7 enable-request

#### Command

```
enable-request
```

#### Parameters

enable-request

Enable the MO

### 1.23.8 operational-info <0-1>

#### Command

```
operational-info <0-1>
```

#### Parameters

operational-info

Set operational information

<0-1>

Set operational info to 0 or 1

### 1.23.9 reset-command

#### Command

```
reset-command
```

#### Parameters

reset-command

Reset the MO

### 1.23.10 start-request

#### Command

```
start-request
```

#### Parameters

start-request

Start the MO

---

### 1.23.11 status-request

#### Command

```
status-request
```

#### Parameters

status-request

Get the MO Status

### 1.23.12 test-request

#### Command

```
test-request
```

#### Parameters

test-request

Test the MO

## 1.24 om2k-con-group

### 1.24.1 con-path (add|del) <0-2047> <0-255> concentrated <1-16>

#### Command

```
con-path (add|del) <0-2047> <0-255> concentrated <1-16>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

con-path

CON Path (In/Out)

add

Add CON Path to Concentration Group

del

Delete CON Path from Concentration Group

<0-2047>

CON Connection Point

<0-255>

Contiguity Index

concentrated

Concentrated in/outlet

<1-16>

Tag Number

---

### 1.24.2 con-path (add|del) <0-2047> <0-255> deconcentrated <0-63>

#### Command

```
con-path (add|del) <0-2047> <0-255> deconcentrated <0-63>
```

#### Application specific attributes

Flag: o

This command applies on A-bis OML link (re)establishment

#### Parameters

con-path

CON Path (In/Out)

add

Add CON Path to Concentration Group

del

Delete CON Path from Concentration Group

<0-2047>

CON Connection Point

<0-255>

Contiguity Index

deconcentrated

De-concentrated in/outlet

<0-63>

TEI Value

## 1.25 config-bsc

This node allows to configure the BSC connection related settings.

### 1.25.1 bsc-auto-rf-off <1-65000>

#### Command

```
bsc-auto-rf-off <1-65000>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

bsc-auto-rf-off

Disable RF on MSC Connection

<1-65000>

Timeout



### 1.25.2 bsc-rf-socket PATH

#### Command

```
bsc-rf-socket PATH
```

#### Parameters

##### bsc-rf-socket

Set the filename for the RF control interface.

##### PATH

RF Control path

### 1.25.3 bts-setup-ramping

#### Command

```
bts-setup-ramping
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### bts-setup-ramping

Enable BTS setup ramping to limit the amount of BTS to configure within a time window.

### 1.25.4 bts-setup-ramping-step-interval <0-65535>

#### Command

```
bts-setup-ramping-step-interval <0-65535>
```

#### Global attributes

##### Flag: !

This command applies immediately

#### Parameters

##### bts-setup-ramping-step-interval

Configure the BTS setup ramping step interval. The time between ramping steps.

##### <0-65535>

Set a step interval (in seconds)

---

### 1.25.5 bts-setup-ramping-step-size <0-65535>

#### Command

```
bts-setup-ramping-step-size <0-65535>
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### bts-setup-ramping-step-size

Configure the BTS setup ramping step size. The amount of BTS to allow to configure within a ramping interval

<0-65535>

Amount of BTS to setup while a step size

### 1.25.6 mid-call-timeout NR

#### Command

```
mid-call-timeout NR
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### mid-call-timeout

Switch from Grace to Off in NR seconds.

#### NR

Timeout in seconds

### 1.25.7 no bsc-auto-rf-off

#### Command

```
no bsc-auto-rf-off
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### no

Negate a command or set its defaults

#### bsc-auto-rf-off

Disable RF on MSC Connection

---

### 1.25.8 no bts-setup-ramping

#### Command

```
no bts-setup-ramping
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

##### no

Negate a command or set its defaults

##### bts-setup-ramping

Disable BTS ramping and configure all waiting BTS.

## 1.26 config-cbc

### 1.26.1 client

#### Command

