CLI in Metel Switches

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About CLI

REV: 20250901

CLI (Command-Line Interface)

is available for all switches G series.
This document describes how to configure switches via the console on METEL devices and basic information about the console.
You can start a CLI session through an SSH connection via network or locally via USB. These connections could be disable in the ***configuration***. By default, local users are enabled. It is possible to use the tacacs server for user authentication and authorization. If there is 5 minutes of inactivity, the connection will be closed.

Default credential to CLI via ethernet

user: metel
password: metel
Via ***user-add*** command is possible change password or ***add*** | ***delete*** new users. The local users are same for USB and ethernet.

```
login as: metel
Keyboard-interactive authentication prompts from server:
| Password:
End of keyboard-interactive prompts from server
 __  __ _____ _____ _____ _          _____ _   _
|  \/  | ____|__   __| ____| |        | ____| | | |
| \  / | |__    | |  | |__ | |        | |__ | | | |
| |\/| |  __|   | |  |  __|| |        |  __|| | | |
| |  | | |____  | |  | |___| |___  _  | |___| |_| |
|_|  |_|_____|  |_|  |_____|_____|(_)|_____|\___/

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Default banner for metel CLI
```

Default credential to CLI via USB

Service: metel (not possible change)
user: metel
password: metel
Via ***user-add*** command is possible change password or ***add*** | ***delete*** new users. The local users are same for USB and ethernet.

```
Service: metel
metel login: metel
Password:
 __  __ _____ _____ _____ _          _____ _   _
|  \/  | ____|__   __| ____| |        | ____| | | |
| \  / | |__    | |  | |__ | |        | |__ | | | |
| |\/| |  __|   | |  |  __|| |        |  __|| | | |
| |  | | |____  | |  | |___| |___  _  | |___| |_| |
|_|  |_|_____|  |_|  |_____|_____|(_)|_____|\___/

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Default banner for metel CLI
```
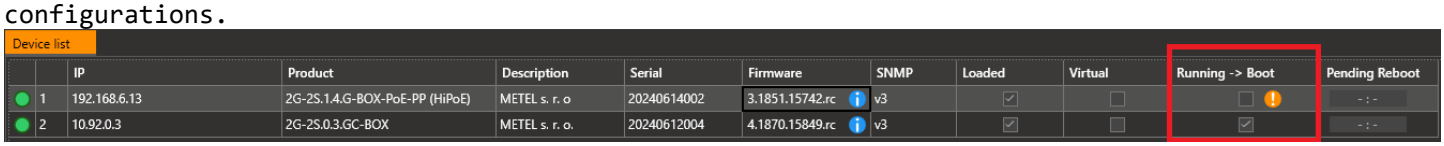
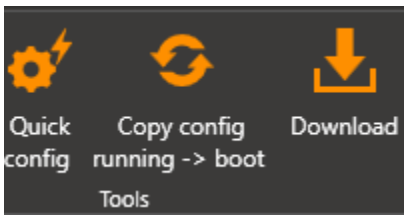

Default password for command *enable*

In the factory settings command ***enable*** is without password. The password is possible set-in menu ***Enable-password***. If no password is set for enable, the command does not need to be entered and you will automatically log in to privileged mode.

Running and boot configuration

Switches G series has two configurations named boot and running. The running configuration is the currently running configuration in the switch. The boot configuration is the configuration of the switch that will be loaded after its restart. Every configuration change is automatically saved in the running configuration. When the switch is rebooted, the boot configuration is loaded. Simuland displays whether the boot and running configuration are the same and displays a warning in the event of a mismatch. If the running configuration is in order according to the customer's requirements, it is necessary to synchronize the configurations.





In the console, you can use the "***view diff***" command to see if the configurations are identical, and if synchronization is necessary, you can use the "***copy***" command.

Supported Commands

Commands are valid for version

SW version 6.1960.16208

Console control

The command is executed after pressing the <Enter> key. Use '**TAB**' for autocomplete or '**?**' to display help in any time in console. The key '**CTRL+D**' goes back for one level, exit command is used. **The given list shows all supported commands, but the switch may not support all commands, it depends on the type of switch.**
Chapters marked with **<ent>** mean that you need to enter the menu and only then continue the configuration from it.

