# OsmoMSC VTY Reference

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**COLLABORATORS**

| | *TITLE* :<br><br>OsmoMSC VTY Reference | |
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| *ACTION* | *NAME* | *DATE* | *SIGNATURE* |
|---|---|---|---|
| WRITTEN BY | | May 27, 2026 | |

**REVISION HISTORY**

| NUMBER | DATE | DESCRIPTION | NAME |
|---|---|---|---|
| DRAFT | unknown | Automatically Generated VTY Reference | nh |

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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|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|...

Command

```
logging level (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr| ↩
    iucs|bssap|sgs|ss|asci|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|ltcap) (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)

cc
: Layer3 Call Control (CC)

bcc
: Layer3 Broadcast Call Control (BCC)

gcc
: Layer3 Group Call Control (GCC)

mm
: Layer3 Mobility Management (MM)

rr
: Layer3 Radio Resource (RR)

mncc
: MNCC API for Call Control application

pag
: Paging Subsystem

msc
: Mobile Switching Center

mgcp
: Media Gateway Control Protocol

ho
: Hand-Over

db
: Database Layer

ref
: Reference Counting

ctrl
: Control interface

smpp
: SMPP interface for external SMS apps

ranap
: Radio Access Network Application Part Protocol

vlr
: Visitor Location Register

iucs
: Iu-CS Protocol

bssap
: BSSAP Protocol (A Interface)

sgs
: SGs Interface (SGsAP)

ss
: Supplementary Services

asci
: Advanced Speech Call Items

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

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

ltcap
: TCAP

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|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr|iucs|...

Command

```
logp (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr|iucs|bssap| ↩
    sgs|ss|asci|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|ltcap) (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)

cc
: Layer3 Call Control (CC)

bcc
: Layer3 Broadcast Call Control (BCC)

gcc
: Layer3 Group Call Control (GCC)

mm
: Layer3 Mobility Management (MM)

rr
: Layer3 Radio Resource (RR)

mncc
: MNCC API for Call Control application

pag
: Paging Subsystem

msc
: Mobile Switching Center

mgcp
: Media Gateway Control Protocol

ho
: Hand-Over

db
: Database Layer

ref
: Reference Counting

ctrl
: Control interface

smpp
: SMPP interface for external SMS apps

ranap
: Radio Access Network Application Part Protocol

vlr
: Visitor Location Register

iucs
: Iu-CS Protocol

bssap
: BSSAP Protocol (A Interface)

sgs
: SGs Interface (SGsAP)

ss
: Supplementary Services

asci
: Advanced Speech Call Items

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

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

ltcap
: TCAP

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 asci calls

Command

```
show asci calls
```

Parameters

show
: Show running system information

asci
: Advanced Speech Call Items

calls
: Show all Voice Group/Broadcast Calls

### 1.2.22 show asciidoc counters

Command

```
show asciidoc counters
```

Parameters

show
: Show running system information

asciidoc
: Asciidoc generation

counters
: Generate table of all registered counters

### 1.2.23 show bsc

Command

```
show bsc
```

Parameters

show
: Show running system information

bsc
: BSC

### 1.2.24 show connection [trans]

Command

```
show connection [trans]
```

Parameters

show
: Show running system information

connection
: Subscriber Connections

[trans]
: Show child transactions of each connection

### 1.2.25 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)

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

Command

```
show cs7 (sua|m3ua|ipa) (sctp|tcp) [<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)

sctp
: SCTP (Stream Control Transmission Protocol)

tcp
: TCP (Transmission Control Protocol)

[<0-65534>]
: Local Port Number

### 1.2.27 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>]
: Local Port Number

### 1.2.28 show cs7 config

Command

```
show cs7 config
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

config
: Currently running cs7 configuration

### 1.2.29 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

### 1.2.30 show cs7 instance <0-15> as binding-table name AS_NAME

Command

```
show cs7 instance <0-15> as binding-table name AS_NAME
```

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)

binding-table
Display binding table

name
Look up AS with a given name

AS_NAME
Name of the Application Server (AS)

### 1.2.31 show cs7 instance <0-15> as name AS_NAME

Command

```
show cs7 instance <0-15> as name AS_NAME
```

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)

name
Look up AS with a given name

AS_NAME
Name of the Application Server (AS)

### 1.2.32 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)

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

Command

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

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)

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

### 1.2.34 show cs7 instance <0-15> asp-assoc-status

Command

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

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-assoc-status
: Application Server Process (ASP) SCTP association status

### 1.2.35 show cs7 instance <0-15> asp-assoc-status name ASP_NAME

Command

```
show cs7 instance <0-15> asp-assoc-status name ASP_NAME
```

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-assoc-status
: Application Server Process (ASP) SCTP association information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

### 1.2.36 show cs7 instance <0-15> asp-remaddr

Command

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

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-remaddr
: Application Server Process (ASP) remote addresses information

### 1.2.37 show cs7 instance <0-15> asp-remaddr name ASP_NAME

Command

```
show cs7 instance <0-15> asp-remaddr name ASP_NAME
```

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-remaddr
: Application Server Process (ASP) remote addresses information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

### 1.2.38 show cs7 instance <0-15> route [POINT_CODE]

Command

```
show cs7 instance <0-15> route [POINT_CODE]
```

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

[POINT_CODE]
: Destination Point Code

### 1.2.39 show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]

Command

```
show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]
```

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

binding-table
: Display binding table

[POINT_CODE]
: Destination Point Code

[all-matches]
: Display all matching Combination Links

### 1.2.40 show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [lis...

Command

```
show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [list-asps]
```

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-lookup
: Look up route

POINT_CODE
: Destination PC

from
: From

POINT_CODE
: Origin PC

sls
: SLS

<0-15>
: SLS value

[list-asps]
: List ASPs of the AS if route points to an AS

### 1.2.41 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

### 1.2.42 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

### 1.2.43 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)

### 1.2.44 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

### 1.2.45 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

### 1.2.46 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

### 1.2.47 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

### 1.2.48 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

### 1.2.49 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

### 1.2.50 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

### 1.2.51 show fsm-state-graph NAME

Command

```
show fsm-state-graph NAME
```

Parameters

show
: Show running system information

fsm-state-graph
: Generate a state transition graph (using DOT language)

NAME
: FSM name

### 1.2.52 show history

Command

```
show history
```

Parameters

show
: Show running system information

history
: Display the session command history

### 1.2.53 show logging vty

Command

```
show logging vty
```

Parameters

show
: Show running system information

logging
: Show current logging configuration

vty
: Show current logging configuration for this vty

### 1.2.54 show mgw-pool

Command

```
show mgw-pool
```

Parameters

show
: Show running system information

mgw-pool
: Display information about the MGW-Pool

### 1.2.55 show neighbor

Command

```
show neighbor
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

### 1.2.56 show neighbor (a|iu)

Command

```
show neighbor (a|iu)
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

### 1.2.57 show neighbor (a|iu) (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME

Command

```
show neighbor (a|iu) (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

ran-pc
: SCCP point code of RAN peer

msc-ipa-name
: GSUP IPA name of target MSC

RAN_PC_OR_MSC_IPA_NAME
: Point code or MSC IPA name value

### 1.2.58 show neighbor (a|iu) cgi <0-999> <0-999> <0-65535> <0-65535>

Command

```
show neighbor (a|iu) cgi <0-999> <0-999> <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

cgi
: Handover target cell by Cell-Global Identifier (MCC, MNC, LAC, CI)

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: LAC

<0-65535>
: CI

### 1.2.59 show neighbor (a|iu) lac <0-65535>

Command

```
show neighbor (a|iu) lac <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

lac
: Handover target cell by LAC

<0-65535>
: LAC

### 1.2.60 show neighbor (a|iu) lac-ci <0-65535> <0-65535>

Command

```
show neighbor (a|iu) lac-ci <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

lac-ci
: Handover target cell by LAC and CI

<0-65535>
: LAC

<0-65535>
: CI

### 1.2.61 show neighbor cgi <0-999> <0-999> <0-65535> <0-65535>

Command

```
show neighbor cgi <0-999> <0-999> <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

cgi
: Handover target cell by Cell-Global Identifier (MCC, MNC, LAC, CI)

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: LAC

<0-65535>
: CI

### 1.2.62 show neighbor lac <0-65535>

Command

```
show neighbor lac <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

lac
: Handover target cell by LAC

<0-65535>
: LAC

### 1.2.63 show neighbor lac-ci <0-65535> <0-65535>

Command

```
show neighbor lac-ci <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

lac-ci
: Handover target cell by LAC and CI

<0-65535>
: LAC

<0-65535>
: CI

### 1.2.64 show nri

Command

```
show nri
```

Parameters

show
: Show running system information

nri
: Mapping of Network Resource Indicators to this MSC, for MSC pooling

### 1.2.65 show online-help

Command

```
show online-help
```

Parameters

show
: Show running system information

online-help
: Online help

### 1.2.66 show pid

Command

```
show pid
```

Parameters

show
: Show running system information

pid
: Displays the process ID

### 1.2.67 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

### 1.2.68 show runtime

Command

```
show runtime
```

Parameters

show
: Show running system information

runtime
: Display runtime information

### 1.2.69 show sgs-connections

Command