```
client
```

#### Parameters

##### client

Configure OsmoBSC's CBSP client role

### 1.26.2 mode (server|client|disabled)

#### Command

```
mode (server|client|disabled)
```

#### Parameters

##### mode

Set OsmoBSC as CBSP server or client

##### server

CBSP Server: listen for inbound TCP connections from a remote Cell Broadcast Centre

##### client

CBSP Client: establish outbound TCP connection to a remote Cell Broadcast Centre

##### disabled

Disable CBSP link

---

### 1.26.3 server

#### Command

```
server
```

#### Parameters

server

Configure OsmoBSC's CBSP server role

## 1.27 config-cbc-server

### 1.27.1 local-ip (A.B.C.D|X:X::X:X)

#### Command

```
local-ip (A.B.C.D|X:X::X:X)
```

#### Parameters

local-ip

Set IP Address to listen on for inbound CBSP from a Cell Broadcast Centre

A.B.C.D

IPv4 address

X:X::X:X

IPv6 address

### 1.27.2 local-port <1-65535>

#### Command

```
local-port <1-65535>
```

#### Parameters

local-port

Set TCP port to listen on for inbound CBSP from a Cell Broadcast Centre

<1-65535>

CBSP port number (Default: 48049)

---

## 1.28 config-cbc-client

### 1.28.1 local-ip (A.B.C.D|X:X::X:X)

Command

```
local-ip (A.B.C.D|X:X::X:X)
```

Parameters

local-ip

Set local bind address for the outbound CBSP link to the Cell Broadcast Centre

A.B.C.D

IPv4 address

X:X::X:X

IPv6 address

### 1.28.2 local-port <1-65535>

Command

```
local-port <1-65535>
```

Parameters

local-port

Set local bind port for the outbound CBSP link to the Cell Broadcast Centre

<1-65535>

port number

### 1.28.3 no local-ip

Command

```
no local-ip
```

Parameters

no

Negate a command or set its defaults

local-ip

Remove local IP address bind config for the CBSP client mode

---

### 1.28.4 no local-port

#### Command

```
no local-port
```

#### Parameters

no

Negate a command or set its defaults

local-port

Remove local TCP port bind config for the CBSP client mode

### 1.28.5 remote-ip (A.B.C.D|X:X::X:X)

#### Command

```
remote-ip (A.B.C.D|X:X::X:X)
```

#### Parameters

remote-ip

Set IP Address of the Cell Broadcast Centre, to establish CBSP link to

A.B.C.D

IPv4 address

X:X::X:X

IPv6 address

### 1.28.6 remote-port <1-65535>

#### Command

```
remote-port <1-65535>
```

#### Parameters

remote-port

Set TCP port of the Cell Broadcast Centre, to establish CBSP link to

<1-65535>

CBSP port number (Default: 48049)

---

## 1.29 config-power-ctrl

### 1.29.1 (rxlev-avg|rxqual-avg) algo (unweighted|weighted|mod-median)

#### Command

```
(rxlev-avg|rxqual-avg) algo (unweighted|weighted|mod-median)
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### rxlev-avg

RxLev (signal strength) measurement averaging (for dynamic mode)

##### rxqual-avg

RxQual (signal quality) measurement averaging (for dynamic mode)

##### algo

Select the averaging algorithm

##### unweighted

Un-weighted average

##### weighted

Weighted average

##### mod-median

Modified median calculation

### 1.29.2 (rxlev-avg|rxqual-avg) algo osmo-ewma beta <1-99>

#### Command

```
(rxlev-avg|rxqual-avg) algo osmo-ewma beta <1-99>
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

---

**rxlev-avg**

RxLev (signal strength) measurement averaging (for dynamic mode)

**rxqual-avg**

RxQual (signal quality) measurement averaging (for dynamic mode)

**algo**

Select the averaging algorithm

**osmo-ewma**

Exponentially Weighted Moving Average (EWMA)

**beta**

Smoothing factor (in %):  $\beta = (100 - \alpha)$

**<1-99>**

1% - lowest smoothing, 99% - highest smoothing

### 1.29.3 (rxlev-avg|rxqual-avg) params hreqave <1-31> hreqt <1-31>

**Command**

