

## **OsmoMGW VTY Reference**

Copyright © 2017

This work is copyright by sysmocom - s.f.m.c. GmbH. All rights reserved.

<b>COLLABORATORS</b>
----------------------

	<i>TITLE :</i> OsmoMGW VTY Reference		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		September 21, 2024	

<b>REVISION HISTORY</b>
-------------------------

NUMBER	DATE	DESCRIPTION	NAME
DRAFT	unknown	Automatically Generated VTY Reference	pm

# Contents

<b>1</b>	<b>VTY reference</b>	<b>1</b>
1.1	Common Commands	1
1.1.1	end	2
1.1.2	exit	2
1.1.3	help	2
1.1.4	list [with-flags]	2
1.1.5	show running-config	3
1.1.6	show vty-attributes	3
1.1.7	show vty-attributes (application library global)	3
1.1.8	write	4
1.1.9	write file [PATH]	4
1.1.10	write memory	4
1.1.11	write terminal	5
1.2	view	5
1.2.1	enable [expert-mode]	5
1.2.2	logging color (0 1)	5
1.2.3	logging disable	6
1.2.4	logging enable	6
1.2.5	logging filter all (0 1)	6
1.2.6	logging level (rtple1 osmux lglobal lapd linpl mux lmi lmi lms lctrl lgtpl st...	7
1.2.7	logging level force-all (debug info notice error fatal)	9
1.2.8	logging level set-all (debug info notice error fatal)	10
1.2.9	logging print category (0 1)	10
1.2.10	logging print category-hex (0 1)	11
1.2.11	logging print extended-timestamp (0 1)	11
1.2.12	logging print file (0 1 basename) [last]	12
1.2.13	logging print level (0 1)	12
1.2.14	logging print thread-id (0 1)	13
1.2.15	logging set-log-mask MASK	13
1.2.16	logging timestamp (0 1)	14

1.2.17	logp (rtple1 osmux global lapd linp mux mill mibl sms lctrl lgtp stats lgsup...	14
1.2.18	no logging level force-all	16
1.2.19	show alarms	17
1.2.20	show asciidoc counters	17
1.2.21	show cpu-sched threads	17
1.2.22	show e1_driver	18
1.2.23	show e1_line [<0-255>] [stats]	18
1.2.24	show e1_timeslot [<0-255>] [<0-31>]	18
1.2.25	show history	19
1.2.26	show logging vty	19
1.2.27	show mgcp [stats]	19
1.2.28	show mgcp active	20
1.2.29	show mgcp endpoint NAME	20
1.2.30	show mgcp trunk <0-64> endpoint NAME	20
1.2.31	show online-help	21
1.2.32	show pid	21
1.2.33	show rate-counters [skip-zero]	22
1.2.34	show stats [skip-zero]	22
1.2.35	show stats level (global peer subscriber) [skip-zero]	22
1.2.36	show talloc-context (application global all) (full brief DEPTH)	23
1.2.37	show talloc-context (application global all) (full brief DEPTH) filter REGEXP	24
1.2.38	show talloc-context (application global all) (full brief DEPTH) tree ADDRESS	24
1.2.39	show uptime	25
1.2.40	show version	25
1.2.41	terminal length <0-512>	26
1.2.42	terminal no length	26
1.2.43	who	26
1.3	enable	27
1.3.1	configure [terminal]	27
1.3.2	copy running-config startup-config	27
1.3.3	disable	27
1.3.4	free-endpoint <0-64> NUMBER	28
1.3.5	logging color (0 1)	28
1.3.6	logging disable	28
1.3.7	logging enable	29
1.3.8	logging filter all (0 1)	29
1.3.9	logging level (rtple1 osmux global lapd linp mux mill mibl sms lctrl lgtp lst...	30
1.3.10	logging level force-all (debug info notice error fatal)	32
1.3.11	logging level set-all (debug info notice error fatal)	32

1.3.12	logging print category (01)	33
1.3.13	logging print category-hex (01)	34
1.3.14	logging print extended-timestamp (01)	34
1.3.15	logging print file (01 basename) [last]	35
1.3.16	logging print level (01)	35
1.3.17	logging print thread-id (01)	36
1.3.18	logging set-log-mask MASK	36
1.3.19	logging timestamp (01)	37
1.3.20	logp (rtple1losmuxllgloballlapdllinpllmuxllmillmibllsmsllctrlllgtplllstatsllgsup...	37
1.3.21	loop-endpoint <0-64> NAME (01)	39
1.3.22	no logging level force-all	40
1.3.23	reset-all-endpoints	40
1.3.24	reset-endpoint <0-64> NUMBER	40
1.3.25	show alarms	41
1.3.26	show asciidoc counters	41
1.3.27	show cpu-sched threads	41
1.3.28	show e1_driver	42
1.3.29	show e1_line [<0-255>] [stats]	42
1.3.30	show e1_timeslot [<0-255>] [<0-31>]	42
1.3.31	show history	43
1.3.32	show logging vty	43
1.3.33	show mgcp [stats]	43
1.3.34	show mgcp active	44
1.3.35	show mgcp endpoint NAME	44
1.3.36	show mgcp trunk <0-64> endpoint NAME	44
1.3.37	show online-help	45
1.3.38	show rate-counters [skip-zero]	45
1.3.39	show startup-config	46
1.3.40	show stats [skip-zero]	46
1.3.41	show stats level (global peer subscriber) [skip-zero]	46
1.3.42	show talloc-context (application global all) (full brief DEPTH)	47
1.3.43	show talloc-context (application global all) (full brief DEPTH) filter REGEXP	48
1.3.44	show talloc-context (application global all) (full brief DEPTH) tree ADDRESS	48
1.3.45	show version	49
1.3.46	shutdown	49
1.3.47	stats report	50
1.3.48	stats reset	50
1.3.49	tap-rtp <0-64> ENDPOINT CONN (in out) (A.B.C.D X:X::X:X) <0-65534>	50
1.3.50	terminal length <0-512>	51

1.3.51	terminal monitor	51
1.3.52	terminal no length	52
1.3.53	terminal no monitor	52
1.3.54	who	52
1.4	config	53
1.4.1	banner motd default	53
1.4.2	banner motd file [FILE]	53
1.4.3	cpu-sched	53
1.4.4	ctrl	54
1.4.5	e1_input	54
1.4.6	enable password (8l) WORD	54
1.4.7	enable password LINE	55
1.4.8	hostname WORD	55
1.4.9	line vty	55
1.4.10	log alarms <2-32700>	56
1.4.11	log file FILENAME [blocking-io]	56
1.4.12	log gsmtap [HOSTNAME]	56
1.4.13	log stderr [blocking-io]	57
1.4.14	log syslog (authpriv cron daemon ftp lpr mail news user uucp)	57
1.4.15	log syslog local <0-7>	58
1.4.16	log systemd-journal [raw]	58
1.4.17	mgcp	58
1.4.18	no banner motd	59
1.4.19	no enable password	59
1.4.20	no hostname [HOSTNAME]	59
1.4.21	no log alarms	60
1.4.22	no log file FILENAME	60
1.4.23	no log gsmtap [HOSTNAME]	60
1.4.24	no log stderr	61
1.4.25	no log syslog	61
1.4.26	no log systemd-journal	61
1.4.27	no service advanced-vty	62
1.4.28	no service terminal-length [<0-512>]	62
1.4.29	no stats reporter log [NAME]	62
1.4.30	no stats reporter statsd [NAME]	63
1.4.31	password (8l) WORD	63
1.4.32	password LINE	64
1.4.33	service advanced-vty	64
1.4.34	service terminal-length <0-512>	64