```
show sgs-connections
```

Parameters

show
: Show running system information

sgs-connections
: Show SGs interface connections / MMEs

### 1.2.70 show sms-queue

Command

```
show sms-queue
```

Parameters

show
: Show running system information

sms-queue
: Display SMSqueue statistics

### 1.2.71 show statistics

Command

```
show statistics
```

Parameters

show
: Show running system information

statistics
: Display network statistics

### 1.2.72 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

### 1.2.73 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

### 1.2.74 show subscriber (msisdn|extension|imsi|tmsi|id) ID [(conn|trans|conn+trans)]

Command

```
show subscriber (msisdn|extension|imsi|tmsi|id) ID [(conn|trans|conn+trans)]
```

Parameters

show
: Show running system information

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

[conn]
: Show child connections

[trans]
: Show child transactions

[conn+trans]
: Show child connections and transactions

### 1.2.75 show subscriber cache [(conn|trans|conn+trans)]

Command

```
show subscriber cache [(conn|trans|conn+trans)]
```

Parameters

show
: Show running system information

subscriber
: Show information about subscribers

cache
: Display contents of subscriber cache

[conn]
: Show child connections

[trans]
: Show child transactions

[conn+trans]
: Show child connections and transactions

### 1.2.76 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

### 1.2.77 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

### 1.2.78 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)

### 1.2.79 show timer [(vlr|mgw|mncc|sccp|geran|utran|sgs)] [TNNNN]

Command

```
show timer [(vlr|mgw|mncc|sccp|geran|utran|sgs)] [TNNNN]
```

Parameters

show
: Show running system information

timer
: Show timers

[vlr]
: VLR (Visitors Location Register)

[mgw]
: MGW (Media Gateway) interface

[mncc]
: MNCC (Mobile Network Call Control) interface

[sccp]
: SCCP (Signalling Connection Control Part)

[geran]
: GERAN (GSM EDGE Radio Access Network)

[utran]
: UTRAN (UMTS Terrestrial Radio Access Network)

[sgs]
: SGs interface towards MME

[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'.

### 1.2.80 show transaction

Command

```
show transaction
```

Parameters

show
: Show running system information

transaction
: Transactions

### 1.2.81 show uptime

Command

```
show uptime
```

Parameters

show
: Show running system information

uptime
: Displays how long the program has been running

### 1.2.82 show version

Command

```
show version
```

Parameters

show
: Show running system information

version
: Displays program version

### 1.2.83 sms delete expired

Command

```
sms delete expired
```

Parameters

sms
: SMS related commands

delete
: SMS Database related commands

expired
: Delete all expired SMS

### 1.2.84 sms send pending

Command

```
sms send pending
```

Parameters

sms
: SMS related commands

send
: SMS Sending related commands

pending
: Send all pending SMS

### 1.2.85 subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test close-loop (a|b|c|d|e|f|i)

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test close-loop (a|b|c|d|e|f|i)
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

ms-test
: Send a TS 04.14 MS Test Command to subscriber

close-loop
: Close a TCH Loop inside the MS

a
: Loop Type A

b
: Loop Type B

c
: Loop Type C

d
: Loop Type D

e
: Loop Type E

f
: Loop Type F

i
: Loop Type I

### 1.2.86 subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test open-loop

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test open-loop
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

ms-test
: Send a TS 04.14 MS Test Command to subscriber

open-loop
: Open a TCH Loop inside the MS

### 1.2.87 subscriber (msisdn|extension|imsi|tmsi|id) ID paging

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID paging
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

paging
: Issue an empty Paging for the subscriber (for debugging)

### 1.2.88 subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call start (any|tch/f|tch/h...

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call start (any|tch/f|tch/h|tch/ ↩
    any|sdcch) (signalling|speech-hr|speech-fr|speech-efr|speech-amr|data-2400|data ↩
    -4800|data-9600|data-14400|data-4800-nt|data-9600-nt|data-14400-nt) [IP]  ↩
    [<0-65535>]
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

silent-call
: Silent call operation

start
: Start silent call

any
: Any channel

tch/f
: TCH/F channel

tch/h
: TCH/H channel

tch/any
: Any TCH channel

sdcch
: SDCCH channel

signalling
: Signalling only

speech-hr
: Speech with HR codec

speech-fr
: Speech with FR codec

speech-efr
: Speech with EFR codec

speech-amr
: Speech with AMR codec

data-2400
: Data (transparent) @ 2.4k/3.6k

data-4800
: Data (transparent) @ 4.8k/6.0k

data-9600
: Data (transparent) @ 9.6k/12.0k

data-14400
: Data (transparent) @ 14.4k/14.5k

data-4800-nt
: Data (non-transparent) @ 4.8k/6k

data-9600-nt
: Data (non-transparent) @ 9.6k/12k

data-14400-nt
: Data (non-transparent) @ 14.4k/14.5k

[IP]
: Target IP for RTP traffic (default 127.0.0.1)

[<0-65535>]
: Target port for RTP traffic (default: 4000)

### 1.2.89 subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call stop

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call stop
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

silent-call
: Silent call operation

stop
: Stop silent call

### 1.2.90 subscriber (msisdn|extension|imsi|tmsi|id) ID silent-sms sender (msisdn|extensio...

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID silent-sms sender (msisdn|extension|imsi| ↩
    tmsi|id) SENDER_ID send .LINE
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

silent-sms
: Silent SMS Operations

sender
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

SENDER_ID
: Identifier for the subscriber

send
: Send SMS

.LINE
: Actual SMS Text

### 1.2.91 subscriber (msisdn|extension|imsi|tmsi|id) ID sms sender (msisdn|extension|imsi|...

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID sms sender (msisdn|extension|imsi|tmsi|id ↩
    ) SENDER_ID send .LINE
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

sms
: SMS Operations

sender
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

SENDER_ID
: Identifier for the subscriber

send
: Send SMS

.LINE
: Actual SMS Text

### 1.2.92 subscriber (msisdn|extension|imsi|tmsi|id) ID ussd-notify (0|1|2) .TEXT

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID ussd-notify (0|1|2) .TEXT
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

ussd-notify
: Send a USSD notify to the subscriber

0
: Alerting Level 0

1
: Alerting Level 1

2
: Alerting Level 2

.TEXT
: Text of USSD message to send

### 1.2.93 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)

### 1.2.94 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

### 1.2.95 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 asci (initiate|terminate) (vgc|vbc) CALLREF

Command

```
asci (initiate|terminate) (vgc|vbc) CALLREF
```

Parameters

asci
: Advanced Speech Call Items

initiate
: Initiate a call

terminate
: Terminate a call

vgc
: Voice Group Call

vbc
: Voice Broadcast Call

CALLREF
: Call reference

### 1.3.2 configure [terminal]

Command

```
configure [terminal]
```

Parameters

configure
: Configuration from vty interface

[terminal]
: Configuration terminal

### 1.3.3 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)

### 1.3.4 cs7 instance <0-15> asp NAME audit point-code POINT_CODE

Command

```
cs7 instance <0-15> asp NAME audit point-code POINT_CODE
```

Global attributes

Flag: !

This command applies immediately

Parameters

cs7

ITU-T Signaling System 7

instance

Instance related commands

<0-15>

SS7 Instance Number

asp

ASP related commands

NAME

Name of ASP

audit

Audit destination Point Code (xUA DAUD)

point-code

Destination Point Code to audit

POINT_CODE

Destination Point Code value

### 1.3.5 cs7 instance <0-15> asp NAME disconnect

Command

```
cs7 instance <0-15> asp NAME disconnect
```

Parameters

cs7

ITU-T Signaling System 7

instance

Instance related commands

<0-15>
SS7 Instance Number

asp
ASP related commands

NAME
Name of ASP

disconnect
Disconnect the ASP (client will reconnect)

### 1.3.6 disable

Command

```
disable
```

Parameters

disable
Turn off privileged mode command

### 1.3.7 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

### 1.3.8 logging disable

Command

```
logging disable
```

Parameters

logging
: Configure logging

disable
: Disables logging to this vty

### 1.3.9 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

### 1.3.10 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

### 1.3.11 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

### 1.3.12 logging level (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|...

Command