Help can be opened by entering a question mark '?'. If nothing matches (wrong command), the output will be empty.
The METEL devices provide two styles of help:
1. A complete help is available when you enter the entire command argument (for example, 'config ?').
In that case, help will provide descriptions for each available option.
2. When you enter an abbreviated argument, partial assistance is offered to display all arguments that match your input.
For example, typing 'config int ?' will list any possible completions that begin with 'int'.
- -
For further help, we recommend visiting https://www.metel.eu/solutions/cli

If a list of commands copied from a notepad, for example, is inserted into the console, they will be executed one after the other. Commands must be written below each other.

Commands for "USER MODE"

Command	Description
enable	After password authentication enable privileged mode
help	Access to the help

logout	Log out of the system

Main commands for "PRIVILIGED MODE"

Command	Description
boot	Set system boot parameters, upgrade FW
clock	Set current system time and date
configure	Switch to configuration commands
copy	Copy data from one file to another
dir	List files from local storage
disable	Disable privileged commands
exit	Return to the previous level
export-help	View help of all commands
help	Access to the help
reboot	It will perform a restart of the device
rmfile	Remove a file from NVM or RAM
view	View information about the running system

Main commands for "view"

Command	Description
bootvar	View boot information
boot-config	View boot configuration
clock	View current system time and date
diff	Compare boot configuration with running configuration
dot1x	View DOT1X settings
ports	View information about ports
input	View digital inputs
ip	View information about network settings
log	View log contents
mac	View MAC status
poe	View PoE power status
power	View power supply information
radius	View RADIUS configuration
ring	View LAN-RING protocol status
running-config	View current (running) configuration
topology	View topology configuration
syslog	View SYSLOG server configuration
system	View basic system information
tacacs	View TACACS configuration
version	View hardware and firmware details
vlan	View VLAN configuration and status

Main commands for "configure"

Command	Description
accounting	Accounting configurations parameters
authorization	Authorization configurations parameters
description	Set system description
do	Do command from privileged mode
dot1x	Configure IEEE 802.1X
enable-password	Set enable password
end	Return to the previous level
exit	Return to the previous level
port	Port configuration
ring	Set METEL LAN-RING protocol
line	Configure line (USB/SSH) settings
snmp	Configure SNMP settings
sntp	Configure SNTP
input	Configure input signal settings
ip	Configure IP protocol settings
mirror	Data src and dst port mirroring settings
radius	Configure RADIUS

syslog	Configure SYSLOG server
tacacs	Configure TACACS+ server
topology	Configure topology protocol
user-add	Add a user. Use: user-add USERNAME sha-512 PASSWORD
user-del	Delete/Remove the user by USERNAME
user-erase-all	(IMPORT) Remove all users including the metel user
vlan	VLAN-specific commands
vlan-init-tab	Initialize VLAN tables
import	Import configuration from file

ENABLE

After password authentication enable privileged mode

Note:
If no password is set for enable, the command does not need to be entered and you will automatically log in to privileged mode.

Example

```
metel@192.168.6.13> enable
Password: *****
```

BOOT

Set system boot parameters

factory-reset	Do factory reset device
upgrade	Upgrade boot image

Example factory reset

```
metel@10.93.0.3(config)# boot factory-reset
executing factory reset...
```

Example upgrade FW - firmware must be placed in ram

```
metel@10.93.0.3# boot upgrade 2.1815.15599_secure.tar
Upgrade file /tmp/cif/ram/2.1815.15599_secure.tar
.....................................................................................
Please run the 'reboot' command to complete the upgrade.
```

To apply the firmware, it is now necessary to reboot the device.

```
metel@10.93.0.3# reboot now
restarting...
```

Note
Firmware downgrade must be consulted with the manufacturer and is not tested.

CLOCK

Set current system time and date

date	Set current system date (YYYY-MM-DD)
time	Set current system time (hh:mm:ss)

Example of set date

```
metel@10.92.0.3# clock date 2024-11-14
Thu Nov 14 22:06:54 UTC 2024
```

Example of set time

```
metel@10.92.0.3# clock time 05:36:00
Thu Nov 14 05:36:00 UTC 2024
```

CONFIGURE

Switch to configuration commands

```
metel@10.92.0.3# configure
metel@10.92.0.3(config)#
```

ACCOUNTING

Accounting configurations parameters

Logging settings for logged-in users to the console.
The system works from the first method and if the first method is not available it continues

to the next method.

Example
Method 1 is selected as TACACS+, method 2 is permit. Every user logged into the console will be logged on the tacacs+ server. If the server is unavailable, login will be permit but without no logging logged users.