1.4.35	show history	65
1.4.36	stats interval <0-65535>	65
1.4.37	stats reporter log [NAME]	65
1.4.38	stats reporter statsd [NAME]	66
1.4.39	stats-tcp batch-size <1-65535>	66
1.4.40	stats-tcp interval <0-65535>	66
1.5	config-log	67
1.5.1	logging color (01)	67
1.5.2	logging filter all (01)	67
1.5.3	logging level (rtple1losmuxllgloballllapdlinpllmuxllmillmibllsmsllctrlllgtpplst...	68
1.5.4	logging level force-all (debuglinfolnoticeerrorlfatal)	70
1.5.5	logging level set-all (debuglinfolnoticeerrorlfatal)	70
1.5.6	logging print category (01)	71
1.5.7	logging print category-hex (01)	72
1.5.8	logging print extended-timestamp (01)	72
1.5.9	logging print file (01 basename) [last]	73
1.5.10	logging print level (01)	73
1.5.11	logging print thread-id (01)	74
1.5.12	logging timestamp (01)	74
1.5.13	no logging level force-all	75
1.6	config-stats	75
1.6.1	disable	75
1.6.2	enable	75
1.6.3	flush-period <0-65535>	76
1.6.4	level (global peer subscriber)	76
1.6.5	local-ip ADDR	76
1.6.6	mtu <100-65535>	77
1.6.7	no local-ip	77
1.6.8	no mtu	77
1.6.9	no prefix	78
1.6.10	prefix PREFIX	78
1.6.11	remote-ip ADDR	78
1.6.12	remote-port <1-65535>	79
1.7	config-line	79
1.7.1	bind A.B.C.D [<0-65535>]	79
1.7.2	login	79
1.7.3	no login	80
1.8	config-e1_input	80
1.8.1	e1_line <0-255> connect-timeout <0-60>	80



1.8.2	e1_line <0-255> driver (misdn misdn_lapd dahdile1 dlipalunixsocket) . . . . .	81
1.8.3	e1_line <0-255> ipa-keepalive <1-300> <1-300> . . . . .	81
1.8.4	e1_line <0-255> keepalive . . . . .	82
1.8.5	e1_line <0-255> keepalive <1-300> <1-20> <1-300> . . . . .	82
1.8.6	e1_line <0-255> name .LINE . . . . .	83
1.8.7	e1_line <0-255> pcap .FILE . . . . .	84
1.8.8	e1_line <0-255> port <0-255> . . . . .	84
1.8.9	e1_line <0-255> socket .SOCKET . . . . .	85
1.8.10	ipa bind A.B.C.D . . . . .	85
1.8.11	ipa ip-dscp (oml rs ) <0-63> . . . . .	86
1.8.12	ipa socket-priority (oml rs ) <0-255> . . . . .	86
1.8.13	no e1_line <0-255> ipa-keepalive . . . . .	87
1.8.14	no e1_line <0-255> keepalive . . . . .	87
1.8.15	no e1_line <0-255> pcap . . . . .	88
1.9	config-ctrl . . . . .	88
1.9.1	bind A.B.C.D [<0-65535>] . . . . .	88
1.10	config-cpu-sched . . . . .	89
1.10.1	cpu-affinity (self all <0-4294967295> THREADNAME) CPUHEXMASK [delay] . . . . .	89
1.10.2	policy rr <1-32> . . . . .	89
1.11	config-mgcp . . . . .	90
1.11.1	bind ip (A.B.C.D X:X::X:X) . . . . .	90
1.11.2	bind port <0-65534> . . . . .	90
1.11.3	call-agent ip (A.B.C.D X:X::X:X) . . . . .	91
1.11.4	conn-timeout <0-65534> . . . . .	91
1.11.5	domain NAME . . . . .	91
1.11.6	force-realloc (0 1) . . . . .	92
1.11.7	local ip (A.B.C.D X:X::X:X) . . . . .	92
1.11.8	no rtp-omit . . . . .	93
1.11.9	no rtp bind-ip . . . . .	93
1.11.10	no rtp bind-ip-v6 . . . . .	94
1.11.11	no rtp force-ptime . . . . .	94
1.11.12	no rtp ip-probing . . . . .	95
1.11.13	no rtp keep-alive . . . . .	95
1.11.14	no rtp-patch . . . . .	96
1.11.15	no rtp-patch rfc5993hr . . . . .	96
1.11.16	no rtp-patch ssrc . . . . .	97
1.11.17	no rtp-patch timestamp . . . . .	97
1.11.18	no sdp audio-payload send-name . . . . .	98
1.11.19	no sdp audio-payload send-ptime . . . . .	98

1.11.20 number endpoints <1-65534>	99
1.11.21 osmux (onoffonly)	99
1.11.22 osmux batch-factor <1-8>	99
1.11.23 osmux batch-size <1-65535>	100
1.11.24 osmux bind-ip A.B.C.D	100
1.11.25 osmux bind-ip-v6 X:X::X:X	100
1.11.26 osmux dummy (onoff)	101
1.11.27 osmux peer-behind-nat (onoff)	101
1.11.28 osmux port <1-65535>	101
1.11.29 rtcp-omit	102
1.11.30 rtp bind-ip A.B.C.D	102
1.11.31 rtp bind-ip-v6 X:X::X:X	102
1.11.32 rtp force-ptime (10 20 40)	103
1.11.33 rtp ip-dscp <0-63>	104
1.11.34 rtp ip-probing	104
1.11.35 rtp keep-alive <1-120>	105
1.11.36 rtp keep-alive once	105
1.11.37 rtp port-range <1024-65534> <1025-65535>	106
1.11.38 rtp socket-priority <0-255>	106
1.11.39 rtp-accept-all (0 1)	107
1.11.40 rtp-patch rfc5993hr	107
1.11.41 rtp-patch ssrc	108
1.11.42 rtp-patch timestamp	108
1.11.43 sdp audio-payload send-name	108
1.11.44 sdp audio-payload send-ptime	109
1.11.45 trunk <0-64>	109
1.12 config-mgcp-trunk	110
1.12.1 force-realloc (0 1)	110
1.12.2 line <0-255>	110
1.12.3 no rtcp-omit	110
1.12.4 no rtp keep-alive	111
1.12.5 no rtp-patch	111
1.12.6 no rtp-patch rfc5993hr	112
1.12.7 no rtp-patch ssrc	112
1.12.8 no rtp-patch timestamp	113
1.12.9 no sdp audio-payload send-name	113
1.12.10 no sdp audio-payload send-ptime	114
1.12.11 rtcp-omit	114
1.12.12 rtp keep-alive <1-120>	115

1.12.13 rtp keep-alive once . . . . . 115

1.12.14 rtp-accept-all (0|1) . . . . . 116

1.12.15 rtp-patch rfc5993hr . . . . . 116

1.12.16 rtp-patch ssrc . . . . . 117

1.12.17 rtp-patch timestamp . . . . . 117

1.12.18 sdp audio-payload send-name . . . . . 117

1.12.19 sdp audio-payload send-ptime . . . . . 118

# List of Tables

1.1	VTY Parameter Patterns . . . . .	1
1.2	VTY port numbers . . . . .	1

## 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 level (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lst...

