CLI Manual

CLI Manual

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Preface

Objective

This manual describes how to configure and maintain Telcomanager appliance using the CLI (Command Line Interface).

Target audience

This manual was designed for network administrators, network consultants and Telcomanager partners.

Conventions used in this manual

This document uses the following conventions:

Table 1. Manual conventions

Item	Convention
[ ]	Square brackets enclose an optional element (keyword or argument).
< >	Angle brackets enclose a required element (keyword or argument).
`Examples`	This font means the text is an example.
#	Comments explaining the command used in the example.
Commands, buttons and keywords	**Boldface** font.

Chapter 1. Help

Getting Help

This section shows how to get help using the CLI.

Table 1.1. Getting Help

Command	Purpose
?	Lists all commands available.
command **?**	Shows overview about the command. Example: ts2date? or ts2date ?
abbreviated-command-entry **<Tab>**	Completes a partial command name. Example: ts2<Tab> will be completed and the command **ts2date** will be shown on CLI

Chapter 2. Login

To access the CLI

First of all, you will need an SSH client to access the Command-line interface (CLI).

You can use PuTTY, the popular free SSH and telnet client for Windows. It can be downloaded using this link http://www.putty.org.

Execute the program and make sure the **PuTTY Configuration** window is open. To configure this program, follow the procedure below:

1. Select the **Session** tab.
2. Enter the IP address of your appliance.
3. Select SSH connection type and don't forget to check if the port is 22.
4. Click on **Open** button

To login, follow the next procedure:

1. Enter with **admin** in "login as:".
2. Use the password **telcoadm** (don't forget to change it using the **password** command).

Finally, the string below will be shown on your CLI and you will be logged.

```
TelcoAppliance>
```

To access the Container

To login, follow the next procedure:

1. Using the browser of your preference, access <IP>:8080;
2. Fill the **Username** field with "admin";
3. Fill the **Password** field with "t3lc0m4n!@#";
4. Click on **Login** button.

Chapter 3. Knowing the CLI commands

List of commands

This table provides all the commands you can use and their description.

Table 3.1. List of commands

Command	Description
apply	Apply current settings to running configuration
astranslation	Starts ASN translation
bond	Bond configuration
bridge	Bridge configuration
clear-cfg	Clear temporary configuration
clock	Set system clock
date2ts	Convert date format to timestamp
db-check	Checks database integrity
disk-cache	Appliance tuning
dns	DNS configuration
dnsquery	Query Internet name servers interactively
exit	Exit from the CLI
flowcollect	Flow collector configuration
flow-probe	Flow-probe configuration
flow-sampling	Set flow sampling
hds-query	HDS viewer
hostname	Hostname configuration
interface	Interface configuration
ipcontrol	Ipcontrol configuration
logview	Print logs
ntp	NTP configuration
ntpquery	NTP server monitoring tool
packet-dump	Capture packets
password	Update user authentication
patchtool	Patch tool
ping	Send ICMP echo messages
poweroff	Turn off
probe	Probe running system information
process	Kill process
prompt	CLI string configuration
restart	Restart system

Command	Description
restore	Restore system configuration
resum	Re-summarize the interval between two instants
route	Route configuration
save	Save to startup configuration after **apply**
service	Service management utility
show	Show running system information
show-cfg	Show config system information before **apply**
show-how	Show how to replicate running system information
smart-diag	Print SMART information
snmp	SNMP statistics
snmp-cfg	Appliance SNMP agent
speed	Interface speed configuration
storage	Data storage management utility
traceroute	Trace route to destination
ts2date	Convert timestamp to date format
update	System update
version	Version information
webserver	Virtual root configuration

Command apply

After a change using another command, you have to apply the current settings. If you want this modification to be definitely saved, do not forget to use the command **save** after.

For instance:

```
TelcoAppliance> show prompt
            Prompt configuration:
                   string: TelcoAppliance
TelcoAppliance> prompt Test
TelcoAppliance> apply
            Please, wait.
            Setting up phase0
            Setting up phase1
            Setting up phase2
            Setting up phase3
(Unsaved) Test>
```

Command astranslation

Using this command, it's possible to translate source and destination ASN (Autonomous system number) by source and destination IP, respectively.

It has 4 parameters: **enable**, **disable**, **update** and **status**. Check below.

To enable this feature, use the following command: **astranslation enable <URL>**. A message will be displayed to confirm if you really desire to download the table containing the ASN. To proceed, type **yes**.

To update the file containing the table, type: **astranslation update <URL>**.

To disable the translation, use the command: **astranslation disable**.

To show the current astranslation configuration, use the command: **astranslation status**.

Command bond

Using this command you can show or drop a bond or create a new one. Besides it's possible to add an interface to a bond or remove it.

To see the current bond configuration, use **show bond**.

To create a bond, use **bond create <NAME>**. Once a bond is created, its mode is **0 (zero)**.

To set the bonding mode, enter the following command: **bond <NAME> mode <MODE>**.

To drop a bond, use **bond drop <NAME>**.

To add an interface to a bond, use **bond <NAME> add <INTERFACE>**.

To remove an interface from a bond, use **bond <NAME> remove <INTERFACE>**.

Table 3.2. Bond Command Notation

Notation	Description
NAME	"bondX", where "X" is the bond number
MODE	Bond mode. The valid values are: 0,1,2,3,4,5 and 6, where: 0 balance-rr 1 active-backop 2 balance-xor 3 broadcast 4 802.3ad 5 balance-tlb 6 balance-alb
INTERFACE	"netX", where "X" is the interface number

Command bridge

Using this command you can show or drop a brigde or create a new one. Besides it's possible to add or remove an interface to a bridge.

To see the current bridge configuration, use **show bridge**

To create a bridge, use **bridge create <NAME>**

To drop a bridge, use **bridge drop <NAME>**

To add an interface to a bridge, use **bridge <NAME> add <INTERFACE>**.

To remove an interface from a bridge, use **bridge <NAME> remove <INTERFACE>**.

Table 3.3. Bridge Command Notation

Notation	Description
NAME	"brdX", where "X" is the bridge number
INTERFACE	"netX", where "X" is the interface number

Command clear-cfg

You can check a change before to apply using the command **show-cfg**. If you do not want this modification anymore, you can use **clear-cfg** to clear this temporary configuration.