```
logging level (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr| ↩
    iucs|bssap|sgs|ss|asci|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|ltcap) (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)

cc
: Layer3 Call Control (CC)

bcc
: Layer3 Broadcast Call Control (BCC)

gcc
: Layer3 Group Call Control (GCC)

mm
: Layer3 Mobility Management (MM)

rr
: Layer3 Radio Resource (RR)

mncc
: MNCC API for Call Control application

pag
: Paging Subsystem

msc
: Mobile Switching Center

mgcp
: Media Gateway Control Protocol

ho
: Hand-Over

db
: Database Layer

ref
: Reference Counting

ctrl
: Control interface

smpp
: SMPP interface for external SMS apps

ranap
: Radio Access Network Application Part Protocol

vlr
: Visitor Location Register

iucs
: Iu-CS Protocol

bssap
: BSSAP Protocol (A Interface)

sgs
: SGs Interface (SGsAP)

ss
: Supplementary Services

asci
: Advanced Speech Call Items

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

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

ltcap
: TCAP

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

### 1.3.13 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

### 1.3.14 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

### 1.3.15 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

### 1.3.16 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>’)

### 1.3.17 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

### 1.3.18 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.

### 1.3.19 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

### 1.3.20 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

### 1.3.21 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

### 1.3.22 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

### 1.3.23 logp (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr|iucs|...

Command

```
logp (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr|iucs|bssap| ↩
    sgs|ss|asci|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|ltcap) (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)

cc
: Layer3 Call Control (CC)

bcc
: Layer3 Broadcast Call Control (BCC)

gcc
: Layer3 Group Call Control (GCC)

mm
: Layer3 Mobility Management (MM)

rr
: Layer3 Radio Resource (RR)

mncc
: MNCC API for Call Control application

pag
: Paging Subsystem

msc
: Mobile Switching Center

mgcp
: Media Gateway Control Protocol

ho
: Hand-Over

db
: Database Layer

ref
: Reference Counting

ctrl
: Control interface

smpp
: SMPP interface for external SMS apps

ranap
: Radio Access Network Application Part Protocol

vlr
: Visitor Location Register

iucs
: Iu-CS Protocol

bssap
: BSSAP Protocol (A Interface)

sgs
: SGs Interface (SGsAP)

ss
: Supplementary Services

asci
: Advanced Speech Call Items

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

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

ltcap
: TCAP

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

### 1.3.24 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

### 1.3.25 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

### 1.3.26 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

### 1.3.27 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>'

### 1.3.28 show alarms

Command

```
show alarms
```

Parameters

show

Show running system information

alarms

Show current logging configuration

### 1.3.29 show asci calls

Command

```
show asci calls
```

Parameters

show
: Show running system information

asci
: Advanced Speech Call Items

calls
: Show all Voice Group/Broadcast Calls

### 1.3.30 show asciidoc counters

Command

```
show asciidoc counters
```

Parameters

show
: Show running system information

asciidoc
: Asciidoc generation

counters
: Generate table of all registered counters

### 1.3.31 show bsc

Command

```
show bsc
```

Parameters

show
: Show running system information

bsc
: BSC

### 1.3.32 show connection [trans]

Command

```
show connection [trans]
```

Parameters

show
: Show running system information

connection
: Subscriber Connections

[trans]
: Show child transactions of each connection

### 1.3.33 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)

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

Command

```
show cs7 (sua|m3ua|ipa) (sctp|tcp) [<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)

sctp
: SCTP (Stream Control Transmission Protocol)

tcp
: TCP (Transmission Control Protocol)

[<0-65534>]
: Local Port Number

### 1.3.35 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>]
: Local Port Number

### 1.3.36 show cs7 config

Command

```
show cs7 config
```

Parameters

show
: Show running system information

cs7
: ITU-T Signaling System 7

config
: Currently running cs7 configuration

### 1.3.37 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

### 1.3.38 show cs7 instance <0-15> as binding-table name AS_NAME

Command

```
show cs7 instance <0-15> as binding-table name AS_NAME
```

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)

binding-table
: Display binding table

name
: Look up AS with a given name

AS_NAME
: Name of the Application Server (AS)

### 1.3.39 show cs7 instance <0-15> as name AS_NAME

Command

```
show cs7 instance <0-15> as name AS_NAME
```

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)

name
: Look up AS with a given name

AS_NAME
: Name of the Application Server (AS)

### 1.3.40 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)

### 1.3.41 show cs7 instance <0-15> asp name ASP_NAME

Command

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

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)

name
Lookup ASP with a given name

ASP_NAME
Name of the Application Server Process (ASP)

### 1.3.42 show cs7 instance <0-15> asp-assoc-status

Command

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

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-assoc-status
Application Server Process (ASP) SCTP association status

### 1.3.43 show cs7 instance <0-15> asp-assoc-status name ASP_NAME

Command

```
show cs7 instance <0-15> asp-assoc-status name ASP_NAME
```

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-assoc-status
: Application Server Process (ASP) SCTP association information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

### 1.3.44 show cs7 instance <0-15> asp-remaddr

Command

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

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-remaddr
: Application Server Process (ASP) remote addresses information

### 1.3.45 show cs7 instance <0-15> asp-remaddr name ASP_NAME

Command

```
show cs7 instance <0-15> asp-remaddr name ASP_NAME
```

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-remaddr
: Application Server Process (ASP) remote addresses information

name
: Lookup ASP with a given name

ASP_NAME
: Name of the Application Server Process (ASP)

### 1.3.46 show cs7 instance <0-15> route [POINT_CODE]

Command

```
show cs7 instance <0-15> route [POINT_CODE]
```

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

[POINT_CODE]
: Destination Point Code

### 1.3.47 show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]

Command

```
show cs7 instance <0-15> route binding-table [POINT_CODE] [all-matches]
```

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

binding-table
: Display binding table

[POINT_CODE]
: Destination Point Code

[all-matches]
: Display all matching Combination Links

### 1.3.48 show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [lis...

Command

```
show cs7 instance <0-15> route-lookup POINT_CODE from POINT_CODE sls <0-15> [list-asps]
```

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-lookup
: Look up route

POINT_CODE
: Destination PC

from
: From

POINT_CODE
: Origin PC

sls
: SLS

<0-15>
: SLS value

[list-asps]
: List ASPs of the AS if route points to an AS

### 1.3.49 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

### 1.3.50 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

### 1.3.51 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)

### 1.3.52 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

### 1.3.53 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

### 1.3.54 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

### 1.3.55 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

### 1.3.56 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

### 1.3.57 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

### 1.3.58 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

### 1.3.59 show fsm-state-graph NAME

Command

```
show fsm-state-graph NAME
```

Parameters

show
: Show running system information

fsm-state-graph
: Generate a state transition graph (using DOT language)

NAME
: FSM name

### 1.3.60 show history

Command

```
show history
```

Parameters

show
: Show running system information

history
: Display the session command history

### 1.3.61 show logging vty

Command

```
show logging vty
```

Parameters

show
: Show running system information

logging
: Show current logging configuration

vty
: Show current logging configuration for this vty

### 1.3.62 show mgw-pool

Command

```
show mgw-pool
```

Parameters

show
: Show running system information

mgw-pool
: Display information about the MGW-Pool

### 1.3.63 show neighbor

Command

```
show neighbor
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

### 1.3.64 show neighbor (a|iu)

Command

```
show neighbor (a|iu)
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

### 1.3.65 show neighbor (a|iu) (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME

Command

```
show neighbor (a|iu) (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

ran-pc
: SCCP point code of RAN peer

msc-ipa-name
: GSUP IPA name of target MSC

RAN_PC_OR_MSC_IPA_NAME
: Point code or MSC IPA name value

### 1.3.66 show neighbor (a|iu) cgi <0-999> <0-999> <0-65535> <0-65535>

Command

```
show neighbor (a|iu) cgi <0-999> <0-999> <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

cgi
: Handover target cell by Cell-Global Identifier (MCC, MNC, LAC, CI)

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: LAC

<0-65535>
: CI

### 1.3.67 show neighbor (a|iu) lac <0-65535>

Command

```
show neighbor (a|iu) lac <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

lac
: Handover target cell by LAC

<0-65535>
: LAC

### 1.3.68 show neighbor (a|iu) lac-ci <0-65535> <0-65535>

Command

```
show neighbor (a|iu) lac-ci <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

lac-ci
: Handover target cell by LAC and CI

<0-65535>
: LAC

<0-65535>
: CI

### 1.3.69 show neighbor cgi <0-999> <0-999> <0-65535> <0-65535>

Command

```
show neighbor cgi <0-999> <0-999> <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

cgi
: Handover target cell by Cell-Global Identifier (MCC, MNC, LAC, CI)

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: LAC

<0-65535>
: CI

### 1.3.70 show neighbor lac <0-65535>

Command

```
show neighbor lac <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

lac
: Handover target cell by LAC

<0-65535>
: LAC

### 1.3.71 show neighbor lac-ci <0-65535> <0-65535>

Command

```
show neighbor lac-ci <0-65535> <0-65535>
```

Parameters

show
: Show running system information

neighbor
: Show Handover targets

lac-ci
: Handover target cell by LAC and CI

<0-65535>
: LAC

<0-65535>
: CI

### 1.3.72 show nri

Command

```
show nri
```

Parameters

show
: Show running system information

nri
: Mapping of Network Resource Indicators to this MSC, for MSC pooling

### 1.3.73 show online-help

Command

```
show online-help
```

Parameters

show
: Show running system information

online-help
: Online help

### 1.3.74 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

### 1.3.75 show runtime

Command

```
show runtime
```

Parameters

show
: Show running system information

runtime
: Display runtime information

### 1.3.76 show sgs-connections

Command

```
show sgs-connections
```

Parameters

show
: Show running system information

sgs-connections
: Show SGs interface connections / MMEs

### 1.3.77 show sms-queue

Command

```
show sms-queue
```

Parameters

show
: Show running system information

sms-queue
: Display SMSqueue statistics

### 1.3.78 show startup-config

Command

```
show startup-config
```

Parameters

show
: Show running system information

startup-config
: Contentes of startup configuration

### 1.3.79 show statistics

Command

```
show statistics
```

Parameters

show
: Show running system information

statistics
: Display network statistics

### 1.3.80 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

### 1.3.81 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

### 1.3.82 show subscriber (msisdn|extension|imsi|tmsi|id) ID [(conn|trans|conn+trans)]

Command

```
show subscriber (msisdn|extension|imsi|tmsi|id) ID [(conn|trans|conn+trans)]
```