Command

```
logging level (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats| ↵
               lgsup|loap|lss7|lscdp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lms|lbssgp|lmsdata|lmsignal| ↵
               liuup|lpfcp|lcsn1|lio) (debug|info|notice|error|fatal)
```

Parameters

logging

Configure logging

level

Set the log level for a specified category

rtp

RTP stream handling

e1

E1 line handling

osmux

Osmux (Osmocom RTP multiplexing)

lglobal

Library-internal global log family

llapd

LAPD in libosmogsm

linp

A-bis Input Subsystem

lmux

A-bis B-Subchannel TRAU Frame Multiplex

lmi

A-bis Input Driver for Signalling

lmib

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

lsms

Layer3 Short Message Service (SMS)

---

lctrl  
Control Interface

lgtplib  
GPRS GTP library

lstats  
Statistics messages and logging

lgsub  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lndata  
GPRS NS layer data PDU

lnsignal  
GPRS NS layer signal PDU

liuup  
Iu UP layer

lpfcp  
libosmo-pfcp Packet Forwarding Control Protocol

lcsn1  
libosmo-csn1 Concrete Syntax Notation 1 codec

---

lio

libosmcore IO Subsystem

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.2.7 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

---

### 1.2.8 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

### 1.2.9 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

---

### 1.2.10 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>')

### 1.2.11 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

---

### 1.2.12 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.

### 1.2.13 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

---



### 1.2.14 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

### 1.2.15 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

### 1.2.16 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

### 1.2.17 logp (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup...

#### Command

```
logp (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap| ↵
    lss7|lscdp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lms|lbssgp|lmsdata|lmsignal|liup|lpfcp| ↵
    lcsn1|lio) (debug|info|notice|error|fatal) .LOGMESSAGE
```

#### Parameters

##### logp

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

##### rtp

RTP stream handling

##### e1

E1 line handling

##### osmux

Osmux (Osmocom RTP multiplexing)

##### lglobal

Library-internal global log family

##### llapd

LAPD in libosmogsm

##### linp

A-bis Input Subsystem

---

lmux  
A-bis B-Subchannel TRAU Frame Multiplex

lmi  
A-bis Input Driver for Signalling

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

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

lstats  
Statistics messages and logging

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lndata  
GPRS NS layer data PDU

---

Inssignal

GPRS NS layer signal PDU

Iuup

Iu UP layer

lpfcp

libosmo-pfcp Packet Forwarding Control Protocol

lcsn1

libosmo-csn1 Concrete Syntax Notation 1 codec

lio

libosmocore IO Subsystem

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

.LOGMESSAGE

Arbitrary message to log on given category and log level

### 1.2.18 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>'

### 1.2.19 show alarms

#### Command

```
show alarms
```

#### Parameters

##### show

Show running system information

##### alarms

Show current logging configuration

### 1.2.20 show asciidoc counters

#### Command

```
show asciidoc counters
```

#### Parameters

##### show

Show running system information

##### asciidoc

Asciidoc generation

##### counters

Generate table of all registered counters

### 1.2.21 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)

---

### 1.2.22 show e1\_driver

#### Command

```
show e1_driver
```

#### Parameters

show

Show running system information

e1\_driver

Display information about available E1 drivers

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

#### Command

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

#### Parameters

show

Show running system information

e1\_line

Display information about a E1 line

[<0-255>]

E1 Line Number

[stats]

Include statistics

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

#### Command

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

#### Parameters

show

Show running system information

e1\_timeslot

Display information about a E1 timeslot

[<0-255>]

E1 Line Number

[<0-31>]

E1 Timeslot Number

### 1.2.25 show history

#### Command

```
show history
```

#### Parameters

##### show

Show running system information

##### history

Display the session command history

### 1.2.26 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

### 1.2.27 show mgcp [stats]

#### Command

```
show mgcp [stats]
```

#### Parameters

##### show

Show running system information

##### mgcp

Display information about the MGCP Media Gateway

##### [stats]

Include statistics

---

### 1.2.28 show mgcp active

#### Command

```
show mgcp active
```

#### Parameters

##### show

Show running system information

##### mgcp

Display information about the MGCP Media Gateway

##### active

Show only endpoints with active connections

### 1.2.29 show mgcp endpoint NAME

#### Command

```
show mgcp endpoint NAME
```

#### Parameters

##### show

Show running system information

##### mgcp

Display information about the MGCP Media Gateway

##### endpoint

Display information about an endpoint

##### NAME

The name of the endpoint

### 1.2.30 show mgcp trunk <0-64> endpoint NAME

#### Command

```
show mgcp trunk <0-64> endpoint NAME
```

#### Parameters

##### show

Show running system information

---



mgcp

Display information about the MGCP Media Gateway

trunk

Display information about a trunk

<0-64>

Trunk number

endpoint

Display information about an endpoint

NAME

The name of the endpoint

### 1.2.31 show online-help

Command

```
show online-help
```

Parameters

show

Show running system information

online-help

Online help

### 1.2.32 show pid

Command

```
show pid
```

Parameters

show

Show running system information

pid

Displays the process ID

### 1.2.33 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

### 1.2.34 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

### 1.2.35 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

### 1.2.36 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

### 1.2.37 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

### 1.2.38 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)

### 1.2.39 show uptime

Command

```
show uptime
```

Parameters

show

Show running system information

uptime

Displays how long the program has been running

### 1.2.40 show version

Command

```
show version
```

Parameters

show

Show running system information

version

Displays program version

### 1.2.41 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)

### 1.2.42 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

### 1.2.43 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 configure [terminal]

Command

```
configure [terminal]
```

Parameters

configure

Configuration from vty interface

[terminal]

Configuration terminal

### 1.3.2 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)

### 1.3.3 disable

Command

```
disable
```

Parameters

disable

Turn off privileged mode command

### 1.3.4 free-endpoint <0-64> NUMBER

#### Command

```
free-endpoint <0-64> NUMBER
```

#### Parameters

##### free-endpoint

Free the given endpoint

##### <0-64>

Trunk number

##### NUMBER

Endpoint number in hex.

