1.4.3 CLI

MSAN MC1000-PX
CLI
1.4.3

CLI 1000-PX ( ).

CLI , 1000-PX (CLI).

TCP/IP, UDP/IP, SIP- Ethernet-.

	, , , .
	, .

, .

, , .

, . <Tab>.

, – . <?>.

. . . , , .

,
msan> enable
msan# configure
msan(config)# exit
msan#

, , , .

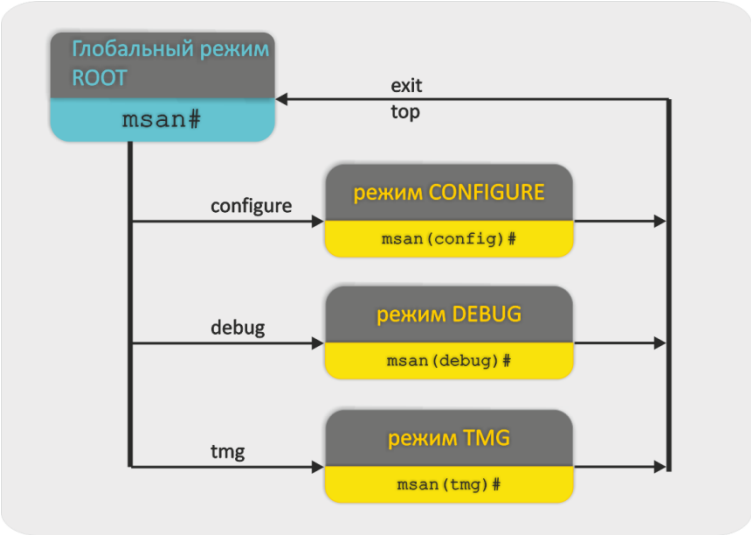
MSAN ().

. .

1.

1 – ( )

(ROOT)		msan#	exit top
MSAN (CONFIGURE)	configure	msan(config)#	
(DEBUG)	debug	msan(debug)#	
TMG	tmg	msan(tmg)#	exit



1 –

BOOT. CONFIGURE.

BOOT :

```
msan> enable
msan# configure
msan(config)# boot
msan(config-boot)#
```

PP4G3X

PP4G3X CONFIGURE. ROOT.

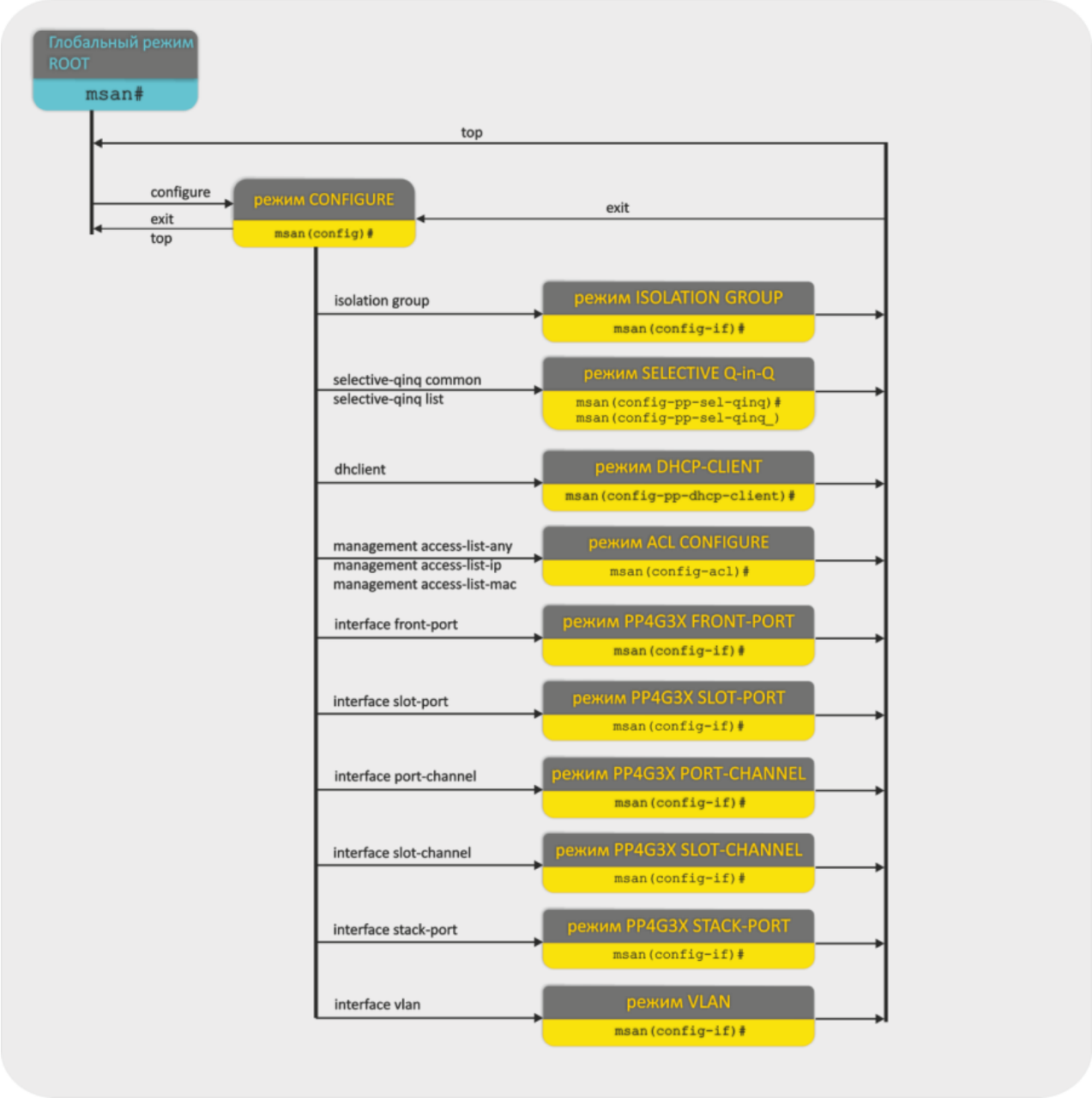
CONFIGURE :

```
msan> enable
msan# configure
msan(config)#
```

2 – PP4G3X

(ISOLATION GROUP)	isolation group	msan(config-if)#	CONFIGURE
SELECTIVE Q-in-Q (SELECTIVE Q-in-Q)	selective-qinq common selective-qinq list	msan(config-sel-qinq)# msan(config-sel-qinq_)#	CONFIGURE
DHCP- (DHCP-CLIENT)	dhclient	msan(config-dhcp-client)#	CONFIGURE
uplink- PP4G3X (PP4G3X FRONT-PORT)	interface front-port	msan(config-if)#	CONFIGURE

PP4G3X (PP4G3X SLOT-PORT)	interface slot-port	msan(config-if)#	CONFIGURE
LAG uplink- PP4G3X (PP4G3X PORT-CHANNEL)	interface port-channel	msan(config-if)#	CONFIGURE
LAG- PP4G3X (PP4G3X SLOT-CHANNEL)	interface slot-channel	msan(config-if)#	CONFIGURE
PP4G3X (PP4G3X STACK-PORT)	interface stack-port	msan(config-if)#	CONFIGURE
VLAN- PP4G3X (PP4G3X VLAN)	interface vlan	msan(config-if)#	CONFIGURE
(ACL CONFIGURE, ACL-MAC CONFIGURE, ACL-IP CONFIGURE)	management access-list-any management access-list-mac management access-list-ip	msan(config-acl)	CONFIGURE



2 – PP4G3X

FXS-72

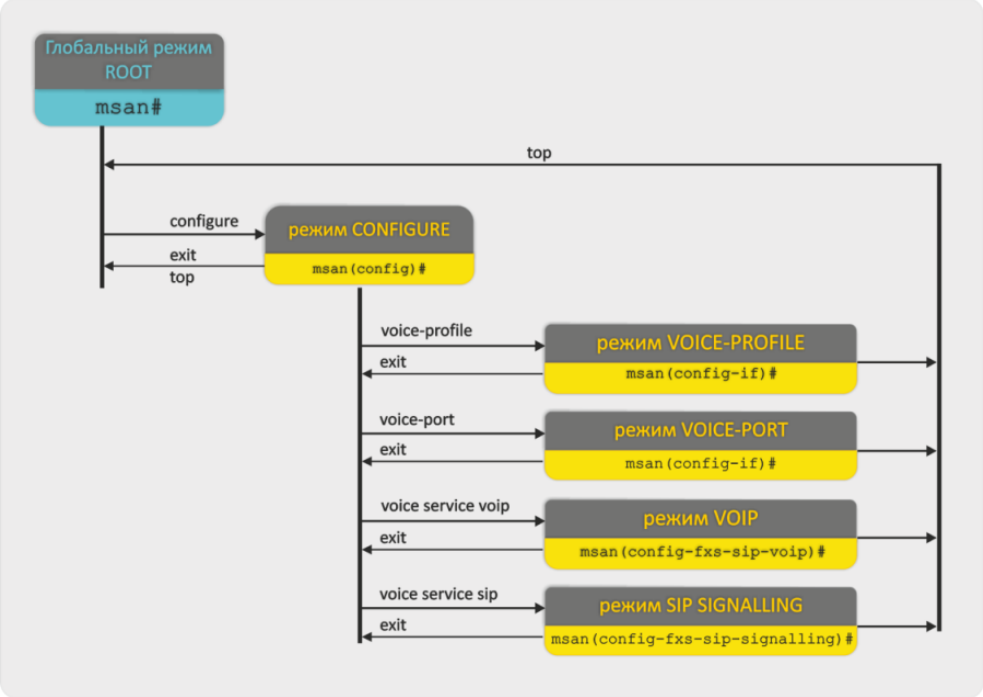
FXS-72 CONFIGURE. ROOT.

CONFIGURE :

```
msan> enable
msan# configure
msan(config)#
```

3 – FXS-72

VoIP (VOIP)	voice service voip	msan(config-fxs-sip-voip)#	CONFIGURE
SIP (SIP SIGNALLING)	voice service sip	msan(config-fxs-sip-signalling)#	CONFIGURE
(VOICE-PROFILE)	voice-profile	msan(config-if)#	CONFIGURE
(VOICE-PORT)	voice-port	msan(config-if)#	CONFIGURE



3 – FXS-72

TMG-16

VoIP TMG-16 TMG. ROOT.

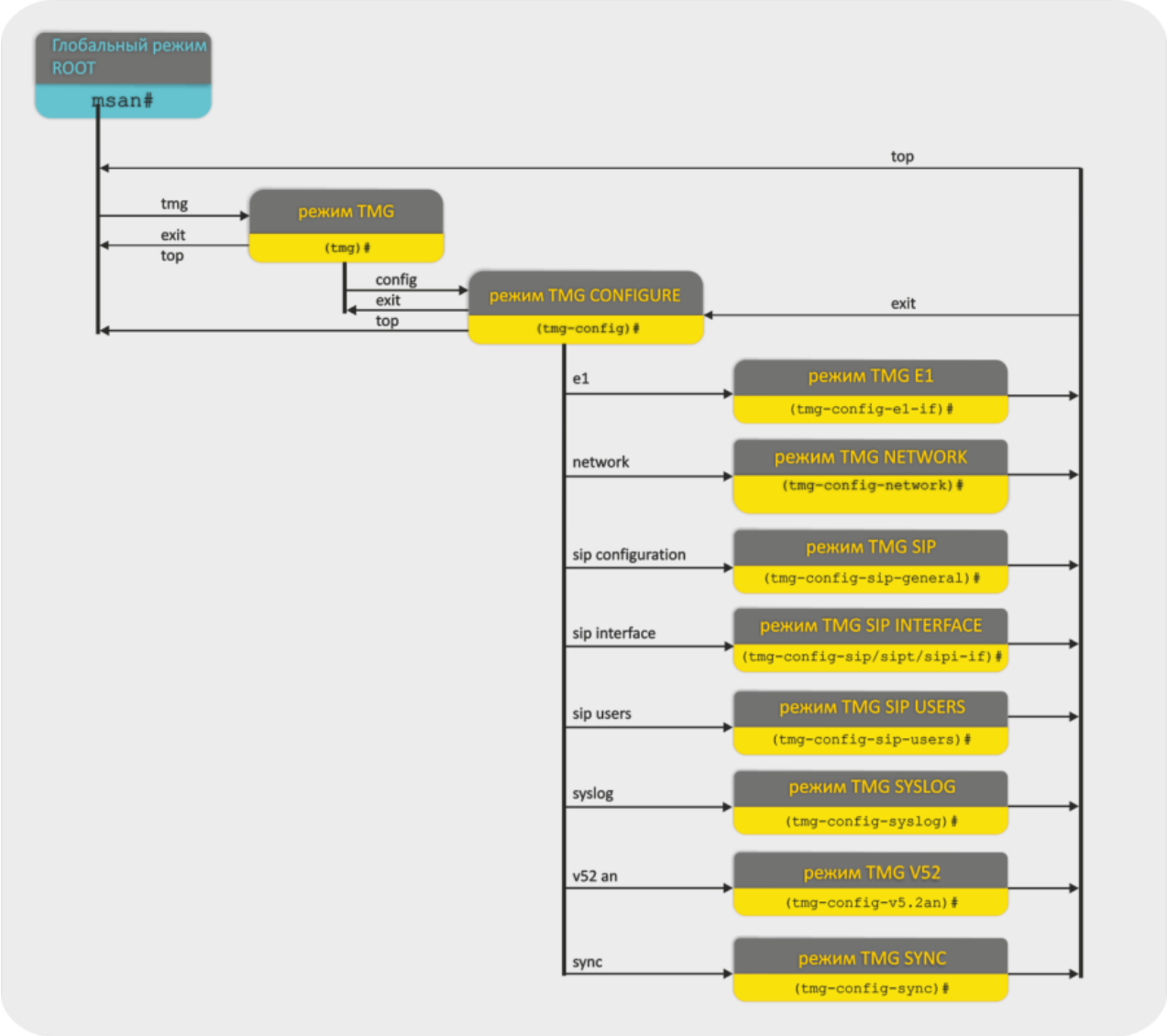
TMG :

```
msan> enable
msan# tmg
msan(tmg)#
```

4 – VoIP- TMG-16

TMG-16 (TMG)	tmg	(tmg)#	ROOT
TMG-16 (TMG CONFIGURE)	config	(tmg-config)#	TMG
E1 (TMG E1)	e1	(tmg-config-e1-if)#	TMG CONFIGURE
TMG-16 (TMG NETWORK)	network	(tmg-config-network)#	TMG CONFIGURE
SIP/SIP-T (TMG SIP)	sip configuration	(tmg-config-sip-general)#	TMG CONFIGURE
SIP/SIP-T (TMG SIP INTERFACE)	sip interface	(tmg-config-sip/sipt/sipi-if)#	TMG CONFIGURE
SIP (TMG SIP USERS)	sip users	(tmg-config-sip-users)#	TMG CONFIGURE
syslog (TMG SYSLOG)	Syslog	(tmg-config-syslog)#	TMG CONFIGURE

V5.2 (TMG V52)	v52 an	(tmg-config-v5.2an)#	TMG CONFIGURE
(SYNC)	sync	(tmg-config-sync)#	TMG CONFIGURE



4 – VoIP- TMG-16

, .

exit

.

c

exit

.

, .

top

ROOT.

top

.

, .

help

.

help

.

.

history

, .

history

.

.

do

do (ROOT) .

do <command>

<command> - .

, .

enable

.

enable

.

ROOT

```
(msan)> enable
(msan)#
```

disable

.

disable

.

ROOT

```
(msan)# disable
(msan)>
```

logout

CLI.

logout

.

ROOT

```
msan# logout
```

reload

.

reload < object >

< object > – :

- master – PP4G3X;
- slave – PP4G3X;
- slot <number> – , <number> - , [0 .. 15];
- system – . , . , , ( );
- system force – . , ;
- system non-stop – c , . .

ROOT

```
msan# reload system
```

.

configure

MSAN.

configure

.

ROOT

```
msan# configure
msan(config)#
```

management gateway

IP- , .

(no) IP- , .

management gateway <GATEWAY>
no management gateway

< GATEWAY > – IP- .

CONFIGURE

```
msan(config)# management gateway 192.168.24.15
```

management ip

IP- . (no) IP- .

management ip <IP> [MASK]
no management ip

<IP> – IP-;
[MASK] – . .

[MASK] , 255.255.255.0.

CONFIGURE

```
msan(config)# management ip 192.168.14.15
```

management vlan

VLAN .

(no) VLAN, , VLAN.

management vlan <VID>
no management vlan

<VID> – VLAN, [2 .. 4095].

BOOT

```
msan(config-boot)# management vlan 7
```

VLAN 7.

show management

.

show management

.

ROOT

```
msan# show management
Network parameters :
Protocol/Status Static/Ok
ip 192.168.18.98
mask 255.255.255.0
gateway 192.168.18.1
tftp_server 0.0.0.0
tftp path msan/switch.conf
in sandbox FALSE
vlan 1
```

clock set

.

clock set <TIME> <DAY > <MONTH> <YEAR>

< TIME > – , hh:mm:ss;
< DAY > – , [1..31];
< MONTH > – , : jan, feb, mar, apr, may, jun, jul, aug, sep, oct, nov, dec;
< YEAR > – , [2000..2038].

ROOT

```
msan# clock set 11:00:00 2 jan 2011
```

clock timezone

.

clock timezone <HOURS> < MINUTES >

< HOURS > – (UTC);
< MINUTES > – (UTC).

CONFIGURE

```
msan(config)# clock timezone 6 00
```

show clock

.

show clock

.

ROOT

```
msan# show clock
Fri May 20 16:18:53 LOCAL 2011
```

, : 16 18 53 , 20 2011 , .

user add

.

user add < user_name > < user_passwd >

< user_name > – , [1 .. 255] ;
< user_passwd > – , [8 .. 34] .

CONFIGURE

```
msan(config)# user add test test
```

test, test.

user delete

.

user delete < user_name >

< user_name > , [1 .. 255] .

CONFIGURE

```
msan(config)# user delete test
```

test.

show users

:

- user name – ;
- user permissions – :
- all – ;
- configure-all – ;
- configure-boot – ;
- configure-other – ;
- configure-shelf – ;
- view-all – ;
- view-basic – , «help», «history», ;
- view-configuration – ;
- view-operational – .

show users

.

ROOT

```
msan# show users
System users
~~~~~~~~~~~~
User name            User permissions
-------------------- ----------------------------------------
root                 all
admin                all
linux                view-all
3 system users.
```

user password

.

user password <user_name> <user_oldpasswd> <user_passwd>

< user_name > – , [1 .. 255] ;
< user_oldpasswd > – , [8 .. 31] ;
< user_passwd > – , [8 .. 31] .

CONFIGURE

```
msan(config)# user password test test password
```

test password.

user permissions

. (no) .

[no] user permissions <param> <user_name>

<param> – :

- all – ;
- configure-all – ;
- configure-boot – ;
- configure-other – ;
- configure-shelf – ;
- view-all – ;
- view-basic – , «help», «history» ;
- view-configuration – ;
- view-operational – .

<user_name> – , [1 .. 255] .

CONFIGURE

1:

```
msan(config)# user permissions configure-all test
```

test .

2:

```
msan(config)# no user permissions configure-shelf test
```

test .

show users status

, .

show users status

.

ROOT

```
msan# show users status
User sessions
~~~~~~~~~~~~~
SID/PID    User name   Logged in at     Host           Privileged  Timers Login/Priv User permissions
---------- ---------- ----------------- -------------- ---------- ----------------- -----------------
f080eb85/907 admin    01/01/00 18:19:34 192.168.27.128    yes      0:29:59/0:19:59        all
1 user sessions.
```

MSAN MC1000-PX CONFIGURE.

boot mode

, (no dhcp-client|dhcp-client).

boot mode

<PROTOCOL> – , , :

- no – , ;
- dhcp – DHCP .

BOOT

```
msan(config-boot)# boot mode dhcp
```

object-name

. 32 . '' DHCP/BOOTP.

(no) .

object-name <NAME>
no object-name

<NAME> – , 32 .

msan.

BOOT

```
msan(config-boot)# object-name test
```

. , , .

clear alarms

.

clear alarms

.

ROOT

```
msan# clear alarms
```

.

show alarms

:

- Time – , DD:MM:YYYY hh:mm:ss;
- Priority – ;
- Text – .

show alarms

.

ROOT

```
msan# show alarms
Active alarms
~~~~~~~~~~~~~~
Time                   Priority  Text
---------------------- -------- ---------------------------------------------
07-11-2012 13:43:56     0        ALARM_PP_CPU_LOAD_HIGH unit 1 7.95/2.33/0.86
01-01-2000 00:00:23     1        ALARM_LINK_DOWN front-port 1/4
01-01-2000 00:00:24     1        ALARM_LINK_DOWN front-port 1/5
01-01-2000 00:00:24     1        ALARM_LINK_DOWN front-port 1/6
01-01-2000 00:00:25     1        ALARM_LINK_DOWN front-port 1/2
01-01-2000 00:00:25     1        ALARM_LINK_DOWN front-port 1/0
01-01-2000 00:00:25     1        ALARM_LINK_DOWN front-port 1/1
01-01-2000 00:00:28     0        ALARM_FAN_CONTROLLER_FAIL
01-01-2000 00:00:33     1        ALARM_LINK_DOWN front-port 2/3
9 active alarms
```

clear events

.

clear events

.

ROOT

```
msan# clear events
```

.

clear events before

.

clear events before <date>

< date > – , YYYY.MM.DD-hh:mm;

ROOT

```
msan# clear events before 2013.01.01-00:00
```

.

show events

:

- Time – , dd:hh:ss;
- Priority – ;
- Text – .

show events

.

ROOT

```
msan#show events
Event journal
~~~~~~~~~~~~~
Time                   Priority Text
---------------------- -------- --------------------------------------------------
01-01-2000 00:00:22     2       ALARM_CSCD_MASTER_CHANGED, id 1, left unit
01-01-2000 00:00:22     2       ALARM_CONFIG_APPLIED 0
01-01-2000 00:00:22     1       ALARM_LINK_DOWN front-port 1/3
01-01-2000 00:00:23     2       ALARM_LINK_UP front-port 1/4
01-01-2000 00:00:23     1       ALARM_LINK_DOWN front-port 1/5
01-01-2000 00:00:23     1       ALARM_LINK_DOWN front-port 1/6
01-01-2000 00:00:23     1       ALARM_LINK_DOWN stack-port 1/0
01-01-2000 00:00:24     1       ALARM_LINK_DOWN front-port 1/2
8 alarms
```

fan speed

.

fan speed <SPEED>
no fan speed

<SPEED> – , [15..100]. .

auto

CONFIGURE

```
msan(config)# fan speed 30
```

fan min-speed

 . . .

fan min-speed <SPEED>
no fan min-speed

<SPEED> – , [15..100], :

- 15 – ;
- 100 – .

fan min-speed 15

CONFIGURE

```
msan(config)# fan min-speed 20
```

fan speed-table

 , . . .

fan speed-table <SPEED_0> <SPEED_1> <SPEED_2> … <SPEED_8>
no fan speed-table

<SPEED_0> .. <SPEED_8> – , [15..100], :

- 15 – ;
- 100 – .

fan speed-table 15 25 35 45 55 65 75 85 95

CONFIGURE

```
msan(config)# fan speed-table 20 25 30 40 45 50 60 70 80
```

show system

.

show system

.

ROOT

```
msan# show system
Current mode: autonomous
```

show shelf

, , .

show shelf

.

ROOT

```
msan# show shelf
Shelf status
~~~~~~~~~~~~
Slot Link Configured device  Configured version     Device       Version                Serial             State
---- ---- ------------------ ---------------------- ------------ ---------------------- ------------------
-----------
0    down tmgsip             1.2.1.1                none         0.0.0.0                                   absent
1    down fxs72sip           1.1.2.0                none         0.0.0.0                                   absent
2    down none               0.0.0.0                none         0.0.0.0                                   absent
3    down none               0.0.0.0                none         0.0.0.0                                   absent
4    down none               0.0.0.0                none         0.0.0.0                                   absent
5    down none               0.0.0.0                none         0.0.0.0                                   absent
6    down none               0.0.0.0                none         0.0.0.0                                   absent
7    down none               0.0.0.0                none         0.0.0.0                                   absent
8    down none               0.0.0.0                none         0.0.0.0                                   absent
9    down none               0.0.0.0                none         0.0.0.0                                   absent
10   down none               0.0.0.0                none         0.0.0.0                                   absent
11   down none               0.0.0.0                none         0.0.0.0                                   absent
12   up fxs72sip             1.1.2.0                fxs72sip     1.1.2.0                MD0S000078
operational
13   down none               0.0.0.0                none         0.0.0.0                                   absent
14   down none               0.0.0.0                none         0.0.0.0                                   absent
15   down none               0.0.0.0                none         0.0.0.0                                   absent
```

show environment

:

- MFC board status – MFC:
  - INITIALIZING – PP4G3X MFC;
  - ERR – PP4G3X MFC;
  - ok – PP4G3X MFC .
- MFC board version – MFC;
- MFC firmware – :
  - Status – ;
  - Versoin – ;
  - Timestamp (UTC) – .
- Sensor inputs state – MFC;
- Fan configured speed, %: – , , 'auto', , 'fan speed-table';

- Fan0..2 – ;
- Status – :
  - ERR – ;
  - ok – .
- RPM – ( );
- Feeder1..2 – ;
- Installed – :
  - yes – ;
  - no – .
- Status – :
  - ERR – ;
  - LO_VOLT – ;
  - HI_VOLT - ;
  - ok – ;
  - N/A – .
- Active – :
  - active – MSAN;
  - backup – MSAN;
  - N/A – .
- Polarity – :
  - ok – ;
  - MISMATCH – ;
  - N/A – .
- Current, A – , N/A, ;
- Voltage, V – , N/A, ;
- Station voltage, V – , N/A, .

show environment

.

ROOT

```
msan# show environment
MFC board status: ok
MFC board version: 0x1
MFC firmware:
Status: 0x00 (ok)
Version: 8 1 1 1 1 27/07/2012
Timestamp (UTC): 27-Jul-2012 07:11:06
Sensor inputs state: 0x00
Fan configured speed, %: auto
Fan0 Fan1 Fan2
Status: ok ok ok
RPM: 1380 1380 1410
Feeder1 Feeder2
Installed: yes yes
Status: ok ok
Active: backup active
Polarity: MISMATCH ok
Current, A: 0.00 1.25
Voltage, V: 0.79 -54.70
Station voltage, V: -53.94
```

boot system

PP4G3X.

boot system image-alternate unit <number>

< number > – [1 .. 2];
– .

ROOT

```
msan# boot system image-alternate unit 1
```

boot confirm

. «unit» , .

boot confirm

.

ROOT

```
msan# boot confirm unit 1
```

shelf slot

. (no) .

shelf slot <SLOT_RANGE> <DEVTYPE>
no shelf slot <SLOT_RANGE>

<SLOT_RANGE> – - , [0..15];
<DEVTYPE> – : tmgsip, fxs72sip, fxs72megaco.

CONFIGURE

```
msan(config)# shelf slot 1-10 fxs72sip
```

save

CANDIDATE .

save

.

ROOT

```
msan# save
```

Flash- .

copy

:

- TFTP- Flash- ;
- TFTP- TFTP-;
- TFTP- candidate-;
- candidate / running- TFTP-;
- candidate-;
- TFTP- PP-.

copy <source-url> <destination-url>

< source-url > – URL, :
tftp://<ip>/<path> – TFTP-,
:

- <ip> – IP- TFTP-;
- <path> – TFTP-.

fs://candidate-config – candidate-,
fs://running-config – running-,
fs://factory-config – ,
< destination-url > – URL, :
tftp://<ip>/<path> – TFTP-,
:

- <ip> – IP- TFTP-;
- <path> – TFTP-.

fs://candidate-config – candidate-,
fs://factory-config – ,
mfc://firmware – MFC,
fs://firmware – .

ROOT

```
msan# copy tftp://192.168.16.176/pp4g3x/firmware.pp4g3x unit://flash@1/image-alternate
```

TFTP- Flash- PP4G3X

copy-config

.

copy-config <source-url> <destination-url>

< source-url > - , , , [0 .. 15];
< destination-url > - , , , [0 .. 15].

ROOT

```
msan# copy-config 13 12
```

, 13 , , 12 .

restore

. . *confirm*. *restore* .

restore

.

ROOT

```
msan# restore
```

.

rollback

MSAN. CANDIDATE . commit.

rollback

.

ROOT

```
msan# rollback
```

.

commit

( ) . RUNNING- CANDIDATE. , *confirm* , (. confirm timer).

commit

ROOT

```
msan# commit
```

, CLI, .

commit boot

( ) . , *confirm* , (. confirm timer).

commit boot

ROOT

```
msan# commit boot
```

, CLI, .

commit update

(RUNNING) . :

1. ;
2. MSAN, TFTP-.

commit update

.

ROOT

```
msan# commit update
```

. commit update, .

confirm

. (system confirmation timer), , – . .

onfirm

.

ROOT

```
msan# confirm
```

.

system confirmation timer

. , .

system confirmation timer <time_min>

< time_min > - , [5 .. 20] .

10

CONFIGURE

```
msan(config)# system confirmation timer 12
```

12 confirm, .

default

.

default

.

ROOT

```
msan# default
```

.

default slot

.

default slot <SLOT>

< SLOT > – , [0 .. 15].

ROOT

```
msan# default slot 12
```

show bootvar

PP4G3X:

- Unit – PP4G3X;
- Image – ;
- Running – (yes/no);
- Boot – * , ;
- Version – ;
- Date – .

show bootvar

.

ROOT

```
msan# show bootvar
Firmware status:
~~~~~~~~~~~~~~~~
Unit Image Running Boot        Version             Date
---- ----- ------- ----------- ------------------- --------------------
1    0     Yes     *           1 1 2 1 25389:25390 04-May-2012 03:21:12
1    1     No                  1 1 1 5 25190       27-Apr-2012 01:04:14
2    0     Yes     *           1 1 2 1 25389:25390 04-May-2012 03:21:12
2    1     No                  1 1 1 5 25190       27-Apr-2012 01:04:14
"*" designates that the image was selected for the next boot
```

show default-config

.

show default-config
show default-config category < CATEGORY >

< CATEGORY > – :

- shelf – ;
- line-profile – ;
- pp – PP4X3G;
- sip – SIP-;
- general – ;
- log – ;
- networks – ;
- signaling – ;
- voip – VOIP-;
- voice-port – ;
- boot – .

ROOT

```
msan# show default-config category shelf
no shelf slot all
```

show running-config

.

show running-config
show running-config category < CATEGORY >

< CATEGORY > – :

- shelf – ;
- line-profile – ;
- pp – PP4X3G;
- sip – SIP-;
- general – ;
- log – ;
- networks – ;
- signaling – ;
- voip – VOIP ;
- voice-port – ;
- boot – .