Parameters

show
: Show running system information

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

[conn]
: Show child connections

[trans]
: Show child transactions

[conn+trans]
: Show child connections and transactions

### 1.3.83 show subscriber cache [(conn|trans|conn+trans)]

Command

```
show subscriber cache [(conn|trans|conn+trans)]
```

Parameters

show
: Show running system information

subscriber
: Show information about subscribers

cache
: Display contents of subscriber cache

[conn]
: Show child connections

[trans]
: Show child transactions

[conn+trans]
: Show child connections and transactions

### 1.3.84 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

### 1.3.85 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

### 1.3.86 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)

### 1.3.87 show timer [(vlr|mgw|mncc|sccp|geran|utran|sgs)] [TNNNN]

Command

```
show timer [(vlr|mgw|mncc|sccp|geran|utran|sgs)] [TNNNN]
```

Parameters

show
: Show running system information

timer
: Show timers

[vlr]
: VLR (Visitors Location Register)

[mgw]
: MGW (Media Gateway) interface

[mncc]
: MNCC (Mobile Network Call Control) interface

[sccp]
: SCCP (Signalling Connection Control Part)

[geran]
: GERAN (GSM EDGE Radio Access Network)

[utran]
UTRAN (UMTS Terrestrial Radio Access Network)

[sgs]
SGs interface towards MME

[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’.

### 1.3.88 show transaction

Command

```
show transaction
```

Parameters

show
Show running system information

transaction
Transactions

### 1.3.89 show version

Command

```
show version
```

Parameters

show
Show running system information

version
Displays program version

### 1.3.90 shutdown

Command

```
shutdown
```

Parameters

shutdown
Request a shutdown of the program

### 1.3.91 sms delete expired

Command

```
sms delete expired
```

Parameters

sms
: SMS related commands

delete
: SMS Database related commands

expired
: Delete all expired SMS

### 1.3.92 sms send pending

Command

```
sms send pending
```

Parameters

sms
: SMS related commands

send
: SMS Sending related commands

pending
: Send all pending SMS

### 1.3.93 sms-queue clear

Command

```
sms-queue clear
```

Parameters

sms-queue
: SMS Queue

clear
: Clear the queue of pending SMS

### 1.3.94 sms-queue max-failure <1-500>

Command

```
sms-queue max-failure <1-500>
```

Parameters

sms-queue
: SMS Queue

max-failure
: Maximum amount of delivery failures

<1-500>
: Amount

### 1.3.95 sms-queue max-pending <1-500>

Command

```
sms-queue max-pending <1-500>
```

Parameters

sms-queue
: SMS Queue

max-pending
: SMS to deliver in parallel

<1-500>
: Amount

### 1.3.96 sms-queue trigger

Command

```
sms-queue trigger
```

Parameters

sms-queue
: SMS Queue

trigger
: Trigger sending messages

### 1.3.97 stats report

Command

```
stats report
```

Parameters

stats
: Stats related commands

report
: Manurally trigger reporting of stats

### 1.3.98 stats reset

Command

```
stats reset
```

Parameters

stats
: Stats related commands

reset
: Reset all rate counter stats

### 1.3.99 subscriber (msisdn|extension|imsi|tmsi|id) ID expire

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID expire
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

expire
: Expire the subscriber Now

### 1.3.100 subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test close-loop (a|b|c|d|e|f|i)

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test close-loop (a|b|c|d|e|f|i)
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

ms-test
: Send a TS 04.14 MS Test Command to subscriber

close-loop
: Close a TCH Loop inside the MS

a
: Loop Type A

b
: Loop Type B

c
: Loop Type C

d
: Loop Type D

e
: Loop Type E

f
: Loop Type F

i
: Loop Type I

### 1.3.101 subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test open-loop

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID ms-test open-loop
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

ms-test
: Send a TS 04.14 MS Test Command to subscriber

open-loop
: Open a TCH Loop inside the MS

### 1.3.102 subscriber (msisdn|extension|imsi|tmsi|id) ID paging

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID paging
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

paging
: Issue an empty Paging for the subscriber (for debugging)

### 1.3.103 subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call start (any|tch/f|tch/h...

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call start (any|tch/f|tch/h|tch/ ↩
    any|sdcch) (signalling|speech-hr|speech-fr|speech-efr|speech-amr|data-2400|data ↩
    -4800|data-9600|data-14400|data-4800-nt|data-9600-nt|data-14400-nt) [IP]  ↩
    [<0-65535>]
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

silent-call
: Silent call operation

start
: Start silent call

any
: Any channel

tch/f
: TCH/F channel

tch/h
: TCH/H channel

tch/any
: Any TCH channel

sdcch
: SDCCH channel

signalling
: Signalling only

speech-hr
: Speech with HR codec

speech-fr
: Speech with FR codec

speech-efr
: Speech with EFR codec

speech-amr
: Speech with AMR codec

data-2400
: Data (transparent) @ 2.4k/3.6k

data-4800
: Data (transparent) @ 4.8k/6.0k

data-9600
: Data (transparent) @ 9.6k/12.0k

data-14400
: Data (transparent) @ 14.4k/14.5k

data-4800-nt
: Data (non-transparent) @ 4.8k/6k

data-9600-nt
: Data (non-transparent) @ 9.6k/12k

data-14400-nt
: Data (non-transparent) @ 14.4k/14.5k

[IP]
: Target IP for RTP traffic (default 127.0.0.1)

[<0-65535>]
: Target port for RTP traffic (default: 4000)

### 1.3.104 subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call stop

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID silent-call stop
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

silent-call
: Silent call operation

stop
: Stop silent call

### 1.3.105 subscriber (msisdn|extension|imsi|tmsi|id) ID silent-sms sender (msisdn|extensio...

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID silent-sms sender (msisdn|extension|imsi| ↩
    tmsi|id) SENDER_ID send .LINE
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

silent-sms
: Silent SMS Operations

sender
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

SENDER_ID
: Identifier for the subscriber

send
: Send SMS

.LINE
: Actual SMS Text

### 1.3.106 subscriber (msisdn|extension|imsi|tmsi|id) ID sms delete-all

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID sms delete-all
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

sms
: SMS Operations

delete-all
: Delete all SMS to be delivered to this subscriber -- WARNING: the SMS data for all unsent SMS for this subscriber WILL BE LOST.

### 1.3.107 subscriber (msisdn|extension|imsi|tmsi|id) ID sms pending-send

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID sms pending-send
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

sms
: SMS Operations

pending-send
: Send pending SMS

### 1.3.108 subscriber (msisdn|extension|imsi|tmsi|id) ID sms sender (msisdn|extension|imsi|...

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID sms sender (msisdn|extension|imsi|tmsi|id ↩
    ) SENDER_ID send .LINE
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

sms
: SMS Operations

sender
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

SENDER_ID
: Identifier for the subscriber

send
: Send SMS

.LINE
: Actual SMS Text

### 1.3.109 subscriber (msisdn|extension|imsi|tmsi|id) ID ussd-notify (0|1|2) .TEXT

Command

```
subscriber (msisdn|extension|imsi|tmsi|id) ID ussd-notify (0|1|2) .TEXT
```

Parameters

subscriber
: Operations on a Subscriber

msisdn
: Identify subscriber by MSISDN (phone number)

extension
: Legacy alias for 'msisdn'

imsi
: Identify subscriber by IMSI

tmsi
: Identify subscriber by TMSI

id
: Legacy alias for 'imsi'

ID
: Identifier for the subscriber

ussd-notify
: Send a USSD notify to the subscriber

0
: Alerting Level 0

1
: Alerting Level 1

2
: Alerting Level 2

.TEXT
: Text of USSD message to send

### 1.3.110 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)

### 1.3.111 terminal monitor

Command

```
terminal monitor
```

Parameters

terminal
: Set terminal line parameters

monitor
: Copy debug output to the current terminal line

### 1.3.112 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

### 1.3.113 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

### 1.3.114 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 asci

Command

```
asci
```

Parameters

asci
: Enable and configure Advanced Speech Call Items

### 1.4.2 banner motd default

Command

```
banner motd default
```

Parameters

banner
: Set banner string

motd
: Strings for motd

default
: Default string

### 1.4.3 banner motd file [FILE]

Command

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

Parameters

banner
: Set banner

motd
: Banner for motd

file
: Banner from a file

[FILE]
: Filename

### 1.4.4 cpu-sched

Command

```
cpu-sched
```

Parameters

cpu-sched
: Configure CPU Scheduler related settings

### 1.4.5 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

### 1.4.6 ctrl

Command

```
ctrl
```

Parameters

ctrl
: Configure the Control Interface

### 1.4.7 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

### 1.4.8 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

### 1.4.9 hlr

Command

```
hlr
```

Parameters

hlr
: Configure connection to the HLR

### 1.4.10 hostname WORD

Command

```
hostname WORD
```

Parameters

hostname
: Set system's network name

WORD
: This system's network name

### 1.4.11 line vty

Command

```
line vty
```

Parameters

line
: Configure a terminal line

vty
: Virtual terminal

### 1.4.12 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

### 1.4.13 log file FILENAME [(nonblocking-io|blocking-io|wq)]

Command

```
log file FILENAME [(nonblocking-io|blocking-io|wq)]
```

Parameters

log
: Configure logging sub-system

file
: Logging to text file

FILENAME
: Filename

[nonblocking-io]
: Use non-blocking, synchronous I/O (may lose msgs if file write buffer becomes full) (default)