For instance:

```
TelcoAppliance> show ntp  #Checking ntp state
 NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: on

TelcoAppliance> ntp state off  #Changing ntp state

TelcoAppliance> show ntp  #ntp state before to apply
 NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: on

TelcoAppliance> show-cfg ntp  #Checking the modification before apply
 NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: off

TelcoAppliance> clear-cfg  #Clear temporary configuration

TelcoAppliance> show-cfg ntp  #Checking if clear-cfg command worked
 NTP is not modified.
```

Important
Notice that this command only clear temporary configuration, that is, before to apply.

Command clock

Use this command to configure the system time and date.

To see the current date and time, use **show clock**.

You can change only the date (**clock <DATE>**), only the time (**clock <TIME>**) or the both of them together (**clock <DATE> <TIME>** or **clock <TIME> <DATE>**).

Notation:

Table 3.4. Clock Command Notation

Notation	Description
DATE	"YYYY/mm/dd"; "Y" stands for year, "m" for month, "d" for day
TIME	"HH:MM:SS"; "H" stands for hours, "M" for minutes, "S" for seconds

Important
You will not be able to set clock if NTP is ON.

Command date2ts

If you want to convert date format to timestamp, you have to use the command **date2ts**.

Full command syntax: date2ts <YEAR> <MONTH> <DAY> <HOUR> <MINUTE>

Notation:

Table 3.5. Date2ts Command Notation

Notation	Description
YEAR	Full year notation
MONTH	Month, from 1 to 12
DAY	Day, from 1 to 31
HOUR	Hour, from 0 to 23
MINUTE	Minute, from 0 to 59

Look at the following example:

```
TelcoAppliance> date2ts 2014 07 03 10 30
                Timestamp: 1404394200
```

Command db-check

This tool analyses all tables of the system to check database integrity.

To run this command, just to type **db-check** on screen and answering "yes" to the question which asks if you want to proceed.

```
TelcoAppliance> db-check
```

Command disk-cache

Configure the disk-cache parameters using this command.

Available options:

- **disk-cache set dirty_ratio <INTEGER>**. This integer has to be between 10 and 80.
- **disk-cache set dirty_expire <INTEGER>**. This integer has to be between 3000 and 720000.
- **disk-cache set dirty_background_ratio <INTEGER>**. This integer has to be between 10 and 60.
- **disk-cache reset**. This command will reset all parameters to its default value. It has to be followed by apply, save and restart.
- **disk-cache highmem_is_dirtyable <yes|no>**.

Command dns

This command is used to Domain Name System (DNS) configuration.

To display your current DNS configuration, enter **show dns** on screen.

To set primary DNS manually, enter **dns primary <IP>**, which IP is a valid IP address.

To set secondary DNS manually, enter **dns secondary <IP>**, which IP is a valid IP address.

It's possible to specify the IP version. To do this, enter **ipv4** or **ipv6** before enter the IP. For instance:

```
TelcoAppliance> dns primary ipv4 10.0.0.13
TelcoAppliance>
```

When the IP version is not specified, the system consider it as IPv4.

Important

You can't forget to apply and save your modifications.

Command dnsquery

Query Internet name servers interactively using this command.

For instance:

```
TelcoAppliance> dnsquery google.com
       Request: google.com
       IP:      173.194.119.37


TelcoAppliance> dnsquery 173.194.119.37
       Request: 173.194.119.37
       Host:    rio01s08-in-f5.1e100.net
```

Command exit

Use this command to quit from the command-line interface.

Command flowcollect

Define the maximum default number of templates to be kept by the collector. When this limit is reached, the oldest template is discarded.

To do this, enter the command: **flowcollect max_templates <N>**, where **N** is the maximum number of templates.

Important

Use this command very carefully. Only change the maximum default number of templates if it is really necessary.

Command flow-probe

Flow-probe is a process which runs in TRAFip.

To visualize the current flow-probe configuration, enter: **show flow-probe**.

Enable flow-probe typing **flow-probe enable** and disable typing **flow-probe disable**.

You need to configure the destination-ip and the destination-port. So, use the commands: **flow-probe destination-ip <IP>** and **flow-probe destination-port <PORT>**.

To set active flow lifetime, use the command **flow-probe active-timeout [SECONDS]** and, to set inactive flow lifetime, use the command **flow-probe inactive-timeout [SECONDS]**.

You can add an interface to flow-probe, but this interface needs to be added to a bridge. To do this, type the following command: **flow-probe add <INTERFACE> <MODE>**.

Table 3.6. Flow-probe Command Notation

Notation	Description
IP	A valid IP address
PORT	A TCP port number
SECONDS	A positive integer.**active-timeout** must be between 10 and 3600, and default is 60; **inactive-timeout** must be between 1 and 60, and default is 15

Notation	Description
INTERFACE	"netX", where "X" is the interface number
MODE	Choose the mode: **ingress**, **egress**, **in-egress** or **sniffer**.

Command flow-sampling

You can set the flow sampling and type-sample using the command **flow-sampling set <sample-type> <INTEGER>**. This integer value is the minimum number of octets or packets to not discard a flow. It means that the flows with less than <INTEGER> octets or packets will be discarded.

To stop discarding flows, enter the command **flow-sampling unset <sample-type>**.

Table 3.7. Flow-sampling - Sample-type notation

Notation	Description
octets	Discard flows with less than threshold octets.
packets	lows will have a probability of being discarded based on the number of packets.

Command hds-query

To consult the summarized data, you can use this command.

Command syntax: **hds-query select <SYSTEM> <HDS ID> <FIELD LIST> <START> <END> <PAGED>** .

You can also squeeze the selected by you summarized data entering this command: **hds-query squeeze <SYSTEM> <HDS ID> <FIELD LIST> <START> <END> <PAGED> <AGGREGATION SIZE> <FUNCTION>**.

Table 3.8. Hds-query Command Notation

Notation	Description
SYSTEM	Enter **trafip** or **slaview**
HDS ID	
FIELD LIST	Refer on Field list section.
START	Start time in Timestamp format.
END	End time in Timestamp format.
PAGED	**1** for paged output **0** otherwise.
AGGREGATION SIZE	Time interval in seconds in which function will be applied.
FUNCTION	Choose the function: **sumsq(sum of squares)**, **sum**, **avg**, **count**, **max** or **min**

Field list

Select the list of fields to be used.