ROOT

```
msan# show running-config category firmware
shelf slot 0-15 fxs72sip
```

show candidate-config

, (commit).

show candidate-config category < CATEGORY >

< CATEGORY > – :

- shelf – ;
- line-profile – ;
- pp – PP4X3G;
- sip – SIP-;
- general – ;
- log – ;
- networks – ;
- signaling – ;
- voip – VOIP-;
- voice-port – ;
- boot – .

ROOT

```
msan# show candidate-config category pp
management ip 192.168.1.98 255.255.255.0
management gateway 192.168.1.1
```

alarm

. (no) .

[no] alarm

.

DEBUG

```
msan(debug)# alarm
```

bonding

. (no) .

[no] bonding

.

DEBUG

```
msan(debug)# bonding
```

rebuild alarm-db

.

rebuild alarm-db

.

DEBUG

```
msan(debug)# rebuild alarm-db
```

snmp-resend alarms

SNMP- .

snmp-resend alarms

.

DEBUG

```
msan(debug)# snmp-resend alarms
```

debug-mode

. . .

(no) .

debug-mode <BYTE1> <BYTE2> … <BYTE12>
no debug-mode

: 08 00 24 D0 11 20 61 00 00 00 00 00.

DEBUG

```
msan(debug)# debug-mode 08 00 24 D0 11 21 61 00 00 00 00 00
```

show debug-mode

.

show debug-mode

DEBUG

```
msan(debug)# show debug-mode
debug-mode 08 00 24 D0 11 20 61 00 00 00 00 00
```

cfgsync manager

-.

(no) .

[no] cfgsync manager [param]

DEBUG

[param] – :

- errors – ;
- routine – .

, .

DEBUG

```
msan(debug)# cfgsync manager errors
```

cfgsync

- (cfgsync-mgr).

(no) .

[no] cfgsync <LEVEL>

<LEVEL> – :

- compare – CFGMGR_COMPARE;
- debugs – CFGMGR_DEBUG;
- errors – CFGMGR_ERROR;
- infos – CFGMGR_INFO;
- fsync debugs – FSYNC_DEBUG;
- fsync errors – FSYNC_ERROR;
- fsync infos – FSYNC_INFO.

DEBUG

```
msan(debug)# cfgsync debugs
```

clish

(clish).

(no) .

[no] clish <LEVEL>

<LEVEL> – (clish):

- manager – CLISH_MANAGER;
- completion – COMPLETION;
- errors – ERROR;
- infos – INFO;
- ptype– PTYPE;
- sockets– SOCKETS;
- timers– TIMERS;
- debugs– DEBUG;

DEBUG

```
msan(debug)# clish manager
```

copy

. (no) .

[no] copy

.

DEBUG

```
msan(debug)# copy
```

cpss events

.

(no) .

[no] cpss events

.

DEBUG

```
msan(debug)# cpss events
```

cscd

:

- master;
- ;
- .

(no) .

[no] cscd <param>

<param> – :

- election – master;
- reserve – ;
- topology – .

DEBUG

```
msan(debug)# cscd election
```

dev-exchange sctp-notification

SCTP. (no) SCTP.

[no] dev-exchange sctp-notification

.

DEBUG

```
msan(debug)# dev-exchange sctp-notification
```

dev-exchange

.

(no) .

[no] dev-exchange

.

DEBUG

```
msan(debug)# dev-exchange
```

dhcp

DHCP.

(no) DHCP .

[no] dhcp <param>

< param > – :

- lient – DHCP-;
- common – ;
- errors – ;
- proxy – DHCP-;
- server – DHCP-.

DEBUG

```
msan(debug)# dhcp client
```

events

.

(no) .

[no] events <type>

<type> – :

- all – ;
- common – ;
- errors – ;
- general – ;
- net – ;
- port – .

DEBUG

```
msan(debug)# events all
```

fan

.

(no) .

[no] fan

.

DEBUG

```
msan(debug)# fan
```

.

firmware

.

[no] firmware

.

DEBUG

```
msan(debug)# firmware
```

ifm

/ .

(no) / .

[no] ifm

.

DEBUG

```
msan(debug)# ifm
```

igmp

IGMP . (no) IGMP .

[no] igmp <act>

<act> – :

- fdb – IGMP-;
- group – , IGMP-;
- packet – / IGMP-.

DEBUG

```
msan(debug)# igmp fdb
```

lacp

LACP . (no) LACP .

[no] lacp <act>

<act> – :

- packet – / LACP-;
- port-channel – LACP LAG uplink-, [1 .. 8];
- slot-channel – LACP LAG , [0 .. 15].

, LACP.

DEBUG

```
msan(debug)# lacp packet
```

link

. (no) .

[no] link

.

DEBUG

```
msan(debug)# link
```

locks

. (no) .

[no] locks

.

DEBUG

```
msan(debug)# locks
```

mac-sync

MAC-.

(no) MAC-.

[no] mac-sync

.

DEBUG

```
msan(debug)# mac-sync
```

mac-sync duplicate-mac

MAC- VLAN.

(no) MAC- VLAN.

[no] mac-sync duplicate-mac

.

DEBUG

```
msan(debug)# mac-sync duplicate-mac
```

mac-sync sctp-notification

MAC- .

(no) MAC- .

[no] mac-sync sctp-notification

.

DEBUG

```
msan(debug)# mac-sync sctp-notification
```

network

, . (no) , .

[no] network <type>

<type> – :

- errors – ;
- rx – ;
- tx – .

DEBUG

```
msan(debug)# network tx
```

packet

.

(no) .

[no] packet <type>

<type> – :

- rx – ;
- tx – .

DEBUG

```
msan(debug)# packet rx
```

sctp

SCTP (, ,).

(no) SCTP.

[no] sctp <param>

<param> – :

- err – ;
- msg – ;
- pkt – .

, SCTP.

DEBUG

```
msan(debug)# sctp err
```

snmp packet

SNMP-.

(no) SNMP-.

[no] snmp packet

.

DEBUG

```
msan(debug)# snmp packet
```

snmp

SNMP-.

(no) SNMP-.

[no] snmp

.

DEBUG

```
msan(debug)# snmp
```

snmpman

SNMP-. (no) SNMP-.

[no] snmpman

.

DEBUG

```
msan(debug)# snmpman
```

sntp

SNTP-.

(no) SNTP-.

[no] sntp

.

DEBUG

```
msan(debug)# sntp
```

spanning-tree

STP/RSTP.

(no) STP/RSTP.

[no] spanning-tree <param>

<param> – :

- common – ;
- errors – ;
- sync – .

DEBUG

```
msan(debug)# spanning-tree errors
```

stack

stack-. (no) .

[no] stack

.

DEBUG

```
msan(debug)# stack
```

syslog

syslog-. (no) .

[no] syslog

.

DEBUG

```
msan(debug)# syslog
```

vlan pvid

PVID, ForcePVID, Acceptable Frame Types, ingress filtering.

(no) PVID, ForcePVID, Acceptable Frame Types, ingress filtering.

[no] vlan pvid

.

DEBUG

```
msan(debug)# vlan pvid
```

vlan

, , VLAN.

(no) , , VLAN.

[no] vlan

.

DEBUG

```
msan(debug)# vlan
```

top-manager

top-manager.

(no) .

[no] top-manager

.

DEBUG

```
msan(debug)# top-manager
```

webs

WEB-.

(no) WEB-.

[no] webs

.

```
msan(debug)# webs
```

webs packet

WEB-.

(no) WEB-.

[no] webs packet

.

DEBUG

```
msan(debug)# webs packet
```

lldp

LLDP.

(no) LLDP.

[no] lldp <param>

<param> – :

- common – ;
- errors – ;
- sync – .

DEBUG

```
msan(debug)# lldp common
```

vlan-manager

vlan-.

(no) -.

[no] vlan-manager

.

DEBUG

```
msan(debug)# vlan-manager
```

stack elections

.

(no) .

[no] stack elections

.

DEBUG

```
msan(debug)# stack elections
```

stack reserve-channel

.

(no) .

[no] stack reserve-channel

.

.

DEBUG

```
msan(debug)# stack reserve-channel
```

test leds

PP4G3X. . TELNET SSH, PP4G3X, . CLI, , PP4G3X, CLI. STATUS, ALARM, MASTER «Enter». <delay>, .

:

- ;
- «Ctrl+C»;
- CLI.

.

test leds [<delay>]

<delay> - ( ).

DEBUG

```
msan(debug)# test leds 2
Welcome to the front-panel LED test program.


POWER indicator should stay green during the test.
STATUS, ALARM and MASTER indicators will change their states.
Please check the color of the LEDs in each state.
Each state will last for 2 seconds.


Test 1: STATUS, ALARM, MASTER
Green?
Red?
Yellow?
Off?


Test 2: STATUS
Green?
Red?
Yellow?


Test 3: ALARM
Green?
Red?
Yellow?


Test 4: MASTER
Green?
Red?
Yellow?


Test finished.
```

show alarms

:

- Alarm code – ;
- Time – , DD:MM:YYYY hh:mm:ss;
- Priority – ;
- Text – ;
- Body – .

show alarms

.

DEBUG

```
msan(debug)# show alarms
Active alarms
~~~~~~~~~~~~~
Alarm code Time         Priority Text                           Body
---------- ------------ -------- ------------------------------ ---------------
2          01-01-2000   2        MSAN_ALARM_LINK_DOWN slot-     15|0|0|0
           00:20:40              port 1/1
0          01-01-2000   2        MSAN_ALARM_LINK_DOWN slot-     14|0|0|0
           00:18:37              port 1/13
```

show events

:

- Alarm code – ;
- Time – , dd:hh:ss;
- Priority – ;
- Text – ;

- Body – .

show events

.

DEBUG

```
msan(debug)#show events
Event journal
~~~~~~~~~~~~~
Alarm code Time         Priority Text                          Body
---------- ------------ -------- ------------------------------ ---------------
1          01-01-1970   2|0|0|0  1014                           946685666
           00:00:00
1          01-01-1970   2|0|0|0  1013                           946685666
           00:00:00
2          01-01-1970   49|0|0|0 1013                           946685666
           00:00:00
2          01-01-1970   50|0|0|0 1013                           946685667
           00:00:00
…
2          01-01-1970   51|0|0|0 1013                           946685667
           00:00:00
2          01-01-1970   52|0|0|0 1013                           946685667
           00:00:00
2          01-01-1970   53|0|0|0 1024                           946685668
           00:00:00
3          01-01-1970   2|0|0|0  2025                           946685668
           00:00:00
230 alarms
```

show interfaces

:

- Id – ;
- Name – ;
- Enabled – :
- Enabled – ;
- Disable – .
- State – :
- up – ;
- down – .

show interfaces

.

DEBUG

```
msan(debug)# show interfaces
Interfaces status
~~~~~~~~~~~~~~~~~
Idx  Id   Name              Enabled  State
---- ---- ----------------- -------- --------
0    0    -                 -        -
1    1    slot-port 1/7     enabled  down
2    2    slot-port 1/8     enabled  down
3    3    slot-port 1/6     enabled  down
4    4    slot-port 1/9     enabled  down
…
80   80   slot-channel 15   enabled  down
81   81   stack-channel 1/0 enabled  down
82   0    -                 -        -
```

PP: (backup config)

«backup» MSAN TFTP-, , .

ROOT.

backup check

.

backup check

.

ROOT

```
msan# backup check
```

PP4G3X.

backup check master

.

backup check master

.

ROOT

```
msan# backup check master
```

PP4G3X.

backup repair

flash, .

backup repair

.

ROOT

```
msan# backup repair
```

.

backup now

, *backup path*.

backup now

.

ROOT

```
msan# backup now
```

.

backup restore

.

backup restore [BACKUP_STR]

[BACKUP_STR] – TFTP- tftp://<ip>/<path>. 255 . .

, _backup_ _path{_}.

ROOT

```
msan# backup restore tftp://192.168.1.3/config.conf
```

backup revision

.

backup revision [BACKUP_STR]

[BACKUP_STR] – , _backup restore{_}. 79 .

ROOT

```
msan# backup revision revision_pp4g3x_1
<cliapi_backup_revision> - res is 12143304
```

backup upload

.

backup upload [BACKUP_STR]

[BACKUP_STR] – , tftp://<ip>/<path>.

, _backup_ _path{_}.

ROOT

```
msan# backup upload tftp://192.168.16.176/pp4g3x/switchd.conf
```

backup onchange

(commit).

(no) .

[no] backup onchange

.

CONFIGURE

```
msan(config)# backup onchange
```

commit ( ) .

backup ontimer

.

(no) .

[no] backup ontimer

.

36000 .

CONFIGURE

```
msan(config)# backup ontimer
```

10 .

backup ontimer-period

.

backup ontimer-period <INTERVAL>

< INTERVAL > – , [600 .. 32000000] .

CONFIGURE

```
msan(config)# backup ontimer-period 600
```

600 .

backup path

.

(no) .

backup path <PATH>
no backup path

< PATH > – : tftp://<ip|hostname>/<tftpdirectiory>.

CONFIGURE

```
msan(config)# backup path tftp://192.168.18.252/PP4G3X/
```

PP:

ip ssh server

SSH.

(no) SSH.

[no] ip ssh server

.

CONFIGURE

```
msan(config)# ip ssh server
```

ip telnet port

telnet-.

(no) telnet- .

ip telnet port <PORT>
no ip telnet port

<PORT> – , [1..65535].

23.

CONFIGURE

```
msan(config)# ip telnet port 24
```

ip telnet server

telnet.

(no) telnet-.

[no] ip telnet server

.

CONFIGURE

```
msan(config)# ip telnet server
```

show ip ssh

SSH-:

- enabled – ;
- disable – .

show ip ssh

.

ROOT

```
msan# show ip ssh
SSH server state: enabled
```

show ip telnet

TELNET- , TELNET.

show ip telnet

.

ROOT

```
msan# show ip telnet
Telnet server state: enabled
port : 23
```

PP:

management access-list-any

(IP MAC).

management access-list-any

.

CONFIGURE

```
msan(config)# management access-list-any
msan(config-acl)#
```

management access-list-ip

IP-.

management access-list-ip

.

CONFIGURE

```
msan(config)# management access-list-ip
msan(config-acl-ip)#
```

management access-list-mac

MAC-.

management access-list-mac

.

CONFIGURE

```
msan(config)# management access-list-mac
msan(config-acl-mac)#
```

management access-list clear

.

management access-list clear

.

CONFIGURE

```
msan(config)# management access-list clear
Jan 1 01:47:11 msan -clish: <clish_acl_clear>
msan(config)#
```

management access-list default

.

management access-list default { allow | deny }

- allow – ;
- deny – .

CONFIGURE

```
msan(config)# management access-list default allow
Jan 1 01:50:39 msan -clish: <clish_acl_default>
```

add

.

add <policy> <protocol> <interface> <range> <mac-address>
add allow <protocol> <interface><range>
add allow <protocol> <interface><range> <ip-address>

<policy> – , :

- allow – ;
- deny – .

<protocol> – , : any, http, snmp, telnet, ssh;
<interface> – :

- any – ;
- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-port – .

<range> – /:

- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5];
- port-channel: [1 .. 8];
- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].

<mac-address> – MAC-;

<ip-address> – IP-.

ACL-MAC CONFIGURE
ACL CONFIGURE
ACL-IP CONFIGURE

```
msan(config-acl-mac)# add allow any any ad:fd:2e:23:e3:e4
Jan 1 02:30:40 msan -clish: <clish_acl_add>
msan(acl-mac)#
msan(config-acl)# add allow any any
Jan 1 02:30:40 msan -clish: <clish_acl_add>
msan(config-acl)#
msan(config-acl-ip)# add allow any any 192.168.128.128 255.255.255.250
Jan 1 02:30:40 msan -clish: <clish_acl_add>
msan(config-acl-ip)#
```

insert

.

insert <policy> <protocol> <interface><range> <mac-address> <number>
insert <policy> <protocol> <interface><range> <number>
insert <policy> <protocol> <interface><range> <ip-address> <number>

<policy> – , :

- allow – ;
- deny – ;

<protocol> – : any, http, snmp, telnet, ssh;

<interface> – :

- any – ;
- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-port – .

<range> – / :

- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].

<number> – ;

<mac-address> – MAC-;

<ip-address> – IP-.

ACL-MAC CONFIGURE
ACL CONFIGURE
ACL-IP CONFIGURE

```
msan(config-acl-mac)# insert allow any any ad:fd:2e:23:e3:e4 21
Jan 1 02:30:40 msan -clish: <clish_acl_add>
msan(config-acl-mac)#
msan(config-acl)# insert allow any any 12
Jan 1 02:30:40 msan -clish: <clish_acl_add>
msan(config-acl)#
msan(config-acl-ip)# insert allow any any 192.168.128.128 255.255.255.250 13
Jan 1 02:30:40 msan -clish: <clish_acl_add>
msan(config-acl-ip)#
```

remove

.

remove <policy> <protocol> <interface><range>
remove <policy> <protocol> <interface><range> <mac-address>
remove <policy> <protocol> <interface><range> <ip-address>

<policy> – , :

- allow – ;
- deny – ;

<protocol> – : any, http, snmp, telnet, ssh;
<interface> – :

- any – ;
- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-port – .

<range> – / :

- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].

<number> – ;

<mac-address> – MAC-;

<ip-address> – IP-.

ACL-MAC CONFIGURE
ACL CONFIGURE
ACL-IP CONFIGURE

```
msan(config-acl-mac)# remove allow any any ad:fd:2e:23:e3:e4
Jan 1 02:30:40 msan -clish: <clish_acl_remove>
msan(config-acl-mac)#
msan(config-acl)# remove allow any any
Jan 1 02:30:40 msan -clish: <clish_acl_remove>
msan(config-acl)#
msan(config-acl-ip)# remove allow any any 192.168.128.128 255.255.255.250
Jan 1 02:30:40 msan -clish: <clish_acl_remove>
msan(config-acl-ip)#
```

remove from

.

remove from <number>

<number> – .

ACL-MAC CONFIGURE
ACL CONFIGURE
ACL-IP CONFIGURE

```
msan(config-acl-mac)# remove from 2
Jan 1 02:30:40 msan -clish: <clish_acl_remove>
msan(config-acl-mac)#
```

show access-list

:

- Index – ;
- Policy – :
- allow – ;
- deny – .
- Proto – , :
- any – ;
- http – http-;
- snmp – snmp-;
- ssh – ssh-;
- telnet – telnet-.
- Interface – PP, : { front-port | slot-port | port-channel | slot-channel }<unit>/<port>);
- ip / mac – IP- MAC-, :
- ip <ip> <mask> – IP-;
- mac <mac> – MAC-;
- any –

show access-list

.

ROOT

```
msan# show access-list
ACL rules
~~~~~~~~~
Index Policy Proto Interface           ip / mac
---- ------ ------ -------------------- ----------------------------------
DEF   allow  any   any                  any
```

PP:

show cmd-dispatcher

:

- overload count – ;
- errors – ;
- size of element – ;
- free – ;
- length – .

show cmd-dispatcher

.

DEBUG

```
msan(debug)# show cmd-dispatcher
Command Dispatcher memory state:
overload count 0
errors 0
size of element 1072
free 500
length 500
```

show evt-dispatcher

:

- overload count – ;
- errors – ;
- size of element – ;
- free – ;
- length – .

show evt-dispatcher

.

DEBUG

```
msan(debug)# show evt-dispatcher
Command Dispatcher memory state:
overload count 0
errors 0
size of element 952
free 500
length 500
```

show memory

.

show memory

.

ROOT

```
msan# show memory
```

show queues

. , .

show queues [QUEUE]

[QUEUE] – , [0 .. 200].

DEBUG

```
msan(debug)# show queues
Registered queues:
command top manager id 1
event exchange id 2
control exchange id 3
mac sync event descriptors id 4
mac sync control descriptors id 5
cscd event descriptors id 6
cscd command descriptors id 7
config manager event descriptor id 8
config manager command descript id 9
mac sync event descriptors id 10
mac sync control descriptors id 11
sshd event descriptors id 12
telnetd event descriptors id 13
firmware manager event descript id 14
firmware manager command descri id 15
maep cmd descriptors id 16
maep evt descriptors id 17
vlan cmd descriptors id 18
vlan evt descriptors id 19
Sensors manager event descripto id 20
Sensors manager command descrip id 21
acsd event descriptors id 22
fan event descriptors id 23
igmp snooping event descriptors id 24
igmp snooping command descripto id 25
snmpag evt descriptors id 26
bonding event descriptors id 27
bonding command descriptors id 28
dhcp client event descriptors id 29
dhcp proxy event descriptors id 30
dhcp proxy command descriptors id 31
dhcp server event descriptors id 32
rstp event descriptors id 33
rstp command descriptors id 34
lldp event descriptors id 35
lldp command descriptors id 36
sntp client event descriptors id 37
Total queues 37
```

show services status

.

show services status

.

ROOT

```
msan# show services status
---------------------
Local services status
---------------------
Name State Priority
Device exchange Ran 60
cscd Ran 10
Mac synchronization Ran 200
LACP Ran 200
Port state check Ran 200
STP/RSTP Stopped 200
Dhcp client Stopped 200
Dhcp proxy Ran 100
Dhcp server Ran 200
IGMP snooping/proxy Stopped 150
SNMPMAN Stopped 200
SNMP agent Ran 200
WEBS Ran 200
Fan control service Ran 200
Top manager Ran 40
Config Manager Ran 210
CLISH MANAGER Ran 200
SSHD Ran 200
TELNETD Ran 200
FIRMWARE Ran 200
SNTP server Ran 200
SNTP client Stopped 200
MAEP manager Ran 200
SENSORS Ran 200
ACS Stopped 200
VLAN manager Ran 200
LLDP Ran 200
```

show system unit

.

show system unit <UNIT>

<UNIT> – PP4G3X, [1 .. 2].

ROOT

```
msan# show system unit 1
System information (1):
 Uptime (d:h:m:s): 0:20:20:4
 CPU load (1/5/15 minutes): 0.00/0.00/0.00
 RAM (total/free), Mbytes: 242/109
 Partition '/' (total/free), Mbytes: 38/17
 Partition '/mnt/tools' (total/free), Mbytes: 192/171
 Partition '/mnt/config' (total/free), Mbytes: 64/61
 Partition '/mnt/log' (total/free), Mbytes: 128/123
 Temperature (SFP 1): 25C
 Temperature (SFP 2): 25C
 Temperature (Switch) : 39C
 Firmware version: 1.1.2.4 r25676 14:27:58 17/05/2012
 Linux version: Linux version 2.6.22.18 (soroko@R402SRV) (gcc version 3.4.4 (release) (CodeSourcery ARM 2005q3-
2)) #1 Thu May 17 14:16:45 NOVST 2012
 MAC address: a8:f9:4b:8a:42:90
```

PP: ethernet

mirror <rx|tx> port

/ . , , .

(no) PP4G3X / .

[no] mirror <rx|tx> interface <port> <num>

<rx|tx> – :

- rx – ;
- tx – .

<port> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – .

<num> – («,», «-»):

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

CONFIGURE

```
msan(config)# mirror rx interface slot-channel all
```

, slot-channel, . slot-channel -, mirror rx analyzer, slot-channel.

mirror <rx|tx> analyzer

, / , *mirror rx port/ mirror tx port.*

mirror <rx|tx> analyzer <interface> <port>

<rx|tx> – :

- rx – ;
- tx – .

< interface > – :

- front-port – uplink-;

< port > – («,», «-»):

- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].

```
msan(config)# mirror rx analyzer front-port 1/2
```

2 uplink- 1- PP4G3X /, / « ».

PP:

interface

PP4G3X.

interface <interface> <number>

< interface > – :

- front-port – uplink-;
- slot-port – ;
- vlan – VLAN;
- port-channel – LAG uplink-;
- slot-channel – LAG- ;
- stack-port – PP4G3X.

< number > – :

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].
- vlan: [1 .. 4094];
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15];
- stack-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 1].

CONFIGURE

```
msan(config)# interface slot-channel 5
msan(config-if)#
```

shutdown

.

(no) .

[no] shutdown

.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-PORT
PP4G3X SLOT-CHANNEL

```
msan(config-if)# shutdown
```

.

bridging to

.

(no) .

[no] bridging to <INTERFACE> <RANGE>

< INTERFACE > – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

< RANGE > – / , :

- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-CHANNEL

```
msan(config-if)# bridging to front-port 2/0-5
```

uplink- 8 uplink- PP4G3X.

flow-control

/ (flow control). flow control . , , , . , .

flow-control <act>

< act > – :

- on – ;
- off – .

.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-CHANNEL

```
msan(config-if)# flow-control on
```

.

frame-types

:

- ;
- VLAN.

frame-types <act>

< act > – :

- all – ;
- tagged – VLAN.

( ).

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-CHANNEL

```
msan(config-if)# frame-types all
```

.

ingress-filtering

VLAN.

(no) VLAN.

[no] ingress-filtering

.

.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-CHANNEL

```
msan(config-if)# ingress-filtering
```

.

pvid

VID , . VID VLAN-, 0, VID, PVID.

pvid <num>

< num > – VLAN-, [1 .. 4094];

PVID = 1.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-CHANNEL

```
msan(config-if)#pvid 5
```

PVID 5.

speed

. : 1000 /, 10/, 10/, 100/ auto.

speed { 10G | 1000M | 100M { full-duplex | half-duplex } | 10M { full-duplex | half-duplex } | auto}

10M – 10/ :

- full-duplex – ,
- half-duplex – ;

100M – 100/ :

- full-duplex – ,
- half-duplex – ;

1000M – 1000/;
10G – 10/;
auto – .

– auto.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL
PP4G3X SLOT-CHANNEL

1

```
msan(config-if)# speed 10G
```

2

```
msan(config-if)# speed 10M full-duplex
```

1

10/.

2

10/, .

clear counters

.

clear counters <interface> <number>

< interface > – :

- front-port – uplink-;
- slot-port – ;
- stack-port – PP4G3X.

< number > – :

- all – ;
- PP4G3X / ;

«,», «-».

PP4G3X [1 .. 2].

:

- front port: [0 .. 5];
- slot-port: [0 .. 15];
- stack-port: [0 .. 1].

ROOT

```
msan# clear counters front-port 1/1-4,2/3-4
```

1,2,3,4 PP4G3X 3,4 .

show interfaces counters

. *detailed* .

:

- Port – ;
- UC sent – ;
- MC sent – ;
- BC sent – ;
- Octets sent – ;
- UC recv –
- MC recv – ;
- BC recv – ;
- Octets recv – ;
- Bad octets recv – ;
- MAC transmit err – , - MAC;
- Bad frames recv – ;
- Frames 64 octets pass – 64 ;
- Frames 65-127 octets pass – 65-127 ;
- Frames 128-255 octets pass – 128-255 ;
- Frames 256-511 octets pass – 256-511 ;
- Frames 512-1023 octets pass – 512-1023 ;
- Frames 1024-max octets pass – 1024 ;
- Excessive collisions – , - ;
- Unrec MAC cntr recv – MAC Control Frames ;
- FC sent – Flow Control;
- Good fc recv – Flow Control;
- Drop events – ;
- Undersize packets – , ;
- Fragments packets – ;
- Oversize packets – , ;
- Jabber packets – -;
- MAC receive err – , - MAC;
- Bad CRC – , , ;
- Collisions – ;
- Late collisions – , , 64 (slotTime) ;
- Bad FC recv – Flow Control, .

show interfaces counters <interface> <number>
show interfaces detailed counters <interface> <number>

< interface > – :

- front-port – uplink-;
- slot-port – ;
- stack-port – PP4G3X.

< number > – <unit/port>, 'all', :

- unit – PP4G3X, [1 .. 2],
- port – :
  - front port: [0 .. 5];
  - slot-port: [0 .. 15];
  - stack-port: [0 .. 1].
- all – . , «,», «-».

ROOT

```
msan# show interfaces detailed counters slot-port 2/2
MAC slot-port 2/2 detailed MIB counters
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Counter Value
----------------------------- --------------------
UC sent 0
MC sent 20370
BC sent 9588
Octets sent 2673495
UC recv 10970
MC recv 9514
BC recv 0
Octets recv 2452031
Bad octets recv 0
MAC transmit err 0
Bad frames recv 0
Frames 64 octets pass 9553
Frames 65-127 octets pass 18695
Frames 128-255 octets pass 21891
Frames 256-511 octets pass 303
Frames 512-1023 octets pass 0
Frames 1024-max octets pass 0
Excessive collisions 0
Unrec MAC cntr recv 0
FC sent 0
Good fc recv 0
Drop events 0
Undersize packets 0
Fragments packets 0
Oversize packets 0
Jabber packets 0
MAC receive err 0
Bad CRC 0
Collisions 0
Late collisions 0
Bad FC recv 0
```

show interfaces configuration

.

:

- Port – ;
- Admin State – , :
  - Up – ;
  - Down – .
- Speed – /;
- Neg – :
  - Enabled – ;
  - Disabled – .

- Duplex – :
    - Full – ;
    - Half – .
- Flow control – « »(PFC):
    - On – ;
    - Off – .

```
show interfaces configuration <interface> <number>
```

<interface> – :

- front-port – uplink-;
- slot-port – ;
- stack-port – PP4G3X;
- port-channel – LAG uplink-;
- slot-channel – LAG ;
- stack-channel – LAG PP4G3X.

<number> – («,» «-»):

- «all»;
- front port: <unit/port>, :
    - unit – PP4G3X, [1 .. 2],
    - port – , [0 .. 5].
- slot-port: <unit/port>, :
    - unit – PP4G3X, [1 .. 2],
    - port – , [0 .. 15].
- stack-port: <unit/port>, :
    - unit – PP4G3X, [1 .. 2],
    - port – , [0 .. 1].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15];
- stack-channel: <unit/port>, :
    - unit – PP4G3X, [1 .. 2],
    - port – , [0].

ROOT

```
msan# show interfaces configuration front-port all
Port Duplex Speed Neg Flow Admin
control State
----------------- ------ -------- -------- ------- -----
front-port 1/0 Full 1 Gbps Disabled Off Up
front-port 1/1 Full 10 Gbps Disabled Off Up
front-port 1/2 Full 10 Gbps Enabled Off Up
front-port 1/3 Full 1 Gbps Enabled Off Up
front-port 1/4 Full 1 Gbps Enabled Off Up
front-port 1/5 Full 1 Gbps Enabled Off Up
front-port 1/6 Full 1 Gbps Enabled Off Up
front-port 2/0 Full 10 Gbps Enabled Off Up
front-port 2/1 Full 10 Gbps Enabled Off Up
front-port 2/2 Full 10 Gbps Enabled Off Up
front-port 2/3 Full 1 Gbps Enabled Off Up
front-port 2/4 Full 1 Gbps Enabled Off Up
front-port 2/5 Full 1 Gbps Disabled Off Up
front-port 2/6 Full 1 Gbps Enabled Off Up
```

show interfaces status

.

detailed .