[blocking-io]
: Use blocking, synchronous I/O (only for debug purposes or when blocking is acceptable)

[wq]
: Use Tx workqueue, asynchronous I/O (may lose msgs if queue becomes full)

### 1.4.14 log gsmtap [HOSTNAME] [(nonblocking-io|blocking-io|wq)]

Command

```
log gsmtap [HOSTNAME] [(nonblocking-io|blocking-io|wq)]
```

Parameters

log
: Configure logging sub-system

gsmtap
: Logging via GSMTAP

[HOSTNAME]
: Host name to send the GSMTAP logging to (UDP port 4729)

[nonblocking-io]
: Use non-blocking, synchronous I/O (may lose msgs if UDP socket send buffer becomes full) (default)

[blocking-io]
: Use blocking, synchronous I/O (only for debug purposes or when blocking is acceptable)

[wq]
: Use Tx workqueue, asynchronous I/O (may lose msgs if queue becomes full)

### 1.4.15 log stderr [(nonblocking-io|blocking-io|wq)]

Command

```
log stderr [(nonblocking-io|blocking-io|wq)]
```

Parameters

log
: Configure logging sub-system

stderr
: Logging via STDERR of the process

[nonblocking-io]
: Use non-blocking, synchronous I/O (may lose msgs if file write buffer becomes full) (default)

[blocking-io]
: Use blocking, synchronous I/O (only for debug purposes or when blocking is acceptable)

[wq]
: Use Tx workqueue, asynchronous I/O (may lose msgs if queue becomes full)

### 1.4.16 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

### 1.4.17 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

### 1.4.18 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

### 1.4.19 mncc-int

Command

```
mncc-int
```

Parameters

mncc-int
: Configure internal MNCC handler

### 1.4.20 msc

Command

```
msc
```

Parameters

msc
: Configure MSC options

### 1.4.21 network

Command

```
network
```

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 sgs

Command

```
sgs
```

Parameters

sgs
: Configure the SGs interface

### 1.4.40 show history

Command

```
show history
```

Parameters

show
: Show running system information

history
: Display the session command history

### 1.4.41 smsc

Command

```
smsc
```

Parameters

smsc
: Configure SMSC options

### 1.4.42 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)

### 1.4.43 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

### 1.4.44 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

### 1.4.45 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

### 1.4.46 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|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|...

Command

```
logging level (rll|cc|bcc|gcc|mm|rr|mncc|pag|msc|mgcp|ho|db|ref|ctrl|smpp|ranap|vlr| ↩
    iucs|bssap|sgs|ss|asci|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|ltcap) (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)

cc
: Layer3 Call Control (CC)

bcc
: Layer3 Broadcast Call Control (BCC)

gcc
: Layer3 Group Call Control (GCC)

mm
: Layer3 Mobility Management (MM)

rr
: Layer3 Radio Resource (RR)

mncc
: MNCC API for Call Control application

pag
: Paging Subsystem

msc
: Mobile Switching Center

mgcp
: Media Gateway Control Protocol

ho
: Hand-Over

db
: Database Layer

ref
: Reference Counting

ctrl
: Control interface

smpp
: SMPP interface for external SMS apps

ranap
: Radio Access Network Application Part Protocol

vlr
: Visitor Location Register

iucs
: Iu-CS Protocol

bssap
: BSSAP Protocol (A Interface)

sgs
: SGs Interface (SGsAP)

ss
: Supplementary Services

asci
: Advanced Speech Call Items

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

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

ltcap
: TCAP

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-ctrl

### 1.8.1 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

## 1.9 config-cs7

### 1.9.1 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)

### 1.9.2 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 port number

<0-65535>
: Local port number

sua
: SCCP User Adaptation

m3ua
: MTP3 User Adaptation

ipa
: IPA Multiplex (SCCP Lite)

### 1.9.3 asp NAME <0-65535> <0-65535> (sua|m3ua|ipa) (sctp|tcp)

Command

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

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

asp

Configure Application Server Process

NAME

Name of ASP

<0-65535>

Remote port number

<0-65535>

Local port number

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

sctp

SCTP (Stream Control Transmission Protocol)

tcp

TCP (Transmission Control Protocol)

### 1.9.4 description .TEXT

Command

```
description .TEXT
```

Parameters

description

Save human-readable description of the object

.TEXT

Text until the end of the line

### 1.9.5 listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]

Command

```
listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]
```

Global attributes

Flag: !

This command applies immediately

Parameters

listen

Configure/Enable xUA Listener

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

<0-65534>

Port number

[sctp]

SCTP (Stream Control Transmission Protocol)

[tcp]

TCP (Transmission Control Protocol)

### 1.9.6 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

### 1.9.7 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

### 1.9.8 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

### 1.9.9 no listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]

Command

```
no listen (sua|m3ua|ipa) <0-65534> [(sctp|tcp)]
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

listen

Disable xUA Listener on given port

sua

SCCP User Adaptation

m3ua

MTP3 User Adaptation

ipa

IPA Multiplex (SCCP Lite)

<0-65534>

Port number

[sctp]

SCTP (Stream Control Transmission Protocol)

[tcp]

TCP (Transmission Control Protocol)

### 1.9.10 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

### 1.9.11 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

### 1.9.12 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

### 1.9.13 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

### 1.9.14 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)

### 1.9.15 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 128 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 128

### 1.9.16 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

### 1.9.17 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

### 1.9.18 secondary-pc POINT_CODE

Command

```
secondary-pc POINT_CODE
```

Global attributes

Flag: !

This command applies immediately

Parameters

secondary-pc

Configure the local Secondary Point Code

POINT_CODE

Point Code

### 1.9.19 sls-opc-dpc [opc-shift] [<0-8>] [dpc-shift] [<0-8>]

Command

```
sls-opc-dpc [opc-shift] [<0-8>] [dpc-shift] [<0-8>]
```

Global attributes

Flag: !

This command applies immediately

Parameters

sls-opc-dpc

Shift OPC and DPC bits used during routing decision

[opc-shift]

Shift OPC bits used during routing decision

[<0-8>]

How many bits from ITU OPC field (starting from least-significant-bit) to skip (default=0). 6 bits are always used

[dpc-shift]

Shift DPC bits used during routing decision

[<0-8>]

How many bits from ITU DPC field (starting from least-significant-bit) to skip (default=0). 6 bits are always used

### 1.9.20 sls-shift <0-6>

Command

```
sls-shift <0-6>
```

Global attributes

Flag: !

This command applies immediately

Parameters

sls-shift

Shift SLS bits used during routing decision

<0-6>

How many bits from derivated 7-bit extended-SLS (OPC, DPC, SLS) field (starting from least-significant-bit) to skip

### 1.9.21 timer xua (T8|T10) <1-999999>

Command

```
timer xua (T8|T10) <1-999999>
```

Global attributes

Flag: !

This command applies immediately

Parameters

timer

Configure CS7 Instance default timer values

xua

Configure CS7 Instance default xua timer values

T8

T8 - Transfer prohibited inhibition timer (transient solution) (ms) (default: 1000)

T10

T10 - Waiting to repeat signalling route set test message (s) (default: 45)

<1-999999>

Timer value, in seconds

### 1.9.22 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

## 1.10 config-cs7-as

### 1.10.1 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

### 1.10.2 binding-table reset

Command

```
binding-table reset
```

Global attributes

Flag: !