WARNING:
If a method is set to Deny and none or the previous method is unavailable, it will not be possible to login to the console.

ALL
all All commands

METHOD1
First accounting method
deny no accounting
permit permit accounting
tacacs TACACS+ accounting

Example set method1 for permit
```
metel@10.93.0.3(config)# accounting all method1 permit
```

METHOD2
Second accounting method
deny no accounting
permit permit accounting
tacacs TACACS+ accounting

METHOD3
Third accounting method
deny no accounting
permit permit accounting
tacacs TACACS+ accounting

Authorization
Authorization configurations parameters
The system works from the first method and if the first method is not available it continues to the next method.
User authorization to execute commands. Designed especially for the Tacacs+ server, where it is possible to define which user will be able to run which commands.

WARNING:
If a method is set to Deny and none or the previous method is unavailable, it will not be possible to execute any command.

ALL
all All commands

METHOD1
First authorization method
deny no authorization
permit permit authorization
tacacs TACACS+ authorization

Example set method1 for tacacs authorization
```
metel@10.93.0.3(config)# authorization all method1 tacacs
```

METHOD2

Second authorization method
deny no authorization
permit permit authorization
tacacs TACACS+ authorization

METHOD3

Third authorization method
deny no authorization
permit permit authorization
tacacs TACACS+ authorization

DESCRIPTION

Device description facilitating its identification in larger systems.
description Set system description

Example of set switch description to "ROOM_2":
```
metel@10.92.0.3(config)# description ROOM_2
```

ENABLE-PASSWORD

Set password for command ***enable***
hash Set enable password as HASH
sha-512 Set enable password and hash it with SHA-512
none Remove enable password

System use **shadow password**, also known is a system file in Linux that stores encrypted user passwords, preventing unauthorized users or malicious actors from breaking into the system. In case you already have an existing password from the system in hash, you can insert it with using the ***hash*** command.
Supproted hashes starting with $ sign
1 = MD5
5 = SHA-256
6 = SHA-512

Example entering a hashed password
```
metel@10.93.0.3(config)# enable-password hash
$5$UFHMEeGjYWG5K7HN$uqL7N8v0x86j5DjhBAWngr/cvMf.76qjWXnlBkHy7y0
```

If the SHA-512 command is used, a "raw" password is entered and the system hashes it using SHA-512.
Example set password "test" with SHA-512 algorithm
```
metel@10.93.0.3(config)# enable-password sha-512 test
```

Example remove password for command ***enable***
```
metel@10.93.0.3(config)# enable-password none
```

DO

Do command from privileged mode. If you want to run a command from a privileged menu and do not want to leave the current menu.

DOT1X

Configure IEEE 802.1X

disable	Disable NAS service
enable	Enable NAS service

Other settings for ports are available in menu ***port configuration***.

END

end	Return to the previous level

EXIT

exit	Return to the previous level

PORT

Selecting the port for configuration. It automatically depends on the type of switch used.

```
metel@10.93.0.3(config)# port?
Exec commands:
  P1                    P1
  P2                    P2
  P3                    P3
  P4                    P4
  P5                    P5
  G1                    G1
  G2                    G2
```

Example selecting Port 1 for next configuration

```
metel@10.92.0.3(config)# port P1
metel@10.92.0.3(config-port-P1)#
```