Table 3.9. TRAFip - List of Fields

TRAFIP Fields	Syntax
*	All TRAFips fields'
Source packets	**pktAb**
Destination packets	**pktBa**
Source flows	**flwAb**
Destination flows	**flwBa**
Source bytes	**bytAb**
Destination bytes	**bytBa**

Table 3.10. SLAview - List of Fields

SLAview Fields	Syntax
*	All SLAviews fields'
[0-23]	Example: "0,1,2,5-8" , "9,10,11,12-18,22,23"

Command hostname

Use this command to change the appliance hostname.

The sintax is: **hostname <NAME>**.

Table 3.11. Hostname command

Notation	Description
NAME	Hostname. Fill with a string.

Command interface

Use this command to visualize and change interface's configuration.

To visualize interface's configuration, enter **show interface**. Besides, to display more specific information about the interface, like Speed and Supported link modes, for instance, type the command m_bold(show interface <INTERFACE> link-status).

To assign an IPv4 address for an interface, use the command: **interface <INTERFACE>[:<LABEL>] ifaddr <IP>/<MASK>**.

To assign an IPv6 address for an interface, use the command: **interface <INTERFACE>[:<LABEL>] ifaddr6 <IPV6>/<MASK>**.

To remove an IPv4 address from an interface, use the command: **interface <INTERFACE>[:<LABEL>] ifaddr remove**.

To remove an IPv6 address from an interface, use the command: **interface <INTERFACE>[:<LABEL>] ifaddr6 remove**.

To up an interface, enter **interface <INTERFACE> up**.

To down an interface, enter **interface <INTERFACE> down**.

To set the protocol as bridge, type: **interface <INTERFACE> bridge**. It is not possible to enter this command when the interface protocol is **bond**.

To set the protocol as bond, type: **interface <INTERFACE> bond**. It is not possible to enter this command when the interface protocol is **bridge**.

To change a MAC address, enter **interface <INTERFACE> hwaddr <MAC>**.

To clean the network information of all the interfaces, use the command: **interface reset**.

Important

Be careful using the last command, because the MAC address' change can invalidate the license of TRAFip.

Table 3.12. Interface Command

Notation	Description
INTERFACE	"netX", where "X" is the interface number
LABEL	An integer positive value. Use it to create additional virtual interfaces for an interface.
MAC	A valid MAC address
IP	A valid IP address
MASK	An IP mask or an integer complementing the CIDR notation

Command ipcontrol

Use this command to filter access to the appliance for a particular IP.

To visualize ipcontrol's configuration, enter **show ipcontrol**.

To permit or block access to an IP address, use the command: **ipcontrol add <permit|block> <IP>**

To delete an ipcontrol filter, use the command: **ipcontrol del <permit|block> <IP>**

Be careful not to block the access of the machine that is accessing the applience

Important

You can't forget to apply and save your modifications.

Command logview

Using this command, you can visualize the logs available on the system. To display all of them, enter the command: **logview <SYSTEM> list**.

To show a continuous log output, you may use the following command: **logview <SYSTEM> stream <LOG>**.

To display the whole log on output, type: **logview <SYSTEM> all <LOG>**. While the log is being shown, you may click on **Space key** to see more information.

You can display on output just the last lines of a log, just type: **logview <SYSTEM> -<N> <LOG> [ZIP_NUMBER]**.

It's possible to display only the first lines using **logview <SYSTEM> +<N> <LOG> [ZIP_NUMBER]**.

Table 3.13. Logview Command

Notation	Description
N	A positive integer, representing the number of lines to be shown.
LOG	The log you want to analyse. You also can enter **SQL** for SQL server logs or **WEB** for web server logs.
ZIP_NUMBER	When a log has more than one file, you may see a specific file by entering its number.
SYSTEM	It can be **TRAFIP** or **BASESYSTEM**.

Command ntp

Entering this command, you can view Network Time Protocol (NTP) configuration and manage the ntp servers.

To show NTP configuration, including information about its state, type **show ntp**. The output will be like this:

```
TelcoAppliance> show ntp
NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: on
```

To enable NTP, just type: **ntp state on**. And to disable NTP, type: **ntp state off**.

To set an NTP server in the list, type **ntp add server<N> <HOST>**

To remove an NTP server from the list, enter the command: **ntp remove server<N>**.

To stop NTP process (**ntpd**), enter: **ntp stop**. To start it, enter: **ntp start**. To restart it, enter: **ntp restart**.

Notation:

Table 3.14. NTP Command Notation

Notation	Description
N	Position of the server in the list, from 1 to 3
HOST	NTP server; may be an IP address or a name

Command ntpquery

NTPQuery is a NTP server monitoring tool. It means you can verify if ntp servers is working well.

The syntax is: **ntpquery <HOST>**. The **HOST** is the NTP server which will receive the queries and it may be an IP address or a host name.

The output will have the following form:

```
remote           refid  st t when poll reach delay   offset jitter
==============================================================================
+pcdsh05.on.br    .IRIG. 1  u 537  1024 377   14.724  4.759  1.418
*gps.ntp.br       .GPS.  1  u 254  1024 377   5.264   3.278  135.338
+clock1.redhat.c  .CDMA. 1  u 71   1024 377   132.353 4.057  1.041
-ntp1.ja.net      .GPS.  1  u 111  1024 377   222.560 22.703 23.326
+clock.tl.fukuok  .GPS.  1  u 30   1024 377   295.849 3.524  0.112
```

Table 3.15. Ntpquery Command Notation

Column	Description
remote	Server and peer entries listed in the configuration file
refid	Current source of synchronization
st	Stratum
t	Type, where u=unicast, m=multicast, l=local and -=dont know'
when	The time in seconds since the peer was last heard
poll	The poll interval, in seconds
reach	The status of the reachability register
delay	The lastest delay, in milliseconds
offset	The offset, in milliseconds
jitter	The jitter, in milliseconds

The characters beside the remote column represent the synchronization status of each peer.

Table 3.16. Ntpquery - Left margin notation

Character	Meaning
+	candidat - acceptable peer, but not the current system peer
-	outlyer - discarded peer
*	sys.peer - declared system peer

To monitore a NTP server on debugging mode, type: **ntpquery debug <HOST>**.

Tip
To see and configure your NTP servers, use the ntp command

Command packet-dump

Packet-dump is a package analyzer. It means you can capture packets for analysis only using this command.

To only capture packets from a specific interface, you have to use the syntax: **packet-dump interface <netX>**.

To define the number of packets to be captured, use the command: **packet-dump packets <number>**.

To only capture packets from a specific port, you have to use the syntax: **packet-dump port <port>**. You can select more than one port, only you have to do is separate the ports you want with comma. It will be like this: **packet-dump port <port1,port2,..,portN>**.