### 1.3.5 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

### 1.3.6 logging disable

#### Command

```
logging disable
```

#### Parameters

##### logging

Configure logging

##### disable

Disables logging to this vty

---



### 1.3.7 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

### 1.3.8 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

---

### 1.3.9 logging level (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lst...

#### Command

```
logging level (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats| ↵
             lgsup|loap|lss7|lsccp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lndata|lnsignal| ↵
             liuup|lpfcp|lcsn1|lio) (debug|info|notice|error|fatal)
```

#### Parameters

##### logging

Configure logging

##### level

Set the log level for a specified category

##### rtp

RTP stream handling

##### e1

E1 line handling

##### osmux

Osmux (Osmocom RTP multiplexing)

##### lglobal

Library-internal global log family

##### llapd

LAPD in libosmogsm

##### linp

A-bis Input Subsystem

##### lmux

A-bis B-Subchannel TRAU Frame Multiplex

##### lmi

A-bis Input Driver for Signalling

##### lmib

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

##### lsms

Layer3 Short Message Service (SMS)

##### lctrl

Control Interface

##### lgtp

GPRS GTP library

##### lstats

Statistics messages and logging

---

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lnsdata  
GPRS NS layer data PDU

lnssignal  
GPRS NS layer signal PDU

liuup  
Iu UP layer

lpfcp  
libosmo-pfcp Packet Forwarding Control Protocol

lcsn1  
libosmo-csn1 Concrete Syntax Notation 1 codec

lio  
libosmocore IO Subsystem

debug  
Log debug messages and higher levels

info  
Log informational messages and higher levels

---

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

### 1.3.10 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

### 1.3.11 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

### 1.3.12 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

---

### 1.3.13 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>')

### 1.3.14 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

---

### 1.3.15 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.

### 1.3.16 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

---

### 1.3.17 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

### 1.3.18 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



### 1.3.19 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

### 1.3.20 logp (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup...

#### Command

```
logp (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats|lgsup|loap| ↵
    lss7|lscdp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lms|lbssgp|lmsdata|lmsignal|liuup|lpfcp| ↵
    lcsn1|lio) (debug|info|notice|error|fatal) .LOGMESSAGE
```

#### Parameters

##### logp

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

##### rtp

RTP stream handling

##### e1

E1 line handling

##### osmux

Osmux (Osmocom RTP multiplexing)

##### lglobal

Library-internal global log family

##### llapd

LAPD in libosmogsm

##### linp

A-bis Input Subsystem

---

lmux  
A-bis B-Subchannel TRAU Frame Multiplex

lmi  
A-bis Input Driver for Signalling

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

lsms  
Layer3 Short Message Service (SMS)

lctrl  
Control Interface

lgtp  
GPRS GTP library

lstats  
Statistics messages and logging

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lndata  
GPRS NS layer data PDU

---

Inssignal

GPRS NS layer signal PDU

liuup

Iu UP layer

lpfcp

libosmo-pfcp Packet Forwarding Control Protocol

lcsn1

libosmo-csn1 Concrete Syntax Notation 1 codec

lio

libosmocore IO Subsystem

debug

Log debug messages and higher levels

info

Log informational messages and higher levels

notice

Log noticeable messages and higher levels

error

Log error messages and higher levels

fatal

Log only fatal messages

.LOGMESSAGE

Arbitrary message to log on given category and log level

### 1.3.21 loop-endpoint <0-64> NAME (0|1)

Command

```
loop-endpoint <0-64> NAME (0|1)
```

Parameters

loop-endpoint

Loop a given endpoint

<0-64>

Trunk number

NAME

The name in hex of the endpoint

0

Disable the loop

1

Enable the loop

### 1.3.22 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>'

### 1.3.23 reset-all-endpoints

#### Command

```
reset-all-endpoints
```

#### Parameters

reset-all-endpoints

Reset all endpoints

### 1.3.24 reset-endpoint <0-64> NUMBER

#### Command

```
reset-endpoint <0-64> NUMBER
```

#### Parameters

reset-endpoint

Reset the given endpoint

<0-64>

Trunk number

NUMBER

Endpoint number in hex.

---

### 1.3.25 show alarms

#### Command

```
show alarms
```

#### Parameters

##### show

Show running system information

##### alarms

Show current logging configuration

### 1.3.26 show asciidoc counters

#### Command

```
show asciidoc counters
```

#### Parameters

##### show

Show running system information

##### asciidoc

Asciidoc generation

##### counters

Generate table of all registered counters

### 1.3.27 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)

---

### 1.3.28 show e1\_driver

#### Command

```
show e1_driver
```

#### Parameters

show

Show running system information

e1\_driver

Display information about available E1 drivers

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

#### Command

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

#### Parameters

show

Show running system information

e1\_line

Display information about a E1 line

[<0-255>]

E1 Line Number

[stats]

Include statistics

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

#### Command

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

#### Parameters

show

Show running system information

e1\_timeslot

Display information about a E1 timeslot

[<0-255>]

E1 Line Number

[<0-31>]