config-port-X

X is replaced by the selected port

adv-10-full-enable	Enable AN 10Mbps full-duplex
adv-10-full-disable	Disable AN 10Mbps full-duplex
adv-10-half-enable	Enable AN 10Mbps half-duplex
adv-10-half-disable	Disable AN 10Mbps half-duplex
adv-100-full-enable	Enable AN 100Mbps full-duplex
adv-100-full-disable	Disable AN 100Mbps full-duplex
adv-100-half-enable	Enable AN 100Mbps half-duplex
adv-100-half-disable	Disable AN 100Mbps half-duplex
adv-1000-full-enable	Enable AN 1000Mbps full-duplex
adv-1000-full-disable	Disable AN 1000Mbps full-duplex
an-enable	Enable AN
an-disable	Disable AN
atu-disable-learning	Disable address table learning
atu-disable-using-da	Disable usage of destination address in ATU
atu-egress-mode	Set ATU egress filtering mode
all	All
no-unknown-unicast	No unknown unicast
no-unknown-multicast	No unknown multicast
no-unknown-DA	No unknown destination address
atu-enable-learning	Enable learning
atu-enable-using-da	Enable using destination address
alias	Set port description
do	Do command from privileged mode
end	Return to the previous level
exit	Return to the previous level
force-10-full	Force ethernet speed 10Mbps full-duplex

```
force-10-half         Force ethernet speed  10Mbps half-duplex
force-100-full        Force ethernet speed  100Mbps full-duplex
force-100-half        Force ethernet speed  100Mbps half-duplex
force-1000-full       Force ethernet speed 1000Mbps full-duplex
jumbo                 Set jumbo packet size
mdix                  Set Media Dependent Interface Crossover
  force-mdi             Force MDI mode
  force-mdix            Force MDIX mode
  auto                  Auto mode for MDI/MDIX
mirror                Setting source ports for mirroring
  ingress-src           Selects port ingress data as mirroring source
  egress-src            Selects port egress data as mirroring source
  no-ingress-src        Disables port ingress data as a mirroring source
  no-egress-src         Disables port egress data as a mirroring source
dot1x-auth            Authenticator
  force-auth            Port control: force authorized
  force-auto            Port control: auto
  force-unauth          Port control: force unauthorized
  reauth-enable         Enable re-auth
  reauth-disable        Disable re-auth
  keytx-enable          Enable KeyTx
  keytx-disable         Disable KeyTx
  quiet-period          Set Quiet period
  tx-period             Set Tx period
  reauth-period         Set Re-auth period
  supp-timeout          Set Supp timeout
  server-timeout        Set Server timeout
  max-request           Set max. request
dot1x-supp            Supplicant
  force-auth            Port control: force authorized
  force-auto            Port control: auto
  force-unauth          Port control: force unauthorized
  admin-valid           Set admin port valid
  admin-invalid         Set admin port invalid
  identity              Set identity name
  password              Set password value
  held-period           Set Held period
  auth-period           Set Auth period
  start-period          Set Start period
  max-start             Set Max start
pae-mode-auth         Set authenticator mode
pae-mode-none         Set none PAE mode
pae-mode-supp         Set supplicant mode
poe-disable           Disable PoE
poe-donot-ignore-discovery Do not ignore discovery
poe-enable            Enable Power over Ethernet
poe-ignore-discovery Ignore PoE discovery
poe-no-swap-pairs     Do not swap PSE pri/sec pairs
poe-no-power-limit    No power limit
poe-swap-pairs        Swap PoE PSE pairs
poe-power-limit       Set PoE power limit (mW)
port-vlan-member      Configure port-based VLAN membership
port-vlan-no-member   Remove Port-based VLAN
power-down            Power down (shutdown) the port
power-up              Power up (negate the shutdown) the port
rate-in-speed         Set input speed rate in kbps
rate-in-limit         Limit input speed rate
rate-in-nolimit       Disable rate in speed limit
rate-out-speed        Set output speed rate in kbps
rate-out-limit        Limit output speed rate
rate-out-nolimit      Disable rate out speed limit
rstp-disable          Disable RSTP-M on port
rstp-enable           Enable RSTP-M on port
rstp-prio             Set RSTP-M port priority
rstp-edge             Enable RSTP-M admin edge
```

```
rstp-edge-none       No admin edge
rstp-cost            Set RSTP-M admin cost
snmp                 Set SNMP traps
vlan-none            Disable VLAN MODE
vlan-keep-tag        Do not discard Tag
vlan-keep-untag      Do not discard Untag
vlan-keep-vid        Do not force VLAN VID
vlan-default-pri     Set default VLAN priority
  end                  Return to the previous level
  default              Default priority
  tag-only             Tag-only mode
  ip-only              IP-only mode
  iptag-comb           Combined IP and tag mode
  iptag-tag            IP-tag mode
vlan-pri-value       Set ports default priority value
vlan-force-vid       Force VLAN ID
vlan-default-id      Set default VLAN ID
vlan-mode            Set VLAN mode
  fallback             Enable fallback mode
  check                Enable check mode
  secure               Enable secure mode
vlan-discard-tag     Discard tagged VLAN frames
vlan-discard-untag   Discard untagged VLAN frames
```

ATU-DISABLE-LEARNING
MAC address learning is disabled on the selected port.

ATU-ENABLE-LEARNING
MAC address learning is enabled on the selected port.

ATU-DISABLE-USING-DA
Map according to the destination address. Learnt MAC addresses are not used for sending frames.

ATU-ENABLE-USING-DA
Map according to the destination address. Learnt MAC addresses are used for sending frames.