If you do not want capture packets from a specific port, type the command: **packet-dump notport <port>** or **packet-dump notport <port1,port2,..,portN>**.

To only capture packets from a specific host, you have to use the syntax: **packet-dump host <host>**. You can select more than one host, only you have to do is separate the hosts you want with comma. It will be like this: **packet-dump host <host1,host2,..,hostN>**.

If you do not want capture packets from a specific host, type the command: **packet-dump nothost <host>** or **packet-dump nothost <port1,port2,..,portN>**.

To not resolve IP addresses and ports in the captured packets, use parameter **-n**. So, use the syntax: **packet-dump -n**.

Important

All the previous parameters work together.

Table 3.17. Packet-dump Command Notation

Notation	Description
netX	A valid interface where X is the number of the interface. To view your interfaces, type the command **show interface**
number	A positive number
port	A valid port number
host	A valid host IP Address

See the following example:

```
TelcoAppliance> packet-dump interface net0 port 22 packets 5
telco-tcpdump: verbose output suppressed, use -v or -vv for full protoco
l decode
listening on net0, link-type EN10MB (Ethernet), capture size 65535 bytes
11:04:17.670151 IP trafipfed02.telco.ssh > 10.0.0.233.54859: Flags [P.],
 seq 2920521486:2920521630, ack 3564702542, win 201, length 144
11:04:17.671205 IP trafipfed02.telco.ssh > 10.0.0.233.54859: Flags [P.],
 seq 144:272, ack 1, win 201, length 128
11:04:17.671520 IP 10.0.0.233.54859 > trafipfed02.telco.ssh: Flags [.],
ack 272, win 256, length 0
11:04:17.673179 IP trafipfed02.telco.ssh > 10.0.0.233.54859: Flags [P.],
seq 272:688, ack 1, win 201, length 416
11:04:17.674161 IP trafipfed02.telco.ssh > 10.0.0.233.54859: Flags [P.],
seq 688:864, ack 1, win 201, length 176
5 packets captured
```

```
9 packets received by filter
0 packets dropped by kernel
```

Command password

To update user authentication, use the command **password**.

Procedure 3.1. Update user authentication steps

1. Enter the command **password**;
2. Type the new password;
3. Retype the new password;
4. Enter the command **apply**;
5. Enter the command **save**

Command patchtool

This feature allows you to apply official patches on the system.

Every patch has the following estructure:

- tmpatch-<build_version>-<sequence_number>.patch

To install a patch, enter the command: **patchtool install <http|https>://<host>:<port>/<patch_file>**. After this, it's necessary to enter with the command: **patchtool apply <patch sequence>**.

There is a command that will show you the patch description, if it exists. For this purpose, use the command: **patchtool details <patch sequence>**.

To apply all patches installed for this version, use the command: **patchtool apply-all**.

If you want to list all the patches installed, enter: **patchtool list**.

If you want to remove the patches, type: **patchtool erase**.

By default, every system update erases all the patches installed.

Important

You will need to contact the Telcomanager support to get the patchs.

Command ping

This command sends ICMP echo messages to test the connection and latency between two network connections.

To send echo messages: **ping [ipv4 | ipv6] <HOST>**

To send echo messages filled with a pattern: **ping [ipv4 | ipv6] <HOST> data <PATTERN>**

To decide the number of times to repeat the ping: **ping [ipv4 | ipv6] <HOST> repeat <COUNT>**

To define a data length to the messages: **ping [ipv4 | ipv6] <HOST> size <SIZE>**

To send echo messages without resolving names: **ping [ipv4 | ipv6] <HOST> no-dns**

Important

When the IP version is not specified, the system consider it as IPv4.

Table 3.18. Ping Command Notation

Notation	Description
HOST	Destination IP address or hostname to ping.
PATTERN	Hexadecimal (0-9a-fA-F) representation of a bit pattern.
COUNT	Number of packets to send. It is a positive integer and the default is 5 packets.
SIZE	Number of bytes in a packet. It is a positive integer and the default is 56 data bytes.

You may enter all the parameters at once. Look the following example:

```
TelcoAppliance> ping www.google.com.br repeat 3 size 56
PING www.google.com.br (173.194.119.63): 56 data bytes
64 bytes from 173.194.119.63: icmp_seq=0 ttl=55 time=59.194 ms
64 bytes from 173.194.119.63: icmp_seq=1 ttl=55 time=30.682 ms
64 bytes from 173.194.119.63: icmp_seq=2 ttl=55 time=31.127 ms
--- www.google.com.br ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max/stddev = 30.682/40.334/59.194/13.337 ms
```

Command poweroff

This command is used to turning off the system.

You can use **poweroff** to turn off after confirming or **poweroff ASAP** to turn off as soon as possible.

Command probe

You can create probes with the following types: **DNS, HTTP, TWAMP, ICMP, SSH or TCPConnect**. The type of probe determines what the probe sends to the server.

To create a DNS probe, enter: **probe create DNS name <NAME> destination <HOST> URL <URL>**.

To create a HTTP probe, enter: **probe create HTTP name <NAME> URL <URL>**.

To create a TWAMP probe, enter: **probe create TWAMP name <NAME> destination <HOST> num_packets <NUMBER> light <yes|no> packet_interval <TIME> payload <BYTES> source <HOST> [port <NUMBER>] [type-p <DSCP>]**.

To create a ICMP probe, enter: **probe create ICMP name <NAME> destination <HOST> num_packets <NUMBER> packet_size <BYTES> packet_interval <TIME> high_latency_discard <NUMBER>**

low_latency_discard <NUMBER>. The parameters **high_latency_discard** and **low_latency_discard** have zero as default value and they define how many packets will be discarded from the statistics.

To create a SSH probe, enter: **probe create SSH name <NAME> destination <HOST> port <PORT>**.

To create a TCPConnect probe, enter: **probe create TCPConnect name <NAME> destination <HOST> port <PORT>**.

You can edit a probe using its index or its name. To edit it using the index, enter: **probe edit index <ID_VALUE> <PARAM> <NEW_VALUE>**. To edit it using the name, enter: **probe edit name <ID_VALUE> <PARAM> <NEW_VALUE>**.

To set the limit of probe threads, type the following command: **probe tcp_max_threads <NUMBER>**. To view the configured limit, enter: **show probe tcp_max_threads**.