```
(rxlev-avg|rxqual-avg) params hreqave <1-31> hreqt <1-31>
```

**Application specific attributes****Flag: l**

This command applies for newly created lchans

**Flag: v**

This command/parameter is BTS vendor specific

**Parameters****rxlev-avg**

RxLev (signal strength) measurement averaging (for dynamic mode)

**rxqual-avg**

RxQual (signal quality) measurement averaging (for dynamic mode)

**params**

Configure general averaging parameters

**hreqave**

Hreqave: the period over which an average is produced

**<1-31>**

Hreqave value (so that  $Hreqave * Hreqt < 32$ )

**hreqt**

Hreqt: the number of averaged results that are maintained

**<1-31>**

Hreqt value (so that  $Hreqave * Hreqt < 32$ )



### 1.29.4 bs-power (static|dyn-max) <0-30>

#### Command

```
bs-power (static|dyn-max) <0-30>
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

#### Parameters

##### bs-power

BS Power IE value to be sent to the BTS

##### static

Fixed BS Power reduction value (for static mode)

##### dyn-max

Maximum BS Power reduction value (for dynamic mode)

##### <0-30>

BS Power reduction value (in dB, even numbers only)

### 1.29.5 ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) algo (unweighted|weighted|mod-median...

#### Command

```
ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) algo (unweighted|weighted|mod-median)
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### ci-avg

C/I (Carrier-to-Interference) measurement averaging (for dynamic mode)

##### fr-efr

Channel Type FR/EFR

##### hr

Channel Type HR

##### amr-fr

Channel Type AMR FR

amr-hr  
Channel Type AMR HR

sdccch  
Channel Type SDCCH

gprs  
Channel Type (E)GPRS

algo  
Select the averaging algorithm

unweighted  
Un-weighted average

weighted  
Weighted average

mod-median  
Modified median calculation

### 1.29.6 ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) algo osmo-ewma beta <1-99>

#### Command

```
ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) algo osmo-ewma beta <1-99>
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### ci-avg

C/I (Carrier-to-Interference) measurement averaging (for dynamic mode)

##### fr-efr

Channel Type FR/EFR

##### hr

Channel Type HR

##### amr-fr

Channel Type AMR FR

##### amr-hr

Channel Type AMR HR

##### sdccch

Channel Type SDCCH

gprs

Channel Type (E)GPRS

algo

Select the averaging algorithm

osmo-ewma

Exponentially Weighted Moving Average (EWMA)

beta

Smoothing factor (in %):  $\beta = (100 - \alpha)$

<1-99>

1% - lowest smoothing, 99% - highest smoothing

### 1.29.7 ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) params hreqave <1-31> hreqt <1-31>

Command

```
ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) params hreqave <1-31> hreqt <1-31>
```

Application specific attributes

Flag: l

This command applies for newly created lchans

Flag: v

This command/parameter is BTS vendor specific

Parameters

ci-avg

C/I (Carrier-to-Interference) measurement averaging (for dynamic mode)

fr-efr

Channel Type FR/EFR

hr

Channel Type HR

amr-fr

Channel Type AMR FR

amr-hr

Channel Type AMR HR

sdccch

Channel Type SDCCH

gprs

Channel Type (E)GPRS

params

Configure general averaging parameters

hreqave

Hreqave: the period over which an average is produced

<1-31>

Hreqave value (so that  $Hreqave * Hreqt < 32$ )

hreqt

Hreqt: the number of averaged results that are maintained

<1-31>

Hreqt value (so that  $Hreqave * Hreqt < 32$ )