:

- Port – ;
- Link State – :
  - up – ;
  - down – .
- Media – :
  - none – ;
  - error – ;
  - copper – ;
  - fiber – ;
  - unknown – .
- Speed – /;
- Duplex – :
  - full – ;
  - half – .
- Flow control – « »(PFC):
  - no – ;
  - yes – .

MAC status – :

- Buffers full – :
  - yes – ;
  - no – .
- Doing back pressure – :
  - yes – ;
  - no – .
- Sending PAUSE frames – MAC- PAUSE:
  - yes – ;
  - no – .
- Receiving PAUSE frames – MAC- PAUSE:
  - yes – ;
  - no – .
- Auto-Negotiation done – , :
  - yes – ;
  - no – .
- Sync fail – :
  - yes - ;
  - no – .

show interfaces status <interface> <number>
show interfaces detailed status <interface> <number>

<interface> – :

- front-port – uplink-;
- slot-port – ;
- stack-port – PP4G3X;
- port-channel – LAG uplink-;
- slot-channel – LAG- ;
- stack-channel – LAG- PP4G3X.

<number> – («,», «-»):

- «all»;
- front port: <unit/port>, :

- unit – PP4G3X, [1 .. 2],
- port – , [0 .. 5].

- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].
- stack-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 1].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15];
- stack-channel: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0].

ROOT

```
msan# show interfaces detailed status front-port 1/3
Interface front-port 1/3
Status: up
Media: copper
Speed: 100 Mbps
Duplex: full
Flow control: no
MAC status:
Buffers full: no
Doing back pressure: no
Sending PAUSE frames: no
Receiving PAUSE frames: no
Auto-Negotiation done: yes
Sync fail: no
```

PP: VLAN

VID PP4G3X PP4G3X VLAN. CONFIGURE.

interface vlan

VLAN PP4G3X.

(no) VLAN PP4G3X, .

interface vlan <number>
no vlan <number>

< number > – VLAN, [1 .. 4094].

CONFIGURE

```
msan(config)# interface vlan 5
msan(config-if)#
```

description

VLAN. VLAN.

(no) .

description <NAME>
no description

<NAME> – VLAN.

VLAN <VLAN ID>.

PP4G3X VLAN

```
msan(config-if)# description test
```

VLAN «test».

tagged

VLAN . , , .

tagged <ports> <num>

<ports> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

<num> – :

- all – ;
- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

PP4G3X VLAN

```
msan(config-if)# tagged front-port 1/0
```

Uplink- 0 PP4G3X VLAN .

untagged

VLAN, .

untagged <ports> <num>

<ports> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

<num> – :

- all – ;
- front port: <unit/port>, :
    - unit – PP4G3X, [1 .. 2],
    - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

PP4G3X VLAN

```
msan(config-if)# untagged front-port 1/1
```

Uplink- 1 PP4G3X VLAN . .

forbidden

VLAN.

forbidden <interface-type> <num>

<interface-type> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

<num> – :

- front port: <unit/port>, :
    - unit – PP4G3X, [1 .. 2],
    - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

PP4G3X VLAN

```
msan(config-if)# forbidden front-port 1/0
```

Uplink- 0 VLAN.

show interfaces vlans

VLAN / :

- Interface front-port – ;
- PVID – VLAN ;
- Frame types – :
- Only tagged – ;
- All –;
- OnlyUntagged – ;
- None – ;
- unknown – .
- Ingress filtering – :
- yes – ;
- no –.
- Member of VLANs – VLAN:

- tagged – VLAN;
- untagged – .

show interfaces vlans <interface_type> <RANGE>

<interface_type> – :

- front-port – uplink-;
- slot-port – ;
- stack-port – PP4G3X;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

<range> – («,», «-»):

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].
- stack-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 1].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

ROOT

```
msan# show interfaces vlans front-port 1/2
Interface front-port 1/2
PVID: 1
Frame types: All
Ingress filtering: yes
Member of VLANs:
tagged: none
untagged: 1
```

PP:

stack master change

master .

stack master change

.

ROOT

```
msan# stack master change
```

stack synchronization-enable

.

(no) .

[no] stack synchronization-enable

.

ROOT

```
msan# stack synchronization-enable
```

.

stack auto-upgrade

«slave» . (no) .

[no] stack auto-upgrade

.

CONFIGURE

```
msan(config)# stack auto-upgrade
```

show stack

.

show stack

.

ROOT

```
msan# show stack
Stack Units
~~~~~~~~~~~
Unit Position Role Prio MAC Address Version
---- -------- ------ ---- ----------------- ---------------
*1 Left MASTER 240 a8:f9:4b:8a:42:50 1 3 5 24 30199M
2 Right BACKUP 208 a8:f9:4b:8a:41:60 1 3 5 24 30199M
Synchronization state in the stack: Enabled
Stack-channel State
~~~~~~~~~~~~~~~~~~~
Interface Status
------------------- --------------------
stack-port 1/0 up
```

PP: SNMP

ip snmp agent community

SNMP-. (no) SNMP-.

[no] ip snmp agent community <mode> <community>

<mode> – :

- readonly — ;
- readwrite — ;
- trap – snmp-.

<community> – , 63 .

CONFIGURE

```
msan(config)# ip snmp agent community readonly test
```

test .

ip snmp agent enable

SNMP.

(no) SNMP.

[no] ip snmp agent enable

.

CONFIGURE

```
msan(config)# ip snmp agent enable
```

ip snmp agent engine id

Engine ID SNMPv3.

(no) Engine ID SNMPv3.

[no] ip snmp agent engine id <engineid>

< engineid > – , 63 .

CONFIGURE

```
msan(config)# ip snmp agent engine id tes
```

ip snmp agent system name

SNMP.

(no) SNMP.

[no] ip snmp agent system name <name>

<name> – , 255 .

CONFIGURE

```
msan(config)# ip snmp agent system name msan
```

ip snmp agent traps

, SNMP TRAP-.

(no) TRAP-.

[no] ip snmp agent traps <param> <ip_address>

<param> – : Informs, trapsv1, trapsv2;
<ip_address> – IP- .

CONFIGURE

```
msan(config)# ip snmp agent traps informs 192.168.18.1
```

ip snmp agent user add

SNMP-.

ip snmp agent user add <user_name> <user_passwd> <user_access>

< user_name > – ;
< user_passwd > – ;
< user_access > – :

- ro – ;
- rw – ;
- sorm – .

CONFIGURE

```
msan(config)# ip snmp agent user add test password ro
```

ip snmp agent user delete

SNMP-.

ip snmp agent user delete <user_name> <user_access>

< user_name > – ;
< user_access > – :

- snmp – snmp- PP4G3X;
- sorm – snmp- FXS-72.

CONFIGURE

```
msan(config)# ip snmp agent user delete test snmp
```

show ip snmp agent users

SNMPv3.

show ip snmp agent users

ROOT

```
msan# show ip snmp agent users
SNMP users
~~~~~~~~~~
User name            User
                     permissions
-------------------- --------------
0                    SNMP users.
```

PP: Spanning Tree

spanning-tree enable

STP PP4G3X PP4G3X FRONT-PORT, PP4G3X PORT-CHANNEL.

(no) STP.

[no] spanning-tree enable

.

CONFIGURE
PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL

```
msan(config)# spanning-tree enable
```

STP .

spanning-tree fdelay

. (forwarding delay) , «Listening» «Learning», «Forwarding».

(no) .

spanning-tree fdelay <forward delay>
no spanning-tree fdelay

< forward delay > – , [4 .. 30].

15 .

CONFIGURE

```
msan(config)# spanning-tree fdelay 20
```

spanning-tree hello

hello-. hello- (Root Bridge) (Designated Bridges) . (no) hello- .

spanning-tree hello <hello time>
no spanning-tree hello

< hello time > – hello-.

2.

CONFIGURE

```
msan(config)# spanning-tree hello 3
```

spanning-tree holdcount

bpdu-, . (no) bpdu-, , .

spanning-tree holdcount <hold count>
no spanning-tree holdcount

< hold count > – bpdu-, [1 .. 10].

6.

CONFIGURE

```
msan(config)# spanning-tree holdcount 5
```

spanning-tree maxage

bpdu-. (no) bpdu- .

spanning-tree maxage <max age>
no spanning-tree maxage

< max age > – bpdu-, [6 .. 40].

20

CONFIGURE

```
msan(config)# spanning-tree maxage 15
```

spanning-tree mode

spanning tree: STP RSTP.

(no) RSTP.

spanning-tree mode <mode>
no spanning-tree mode

<mode> – : stp/rstp.

RSTP.

CONFIGURE

```
msan(config)# spanning-tree mode rstp
```

spanning-tree priority

PP4G3X STP, (0-65535). . 32768. 4096.

PP4G3X FRONT-PORT, PP4G3X PORT-CHANNEL STP, (0-240). 16. 128.

(no) STP .

spanning-tree priority <priority>
no spanning-tree priority

< priority > –

PP4G3X \[0..65535\], 4096.

PP4G3X FRONT-PORT, PP4G3X PORT-CHANNEL [0..240], 16.

PP4G3X 32768.

PP4G3X FRONT-PORT, PP4G3X PORT-CHANNEL 128.

CONFIGURE
PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL

```
msan(config-if)# spanning-tree priority 144
```

STP - 144.

spanning-tree pathcost

STP.

(no) .

spanning-tree pathcost <pathcost>
no spanning-tree pathcost

< pathcost > – .

0.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL

```
msan(config-if)# spanning-tree pathcost 1
```

1.

spanning-tree admin-edge

edge- . .

(no) .

[no] spanning-tree admin-edge

.

edge- .

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL

```
msan(config-if)# spanning-tree admin-edge
```

edge-.

spanning-tree admin-p2p

p2p. (no) p2p .

spanning-tree admin-p2p <type>
no spanning-tree admin-p2p

< type > – :

- auto – bpdu;
- force-false – p2p;
- force-true – p2p.

p2p bpdu.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL

```
msan(config-if)# spanning-tree admin-p2p auto
```

p2p bdpu.

spanning-tree auto-edge

() /.

(no) () /. .

[no] spanning-tree auto -edge

.

PP4G3X FRONT-PORT
PP4G3X PORT-CHANNEL

```
msan(config-if)# spanning-tree auto-edge
```

.

show spanning-tree active

STP- .

show spanning-tree active

.

ROOT

```
msan# show spanning-tree active
SPANNING TREE: OFF
```

show spanning-tree bridge

.

show spanning-tree bridge

.

ROOT

```
msan# show spanning-tree bridge
SPANNING TREE: OFF
```

show spanning-tree interface

STP- .

show spanning-tree interface <INTERFACE> <RANGE>

< INTERFACE > – :

- front-port – uplink-;
- port-channel – LAG uplink-.

< RANGE > – («,», «-»):

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8].

ROOT

```
msan# show spanning-tree interface front-port 1/0
SPANNING TREE: OFF
[0] front-port 1/0
SPANNING TREE: OFF
```

PP: (IGMP)

ip igmp snooping enable

IGMP snooping . (no) IGMP snooping .

IGMP Snooping – , .

[no] ip igmp snooping enable

.

CONFIGURE

```
msan(config)# ip igmp snooping enable
```

IGMP snooping.

ip igmp snooping enable (VLAN)

IGMP snooping VLAN. IGMP Snooping – , , .

(no) IGMP snooping VLAN.

[no] ip igmp snooping enable

.

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping enable
```

VLAN IGMP snooping.

ip igmp query-interval

VLAN. , . (ip igmp query-response-interval) , , .

(no) .

ip igmp query-interval <param>
no ip igmp query-interval

<param> – [30 .. 600], .

125 .

PP4G3X VLAN

```
msan(config-if)# ip igmp query-interval 100
```

100 .

ip igmp query-response-interval

VLAN. , , .

(no) .

ip igmp query-response-interval <param>
no ip igmp query-response-interval

<param> – [5 .. 200], .

100 .

PP4G3X VLAN

```
msan(config-if)# ip igmp query-response-interval 125
```

125 .

ip igmp last-member-query-interval

. - IGMP. . , , .

(no) .

[no] ip igmp last-member-query-interval <param>

<param> – [1 .. 25], .

10 .

PP4G3X VLAN

```
msan(config-if)# ip igmp last-member-query-interval 25
```

25 .

ip igmp robustness

, . . , .

(no) .

ip igmp robustness <param>
no ip igmp robustness

<param> – [1 .. 10].

2.

PP4G3X VLAN

```
msan(config-if)# ip igmp robustness 5
```

5 VLAN.

ip igmp snooping mrouter add

, VLAN.

ip igmp snooping mrouter add <interface> <num>

<interface> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

<num> – :

- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping mrouter add slot-channel 1
```

ip igmp snooping mrouter del

, VLAN.

ip igmp snooping mrouter del <ports> <num>

<ports> – :

- front-port – uplink-;
- port-channel – uplink-.

<num> – :

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].
- port-channel: [1 .. 8].

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping mrouter del slot-channel 1
```

ip igmp snooping mrouter learning

. (no) .

[no] ip igmp snooping mrouter learning

.

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping mrouter learning
```

ip igmp snooping querier enable

querier-. Querier – , IGMP-. (no) querier-.

[no] ip igmp snooping querier enable

.

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping querier enable
```

igmp snooping querier fast-leave

fast-leave VLAN. «igmp-leave», IGMP-.

(no) fast-leave VLAN.

[no] ip igmp snooping querier fast-leave

.

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping querier fast-leave
```

ip igmp unregistered ip4-mc

IPv4. , multicast- .

ip igmp unregistered ip4-mc <act>

<act> – :

- drop – , ;

- flood – , .

flood

CONFIGURE

```
msan(config)# ip igmp unregistered ip4-mc drop
```

IPv4 .

ip igmp snooping querier version

IGMP VLAN. (no) .

ip igmp snooping querier version <version>
no ip igmp snooping querier version

<version> – IGMP.

3 .

PP4G3X VLAN

```
msan(config-if)# ip igmp snooping querier version 3
```

show ip igmp snooping groups vlan

IGMP- VLAN.

show ip igmp snooping groups vlan < vid >

<vid> – VLAN, [1 .. 4094].

ROOT

```
msan# show ip igmp snooping groups vlan 1
VLAN 1: 0 groups
```

show ip igmp snooping vlan config

IGMP VLAN:

- IGMP snooping is disable/enable globally – IGMP snooping / ;
- IGMP snooping is disable/enable for this VLAN – IGMP snooping / VLAN;
- Querier disabled/enabled – querier- /;
- Querier IGMP version compatibility – IGMP;
- Query Interval – ;
- Query Response Interval – (, ,);
- Robustness Variable – ;
- Group Membership Int – , , , , ;
- Fast Leave – fast-leave;

- Last Member Query Int – IGMP- ( );
- Last Member Query Time – IGMP- ( ).

show ip igmp snooping vlan config < vid >

<vid> – VLAN, \[1 .. 4094\]. VID «,», «-».

ROOT

```
msan# show ip igmp snooping vlan config 1
VLAN 1
 IGMP snooping is disabled globally
 IGMP snooping is disabled for this VLAN
 Querier disabled
 Querier IGMP version compatibility: 3
 Query Interval: 125 seconds
 Query Response Interval: 10 seconds
 Robustness Variable: 2
 Group Membership Int.: 260 seconds
 Fast Leave: disabled
 Last Member Query Int.: 1 seconds
 Last Member Query Time: 2 seconds
```

show ip igmp snooping vlan hosts

IGMP VLAN.

show ip igmp snooping vlan hosts < vid >

<vid> – VLAN [1 .. 4094].

VID «,», «-».

ROOT

```
msan# show ip igmp snooping vlan hosts 100

Hosts ports. VLAN 100.
~~~~~~~~~~~~~~~~~~~~~~
Interface                                Timer
---------------------------------------- ----------
```

show ip igmp snooping vlan mrouter

, VLAN.

show ip igmp snooping vlan mrouter < vid >

<vid> – VLAN [1 .. 4094].

VID «,», «-».

ROOT

```
msan# show ip igmp snooping vlan mrouter 100

Multicast routers ports. VLAN 100.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Interface                               Static Timer
--------------------------------------- ------ ----------
```

PP:

port-channel ipv6-hash-mode

ipv6-.

port-channel ipv6-hash-mode <mode>

<mode> – :

- 1 – SIP, DIP flow label;
- 2 – SIP, DIP flow label;
- 3 – SIP, DIP flow label;
- 4 – SIP DIP.

CONFIGURE

```
msan(config)# port-channel ipv6-hash-mode 1
```

port-channel l4-long-hash

/ LACP L4.

port-channel l4-long-hash <act>

<act> – :

- disable – ;
- enable – .

CONFIGURE

```
msan(config)# port-channel l4-long-hash enable
```

port-channel load-balance

IPv4-.

port-channel load-balance <method>

< method > – :

- Ip – IP- ;
- ip-l4 – IP- , L4;
- mac – MAC- ;
- mac-ip – MAC- IP- ;
- mac-ip-l4 – MAC-, IP- L4 .

CONFIGURE

```
msan(config)# port-channel load-balance ip
```

lacp system-priority

LACP. LACP , LACP. (no) LACP .

lacp system-priority <priority>
no lacp system-priority

<priority> – LACP, [0 .. 65535].

32768.

CONFIGURE

```
msan(config)# lacp system-priority 32541
```

no interface port-channel

uplink- port-channel.

no interface port-channel <number>

< number > – , [1 .. 8].

CONFIGURE

```
msan(config)# no interface port-channel 4
```

mode

: LACP; .

mode <act>

<act> – :

- lacp – LACP;
- static – .

PP4G3X PORT-CHANNEL

```
msan(config-if)# mode lacp
```

.

channel-group

/ .

(no) / .

channel-group <ID> [force]
no channel-group

< ID > – , , [1 .. 8];
[force] – , .

PP4G3X FRONT-PORT

```
msan(config-if)# channel-group 1
```

port channel 1.

lacp mode

:

- Passive – , LACP.
- Active – . , LACP active passive.

(no) .

lacp mode <NAME>
no lacp mode

< NAME > – :

- active;
- passive.

«active».

PP4G3X FRONT-PORT

```
msan(config-if)# lacp mode active
```

«active».

lacp port-priority

. [1 .. 65535]. 1 .

(no) .

lacp port-priority <priority>
no lacp port-priority

< priority > – , [0 .. 65535].

32768.

PP4G3X FRONT-PORT

```
msan(config-if)# lacp port-priority 256
```

256.

lacp rate

LACPDU.

(no) LACPDU .

lacp rate <rate>
no lacp rate

< rate > – :

- fast – 1 ;
- slow – 30 .

1 (fast).

PP4G3X FRONT-PORT

```
msan(config-if)# lacp rate slow
```

LACPDU 30 .

show channel-group hw

LAG-.

show channel-group hw [number]

[number] – , [1 .. 127], «0» .

0 – .

ROOT

```
msan# show channel-group hw
Channel group 9 (2 members): slot-port 1/0 [E], slot-port 2/0 [E]
Channel group 10 (2 members): slot-port 1/1 [E], slot-port 2/1 [E]
Channel group 11 (2 members): slot-port 1/2 [E], slot-port 2/2 [E]
Channel group 12 (2 members): slot-port 2/3 [D], slot-port 1/3 [D]
Channel group 13 (2 members): slot-port 2/4 [D], slot-port 1/4 [D]
Channel group 14 (2 members): slot-port 2/5 [D], slot-port 1/5 [D]
Channel group 15 (2 members): slot-port 2/6 [D], slot-port 1/6 [D]
Channel group 16 (2 members): slot-port 2/7 [D], slot-port 1/7 [D]
Channel group 17 (2 members): slot-port 2/8 [D], slot-port 1/8 [D]
Channel group 18 (2 members): slot-port 2/9 [D], slot-port 1/9 [D]
Channel group 19 (2 members): slot-port 2/10 [D], slot-port 1/10 [D]
Channel group 20 (2 members): slot-port 2/11 [D], slot-port 1/11 [D]
Channel group 21 (2 members): slot-port 2/12 [D], slot-port 1/12 [D]
Channel group 22 (2 members): slot-port 2/13 [D], slot-port 1/13 [D]
Channel group 23 (2 members): slot-port 2/14 [D], slot-port 1/14 [D]
Channel group 24 (2 members): slot-port 2/15 [D], slot-port 1/15 [D]
```

show channel-group counters

bpdu, .

show channel-group counters [number]

[number] – , [1 .. 127], «0» .

0 – .

ROOT

```
msan# show channel-group counters 9
Channel group 9
 Mode: LACP
 Port slot-port 1/0: Link failure count: 0 LACPDU Rx: 6191 LACPDU Tx: 6190
 Port slot-port 2/0: Link failure count: 2 LACPDU Rx: 4323 LACPDU Tx: 6219
```

show channel-group lacp

LACP- .

show channel-group lacp [number]

[number] – , \[1 .. 127\], «0» .

0 – .

ROOT

```
msan# show channel-group lacp 11
Channel group 11
 Mode: LACP
 Active Aggregator: 27
 Channel group 11 (Aggregator 27)     Number of ports: 2
                     Actor System        Partner System
   System Priority:   32768               65535
   System MAC:        a8:f9:4b:8a:42:90   02:00:09:0b:00:02
   Key:               0x02d1              0x0009
   Port slot-port 1/2:[active], link up, 1 Gbps , full duplex
                     Actor Port          Partner Port
   Port Number:       13                  1
   Port Priority:     32768               255
   LACP Activity:     active              active
   Port slot-port 2/2:[active], link up, 1 Gbps, full duplex
                     Actor Port          Partner Port
   Port Number:       41                  2
   Port Priority:     32768               255
   LACP Activity:     active              active
```

show channel-group summary

.

show channel-group summary <number>

[number] – , [1 .. 127], «0» .

0 – .

ROOT

```
msan# show channel-group summary 11
Channel group 11
  Mode: LACP
  Port slot-port 1/2: [active], link up, 1 Gbps, full duplex
  Port slot-port 2/2: [active], link up, 1 Gbps, full duplex
```

show interfaces lacp

LACP.

show interfaces lacp

.

ROOT

```
 msan# show interfaces lacp
 Interface name Port Priority LACPDU rate Mode
 slot-port 1/7 32768 Fast Active
 slot-port 1/8 32768 Fast Active
 …
 front-port 2/1 32768 Fast Active
```

PP: MAC-

mac-address-table aging-time

MAC- .

(no) MAC- .

mac-address-table aging-time <AGING TIME>
no mac-address-table aging-time

< AGING TIME > – -, [10 .. 630] .

300 .

CONFIGURE

```
msan(config)# mac-address-table aging-time 400
```

show mac address-table

- :

- ;
- -;
- VID.

, .

show mac address-table [<type> <param> <value>]

<type> – :

- exclude – ;
- include – .

<param> – (exclude, include):

- interface front-port – front-port;
- interface port-channel – port-channel;
- interface slot-channel – slot-channel;
- mac – -;
- VID – VLAN ID.

<value> – , (exclude, include):

- <param> = 'interface front-port', <value> : <unit/port>, :
  - unit – PP4G3X, [1 .. 2];
  - port – , [0 .. 5].
- <param> = 'interface port-channel', <value> : [1 .. 8];
- <param> = 'interface slot-channel', <value> : [0 .. 15];
- <param> = 'mac', <value> : <MAC VALUE> [MAC MASK], MAC VALUE – - XX:XX:XX:XX:XX:XX;
- <param> = 'vid', <value> [1 .. 4094].

ROOT

```
msan# show mac address-table include vlan 4094
Mac table (shadow)
~~~~~~~~~~~~~~~~~~
VID   MAC address        Port                          Type     From          To
----  -----------------  ----------------------------- -------- ------------- -------------
4094  a8:f9:4b:8a:41:e0   2/CPU                        Static   Forward       Trap to CPU
4094  a8:f9:4b:8a:42:90   1/CPU                        Static   Forward       Trap to CPU
2 valid mac entries
```

show mac address-table count

- .

show mac address-table count

.

ROOT

```
msan# show mac address-table count
19 valid mac entries
```

show interfaces mac-address

- .

show interfaces mac-address <interface> <number>

< interface > – :

- front-port – uplink-;
- slot-port – ;
- stack-port – PP4G3X;
- port-channel – LAG uplink-;
- slot-channel – LAG ;
- stack-channel– LAG PP4G3X.

< number > – («,», «-»):

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2];
  - port – [0 .. 5].
- slot-port: <unit/port>, :
  - unit – PP4G3X [1 .. 2];
  - port – [0 .. 15].
- stack-port: <unit/port>, :
  - unit – PP4G3X [1 .. 2];
  - port – [0 .. 1].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15];
- stack-channel: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0].

ROOT

```
msan# show interfaces mac-address front-port 1/6
Interface front-port 1/6
MAC address: a8:f9:4b:8a:42:97
```

PP: QoS

qos default

  ,   . 7 .

qos default <queue>

< queue > – , [0 .. 7].

  0.

CONFIGURE

```
msan(config)# qos default 6
```

, , 6.

qos type

  ,   .   ,   (IEEE 802.1p/DSCP).

  :

- ;
- IEEE 802.1p;
- IP ToS ( ) 3 - Differentiated Services Codepoint (DSCP);
- 802.1p, DSCP/TOS.

qos type <type>

<type> – :

- 0 – ;
- 1 – 802.1p (Priority 802.1Q);
- 2 - DSCP/TOS (Differentiated Services IP , 6);
- 3 - 802.1p, DSCP/TOS.

  .

CONFIGURE

```
msan(config)# qos type 2
```

  DSCP/TOS.

qos map

  : Differentiated Services IP-, 6 – Priority 802.1Q .

 , qos type, . (no) .

[no] qos map <type> <field values> to <queue>

<type> – :

- 0 – 802.1p (2);
- 1 – DSCP/TOS (3).

< field values > – , <type> (, «-»):

- <type> = 0, Priority 802.1Q : [0 .. 7];
- <type> = 1, Differentiated Services IP-, 6 . : [0 .. 63].

< queue > – , [0 .. 7].

CONFIGURE

```
msan(config)# qos map 0 7 to 6
```

7- priority = 7 802.1Q .

cntrset

.

cntrset <PORT> <UNIT> <SET> <VLAN> <QUEUE> <DROP PRECEDENCE>

< PORT > – , :

- all – ,
- cpu – CPU-,
- front-port – counting front-port
- slot-port – counting slot-port
- stack-port – counting stack-port

< UNIT > – :

- cpu: [1 .. 2];
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- slot-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 15].
- stack-port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 1].

< SET > – , [0 .. 1];
< VLAN > – VLAN, [1 .. 4094] all;
< QUEUE > – , [0 .. 7] all;
< DROP PRECEDENCE > – drop precedence [0 .. 1] all.

CONFIGURE

```
msan(config)# cntrset cpu 1 0 59 7 1
```

show cntrset

.

show cntrset <SET>

<SET> – , [0 .. 1].

ROOT

```
msan# show cntrset 1
[01800160] Configuration Register: 0x00000000
[01B40164] Outgoing Unicast Packet Count: 32901
[01B40168] Outgoing Multicast Packet Count: 23
[01B4016C] Outgoing Broadcast Packet Count: 67
[01B40170] Bridge Egress Filtered Packet Count: 6501
[01B40174] Tail Dropped Packet Counter: 0
[01B40178] Control Packet Counter: 40052
[01B4017C] Egress Forwarding Restriction Dropped Packet Counter: 0
```

show qos

QoS.

show qos

.

ROOT

```
msan# show qos
Priority assignment by NONE packet field, all priorities are equal
Default priority queue is 0
DSCP/TOS queues:
0:
1:
2:
3:
4:
5:
6:
802.1p queues:
0:
1:
2:
3:
4:
5:
6:
```

PP:

isolation group

.

isolation group <group range>

<group range> – , [0..29].

CONFIGURE

```
msan(config)# isolation group 1
msan(config-if)#
```

allow

, .

(no) / .

[no] allow < INTERFACE > < RANGE >

< INTERFACE > – :

, .

(no) / .

[no] allow < INTERFACE > < RANGE >

< INTERFACE > – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG .

< RANGE > – / :

- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

: «all»; «,», «-».

ISOLATION GROUP

```
msan(config-if)# allow front-port 1/5
```

isolation enable

VLAN.

(no) .

[no] isolation enable

.

PP4G3X VLAN

```
msan(config-if)# isolation enable
```

isolation assign

VLAN.

(no) .

[no] isolation assign <port> <num> group < group range >

<port> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG .

<num> – :

- all – ;
- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

<group range> – , [0..29].

PP4G3X VLAN

```
msan(config-if)# isolation assign front-port all group 0
```

show bridging

.

show bridging <interface> < number>

< interface > – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG .

< number > – («,», «-»):

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X [1 .. 2],
  - port – [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

ROOT

```
msan# show bridging slot-channel 0
Bridging settings
~~~~~~~~~~~~~~~~~
Source                Destination         Traff
                                          ic re
                                          stric
                                          tion
                                          flag
--------------------- ------------------- -----
slot-channel 0        front-port 1/0      Allow
                      front-port 1/1      Allow
                      front-port 1/2      Allow
                      front-port 1/3      Allow
                      front-port 1/4      Allow
                      front-port 1/5      Allow
                      front-port 1/6      Allow
                      front-port 2/0      Allow
                      front-port 2/1      Allow
                      front-port 2/2      Allow
                      front-port 2/3      Allow
                      front-port 2/4      Allow
                      front-port 2/5      Allow
                      front-port 2/6      Allow
                      slot-channel 0      Allow
                      slot-channel 1      Allow
                      slot-channel 2      Allow
                      slot-channel 3      Allow
                      slot-channel 4      Allow
                      slot-channel 5      Allow
                      slot-channel 6      Allow
                      slot-channel 7      Allow
                      slot-channel 8      Allow
                      slot-channel 9      Allow
                      slot-channel 10     Allow
                      slot-channel 11     Allow
                      slot-channel 12     Allow
                      slot-channel 13     Allow
                      slot-channel 14     Allow
                      slot-channel 15     Allow
--------------------- ------------------- -----
```

show isolation vlans

VLAN.

show isolation vlans \[VID\]

[VID] – VLAN, [1 .. 4094]. .

VLAN.