To visualize all probes configuration, enter: **show probe**. If you want to see a specific probe configuration, type the command **show probe index <INDEX>** or the command **show probe name <NAME>**. For instance: show probe 1

To visualize all probes statistics, enter: **show probe stats**. If you want to see a specific probe statistics, enter the previous command with the probe index. For instance: show probe stats 1

To delete a probe by index, type: **probe remove <INDEX>**. To remove a probe by name, type: **probe remove name <NAME>**.

To delete all probes at once, type: **probe remove all**.

After to create or to remove a probe, it is necessary to type the **probe apply** command. Do not forget to save this change using the **probe save** command.

Table 3.19. Probe Command Notation

Notation	Description
NAME	Probe name. Attention: It must be unique!
HOST	A valid IP address
URL	A valid URL
PORT	A valid TCP port
BYTES	The packet size in bytes
TIME	The packet interval in milliseconds
NUMBER	A positive integer
DSCP	A positive integer between 0 and 63
INDEX	When you create a probe, it receives a number. This is the probe index and it is always a positive integer or zero.
ID_VALUE	It can be the probe index or the probe name. Only used in probe edition.
PARAM	Probe param to be edited.

Command process

You can use this command to display the processes that are running or to kill any of them.

To list the processes, type the command **show process**.

Table 3.20. Process Command - Output format

Column	Description
PID	Process ID
%CPU	How much of the CPU is being used
%MEM	How much memory the process is using
VSZ	Virtual Memory Size of the process in KiB
RSS	Resident Set Size in KiB
STAT	Process status
STIME	Process start time
TIME	Total CPU usage
PROCESS	Process name

To kill a process, type **process kill <PID>**.

Command prompt

Entering this command you can modify the string to be displayed on CLI prompt.

To see the current string, type **show prompt**.

To change the CLI string use the following syntax:

prompt <STRING>

<STRING> is the new string to be displayed on CLI prompt and it has the maximum length of 32 characters.

For instance:

```
TelcoAppliance> show prompt
Prompt configuration:
        string: TelcoAppliance
TelcoAppliance> prompt Test
```

Note: Do not forget to **apply** and **save**.

Command restart

Use this command to restart system. You always have to enter it after **update** command.

Command restore

You can restore configuration to start-up conditions or to factory conditions.

In this first option, enter the command: **restore startup**.

In the second one, enter the command: **restore factory**.

Command resum

If you deserve re-summarize the interval between two instants, you have to use this command.

The full syntax of this command is: **resum <SYSTEM> <YYYY/MM/DD> <HH:mm> <YYYY/MM/DD> <HH:mm>**.

Notation:

Table 3.21. Resum Command Notation

Notation	Description
SYSTEM	**trafip** or **slaview**
YYYY	4-digit year
MM	2-digit month
DD	2-digit day
HH	2-digit hour
mm	2-digit minute. It will be rounded to a multiple of 5

To check the status of the current re-summarization, enter: **resum <SYSTEM> status**.

To stop a re-summarization process, type: **resum <SYSTEM> cancel**.

Command route

The **route** command is used to manager the IP routing tables.

To display the current route configuration, enter: **show route**. The output will show the following information: Destination, Netmask, Gateway, Interface and Flags.

Adding route

To bind default route to gateway, enter: **route add [ipv4 | ipv6] default gw <IP>**.

To bind target to a route by gateway, enter: **route add [ipv4 | ipv6] <IP>/<MASK> gw <IP>**.

To bind default route to device, enter: **route add [ipv4 | ipv6] default dev <INTERFACE>**.

To bind target to a route by device, enter: **route add [ipv4 | ipv6] <IP>/<MASK> dev <INTERFACE>**.

Removing route

To unbind default route from gateway, type: **route del [ipv4 | ipv6] default gw <IP>**.

To unbind target from a route by gateway, type: **route del [ipv4 | ipv6] <IP>/<MASK> gw <IP>**.

To unbind default route from device, type: **route del [ipv4 | ipv6] default dev <INTERFACE>**.

To unbind target from a route by device, type: **route del [ipv4 | ipv6] <IP>/<MASK> dev <INTERFACE>**.

Table 3.22. Route Command Notation

Notation	Description
IP	A valid IPv4 or IPv6 address
MASK	An IP Mask
INTERFACE	"netX", where "X" is the interface number

Important
When the IP version is not specified, the system consider it as IPv4.

Command save

After apply a modification using the command **apply**, you have to type the command **save** if you really want this modification to be saved.

For instance:

```
TelcoAppliance> show prompt
Prompt configuration:
        string: TelcoAppliance
TelcoAppliance> prompt Test
TelcoAppliance> apply
Please, wait.
Setting up phase0
Setting up phase1
Setting up phase2
Setting up phase3
(Unsaved) Test> save
Test>
```

Command service

You will use this command to manage the services. The service's name can be **trafip, scheduler, web or sql**.

To view which service is "ON", enter **show service**.

To turn on or turn off Trafip service, enter **service <ACTION> trafip**. Enter "on" or "off" in <ACTION>.

To stop a service, enter **service stop <SERVICE_NAME>**.

To start a service, enter **service start <SERVICE_NAME>**.

To restart a service, enter **service restart <SERVICE_NAME>**.

Table 3.23. Services

Service	Description
Trafip	Related to Trafip processes

Service	Description
Scheduler	Affect scheduled processes
Web Service	Affect Web access
SQL Service	Related to Database processes

Important
This command does not need to be applied and saved, so be careful!

Command smart-diag

Use **smart-diag** command to consult SMART information from HD.

It's also possible to test this functionality. Choose **short-test** parameter for a faster test or **long-test** parameter to obtain more specific results.

```
TelcoAppliance> smart-diag
TelcoAppliance>
TelcoAppliance>
TelcoAppliance> smart-diag short-test
TelcoAppliance>
TelcoAppliance>
TelcoAppliance> smart-diag long-test
TelcoAppliance>
```

Command show

Using this command, the running system information can be displayed on screen.

This command does not work just by itself, it needs to be completed. So, the full sintax is: **show <OPTION>**

All the possibilities to <OPTION> are shown in the following table:

Table 3.24. Show command

Option	Description
all	View all system configuration.
arptable	Show arp table.
bond	View bond configuration.
bridge	View bridge configuration.
clock	Displays system clock.
cpu	View CPU statistics.
diag	View interface diagnostics.
disk-cache	Appliance tuning.
dns	View dns configuration.
flowcollect	View the flow collector configuration.