### 1.29.8 ci-thresh (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) lower <0-30> upper <0-30>

Command

```
ci-thresh (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) lower <0-30> upper <0-30>
```

Application specific attributes

Flag: l

This command applies for newly created lchans

Flag: v

This command/parameter is BTS vendor specific

Parameters

ci-thresh

Set target C/I thresholds (for dynamic mode), only available in ms-power-control

fr-efr

Channel Type FR/EFR

hr

Channel Type HR

amr-fr

Channel Type AMR FR

amr-hr

Channel Type AMR HR

sdccch

Channel Type SDCCCH

gprs

Channel Type (E)GPRS

lower

Lower C/I value

<0-30>

Lower C/I value (Carrier-to-Interference (dB), 0 is worst, 30 is best)

upper

Upper C/I value

<0-30>

Upper C/I value (Carrier-to-Interference (dB), 0 is worst, 30 is best)

### 1.29.9 ci-thresh (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs|all) (enable|disable)

#### Command

```
ci-thresh (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs|all) (enable|disable)
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### ci-thresh

Set target C/I thresholds (for dynamic mode), only available in ms-power-control

##### fr-efr

Channel Type FR/EFR

##### hr

Channel Type HR

##### amr-fr

Channel Type AMR FR

##### amr-hr

Channel Type AMR HR

##### sdccch

Channel Type SDCCCH

##### gprs

Channel Type (E)GPRS

##### all

All Channel Types

##### enable

Enable C/I comparison in control loop

##### disable

Disable C/I comparison in control loop

## 1.29.10 ci-thresh-comp (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) lower <0-31> <0-31> upper <0...

### Command

```
ci-thresh-comp (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs) lower <0-31> <0-31> upper <0-31> ↔
<0-31>
```

### Application specific attributes

#### Flag: l

This command applies for newly created lchans

#### Flag: v

This command/parameter is BTS vendor specific

### Parameters

#### ci-thresh-comp

Set Carrier-to\_interference (C/I) threshold comparators (for dynamic mode)

#### fr-efr

Channel Type FR/EFR

#### hr

Channel Type HR

#### amr-fr

Channel Type AMR FR

#### amr-hr

Channel Type AMR HR

#### sdccch

Channel Type SDCCH

#### gprs

Channel Type (E)GPRS

#### lower

Lower Carrier-to\_interference (C/I) threshold comparators (see 3GPP TS 45.008, A.3.2.1)

#### <0-31>

Lower P (default 5)

#### <0-31>

Lower N (default 7)

#### upper

Upper Carrier-to\_interference (C/I) threshold comparators (see 3GPP TS 45.008, A.3.2.1)

#### <0-31>

Upper P (default 15)

#### <0-31>

Upper N (default 18)

### 1.29.11 ctrl-interval <0-31>

#### Command

```
ctrl-interval <0-31>
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### ctrl-interval

Set power control interval (for dynamic mode)

##### <0-31>

P\_CON\_INTERVAL, in units of 2 SACCH periods (0.96 seconds)(default=1)

### 1.29.12 mode (static|dyn-bts|dyn-bsc) [reset]

#### Command

```
mode (static|dyn-bts|dyn-bsc) [reset]
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

#### Parameters

##### mode

Power control mode

##### static

Instruct the MS/BTS to use a static power level

##### dyn-bts

Power control to be performed dynamically by the BTS itself

##### dyn-bsc

Power control to be performed dynamically at this BSC

##### [reset]

Reset to default parameters for the given mode

---

### 1.29.13 no (rxlev-avg|rxqual-avg)

#### Command

```
no (rxlev-avg|rxqual-avg)
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### no

Negate a command or set its defaults

##### rxlev-avg

RxLev (signal strength) measurement averaging (for dynamic mode)

##### rxqual-avg

RxQual (signal quality) measurement averaging (for dynamic mode)