ROOT

```
msan# show isolation vlans 1
```

```
   Isolation per vlan:
   ~~~~~~~~~~~~~~~~~~~
VID    State      Interface              Destination
                                         group
----   --------   --------------------   ------------
1      disabled   front-port 1/0         Any
                  front-port 1/1         Any
                  front-port 1/2         Any
                  front-port 1/3         Any
                  front-port 1/4         Any
                  front-port 1/5         Any
                  front-port 1/6         Any
                  front-port 2/0         Any
                  front-port 2/1         Any
                  front-port 2/2         Any
                  front-port 2/3         Any
                  front-port 2/4         Any
                  front-port 2/5         Any
                  front-port 2/6         Any
                  slot-channel 0         0
                  slot-channel 1         0
                  slot-channel 2         0
                  slot-channel 3         0
                  slot-channel 4         0
                  slot-channel 5         0
                  slot-channel 6         0
                  slot-channel 7         0
                  slot-channel 8         0
                  slot-channel 9         0
                  slot-channel 10        0
                  slot-channel 11        0
                  slot-channel 12        0
                  slot-channel 13        0
                  slot-channel 14        0
                  slot-channel 15        0
```

show isolation groups

.

show isolation groups [GROUP RANGE]

[GROUP RANGE] – , [0 .. 29]. .

.

ROOT

```
msan# show isolation groups 0
```

```
   Isolation groups:
   ~~~~~~~~~~~~~~~~
Group   Interface             Traffic
                              restriction
                              flag
----   --------------------   -----------
0      front-port 1/0         Allow
       front-port 1/1         Allow
       front-port 1/2         Allow
       front-port 1/3         Allow
       front-port 1/4         Allow
       front-port 1/5         Allow
       front-port 1/6         Allow
       front-port 2/0         Allow
       front-port 2/1         Allow
       front-port 2/2         Allow
       front-port 2/3         Allow
       front-port 2/4         Allow
       front-port 2/5         Allow
       front-port 2/6         Allow
       slot-channel 0         Deny
       slot-channel 1         Deny
       slot-channel 2         Deny
       slot-channel 3         Deny
       slot-channel 4         Deny
       slot-channel 5         Deny
       slot-channel 6         Deny
       slot-channel 7         Deny
       slot-channel 8         Deny
       slot-channel 9         Deny
       slot-channel 10        Deny
       slot-channel 11        Deny
       slot-channel 12        Deny
       slot-channel 13        Deny
       slot-channel 14        Deny
       slot-channel 15        Deny
```

PP: SELECTIVE Q-IN-Q. SELECTIVE Q-IN-Q

Selective Q-in-Q SELECTIVE Q-IN-Q COMMON. Selective Q-in-Q SELECTIVE Q-IN-Q LIST.

SELECTIVE Q-IN-Q VLAN (Customer VLAN) SPVLAN (Service Provider's VLAN), Customer VLAN, .

SELECTIVE Q-IN-Q COMMON ROOT :

```
msan> enable
msan# configure
msan(config)# selective-qinq common
msan(config-sel-qinq)#
```

SELECTIVE Q-IN-Q LIST ROOT :

```
msan> enable
msan# configure
msan(config)# selective-qinq list <NAME>
msan(config-sel-qinq-_)#
```

<NAME> - , 31 .

selective-qinq common

Selective Q-in-Q.

selective-qinq common

.

CONFIGURE

```
msan(config)# selective-qinq common
msan(config-sel-qinq)#
```

selective-qinq list

Selective Q-in-Q.

selective-qinq list <name>

<name> – Selective Q-in-Q, 31 .

CONFIGURE

```
msan(config)# selective-qinq list TEST
msan(config-sel-qinq-test)#
```

add-tag

.

(no) .

[no] add-tag svlan <S-VLAN> cvlan <C-VLAN>

<S-VLAN> – , [1..4095];

<C-VLAN> – / , 1-4094. C- VLAN «,».

SELECTIVE Q-IN-Q COMMON

SELECTIVE Q-IN-Q LIST

```
msan(config-sel-qinq)# add-tag svlan 3 cvlan 2,4-100
```

overwrite -tag

VLAN .

(no) .

[no] overwrite-tag new-vlan <NEW-VLAN> old-vlan <OLD-VLAN> <RULE_DIRECTION>

<NEW-VLAN> – VLAN, [1 ..4095];

<OLD-VLAN> – VLAN, , [1 .. 4094];

<RULE_DIRECTION> – :

- Ingress – ;
- Egress – ;

SELECTIVE Q-IN-Q COMMON
SELECTIVE Q-IN-Q LIST

```
msan(config-sel-qinq)# overwrite-tag new-vlan 555 old-vlan 111 ingress
```

remove

Selective Q-in-Q .

remove <RULE_INDEX>

<RULE_INDEX> – , [0 .. 511].

SELECTIVE Q-IN-Q COMMON

SELECTIVE Q-IN-Q LIST

```
msan(config-sel-qinq)# remove 0
```

clear

Selective Q-in-Q.

clear

.

SELECTIVE Q-IN-Q COMMON
SELECTIVE Q-IN-Q LIST

```
msan(config-sel-qinq)# clear
```

show selective-qinq

Selective Q-in-Q.

show selective-qinq <param>

<param> – :

- common – ;
- list – . «» ;
- lists – .

ROOT

```
msan# show selective-qinq lists
Selective Q-in-Q common rules
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Index     Rule                                    Direction
-----     ---------------------------------------- ------------
 –         –                                        –
-----     ---------------------------------------- ------------
```

show interfaces selective-qinq lists

"Selective Q-in-Q" (State) .

show interfaces selective-qinq lists <interface_type> <range>

<interface_type> – :

- front-port – uplink-;
- port-channel – LAG uplink-;
- slot-channel – LAG- .

<range> – («,», «-»):

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8];
- slot-channel: [0 .. 15].

ROOT

```
msan# show interfaces selective-qinq lists front-port all
Interfaces selective Q-in-Q
~~~~~~~~~~~~~~~~~~~~~~~~~~~
Interfaces          State      Group
-------------------- ---------- --------------------------------
front-port 1/0      disabled   No (common only)
front-port 1/1      disabled   No (common only)
front-port 1/2      disabled   No (common only)
front-port 1/3      disabled   No (common only)
front-port 1/4      disabled   No (common only)
front-port 1/5      disabled   No (common only)
front-port 1/6      disabled   No (common only)
front-port 2/0      disabled   No (common only)
front-port 2/1      disabled   No (common only)
front-port 2/2      disabled   No (common only)
front-port 2/3      disabled   No (common only)
front-port 2/4      disabled   No (common only)
front-port 2/5      disabled   No (common only)
front-port 2/6      disabled   No (common only)
-------------------- ---------- -------------------------------
```

PP: DHCP (DHCP relay agent)

dhclient

DHCP-.

dhclient

.

CONFIGURE

```
msan> enable
msan# configure
msan(config)# dhclient
msan(config-dhcp-client)#
```

lease-time

IP-.

(no) .

lease-time <TIME>

no lease-time

<TIME> – IP-, [0 .. 3600] .

100 .

DHCP CLIENT

```
msan(config-dhcp-client)# lease-time 200
```

reboot

, DHCP- IP-.

(no) .

reboot <TIME>

no reboot

<TIME> – IP-, [0 .. 3600] .

10 .

DHCP CLIENT

```
msan(config-dhcp-client)# reboot 20
```

retry

IP-.

(no) .

retry <TIME>

no retry

<TIME> – IP-, [0 .. 3600] .

120 .

DHCP CLIENT

```
msan(config-dhcp-client)# retry 120
```

select-timeout

DHCP- .

(no) .

select-timeout <TIME>

no select-timeout

< TIME > – DHCP-, [0 .. 3600] .

3 .

DHCP CLIENT

```
msan(config-dhcp-client)# select-timeout 3
```

timeout

, DHCP- IP-.

(no) .

timeout <time>

no timeout

<time> – IP- DHCP-, [0 .. 3600] .

60 .

DHCP CLIENT

```
msan(config-dhcp-client)# timeout 90
```

PP: LLDP

lldp enable

LLDP. (no) LLDP.

[no] lldp enable

.

CONFIGURE

```
msan(config)# lldp enable
```

lldp hold-multiplier

, LLDP . LLDP update ( ), LLDP (lldp timer). , LLDP TTL = min(65535, LLDP-Timer * LLDP-HoldMultiplier).

(no) .

lldp hold-multiplier <hold>

no lldp hold-multiplier

<hold> – , [2 .. 10] .

– 4 .

CONFIGURE

```
msan(config)# lldp hold-multiplier 5
```

lldp reinit

, LLDP- LLDP.

(no) .

lldp reinit <reinit>

no lldp reinit

<reinit> – , [1 .. 10] .

– 2 .

CONFIGURE

```
msan(config)# lldp reinit 3
```

lldp timer

, LLDP.

(no) – 30 .

lldp timer <timer>

no lldp timer

<timer> – , [5..32768] .

 – 30 .

CONFIGURE

```
msan(config)# lldp timer 60
```

lldp tx-delay

 LLDP, MIB LLDP. , , 0.25* LLDP-Timer.

 (no) - 2 .

lldp tx-delay <txdelay>

no lldp tx-delay

<txdelay> – , [1..8192] .

 - 2 .

CONFIGURE

```
msan(config)# lldp tx-delay 3
```

show lldp configuration

 LLDP- , :

- Interface – ;
- Status – :
- disabled – ;
- transmit-only – ;
- receive-only – ;
- transmit-receive – -;
- invalid – .
- Timer – LLDP;
- Hold multiplier – , LLDP ;
- Reinit delay – , LLDP- LLDP;
- Tx delay – LLDP, MIB LLDP.

show lldp configuration [<interface>< number >]

.

<interface> – :

- front-port – uplink-;
- port-channel – LAG uplink-.

<number> – :

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].

- port-channel: [1 .. 8].

.

ROOT

```
msan# show lldp configuration front-port 2/4
LLDP configuration
~~~~~~~~~~~~~~~~~~
Interface       Status          Timer (sec)  Hold multiplier Reinit delay (sec) Tx delay (sec)
--------------- --------------- ------------ --------------- ----------------- ---------------
front-port 2/4  transmit-receive  30               4               2                2
```

show lldp neighbor

, LLDP.

show lldp neighbor [<interface>< number >]

.

<interface> – :

- front-port – uplink-;
- port-channel – LAG uplink-.

<number> – :

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8].

.

ROOT

```
msan# show lldp neighbor
LLDP neighbors
~~~~~~~~~~~~~~
Interface            Device ID                      Port ID                        TTL
-------------------- ------------------------------ ------------------------------ ---------
front-port 1/5       a8:f9:4b:80:e1:00              gi0/4                          91/120
```

show lldp local

LLDP-, .

show lldp local [<interface>< number >]

.

<interface> – :

- front-port – uplink-;
- port-channel – LAG uplink-.

<number> – :

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8].

.

ROOT

```
msan> show lldp local
LLDP local TLVs
~~~~~~~~~~~~~~~
Interface            Device ID                       Port ID                         TTL
-------------------- ------------------------------- ------------------------------- ------
front-port 1/5       a8:f9:4b:8a:42:90               front-port 1/5                  120
```

show lldp statistics

LLDP front-port, port-channel.

show lldp statistics [<interface>< number >]

.

<interface> – :

- front-port – uplink-;
- port-channel – LAG uplink-.

<number> – :

- «all»;
- front port: <unit/port>, :
  - unit – PP4G3X, [1 .. 2],
  - port – , [0 .. 5].
- port-channel: [1 .. 8].

.

ROOT

```
msan> show lldp statistics front-port 2/2
Tables Last Change Time: 0:0:2:37
Tables Inserts: 4
Tables Deletes: 3
Tables Dropped: 0
Tables Ageouts: 1
LLDP statistics
~~~~~~~~~~~~~~~
Interface    Tx total Rx total  Rx errors Rx discarded TLVs discarded TLVs unrecognized Agouts total
------------ -------- --------- --------- -----------  -------------- ----------------- ------------
front-port2/2   0         0         0          0             0                0              0
```

PP:

LOGGING (,), , .

CONFIGURE. ROOT :

```
msan> enable
msan#configure
```

logging console

syslog, : , .

(no) .

[no] logging console <SEVERITY> [ONLY]

< SEVERITY > – syslog : 'emerg' 'alert' 'crit' 'error' 'warning' 'notice' 'info' 'debug';

[ONLY] – . .

CONFIGURE

```
msan(config)# logging console debug
```

logging file

, , , .

[no] logging file <FILE> <SEVERITY> [ONLY]

< FILE > – , 255 ;

< SEVERITY > – , ;

[ONLY] – .

CONFIGURE

```
msan(config)# logging file debug.log debug only
```

logging file-size

- . , , max-files (. logging max-files).

(no) .

logging file-size <SIZE>

no logging file-size

< SIZE > – -, [100..10000] .

500 .

CONFIGURE

```
msan(config)# logging file-size 1000
```

logging host

.

(no) .

logging host <HOST> port <PORT> transport <TRANSPORT> <SEVERITY> [ONLY]

no logging host

< HOST > – IP- log-;

< PORT > – 1 65535;

< TRANSPORT > – : tcp udp;

< SEVERITY > – , ;

[ONLY] – c .

CONFIGURE

```
msan(config)# logging host 192.168.1.2 port 1024
transport tcp debug only
```

logging max-files

-, . , .

(no) .

logging max-files <file_num>]
no logging max-files

< file_num > – -, 1 100

– 3 .

CONFIGURE

```
msan(config)# logging max-files 20
```

logging monitor

syslog, : , .

(no) .

[no] logging monitor <SEVERITY> [ONLY]

< SEVERITY > – syslog : 'emerg' 'alert' 'crit' 'error' 'warning' 'notice' 'info' 'debug';

[ONLY] – . .

CONFIGURE

```
msan(config)# logging monitor debug
```

logging storage persistent

syslog .

(no) .

[no] logging storage persistent

.

CONFIGURE

```
msan(config)# logging storage persistent
```

FXS: FXS-72

test interface

(PP) . syslog.

test interface <UNIT> <SLOT> [TIME] [PKT_LENGTH]

< UNIT > – PP4G3X, [1 .. 2];

< SLOT > – , [0 .. 15];

[TIME] – , , [5 .. 30].

[PKT_LENGTH] – , 64 1518.

[TIME] – 5;

[PKT_LENGTH] – 1518.

DEBUG

```
msan(debug)# test interface 1 14
Jan  1 01:35:26 voiplab switch: %PSTATE: Interface test finished: slot-port 1/15
Jan  1 01:35:26 voiplab switch: %PSTATE: Start time: 01-01-2000 01:30:11
Jan  1 01:35:26 voiplab switch: %PSTATE: Planned duration: 300 seconds
Jan  1 01:35:26 voiplab switch: %PSTATE: Elapsed time:     300.185008 seconds
Jan  1 01:35:26 voiplab switch: %PSTATE: End reason: complete
```

```
Jan  1 01:35:26 voiplab switch: %PSTATE: Packet generator parameters:
Jan  1 01:35:26 voiplab switch: %PSTATE: Packet length:  1518
Jan  1 01:35:26 voiplab switch: %PSTATE: Packet payload: random
Jan  1 01:35:26 voiplab switch: %PSTATE: Packet FCS:     good
Jan  1 01:35:26 voiplab switch: %PSTATE: Receive counters:
Jan  1 01:35:26 voiplab switch: %PSTATE: *** octets_recv: 37037293392
Jan  1 01:35:26 voiplab switch: %PSTATE: *** mc_frames_recv: 12223246
Jan  1 01:35:26 voiplab switch: %PSTATE: *** uc_frames_recv: 12175498
Jan  1 01:35:26 voiplab switch: %PSTATE: Expected packets: 24397351
Jan  1 01:35:26 voiplab switch: %PSTATE: Received packets: 24398744
Jan  1 01:35:26 voiplab switch: %PSTATE: Expected octets:  37035178818
Jan  1 01:35:26 voiplab switch: %PSTATE: Received octets:  37037293392
Jan  1 01:35:26 voiplab switch: %PSTATE: Packets count deviation: +1393 (threshold: 40637)
Jan  1 01:35:26 voiplab switch: %PSTATE: Octets count deviation: +2114574 (threshold: 61686966)
Jan  1 01:35:26 voiplab switch: %PSTATE: Test result: PASS
```

show system slot

.

show system slot < SLOT >

< SLOT > – , [0 .. 15].

ROOT

```
msan# show system slot 12
        Version protocol: 1.0
        Version software: #1.2.0-fxs-3d91e60 Tue Aug  7 11:17:41 2012
        Version OS      : Linux version 2.6.22.19-4.03.0-c300evm (igor@igor-desktop) (gcc version 3.4.5) #239 Mon
Aug 6 17:38:39 OMST 2012
        Version firmware: v7_21
        Version BPU     : FXS72 PLD v20120724 date: 2012 Jul 24 time 9:53:43

        Factory type  : FXS72
        Factory serial: MS0D000027
        Factory MAC   : 02:77:77:77:77:77

        System time     : Sat Jan  1 05:23:56 2000
        Uptime (d:h:m:s): 0:05:21:56
        CPU load (1/5/15 minutes): 0.00/0.00/0.00
        Memory size, KiB (total/free)    : 44760/14144
        Filesystem size, KiB (total/free): 15491/2598

        Vmode : 60 V
```

```
        Vbat  : 60 V

        Vring1: 108 V

        Vring2: 108 V

        Temperature(Board) : 56 C
```

show voice-port status

FXS-72.

show voice-port status <shelf/slot/port>

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

:

- 1/1/0 – , , ;
- 1/1-4/13 – , , ;
- 1/1-4/13-45,56,66-71 - , , , ( );
- 1/1-2/23-56,1/6/71,1/15/45-55,63 – .

ROOT

```
msan# show voice-port status 1/0/1-10
State of voice-port in slot 0
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port State         Start time Number     Dialed digits Registration state  Last         Next
                                                                            registration registration
                                                                            at           after
---- ------------- ---------- ---------- ------------- ------------------ ------------ ------------
1    s00p01 on-hook                                          Off                not          not
connected connected
2 s00p02 on-hook                                          Off                not          not
connected connected
3 s00p03 on-hook                                          Off                not          not
connected connected
4 s00p04 on-hook                                          Off                not          not
connected connected
5 s00p05 on-hook                                          Off                not          not
connected connected
6 s00p06 on-hook                                          Off                not          not
connected connected
7 s00p07 on-hook                                          Off                not          not
connected connected
8 s00p08 on-hook                                          Off                not          not
connected connected
9 s00p09 on-hook                                          Off                not          not
connected connected
10 s00p10 on-hook                                         Off                not          not
connected connected
```

show voice-port status sip-username

FXS-72 .

show voice-port status sip-username <WORD>

< WORD > – SIP-.

ROOT

```
msan# show voice-port status sip-username 778001
State of voice-port in slot 0
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port State                Start time Number               Dialed digits        SIP Proxy
---- -------------------- ---------- -------------------- -------------------- ----------
1    778001 on-hook                                                            162:12:11
```

show interfaces status slot

FXS-72:

- Link – :
- off – ( );
- on – ( ).
- Duplex – :
- N/A – , ;
- full – ;
- half – .
- Speed – (10 Mbps, 100 Mbps, 1000 Mbps):
- N/A – , .

show interfaces status slot < SLOT >

< SLOT > – , [0 .. 15].

ROOT

```
msan> show interfaces status slot 0

    State interfaces for slot 12

   ~~~~~~~~~~~~~~~~~~~~~~~~~~~
         CPU 0         CPU 1         slot-port 0   slot-port 1   front-port
------   -----------   -----------   -----------   -----------   -----------
Link     on            on            on            on            off
Duplex   full          full          full          full          N/A
Speed    1000Mbps      1000Mbps      1000Mbps      1000Mbps      N/A
```

test voice-port slot/port

FXS-72.

test voice-port <shelf/slot/port > [PAR]

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan# test voice-port 12/0-4
State testing of voice-port in slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Status
---- ----------
0    ok
1    ok
2    ok
3    ok
4    ok
```

show voice-port test-results

FXS-72.

show voice-port test-results <shelf/slot/port> [PAR]

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> show voice-port test-results 12/0-10
Test results for voice-port on slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Result       Ub, V  Ua, V Ubat, V Uring, V Rab, kOhm Ra, kOhm Rb, kOhm Cab, uF Ca, uF  Cb, uF
---- ------------ -----  ----- ------- -------- --------- -------- -------- ------- ------- ------
0    ok           -1.33  0.20   60.25   109.17   537.30    427.11   387.65   0.37   18.16   0.31
1    ok            0.20  0.20   60.34   109.38   563.65    362.07   419.55   1.21   57.75   1.09
2    ok           -0.82  0.20   60.38   109.25   567.54    336.19   355.14   0.19   10.31   0.16
3    ok            0.20 -1.50   60.19   109.40   554.20    376.20   395.77   0.57   22.16   0.50
4    ok           -1.50 -1.50   60.24   109.25   545.93    386.96   415.45   0.52   70.51   0.43
5    ok            0.20  0.20   60.20   109.25   558.31    405.19   392.07   2.07   530.37  1.86
6    ok            0.20  0.20   60.36   109.25   549.92    397.85   378.75   0.85   118.77  0.75
7    ok           -0.82  0.20   60.31   109.11   549.49    373.24   385.24   0.13   16.63   0.10
8    ok            0.20  0.20   60.37   109.19   536.17    358.06   391.46   0.43   9.76    0.37
9    ok            0.20  0.20   60.33   109.33   566.13    431.90   386.50   0.27   11.98   0.22
10   ok            0.20 -1.50   60.39   109.23   556.82    385.58   374.89   0.50   24.69   0.43
```

test voice-port sip-username

FXS-72 .

test voice-port sip-username <WORD> [PAR]

< WORD > – sip-, 21 .

[PAR] – (,)

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> test voice-port sip-username s12p71
State testing of voice-port in slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port   Status
----   ----------
71     ok
```

clear voice-port test-queue sip-username

FXS-72 .

clear voice-port test-queue sip-username <WORD> \[PAR\]

< WORD > – sip-, 21 .

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> clear voice-port test-queue sip-username s12p71

State deleted in queue voice-port for slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Status
---- ----------
71   ok
```

clear voice-port test-queue

FXS-72 .

clear voice-port test-queue <shelf/slot/port> [PAR]

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-».

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> clear voice-port test-queue 1/12/71

State deleted in queue voice-port for slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Status
---- ----------
71   ok
```

show voice-port test-results sip-username

FXS-72 .

show voice-port test-results sip-username < WORD > \[PAR\]

< WORD > – sip-, 21 .

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> show voice-port test-results sip-username s12p00
Test results for voice-port on slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Result       Ub, V Ua, V Ubat, V Uring, V Rab, kOhm Ra, kOhm Rb, kOhm Cab, uF Ca, uF  Cb, uF
---- ------------ ----- ----- ------- -------- --------- -------- -------- ------- ------- ------
0    ok           -1.16 +0.20 60.32   109.02   529.21    362.85   493.52   2.62    1093.34 2.58
```

show voice-port test-queue-status

FXS-72.

show voice-port test-queue-status <slot>

SLOT – , [0..15].

ROOT

```
msan> show voice-port test-queue-status 12

   Status of the queue to test voice-port in slot 12
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port   Status      Start       Status      Start time   End time
                   time test   last test   last test    last test
----   ---------   ---------   ---------   ----------   ---------
0      testing     01/01/00    completed   01/01/00     01/01/00
                   06:45:55                06:18:41     06:19:03
1      in queue    N/A         completed   01/01/00     01/01/00
                                           06:19:03     06:19:24
2      in queue    N/A         completed   01/01/00     01/01/00
                                           06:19:24     06:19:46
3      in queue    N/A         completed   01/01/00     01/01/00
                                           06:19:46     06:20:07
4      in queue    N/A         completed   01/01/00     01/01/00
                                           06:20:07     06:20:29
5      in queue    N/A         completed   01/01/00     01/01/00
                                           06:20:29     06:20:51
6      in queue    N/A         completed   01/01/00     01/01/00
                                           06:20:51     06:21:27
7      in queue    N/A         completed   01/01/00     01/01/00
                                           06:21:27     06:21:49
```

show voice-port test-status

FXS-72.

show voice-port test-status <shelf/slot/port> \[PAR\]

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> show voice-port test-status 12/0-10

State test voice-port for slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Status     Start      Status     Start time  End time
                 time test  last test  last test   last test
---- ---------  ---------  ---------  ----------  ---------
0    idle       N/A        completed  01/01/00    01/01/00
                                        06:45:55    06:46:31
1    idle       N/A        completed  01/01/00    01/01/00
                                        06:46:31    06:46:53
2    idle       N/A        completed  01/01/00    01/01/00
                                        06:46:53    06:47:44
3    idle       N/A        completed  01/01/00    01/01/00
                                        06:47:44    06:48:05
4    idle       N/A        completed  01/01/00    01/01/00
                                        06:48:05    06:48:27
5    idle       N/A        completed  01/01/00    01/01/00
                                        06:48:27    06:48:49
6    idle       N/A        completed  01/01/00    01/01/00
                                        06:48:49    06:49:10
7    idle       N/A        completed  01/01/00    01/01/00
                                        06:49:10    06:49:32
8    idle       N/A        completed  01/01/00    01/01/00
                                        06:49:32    06:49:53
9    idle       N/A        completed  01/01/00    01/01/00
                                        06:49:53    06:50:15
10   idle       N/A        completed  01/01/00    01/01/00
                                        06:50:15    06:50:36
```

show voice-port test-status sip-username

FXS-72.

show voice-port test-status sip-username <WORD> [PAR]

< WORD > – sip-, 21 .

[PAR] – (,):

- battery – ;
- voltage – ;
- resistance – ;
- capacitance – .

ROOT

```
msan> show voice-port test-status sip-username s12p00
State test voice-port for slot 12
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Port Status    Start     Status    Start time End time
               time test last test last test  last test
---- --------- --------- --------- ---------- ---------
0    idle      N/A       completed 01/01/00   01/01/00
                                   06:45:55   06:46:31
```

FXS: FXS-72

ip gateway

IP- , , , .

(no) IP- .

ip gateway <ip_address>

no ip gateway

<ip_address> – IP- , AAA.BBB.CCC.DDD, [0..255].

CONFIGURE

```
msan(config)# ip gateway 192.168.0.1
```

ip dns

IP- DNS-. DNS IP- 127.0.0.1.

(no) IP- DNS-.

ip dns <ip_address>

no ip dns

<ip_address> – IP- , AAA.BBB.CCC.DDD, [0..255].

CONFIGURE

```
msan(config)# ip dns 127.0.0.1
```

route add

.

route add <IP> <MASK> <GATEWAY> <INTERFACE>

<IP> – IP- IP- , AAA.BBB.CCC.DDD, [0..255];

<MASK> – . <IP> IP-, 255.255.255.255;

<GATEWAY> – IP- , (IP-), AAA.BBB.CCC.DDD, [0..255];

<INTERFACE> – , :

- common – ;
- rtp – RTP-;
- sig – SIP.

CONFIGURE

```
msan(config)# route add 192.168.0.1 255.255.255.0 192.168.25.24 common
```

route del

.

route del <number>

<number> – , [0..19].

CONFIGURE

```
msan(config)# route del 0
```

no route

.

no route

.

CONFIGURE

```
msan(config)# no route
```

FXS: SIG, RTP, Common FXS-72

RTP, SIG COMMON FXS-72.

service-interfaces rtp enable

RTP.

(no) .

[no] service-interfaces rtp enable <SLOT>

<SLOT> – , [0..15], all. «,», «-».

(no enable).

CONFIGURE

```
msan(config)# service-interfaces rtp enable 12
```

service-interfaces rtp vid

VLAN RTP-.

(no) .

service-interfaces rtp vid <SLOT> <VID>

no service-interfaces rtp vid <SLOT>

<VID> – VLAN, [1..4095, none];

<SLOT> – , [0..15], all. «,», «-».

VLAN – 0.

CONFIGURE

```
msan(config)# service-intefaces rtp vid 5 12
```

service-interfaces rtp broadcast

IP- RTP.

(no) .

service-interfaces rtp broadcast < SLOT > <ADDRESS>no service-interfaces rtp broadcast < SLOT >

<ADDRESS> – IP-, AAA.BBB.CCC.DDD, [0..255].

< SLOT > – , [0 .. 15].

.

CONFIGURE

```
msan(config)# service-interfaces rtp broadcast 3 192.168.25.28
```

IP- 192.168.25.28 .

service-interfaces rtp ip

IP- RTP.

(no) .

service-interfaces rtp ip < SLOT > <IP_ADDRESS> [MASK]

no service-interfaces rtp ip < SLOT >

<IP_ADDRESS> – IP- , AAA.BBB.CCC.DDD, [0..255];

[MASK] – , , AAA.BBB.CCC.DDD, [0..255]. \[MASK\] , 255.255.255.0.

< SLOT > – , [0 .. 15].

.

CONFIGURE

```
msan(config)# service-interfaces rtp ip 2 192.168.44.14
```

IP- 192.168.44.14, 255.255.255.0.

service-interfaces rtp dhcp

, RTP DHCP. (no) DHCP.

[no] service-intefaces rtp dhcp <SLOT>

< SLOT > – , [0 .. 15].

CONFIGURE

```
msan(config)# service-interfaces rtp dhcp 12
```

service-interfaces rtp dhcp-gateway

, , DHCP. (no) .

[no] service-interfaces rtp dhcp-gateway <SLOT>

< SLOT > – , \[0 .. 15\].

CONFIGURE

```
msan(config)# service-interfaces rtp dhcp-gateway 1
```

service-interfaces rtp qos-cos

802.1 RTP.

(no) .

service-interfaces rtp qos-cos <SLOT> <COS>

no service-interfaces rtp qos-cos <SLOT>

<COS> – 802.1, [0..7];

<SLOT> – , [0..15].

.

CONFIGURE

```
msan(config)# service-interfaces rtp qos-cos 1 3
```

802.1.

service-interfaces sig enable

SIP.

(no) .

[no] service-interfaces SIG enable <SLOT>

<SLOT> – , [0..15], all. «,», «-».

(no enable).

CONFIGURE

```
msan(config)# service-interfaces sig enable 12
```

service-interfaces sig vid

VLAN .

(no) .

service-intefaces sig vid <SLOT> <VID>

no service-intefaces sig vid <SLOT>

<VID> – VLAN, [1..4095, none];

<SLOT> – , [0..15], all. «,», «-».

VLAN – 0.

CONFIGURE

```
msan(config)# service-interfaces sig vid 5 12
```

service-interfaces sig broadcast

IP- . (no) .

service-interfaces sig broadcast < SLOT > <ADDRESS> no service-interfaces sig broadcast < SLOT >

<ADDRESS> – IP-, AAA.BBB.CCC.DDD, [0..255].

< SLOT > – , [0 .. 15].

.

CONFIGURE

```
msan(config)# service-interfaces sig broadcast 3 192.168.25.28
```

IP- 192.168.25.28 .

service-interfaces sig ip

IP- .

(no) .

service-interfaces sig ip < SLOT > <IP_ADDRESS> [MASK]

no service-interfaces sig ip < SLOT >

<IP_ADDRESS> – IP- , AAA.BBB.CCC.DDD, [0..255];

[MASK] – , , AAA.BBB.CCC.DDD, [0..255]. [MASK] , 255.255.255.0.

< SLOT > – , [0 .. 15].

.

CONFIGURE

```
msan(config)# service-interfaces sig ip 2 192.168.44.14
```

IP- 192.168.44.14, 255.255.255.0.

service-interfaces sig dhcp

, DHCP.

(no) DHCP.

[no] service-interfaces sig dhcp <SLOT>

< SLOT > – , [0 .. 15].

CONFIGURE

```
msan(config)# service-interfaces sig dhcp 12
```

service-interfaces sig dhcp-gateway

, , DHCP.

(no) .

[no] service-interfaces sig dhcp-gateway <SLOT>

< SLOT > – , [0 .. 15].

CONFIGURE

```
msan(config)# service-interfaces sig dhcp-gateway 1
```

service-interfaces sig qos-cos

802.1 .

(no) .

service-interfaces sig qos-cos <SLOT> <COS>

no service-interfaces sig qos-cos <SLOT>

<COS> – 802.1, [0..7];

<SLOT> - , [0..15].

.

CONFIGURE

```
msan(config)# service-interfaces sig qos-cos 1 3
```

802.1.

service-interfaces common broadcast

IP- COMMON.

(no) .

service-interfaces common broadcast < SLOT > <ADDRESS>no service-interfaces common broadcast < SLOT >

<ADDRESS> – IP-, AAA.BBB.CCC.DDD, [0..255].

< SLOT > – , [0 .. 15].

.

CONFIGURE

```
msan(config)# service-interfaces common broadcast 3 192.168.25.28
```

IP- 192.168.25.28 .

service-interfaces common ip

IP- COMMON.

(no) .

service-interfaces common ip < SLOT > <IP_ADDRESS> [MASK]

no service-interfaces common ip < SLOT >

<IP_ADDRESS> – IP- , AAA.BBB.CCC.DDD, [0..255];

[MASK] – , , AAA.BBB.CCC.DDD, [0..255]. [MASK] , 255.255.255.0.

< SLOT > – , [0 .. 15].

.

CONFIGURE

```
msan(config)# service-interfaces common ip 2 192.168.44.14
```

IP- 192.168.44.14, 255.255.255.0.

service-interfaces common dhcp

, COMMON DHCP.

(no) DHCP.

[no] service-interfaces common dhcp <SLOT>

< SLOT > – , [0 .. 15].

CONFIGURE

```
msan(config)# service-interfaces common dhcp 12
```

service-interfaces common dhcp-gateway

, , DHCP.

(no) .

[no] service-interfaces common dhcp-gateway <SLOT>

< SLOT > – , [0 .. 15].

CONFIGURE

```
msan(config)# service-interfaces common dhcp-gateway 1
```

service-interfaces common qos-cos

802.1 COMMON.

(no) .

service-interfaces common qos-cos <SLOT> <COS>

no service-interfaces common qos-cos <SLOT>

<COS> – 802.1, [0..7];

<SLOT> – , [0..15].

.

CONFIGURE

```
msan(config)# service-interfaces common qos-cos 1 3
```

802.1.

show service-interfaces configuration slot

COMMON, RTP, SIG:

show service-interfaces configuration slot < SLOT >

< SLOT > – , [0 .. 15].

ROOT

```
msan> show service-interfaces configuration slot 0-5

   Table service-interface
   ~~~~~~~~~~~~~~~~~~~~~~~
Slot   Service   IP-Address        Net Mask          Broadcast         VID    COS   DHCP   DHCP
                                                                                      GW
----   -------   ---------------   ---------------   ---------------   ----   ---   ----   ----
0      rtp sig   192.168.18.241    255.255.255.0                        -     0     on     on
1      rtp sig   192.168.6.221     255.255.255.0                        -     0     on     on
2      rtp sig   192.168.6.222     255.255.255.0                        -     0     on     on
3      rtp sig   192.168.6.223     255.255.255.0                        -     0     on     on
4      rtp sig   192.168.6.224     255.255.255.0                        -     0     on     on
5      rtp sig   192.168.6.225     255.255.255.0                        -     0     on     on
```

FXS: FXS-72

 FXS-72 SIP. FXS-72 CONFIGURE.