RSTP-ENABLE
RSTP is enabled for this port.

RSTP-DISABLE
RSTP is disabled for this port.

RSTP-PRIO
Port Priority, an unsigned value used to represent the priority component of a Port Identifier. A lower numerical value means that the port has a higher priority.
Valid Port Priorities are in the range 0 through 240, in steps of 16.

RSTP-EDGE
The port is set to edge port. However, if the port receives a BPDU, the Oper Edge Port setting changes to non-edge-port. (To receive a BPDU, the port must be connected to a bridge and thus is not an edge port.)

RSTP-EDGE-NONE
The port must be connected to a bridge. Otherwise, the port can't rapidly transition to forwarding state

RSTP-COST
The administratively assigned value for the contribution of this port to the path cost of paths toward the spanning tree root. Writing a value of '0' assigns the automatically calculated default Path Cost value to the port.

VLAN-DEFAULT-ID
The initial VLAN identifier is used as a packet VLAN identifier, if mode 802.1Q is on and the packet has no IEEE VID (VLAN identifer) tag or if it has a priority in the tag. The tag is also used as packet VID, if its original VID is 0x000 or if a forced override of the VID packet is set (VLAN-Force-VID).

VLAN-PRI-VALUE
Allows to set the importance of frames and prioritize them before others with lower priority. You mustenter values 0-7 in the field, where the value 7 It is Market as the highest priority. This value is only assigned to frames that they do not contain more information about the priority.

VLAN-FORCE-VID
Enables overriding of the VID input frames if this packet already contains an VLAN ID. This option is never used at "Trunk" ports is to avoid overwriting identifiers to the one VLAN.

ATU-EGRESS-MODE
all	All
no-unknown-unicast	No unknown unicast
no-unknown-multicast	No unknown multicast
no-unknown-DA	No unknown destination address

Description
all - all frames are sent, no blocking.
no-unknown-DA - frames with not learnt destination address are not sent to this port.
no-unknown-multicast - multicast packets are not sent to this port.
no-unknown-unicast - unicast packets are not sent to this port.

MDIX
force-mdi	Force MDI mode
force-mdix	Force MDIX mode
auto	Auto mode for MDI/MDIX

VLAN-PRI-INITIAL

override	Use only ports default priority value
tag-only	Use priority from tag
ip-only	Use priority from IP header
iptag-comb	Use priority from IP header or tag
iptag-tag	Use priority from tag or IP header

VLAN-MODE
fallback	Enable fallback mode
check	Enable check mode
secure	Enable secure mode

Fallback
Incoming frames are not discarded if their VLAN VID is not defined in the VLAN table. Outgoing frames can then be left, if the port is a member of a VLAN defined in the VLAN table or if the VLAN VID frame is not defined in the VLAN table.

Check
The VLAN VID of the incoming frame must be defined in the VLAN table otherwise it is discarded. The frame will not be discarded if the input port is not a member of this VLAN. At this port, only the frames whose VLANs are port members can exit.

Secure

The incoming frame's VLAN VID must be defined in the VLAN table and the input port must be a member of this VLAN. Only frames can be left whose VLAN is a port member.

MIRROR

Setting source ports for mirroring

ingress-src	Selects port ingress data as mirroring source
egress-src	Selects port egress data as mirroring source
no-ingress-src	Disables port ingress data as a mirroring source
no-egress-src	Disables port egress data as a mirroring source

Example enable mirroring ingress data from P1. Destination port is selected in menu ***mirror***.

```
metel@10.93.0.3(config-port-P1)# mirror ingress-src
```

DOT1X-AUTH

Settings for port as Authenticator

force-auth	Port control: force authorized
force-auto	Port control: auto
force-unauth	Port control: force unauthorized
reauth-enable	Enable re-auth
reauth-disable	Disable re-auth
keytx-enable	Enable KeyTx
keytx-disable	Disable KeyTx
quiet-period	Set Quiet period
tx-period	Set Tx period
reauth-period	Set Re-auth period
supp-timeout	Set Supp timeout
server-timeout	Set Server timeout
max-request	Set max. request

DOT1X-SUPP

Settings for port as Supplicant

force-auth	Port control: force authorized
force-auto	Port control: auto
force-unauth	Port control: force unauthorized
admin-valid	Set admin port valid
admin-invalid	Set admin port invalid
identity	Set identity name
password	Set password value
held-period	Set Held period
auth-period	Set Auth period
start-period	Set Start period
max-start	Set Max start