E1 Timeslot Number

### 1.3.31 show history

#### Command

```
show history
```

#### Parameters

##### show

Show running system information

##### history

Display the session command history

### 1.3.32 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

### 1.3.33 show mgcp [stats]

#### Command

```
show mgcp [stats]
```

#### Parameters

##### show

Show running system information

##### mgcp

Display information about the MGCP Media Gateway

##### [stats]

Include statistics

---

### 1.3.34 show mgcp active

#### Command

```
show mgcp active
```

#### Parameters

##### show

Show running system information

##### mgcp

Display information about the MGCP Media Gateway

##### active

Show only endpoints with active connections

### 1.3.35 show mgcp endpoint NAME

#### Command

```
show mgcp endpoint NAME
```

#### Parameters

##### show

Show running system information

##### mgcp

Display information about the MGCP Media Gateway

##### endpoint

Display information about an endpoint

##### NAME

The name of the endpoint

### 1.3.36 show mgcp trunk <0-64> endpoint NAME

#### Command

```
show mgcp trunk <0-64> endpoint NAME
```

#### Parameters

##### show

Show running system information

---



mgcp

Display information about the MGCP Media Gateway

trunk

Display information about a trunk

<0-64>

Trunk number

endpoint

Display information about an endpoint

NAME

The name of the endpoint

### 1.3.37 show online-help

Command

```
show online-help
```

Parameters

show

Show running system information

online-help

Online help

### 1.3.38 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

### 1.3.39 show startup-config

#### Command

```
show startup-config
```

#### Parameters

##### show

Show running system information

##### startup-config

Contentes of startup configuration

### 1.3.40 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

### 1.3.41 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

### 1.3.42 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

### 1.3.43 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

### 1.3.44 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)

### 1.3.45 show version

Command

```
show version
```

Parameters

show

Show running system information

version

Displays program version

### 1.3.46 shutdown

Command

```
shutdown
```

Parameters

shutdown

Request a shutdown of the program

### 1.3.47 stats report

#### Command

```
stats report
```

#### Parameters

stats

Stats related commands

report

Manurally trigger reporting of stats

### 1.3.48 stats reset

#### Command

```
stats reset
```

#### Parameters

stats

Stats related commands

reset

Reset all rate counter stats

### 1.3.49 tap-rtp <0-64> ENDPOINT CONN (in|out) (A.B.C.D|X:X::X:X) <0-65534>

#### Command

```
tap-rtp <0-64> ENDPOINT CONN (in|out) (A.B.C.D|X:X::X:X) <0-65534>
```

#### Parameters

tap-rtp

Forward data on endpoint to a different system

<0-64>

Trunk number

ENDPOINT

The endpoint in hex

CONN

The connection id in hex

---

in

Forward incoming data

out

Forward leaving data

A.B.C.D

Destination IPv4 of the data

X:X::X:X

Destination IPv6 of the data

<0-65534>

Destination port

### 1.3.50 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)

### 1.3.51 terminal monitor

Command

```
terminal monitor
```

Parameters

terminal

Set terminal line parameters

monitor

Copy debug output to the current terminal line

### 1.3.52 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

### 1.3.53 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

### 1.3.54 who

#### Command

```
who
```

#### Parameters

##### who

Display who is on vty

---



## 1.4 config

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

### 1.4.1 banner motd default

#### Command

```
banner motd default
```

#### Parameters

##### banner

Set banner string

##### motd

Strings for motd

##### default

Default string

### 1.4.2 banner motd file [FILE]

#### Command

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

#### Parameters

##### banner

Set banner

##### motd

Banner for motd

##### file

Banner from a file

##### [FILE]

Filename

### 1.4.3 cpu-sched

#### Command

```
cpu-sched
```

#### Parameters

##### cpu-sched

Configure CPU Scheduler related settings

---

#### 1.4.4 ctrl

##### Command

```
ctrl
```

##### Parameters

ctrl

Configure the Control Interface

#### 1.4.5 e1\_input

##### Command

```
e1_input
```

##### Global attributes

Flag: !

This command applies immediately

##### Parameters

e1\_input

Configure E1/T1/J1 TDM input

#### 1.4.6 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

### 1.4.7 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

### 1.4.8 hostname WORD

#### Command

```
hostname WORD
```

#### Parameters

##### hostname

Set system's network name

##### WORD

This system's network name

### 1.4.9 line vty

#### Command

```
line vty
```

#### Parameters

##### line

Configure a terminal line

##### vty

Virtual terminal

### 1.4.10 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

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

#### Command

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

#### Parameters

log

Configure logging sub-system

file

Logging to text file

FILENAME

Filename

[blocking-io]

Use blocking, synchronous I/O

### 1.4.12 log gsmtap [HOSTNAME]

#### Command

```
log gsmtap [HOSTNAME]
```

#### Parameters

log

Configure logging sub-system

gsmtap

Logging via GSMTAP

[HOSTNAME]

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

---

### 1.4.13 log stderr [blocking-io]

#### Command

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

#### Parameters

log

Configure logging sub-system

stderr

Logging via STDERR of the process

[blocking-io]

Use blocking, synchronous I/O

### 1.4.14 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

---

### 1.4.15 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

### 1.4.16 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

### 1.4.17 mgcp

#### Command

```
mgcp
```

#### Parameters

mgcp

Configure the MGCP

---

### 1.4.18 no banner motd

#### Command

```
no banner motd
```

#### Parameters

no

Negate a command or set its defaults

banner

Set banner string

motd

Strings for motd

### 1.4.19 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

### 1.4.20 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

---

### 1.4.21 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

### 1.4.22 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

### 1.4.23 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)

---



### 1.4.24 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

### 1.4.25 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

### 1.4.26 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

---

### 1.4.27 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

### 1.4.28 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)

### 1.4.29 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

### 1.4.30 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

### 1.4.31 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

### 1.4.32 password LINE

#### Command

```
password LINE
```

#### Parameters

##### password

Assign the terminal connection password

##### LINE

The UNENCRYPTED (cleartext) line password

### 1.4.33 service advanced-vty

#### Command

```
service advanced-vty
```

#### Parameters

##### service

Set up miscellaneous service

##### advanced-vty

Enable advanced mode vty interface

### 1.4.34 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)

---

### 1.4.35 show history

#### Command

```
show history
```

#### Parameters

##### show

Show running system information

##### history

Display the session command history

### 1.4.36 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)

### 1.4.37 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

---

### 1.4.38 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

### 1.4.39 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

### 1.4.40 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 level (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lst...

#### Command

```
logging level (rtp|e1|osmux|lglobal|llapd|linp|lmux|lmi|lmib|lsms|lctrl|lgtp|lstats| ↵
             lgsup|loap|lss7|lsccp|lsua|lm3ua|lmgcp|ljibuf|lrspro|lns|lbssgp|lndata|lnsignal| ↵
             liuup|lpfcp|lcsn1|lio) (debug|info|notice|error|fatal)
```

#### Parameters

##### logging

Configure logging

##### level

Set the log level for a specified category

##### rtp

RTP stream handling

##### e1

E1 line handling

##### osmux

Osmux (Osmocom RTP multiplexing)

##### lglobal

Library-internal global log family

##### llapd

LAPD in libosmogsm

##### linp

A-bis Input Subsystem

##### lmux

A-bis B-Subchannel TRAU Frame Multiplex

##### lmi

A-bis Input Driver for Signalling

##### lmib

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

##### lsms

Layer3 Short Message Service (SMS)