This command applies immediately

Parameters

binding-table

AS Loadshare binding table operations

reset

Reset loadshare binding table

### 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 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

### 1.10.5 no point-code override (opc|dpc)

Command

```
no point-code override (opc|dpc)
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

point-code

Point Code Specific Features

override

Override (force) a point-code of messages received at the AS

opc

Override Source Point Code of received messages

dpc

Override Destination Point Code of received messages

### 1.10.6 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

### 1.10.7 point-code override (opc|dpc) PC

Command

```
point-code override (opc|dpc) PC
```

Global attributes

Flag: !

This command applies immediately

Parameters

point-code

Point Code Specific Features

override

Override (force) a point-code of messages received at the AS

opc

Override Source Point Code of received messages

dpc

Override Destination Point Code of received messages

PC

New Point Code

### 1.10.8 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

### 1.10.9 qos-class <0-7>

Command

```
qos-class <0-7>
```

Global attributes

Flag: !
This command applies immediately

Parameters

qos-class
Specity QoS Class of AS

<0-7>
QoS Class

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

Command

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

Global attributes

Flag: !
This command applies immediately

Parameters

recovery-timeout
Specifies RFC4666 recovery timer T(r) timeout

<1-2000>
Recovery Timeout in Milliseconds

### 1.10.11 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

### 1.10.12 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

### 1.10.13 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

### 1.10.14 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

### 1.10.15 sls-shift <0-3>

Command

```
sls-shift <0-3>
```

Global attributes

Flag: !

This command applies immediately

Parameters

sls-shift

Shift SLS bits used during routing decision

<0-3>

How many bits from SLS field (starting from least-significant-bit) to skip

### 1.10.16 traffic-mode (broadcast | roundrobin | override)

Command

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

Parameters

traffic-mode

Specifies traffic mode of operation of the ASP within the AS

broadcast

Broadcast to all ASP within AS

roundrobin

Round-Robin between all ASP within AS

override

Override

### 1.10.17 traffic-mode loadshare [bindings] [sls] [opc-sls] [opc-shift] [<0-2>]

Command

```
traffic-mode loadshare [bindings] [sls] [opc-sls] [opc-shift] [<0-2>]
```

Parameters

traffic-mode
: Specifies traffic mode of operation of the ASP within the AS

loadshare
: Share Load among all ASP within AS

[bindings]
: Configure Loadshare parameters

[sls]
: Configure Loadshare SLS generation parameters

[opc-sls]
: Generate extended SLS with OPC information

[opc-shift]
: Shift OPC bits used during routing decision

[<0-2>]
: How many bits from ITU OPC field (starting from least-significant-bit) to skip (default=0). 6 bits are always used

## 1.11 config-cs7-asp

### 1.11.1 asp-identifier <0-4294967295>

Command

```
asp-identifier <0-4294967295>
```

Global attributes

Flag: @
: This command applies on VTY node exit

Parameters

asp-identifier
: Specify ASP Identifier for this ASP

<0-4294967295>
: ASP Identifier

### 1.11.2 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

### 1.11.3 description .TEXT

Command

```
description .TEXT
```

Parameters

description

Save human-readable description of the object

.TEXT

Text until the end of the line

### 1.11.4 destination-audit asp-active

Command

```
destination-audit asp-active
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

destination-audit

Configure ASP Auditing (xUA DAUD)

asp-active

Transmit DAUD after ASP successful activate (for remote PCs in sccp address-book)

### 1.11.5 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

### 1.11.6 no asp-identifier

Command

```
no asp-identifier
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

asp-identifier

Specify ASP Identifier for this ASP

### 1.11.7 no block

Command

```
no block
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

block

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

### 1.11.8 no destination-audit asp-active

Command

```
no destination-audit asp-active
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

destination-audit

Configure ASP Auditing (xUA DAUD)

asp-active

Transmit xUA DAUD after ASP successful activate (for remote PCs in sccp address-book)

### 1.11.9 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

### 1.11.10 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

### 1.11.11 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

### 1.11.12 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)

### 1.11.13 no shutdown

Command

```
no shutdown
```

Global attributes

Flag: @
: This command applies on VTY node exit

Parameters

no
: Negate a command or set its defaults

shutdown
: Terminates SCTP association; New associations will be rejected

### 1.11.14 no tcp-param keepalive

Command

```
no tcp-param keepalive
```

Global attributes

Flag: @
: This command applies on VTY node exit

Parameters

no
: Negate a command or set its defaults

tcp-param
: Configure TCP parameters

keepalive
: Configure TCP keep-alive related parameters

### 1.11.15 no tcp-param keepalive (time|intvl|probes)

Command

```
no tcp-param keepalive (time|intvl|probes)
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

tcp-param

Configure TCP parameters

keepalive

Configure TCP keep-alive related parameters

time

Configure number of seconds a connection needs to be idle before beggining to send probes

intvl

Configure number of seconds between probes

probes

Configure max number of probes to send before giving up if no response is obtained

### 1.11.16 no tcp-param user-timeout

Command

```
no tcp-param user-timeout
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

no

Negate a command or set its defaults

tcp-param

Configure TCP parameters

user-timeout

Configure TCP User Timeout socket option (TCP_USER_TIMEOUT)

### 1.11.17 qos-class <0-7>

Command

```
qos-class <0-7>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

qos-class

Specify QoS Class of ASP

<0-7>

QoS Class

### 1.11.18 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

### 1.11.19 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

### 1.11.20 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)

### 1.11.21 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

### 1.11.22 shutdown

Command

```
shutdown
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

shutdown

Terminates SCTP association; New associations will be rejected

### 1.11.23 tcp-param keepalive (time|intvl|probes) <0-65535>

Command

```
tcp-param keepalive (time|intvl|probes) <0-65535>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

tcp-param

Configure TCP parameters

keepalive

Configure TCP keep-alive related parameters

time

Configure number of seconds a connection needs to be idle before beggining to send probes

intvl

Configure number of seconds between probes

probes

Configure max number of probes to send before giving up if no response is obtained

<0-65535>

Value of the parameter

### 1.11.24 tcp-param keepalive enabled

Command

```
tcp-param keepalive enabled
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

tcp-param

Configure TCP parameters

keepalive

Configure TCP keep-alive related parameters

enabled

Enable TCP keep-alive

### 1.11.25 tcp-param user-timeout <0-65535>

Command

```
tcp-param user-timeout <0-65535>
```

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

tcp-param

Configure TCP parameters

user-timeout

Configure TCP User Timeout socket option (TCP_USER_TIMEOUT)

<0-65535>

Value of the parameter

### 1.11.26 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

### 1.11.27 timer xua (ack|beat) <1-999999>

Command

```
timer xua (ack|beat) <1-999999>
```

Global attributes

Flag: !

This command applies immediately

Parameters

timer

Configure ASP default timer values

xua

Configure ASP default xua timer values

ack

Resend ASP Up/Down/Active/Inactive after timeout waiting for ASP Up/Down/Active/Inactive ACK (ASP role)(s) (default: 2)

beat

Heartbeat Timer (0 = disabled) (s) (default: 30)

<1-999999>

Timer value, in seconds

### 1.11.28 transport-role (client|server)

Command

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

Global attributes

Flag: @

This command applies on VTY node exit

Parameters

transport-role

Specify the transport layer role for this ASP

client

Operate as a client; connect to a server

server

Operate as a server; wait for client connections

## 1.12 config-cs7-listen

### 1.12.1 accept-asp-connections (pre-configured|dynamic-permitted)

Command

```
accept-asp-connections (pre-configured|dynamic-permitted)
```

Global attributes

Flag: !
: This command applies immediately

Parameters

accept-asp-connections
: Define what kind of ASP connections to accept

pre-configured
: Accept only pre-configured ASPs (source IP/port)

dynamic-permitted
: Accept any connection and dynamically create an ASP definition

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

Command

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

Global attributes

Flag: !
: This command applies immediately

Parameters

local-ip
: Configure the Local IP Address for xUA

A.B.C.D
: IPv4 Address to use for XUA

X:X::X:X
: IPv6 Address to use for XUA

### 1.12.3 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

Configure the Local IP Address for xUA

A.B.C.D

IPv4 Address to use for XUA

X:X::X:X

IPv6 Address to use for XUA

### 1.12.4 no sctp-param init (num-ostreams|max-instreams)

Command

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

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

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

Command

```
sctp-param init (num-ostreams|max-instreams) <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

<0-65535>

Value of the parameter

## 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 authentication (optional|required)

Command

```
authentication (optional|required)
```

Parameters

authentication
: Whether to enforce MS authentication in 2G

optional
: Allow MS to attach via 2G BSC without authentication

required
: Always do authentication

### 1.16.2 call-waiting

Command

```
call-waiting
```

Parameters

call-waiting
: Enable Call Waiting on the Network

### 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>]
```

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 encryption uea <0-2> [<0-2>] [<0-2>]

Command

```
encryption uea <0-2> [<0-2>] [<0-2>]
```

Parameters

encryption
Encryption options

uea
UTRAN (3G) encryption algorithms to allow: 0 = UEA0 (no encryption), 1 = UEA1, 2 = UEA2.

<0-2>
UEAn Algorithm Number

[<0-2>]
UEAn Algorithm Number

[<0-2>]
UEAn Algorithm Number

### 1.16.5 long name .NAME

Command

```
long name .NAME
```

Parameters

long
Set the long GSM network name

name
Name Commands

.NAME
Name to use

### 1.16.6 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

### 1.16.7 mm info (0|1)

Command

```
mm info (0|1)
```

Parameters

mm

Mobility Management

info

Send MM INFO after LOC UPD ACCEPT

0

Disable

1

Enable

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

Command

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

Parameters

mobile
: Set the GSM mobile network code

network
: Network Commands

code
: Code commands

<0-999>
: Mobile Network Code to use

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

Command

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

Parameters

network
: Set the GSM network country code

country
: Country commands

code
: Code commands

<1-999>
: Network Country Code to use

### 1.16.10 no call-waiting

Command

```
no call-waiting
```

Parameters

no
: Negate a command or set its defaults

call-waiting
: Disable Call Waiting on the Network

### 1.16.11 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

### 1.16.12 no timezone

Command

```
no timezone
```

Parameters

no

Negate a command or set its defaults

timezone

Disable network timezone override, use system tz

### 1.16.13 rrlp mode (none|ms-based|ms-preferred|ass-preferred)

Command