 LINE-PROFILE :

```
msan> enable
msan# configure
msan(config)# voice-profile <profile_name>
msan(config-if)#
```

<profile_name> – , 15 .

voice-profile

 .

voice-profile <WORD>

<WORD> – , 15 .

CONFIGURE

```
msan(config)# voice-profile profile_1
msan(config-if)#
```

default voice-profile

 .

default voice-profile <WORD>

<WORD> – , 15 .

ROOT

```
msan# default voice-profile profile_1
```

cid mode

 .

 (no) .

cid mode <MODE>
no cid mode

<MODE> - :

- off – ;
- russian – « ». , 500 ;
- dtmf – DTMF. DTMF ;
- fsk-bell202 – FSK bell202. ;
- fsk-v23 – FSK ITU-T V.23. .

.

VOICE-PROFILE

```
msan(config-if)# cid mode dtmf
```

cid hide-name

fsk-bell202, fsk-v23.

(no) fsk-bell202, fsk-v23.

[no] cid hide-name

VOICE-PROFILE

```
msan(config-if)# cid hide-name
```

cid hide-date

fsk-bell202, fsk-v23.

(no) .

[no] cid hide-date

fsk-bell202, fsk-v23.

VOICE-PROFILE

```
msan(config-if)# cid hide-date
```

taxophone

.

(no) .

taxophone <MODE>
no taxophone

<MODE> – :

- off – ;
- polarity-pulse – . ;
- 16k-pulse – . 16 kHz;
- 12k-pulse – . 12 kHz.

.

VOICE-PROFILE

```
msan(config-if)# taxophone polarity-pulse
```

flashtime

Flash ().

(no) .

flashtime < MINIMUM> <MAXIMUM>

no flashtime

<MINIMUM> – Flash, [70..1000] ;

<MAXIMUM> – Flash, [< MINIMUM>.. 1000] .

min 200, max 600

VOICE-PROFILE

```
msan(config-if)# flashtime 70 1000
```

receive-gain

, / , .

(no) .

receive-gain <GAIN>

no receive-gain

<GAIN> – / (), [-230 .. 20]*0.1.

-70

VOICE-PROFILE

```
msan(config-if)# receive-gain -100
```

transmit-gain

, / .

(no) .

transmit-gain <GAIN>

no transmit-gain

<GAIN> – / (), [-170..60]*0.1.

0

VOICE-PROFILE

```
msan(config-if)# transmit-gain 20
```

call-transfer

.

(no) .

call-transfer <MODE>
no call-transfer

<MODE> – flash:

- transmit-flash – flash , (Codecs conf.) Flash Transfer.). flash ;
- attended – « » , . flash ;
- unattended – « » , . flash ;
- off – flash.

transmit-flash

VOICE-PROFILE

```
msan(config-if)# call-transfer attended
```

call-waiting

« »(flash – call transfer).

(no) « ».

[no] call-waiting

.

VOICE-PROFILE

```
msan(config-if)# call-waiting
```

rename

.

(no) .

rename <PROFILE_NAME>
no rename

<PROFILE_NAME> – , 15 .

'profile_N', N – (0..15).

VOICE-PROFILE

```
msan(config-if)# rename test
```

cpc

CPC (Calling Party Control) BUSY-.

(no) CPC (Calling Party Control) BUSY-.

[no] cpc

.

CPC (Calling Party Control) BUSY-.

VOICE-PROFILE

```
msan(config-if)# cpc
```

cpc-time

CPC.

(no) .

cpc-time <TIME>

no cpc-time

<TIME> – CPC, [200 .. 600] .

200 .

VOICE-PROFILE

```
msan(config-if)# cpc-time 250
```

stop-dial

'#' , '#', , DTMF-. '#' .

(no) , .

[no] stop-dial

'#', , DTMF-.

VOICE-PROFILE

```
msan(config-if)# stop-dial
```

category-rus

(cpc-rus). «from», SIP URI TEL URI.

(no) , .

category-rus <CAT>

no category-rus

< CAT > – , [1..10].

no category-rus

VOICE-PROFILE

```
msan(config-if)# category-rus 5
```

category-sipt

-7 SIP-T -7. :

	-7
1	10
2	225
3	228
4	11
5	226
6	15
7	227
8	12
9	229
10	224

(no) , 10.

category-sipt <CAT>

no category-sipt

< CAT > – -7, [0..255]

10

VOICE-PROFILE

```
msan(config-if)# category-sipt 224
```

show voice-profile

.

show voice-profile

.

ROOT

```
msan> show voice-profile
List voice-port profile
~~~~~~~~~~~~~~~~~~~~~~~
Profile name
--------------------------
profile_0
profile_1
profile_2
profile_3
profile_4
profile_5
profile_6
profile_7
profile_8
profile_9
profile_10
profile_11
profile_12
profile_13
profile_14
profile_15
```

show voice-profile name

.

show voice-profile name <WORD>

<WORD> – , 15 .

ROOT

```
msan> show voice-profile name profile_0
Settings for the profile 'profile_0'
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Attribute                  Value                User Def
-------------------------- -------------------- ---- ---
AOH:                       fsk-v23              *
Hide date:                 Disable                   *
Hide name:                 Disable                   *
Min Flashtime(ms):         150                  *
Max Flashtime(ms):         600                  *
Gain Receive(0.1 dB):      -70                       *
Gain Transmit(0.1 dB):     0                         *
Process flash:             Transmit flash       *
Call Waiting:              Disable                   *
Taxophone:                 Disable                   *
Enable CPC:                Disable                   *
CPC Time(ms):              200                       *
```

FXS: FXS-72

FXS-72. FXS-72CONFIGURE.

VOICE-PORT :

```
msan> enable
msan# configure
msan(config)# voice-port <shelf>/<slot(s)>/<port(s)>
msan(config-if)#
```

<shelf> – ,
<slot(s)> - ,
<port(s)> – .

voice-port

.

voice-port <shelf/slots/ports> | all

<shelf/slot/port> – , shelf/slot/port,

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

CONFIGURE FXS-72

```
msan(config)# voice-port 1/5/0-71
msan(config-if)#
```

default voice-port

.

default voice-port <shelf/slots/ports> | all

<shelf/slot/port> – , shelf/slot/port,

- SHELF – , [1..1];
- SLOT – , \[0..15\]. «,» «-»;
- PORT – , \[0..71\]. «,» «-».

ROOT

```
msan# default voice-port 1/5/0-71
```

cid mode

.

(no) , .

cid mode <MODE>
no cid mode

<MODE> – :

- off – ;
- russian – « ». 500 ;
- dtmf – DTMF. DTMF ;
- fsk-bell202 – FSK bell202. ;
- fsk-v23 – FSK ITU-T V.23. .

VOICE-PORT

```
msan(config-if)# cid mode fsk-bell202
```

cid hide-name

/ fsk-bell202, fsk-v23.

(no) , .

cid hide-name <ACT>
no cid hide-name

<ACT> – :

- disable – ;
- enable – .

```
msan(config-if)# cid hide-name enable
```

cid hide-date

/ fsk-bell202, fsk-v23.

(no) , .

cid hide-date <ACT>
no cid hide-date

<ACT> – :

- disable – ;
- enable – .

, .

VOICE-PORT

```
msan(config-if)# cid hide-date enable
```

taxophone

.

(no) , .

taxophone <MODE>
no taxophone

<MODE> – :

- off – ;
- polarity-pulse - . ;
- 16k-pulse – . 16 kHz;
- 12k-pulse – . 12 kHz.

, .

VOICE-PORT

```
msan(config-if)# taxophone off
```

flashtime

Flash ().

(no) , .

flashtime < MINIMUM> <MAXIMUM>

no flashtime

< MINIMUM> – Flash, [70..1000] ;

<MAXIMUM> – Flash, [< MINIMUM>.. 1000] .

, .

LINE-PROFILE

```
msan(config-if)# flashtime 70 1000
```

receive-gain

, / , .

(no) , .

receive-gain <GAIN>

no receive-gain

<GAIN> – / (), [-230 .. 20].

, .

VOICE-PORT

```
msan(config-if)# receive-gain -100
```

transmit-gain

, / .

(no) , .

transmit-gain <GAIN>

no transmit-gain

<GAIN> – / (), [-170..60].

, .

LINE-PROFILE

```
msan(config-if)# transmit-gain 20
```

call-transfer

flash ( ).

(no) , .

call-transfer <MODE>
no call-transfer

<MODE> – flash:

- transmit-flash – flash , (Codecs conf.) Flash Transfer.). flash ;
- attended – « » , . flash ;
- unattended – « » , . flash ;
- off – flash.

, .

VOICE-PORT

```
msan(config-if)# call-transfer attended
```

call-waiting

« »(flash – call transfer).

(no) , .

call-waiting <ACT>
no call-waiting

<ACT> – :

- disable – ;
- enable – .

VOICE-PORT

```
msan(config-if)# call-waiting enable
```

set-profile

/ .

(no) .

set-profile <NAME>
no set-profile

<NAME> – , 15 .

'profile_0'.

VOICE-PORT

```
msan(config-if)# set-profile profile_1
```

cpc

CPC (Calling Party Control) BUSY .

(no) , .

cpc <ACT>
no cpc

<ACT> – :

- disable – ;
- enable – .

, .

VOICE-PORT

```
msan(config-if)# cpc enable
```

cpc-time

CPC.

(no) , .

cpc-time <TIME>

no cpc-time

<TIME> – CPC, [200 .. 600] .

200 .

VOICE-PORT

```
msan(config-if)# cpc-time 250
```

alt-dial

. - (URI from SIP).

(no) .

alt-dial <PHONE_NUMBER>
no alt-dial

<PHONE_NUMBER> – , 20 : a-z, A-Z, #, *, 0-9.

VOICE-PORT

```
msan(config-if)# alt-dial 9555
```

authentication name

. SIP, SIP (Authentication – user defined).
(no) .

, <NAME> , +1 ( ). sip-user name.

authentication name <NAME>
no authentication name

<NAME> – , 20 .

VOICE-PORT

```
msan(config-if)# authentication name TEST
```

authentication name-as-phone

.

(no) .

[no] authentication name-as-phone

.

VOICE-PORT

```
msan(config-if)# authentication name-as-phone
```

authentication password

. SIP, SIP (Authentication – user defined).

(no) .

authentication password <PASS>
no authentication password

<PASS> – , 20 .

VOICE-PORT

```
msan(config-if)# authentication password password
```

hotnumber

, «/ ».

(no) «/ ».

hotnumber <PHONE_NUMBER>
no hotnumber

<PHONE_NUMBER> – , 20 : a-z, A-Z, #, *, 0-9.

VOICE-PORT

```
msan(config-if)# hotnumber 8858
```

sip-username

.

(no) , .

, < PHONE_NUMBER > , +1 ( ).

sip-username <WORD>
no sip-username

<WORD> – , 20 : a-z, A-Z, #, *, 0-9.

VOICE-PORT

```
msan(config-if)# sip-username 1235
```

clir

« » (-).

(no) -.

[no] clir

- .

VOICE-PORT

```
msan(config-if)# clir
```

- .

shutdown

.

.

[no] shutdown

.

VOICE-PORT

```
msan(config-if)# shutdown
```

.

stop-dial

'#' , '#', , DTMF . '#' , .

(no) , .

[no] stop-dial

'#', , DTMF .

VOICE-PORT

```
msan(config-if)# stop-dial
```

category-rus

(cpc-rus). «from», SIP URI TEL URI.

(no) , .

category-rus <CAT>

no category-rus

< CAT > – , [1..10]

no category-rus

VOICE- PORT

```
msan(config-if)# category-rus 5
```

category-sipt

-7 SIP-T -7. :

	-7
1	10
2	225
3	228
4	11
5	226
6	15
7	227
8	12

9	229
10	224

(no) , 10.

category-sipt <CAT>

no category-sipt

< CAT > – -7, [0..255]

10

VOICE-PORT

```
msan(config-if)# category-sipt 224
```

sip-port

UDP-, SIP.

(no) .

sip-port <PORT>

no sip-port

<PORT> – , [0 .. 65535].

0

VOICE-PORT

```
msan(config-if)# sip-port 25
```

hottimeout

« ».

(no) .

hottimeout <timeout>

no hottimeout

<timeout> – , [0..300] .

0

VOICE-PORT

```
msan(config-if)# hottimeout 50
```

show voice-port other-configuration

Hot timeout, Hot number, Authentication name, CLIR, Stop Dial, Alternate number .

show voice-port other-configuration <SHELF/SLOTS/PORTS>

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , \[0..71\]. «,» «-».

, 1/0/2 1/0-3/23,34-56 1/0/0-71,1/3/9-45,67-70,1/5-8/1,5,8,9,34-71 all (..);

ROOT

```
msan> show voice-port other-configuration 1/12/0-1
Voice-port configuration other
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Ports Alternate number     Authentication name  Hot     Hot number           CLIR Stop
                                                timeout                           Dial
----- -------------------- -------------------- ------- -------------------- ---- ----
12/0                                            0                            Off  Off
12/1                                            0                            Off  Off
```

show voice-port other-configuration sip-username

Hot timeout, Hot number, Authentication name, CLIR, Stop Dial, Alternate number .

show voice-port other-configuration sip-username <WORD>

< WORD > – sip-, 21 .

ROOT

```
msan> show voice-port other-configuration sip-username tester
Voice-port configuration other
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Ports Alternate number     Authentication name  Hot     Hot number           CLIR Stop
                                                timeout                           Dial
----- -------------------- -------------------- ------- -------------------- ---- ----
12/5                                            0                            Off  Off
```

show voice-port profile-configuration

, .

show voice-port profile-configuration <SHELF/SLOTS/PORTS>

<shelf/slot/port> – , shelf/slot/port, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

, 1/0/2 1/0-3/23,34-56 1/0/0-71,1/3/9-45,67-70,1/5-8/1,5,8,9,34-71 all (..).

ROOT

```
msan> show voice-port profile-configuration 1/12/0-1
Voice-port configuration profile
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Ports  AOH        Hide Hide Flash Flash Gain Gain Process flash  Call Taxophone CPC  CPC
                  date name time  time  R    T                   Wait               time
                                  Min   Max
----- ----------- ---- ---- ----- ----- ---- ---- -------------- ---- --------- ---- ----
12/0  Disable     Off  Off  200   600   -70  0    Transmit flash Off  Disable   Off  200
12/1  Disable     Off  Off  200   600   -70  0    Transmit flash Off  Disable   Off  200
```

show voice-port profile-configuration sip-username

, .

show voice-port profile-configuration < WORD >

< WORD > – sip-, 21 .

ROOT

```
 msan> show voice-port profile-configuration sip-username tester
 Voice-port configuration profile
 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Ports  AOH        Hide Hide Flash Flash Gain Gain Process flash  Call Taxophone CPC  CPC
                  date name time  time  R    T                   Wait               time
                                  Min   Max
----- ----------- ---- ---- ----- ----- ---- ---- -------------- ---- --------- ---- ----

12/5   Disable    Off  Off  200   600   -70   0   Transmit flash  Off  Disable  Off  200
```

show voice-port main-configuration

Phone, User name, Profile name, SIP port, State .

show voice-port main-configuration <SHELF/SLOTS/PORTS>

<shelf/slot/port> – , shelf/slot/port,

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

, 1/0/2 1/0-3/23,34-56 1/0/0-71,1/3/9-45,67-70,1/5-8/1,5,8,9,34-71 all (..).

ROOT

```
msan> show voice-port main-configuration 1/12/0-1
Voice-port configuration main
~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Ports Phone                User name            Profile name    SIP   State
port
----- -------------------- -------------------- --------------- ----- -----
12/0  s12p00                                    profile_0        0    up
12/1  s12p01                                    profile_0        0    up
```

show voice-port main-configuration sip-username

Phone, User name, Profile name, SIP port, State .

show voice-port main-configuration < WORD >

< WORD > – sip-, 21 .

ROOT

FXS: FXS-72 SIP

FXS-72 SIP. CONFIGURE.

sip-dialing immediate

INVITE . (no) .

[no] sip-dialing immediate

.

CONFIGURE

```
msan(config)# sip-dialing immediate
```

dialplan rules

.

(no) .

dialplan rules number <number><rules>
no dialplan rules <number>

- <number> – ;
- <rules> – (50), :

1| 2|..| N
= L{} S{} prefix@optional
:

- *L* – L-,
- *S* – S- (, ,)
- *prefix* –
- *@optional* – ( )

C :

:

- **|** - - ;
- X – 0 9, [0-9];
- **0** - **9** – 0 9;
- * – *;
- # – #;
- [ ] – ( ), (,), :

[1-5] - 1,2,3,4 5;

[138] - 1,3 8;

[0-9*#] – 0 9, * #.

- **{min,max}** – , , *#:
- *min* - ,
- *max* - .

{,max} – {0,max};

{min,} – {min,inf.}.

: **5{2,5}** – 5 . 55|555|5555|55555)

- **.** – «» , *# . {0,}

: **5.*** - , . 5*|5*|5xx*|5xxx*|...

- **+** – "+" , *# . {1,}
- **<:>** – . # , . - ***<:>**, - **<:>**, - **<:>** .
- **!** – . , , , .
- **,** – " ". (-) , .

: **8,**. - 8 " ".

( ):

- **host{nature:X}:port** - IP-. SIP. @host:port , SIP-proxy.
- SIP- {nature:X} , SIP-T.Nature , :

  =0, Unknown
  =1, Subscriber
  =2, National
  =3, Inernational

: 1xxxx@192.168.16.13:5062 - , 1, IP- 192.168.16.13 5062.

- **{pickup:x,xx}** - . .

: *8@{pickup:1} - *8 .

:

- **S** - , , , ;
- **L** - , , , , , .

, . , .

, .

CONFIGURE

```
msan(config)#
dialplan rules 1 "\[1-7\]xxxxx@192.168.16.234|0x|0xx|*xx#|#xx#|*#xx#"
msan(config)# dialplan rules 2 "|L15 S5 8xxxxx|*xx*x+#"
```

no dialplan

.

no dialplan

.

CONFIGURE

```
msan(config)# no dialplan
```

digitmap-timers

.

(no) .

digitmap-timers <TIMER> <MSEC>
no digitmap-timers <TIMER>

<TIMER> - :

- T-timer – , , «» .
- Z-timer – . , ;
- S-timer – S- , , , ;
- L-timer – L- , , , , , ;
- wait-answer-timer - . , ;

<MSEC> – :

- T-timer, Z-timer [10 .. 300] ;
- S-timer, L-timer [1 .. 60] ;
- wait-answer-timer [40 .. 300] .

T-timer 300, Z-timer 300, S-timer 8, L-timer 15, wait-answer-timer 300

CONFIGURE

```
msan(config)# digitmap-timers T-timer 300
```

device-name

. SYSLOG- .

(no) .

device-name <NAME>
no device-name

<NAME> – , 15 .

fxs72

CONFIGURE

```
msan(config)# device-name test
```

sipt-prefix enable

, «sipt-prefix value». : «national», – «subscriber» (CgPN). SIP-T.

(no) .

[no] sipt-prefix enable

CONFIGURE

```
msan(config)# sipt-prefix enable
```

sipt-prefix value

. SIP-T.

(no) .

sipt-prefix value <VALUE>
no sipt-prefix value

<VALUE> – , 50 .

CONFIGURE

```
msan(config)# sipt-prefix value 383
```

voice service sip

FXS SIP. SIP 38.

voice service sip

.

CONFIGURE

```
msan(config)# voice service sip
msan(config-fxs-sip-signalling)#
```

voice service voip

VOIP- FXS SIP.

VOIP- FXS SIP.

voice service voip

.

CONFIGURE

```
msan(config)# voice service voip
```

vapi

VAPI. (no) .

[no] vapi

.

VAPI .

CONFIGURE

```
msan(config)# vapi
```

app error

Syslog- . (no) .

[no] app error

.

Syslog- .

CONFIGURE

```
msan(config)# app error
```

app info

Syslog- .

(no) .

[no] app info

.

Syslog- .

CONFIGURE

```
msan(config)# app info
```

app debug

Syslog-.

(no) .

[no] app debug

.

Syslog- .

CONFIGURE

```
msan(config)# app debug
```

app warning

Syslog- .

(no) .

[no] app warning

.

Syslog- .

CONFIGURE

```
msan(config)# app warning
```

syslog run

Syslog .

(no) .

[no] syslog run

.

Syslog .

CONFIGURE

```
msan(config)# syslog run
```

debug-level sip

SIP.

(no) .

debug-level sip <LEVEL>

no debug-level sip

<LEVEL> – SIP, [-1 .. 9].

3

CONFIGURE

```
msan(config)# debug-level sip <span style="color: #ff3300">3</span>
```

debug-level vapi

VAPI.

(no) .

debug-level vapi <AB>
no debug-level vapi

<AB> – VAPI, :

- A [0 .. 6], (Lib level);
- B [1 .. 5], (APP level).

A = 0, B= 5

CONFIGURE

```
msan(config)# debug-level vapi 22
```

trace-out

syslog-.

(no) .

trace-out <TYPE>
no trace-out

<TYPE> – Syslog-:

- stdout – ();
- syslog-server – syslog-;
- off – syslog-.

disable

CONFIGURE

```
msan(config)# msan(config-fxs)# trace-out stdout
```

syslog server

IP- syslog-.

(no) .

syslog server <IP_address>
no syslog server

<IP_address> – IP- Syslog-.

CONFIGURE

```
msan(config)# syslog server 172.165.254.21
```

syslog port

SYSLOG-.

(no) .

syslog port <PORT>

no syslog port

<PORT> – Syslog-, [1 .. 65535].

514.

CONFIGURE

```
msan(config)# syslog port 214
```

show voice-port logging-configuration

FXS72SIP:

- Device name – , SYSLOG ;
- Debuging VAPI lib – VAPI;
- Send to Syslog info message – Syslog- ;
- Send to Syslog warning message – Syslog- ;
- Send to Syslog error message – Syslog- ;
- Send to Syslog debug message – Syslog- ;
- Autorun syslog – Syslog ;
- Level debuging VAPI – VAPI ;
- Level debuging SIP – SIP;
- IP-address syslog-server – IP- Syslog-;
- Port syslog-server – Syslog- (514);
- Trace out– syslog-.

show voice-port logging-configuration

.

ROOT

```
msan> show voice-port logging-configuration
Logging settings
~~~~~~~~~~~~~~~~
Attribute                       Value
------------------------------- ----------------------
Device name:                    fxs72
Debuging VAPI lib:              Off
Send to Syslog info message:    On
Send to Syslog warning message: On
Send to Syslog error message:   On
Send to Syslog debug message:   Off
Autorun syslog:                 Off
Level debuging VAPI:            5
Level debuging SIP:             3
IP-address syslog-server:
Port syslog-server:             514
Trace out:                      Off
```

show voice-port dialplan-configuration

FXS72SIP.

show voice-port dialplan -configuration

.

ROOT

```
msan> show voice-port dialplan-configuration
Dialplan settings
~~~~~~~~~~~~~~~~~
Attribute            Value
-------------------- --------------------------------------------------
DigitMap Timers:
Start(T) timer:      15
Duration(Z) timer:   60
Short(S) timer:      8
Long(L) timer:       15
Dial Plan Rules:
String rules 1:      x+|xx#|#xx#|#xx#|*xx*x+#
```

show voice-port route-configuration

FXS72SIP.

show voice-port route-configuration

.

ROOT

```
msan# show voice-port route-configuration
Route table
~~~~~~~~~~~
Idx   I P-Address          Net Mask         Gateway Interface
--- --------------- --------------- --------------- ---------
  1  192.168.16.179   255.255.255.0    192.168.16.1    common
```

show voice-port network-configuration

FXS72SIP.

show voice-port network-configuration

.

ROOT

```
msan# show voice-port network-configuration
Network settings
~~~~~~~~~~~~~~~~
Attribute Value
------------------------- -------------------------------
Gateway:
IP-address DNS: 127.0.0.1
SORM user:
```

FXS: SIP FXS-72. SIP signalling

SIP- FXS. FXS-72.

SIP SIGNALLING :

```
msan> enable
msan# configure
msan(config)# voice service sip
msan(config-fxs-sip-signalling)#
```

default service sip

SIP .

default service sip

ROOT

```
msan# default service sip
```

callwaiting-ringback

180 182 Call waiting. («») , . , (180 Ringing, 182 Queued) «» (180 Ringing), (182 Queued). (no) .

callwaiting-ringback <ACT>
no callwaiting-ringback

<ACT> – :

- ringing – 180 Ringing;
- queued – 182 Queued.

Ringing

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# callwaiting-ringback ringing
```

remote-ringback

, « » («») . (no) .

remote-ringback <ACT>
no remote-ringback

<ACT> – :

- disable – «»;
- ringback-with-ringing – «» . SIP «180 ringing»;
- ringback-with-progress – «» . SIP «183 progress».

disable

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# remote-ringback disable
```

proxy-mode

SIP- (SIP-proxy). (no) .

proxy-mode <ACT>
no proxy-mode

<ACT> – :

- parking – SIP-proxy SIP-proxy;
- homing – SIP-proxy SIP-proxy.

SIP-proxy SIP-proxy.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# proxy-mode homing
```

dtmf-mime-type

MIME, DTMF INFO- SIP.

(no) .

dtmf-mime-type <TYPE>
no dtmf-mime-type

<TYPE> – :

- dtmf – DTMF application/dtmf (* # 10 11);
- dtmf-relay – DTMF application/dtmf-relay (* # * #);
- audio – DTMF audio/telephone-event (* # 10 11).

dtmf-relay

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# dtmf-mime-type dtmf
```

hflash-mime-type

MIME, Flash INFO- SIP.

(no) .

hflash-mime-type <TYPE>
no hflash-mime-type

<TYPE> – :

- dtmf – MIME, DTMF MIME Type. , application/dtmf-relay, flash signal=hf, application/dtmf audio/telephone-event, flash 16;
- hook-flash – flash Application/ Hook Flash (signal=hf);
- broadsoft – flash Application/ Broadsoft (event flashhook). , flash .

hook-flash

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# hflash-mime-type broadsoft
```

100rel

(RFC3262).

(no) .

100rel <ACT>
no 100rel

<ACT> – :

- supported – ;
- required – ;
- off – .

supported

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# 100rel required
```

transport

, SIP.

(no) .

transport <ACT>
no transport

<ACT> – :

- udp-preffered – UDP -, UDP ;
- tcp-preffered – UDP -, ;
- udp – UDP-;
- tcp – P-.

udp-preffered

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# transport udp-preffered
```

home-test-mode

(OPTIONS, REGISTER, INVITE) homing.