##### lctrl

Control Interface

##### lgtp

GPRS GTP library

##### lstats

Statistics messages and logging



---

lgsup  
Generic Subscriber Update Protocol

loap  
Osmocom Authentication Protocol

lss7  
libosmo-sigtran Signalling System 7

lsccp  
libosmo-sigtran SCCP Implementation

lsua  
libosmo-sigtran SCCP User Adaptation

lm3ua  
libosmo-sigtran MTP3 User Adaptation

lmgcp  
libosmo-mgcp Media Gateway Control Protocol

ljibuf  
libosmo-netif Jitter Buffer

lrspro  
Remote SIM protocol

lns  
GPRS NS layer

lbssgp  
GPRS BSSGP layer

lnsdata  
GPRS NS layer data PDU

lnssignal  
GPRS NS layer signal PDU

liuup  
Iu UP layer

lpfcp  
libosmo-pfcp Packet Forwarding Control Protocol

lcsn1  
libosmo-csn1 Concrete Syntax Notation 1 codec

lio  
libosmocore IO Subsystem

debug  
Log debug messages and higher levels

info  
Log informational messages and higher levels

---

**notice**

Log noticeable messages and higher levels

**error**

Log error messages and higher levels

**fatal**

Log only fatal messages

### 1.5.4 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

### 1.5.5 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

### 1.5.6 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

---

### 1.5.7 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>')

### 1.5.8 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

---

### 1.5.9 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.

### 1.5.10 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

---

### 1.5.11 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

### 1.5.12 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

### 1.5.13 no logging level force-all

#### Command

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

#### Parameters

no

Negate a command or set its defaults

logging

Configure logging

level

Set the log level for a specified category

force-all

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

## 1.6 config-stats

### 1.6.1 disable

#### Command

```
disable
```

#### Parameters

disable

Disable the reporter

### 1.6.2 enable

#### Command

```
enable
```

#### Parameters

enable

Enable the reporter

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

#### Command

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

#### Parameters

flush-period

Configure stats sub-system

<0-65535>

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

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

#### Command

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

#### Parameters

level

Set the maximum group level

global

Report global groups only

peer

Report global and network peer related groups

subscriber

Report global, peer, and subscriber groups

### 1.6.5 local-ip ADDR

#### Command

```
local-ip ADDR
```

#### Parameters

local-ip

Set the IP address to which we bind locally

ADDR

IP Address

---



### 1.6.6 mtu <100-65535>

#### Command

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

#### Parameters

mtu

Set the maximum packet size

<100-65535>

Size in byte

### 1.6.7 no local-ip

#### Command

```
no local-ip
```

#### Parameters

no

Negate a command or set its defaults

local-ip

Set the IP address to which we bind locally

### 1.6.8 no mtu

#### Command

```
no mtu
```

#### Parameters

no

Negate a command or set its defaults

mtu

Set the maximum packet size

### 1.6.9 no prefix

#### Command

```
no prefix
```

#### Parameters

no

Negate a command or set its defaults

prefix

Set the item name prefix

### 1.6.10 prefix PREFIX

#### Command

```
prefix PREFIX
```

#### Parameters

prefix

Set the item name prefix

PREFIX

The prefix string

### 1.6.11 remote-ip ADDR

#### Command

```
remote-ip ADDR
```

#### Parameters

remote-ip

Set the remote IP address to which we connect

ADDR

IP Address

## 1.6.12 remote-port <1-65535>

### Command

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

### Parameters

#### remote-port

Set the remote port to which we connect

#### <1-65535>

Remote port number

## 1.7 config-line

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

### Command

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

### Parameters

#### bind

Accept VTY telnet connections on local interface

#### A.B.C.D

Local interface IP address (default: 127.0.0.1)

#### [<0-65535>]

Local TCP port number

### 1.7.2 login

### Command

```
login
```

### Parameters

#### login

Enable password checking

### 1.7.3 no login

#### Command

```
no login
```

#### Parameters

no

Negate a command or set its defaults

login

Enable password checking

## 1.8 config-e1\_input

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

#### Command

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

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

connect-timeout

Set connect timeout

<0-60>

Connect timeout in seconds (0 to disable)

---

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

#### Command

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

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

driver

Set driver for this line

misdn

mISDN supported E1 Card (kernel LAPD)

misdn\_lapd

mISDN supported E1 Card (userspace LAPD)

dahdi

DAHDI supported E1/T1/J1 Card

e1d

osmo-e1d supported E1 interface

ipa

IPA TCP/IP input

unixsocket

Unix socket input

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

#### Command

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

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

ipa-keepalive

Enable IPA PING/PONG keep-alive

<1-300>

Idle interval in seconds before probes are sent

<1-300>

Time to wait for PONG response

#### 1.8.4 e1\_line <0-255> keepalive

Command

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

Library specific attributes

Flag: I

This command applies on IPA link establishment

Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

keepalive

Enable keep-alive probing

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

Command

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

Library specific attributes

Flag: I

This command applies on IPA link establishment

Parameters

---

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

keepalive

Enable keep-alive probing

<1-300>

Idle interval in seconds before probes are sent

<1-20>

Number of probes to sent

<1-300>

Delay between probe packets in seconds

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

Command

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

Global attributes

Flag: !

This command applies immediately

Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

name

Set name for this line

.LINE

Human readable name

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

#### Command

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

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

pcap

Setup a pcap recording of E1 traffic for line

.FILE

Filename to save the packets to

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

#### Command

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

#### Library specific attributes

Flag: L

This command applies on E1 line update

#### Parameters

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

port

Set physical port/span/card number

<0-255>

E1/T1 Port/Span/Card number



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

#### Command

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

#### Library specific attributes

#### Flag: L

This command applies on E1 line update

#### Parameters

#### e1\_line

Configure E1/T1/J1 Line

#### <0-255>

Line Number

#### socket

Set socket path for unixsocket

#### .SOCKET

socket path

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

#### Command

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

#### Library specific attributes

#### Flag: L

This command applies on E1 line update

#### Parameters

#### ipa

ipa driver config

#### bind

Set ipa local bind address

#### A.B.C.D

Listen on this IP address (default 0.0.0.0)

---

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

#### Command

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

#### Library specific attributes

#### Flag: I

This command applies on IPA link establishment

#### Parameters

##### ipa

ipa driver config

##### ip-dscp

Set IP DSCP value for outbound packets

##### oml

Set IP DSCP for OML link

##### rsl

Set IP DSCP for RSL link

##### <0-63>

IP DSCP Value to use

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

#### Command

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

#### Library specific attributes

#### Flag: I

This command applies on IPA link establishment

#### Parameters

##### ipa

ipa driver config

##### socket-priority

Set socket priority value for outbound packets

##### oml

Set socket priority for OML link

##### rsl

Set socket priority for RSL link

##### <0-255>

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

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

#### Command

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

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

ipa-keepalive

Enable IPA PING/PONG keep-alive

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

#### Command

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

#### Library specific attributes

Flag: I

This command applies on IPA link establishment

#### Parameters

no

Negate a command or set its defaults

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

keepalive

Enable keep-alive probing

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

#### Command

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

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

e1\_line

Configure E1/T1/J1 Line

<0-255>

Line Number

pcap

Disable pcap recording of E1 traffic for line

## 1.9 config-ctrl

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

#### Command

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

#### Parameters

bind

Set bind address to listen for Control connections

A.B.C.D

Local IP address (default 127.0.0.1)

[<0-65535>]

Local TCP port number

## 1.10 config-cpu-sched

### 1.10.1 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

### 1.10.2 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

## 1.11 config-mgcp

### 1.11.1 bind ip (A.B.C.D|X:X::X:X)

#### Command

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

#### Parameters

##### bind

Listen/Bind related socket option

##### ip

IP information

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

IPv4 Address to bind to

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

IPv6 Address to bind to

### 1.11.2 bind port <0-65534>

#### Command

```
bind port <0-65534>
```

#### Parameters

##### bind

Listen/Bind related socket option

##### port

Port information

##### <0-65534>

UDP port to listen for MGCP messages

---

### 1.11.3 call-agent ip (A.B.C.D|X:X::X:X)

#### Command

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

#### Parameters

call-agent

Call agent information

ip

IP information

A.B.C.D

IPv4 Address of the call agent

X:X::X:X

IPv6 Address of the call agent

### 1.11.4 conn-timeout <0-65534>

#### Command

```
conn-timeout <0-65534>
```

#### Parameters

conn-timeout

Set a time after which inactive connections (CIs) are closed. Set to 0 to disable timeout. This can be used to work around interoperability problems causing connections to stay open forever, and slowly exhausting all available ports. Enable keep-alive packets in MGW clients when using this option together with LCLS (OsmoBSC, OsmoMSC: 'rtp keep-alive')!

<0-65534>

Timeout value (sec.)