### 1.29.14 no ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs)

#### Command

```
no ci-avg (fr-efr|hr|amr-fr|amr-hr|sdccch|gprs)
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### no

Negate a command or set its defaults

##### ci-avg

C/I (Carrier-to-Interference) measurement averaging (for dynamic mode)

##### fr-efr

Channel Type FR/EFR

##### hr

Channel Type HR

---



amr-fr

Channel Type AMR FR

amr-hr

Channel Type AMR HR

sdccch

Channel Type SDCCH

gprs

Channel Type (E)GPRS

### 1.29.15 rxlev-thresh lower <0-63> upper <0-63>

Command

```
rxlev-thresh lower <0-63> upper <0-63>
```

Application specific attributes

Flag: l

This command applies for newly created lchans

Flag: v

This command/parameter is BTS vendor specific

Parameters

rxlev-thresh

Set target RxLev thresholds (for dynamic mode)

lower

Lower RxLev value (default is 32, i.e. -78 dBm)

<0-63>

Lower RxLev value (signal strength, 0 is worst, 63 is best)

upper

Upper RxLev value (default is 38, i.e. -72 dBm)

<0-63>

Upper RxLev value (signal strength, 0 is worst, 63 is best)

### 1.29.16 rxlev-thresh-comp lower <0-31> <0-31> upper <0-31> <0-31>

Command

```
rxlev-thresh-comp lower <0-31> <0-31> upper <0-31> <0-31>
```

Application specific attributes

---

Flag: l

This command applies for newly created lchans

Flag: v

This command/parameter is BTS vendor specific

Parameters

rxlev-thresh-comp

Set RxLev threshold comparators (for dynamic mode)

lower

Lower RxLev threshold comparators (see 3GPP TS 45.008, A.3.2.1)

<0-31>

P1 (default 10)

<0-31>

N1 (default 12)

upper

Upper RxLev threshold comparators (see 3GPP TS 45.008, A.3.2.1)

<0-31>

P2 (default 10)

<0-31>

N2 (default 12)

### 1.29.17 rxqual-thresh lower <0-7> upper <0-7>

Command

```
rxqual-thresh lower <0-7> upper <0-7>
```

Application specific attributes

Flag: l

This command applies for newly created lchans

Flag: v

This command/parameter is BTS vendor specific

Parameters

rxqual-thresh

Set target RxQual thresholds (for dynamic mode)

lower

Lower RxQual value (default is 3, i.e.  $0.8\% \leq \text{BER} < 1.6\%$ )

<0-7>

Lower RxQual value (signal quality, 0 is best, 7 is worst)

upper

Upper RxQual value (default is 0, i.e.  $\text{BER} < 0.2\%$ )

<0-7>

Upper RxQual value (signal quality, 0 is best, 7 is worst)

### 1.29.18 rxqual-thresh-comp lower <0-31> <0-31> upper <0-31> <0-31>

#### Command

```
rxqual-thresh-comp lower <0-31> <0-31> upper <0-31> <0-31>
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

##### rxqual-thresh-comp

Set RxQual threshold comparators (for dynamic mode)

##### lower

Lower RxQual threshold comparators (see 3GPP TS 45.008, A.3.2.1)

##### <0-31>

P3 (default 5)

##### <0-31>

N3 (default 7)

##### upper

Upper RxQual threshold comparators (see 3GPP TS 45.008, A.3.2.1)

##### <0-31>

P4 (default 15)

##### <0-31>

N4 (default 18)

### 1.29.19 step-size inc <2-6> red <2-4>

#### Command

```
step-size inc <2-6> red <2-4>
```

#### Application specific attributes

##### Flag: l

This command applies for newly created lchans

##### Flag: v

This command/parameter is BTS vendor specific

#### Parameters

---

step-size

Set power change step size (for dynamic mode)

inc

Increase step size (default is 4 dB)

<2-6>

Step size (2, 4, or 6 dB)

red

Reduce step size (default is 2 dB)

<2-4>

Step size (2 or 4 dB)