(no) .

home-test-mode <ACT>
no home-test-mode

<ACT> – :

- invite – INVITE;
- options – OPTIONS;
- register – REGISTER.

invite

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# home-test-mode invite
```

authentication

.

(no) ().

authentication < MODE>
no authentication

< MODE> – :

- global – SIP- ;
- user-defined – SIP- . *voice-port shelf/slots/ports*.

disable

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# authentication global
```

register-retry-interval

SIP- , (, «403 forbidden»).

(no) .

register-retry-interval <TIME>

no register-retry-interval

<TIME> – , [10 .. 3 600] .

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# register-retry-interval 200
```

keepalive-time

OPTIONS REGISTER .

(no) .

keepalive-time <TIME>

no keepalive-time

<TIME> – , [10 000 .. 3 600 000] .

60000

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# keepalive-time 15000
```

udp-mtu

SIP , UDP (RFC3261 1300). SIP (, , qop-), . udp(preferred),tcp.

(no) .

udp-mtu <MTU>

no udp-mtu

<MTU> – MTU, [1 300 .. 1 450].

MTU 1300.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# udp-mtu 1400
```

expires

.

(no) .

expires <TIME>

no expires

<TIME> – , [10 .. 345 600] .

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# expires 200
```

username

global.

(no) .

username <NAME>
no username

<NAME> – global, 20 .

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# username test
```

password

global. (no) .

password <PASSWORD>
no password

<PASSWORD> – global, c 20 .

– password.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# password test
```

proxy-address

SIP-proxy.

(no) SIP-proxy.

proxy-address <NUMBER_PROXY> <IP\[:PORT\]>

no proxy-address

<NUMBER_PROXY> – , \[0 .. 4\];

<IP[:PORT]> – , AAA.BBB.CCC.DDD: port, AAA, BBB, CCC, DDD \[0..255\], .

, 5060.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# proxy-address 2 172.125.12.35
```

regrar-address

.

(no) .

regrar-address <NUMBER_REGRAR> <IP> [PORT]

no regrar-address

<NUMBER_REGRAR> – , [0 .. 4];

<IP[:PORT]> – , AAA.BBB.CCC.DDD: port, AAA, BBB, CCC, DDD [0..255], .

, – 5060.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# regrar-address 4 172.125.25.21
```

p-rtp-stat

. BYE, 200 P-RTP-Stat, .

(no) .

[no] p-rtp-stat

.

.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# p-rtp-stat
```

remove-inactive-media-sdp

SDP (RFC 3264 SDP), ISKRATEL SI3000.

(no) .

[no] remove-inactive-media-sdp

.

SDP .

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# remove-inactive-media-sdp
```

short-mode

SIP.

(no) .

[no] short-mode

.

SIP .

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# short-mode
```

send-domain

. Request URI «REGISTER».

(no) .

[no] send-domain

.

.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# send-domain
```

replaces-disable

«{_}replaces»_ Call Transfer ( ). «{_}replaces»_ refer-to, , , , replaces, DIALOG ID (Call-ID, to-tag, from-tag) . «replaces» SIP-, SIP- , .

(no) , , .. .

[no] replaces-disable

.

«{_}replaces»_ Call Transfer.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# replaces-disable
```

inbound-proxy

SIP-proxy. , SIP-proxy, proxy («305 Use proxy»,).

(no) , .

[no] inbound-proxy

.

.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# inbound-proxy
```

outbound-proxy

SIP-proxy .

(no) .

[no] outbound-proxy <ACT>

<ACT> – :

- disable – , ;
- enable – , SIP-proxy;
- busytone – «», SIP-proxy. - , «».

.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# outbound-proxy enable
```

user-phone-tag

User = Phone SIP URI.

(no) , .

[no] user-phone-tag

.

User = Phone SIP URI.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# user-phone-tag
```

escape-hash-uri

("") SIP URI escape "%23", "#".

User=Phone SIP URI, ("") "#" Escape hash uri.

(no) , «», .

[no] escape-hash-uri

.

("") SIP URI escape "%23". «#».

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# escape-hash-uri
```

ringback

« » «183 Progress». «» 183 , 183 SDP .

(no) , .

[no] ringback

.

« » «183 Progress».

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# ringback
```

invite-initial-timeout

SIP- 1 - INVITE . INVITE (, ..) (, 300 , INVITE 300 , - 600 , - 1200 ..).

(no) .

invite-initial-timeout < TIME >

no invite-initial-timeout

< TIME > – , [100 .. 1000] .

500

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# invite-initial-timeout 300
```

invite-total-timeout

INVITE . , . INVITE, SIP-proxy.

(no) .

invite-total-timeout < TIME >

no invite-total-timeout

< TIME > – , [1000 .. 39000] .

32000

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# invite-total-timeout 1000
```

sip-domain

SIP-. «host» SIP URI from to.

(no) .

sip-domain < NAME >
no sip-domain

< NAME > – , 20 .

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# sip-domain eltex
```

reg-delay

FXS. 500 . , SBC, REGISTER IP- .

(no) .

reg-delay < VALUE >

no reg-delay

< VALUE > – , [0-5000].

500

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# reg-delay 200
```

rfc4028 enable

SIP- (RFC 4028). UPDATE ( ) re-INVITE

(no) .

[no] rfc4028 enable

.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# rfc4028 enable
```

rfc4028 min-se

(no) .

rfc4028 min-se <VALUE>

no rfc4028 min-se

< VALUE > – [90..1800]

```
msan(config-fxs-sip-signalling)# rfc4028 min-se 190
```

rfc4028 se

, , .

(no) .

rfc4028 se <VALUE>

no rfc4028 se

< VALUE > – [90..80000] .


```
msan(config-fxs-sip-signalling)# rfc4028 se 1800
```

keepalive mode

NAT.

(no) .

keepalive mode { notify|options|crlf}
no keepalive mode

- options – OPTIONS;
- notify – NOTIFY;
- CRLF – CRLF.


```
msan(config-fxs-sip-signalling)# keepalive mode notify
```

keepalive interval

.

(no) .

keepalive interval <TIME>

no keepalive interval

<TIME> – , [30..120] .

30

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# keepalive interval 40
```

conference mode

.

(no) .

conference mode {local|remote}
no conference mode

- *local* – . FXS;
- *remote* – . .

local

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# conference mode remote
```

conference server

Remote.

(no) .

conference server <VALUE>
no conference server

<VALUE> – 80 .

conf

SIP SIGNALLING

```
 msan(config-fxs-sip-signalling)# conference server conference-ims
```

ims enable

(simulation services) IMS (3GPP TS 24.623).

(implicit) IMS, SUBSCRIBE , NOTIFY-, IMS, .

IMS Enable call-transfer, Call-waiting hotnumber/ hottimeout , IMS-.

(no) .

[no] ims enable

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# ims enable
```

ims conference/hotline/cw/hold/ct

, XCAP .

- conference – , XCAP « »;
- hotline – , XCAP- « »;
- cw – , XCAP- « »;
- hold – , XCAP- « »;
- ct – , XCAP- « ».

(no) .

ims {conference|hotline|cw|hold|ct} <VALUE>

[no] ims {conference|hotline|cw|hold|ct}

<VALUE> – 30 .

- - three-party-conference;
- - hot-line-service;
- - call-waiting;
- - call-hold;
- - explicit-call-transfer.

SIP SIGNALLING

```
msan(config-fxs-sip-signalling)# ims conference 3way
```

show voice-port proxy-configuration

- FXS72SIP.

show voice-port proxy-configuration

.

ROOT

```
msan> show voice-port proxy-configuration
Proxy settings
~~~~~~~~~~~~~~
Number Proxy                      Registrar
------ -------------------------- --------------------------
0
```

show voice-port sip-configuration

SIP FXS72SIP.

show voice-port sip-configuration

.

ROOT

```
msan> show voice-port sip-configuration
SIP settings
~~~~~~~~~~~~
Attribute                       Value
------------------------------- ---------------------
Proxy mode:                     Off
Home server test:               invite
Keepalive time (s):             60000
SIP-Domain:
Use domain to Register:         Off
Register Rerty Interval (s):    30
Inbound:                        Off
Outbound:                       disable
Expires (s):                    1800
Authentication:                 Off
User Name:                      TAU-72.IP
Invite initial timeout (s):     500
Invite total timeout (s):       32000
Ringback at answer 183:         Off
Ringback at callwaiting:        180 Ringing
Remote Ringback:                off
DTMF MIME Type:                 dtmf-relay
Hook flash MIME Type:           hook-flash
Escape hash uri:                Off
CT with replaces:               Off
Short mode:                     Off
User=Phone:                     Off
Transport:                      udp-preffered
SIP UDP MTU:                    1300
100rel:                         supported
P-RTP-Stat:                     Off
Remove inactive media from SDP: Off
```

FXS: VOIP FXS72SIP

VoIP FXS. CONFIGURE.

VoIP :

```
msan> enable
msan# configure
msan(config)# voice service voip
msan(config-fxs-sip-voip)#
```

default service voip

VoIP .

default service voip

ROOT

```
msan# default service voip
```

fax-direction

, , .

(no) .

fax-direction <VAL>
no fax-direction

<VAL> – :

- both – , . CNG FAX . V.21 ;
- caller – . CNG FAX ;
- callee – . V.21 ;
- none – , (,).

both

VOIP

```
msan(config-fxs-sip-voip)# fax-direction none
```

codec-order

, .

(no) .

codec-order <CODEC_ORDER>
no codec-order

<CODEC_ORDER> – . . , .
: g711a, g711u, g729, g723, g726-32.

g711a, g711u

VOIP

```
msan(config-fxs-sip-voip)# codec-order g711a,g711u,g729,g723, g726-32
```

codec-packettime g711

, RTP G711.

(no) .

codec-packettime g711 < TIME >
no codec-packettime g711

< TIME > – , : 10, 20, 30, 40, 50, 60 .

20

VOIP

```
msan(config-fxs-sip-voip)# codec-packettime g711 50
```

codec-packettime g729

() , RTP G729.

(no) .

codec-packettime g729 < TIME >
no codec-packettime g729

< TIME > – , : 10, 20, 30, 40, 50, 60, 70, 80 .

20

VOIP

```
msan(config-fxs-sip-voip)# codec-packettime g729 80
```

codec-packettime g723

() , RTP G723.1.

(no) .

codec-packettime g723 < TIME >
no codec-packettime g723

< TIME > – , : 30, 60, 90 .

30

VOIP

```
msan(config-fxs-sip-voip)# codec-packettime g723 60
```

codec-packettime g726

, RTP G726-32.

(no) .

codec-packettime g726 < TIME >

no codec-packettime g726

< TIME > – , : 10, 20, 30 .

20

VOIP

```
msan(config-fxs-sip-voip)# codec-packettime g726 30
```

dtmf-mode

DTMF. DTMF .

(no) .

dtmf-mode <MODE>
no dtmf-mode

<MODE> – DTMF-:

- inband – , RTP;
- rfc2833 - RFC2833 RTP; DTMF- rfc2833 , MSAN ( ).
- rfc2833-peer-pt - RFC2833 RTP. DTMF- rfc2833 , . , rfc3264;
- info – . SIP INFO, DTMF MIME.

rfc2833

VOIP

```
msan(config-fxs-sip-voip)# dtmf-mode info
```

flash-mode

Flash. flash IP- flash - Transmit flash.

(no) .

flash-mode <MODE>
no flash-mode

<MODE> – Flash:

- disabled – flash ;
- rfc2833 – flash RFC2833 RTP;
- info – flash SIP. SIP INFO, flash MIME.

rfc2833

VOIP

```
msan(config-fxs-sip-voip)# flash-mode info
```

fax-mode

/, .

(no) .

fax-mode <TYPE>
no fax-mode

<TYPE> – :

- g711a – G.711A . g711a ;
- g711u – G.711U . g711u ;
- t38 – .38 . .38 .

g711u

VOIP

```
msan(config-fxs-sip-voip)# fax-mode g711a
```

slave-faxtransfer

/, . , .

(no) .

slave-faxtransfer <TYPE>
no slave-faxtransfer

<TYPE> – :

- g711a – G.711A . G.711A ;
- g711u – G.711U . G.711U ;
- t38 – .38 . .38 .
- none – .

none

VOIP

```
msan(config-fxs-sip-voip)# slave-faxtransfer G.711A
```

modem-mode

Voice band data (V.152). VBD (VAD) (CNG), .

(no) .

modem-mode <MODE>
no modem-mode

<MODE> – Voice band data:

- off – ;
- g711a-vbd – G.711A . G.711A VBD CED;
- g711u-vbd – G.711U . G.711U VBD CED;
- g711a-rfc3108 – G.711A . SIP VAD , RFC3108:

a=silenceSupp:off - - - -
a=ecan:fb off -;

- g711u-rfc3108 – G.711U . SIP, VAD , RFC3108:

a=silenceSupp:off - - - -
a=ecan:fb off -;

- g711a-nse – G.711U . G.711U ;
- g711u-nse – .38 . .38 .

g711a-vbd

VOIP

```
msan(config-fxs-sip-voip)# modem-mode G.711U-NSE
```

nlp-disable

NLP. , , NLP. .

(no) , .

[no] nlp-disable

.

NLP.

VOIP

```
msan(config-fxs-sip-voip)# nlp-disable
```

fax-bitrate

(9600, 14400). . 14400, 9600, 9600 . , , 9600, 14400, , .

(no) .

fax-bitrate <VAL>
no fax-bitrate

<VAL> – , 9600, 14400.

14440

VOIP

```
msan(config-fxs-sip-voip)# fax-bitrate 14400
```

fax-datagram

. 0 , SIP- T38MaxDatagram . 0 , 272 . , .38.

(no) .

fax-datagram <DATAGRAM>

no fax-datagram

<DATAGRAM> – , [0, 272 .. 512] .

512

VOIP

```
msan(config-fxs-sip-voip)# fax-datagram 0
```

payloadtype dtmf

, RFC2833. RFC2833 DTMF Flash RTP-. .

(no) .

payloadtype dtmf <TYPE>

no payloadtype dtmf

<TYPE> – , [96 .. 127].

96

VOIP

```
msan(config-fxs-sip-voip)# payloadtype dtmf 120
```

payloadtype cisco-nse

, NSE.

(no) .

payloadtype cisco-nse <TYPE>

no payloadtype cisco-nse

<TYPE> – , [96 .. 127].

100

VOIP

```
msan(config-fxs-sip-voip)# payloadtype cisco-nse 120
```

payloadtype g726

, G.726.

(no) .

payloadtype g726 <TYPE>

no payloadtype g726

<TYPE> – , [96 .. 127].

102

VOIP

```
msan(config-fxs-sip-voip)# payloadtype g726-32 122
```

silence-detection

(VAD) (SSup). RTP , .

(no) , .

[no] silence-detection

.

(VAD) (SSup).

VOIP

```
msan(config-fxs-sip-voip)# silence-detection
```

echo-canceller

.

(no) , .

[no] echo-canceller

.

.

VOIP

```
msan(config-fxs-sip-voip)# echo-canceller
```

comfort-noise-generation

. Silence detection (VAD), .

(no) , .

[no] comfort-noise-generation

.

.

VOIP

```
msan(config-fxs-sip-voip)# comfort-noise-generation
```

playout-delay

-.

(no) .

playout-delay <PARAM> <VAL>
no playout-delay <PARAM>

<PARAM> – , :

- fax milliseconds – -, ;
- minimum milliseconds – - ( ) -;
- maximum milliseconds – ( ) - ;
- deletion-threshold milliseconds – . ;

<VAL> – :

- _fax milliseconds{_}, [0..200] ;
- _minimum milliseconds{_}, [0..200] ;
- _maximum milliseconds{_}, [{_}minimum milliseconds_ .. 200] ;
- _deletion-threshold milliseconds{_}, [{_}maximum milliseconds_ .. 500] .

playout-delayfax 0
playout-delayminimum 0
playout-delaymaximum 200
playout-delaydeletion-threshold 500

VOIP

```
msan(config-fxs-sip-voip)#playout-delay fax 1
```

playout-delay mode

-.

(no) .

playout-delay mode <MODE>
no playout-delay mode

<MODE> – -:

- adaptive – ;
- fixed – .

adaptive

VOIP

```
msan(config-fxs-sip-voip)# playout-delay mode adaptive
```

playout-delay deletion-mode

. , .

(no) .

playout-delay deletion-mode <MODE>
no playout-delay deletion-mode

<MODE> – :

- soft – , ;
- hard – , , .

soft

VOIP

```
msan(config-fxs-sip-voip)# playout-delay deletion-mode soft
```

protocol rtcp timer

, RTCP.

(no) RTCP.

protocol rtcp timer <TIME>
no protocol rtcp timer

<TIME> – , [5 .. 65535] .

- RTCP

VOIP

```
msan(config-fxs-sip-voip)# protocol rtcp timer 500
```

protocol rtcp period

. (RTCP timer), RTCP . – cause 3 no route to destination. : RTCP timer* RTCP control period .

(no) RTCP.

protocol rtcp period <COUNT>

no protocol rtcp period

<COUNT> – , [2 .. 65535].

VOIP

```
msan(config-fxs-sip-voip)# protocol rtcp period 10
```

protocol rtcp xr

RTCP Extended Reports RFC 3611.

(no) RTCP Extended Reports.

[no] protocol rtcp xr

VOIP

```
msan(config-fxs-sip-voip)# protocol rtcp xr
```

protocol verify-remote-media

-. - (, 38), , SIP - .

(no) , .

[no] protocol verify-remote-media

.

-.

VOIP

```
msan(config-fxs-sip-voip)# protocol verify-remote-media
```

protocol

SIP- RTP-. 8 Diffserv (DSCP 6) IP, . 5.

(no) .

5 – « RTP/SIP » (Diffserv)

Diffserv	
0 (0x00)	(DSCP 0x00) – (Best effort) – ;
32 (0x20)	(DSCP 0x08) – 1;
40 (0x28)	(DSCP 0x0A)– , (Class1, AF11);
48 (0x30)	(DSCP 0x0C) – , (Class1, AF12);
56 (0x38)	(DSCP 0x0E) – , (Class1, AF13);
64 (0x40)	(DSCP 0x10) – 2;
72 (0x48)	(DSCP 0x12) – , (Class2, AF21);
80 (0x50)	(DSCP 0x14) – , (Class2, AF22);
88 (0x58)	(DSCP 0x16) – , (Class2, AF23);
96 (0x60)	(DSCP 0x18) – 3;
104 (0x68)	(DSCP 0x1A) – , (Class3, AF31);
112 (0x70)	(DSCP 0x1C) – , (Class3, AF32);
120 (0x78)	(DSCP 0x1E) – , (Class3, AF33);
128 (0x80)	(DSCP 0x20) – 4;
136 (0x88)	(DSCP 0x22) – , (Class4, AF41);
144 (0x90)	(DSCP 0x24) – , (Class4, AF42);
152 (0x98)	(DSCP 0x26) – , (Class4, AF43);
160 (0xA0)	(DSCP 0x28) – 5
184 (0xB8)	(DSCP 0x2E) – (Class5, Expedited Forwarding);

IP Precedence:	
0 (0x00)	IPP0 (Routine)
32 (0x20)	IPP1 (Priority)
64 (0x40)	IPP2 (Immediate)
96 (0x60)	IPP3 (Flash)
128 (0x80)	IPP4 (Flash Override)
160 (0xA0)	IPP5 (Critical)
192 (0xC0)	IPP6 (Internetwork Control)
224 (0xE0)	IPP7 (Network Control)

protocol <PARAM> <TYPE>
no protocol <PARAM>

<PARAM> – :

- sip-diffserv– SIP-;
- diffserv– RTP-.

<TYPE> – , [0..255].

sip-diffserv 104

diffserv 184

VOIP

```
msan(config-fxs-sip-voip)# protocol sip-diffserv 0
```

protocol intrcp-port-range

, – .

(no) .

protocol intrcp-port-range <MIN> <MAX>

no protocol intrcp-port-range

<MIN> – , ( ), , \[1024 .. 65535\];

<MAX> – , ( ), \[<MIN> .. 65535\].

min = 50000, max = 50100

VOIP

```
msan(config-fxs-sip-voip)# protocol intrcp-port-range 1024 2024
```

protocol sip-rtp-port-range

, – RTP.

(no) .

protocol sip-rtp-port-range <MIN> <MAX>

no protocol sip-rtp-port-range

<MIN> – RTP- SIP, \[1024 .. 65535\];

<MAX> – RTP- SIP, \[<MIN> .. 65535\].

min = 35002, max = 40000

VOIP

```
msan(config-fxs-sip-voip)# protocol sip-rtp-port-range 20000 30000
```

show voice-port voip-configuration

voip- FXS72SIP.

show voice-port voip-configuration

.

ROOT

```
msan> show voice-port voip-configuration
VoIP settings
~~~~~~~~~~~~~
Attribute                       Value
------------------------------- ----------------------
Use G.711A:                     On
Use G.711U:                     On
Use G.723 :                     Off
Use G.729 :                     Off
G.711 PTE:                      20
G.723 PTE:                      30
G.729 PTE:                      20
DTMF Transfer:                  rfc2833
Flash Transfer:                 rfc2833
Fax Transfer:                   G.711U
Slave Fax Transfer:             none
Modem Transfer:                 g711a-vbd
Silence compression:            Off
Echo canceller:                 On
Comfort noise:                  Off
NLP Disable:                    Off
RTCP Timer:                     -1
RTCP control period:            -1
Max Datagram Size:              512
Bitrate:                        14400
Playout delay:
Fax(ms):                        0
Mode:                           On
Min/Nominal(ms):                0
Maximum(ms):                    200
Delete Threshold(ms):           500
Delete Mode:                    soft
```

TMG: TMG-16

TMG-16.

show e1-framer info

E1.

show e1-framer info

.

ROOT

```
 msan> show e1-framer info

   E1 framer info
   ~~~~~~~~~~~~~~

#  Name Submodule
-- ---------------
0  none
1  QFALC_v3.1
2  none
3  QFALC_v3.1
```

show e1-interfaces counters

E1.

show e1-interfaces counters [STREAM]

[STREAM] – E1, [0 .. 15]. «,», «-».

ROOT

```
 msan> show e1-interfaces counters E1 interface counters
 ~~~~~~~~~~~~~~~~~~~~~~~

 #  Rx Low  Rx Big  Rx      Rx CRC  Tx      BER     CVC     CEC
                    Ovfl            Urun    Count           PRBS
 -- ------  ------  ------ ------  ------  ------ ------ ------

 0  0       0       0      0       0       0      0      0

 1  0       0       0      0       0       0      0      0

 2  0       0       0      0       0       0      0      0

 3  0       0       0      0       0       0      0      0

 4  0       0       0      0       0       0      0      0

 5  0       0       0      0       0       0      0      0

 6  0       0       0      0       0       0      0      0
```

```
 7  0       0       0      0       0       0      0      0

 8  0       0       0      0       0       0      0      0

 9  0       0       0      0       0       0      0      0
```

show e1-interfaces status detailed

E1.

show e1-interfaces status detailed <STREAM>

<STREAM> – a E1, [0 .. 15]. «,», «-».

ROOT

```
msan> show e1-interfaces status detailed 1

   E1 interface channels status
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~
#    Status  Status  Called Party  Calling Party Connected
             Timer   Number        Number        Port

--   ------  ------  -----------   -----------   ---------

 0    off     –      none          none          none
 1    off     –      none          none          none
 2    off     –      none          none          none
 3    off     –      none          none          none
 4    off     –      none          none          none
 5    off     –      none          none          none
 6    off     –      none          none          none
 7    off     –      none          none          none
 8    off     –      none          none          none
 9    off     –      none          none          none
 10   off     –      none          none          none
 11   off     –      none          none          none
 12   off     –      none          none          none
 13   off     –      none          none          none
 14   off     –      none          none          none
 15   off     –      none          none          none
 16   off     –      none          none          none
 17   off     –      none          none          none
 18   off     –      none          none          none
 19   off     –      none          none          none
 20   off     –      none          none          none
 21   off     –      none          none          none
 22   off     –      none          none          none
 23   off     –      none          none          none
 24   off     –      none          none          none
 25   off     –      none          none          none
 26   off     –      none          none          none
 27   off     –      none          none          none
 28   off     –      none          none          none
 29   off     –      none          none          none
 30   off     –      none          none          none
 31   off     –      none          none          none
```

show e1-interfaces status

E1. .

show e1-interfaces status [STREAM]

[STREAM] – / E1 0 15. (0,3-10)

ROOT

```
msan> show e1-interfaces status

   E1 interface status
   ~~~~~~~~~~~~~~~~~~~

#   Status E1  Status  Status  Slip Up  Slip  Rx Count Tx Count
               Timer   D-chan           Down
--  ---------  ------  ------  -------  ----- -------- --------

 0  none       –       off     0        0     0        0
 1  none       –       off     0        0     0        0
 2  none       –       off     0        0     0        0
 3  none       –       off     0        0     0        0
 4  off        –       off     0        0     0        0
 5  off        –       off     0        0     0        0
 6  off        –       off     0        0     0        0
 7  off        –       off     0        0     0        0
 8  none       –       off     0        0     0        0
 9  none       –       off     0        0     0        0
 10 none       –       off     0        0     0        0
 11 none       –       off     0        0     0        0
 12 off        –       off     0        0     0        0
 13 off        –       off     0        0     0        0
 14 off        –       off     0        0     0        0
 15 off        –       off     0        0     0        0
```

show v52an-interface status l3address

v52an.

show v52an-interface status l3address <L3ADDR>

<L3ADDR> – l3-.

ROOT

```
 msan> show v52an-interface status l3address 20-30

    V5.2-AN interface status l3address
    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#   Call     Call Ctrl  Common Ctrl  Common Ctrl  PSTN     PBX Status
    Ctrl     Line Info  Port Status  Protocol     Status
    Status                           Status
--  -------  ---------  -----------  -----------  ------   ----------

 0  free     outOfOrder operational  out of       blocked  off
                                     service
 1  free     outOfOrder operational  out of       blocked  off
                                     service
 2  free     outOfOrder operational  out of       blocked  off
                                     service
 3  free     outOfOrder operational  out of       blocked  off
                                     service
 4  free     outOfOrder operational  out of       blocked  off
                                     service
 5  free     outOfOrder operational  out of       blocked  off
                                     service
 6  free     outOfOrder operational  out of       blocked  off
                                     service
 7  free     outOfOrder operational  out of       blocked  off
                                     service
 8  free     outOfOrder operational  out of       blocked  off
                                     service
 9  free     outOfOrder operational  out of       blocked  off
                                     service
```

show v52an-interface status

v52an.

show v52an-interface status

.

ROOT

```
msan> show v52an-interface status

    V5.2-AN interface status
    ~~~~~~~~~~~~~~~~~~~~~~~~

#  Status    Duration of
             status
-- --------- ------------
0  down      00:13:01
```

show voip-module status

VoIP-.

show voip-module status

.