### 1.11.5 domain NAME

#### Command

```
domain NAME
```

#### Parameters

domain

Set the domain part expected in MGCP messages' endpoint names

NAME

Qualified domain name expected in MGCP endpoint names, or '\*' to accept any domain

---

### 1.11.6 force-realloc (0|1)

#### Command

```
force-realloc (0|1)
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### force-realloc

Force endpoint reallocation when the endpoint is still seized

0

Don't force reallocation

1

force reallocation

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

#### Command

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

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### local

Local options for the SDP record

#### ip

IP information

#### A.B.C.D

IPv4 Address to use in SDP record

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

IPv6 Address to use in SDP record



### 1.11.8 no rtcp-omit

#### Command

```
no rtcp-omit
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

no

Negate a command or set its defaults

rtcp-omit

Drop RTCP packets in both directions

### 1.11.9 no rtp bind-ip

#### Command

```
no rtp bind-ip
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

no

Negate a command or set its defaults

rtp

RTP configuration

bind-ip

Bind endpoints facing the Network

### 1.11.10 no rtp bind-ip-v6

#### Command

```
no rtp bind-ip-v6
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp

RTP configuration

#### bind-ip-v6

Bind endpoints facing the Network

### 1.11.11 no rtp force-ptime

#### Command

```
no rtp force-ptime
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp

RTP configuration

#### force-ptime

Force a fixed ptime for packets sent

### 1.11.12 no rtp ip-probing

#### Command

```
no rtp ip-probing
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp

RTP configuration

#### ip-probing

no automatic rtp bind ip selection

### 1.11.13 no rtp keep-alive

#### Command

```
no rtp keep-alive
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### no

Negate a command or set its defaults

#### rtp

RTP configuration

#### keep-alive

Send dummy UDP packet to net RTP destination

### 1.11.14 no rtp-patch

#### Command

```
no rtp-patch
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp-patch

Modify RTP packet header in both directions

### 1.11.15 no rtp-patch rfc5993hr

#### Command

```
no rtp-patch rfc5993hr
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp-patch

Modify RTP packet header in both directions

#### rfc5993hr

Convert GSM-HR from TS101318 to RFC5993 and vice versa

### 1.11.16 no rtp-patch ssrc

#### Command

```
no rtp-patch ssrc
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp-patch

Modify RTP packet header in both directions

#### ssrc

Force a fixed SSRC

### 1.11.17 no rtp-patch timestamp

#### Command

```
no rtp-patch timestamp
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp-patch

Modify RTP packet header in both directions

#### timestamp

Adjust RTP timestamp

### 1.11.18 no sdp audio-payload send-name

#### Command

```
no sdp audio-payload send-name
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

no

Negate a command or set its defaults

sdp

SDP File related options

audio-payload

Audio payload options

send-name

Send SDP rtpmap with the audio name

### 1.11.19 no sdp audio-payload send-ptime

#### Command

```
no sdp audio-payload send-ptime
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

no

Negate a command or set its defaults

sdp

SDP File related options

audio-payload

Audio payload options

send-ptime

Send SDP ptime (packet duration) attribute

### 1.11.20 number endpoints <1-65534>

#### Command

```
number endpoints <1-65534>
```

#### Parameters

number

Number options

endpoints

Endpoints available

<1-65534>

Number endpoints

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

#### Command

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

#### Parameters

osmux

RTP multiplexing

on

Enable OSMUX

off

Disable OSMUX

only

Only use OSMUX

### 1.11.22 osmux batch-factor <1-8>

#### Command

```
osmux batch-factor <1-8>
```

#### Parameters

osmux

RTP multiplexing

batch-factor

Batching factor

<1-8>

Number of messages in the batch

### 1.11.23 osmux batch-size <1-65535>

#### Command

```
osmux batch-size <1-65535>
```

#### Parameters

osmux

RTP multiplexing

batch-size

batch size

<1-65535>

Batch size in bytes

### 1.11.24 osmux bind-ip A.B.C.D

#### Command

```
osmux bind-ip A.B.C.D
```

#### Parameters

osmux

RTP multiplexing

bind-ip

IP information

A.B.C.D

IPv4 Address to bind to

### 1.11.25 osmux bind-ip-v6 X:X::X:X

#### Command

```
osmux bind-ip-v6 X:X::X:X
```

#### Parameters

osmux

RTP multiplexing

bind-ip-v6

IP information

X:X::X:X

IPv6 Address to bind to



### 1.11.26 osmux dummy (on|off)

#### Command

```
osmux dummy (on|off)
```

#### Parameters

osmux

RTP multiplexing

dummy

Dummy padding

on

Enable dummy padding

off

Disable dummy padding

### 1.11.27 osmux peer-behind-nat (on|off)

#### Command

```
osmux peer-behind-nat (on|off)
```

#### Parameters

osmux

RTP multiplexing

peer-behind-nat

Define whether peer is behind NAT

on

Peer is behind NAT

off

Peer is NOT behind NAT

### 1.11.28 osmux port <1-65535>

#### Command

```
osmux port <1-65535>
```

#### Parameters

osmux

RTP multiplexing

port

port

<1-65535>

UDP port

---

### 1.11.29 rtcp-omit

#### Command

```
rtcp-omit
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtcp-omit

Drop RTCP packets in both directions

### 1.11.30 rtp bind-ip A.B.C.D

#### Command

```
rtp bind-ip A.B.C.D
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

rtp

RTP configuration

bind-ip

Bind endpoints facing the Network

A.B.C.D

IPv4 Address to bind to

### 1.11.31 rtp bind-ip-v6 X:X::X:X

#### Command

```
rtp bind-ip-v6 X:X::X:X
```

#### Application specific attributes

---

Flag: n

This command applies when a new connection is created

Parameters

rtp

RTP configuration

bind-ip-v6

Bind endpoints facing the Network

X:X::X:X

IPv6 Address to bind to

### 1.11.32 rtp force-ptime (10|20|40)

Command

```
rtp force-ptime (10|20|40)
```

Application specific attributes

Flag: n

This command applies when a new connection is created

Parameters

rtp

RTP configuration

force-ptime

Force a fixed ptime for packets sentThe required ptime (packet duration) in ms

10

10 ms

20

20 ms

40

40 ms

### 1.11.33 rtp ip-dscp <0-63>

#### Command

```
rtp ip-dscp <0-63>
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

rtp

RTP configuration

ip-dscp

Use specified DSCP for the audio stream (including Osmux)

<0-63>

The DSCP value

### 1.11.34 rtp ip-probing

#### Command

```
rtp ip-probing
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

rtp

RTP configuration

ip-probing

automatic rtp bind ip selection

### 1.11.35 rtp keep-alive <1-120>

#### Command

```
rtp keep-alive <1-120>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtp

RTP configuration

keep-alive

Send dummy UDP packet to net RTP destination

<1-120>

Keep alive interval in secs

### 1.11.36 rtp keep-alive once

#### Command

```
rtp keep-alive once
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtp

RTP configuration

keep-alive

Send dummy UDP packet to net RTP destination

once

Send dummy packet only once after CRCX/MDCX

### 1.11.37 rtp port-range <1024-65534> <1025-65535>

#### Command