```
rrlp mode (none|ms-based|ms-preferred|ass-preferred)
```

Parameters

rrlp

Radio Resource Location Protocol

mode
: Set the Radio Resource Location Protocol Mode

none
: Don't send RRLP request

ms-based
: Request MS-based location

ms-preferred
: Request any location, prefer MS-based

ass-preferred
: Request any location, prefer MS-assisted

### 1.16.14 short name .NAME

Command

```
short name .NAME
```

Parameters

short
: Set the short GSM network name

name
: Name Commands

.NAME
: Name to use

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

Command

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

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)

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

Command

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

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-msc

### 1.18.1 assign-tmsi

Command

```
assign-tmsi
```

Parameters

assign-tmsi
: Assign TMSI during Location Updating.

### 1.18.2 auth-tuple-max-reuse-count <-1-2147483647>

Command

```
auth-tuple-max-reuse-count <-1-2147483647>
```

Parameters

auth-tuple-max-reuse-count
: Configure authentication tuple re-use

<-1-2147483647>
: 0 to use each auth tuple at most once (default), >0 to limit re-use, -1 to re-use infinitely (vulnerable!).

### 1.18.3 auth-tuple-reuse-on-error (0|1)

Command

```
auth-tuple-reuse-on-error (0|1)
```

Parameters

auth-tuple-reuse-on-error
: Configure authentication tuple re-use when HLR is not responsive

0
: Never re-use auth tuples beyond auth-tuple-max-reuse-count (default)

1
: If the HLR does not deliver new tuples, do re-use already available old ones.

### 1.18.4 check-imei-rqd (0|1|early)

Command

```
check-imei-rqd (0|1|early)
```

Parameters

check-imei-rqd
: Send each IMEI to the EIR to ask if it is permitted or not. The EIR is implemented as part of OsmoHLR, and can optionally save the IMEI in the HLR.

0
: Do not send IMEIs to the EIR

1
: Send each IMEI to the EIR

early
: Send each IMEI to the EIR, and do it at the start of the location update. This allows the EIR to receive the IMEI, even if the MS would get rejected when the MSC sends the location update request to the HLR.

### 1.18.5 cs7-instance-a <0-15>

Command

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

Parameters

cs7-instance-a
: Set SS7 to be used by the A-Interface.

<0-15>
: SS7 instance reference number

### 1.18.6 cs7-instance-iu <0-15>

Command

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

Parameters

cs7-instance-iu
: Set SS7 to be used by the Iu-Interface.

<0-15>
: SS7 instance reference number

### 1.18.7 emergency-call route-to-msisdn MSISDN

Command

```
emergency-call route-to-msisdn MSISDN
```

Parameters

emergency-call
: Configure Emergency Call Behaviour

route-to-msisdn
: MSISDN to which Emergency Calls are Dispatched

MSISDN
: MSISDN (E.164 Phone Number)

### 1.18.8 handover-number range MSISDN_FIRST MSISDN_LAST

Command

```
handover-number range MSISDN_FIRST MSISDN_LAST
```

Parameters

handover-number
: Configure a range of MSISDN to be assigned to incoming inter-MSC Handovers for call forwarding.

range
: Configure a handover number range

MSISDN_FIRST
: First Handover Number MSISDN

MSISDN_LAST
: Last Handover Number MSISDN

### 1.18.9 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

### 1.18.10 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

### 1.18.11 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

### 1.18.12 lcls-permitted

Command

```
lcls-permitted
```

Global attributes

Flag: !

This command applies immediately

Parameters

lcls-permitted

Globally allow LCLS (Local Call Local Switch) for all calls on this MSC.

### 1.18.13 mncc external MNCC_SOCKET_PATH

Command

```
mncc external MNCC_SOCKET_PATH
```

Parameters

mncc

Configure Mobile Network Call Control

external

Use external MNCC handler (changes need a program restart)

MNCC_SOCKET_PATH

File system path to create the MNCC unix domain socket at

### 1.18.14 mncc guard-timeout <0-255>

Command

```
mncc guard-timeout <0-255>
```

Parameters

mncc

Configure Mobile Network Call Control

guard-timeout

Set global guard timer for mncc interface activity

<0-255>

guard timer value (sec.)

### 1.18.15 mncc internal

Command

```
mncc internal
```

Parameters

mncc
: Configure Mobile Network Call Control

internal
: Use internal MNCC handler (default; changes need a program restart)

### 1.18.16 ncss guard-timeout <0-255>

Command

```
ncss guard-timeout <0-255>
```

Parameters

ncss
: Configure call independent Supplementary Services

guard-timeout
: Set guard timer for session activity

<0-255>
: guard timer value (sec.), or 0 to disable

### 1.18.17 neighbor (a|iu) cgi <0-999> <0-999> <0-65535> <0-65535> (ran-pc|msc-ipa-name) RA...

Command

```
neighbor (a|iu) cgi <0-999> <0-999> <0-65535> <0-65535> (ran-pc|msc-ipa-name)  ↩
    RAN_PC_OR_MSC_IPA_NAME
```

Parameters

neighbor
: Add Handover target configuration

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

cgi
: Handover target cell by Cell-Global Identifier (MCC, MNC, LAC, CI)

<0-999>
: MCC

<0-999>
: MNC

<0-65535>
: LAC

<0-65535>
: CI

ran-pc
: SCCP point code of RAN peer

msc-ipa-name
: GSUP IPA name of target MSC

RAN_PC_OR_MSC_IPA_NAME
: Point code or MSC IPA name value

### 1.18.18 neighbor (a|iu) lac <0-65535> (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME

Command

```
neighbor (a|iu) lac <0-65535> (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME
```

Parameters

neighbor
: Add Handover target configuration

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

lac
: Handover target cell by LAC

<0-65535>
: LAC

ran-pc
: SCCP point code of RAN peer

msc-ipa-name
: GSUP IPA name of target MSC

RAN_PC_OR_MSC_IPA_NAME
: Point code or MSC IPA name value

### 1.18.19 neighbor (a|iu) lac-ci <0-65535> <0-65535> (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_I...

Command

```
neighbor (a|iu) lac-ci <0-65535> <0-65535> (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME
```

Parameters

neighbor
: Add Handover target configuration

a
: Neighbor on GERAN-A

iu
: Neighbor on UTRAN-Iu

lac-ci
: Handover target cell by LAC and CI

<0-65535>
: LAC

<0-65535>
: CI

ran-pc
: SCCP point code of RAN peer

msc-ipa-name
: GSUP IPA name of target MSC

RAN_PC_OR_MSC_IPA_NAME
: Point code or MSC IPA name value

### 1.18.20 no assign-tmsi

Command

```
no assign-tmsi
```

Parameters

no
: Negate a command or set its defaults

assign-tmsi
: Assign TMSI during Location Updating.

### 1.18.21 no lcls-permitted

Command

```
no lcls-permitted
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

lcls-permitted

Globally disable LCLS (Local Call Local Switch) for all calls on this MSC.

### 1.18.22 no neighbor (a|iu) (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME

Command

```
no neighbor (a|iu) (ran-pc|msc-ipa-name) RAN_PC_OR_MSC_IPA_NAME
```

Parameters

no

Negate a command or set its defaults

neighbor

Remove Handover target

a

Neighbor on GERAN-A

iu

Neighbor on UTRAN-Iu

ran-pc

SCCP point code of RAN peer

msc-ipa-name

GSUP IPA name of target MSC

RAN_PC_OR_MSC_IPA_NAME

Point code or MSC IPA name value

### 1.18.23 no sms-over-gsup

Command

```
no sms-over-gsup
```

Parameters

no
: Negate a command or set its defaults

sms-over-gsup
: Disable routing of SMS messages over GSUP

### 1.18.24 no tw-rtp-formats

Command

```
no tw-rtp-formats
```

Parameters

no
: Negate a command or set its defaults

tw-rtp-formats
: Use ThemWi RTP formats

### 1.18.25 nri add <0-32767> [<0-32767>]

Command

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

Parameters

nri
: Mapping of Network Resource Indicators to this MSC, 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.

### 1.18.26 nri bitlen <0-15>

Command

```
nri bitlen <0-15>
```

Parameters

nri
: Mapping of Network Resource Indicators to this MSC, for MSC pooling

bitlen
: Set number of NRI bits to place in TMSI identities (always starting just after the most significant octet)

<0-15>
: bit count (default: NRI_BITLEN_DEFAULT)

### 1.18.27 nri del <0-32767> [<0-32767>]

Command

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

Parameters

nri
: Mapping of Network Resource Indicators to this MSC, 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.