ROOT

```
 msan> show voip-module status
 VoIP submodule info
 ~~~~~~~~~~~~~~~~~~~

#  Status  Version Boot  Payload Used  CreateReq/ DestroyedReq/
           Device  Count         Conn  Created    Destroyed
-- ------- ------- ----- ------- ----- ---------- -------------

 0 work    M82359  1     01.89%  3     0/0        0/0
 1 none    -       -     -       -     -          -
 2 work    M82359  1     00.00%  0     0/0        0/0
 3 none    -       -     -       -     -          -
 4 none    -       -     -       -     -          -
 5 none    -       -     -       -     -          -
```

show voip-module channels network-status

VoIP-: , .

show voip-module channels network-status <MODULE_IDX>

<MODULE_IDX> – voip-, [0-5].

ROOT

```
msan> show voip-module channels network-status 2
```

```
   VoIP submodule channels network-status
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#  Status    Call  Local ip/port/mac Remote            Timer
             Refer                   ip/port/mac
-- --------- ----- ----------------- ----------------- --------

 0 active    03FF  192.168.20.122    192.168.20.152    00:01:25
                   20000             7078
                   02:31:52:63:74:82 BC:AE:C5:DA:0C:F2
```

show voip-module channels pstn-status

VoIP-: , .

show voip-module channels pstn-status <MODULE_IDX>

<MODULE_IDX> – voip-, [0-5].

ROOT

```
msan> show voip-module channels pstn-status 2
   VoIP submodule channels pstn-status
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#  Status    Call  Called Party    Calling Party   Timer
             Refer Number          Number
-- --------- ----- --------------- --------------- --------

 0 active    03FF  2000008         44010           00:02:09
```

show sip-user status

SIP-.

show sip-user status

.

ROOT

```
 msan# show sip-user status
 Registration info for SIP users
 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#    Status   Number          Contact         IP-address &     Last Reg  Timeout
                                              Port
--   -------- --------------- --------------- ---------------  --------  --------
```

```
 0  none      44000           44000@eltex.loc  -               never      -
 1  none      44001           44001@eltex.loc  -               never      -
 2  none      44002           44002@eltex.loc  -               never      -
 3  none      44003           44003@eltex.loc  -               never      -
 4  none      44004           44004@eltex.loc  -               never      -
 5  none      44005           44005@eltex.loc  -               never      -
 6  none      44006           44006@eltex.loc  -               never      -
 7  none      44007           44007@eltex.loc  -               never      -
 8  none      44008           44008@eltex.loc  -               never      -
 9  none      44009           44009@eltex.loc  -               never      -
 10 active    44010           s00p05           192.168.20.152  01/01/70  00:50:00
                              192.168.20.122   5075            00:45:42
 11 none      44011           s05p38           -               never      -
                              192.168.20.122
 12 none      44012           44012@eltex.loc  -               never      -
 13 none      44013           44013@eltex.loc  -               never      -
```

show sip-user status active

SIP-.

show sip-user status active

.

ROOT

```
 msan# show sip-user status active

    Registration info for SIP users
    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#   Status   Number          Contact         IP-address &    Last Reg Timeout
                                             Port
--  -------- --------------- --------------- --------------- -------- --------

10  active   44010           s00p05          192.168.20.152  01/01/70 00:49:55
                             192.168.20.122  5075            00:45:42
```

show sip-user status name

SIP- .

show sip-user status name <WORD>

<WORD> – 21 .

ROOT

```
 msan# show sip-user status name s05p38

    Registration info for SIP users
    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#  Status   Number          Contact         IP-address &    Last Reg Timeout
 Port
-- -------- --------------- --------------- --------------- -------- --------

11 none     44011           s05p38           -              never     -
                            192.168.20.122
```

show sip-user status number

SIP- .

show sip-user status number <WORD>

<WORD> – 1 15 .

ROOT

```
 msan# show sip-user status number 44015

   Registration info for SIP users
   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

#   Status   Number          Contact         IP-address &    Last Reg Timeout
                                             Port
--  -------- --------------- --------------- --------------- -------- --------

15  none     44015           44015@eltex.loc  -              never     -
```

TMG: TMG-16

tmg

TMG-16.

tmg

.

ROOT

```
msan# tmg
(tmg)#
```

config

TMG-16.

config

.

TMG

```
(tmg)# config
Entering configuration mode.
(tmg-config)#
```

TMG:

sip-user number

SIP.

sip-user number <NUMBER> voice-port < SHELF/SLOT/PORT > [print|no-print]

<NUMBER> – , 15 ;

< SHELF/SLOT/PORT > – , SHELF/SLOT/PORT, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

[print|no-print] – :

- print – ;
- no-print – .

TMG

```
msan(tmg)# sip-user number
msan(tmg)# sip-user number 5000 voice-port 1/2/0-5
SIP-User[0]. Set number '5000'
SIP-User[1]. Set number '5001'
SIP-User[2]. Set number '5002'
SIP-User[3]. Set number '5003'
SIP-User[4]. Set number '5004'
SIP-User[5]. Set number '5005'
```

sip-user v52an-l3addr

L3- V5.2.

sip-user v52an-l3addr <L3ADDR> voice-port <SHELF/SLOT/PORT>

<L3ADDR> – L3- V5.2, [0..4095];

< SHELF/SLOT/PORT > – , SHELF/SLOT/PORT, :

- SHELF – , [1..1];
- SLOT – , [0..15]. «,» «-»;
- PORT – , [0..71]. «,» «-».

TMG

```
msan(tmg)# sip-user number

msan(tmg)# sip-user number 5000 voice-port 1/2/0-5
SIP-User[0]. Set number '5000'
SIP-User[1]. Set number '5001'
SIP-User[2]. Set number '5002'
SIP-User[3]. Set number '5003'
SIP-User[4]. Set number '5004'
SIP-User[5]. Set number '5005'
```

```
msan(tmg)# sip-user name voice-port 1/2/0-5
SIP-User[0]. Set regname 's02p00'
SIP-User[1]. Set regname 's02p01'
SIP-User[2]. Set regname 's02p02'
SIP-User[3]. Set regname 's02p03'
SIP-User[4]. Set regname 's02p04'
SIP-User[5]. Set regname 's02p05'

msan(tmg)# sip-user v52an-l3addr 0 voice-port 1/2/0-5
SIP-User[0]. Set v52l3addr '0'
SIP-User[1]. Set v52l3addr '1'
SIP-User[2]. Set v52l3addr '2'
SIP-User[3]. Set v52l3addr '3'
SIP-User[4]. Set v52l3addr '4'
SIP-User[5]. Set v52l3addr '5'
msan(tmg)#
```

TMG: 1

e1

E1.

e1 <E1_INDEX>

<E1_INDEX> – E1, [0-15].

TMG CONFIGURE

```
(tmg-config)# e1 0
Entering E1-stream mode.
(tmg-config-e1-if)#
```

alarm

E1.

alarm <ACT>

<ACT> – :

- on – E1;
- off – E1.

off

TMG E1

```
(tmg-config-e1-if)# alarm off
E1[0]. Set Alarm-Indication 'off'
```

remalarm

E1.

remalarm

<ACT> – :

- on – E1;
- off – E1.

off

TMG E1

```
(tmg-config-e1-if)# remalarm off
E1[14]. Set RemAlarm-Indication 'off'
```

crc4

CRC4 E1.

crc4 <ACT>

<ACT> – :

- on – CRC4 E1;
- off – CRC4 E1.

off

TMG E1

```
(tmg-config-e1-if)# crc4 off
E1[14]. Set CRC4 'off'
```

disabled

.

disabled

.

TMG E1

```
(tmg-config-e1-if)# disabled
E1[14]. Set line 'off'
```

enabled

.

enabled

.

TMG E1

```
(tmg-config-e1-if)# enabled
E1[14]. Set line 'on'
```

equalizer

/ E1.

equalizer <ACT>

<ACT> – :

- on – CRC4 E1;
- off – CRC4 E1.

off

TMG E1

```
(tmg-config-e1-if)# equalizer on
E1[14]. Set equalizer 'on'
```

linecode

AMI HDB3.

linecode <type>

<type> – :

- AMI;
- HDB3.

HDB3

TMG E1

```
(tmg-config-e1-if)# linecode HDB3
E1[14]. Set line_code 'hdb3'
```

show

.

show

.

TMG E1

```
(tmg-config-e1-if)# show
'E1: PHYS' [14]:
                          line          'off'
                          code          'hdb3'
                          eq            'off'
                          crc           'off'
                          sig           'SIG_PRI_USER' (1)
                          alarm_ind     'off'
                          rem_alarm_ind 'off'
                          slipTO        '15min'
                          slipIND       'off'
```

slipIND

.

slipIND <ACT>

<ACT> – :

- on – ;
- off – .

off

TMG E1

```
(tmg-config-e1-if)# slipIND off
E1[14]. Set Slip inication 'off'
```

slipTO

. , .

slipTO <TIMEOUT>

<TIMEOUT> – , : 5sec, 10sec, 20sec, 30sec, 45sec, 1min, 2min, 3min, 5min, 10min, 15min, 30min, 1hour, 2hour, 6hour.

15min

TMG E1

```
(tmg-config-e1-if)# slipTO 10min
E1[14]. Set Slip timeout variant '9'
```

TMG:

network

.

network

.

TMG CONFIGURE

```
(tmg-config)# network
Entering Network mode.
(tmg-config-network)#
```

set gateway

IP- .

set gateway <GATEWAY>

<GATEWAY> – IP-, AAA.BBB.CCC.DDD, [0..255].

0.0.0.0

TMG NETWORK

```
(tmg-config-network)# set gateway 192.168.70.7
Network. Set gateway '192.168.70.7'
```

set ip

IP-.

set ip <IPADDR>

<IPADDR> – IP-, AAA.BBB.CCC.DDD, [0..255].

192.168.1.2

TMG NETWORK

```
msan(tmg-config-network)#set ip 192.168.1.220
Network. Set ipaddr '192.168.1.220'
```

set mask

.

set ip <NETMASK>

<NETMASK> – , AAA.BBB.CCC.DDD, [0..255].

255.255.255.0

TMG NETWORK

```
msan(tmg-config-network)# set mask 255.255.255.240
Network. Set netmask '255.255.255.240'
```

set rtp_vlan

VLAN .

set rtp_vlan <RTP_VLAN>

<RTP_VLAN> – VLAN, :

- VLAN1, VLAN2, VLAN3, VLAN4;
- NO_VLAN – VLAN .

NO_VLAN

TMG NETWORK

```
(tmg-config-network)# set rtp_vlan vlan1
Network. Set rtp_vlan '1'
```

set sig_vlan

VLAN SIP/H323.

set sig_vlan <SIG_VLAN>

<SIG_VLAN> – VLAN, :

- VLAN1, VLAN2, VLAN3, VLAN4;
- NO_VLAN – VLAN .

NO_VLAN

TMG NETWORK

```
(tmg-config-network)# set sig_vlan no_VLAN
Network. Set sig_vlan '0'
```

set vlan cos

802.1 VLAN.

set vlan cos <VLAN> <COS>

<VLAN> – VLAN, : VLAN1, VLAN2, VLAN3, VLAN4;

<COS> – , [0..7].

COS: 0

TMG NETWORK

```
(tmg-config-network)# set vlan cos VLAN1 1
Network. Set vlan_cos '1'
```

set vlan dhcp

/ VLAN DHCP.

set vlan dhcp <VLAN> <ACT>

<VLAN> – VLAN, : VLAN1, VLAN2, VLAN3, VLAN4;
<ACT> – :

- on – DHCP;
- off – DHCP.

off

TMG NETWORK

```
(tmg-config-network)# set vlan dhcp VLAN1 off
Network. Set vlan_dhcp '0'
```

set vlan enable

/ VLAN.

set vlan enable <VLAN> <ACT>

<VLAN> – VLAN, : VLAN1, VLAN2, VLAN3, VLAN4;
<ACT> – :

- on – VLAN;
- off – VLAN.

no

TMG NETWORK

```
(tmg-config-network)# set vlan enable VLAN1 off
Network. Set vlan_ena '0'
```

set vlan id

VLAN.

set vlan id <VLAN> <VID>

<VLAN> – VLAN, : VLAN1, VLAN2, VLAN3, VLAN4;

<VID> – VLAN, [0 .. 4095].

0

TMG NETWORK

```
(tmg-config-network)# set vlan id VLAN1 2
Network. Set vlan_id '2'
```

set vlan ip

IP- VLAN.

set vlan ip <VLAN>

<VLAN> – VLAN, VLAN1, VLAN2, VLAN3, VLAN4;

<IP> – IP-, AAA.BBB.CCC.DDD, [0..255].

0.0.0.0

TMG NETWORK

```
(tmg-config-network)# set vlan ip VLAN1 192.168.0.5
Network. Set vlan_ip '192.168.0.5'
```

set vlan mask

, VLAN.

set vlan mask <VLAN> <MASK>

<VLAN> – VLAN, VLAN1, VLAN2, VLAN3, VLAN4;

<MASK> – , AAA.BBB.CCC.DDD, [0..255].

0.0.0.0

TMG NETWORK

```
(tmg-config-network)# set vlan mask VLAN1 255.255.255.0
Network. Set vlan_mask '255.255.255.0'
```

set vlan dns auto

/ DNS- DHCP VLAN.

set vlan dns auto

<VLAN> – VLAN, VLAN1, VLAN2, VLAN3, VLAN4;
<ACT> – :

- on – DNS- DHCP;
- off – DNS- DHCP.

off

TMG NETWORK

```
(tmg-config-network)# set vlan dns auto VLAN1 off
Network. Set vlan_dns '0'
```

set vlan ntp_dhcp

/ IP- SNTP- VLAN.

set vlan ntp_dhcp <VLAN> <ACT>

<VLAN> – VLAN, : VLAN1, VLAN2, VLAN3, VLAN4;
<ACT> – :

- on – IP- SNTP- VLAN;
- off – IP- SNTP- VLAN.

off

TMG NETWORK

```
(tmg-config-network)# set vlan ntp_dhcp VLAN1 off
Network. Set vlan_ntp '0'
```

show

.

show

.

TMG NETWORK

```
(tmg-config-network)# show
Network. Request info.
'NETWORK SETTINGS':
HOSTNAME:
IPADDR: 0.0.0.0
NETMASK: 0.0.0.0
GATEWAY: 192.168.70.7
DNS-PRI: 0.0.0.0
DNS-SEC: 0.0.0.0
NTP: 0.0.0.0
NTP-PERIOD: 100
DHCP: no
DNS-DHCP: no
NTP_DHCP: no
VLAN1_VID: 2
VLAN1_IP: 0.0.0.0
VLAN1_MASK: 255.255.255.0
VLAN1_ENABLE: no
VLAN1_DHCP: no
VLAN1_DNS_AUTO: no
VLAN1_NTPDHCP: no
VLAN1_COS: 1
VLAN2_VID: 0
VLAN2_IP: 0.0.0.0
VLAN2_MASK: 0.0.0.0
VLAN2_ENABLE: no
VLAN2_DHCP: no
VLAN2_DNS_AUTO: no
VLAN2_NTPDHCP: no
VLAN2_COS: 0
VLAN3_VID: 0
VLAN3_IP: 0.0.0.0
VLAN3_MASK: 0.0.0.0
VLAN3_ENABLE: no
VLAN3_DHCP: no
VLAN3_DNS_AUTO: no
VLAN3_NTPDHCP: no
VLAN3_COS: 0
VLAN4_VID: 0
VLAN4_IP: 0.0.0.0
VLAN4_MASK: 0.0.0.0
VLAN4_ENABLE: no
VLAN4_DHCP: no
VLAN4_DNS_AUTO: no
VLAN4_NTPDHCP: no
VLAN4_COS: 0
SNMP: no
RTP_VLAN: NO_VLAN
SIG_VLAN: NO_VLAN
CTRL_VLAN: NO_VLAN
RADIUS_VLAN: NO_VLAN
```

TMG: SIP-

new sipt-interface

SIP-T.

new sipt-interface

.

TMG CONFIGURE

```
msan(tmg-config)# new sipt-interface
NEW 'SIP/SIPT INTERFACE' [01]: successfully created
```

delete sipt-interface

SIP.

delete sipt-interface <OBJECT_INDEX>

<OBJECT_INDEX> – SIP.

TMG CONFIGURE

```
(tmg-config)# delete sipt-interface 0
```

count sipt-interface

SIP.

count sipt-interface

TMG CONFIGURE

```
(tmg-config)# count sipt-interface
'SIP/SIPT INTERFACE' count [01]
```

TMG: UDP-

ports range

UDP-, (RTP) .38.

ports range <RANGE_PORT>

<RANGE_PORT> – UDP-, (RTP) .38, [1 .. 65535].

10000

TMG CONFIGURE

```
(tmg-config)# ports range 500
```

ports start

UDP-, (RTP) .38.

ports start

<START_PORT> – UDP-, [1024 .. 65535].

20000

TMG CONFIGURE

```
(tmg-config)# ports range 1026
```

ports show

UDP-.

ports show

.

TMG CONFIGURE

```
(tmg-config)# ports show
Ports. Request info.
'PORTS SETTINGS':
start: 20000
range: 10000
```

TMG: SIP-

sip configuration

SIP/SIP-T.

sip configuration

.

TMG CONFIGURE

```
(tmg-config)# sip configuration
Entering SIP/SIP-T/SIP-I/SIP-profile config mode.
(tmg-config-sip-general)#
```

port

, .

port <NUMBER>

<NUMBER> – , [1..65535].

5060

TMG SIP

```
(tmg-config-sip-general)# port 5061
SIPT-Config. Set port '5061'
```

save_database

/ .

- . WEB CLI- .

save_database <ACT>

<ACT> – :

- on – ;
- off – .

off

TMG SIP

```
(tmg-config-sip-general)# save_database off
SIPT-Config. Set database '0'
```

show

SIP-T.

show

TMG SIP

```
(tmg-config-sip-general)# show
SIPT-Config. Get info
'SIP/SIPT CONFIG' :
port: 5
transport: UDP only
T1: 5 (x100 ms)
T2: 40 (x100 ms)
T4: 50 (x100 ms)
save database: off
saving period: 1hour
Cause codes KZ: off
```

t1

SIP- T1.

t1 <T1_TIMER>

<T1_TIMER> – , [0..255] x 100 .

5 (x100 ms)

TMG SIP

```
(tmg-config-sip-general)# t1 5
SIPT-Config. Set t1_timer '5'
```

t2

SIP- T2.

t2 <T2_TIMER>

<T2_TIMER> – , [0..255] x 100 .

40 (x100 ms)

TMG SIP

```
(tmg-config-sip-general)# t2 40
SIPT-Config. Set t2_timer '40'
```

t4

SIP- T4.

t4 <T4_TIMER>

<T4_TIMER> – , [0..255] x 100 .

50 (x100 ms)

TMG SIP

```
(tmg-config-sip-general)# t4 50
SIPT-Config. Set t4_timer '50'
```

transport

, SIP.

transport <TRANSPORT>

<TRANSPORT> – :

- UDP-only – UDP;
- UDP-prefer – UDP TCP, 1300 TCP, 1300 – UDP;
- TCP-prefer – UDP TCP, TCP. TCP, UDP;
- TCP-only – P.

UDP-only

TMG SIP

```
(tmg-config-sip-general)# transport UDP-only
SIPT-Config. Set transport '0'
```

write_timeout

.

write_timeout <TIMEOUT>

<TIMEOUT> – , : 1hour, 2hours, 4hours, 6hours, 8hours, 12hours, 16hours.

1hour

TMG SIP

```
(tmg-config-sip-general)# write_timeout 1hour
SIPT-Config. Set wr_timeout '0'
```

sip interface

SIP/SIP-T.

sip interface <SIPT_INDEX>

<SIPT_INDEX> – SIP/SIP–T, [0..63].

TMG CONFIGURE

```
(tmg-config)# sip interface 0
Entering SIPT-mode.
(tmg-config-sip/sipt/sipi-if)#
```

show

SIP-T.

show

.

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# show
```

```
SIPT-Interface[0]. Request info.
'SIP/SIPT INTERFACE' [00]:   id[01]
                          name:               SIP-interface00
                          mode:               SIP-Profile

                          codecs:
                                 0 :
                                     codec:   G.711-A
                                     ptype:   8
                                     pte:     20

                          max active:         0

                          VAD/CNG:            off
                          Source verify:      off
                          Echo cancel:        voice (default)
                          Gain RX:            0
                          Gain TX:            0

                          DSCP RTP:           0
                          DSCP SIG:           0
                          RTCP period:        0
                          RTCP control:       0
                          RTP loss timeout:   off

                          DTMF MODE:          inband
                          DTMF PType:         101
                          DTMF MIMETYPE:      application/dtmf

                          Session Expires:    off
                          Inband and 183+SDP: off
                          Rport:              off
                          Reliable 1xx resp:  off
                          NAT (comedia)       off
                          Upper-registration:
                                  enable:   yes
                               ipaddr:port:   192.168.1.22:5080
                                   expires:   120
                                 sipdomain:   192.168.1.22
                                   options:   yes [120]

                          STUN-use:           no
                          STUN-ip:            0.0.0.0
                          STUN-port:          3478
                          STUN-period:        60

                          FAX-detect:         no detecting
                          FAX-mode:           T38
                          T38-BitRate:       14400
                          T38-RateMgmt:      transferredTCF
                          T38-FillBitRem:    off
                          T38-Redundancy:    1
                          T38-PTE:           30

                          VBD:                off

                          Jitter buffer adaptive mode
                            minimum size:           0 ms
                            initial size:           0 ms
                            maximum size:           200 ms
                            deletion mode:          soft
                            deletion threshold:     500 ms
                            adaptation period:      10000 ms
                            adjustment mode:        non-immediate
                            size for VBD:           0
```

codec disable

 , .

codec disable <CODEC_IDX>

<CODEC_IDX> – , [0..4].

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# codec disable 0
SIPT-Interface[0]. Set disable '0'
```

codec pte

.

codec pte <CODEC_IDX> <PTE>

<CODEC_IDX> – , [0..4];

<PTE> – (), [10, 20, 30, 40, 50, 60, 70, 80, 90].

30

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# codec pte 0 20
SIPT-Interface[0]. Set pte '0'
```

codec ptype

.

codec ptype <CODEC_IDX> <PTYPE>

<CODEC_IDX> – , [0..4];

<PTYPE> – , : [0 .. 127] 'static'.

G.711A: 8

G.711U: 0

G.729: 18

G.723.1: 4

G.726-32: 102

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# codec ptype 0 8
SIPT-Interface[0]. Set ptype '0'
```

codec set

SIP-T .

codec set <CODEC_IDX> <CODEC>

<CODEC_IDX> – , [0..4];

<CODEC> – , : G.711-U, G.711-A, G.729, G.723.1_5.3, G.723.1_6.3, G.726.

G.711-A, G.711-U

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# codec set 0 G.711-A
SIPT-Interface[0]. Set codec '0'
```

DSCP RTP

DSCP RTP-.

DSCP RTP <NUMBER>

<NUMBER> – DSCP, [0..63].

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# DSCP RTP 0
SIPT-Interface[0]. Set DSCP_RTP '0'
```

DTMF mime type

MIME, DTMF INFO- SIP.

DTMF mime type <TYPE>

<TYPE> – SIP-INFO, :

- application/dtmf – DTMF application/dtmf (* # 10 11);
- application/dtmf-relay – DTMF application/dtmf-relay (* # * #).

application/dtmf

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# DTMF mime type application/dtmf
```

DTMF mode

DTMF .

DTMF mode <MODE>

<MODE> – DTMF, :

- Inband – , RTP;
- RFC2833 – RFC2833 RTP;
- SIP-INFO – . SIP INFO, DTMF MIME.

inband

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# DTMF mode inband
SIPT-Interface[0]. Set DTMF_type '0'
```

ecan

.

ecan <ECAN>

<ECAN> – , :

- voice – ;
- nlp-off-voice – , NLP . , , NLP. , ;
- modem – (, NLP ,);
- off – .

voice

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# ecan voice
SIPT-Interface[0]. Set ECAN_MODE '1'
```

fax detection

.

fax detection <DETECTION>

<DETECTION> – , :

- no – ;
- callee – ;
- caller – ;
- callee_and_caller – .

no

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# fax detection no
SIPT-Interface[0]. Set fax_det '0'
```

fax mode

, .

fax mode <MODE>

<MODE> – , :

- T38 – .38 ;
- G.711 – G.711 ;
- T38_and_G.711 – .38 G.711 .

T38

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# fax mode T38
SIPT-Interface[0]. Set fax_mode '1'
```

gain rx

, / , SMG.

gain rx <GAIN>

<GAIN> – , [-140;60] *0.1 Db.

0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# gain rx 0
SIPT-Interface[0]. Set gain_rx '0'
```

gain tx

, / SMG .

gain tx <GAIN>

<GAIN> – , [-140;60] *0.1 dB.

0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# gain tx 0
SIPT-Interface[0]. Set gain_tx '0'
```

jitter adaptation period

- .

jitter adaptation period <JT_AP>

<JT_AP> – -, [1000 .. 65535] .

10000

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter adaptation period 10000
SIPT-Interface[0]. Set jitter_ap '10000'
```

jitter adjust mode

-:

jitter adjust mode <JT_AM>

<JT_AM> – -, :

- non-immediate – ;
- immediately – .

non-immediate

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter adjust mode non-immediate
SIPT-Interface[0]. Set jitter_am '0'
```

jitter deletion mode

. , .

jitter deletion mode <JT_DM>

<JT_DM> – , :

- soft – , ;
- hard – , , .

soft

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter deletion mode soft
SIPT-Interface[0]. Set jitter_dm '0
```

jitter deletion threshold

. .

jitter deletion threshold <JT_DT>

<JT_DT> – , , [0..500] .

500 ms

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter deletion threshold 500
SIPT-Interface[0]. Set jitter_dt '500'
```

jitter init

-.

jitter init <JT_INIT>

<JT_INIT> – -, \[0-200\] .

0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter init 0
SIPT-Interface[0]. Set jitter_init '0'
```

jitter max

( ) -.

jitter max <JT_MAX>

<JT_MAX> – -, [0..200] .

200 ms

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter max 200
SIPT-Interface[0]. Set jitter_max '200'
```

jitter min

( ) -.

jitter min <JT_MIN>

<JT_MIN> – -, [0..200] .

0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter min 0
SIPT-Interface[0]. Set jitter_min '0'
```

jitter mode

-.

jitter mode <JT_MODE>

<JT_MODE> – -, :

- adaptive – ;
- non-adaptive – .

adaptive mode

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter mode adaptive
SIPT-Interface[0]. Set jitter_mode '0'
```

jitter vbd

VBD.

jitter vbd <JT_VBD>

<JT_VBD> – VBD, [0..200] .

0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# jitter vbd 0
SIPT-Interface\[0\]. Set jitter_vbd '0'
```

max_active

.

max_active <MAX_ACTIVE>

<MAX_ACTIVE> – , [0..65535].

0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# max_active 0
SIPT-Interface[0]. Set max_active '0'
```

name

SIP-.

name <S_NAME>

<S_NAME> – SIP-T , 31 , , , '_'.

SIP-interface

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# name test_1
SIPT-Interface[0]. Set name 'test_1'
```

nat

/ NAT.

nat <NAT>

<NAT> – :

- on – NAT;
- off – NAT.

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# nat off
SIPT-Interface\[0\]. Set NAT '0'
```

options

/ OPTIONS. . OPTIONS, 100rel, replaces timer, .

options <ACT>

<ACT> – :

- disable – ;
- enable – .

disable

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# options disable
SIPT-Interface[0]. Set options '0'
```

options period

OPTIONS.

options period <OPTIONS_PERIOD>

<OPTIONS_PERIOD> – , :

- [30..3600] ;
- off – .

30

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# options period 30
SIPT-Interface[0]. Set period_options '30'
```

redirection

/ .

redirection <ACT>

<ACT> – :

- on – ;

- off – .

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# redirection off
```

refer

/ REFER.

refer <ACT>

<ACT> – :

- on – REFER;
- off – REFER.

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# refer off
SIPT-Interface[0]. Set REFER '0'
```

reg_expire

.

reg_expire <REGEXP>

<REGEXP> – , [90 .. 64800].

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# reg_expire 64000
```

reliable_1xx_response

/ , INVITE 1, require: 100rel, .

reliable_1xx_response <ACT>

<ACT> – :

- on – ;
- off – .

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# reliable_1xx_response off
SIPT-Interface[0]. Set reliable_1xx '0'
```

rport

/ rport VIA INVITE.

rport <ACT>

<ACT> – :

- on – rport VIA INVITE;
- off – rport VIA INVITE.

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# rport off
SIPT-Interface[0]. Set rport '0'
```

RTCP control

(RTCP period), RTCP .

RTCP control <RTCP_c>

<RTCP_c> – , [2..255] 'off'.

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# rtcp control 3
SIPT-Interface[0]. Set RTCP_control '3'
```

RTP loss silence

RTP- . , RTP-loss timeout.

RTP loss silence <TIMEOUT>

<TIMEOUT> – , [1..30].

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# rtp loss silence 1
SIPT-Interface\[0\]. Set RTP_loss_silence '1'
```

RTP loss timeout

RTP-.

RTP loss timeout <TIMEOUT>

<TIMEOUT> – RTP-, [10..300] 'off'.

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# rtp loss timeout off
SIPT-Interface[0]. Set RTP_loss 'off'
```

sipdomain

.

sipdomain <SIPDOM>

<SIPDOM> – , 15 .

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# sipdomain sip1
SIPT-Interface[0]. Set sipdomain 'sip<span style="color: #ff3300">1</span>'
```

src verify

IP- UDP-, SDP, IP- UDP-.

src verify <ACT>

<ACT> – :

- on – IP- UDP-, SDP;
- off – IP- UDP-.

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# src verify off
SIPT-Interface[0]. Set srcverify '0'
```

STUN ip

IP- STUN-.

STUN ip <IPADDR>

<IPADDR> – IP- STUN-, AAA.BBB.CCC.DDD, [0..255].

0.0.0.0

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# STUN ip 192.168.2.2
SIPT-Interface[0]. Set stunip '192.168.2.2'
```

STUN period

.

STUN period <PERIOD>

<PERIOD> – , [0, 10..1800].

60

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# STUN period 60
SIPT-Interface[0]. Set stunperiod '60'
```

STUN port

STUN- .

STUN port <PORT>

<PORT> – STUN- , [1..65535].

3478

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# STUN port 3478
SIPT-Interface[0]. Set stunport '3478'
```

STUN use

/ STUN.

STUN use <ACT>

<ACT> – :

- yes – STUN;
- no – STUN.

no

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# STUN use yes
SIPT-Interface[0]. Set stunuse '1'
```

t38 bitrate

.38.

t38 bitrate <BITRATE>

<BITRATE> – T.38, : nolimit, 2400, 4800, 7200, 9600, 12000, 14400.

14400

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# t38 bitrate 14400
SIPT-Interface[0]. Set t38_bitrate '6'
```

t38 fillbitremoval

/ , .

t38 fillbitremoval <ACT>

<ACT> – :

- on – ;
- off – .

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# t38 fillbitremoval off
SIPT-Interface[0]. Set t38_fbr '0'
```

t38 pte

.38.

t38 pte <T38_PTE>

<T38_PTE> – T.38, : 10, 20, 30, 40 .

30

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# t38 pte 30
SIPT-Interface[0]. Set t38_pte '30'
```

t38 ratemgmt

.

t38 ratemgmt <T38_RATE_MGMT>

<T38_RATE_MGMT> – , :

- localTCF – , TCF ;
- transferredTCF – , TCF .

transferredTCF

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# t38 ratemgmt transferredTCF
SIPT-Interface[0]. Set t38_rate_mgmt '1'
```

t38 redundancy

/ .

t38 redundancy <T38_REDUNDANCY>

<T38_REDUNDANCY> – :

- off – ;
- 1, 2, 3 — .

1

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# t38 redundancy 1
SIPT-Interface[0]. Set t38_redundancy '1'
```

upper-registration enable

/ upper-.

upper-registration enable <YES_NO>

<YES_NO> – :

- yes – upper-;
- no – upper-.

no

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration enable yes
SIPT-Interface[0]. Set upper_reg_enable '1'
```

upper-registration expire

upper-.

upper-registration expire <REG_EXPIRE>

<REG_EXPIRE> – , 60 64800 .

3600

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration expire 180
SIPT-Interface[0]. Set upper_reg_expire '180'
```

upper-registration options control

upper- SIP OPTIONS.

upper-registration options control <YES_NO>

<YES_NO> – :

- yes – OPTIONS;
- no – OPTIONS.

no

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration options control yes
SIPT-Interface[0]. Set upper_reg_options '1'
```

upper-registration options period

upper- SIP OPTIONS.

upper-registration options period <OPTIONS_PERIOD>

<OPTIONS_PERIOD> – :

- 30-3600 – ;
- off – OPTIONS.

60

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration options period 90
SIPT-Interface[0]. Set upper_reg_opt_period '90'
```

upper-registration server ipaddr

IP- upper-.

upper-registration server ipaddr <IPADDR>

<IPADDR> – IP-, AAA.BBB.CCC.DDD, [0..255].

0.0.0.0

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration server ipaddr 192.168.1.22
SIPT-Interface[0]. Set upper_reg_ipaddr '192.168.1.22'
```

upper-registration server port

upper-.

upper-registration server port <PORT>

<PORT> – , 1 65535.

0

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration server port 5080
SIPT-Interface[0]. Set upper_reg_port '5080'
```

upper-registration sipdomain

SIP upper-.

upper-registration sipdomain <SIP_DOMAIN>

<SIP_DOMAIN> – 63 .

TMG SIP INTERFACE

```
msan(tmg-config-sip/sipt/sipi-if)# upper-registration sipdomain eltex.domain
SIPT-Interface[0]. Set sipdomain 'eltex.domain'
```

timer enable

/ SIP- RFC4028.

timer enable <ACT>

<ACT> – :

- yes – ;
- no – .

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# timer enable no
SIPT-Interface[0]. Set Session_Timer '0'
```

timer refresher

, .

timer refresher <REFRESHER>

<REFRESHER> – , :

- uac – ;
- uas – .

uac

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# timer refresher uac
SIPT-Interface[0]. Set Session_Refresher '0'
```

timer session expires

, , .

timer session expires <EXPIRES>

<EXPIRES> – , [90-64800] .

1800

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# timer session expires 90
```

timer session Min-SE

. "timer session expires".

timer session Min-SE <MIN_SE>

<MIN_SE> – , [90..32000] .

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# timer session Min-SE 90
```

VAD_CNG

/ / .

VAD_CNG <ACT>

<ACT> – :

- on – ;
- off – .

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# VAD_CNG off
SIPT-Interface[0]. Set VAD_CNG '0'
```

vbd codec

, VBD.

vbd codec <VBD_CODEC>

<VBD_CODEC> – , : G.711-U, G.711-A.