SNMP

Set SNMP traps

trap	Set SNMP traps

TRAP

Set SNMP traps

dot1x	Configure IEEE 802.1X trap
auth-state-disable	Disable SNMP trap when authenticator state changes
auth-state-enable	Enable SNMP trap when authenticator state changes
supp-state-disable	Disable SNMP trap when supplicant state changes
supp-state-enable	Enable SNMP trap when supplicant state changes
in-limit	Set ingress limit trap [bps]

```
in-over-disable      Disable ingress over limit on port
in-over-enable       Enable ingress over limit on port
in-under-disable     Disable ingress under limit on port
in-under-enable      Enable ingress under limit on port
link-disable         Disable SNMP trap on link up/down state change
link-enable          Enable SNMP trap on link up/down state change
out-limit            Set egress limit trap [bps]
out-over-disable     Disable ingress over limit on port
out-over-enable      Enable ingress over limit on port
out-under-disable    Disable ingress under limit on port
out-under-enable     Enable ingress under limit on port
poe-disable          Disable SNMP trap when PoE state changes
poe-enable           Enable SNMP trap when PoE state changes
```

Example enable trap for link status

```
metel@192.168.6.13(config-port-P1)# snmp trap link-enable
```

DOT1X

Configure IEEE 802.1X trap

```
auth-state-disable   Disable SNMP trap when authenticator state changes
auth-state-enable    Enable SNMP trap when authenticator state changes
supp-state-disable   Disable SNMP trap when supplicant state changes
supp-state-enable    Enable SNMP trap when supplicant state changes
```

RING

Set METEL LAN-RING protocol, in this menu is selecting which ring you will configure. Small switches support just 1 RING, but unit switches support up to 5 RING connection.

Example selecting Ring 1

```
metel@10.92.0.3(config)# ring R1
metel@10.92.0.3(config-ring-R1)#
```

config-ring-RX

X is replaced by the selected the ring

```
end                  Return to the previous level
exit                 Return to the previous level
do                   Do command from privileged mode
enable               Enable METEL LAN-RING
disable              Disable METEL LAN-RING
rid                  Set METEL LAN-RING identificator
master               Set METEL LAN-RING Master (only v1)
slave                Set METEL LAN-RING Slave (only v1)
atu-clear-enable     Enable ATU clear (only v2)
atu-clear-disable    Disable ATU clear (only v2)
snmp                 Set SNMP traps
  trap              Set SNMP traps
    state-enable       Enable SNMP trap on LAN-RING state change
    state-disable      Disable SNMP trap on LAN-RING state change
version              Set METEL LAN-RING version
  v1                   METEL LAN-RING version 1
  v2                   METEL LAN-RING version 2
```

RID

Ring identifier is a number used for identification of the devices that are expected to communicate with each other within the ring.
Example: If there is one ring with one master, having "Ring identifier" set to 6, all other switches in this ring must have "Ring identifier" set to 6, too.

```
metel@10.93.0.3(config-ring-R1)# rid 6
```

VERSION
Protocol version of LAN-RING.
LAN-RING v1:
Master switch must be set manually. In the case of failure or restore ring occurs a short disruption.
LAN-RING v2:
Master switch is set automatically and dynamically varies due to the fault. In the case of failure in the ring occurs a short disruption. Disruption does not occur when you restore ring. RECOMMENDED
Example set LAN-RING v2 protocol

```
metel@10.93.0.3(config-ring-R1)# version v2
```

MASTER
If is using LAN-RING version 1, than is switch set as Master.
If is using LAN-RING version 2, than in the case of failure of the ring, learnt addresses in ATU table will be flushed on appropriate ports of this device, recommended.

SLAVE
If is using LAN-RING version 1, than is switch set as Slave i.e. it is listening to the switch with the same Ring identifier and Master priority.
If is using LAN-RING version 2 than in case of failure of the ring, learnt addresses in ATU table will not be flushed. This option makes sense only in case if 'Learning disable' on the port is set. However, this option is NOT usually recommended.

TRAP
Set SNMP traps

state-enable	Enable SNMP trap on LAN-RING state change
state-disable	Disable SNMP trap on LAN-RING state change

Example enable trap

```
metel@192.168.6.13(config-ring-R1)# snmp trap state-enable
```

LINE
System configuration and methods for logging into the console over the network/USB.