Option	Description
flow-probe	View flow-probe configuration.
flow-sampling	View flow sampling configuration.
hostname	View hostname configuration.
interface	View interface configuration.
ipcontrol	View ipcontrol configuration.
memory	View memory usage statistics.
ntp	View NTP configuration.
probe	View probe information or configuration.
process	View process list.
prompt	Display CLI string configuration.
route	View route configuration.
service	View service management utility.
snmp-cfg	View appliance SNMP agent configuration.
speed	View interface speed configuration.
storage	View data storage management utility.
uptime	View uptime.
version	Displays system version.
webserver	View virtual root configuration.

Show all

This option displays all already configured parameters.

Show arptable

To show the arp table (IP address, hardware type, flags, hardware address, mask and device), type: **show arptable**.

Show bond

Enter this command to view bond configuration.

Type **show bond** to view all configured bonds or **show bond <NAME>** to view a specific one.

Show bridge

Enter this command to view bridge configuration.

Type **show bridge** to view all configured bridges or **show bridge <BRIDGE>** to view a specific one.

Show clock

Something in the following format will be printed on screen displaying the system's time and date:

<WEEKDAY> <MONTH> <DAY> <TIME> <YEAR>

Notation:

Table 3.25. Show Clock Notation

Notation	Description
WEEKDAY	Day of the week
MONTH	Month
DAY	Day
TIME	"HH:MM:SS"; "H" stands for hours, "M" for minutes, "S" for seconds
YEAR	Full year notation

```
TelcoAppliance> show clock
Wed Oct  1 09:37:35 2014
```

Show cpu

It displays CPU statistics on the screen.

```
TelcoAppliance> show cpu
procs ---------memor---------- -swap- --io-- -system- ----cpu----
 r  b swpd free    buff cache  si so  bi bo  in  cs   us sy id wa
 1  0 0    1712048 6768 291500 0  0   32 21  202 468  2  1  94 4
```

Show diag

To view interface diagnostics, enter: **show diag interface <INTERFACE>**.

To view interface statistics, enter: **show diag interface <INTERFACE> stat**.

Remember: **<INTERFACE>** has to be replaced by "netX", where "X" is the interface number.

```
TelcoAppliance> show diag interface net0
        Supported link modes:   10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
                                1000baseT/Full
        Supports auto-negotiation: Yes

        Advertised link modes:  100baseT/Full
        Advertised pause frame use: No
        Advertised auto-negotiation: Yes

        Speed: 1000Mb/s
        Duplex: Full
        Auto-negotiation: on
        MDI-X:
        Link detected: yes
```

Show disk-cache

It displays the disk-cache configured parameters. To set them, go to disk-cache section.

```
TelcoAppliance> show disk-cache
disk-cache configuration:
        dirty_ratio:   20
        dirty_expire:   3000
        dirty_background_ratio:   10
        highmem_is_dirtyable:   0
```

The 0 ('zero') value in **highmem_is_dirtyable** means that it was set with **no** parameter. When this option is configured with **yes** parameter, the value will be shown is 1 ('one').

Show dns

It displays DNS (Domain Name System) configuration.

```
TelcoAppliance> show dns
DNS configuration:
        primary:   10.0.0.13
        secondary: 10.0.0.2
```

Show flowcollect

It displays the maximum number of templates received by the collector.

```
flowcollect configuration:
        max_templates: 10
```

Show flow-probe

Inserting the **show flow-probe** command, the flow-probe configuration will be printed on screen.

```
TelcoAppliance> show flow-probe
FLOW PROBE configuration

        Status              Enabled
        Destination IP      127.0.0.1
        Destination Port    63636
        Active timeout      90
        Inactive timeout    15
```

Show flow-sampling

The **show flow-sampling** command displays the minimum number of octets or packets to not discard a flow.

To set this value, use the **flow-sampling** command.

Show hostname

It displays the appliance hostname.

```
TelcoAppliance> show hostname
Hostname: repl-114
```

Show interface

To view a specific interface configuration: **show interface [INTERFACE]**.

```
TelcoAppliance> show interface net0
INTERFACE configuration

net0    protocol: bridge
```

You might get more details about the interface configuration typing: **show interface [INTERFACE] link-status**.

```
TelcoAppliance> show interface net0 link-status
Settings for net0:
        Supported link modes:   10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
                                1000baseT/Full
        Speed: 1000Mb/s
        Duplex: Full
        Auto-negotiation: on
        Link detected: yes
```

Show ipcontrol

To visualize ipcontrol's configuration, enter **show ipcontrol**.

Show memory

To show the memory usage statistics, enter **show memory**.

```
TelcoAppliance> show memory ?
show memory - Memory usage statistics

OVERVIEW
  show memory
```

Show ntp

Shows the NTP (Network Time Protocol) configuration.

```
TelcoAppliance> show ntp
NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.south-america.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: on
```

Show probe

To view probe configuration, enter: **show probe**.

To display probe statistics, enter: **show probe stats**.

Finally, to display the limit of probe threads, enter: **show probe tcp_max_threads**.

Show process

To show all processes, enter: **show process**.

Show prompt

This command prints on screen the CLI string.

```
TelcoAppliance> show prompt
Prompt configuration:
        string: TelcoAppliance
```

Show route

You can view the route configuration entering the command: **show route**.

```
TelcoAppliance> show route
Route configuration:
        Destination     Netmask          Gateway          Flags
        default                          10.0.0.1
```

Show service

Displays the status of each service (Trafip, Scheduler, Web Service or SQL service).

```
TelcoAppliance> show service
Service          status
Trafip           ON
Scheduler        ON
Web Service      ON
SQL service      ON
```

Show snmp-cfg

Shows the appliance SNMP agent configuration.

```
TelcoAppliance> show snmp-cfg
snmp-cfg configuration:
         enable
         community:     public
         syslocation:   Unknown
         syscontact:    admin@company
         sysname:       TelcoAppliance
```

Show speed

Enter **show speed** to print on screen the interface speed configuration.

```
TelcoAppliance> show speed
Speed configuration:
interface: net0
        autoneg: on
```

Show storage

It displays the name, the id, the total, free and used size of storage.

```
TelcoAppliance> show storage

Name                    Id  Size     Used  Free

storage                 1   0.0      ----- -----
```

```
  |- Trafip FileSystem  -   28.5G    428.9M 28.1G
```

Show uptime

Typing you can view the uptime, the number of users and the load average.

Show version

It makes possible to view the model, the serial number (when it's already configured), the factory, UUID1, UUID2, the image, the version and the build.

Show webserver

It displays the vroot used to access the web.