G.711-A

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# vbd codec G.711-A
```

vbd

/ V.152.

vbd <ACT>

<ACT> – :

- disable – V.152;
- enable – V.152.

off

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# vbd disable
SIPT-Interface[0]. Set vbd_ena '0'
```

vbd payload type

, VBD-.

vbd payload type <VBD_PT>

<VBD_PT> – , :

- static;
- [96..127].

static

TMG SIP INTERFACE

```
(tmg-config-sip/sipt/sipi-if)# vbd payload type static
SIPT-Interface[0]. Set vbd_pt 'static'
```

TMG: SIP-

sip users

SIP.

sip users

.

TMG CONFIGURE

```
(tmg-config)# sip users
Entering SIP-Users mode.
(tmg-config-sip-users)#
```

add one

.

add one

.

TMG SIP USERS

```
(tmg-config-sip-users)# add one
NEW 'SIP USER' [144]: successfully created
```

authorization

.

authorization <INDEX> <AUTHMODE>

<INDEX> – SIP-;
<AUTHMODE> – :

- None – ;
- register – ;
- register_and_invite – .

none

TMG SIP USERS

```
(tmg-config-sip-users)# authorization 0 none
SIP-User[0]. Set auth '0'
```

category

.

category <INDEX> <CATEGORY>

<INDEX> – SIP-, [0..1999];

<CATEGORY> – -, [0..9], nochange.

1

TMG SIP USERS

```
(tmg-config-sip-users)# category 5 1
SIP-User[5]. Set category '1'
```

count

SIP-.

count

.

TMG SIP USERS

```
(tmg-config-sip-users)# count
SIP-User. Count 145
```

domain

SIP- .

domain <INDEX><DOMAIN>

<INDEX> – SIP-, [0..1999];

<DOMAIN> – , 15 .

TMG SIP USERS

```
(tmg-config-sip-users)# domain 0 test
SIP-User[0]. Set domain 'test'
```

ipaddr

IP- .

Ipaddr <INDEX> <IPADDR>

<INDEX> – SIP-, [0..1999];

<IPADDR> – IP-, AAA.BBB.CCC.DDD, [0..255].

0.0.0.0

TMG SIP USERS

```
(tmg-config-sip-users)# ipaddr 0 192.168.0.5
SIP-User[0]. Set ipaddr '192.168.0.5'
```

login

.

login <INDEX> <LOGIN>

<INDEX> – SIP-, [0..1999];

<LOGIN> – , 15 ;

<PASSWORD> – , 15 .

TMG SIP USERS

```
(tmg-config-sip-users)# login 0 user user
```

name

SIP-.

name <INDEX> <NAME>

<INDEX> – SIP-, [0..1999];

<NAME> – SIP-, 31 , , , '_'.

TMG SIP USERS

```
(tmg-config-sip-users)# name 0 sip_1
```

number

SIP-.

number <INDEX> <NUMBER>

<INDEX> – SIP-, [0..1999];

<NUMBER> – SIP-, 15 .

TMG SIP USERS

```
(tmg-config-sip-users)# number 0 123456
SIP-User[0]. Set number '123456'
```

numberAON

SIP-.

numberAON <INDEX> <NUMBER>

<INDEX> – SIP-, [0..1999];

<NUMBER> – , 15 .

TMG SIP USERS

```
(tmg-config-sip-users)# numberAON 0 123456
SIP-User[0]. Set aonnumber '123456'
```

profile

SIP- SIP-.

profile <INDEX> <PROFILE>

<INDEX> – SIP-, [0..1999];

<PROFILE> – SIP-, [0..63], none.

0

TMG SIP USERS

```
(tmg-config-sip-users)# profile 0 none
SIP-User[0]. Set profile 'none'
```

redirection

/ SIP-.

redirection <INDEX> <REDIRECTION>

<INDEX> – SIP-, [0..1999];

<REDIRECTION> – :

- enable – SIP-;
- disable – SIP-.

disable

TMG SIP USERS

```
(tmg-config-sip-users)# redirection 0 disable
SIP-User[0]. Set redir '0'
```

refer

/ REFER.

refer <INDEX><REDIRECTION>

<INDEX> – SIP-, [0..1999];

<REFER> – :

- enable – REFER ;
- disable – REFER .

TMG SIP USERS

```
(tmg-config-sip-users)# refer 0 disable
SIP-User[0]. Set refer '0'
```

regname

.

regname <INDEX> < REGNAME>

<INDEX> – SIP-, [0..1999];

<REGNAME> – , .

TMG SIP USERS

```
(tmg-config-sip-users)# regname 0 s00p00

SIP-User[0]. Set regname 's00p00'
'SIP USER' [00]:
                          name:                  Subscriber#000
                          IPaddr:                0.0.0.0
                          contact:               s00p00
                          SIP domain:
                          dynamic registration:  off
                          number:                123456
                          AON number:            123456
                          AON type number:       subscriber
                          profile:               not set
                          category:              1
                          access cat:            0
                          auth:          none
                          redir:                 disable
                          refer:                 disable
                          pbxprofile:            none
                          access mode:           On
                          v52 part:              none
                          FXS slot/port:         0/0
```

remove

.

remove

<INDEX> – SIP-, [0..1999];

TMG SIP USERS

```
(tmg-config-sip-users)# remove 0
```

savedb

. , -. WEB CLI .

savedb

.

TMG SIP USERS

```
(tmg-config-sip-users)# savedb
```

show

SIP-.

show <INDEX>

<INDEX> – SIP-, [0..1999].

TMG SIP USERS

```
(tmg-config-sip-users)# show 5

'SIP USER' [05]:
                          name:                  Subscriber#005
                          IPaddr:                0.0.0.0
                          contact:               s00p05
                          SIP domain:
                          dynamic registration:  off
                          number:                50005
                          AON number:
                          AON type number:       subscriber
                          profile:               not set
                          category:              1
                          access cat:            0
                          auth:          none
                          redir:                 disable
                          refer:                 disable
                          pbxprofile:            none
                          access mode:           On
                          v52 part:              none
                          FXS slot/port:         0/5
```

typeAON

.

typeAON <INDEX> <TYPE>

<INDEX> – SIP-, [0..1999];

<TYPE> – :

- subscriber – ;
- national – Subscriber;
- international – - - ;
- unknown – ;
- network_specific – ;
- nochange – .

subscriber

TMG SIP USERS

```
(tmg-config-sip-users)# typeAON 0 subscriber
SIP-User[0]. Set aontype '1'
```

v52l3addr

L3- SIP-.

v52l3addr <INDEX> <L3ADDR>

<INDEX> – SIP-, [0..1999];

<L3ADDR> – L3-, [0..4095] 'none'.

none

TMG SIP USERS

```
(tmg-config-sip-users)# v52l3addr 0 0
SIP-User[0]. Set v52l3addr '0'
```

TMG: syslog

syslog

syslog.

syslog

.

TMG CONFIGURE

```
(tmg-config)# syslog
Entering syslog mode.
(tmg-config-syslog)#
```

alarm

.

alarm <ALARM>

<ALARM> – , [0..99], 0 – .

0

TMG SYSLOG

```
(tmg-config-syslog)# alarm 0
Syslog. Set alarm '0'.
```

calls

.

calls <CALLS>

<CALLS> – , [0..99], 0 – .

0

TMG SYSLOG

```
(tmg-config-syslog)# calls 0
Syslog. Set calls '0'.
```

hw

E1 .

hw <E1> <HW>

- <E1> – 1, [0..15];
- <HW> – , [0..99], 0 – .

TMG SYSLOG

```
(tmg-config-syslog)# hw 0 0
Syslog. Set hw '0'.
```

ipaddr

IP- syslog-.

Ipaddr <IPADDR>

<IPADDR> – IP-, AAA.BBB.CCC.DDD, [0..255].

0.0.0.0:514

TMG SYSLOG

```
(tmg-config-syslog)# ipaddr 192.168.0.5
Syslog. Set ipaddr '192.168.0.5'.
```

msp

MSP .

msp <MSP>

<MSP> – , [0-99], 0 – .

0

TMG SYSLOG

```
(tmg-config-syslog)# msp 2
```

port

UDP- SYSLOG-.

port <PORT>

<PORT> – UDP-, [1..65535].

514

TMG SYSLOG

```
(tmg-config-syslog)# port 514
Syslog. Set port '514'.
```

rtp-create

RTP , 0 – .

rtp-create <RTP>

<RTP> – , [0..99], 0 – .

0

TMG SYSLOG

```
(tmg-config-syslog)# rtp-create 0
Syslog. Set rtp '0'.
```

show

Syslog.

show

.

TMG SYSLOG

```
(tmg-config-syslog)# show
Syslog. Request info.
'SYSLOG':
ipaddr: 0.0.0.0:514
alarms: 0
calls: 0
isup: 0
sipt: 0
q931: 0
rtp: 0
msp: 0
radius: 0
sorm: 0
```

sipt

SIP-T .

sipt <SIPT>

<SIPT> – , [0..99], 0 – .

0

TMG SYSLOG

```
(tmg-config-syslog)# sipt 0
Syslog. Set sipt '0'.
```

TMG: V5.2

v52 an

V5.2.

v52 an

.

TMG CONFIGURE

```
(tmg-config)# v52 an
Entering V5.2-AN mode.
(tmg-config-v5.2an)#
```

interface alarm

/ V5.2.

interface alarm indication <ACT>

<ACT> – :

- on – V5.2;
- off – V5.2.

off

TMG V52

```
(tmg-config-v5.2an)# interface alarm indication on
V52-Interface[0]. Set alarm_ind '1'
```

interface apa

/ V5.2.

interface apa <ACT>

<ACT> – :

- on – V5.2;
- off – V5.2.

off

TMG V52

```
(tmg-config-v5.2an)# interface apa on
V52-Interface[0]. Set intf_apa '1'
```

interface apa_mode

.

interface apa_mode <MODE>

<MODE> – , :

- PSTN/ISDN;
- PSTN.

PSTN&ISDN

TMG V52

```
(tmg-config-v5.2an)# interface apa_mode PSTN
V52-Interface[0]. Set intf_apa_mode '1'
```

interface auto switchover

/ .

interface auto switchover <ACT>

<ACT> – :

- on – ;
- off – .

off

TMG V52

```
(tmg-config-v5.2an)# interface auto switchover on
V52-Interface[0]. Set intf_auto_switchover '1'
```

interface ccid

V5.2-AN.

interface ccid <CCHAN_ID>

<CCHAN_ID> – , [0..255]

0

TMG V52

```
(tmg-config-v5.2an)# interface ccid 10
V52-Interface[0]. Set intf_ccid '10'
```

interface dtmf dialing

/ LE V5.2 DTMF.

- « off ».

interface dtmf dialing <ACT>

<ACT> – :

- on – LE V5.2 DTMF;
- off – LE V5.2 DTMF.

off

TMG V52

```
(tmg-config-v5.2an)# interface dtmf dialing off
(tmg-config-v5.2an)# interface dtmf dialing on
V52-Interface[0]. Set intf_dtmf_dialing '1'
```

interface id

V5.2.

interface id <INTF_ID>

<INTF_ID> – , [0..255].

255

TMG V52

```
(tmg-config-v5.2an)# interface id 200
(tmg-config-v5.2an)# interface id 5
V52-Interface[0]. Set intf_id '5'
```

interface l3address range

l3- V5.2.

interface l3address range <START_L3> <COUNT>

<START_L3> – L3-, [0..4095];

<COUNT> – L3- (), [1..2000].

0

TMG V52

```
(tmg-config-v5.2an)# interface l3address range 0 1
V52-Interface[0]. Set intf_range_l3addr '0'
```

interface lid

/ V5.2 (id V5.2).

interface lid <ACT>

<ACT> – :

- on – V5.2;
- off – V5.2.

off

TMG V52

```
(tmg-config-v5.2an)# interface lid off
V52-Interface[0]. Set intf_lid '0'
```

interface link add

E1 V5.2.

interface link add <LINK_IDX>

<LINK_IDX> – E1 V5.2, [0-15], 14 .

0

TMG V52

```
(tmg-config-v5.2an)# interface link add 3
V52-Interface[0]. Set intf_line_add '3'
```

interface link del

E1 V5.2.

interface link add <LINK_IDX>

<LINK_IDX> – E1 V5.2, [0-15].

0

TMG V52

```
(tmg-config-v5.2an)# interface link del 3
V52-Interface[0]. Set intf_line_del '3'
```

interface link primary

- E1 V5.2.

interface link primary <LINK_IDX>

<LINK_IDX> – E1 V5.2, [0-15] 'none'.

0

TMG V52

```
(tmg-config-v5.2an)# interface link primary 0
```

interface link secondary

E1 V5.2.

interface link secondary <LINK_IDX>

<LINK_IDX> – E1 V5.2, [0-15] 'none'.

none

TMG V52

```
(tmg-config-v5.2an)# interface link secondary none
V52-Interface[0]. Set intf_link_sec 'none'

V52-Interface[0]. Set intf_link_sec '1'
'V52 INTF' [00]:
                          ID:              5
                          VariantID:       7
                          C-Chan ID:       0
                          LID:             off
                          APA:             on
                          APA mode:        PSTN&ISDN
                          Link primary:    0
                          Link secondary:  1

                          L3address start: 0
                          L3address count: 1007

                          DTMF dialing:    off
                          Restart request: on
                          Auto swich-over: off
(tmg-config-v5.2an)#
```

interface restart request

V5.2.

Si2000 - « on ».

interface restart request <ACT>

<ACT> – :

- on – ;
- off – .

Off

TMG V52

```
(tmg-config-v5.2an)# interface restart request on
V52-Interface[0]. Set intf_restart_request '1'
```

interface vid

«variant» V5.2.

interface vid <VARIANT_ID>

<VARIANT_ID> – «variant» V5.2, [0..255].

255

TMG V52

```
(tmg-config-v5.2an)# interface vid 7
V52-Interface[0]. Set intf_vid '7'
```

show interface

V5.2 E1.

show interface

.

TMG V52

```
(tmg-config-v5.2an)# show interface
V5.2 Interface[0]. Request info.
'V52 INTF' [00]:
                          ID:              255
                          VariantID:       255
                          C-Chan ID:       0
                          LID:             off
                          APA:             off
                          APA mode:        PSTN&ISDN
                          Link primary:    none
                          Link secondary:  none

                          L3address start: 0
                          L3address count: 0

                          DTMF dialing:    off
                          Restart request: off
                          Auto swich-over: off
```

TMG:

TMG-16.

new ext

.

new ext <PRIO> <EXT>

<PRIO> – , [0-15];
<EXT> – , [0-1].

TMG SYNC

```
msan(tmg-config-sync)# new ext 0 0
```

new stream

1.

new stream <STREAM> <PRIO>

<STREAM> – 1, [0-15].
<PRIO> – , [0-15].

TMG SYNC

```
msan(tmg-config-sync)# new stream 0 0
```

remove

.

remove <SOURCE>

<SOURCE> – , [0-15].

TMG SYNC

```
msan(tmg-config-sync)# remove 0
```

show

TMG-16.

show

.

TMG SYNC

```
msan(tmg-config-sync)# show
Sync. Request info.
'SYNC_INFO':
timeout up: 5
timeout down: 5
```

timeout

- .

timeout <PARAM> <TIMEOUT>

<PARAM> – - :

- up – - – , , ;
- down – - – , . , .

<TIMEOUT> – -, [0..255] .

TMG SYNC

```
msan(tmg-config-sync)# timeout down 5
```

Management-

```
msan> enable
msan# configure
msan(config)# boot
msan(config-boot)# management vlan 112 (   VLAN)
msan(config-boot)# exitmsan(config)# management ip 192.168.16.110
msan(config)# management gateway 192.168.16.1
msan(config)# do commit
msan(config)# do commit boot
msan(config)# do confirm
msan(config)# top
msan#
```

```
msan> enable
msan# copy tftp://192.168.16.44/firmware.msan fs://firmware
msan# boot system image-alternate unit 1
msan# reload system
```

:

```
msan> enable
msan# boot confirm
```

FXS-72

16- FXS72:

```
msan# reload slot 0-15
```

TMG-16

```
reload slot 0
```

TMG-16 , 0- .

16- FXS-72 , SIP:

```
msan> enable
msan(config)# shelf slot 0-15 fxs72sip
msan(config)# do commit
msan(config)# do confirm
```

:

- (VLAN PP4G3X);
- ;
- MSAN SSW.

FXS72 (SIP)

SIP RTP (management vlan). 14.

```
msan> enable
msan# configure
msan(config)# ip gateway 192.168.16.1
msan(config)# service-interfaces common ip 14 192.168.16.234
msan(config)# do commit
msan(config)# do confirm
msan(config)# top
msan#
```

SIP RTP VLAN. 14, SIP 20- VLAN, RTP 40- VLAN:

```
msan> enable
msan# configure
msan(config)# service-interfaces sig enable 14
msan(config)# service-interfaces sig ip 14 192.168.10.234
msan(config)# service-interfaces sig vid 14 20
msan(config)# service-interfaces rtp enable 14
msan(config)# service-interfaces rtp ip 14 192.168.13.234
msan(config)# service-interfaces rtp vid 14 40
```

SIP RTP :

```
msan(config)# route add 192.168.1.0 255.255.255.0 192.168.10.1 sig
msan(config)# route add 192.168.1.0 255.255.255.0 192.168.13.1 rtp
```

:

```
msan(config)# do commit
msan(config)# do confirm
msan(config)# top
msan#
```

IP- (: IP-address next = IP-address + 1). 0- IP- 192.168.16.220 , - 192.168.16.221 ..

```
msan> enable
msan# configure
msan(config)# ip gateway 192.168.16.1
msan(config)# service-interfaces common ip 0-15 192.168.16.220
msan(config)# do commit
msan(config)# do confirm
msan(config)# top
msan#
```

4G3X

(master – unit 1, slave – unit 2):

:

```
msan# stack synchronization-enable
msan# configure
```

SIP:

```
msan(config)# interface port-channel 1
```

:

```
msan(config-if)# flow-control on
```

:

```
msan(config-if)# speed 10M full-duplex
```

: :

```
msan(config-if)# mode lacp
msan(config-if)# exit
```

, 1/0-6, , 2/0-6:

```
msan(config)# interface front-port 1/0,2/0
msan(config-if)# speed 10M full-duplex
msan(config-if)# channel-group 1
msan(config-if)# exit
```

VLAN SIP:

```
msan(config)# interface vlan 20
msan(config-if)# description SIG_SIP_VLAN
msan(config-if)# tagged port-channel 1
```

VLAN ( ):

```
msan(config-if)# tagged slot-channel 0-15
msan(config-if)# exit
```

RTP:

```
msan(config)# interface port-channel 2
msan(config-if)# flow-control on
msan(config-if)# speed 10M full-duplex
msan(config-if)# mode lacp
msan(config-if)# exit
msan(config)# interface front-port 1/1,2/1
msan(config-if)# speed 10M full-duplex
msan(config-if)# channel-group 2
msan(config-if)# exit
```

VLAN RTP:

```
msan(config)# interface vlan 40
msan(config-if)# description RTP_VLAN
msan(config-if)# tagged port-channel 2
```

VLAN ( ):

```
msan(config-if)# tagged slot-channel 0-15
msan(config-if)# exit
```

:

```
msan(config)# interface port-channel 3
msan(config-if)# flow-control on
msan(config-if)# speed 10M full-duplex
msan(config-if)# mode lacp
msan(config-if)# exit
msan(config)# interface front-port 1/2,2/2
msan(config-if)# speed 10M full-duplex
msan(config-if)# channel-group 3
msan(config-if)# exit
```

VLAN :

```
msan(config)# interface vlan 112
msan(config-if)# description CTL_VLAN
msan(config-if)# tagged port-channel 3
msan(config-if)# top
msan #
```

PP4G3X

```
msan> enable
msan# configure
```

14 front-port:

```
msan(config)# mirror rx interface slot-channel 14
msan(config)# mirror rx analyzer front-port 1/2
msan(config)# top
msan #
```

```
msan> enable
msan# configure
msan(config)# voice-profile profile_0
msan(config-if)# cid mode fsk-v23
msan(config-if)# flashtime 150 600
```

«flash» :

```
msan(config-if)# call-transfer attended
```

SSW (, SIP INFO. . MSAN SSW)

```
msan(config-if)# call-transfer transmit-flash
msan(config-if)# do commit
msan(config-if)# do confirm
msan(config-if)# top
msan #
```

0- (/)

```
msan> enable
msan# configure
msan(config)# voice-port 1/0/0-71
msan(config-if)# sip-username 9000000  */ sip-user name next = sip-user name + 1 /*
msan(config-if)# authentication name 9000000
msan(config-if)# no shutdown
msan(config-if)# set-profile profile_0
msan(config-if)# exit
msan(config)# voice-port 1/0/0
msan(config-if)# authentication password rYug54Gh
msan(config-if)# exit
…
msan(config)# voice-port 1/0/71
msan(config-if)# authentication password Io78mNgf
msan(config-if)# do commit
msan(config-if)# do confirm
msan(config-if)# top
msan #
```

MSAN SSW (DTMF RFC 2833, .38)

```
msan> enable
msan# configure
msan(config)# voice service sip
msan(config-fxs-sip-signalling)# proxy-address 1 192.168.16.45
msan(config-fxs-sip-signalling)# regrar-address 1 192.168.16.45
msan(config-fxs-sip-signalling)# proxy-mode parking
msan(config-fxs-sip-signalling)# authentication user-defined
msan(config-fxs-sip-signalling)# expires 1800
msan(config-fxs-sip-signalling)# exit
```

+ :

```
msan(config)# dialplan rules 1 [1-9]xxxxxx|0x|0xx|*xx#|#xx#|*#xx#|*xx*x+#
msan(config)# digitmap-timers S-timer 5
msan(config)# digitmap-timers L-timer 15
msan(config)# digitmap-timers Z-timer 60
msan(config)# digitmap-timers T-timer 15
msan(config)# voice service voip
msan(config-fxs-sip-voip)# codec-order g711a,g711u
msan(config-fxs-sip-voip)# echo-canceller
```

DTMF rfc2833:

```
msan(config-fxs-sip-voip)# dtmf-mode rfc2833
```

.38:

```
msan(config-fxs-sip-voip)# fax-direction both
msan(config-fxs-sip-voip)# fax-mode t38
msan(config-fxs-sip-voip)# do commit
msan(config-fxs-sip-voip)# do confirm
msan(config-fxs-sip-voip)# top
msan #
```

MSAN SSW ( ) (DTMF FLASH SIP INFO, .38, - G.711A)

```
msan> enable
msan# configure
```

+ :

```
msan(config)# dialplan rules 1 [1-9]xxxxxx|0x|0xx|*xx#|#xx#|*#xx#|*xx*x+#
msan(config)# digitmap-timers S-timer 5
msan(config)# digitmap-timers L-timer 15
msan(config)# digitmap-timers Z-timer 60
msan(config)# digitmap-timers T-timer 15
msan(config)# voice service voip
msan(config-fxs-sip-voip)# codec-order g711a,g711u
msan(config-fxs-sip-voip)# echo-canceller
```

DTMF FLASH SIP INFO:

```
msan(config-fxs-sip-voip)# dtmf-mode info
msan(config-fxs-sip-voip)# flash-mode info
```

.38, g711a:

```
msan(config-fxs-sip-voip)# fax-direction both
msan(config-fxs-sip-voip)# fax-mode t38
msan(config-fxs-sip-voip)# slave-faxtransfer g711a
msan(config-fxs-sip-voip)# exit
msan(config)# voice service sip
msan(config-fxs-sip-signalling)# proxy-address 1 192.168.16.45
msan(config-fxs-sip-signalling)# regrar-address 1 192.168.16.45
msan(config-fxs-sip-signalling)# proxy-address 2 192.168.16.92
msan(config-fxs-sip-signalling)# regrar-address 2 192.168.16.92
msan(config-fxs-sip-signalling)# proxy-mode homing
msan(config-fxs-sip-signalling)# home-test-mode register
msan(config-fxs-sip-signalling)# dtmf-mime-type dtmf-relay
msan(config-fxs-sip-signalling)# hflash-mime-type hook-flash
msan(config-fxs-sip-signalling)# authentication user-defined
msan(config-fxs-sip-signalling)# expires 1800
msan(config-fxs-sip-signalling)# do commit
msan(config-fxs-sip-signalling)# do confirm
msan(config-fxs-sip-signalling)# top
msan#
```

MSAN SSW (0x|0xx 192.168.16.77 SSW)

```
msan> enable
msan# configure
msan(config)# voice service sip
msan(config-fxs-sip-signalling)# proxy-address 1 192.168.16.45
msan(config-fxs-sip-signalling)# regrar-address 1 192.168.16.45
msan(config-fxs-sip-signalling)# proxy-mode parking
msan(config-fxs-sip-signalling)# outbound-proxy enable
msan(config-fxs-sip-signalling)# authentication user-defined
msan(config-fxs-sip-signalling)# expires 1800
msan(config-fxs-sip-signalling)# exit
```

+ :

```
msan(config)# dialplan rules 1 [1-9]xxxxxx|0x{1,2\}@192.168.16.77|*xx#|#xx#
msan(config)# dialplan rules 2 |*#xx#|*xx*x+#
msan(config)# digitmap-timers S-timer 5
msan(config)# digitmap-timers L-timer 15
msan(config)# digitmap-timers Z-timer 60
msan(config)# digitmap-timers T-timer 15
msan(config)# voice service voip
msan(config-fxs-sip-voip)# codec-order g711a,g711u
msan(config-fxs-sip-voip)# echo-canceller
```

DTMF rfc2833:

```
msan(config-fxs-sip-voip)# dtmf-mode rfc2833
```

.38:

```
msan(config-fxs-sip-voip)# fax-direction both
msan(config-fxs-sip-voip)# fax-mode t38
msan(config-fxs-sip-voip)# do commit
msan(config-fxs-sip-voip)# do confirm
msan(config-fxs-sip-voip)# top
msan#
```

MSAN upper- MSAN . VLAN.

FXS72 VLAN, .

```
msan> enable
msan(tmg)# config
```

TMG16:

```
msan# tmg
msan(tmg-config)# network
msan(tmg-config-network)# set ip 192.168.1.20
msan(tmg-config-network)# set mask 255.255.255.0
msan(tmg-config-network)# set vlan id VLAN1 609
msan(tmg-config-network)# set vlan ip VLAN1 192.168.69.20
msan(tmg-config-network)# set vlan mask VLAN1 255.255.255.0
msan(tmg-config-network)# set vlan enable VLAN1 on
msan(tmg-config-network)# set rtp_vlan VLAN1
msan(tmg-config-network)# exit
```

SIP- TMG16:

```
msan(tmg-config)# sip interface 0
msan(tmg-config-sip/sipt/sipi-if)# codec set 0 G.711-A
msan(tmg-config-sip/sipt/sipi-if)# codec set 1 G.711-U
msan(tmg-config-sip/sipt/sipi-if)# codec set 2 G.729
msan(tmg-config-sip/sipt/sipi-if)# upper-registration server ipaddr 192.168.1.22
msan(tmg-config-sip/sipt/sipi-if)# upper-registration server port 5080
msan(tmg-config-sip/sipt/sipi-if)# upper-registration sipdomain 192.168.1.22
msan(tmg-config-sip/sipt/sipi-if)# upper-registration expire 120
msan(tmg-config-sip/sipt/sipi-if)# upper-registration options control yes
msan(tmg-config-sip/sipt/sipi-if)# upper-registration options period 60
msan(tmg-config-sip/sipt/sipi-if)# upper-registration enable yes
msan(tmg-config-sip/sipt/sipi-if)# exit
msan(tmg-config)# exit
```

(10 FXS72 13):

```
msan(tmg)# sip-user number 2223300 voice-port 1/13/0-9 print
msan(tmg)# exit
```

FXS72:

```
msan# config
msan(config)# shelf slot 13 fxs72sip
msan(config)# voice-port 1/13/0-9
msan(config-if)# sip-username 2223300
msan(config-if)# authentication name 2223300
msan(config-if)# set-profile profile_0
msan(config-if)# no shutdown
msan(config)# voice-port 1/13/0
msan(config-if)# authentication password Y42fPJsK
msan(config-if)# exit
...
msan(config)# voice-port 1/13/9
msan(config-if)# authentication password K5KNpBPs
msan(config-if)# exit
```

FXS72 TMG16:

```
msan(config)# voice service sip
msan(config-fxs-sip-signalling)# proxy-address 1 192.168.1.20
msan(config-fxs-sip-signalling)# regrar-address 1 192.168.1.20
msan(config-fxs-sip-signalling)# proxy-mode homing
msan(config-fxs-sip-signalling)# authentication user-defined
msan(config-fxs-sip-signalling)# expires 120
msan(config-fxs-sip-signalling)# exit
```

, :

```
msan(config)# dialplan rules 1 22233xx|0x|0xx|*xx#|#xx#|*#xx#|*xx*x+#
msan(config)# digitmap-timers S-timer 5
msan(config)# digitmap-timers L-timer 15
msan(config)# digitmap-timers Z-timer 60
msan(config)# digitmap-timers T-timer 15
msan(config)# voice service voip
msan(config-fxs-sip-voip)# codec-order g711a,g711u,g729
msan(config-fxs-sip-voip)# echo-canceller
msan(config-fxs-sip-voip)# dtmf-mode rfc2833
msan(config-fxs-sip-voip)# fax-direction both
msan(config-fxs-sip-voip)# fax-mode t38
msan(config-fxs-sip-voip)# exit
msan(config)# exit
```

:

```
msan# commit
msan# confirm
```

.

TMG16:

```
msan# show sip-user status active
```

FXS72:

```
msan# show voice-port status 1/13/0-9
```

1.5	17.07.2017	: • 44 TMG: IP- • 47 TMG: upper-
1.4	22.07.2015	: • 28 PP: SELECTIVE Q-IN-Q. SELECTIVE Q-IN-Q • 32 FXS: FXS-72 • 36 FXS: FXS-72 • 38 FXS: SIP FXS-72. SIP signalling
1.3	30.05.2014	: • 36 FXS: FXS-72 • 37 FXS: FXS-72 • 38 FXS: FXS-72 SIP • 39 FXS: SIP- FXS-72. SIP SIGNALLING • 40 FXS: VoIP- FXS-72 SIP
1.2	04.02.2013	: • 44 TMG: : • 3.2 PP4G3X • 3.3 FXS-72 • : 5-14, 16, 18, 20, 34, 36, 38, 39-41, 43: ; pp, fxs, configure •
1.1	19.10.2012	: • 3.4 TMG-16 • 43 TMG: TMG-16 : •
1.0	21.08.2012	
	1.4.3	