Example selecting USB interface for configuration

```
metel@10.92.0.3(config)# line usb
metel@10.92.0.3(config-line-USB)#
```

Example selecting SSH interface for configuration

```
metel@10.92.0.3(config)# line ssh
metel@10.92.0.3(config-line-SSH)#
```

USB
USB interface

authentication	Authentication configurations parameters
method1	First authentication method
method2	Second authentication method
method3	Third authentication method
banner	Specify terminal
disable	Disable terminal
do	Do command from privileged mode
enable	Enable terminal
end	Return to the previous level
exit	Return to the previous level

snmp Set SNMP traps

AUTHENTICATION

User authentication to the console via USB.
The system works from the first method and if the first method is not available it continues to the next method.

method1 First authentication method
method2 Second authentication method
method3 Third authentication method

WARNING:
If a method is set to Deny and none or the previous method is unavailable, it will not be possible to login to console.
If a method is set to Permit so you log into the system with any username and password.

METHOD1

Select configuration for method1.

deny no authentication
permit permit authentication
local local authentication
tacacs TACACS+ authentication

Example set method 1 for tacacs user authentication

```
metel@10.93.0.3(config-line-USB)# authentication method1 tacacs
```

METHOD2

Select configuration for method1.

deny no authentication
permit permit authentication
local local authentication
tacacs TACACS+ authentication

Example set method 2 for local user authentication

```
metel@10.93.0.3(config-line-USB)# authentication method2 local
```

METHOD3

Select configuration for method1.

deny no authentication
permit permit authentication
local local authentication
tacacs TACACS+ authentication

SNMP

Set SNMP traps

cable-disable Disable USB cable status changed
cable-enable Enable USB cable status changed

Example enable trap

```
metel@192.168.6.13(config-line-USB)# snmp trap cable-enable
```

SSH

SSH interface

authentication Authentication configurations parameters
  method1 First authentication method
  method2 Second authentication method

```
  method3              Third authentication method
banner                 Specify terminal
disable                Disable terminal
do                     Do command from privileged mode
enable                 Enable terminal
end                    Return to the previous level
exit                   Return to the previous level
```

AUTHENTICATION

```
User authentication to the console via network.
The system works from the first method and if the first method is not available it continues
to the next method.
method1                First authentication method
method2                Second authentication method
method3                Third authentication method

WARNING:
If a method is set to Deny and none or the previous method is unavailable, it will not be
possible to login to console.
If a method is set to Permit so you log into the system with any username and password.
```

METHOD1

```
Select configuration for method1.
deny                   no authentication
permit                 permit authentication
local                  local authentication
tacacs                 TACACS+ authentication

Example set method 1 for tacacs user authentication
metel@10.93.0.3(config-line-SSH)# authentication method1 tacacs
```

METHOD2

```
Select configuration for method1.
deny                   no authentication
permit                 permit authentication
local                  local authentication
tacacs                 TACACS+ authentication

Example set method 2 for tacacs user authentication
metel@10.93.0.3(config-line-SSH)# authentication method2 local
```

METHOD3

```
Select configuration for method1.
deny                   no authentication
permit                 permit authentication
local                  local authentication
tacacs                 TACACS+ authentication
```

SNMP

```
Configure SNMP settings
```

VERSION

```
Select SNMP version
v2c                    Set SNMP to version 2c
v3                     Set SNMP to version 3
```

Example set SNMP to version 3
```
metel@10.93.0.3(config)# snmp version v3
```

TRAP

Configure SNMP trap

conf-changed	configuration changed TRAP settings
live-check	Live check TRAP settings
temperature	Temperature monitoring SNMP trap configuration
voltage	Voltage monitoring SNMP trap configuration

CONF-CHANGED

Configuration changed TRAP settings

changed-disable	Disable configuration changed
changed-enable	Enable configuration changed

Example enable trap
```
metel@192.168.6.13(config)# snmp trap conf-changed changed-enable
```

LIVE-CHECK

Live check TRAP settings

disable	Disable trap destination
enable	Enable trap destination
timeout	Set timeout [s]
syslog-disable	Disable write to logger
syslog-enable	Enable write to logger

Example set timeout 20s for live-check trap
```
metel@192.168.6.13(config)# snmp trap live-check timeout 20
```