Command show-cfg

This command is used to checking a modification before to apply.

The full sintax is: **show-cfg <OPTION>**

All the possibilities to <OPTION> are shown in the following table:

Table 3.26. Show-cfg command

Option	Description
all	View all temporary system configuration.
bridge	View temporary bridge configuration.
dns	View temporary dns configuration.
flow-probe	View temporary flow-probe configuration.
interface	View temporary interface configuration.
ntp	View temporary NTP configuration.
probe	View temporary probe information or configuration.
prompt	Display temporary CLI string configuration.
route	View temporary route configuration.
snmp-cfg	View temporary appliance SNMP agent configuration.
speed	View temporary interface speed configuration.

For instance:

```
TelcoAppliance> show ntp       #Checking ntp state
NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
```

```
        server-3: 0.br.pool.ntp.org
        state: on

TelcoAppliance> ntp state off  #Changing ntp state

TelcoAppliance> show ntp       #ntp state before to apply
NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: on

TelcoAppliance> show-cfg ntp   #Checking the modification before apply
NTP configuration:
        server-1: 0.pool.ntp.org
        server-2: 1.pool.ntp.org
        server-3: 0.br.pool.ntp.org
        state: off
```

Command show-how

Using this command, you will can replicate running system information in other system due to the fact that the commands are printed exactly like they were configured.

Table 3.27. Show-how command

Option	Description
all	Commands to replicate configuration.
astranslation	Commands to replicate astranslation configuration.
bond	Commands to replicate bond configuration.
bridge	Commands to replicate bridge configuration.
dns	Commands to replicate DNS configuration.
flow-probe	Commands to replicate flow-probe configuration.
interface	Commands to replicate interface configuration.
interface	Commands to replicate ipcontrol configuration.
ntp	Commands to replicate NTP configuration.
probe	Commands to replicate probe configuration.
prompt	Commands to replicate CLI string configuration.
route	Commands to replicate route configuration.
snmp-cfg	Commands to replicate SNMP agent configutation.
speed	Commands to replicate interface speed configuration.

Look the following example:

```
TelcoAppliance> show-how prompt
prompt TelcoAppliance
```

Command snmp

The **Simple Network Management Protocol (SNMP)** is an application-layer protocol and is used to manage and monitor network elements.

At CLI, the following SNMP commands are available: **snmp get**, **snmp walk**, **snmp bulkget** and **snmp bulkwalk**.

Use **snmp get** to communicate with a network entity using SNMP GET requests. The full syntax is: **snmp get <IP>[:PORT] <COMMUNITY> <VERSION> <OID> [AUTH_TYPE USER PASSWORD_TYPE PASSWORD PRIVACY_PASSWORD]**.

Use **snmp walk** to retrieve a subtree of management values using SNMP GETNEXT requests. The full syntax is: **snmp walk <IP>[:PORT] <COMMUNITY> <VERSION> <OID> [AUTH_TYPE USER PASSWORD_TYPE PASSWORD PRIVACY_PASSWORD]**.

Use **snmp bulkget** to communicate with a network entity using SNMP GETBULK requests. The full syntax is: **snmp bulkget <IP>[:PORT] <COMMUNITY> <VERSION> <OID> [AUTH_TYPE USER PASSWORD_TYPE PASSWORD PRIVACY_PASSWORD]**.

Use **snmp bulkwalk** to retrieve a subtree of management values using SNMP GETBULK requests. The full syntax is: **snmp bulkwalk <IP>[:PORT] <COMMUNITY> <VERSION> <OID> [AUTH_TYPE USER PASSWORD_TYPE PASSWORD PRIVACY_PASSWORD]**.

Important

The last two commands, **snmp bulkwalk** and **snmp bulkget**, utilize the SNMP GETBULK message, which is not available in SNMPv1.

Table 3.28. SNMP Command Notation

Notation	Description
IP	IP address of the device. It can be IPv4 or IPv6.
PORT	SNMP port. When this parameter is not specified, the system consider the default port (161).
COMMUNITY	SNMP community string. Only for SNMPv1 and SNMPv2. Check the Tip below.
VERSION	Specifies the version of SNMP used to send the traps. The versions available here are: **"1"**, **"2c"** and **"3"**.
OID	ASN.1 object identifier

The table below shows the SNMP version 3 options:

Table 3.29. SNMPv3 parameters

Notation	Description
AUTH_TYPE	The security level. It can be noAuthNoPriv (No Authentication, No Privacy), authNoPriv

Notation	Description
	(Authentication, No Privacy) or authPriv (Authentication, Privacy).
USER	User security name.
PASSWORD_TYPE	Authentication type. It can be MD5 or SHA.
PASSWORD	Authentication passphrase.
PRIVACY_PASSWORD	Password.

Tip

The Default Read-only community string is **"public"**.

Command snmp-cfg

Configure your Appliance SNMP Agent using this command.

First of all, you can visualize the current SNMP Agent's configuration. Just type: **show snmp-cfg**.

See the example below:

```
TelcoAppliance> show snmp-cfg
snmp-cfg configuration:
        enable
        community:     public
        syslocation:   Unknown
        syscontact:    admin@company
        sysname:       TelcoAppliance
```

To enable SNMP configuration, enter: **snmp-cfg enable**. To disable, enter: **snmp-cfg disable**.

To define SNMP community string, enter: **snmp-cfg community <STRING>**. For instance, "public" or "erlang2".

To define location of SNMP device, just enter: **snmp-cfg syslocation <STRING>**.

To set contact's information, type **snmp-cfg syscontact <EMAIL>**.

Finally, to set the name, enter: **snmp-cfg sysname <STRING>**.

Command speed

The speed command is used to configure the speed of an Ethernet interface.

To see your current speed configuration, type: **show speed**. To see a specific interface speed, type: **show speed <INTERFACE>**.

The negotiation mode enables automatic speed configuration. To active this mode, enter **speed <INTERFACE> autoneg on**. To deactivate, enter **speed <INTERFACE> autoneg off**.

You can set the interface speed using the command: **speed <INTERFACE> <RATE>**.

You also can set the interface multiplexing mode and choose between **half** or **full** operation. Just enter the command: **speed <INTERFACE> duplex <MUXING_MODE>**.

Table 3.30. Speed Command Notation

Notation	Description
INTERFACE	"netX", where "X" is the interface number
RATE	data rate (in Mbps); Options: "10", "100" or "1000"
MUXING_MODE	multiplexing mode; Options: "half" or "full"

Command storage

To manage your storage objects, use this command.