### 1.18.28 osmux (on|off|only)

Command

```
osmux (on|off|only)
```

Parameters

osmux
: RTP multiplexing

on
: Enable OSMUX

off
: Disable OSMUX

only
: Only use OSMUX

### 1.18.29 sms-over-gsup

Command

```
sms-over-gsup
```

Parameters

sms-over-gsup
: Enable routing of SMS messages over GSUP

### 1.18.30 timer [(vlr|mgw|mncc|sccp|geran|utran|sgs)] [TNNNN] [(<0-2147483647>|default)]

Command

```
timer [(vlr|mgw|mncc|sccp|geran|utran|sgs)] [TNNNN] [(<0-2147483647>|default)]
```

Parameters

timer
: Configure or show timers

[vlr]
: VLR (Visitors Location Register)

[mgw]
: MGW (Media Gateway) interface

[mncc]
: MNCC (Mobile Network Call Control) interface

[sccp]
: SCCP (Signalling Connection Control Part)

[geran]
: GERAN (GSM EDGE Radio Access Network)

[utran]
: UTRAN (UMTS Terrestrial Radio Access Network)

[sgs]

SGs interface towards MME

[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

### 1.18.31 tw-rtp-formats (fr|hr|amr|csd) [(fr|hr|amr|csd)] [(fr|hr|amr|csd)] [(fr|hr|amr|c...

Command

```
tw-rtp-formats (fr|hr|amr|csd) [(fr|hr|amr|csd)] [(fr|hr|amr|csd)] [(fr|hr|amr|csd)]
```

Parameters

tw-rtp-formats

Use ThemWi RTP formats

fr

TW-TS-001 for FR & EFR

hr

TW-TS-002 for HRv1

amr

TW-TS-006 for AMR

csd

TW-TS-007 for CSD

[fr]

TW-TS-001 for FR & EFR

[hr]

TW-TS-002 for HRv1

[amr]

TW-TS-006 for AMR

[csd]

TW-TS-007 for CSD

[fr]

TW-TS-001 for FR & EFR

[hr]

TW-TS-002 for HRv1

[amr]
TW-TS-006 for AMR

[csd]
TW-TS-007 for CSD

[fr]
TW-TS-001 for FR & EFR

[hr]
TW-TS-002 for HRv1

[amr]
TW-TS-006 for AMR

[csd]
TW-TS-007 for CSD

## 1.19 config-mncc-int

This node allows to configure the default codecs for the internal call control handling.

### 1.19.1 default-codec tch-f (fr|efr|amr)

Command

```
default-codec tch-f (fr|efr|amr)
```

Parameters

default-codec
Set default codec

tch-f
Codec for TCH/F

fr
Full-Rate

efr
Enhanced Full-Rate

amr
Adaptive Multi-Rate

### 1.19.2 default-codec tch-h (hr|amr)

Command

```
default-codec tch-h (hr|amr)
```

Parameters

default-codec
: Set default codec

tch-h
: Codec for TCH/H

hr
: Half-Rate

amr
: Adaptive Multi-Rate

## 1.20 config-hlr

### 1.20.1 ipa-name NAME

Command

```
ipa-name NAME
```

Parameters

ipa-name
: Set the IPA name of this MSC

NAME
: A unique name for this MSC. For example: PLMN + redundancy server number: MSC-901-70-0. This name is used for GSUP routing and must be set if more than one MSC is connected to the HLR. The default is 'unnamed-MSC'.

### 1.20.2 remote-ip A.B.C.D

Command

```
remote-ip A.B.C.D
```

Parameters

remote-ip
: Remote GSUP address of the HLR

A.B.C.D
: Remote GSUP address (default: 127.0.0.1)

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

Command

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

Parameters

remote-port
: Remote GSUP port of the HLR

<1-65535>
: Remote GSUP port (default: MSC_HLR_REMOTE_PORT_DEFAULT)

## 1.21 config-sgs

### 1.21.1 counter (ns7|ns11) <0-255>

Command

```
counter (ns7|ns11) <0-255>
```

Parameters

counter
: Configure SGs Counter

ns7
: Non-EPS alert request retry counter

ns11
: VLR reset retry counter

<0-255>
: Counter value

### 1.21.2 local-ip A.B.C.D

Command

```
local-ip A.B.C.D
```

Parameters

local-ip
: Set the Local IP Address of the SGs interface

A.B.C.D
: Local IP Address of the SGs interface

### 1.21.3 local-port <0-65535>

Command

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

Parameters

local-port
: Set the local SCTP port of the SGs interface

<0-65535>
: Local SCTP port of the SGs interface

### 1.21.4 timer (ts5|ts6-2|ts7|ts11|ts14|ts15) <1-120>

Command

```
timer (ts5|ts6-2|ts7|ts11|ts14|ts15) <1-120>
```

Parameters

timer
: Configure SGs Timer

ts5
: Paging procedure guard timer

ts6-2
: TMSI reallocation guard timer

ts7
: Non-EPS alert procedure guard timer

ts11
: VLR reset guard timer

ts14
: UE fallback prcoedure timer

ts15
: MO UE fallback procedure guard timer

<1-120>
: Time in seconds

### 1.21.5 vlr-name FQDN

Command

```
vlr-name FQDN
```

Parameters

vlr-name
: Set the SGs VLR Name as per TS 29.118 9.4.22

FQDN
: Fully-Qualified Domain Name of this VLR

## 1.22 config-smsc

### 1.22.1 database PATH

Command

```
database PATH
```

Parameters

database
: Set the path to the MSC-SMS database file

PATH
: Relative or absolute file system path to the database file (default is 'sms.db')

### 1.22.2 database delete-delivered (0|1)

Command

```
database delete-delivered (0|1)
```

Parameters

database
: SMS Database Configuration

delete-delivered
: Configure if delivered SMS are deleted from DB

0
: Do not delete SMS after delivery

1
: Delete SMS after delivery

### 1.22.3 database delete-expired (0|1)

Command

```
database delete-expired (0|1)
```

Parameters

database
: SMS Database Configuration

delete-expired
: Configure if expired SMS are deleted from DB

0
: Do not delete SMS after expiration of validity period

1
: Delete SMS after expiration of validity period

### 1.22.4 queue max-failure <1-500>

Command

```
queue max-failure <1-500>
```

Parameters

queue
: SMS Queue

max-failure
: Maximum number of delivery failures before giving up

<1-500>
: Amount

### 1.22.5 queue max-pending <1-500>

Command

```
queue max-pending <1-500>
```

Parameters

queue
: SMS Queue

max-pending
: SMS to deliver in parallel

<1-500>
: Amount

### 1.22.6 validity-period (minimum|default) <1-5256000>

Command

```
validity-period (minimum|default) <1-5256000>
```

Parameters

validity-period
: Configure validity period for SMS

minimum
: Minimum SMS validity period in minutes

default
: Default SMS validity period in minutes

<1-5256000>
: Validity period in minutes

## 1.23 config-asci

### 1.23.1 (enable|disable)

Command

```
(enable|disable)
```

Parameters

enable
: Enable Advanced Speech Call Items

disable
: Disable Advanced Speech Call Items

### 1.23.2 gcr

Command

```
gcr
```

Parameters

gcr
: Configure Group Call Register

## 1.24 config-gcr

### 1.24.1 no vbc ID

Command

```
no vbc ID
```

Parameters

no
: Negate a command or set its defaults

vbc
: Configure Voice Broadcast Call

ID
: Group ID

### 1.24.2 no vgc ID

Command

```
no vgc ID
```

Parameters

no
: Negate a command or set its defaults

vgc
: Configure Voice Group Call

ID
: Group ID

### 1.24.3 vbc ID

Command

```
vbc ID
```

Parameters

vbc
: Configure Voice Broadcast Call

ID
: Group ID

### 1.24.4 vgc ID

Command

```
vgc ID
```

Parameters

vgc
: Configure Voice Group Call

ID
: Group ID

## 1.25

### 1.25.1 cell POINT_CODE <0-65535>

Command

```
cell POINT_CODE <0-65535>
```

Parameters

cell
: Add cell to current group

POINT_CODE
: Point code of MSC

<0-65535>
: Cell ID of BTS

### 1.25.2 mute-talker

Command

```
mute-talker
```

Parameters

mute-talker
: Mute talker's downlink

### 1.25.3 no cell POINT_CODE [<0-65535>]

Command

```
no cell POINT_CODE [<0-65535>]
```

Parameters

no
: Negate a command or set its defaults

cell
: Remove BSS/cell from current group

POINT_CODE
: Point code of MSC

[<0-65535>]
: Cell ID of BTS

### 1.25.4 no timeout

Command

```
no timeout
```

Parameters

no
: Negate a command or set its defaults

timeout
: Unset inactivity timer

### 1.25.5 timeout <1-65535>

Command

```
timeout <1-65535>
```

Parameters

timeout
: Set inactivity timer

<1-65535>
: Timeout in seconds

### 1.25.6 unmute-talker

Command

```
unmute-talker
```

Parameters

unmute-talker
: Unmute talker's downlink

## 1.26

### 1.26.1 cell POINT_CODE <0-65535>

Command

```
cell POINT_CODE <0-65535>
```

Parameters

cell
: Add cell to current group

POINT_CODE
: Point code of MSC

<0-65535>
: Cell ID of BTS

### 1.26.2 mute-talker

Command

```
mute-talker
```

Parameters

mute-talker
: Mute talker's downlink

### 1.26.3 no cell POINT_CODE [<0-65535>]

Command

```
no cell POINT_CODE [<0-65535>]
```

Parameters

no
: Negate a command or set its defaults

cell
: Remove BSS/cell from current group

POINT_CODE
: Point code of MSC

[<0-65535>]
: Cell ID of BTS

### 1.26.4 unmute-talker

Command

```
unmute-talker
```

Parameters

unmute-talker
: Unmute talker's downlink