```
rtp port-range <1024-65534> <1025-65535>
```

#### Parameters

rtp

RTP configuration

port-range

Range of ports to use for the NET side

<1024-65534>

Start of the range of ports

<1025-65535>

End of the range of ports

### 1.11.38 rtp socket-priority <0-255>

#### Command

```
rtp socket-priority <0-255>
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

rtp

RTP configuration

socket-priority

socket priority (values > 6 require CAP\_NET\_ADMIN)

<0-255>

socket priority value

### 1.11.39 rtp-accept-all (0|1)

#### Command

```
rtp-accept-all (0|1)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtp-accept-all

Accept all RTP packets, even when the originating IP/Port does not match

0

enable filter

1

disable filter

### 1.11.40 rtp-patch rfc5993hr

#### Command

```
rtp-patch rfc5993hr
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

rtp-patch

Modify RTP packet header in both directions

rfc5993hr

Convert GSM-HR from TS101318 to RFC5993 and vice versa

---

### 1.11.41 rtp-patch ssrc

#### Command

```
rtp-patch ssrc
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### rtp-patch

Modify RTP packet header in both directions

#### ssrc

Force a fixed SSRC

### 1.11.42 rtp-patch timestamp

#### Command

```
rtp-patch timestamp
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### rtp-patch

Modify RTP packet header in both directions

#### timestamp

Adjust RTP timestamp

### 1.11.43 sdp audio-payload send-name

#### Command

```
sdp audio-payload send-name
```

#### Application specific attributes

---



Flag: n

This command applies when a new connection is created

Parameters

sdp

SDP File related options

audio-payload

Audio payload options

send-name

Send SDP rtpmap with the audio name

### 1.11.44 sdp audio-payload send-ptime

Command

```
sdp audio-payload send-ptime
```

Application specific attributes

Flag: n

This command applies when a new connection is created

Parameters

sdp

SDP File related options

audio-payload

Audio payload options

send-ptime

Send SDP ptime (packet duration) attribute

### 1.11.45 trunk <0-64>

Command

```
trunk <0-64>
```

Parameters

trunk

Configure a SS7 trunk

<0-64>

Trunk Nr

## 1.12 config-mgcp-trunk

### 1.12.1 force-realloc (0|1)

#### Command

```
force-realloc (0|1)
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### force-realloc

Force endpoint reallocation when the endpoint is still seized

#### 0

Don't force reallocation

#### 1

force reallocation

### 1.12.2 line <0-255>

#### Command

```
line <0-255>
```

#### Parameters

#### line

Configure trunk for given Line

#### <0-255>

E1/T1 Line Number

### 1.12.3 no rtcp-omit

#### Command

```
no rtcp-omit
```

#### Global attributes

---

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

rtcp-omit

Drop RTCP packets in both directions

#### 1.12.4 no rtp keep-alive

Command

```
no rtp keep-alive
```

Global attributes

Flag: !

This command applies immediately

Parameters

no

Negate a command or set its defaults

rtp

RTP configuration

keep-alive

Send dummy UDP packet to net RTP destination

#### 1.12.5 no rtp-patch

Command

```
no rtp-patch
```

Application specific attributes

Flag: n

This command applies when a new connection is created

Parameters

no

Negate a command or set its defaults

rtp-patch

Modify RTP packet header in both directions

### 1.12.6 no rtp-patch rfc5993hr

#### Command

```
no rtp-patch rfc5993hr
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp-patch

Modify RTP packet header in both directions

#### rfc5993hr

Convert GSM-HR from TS101318 to RFC5993 and vice versa

### 1.12.7 no rtp-patch ssrc

#### Command

```
no rtp-patch ssrc
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### rtp-patch

Modify RTP packet header in both directions

#### ssrc

Force a fixed SSRC

### 1.12.8 no rtp-patch timestamp

#### Command

```
no rtp-patch timestamp
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

no

Negate a command or set its defaults

rtp-patch

Modify RTP packet header in both directions

timestamp

Adjust RTP timestamp

### 1.12.9 no sdp audio-payload send-name

#### Command

```
no sdp audio-payload send-name
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

no

Negate a command or set its defaults

sdp

SDP File related options

audio-payload

Audio payload options

send-name

Send SDP rtpmap with the audio name

### 1.12.10 no sdp audio-payload send-ptime

#### Command

```
no sdp audio-payload send-ptime
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

#### no

Negate a command or set its defaults

#### sdp

SDP File related options

#### audio-payload

Audio payload options

#### send-ptime

Send SDP ptime (packet duration) attribute

### 1.12.11 rtcp-omit

#### Command

```
rtcp-omit
```

#### Global attributes

#### Flag: !

This command applies immediately

#### Parameters

#### rtcp-omit

Drop RTCP packets in both directions

### 1.12.12 rtp keep-alive <1-120>

#### Command

```
rtp keep-alive <1-120>
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtp

RTP configuration

keep-alive

Send dummy UDP packet to net RTP destination

<1-120>

Keep-alive interval in secs

### 1.12.13 rtp keep-alive once

#### Command

```
rtp keep-alive once
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtp

RTP configuration

keep-alive

Send dummy UDP packet to net RTP destination

once

Send dummy packet only once after CRCX/MDCX

### 1.12.14 rtp-accept-all (0|1)

#### Command

```
rtp-accept-all (0|1)
```

#### Global attributes

Flag: !

This command applies immediately

#### Parameters

rtp-accept-all

Accept all RTP packets, even when the originating IP/Port does not match

0

enable filter

1

disable filter

### 1.12.15 rtp-patch rfc5993hr

#### Command

```
rtp-patch rfc5993hr
```

#### Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

rtp-patch

Modify RTP packet header in both directions

rfc5993hr

Convert GSM-HR from TS101318 to RFC5993 and vice versa

---



### 1.12.16 rtp-patch ssrc

#### Command

```
rtp-patch ssrc
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

##### rtp-patch

Modify RTP packet header in both directions

##### ssrc

Force a fixed SSRC

### 1.12.17 rtp-patch timestamp

#### Command

```
rtp-patch timestamp
```

#### Application specific attributes

#### Flag: n

This command applies when a new connection is created

#### Parameters

##### rtp-patch

Modify RTP packet header in both directions

##### timestamp

Adjust RTP timestamp

### 1.12.18 sdp audio-payload send-name

#### Command

```
sdp audio-payload send-name
```

#### Application specific attributes

---

Flag: n

This command applies when a new connection is created

#### Parameters

sdp

SDP File related options

audio-payload

Audio payload options

send-name

Send SDP rtpmap with the audio name

### 1.12.19 sdp audio-payload send-ptime

#### Command

```
sdp audio-payload send-ptime
```

Application specific attributes

Flag: n

This command applies when a new connection is created

#### Parameters

sdp

SDP File related options

audio-payload

Audio payload options

send-ptime

Send SDP ptime (packet duration) attribute