To format your storage, enter: **storage format <DEVICE ID> [swap <GB>] [gpt]**

To check the storage, you can use the command: **storage check_fs <DEVICE ID>**. It's important to remember this command needs to be run on the rescue mode, when the filesystem is unmounted. If you try to run this command on a mounted filesystem, it may cause a severe filesystem damage. So, be very careful using this feature.

This command's help shows two more parameters: **storage write_magic <DEVICE ID>** and **storage read_magic <DEVICE ID>**. These commands are used by Telcomanager support team to detect possible problems.

Notation:

Table 3.31. Storage Command Notation

Notation	Description
Device ID	Device id. To discover the id, use the **show storage** command
GB	The size of swap partition.
gpt	Optional parameter. It is used to format the device using GPT.

Command traceroute

This command prints the route that packets take to a network host.

Full command syntax: traceroute <HOST>

Notation:

Table 3.32. Traceroute Command Notation

Notation	Description
HOST	Destination address or hostname

For instance:

```
TelcoAppliance> traceroute www.google.com
traceroute to www.google.com (173.194.119.51), 64 hops max
 1   10.0.0.1 (10.0.0.1) 0.367ms 0.331ms 0.419ms
 2   192.168.1.1 (192.168.1.1) 0.793ms 1.288ms 0.887ms
 3   *  *  *
 4   200.195.81.229 (200.195.81.229) 138.508ms 55.964ms 24.330ms
 5   200.223.41.83 (200.223.41.83) 60.177ms 30.460ms 36.635ms
 6   200.199.62.155 (200.199.62.155) 32.155ms  200.223.50.186
(200.223.50.186) 34.317ms  200.199.62.157 (200.199.62.157) 32.058ms
 7   200.199.54.88 (200.199.54.88) 42.472ms  200.199.54.184
(200.199.54.184) 91.030ms  200.223.254.166 (200.223.254.166) 30.039ms
 8   72.14.217.14 (72.14.217.14) 48.066ms 26.846ms 37.650ms
 9   209.85.254.54 (209.85.254.54) 31.331ms 69.958ms 211.027ms
 10   72.14.235.143 (72.14.235.143) 55.777ms 26.741ms 38.355ms
 11   64.233.175.85 (64.233.175.85) 54.185ms 33.863ms 28.850ms
 12   173.194.119.51 (173.194.119.51) 32.774ms 28.505ms 35.291ms
```

Command ts2date

If you want to convert timestamp to date format, you have to use the command **ts2date**.

Full command syntax: ts2date <TIMESTAMP>

The output will be in the following format: Date: <YEAR> <MONTH> <DAY> <HOUR> <MINUTE>

Notation:

Table 3.33. Ts2date Command Notation

Notation	Description
TIMESTAMP	A positive integer
YEAR	Full year notation
MONTH	Month, from 1 to 12
DAY	Day
HOUR	Hour, from 0 to 23
MINUTE	Minute, from 0 to 59

Look at the following example:

```
TelcoAppliance> ts2date 1404394200
Date: 2014 07 03 10 30
```

Command update

The command **update** is used to updating the system version. You will need an update file provided by Telcomanager Support. Please, contact our team to get it.

Full command syntax: update <URI>

Notation:

Table 3.34. Update Command Notation

Notation	Description
URI	Location of update file

Check the example:

```
TelcoAppliance> update http://localhost/telco-lfs64-5.8-20121127-16011
9-p1-r16219.bzImage.full
```

Important
The system should not be powered off during the update process.

Command version

Enter **version history** and get a list of all updates.

This list includes the build version, the date on which it was installed, the system architecture (x32 ou x64) and the checksum (without the header).

Command webserver

Enter **webserver vroot <NAME>** to set a string to use it as virtual root, where <NAME> is the string.

For instance, if you type the command **webserver vroot TRAFip**, the web server will respond requests for <IP>/TRAFip.

To erase the virtual root configuration, type **webserver remove**.

Important
After **apply** and **save**, it will be necessary to enter the **service restart web** command.

Chapter 4. Glossary

Abbreviations

This section shows the abbreviations you will find in this manual.

Table 4.1. Abbreviations list

Abbreviation	Description
AD	Active Directory.
API	Application Programming Interface.
AS	Autonomous system.
ASN	Autonomous system number.
Avg	Average.
CDP	Cisco Discovery Protocol.
CLI	Command Line Interface.
CNT	It is an analysis type of traffic profile: Content.
CPU	Central Processing Unit.
DNS	Domain Name System.
DoS	Denial of service.
DST	It is an analysis type of traffic profile: Distribution.
Enum	Enumerate.
EPM	Expanded Processing Module. It is an extended module of SLAview.
FTP	File Transfer Protocol.
GB	Gigabyte.
GIS	Geographic Information System.
HTTP	Hypertext Transfer Protocol.
HTTPS	Hypertext Transfer Protocol Secure.
ICMP	Internet Control Message Protocol.
IETF	Internet Engineering Task Force.
IP	Internet Protocol.
IPFIX	IP Flow Information Export.
IPv4	Internet Protocol version 4. It uses 32-bit addresses.
IPv6	Internet Protocol version 6. It uses 128-bit addresses.
ISP	Internet Service Provider.
Kb	Kilobit.
KPI	Key Performance Indicator.
LAN	Local Area Network.
LLDP	Link Layer Discovery Protocol.

Abbreviation	Description
Max	Maximum.
Mb	Megabt.
MIB	Management Information Base.
Min	Minimum.
MPLS	Multi-Protocol Label Switching.
MTX	It is an analysis type of traffic profile: Matrix.
NaN	When a value is Not A Number.
NTP	Network Time Protocol.
OID	Object Identifier.
QoS	Quality of Service.
RFC	Request for Comments.
RFI	Repeated Flow Interface.
SMS	Short Message Service.
SMPP	Short Message Peer-to-Peer.
SMTP	Simple Mail Transfer Protocol.
SNMP	Simple Network Management Protocol.
SSH	Secure Shell.
TACACS	Terminal Access Controller Access-Control System.
TCP	Transmission Control Protocol.
TCS	Telcomanager Custom Script.
THA	Telcomanager Host Agent.
ToS	Type of Services.
TSA	Telcomanager Windows Security Agent.
UDP	User Datagram Protocol.
URL	Uniform Resource Locator.
WAAS	Wide Area Augmentation System.
WAN	Wide Area Network.