TEMPERATURE

Temperature monitoring SNMP trap configuration

limit	Set limit [C]
over-limit-disable	Disable SNMP trap when temperature exceeds upper limit
over-limit-enable	Enable SNMP trap when temperature exceeds upper limit
under-limit-disable	Disable SNMP trap when temperature drops below lower limit
under-limit-enable	Enable SNMP trap when temperature drops below lower limit

Example set limit for 60°C and enable over-limit trap
```
metel@192.168.6.13(config)# snmp trap temperature limit 60
metel@192.168.6.13(config)# snmp trap temperature over-limit-enable
```

VOLTAGE

Voltage monitoring SNMP trap configuration

backup	Configure backup voltage traps
ov-limit	Set overvoltage limit [V]
ov-over-disable	Disable overvoltage limit
ov-over-enable	Enable overvoltage limit
ov-under-disable	Disable overvoltage limit
ov-under-enable	Enable overvoltage limit
uv-limit	Set undervoltage limit [V]
uv-over-disable	Disable undervoltage over limit
uv-over-enable	Enable undervoltage over limit
uv-under-disable	Disable undervoltage under limit
uv-under-enable	Enable undervoltage under limit

```
primary              Configure primary voltage traps
  ov-limit           Set overvoltage limit [V]
  ov-over-disable    Disable overvoltage limit
  ov-over-enable     Enable overvoltage limit
  ov-under-disable   Disable overvoltage limit
  ov-under-enable    Enable overvoltage limit
  uv-limit           Set undervoltage limit [V]
  uv-over-disable    Disable undervoltage over limit
  uv-over-enable     Enable undervoltage over limit
  uv-under-disable   Disable undervoltage under limit
  uv-under-enable    Enable undervoltage under limit

Example set limit for primary input undervoltage lower then 12V and enable trap
metel@192.168.6.13(config)# snmp trap voltage primary uv-limit 12
metel@192.168.6.13(config)# snmp trap voltage primary uv-under-enable
```

DEST-TRAP

```
Configure SNMP trap destinations
host1                TRAP destination host 1 settings
  disable              Disable trap destination
  enable               Enable trap destination
  ip                   Set IPv4 for destination
  port                 Set port for destination (162 is usually use)
  name                 Set SNMP community or username
host2                TRAP destination host 2 settings
host3                TRAP destination host 3 settings
host4                TRAP destination host 4 settings
host5                TRAP destination host 5 settings
```

HOST1

```
TRAP destination host 1 settings

disable              Disable trap destination
enable               Enable trap destination
ip                   Set IPv4 for destination
port                 Set port for destination (162 is usually use)
name                 Set SNMP community or username (default is: "user" or "master")

Example set destination IP for, name, port and enable
metel@192.168.6.13(config)# snmp dest-trap host1 ip 192.168.6.59
metel@192.168.6.13(config)# snmp dest-trap host1 port 162
metel@192.168.6.13(config)# snmp dest-trap host1 name user
metel@192.168.6.13(config)# snmp dest-trap host1 enable
```

HOST2

```
TRAP destination host 2 settings

disable              Disable trap destination
enable               Enable trap destination
ip                   Set IPv4 for destination
port                 Set port for destination (162 is usually use)
name                 Set SNMP community or username (default is: "user" or "master")
```

HOST3

```
TRAP destination host 3 settings

disable              Disable trap destination
```

enable Enable trap destination
ip Set IPv4 for destination
port Set port for destination (162 is usually use)
name Set SNMP community or username (default is: "user" or "master")

HOST4
TRAP destination host 4 settings

disable Disable trap destination
enable Enable trap destination
ip Set IPv4 for destination
port Set port for destination (162 is usually use)
name Set SNMP community or username (default is: "user" or "master")

HOST5
TRAP destination host 5 settings

disable Disable trap destination
enable Enable trap destination
ip Set IPv4 for destination
port Set port for destination (162 is usually use)
name Set SNMP community or username (default is: "user" or "master")

SNTP
Configure SNTP
disable Disable SNTP
enable Enable SNTP
server1 Configure primary SNTP server IP address
server2 Configure secondary SNTP server IP address
server3 Configure tertiary SNTP server IP address
request-interval Server request interval in seconds
timezone Timezone offset in hours
auto-DST-disable Disable automatic daylight saving time correction
auto-DST-enable Enable automatic daylight saving time correction
synchronize Try to synchronize with SNTP servers
set-time Set time in format dd.mm.yyyy hh:mm:ss

Example enable SNTP protocol
```
metel@10.93.0.3(config)# sntp enable
```

Example set server1 to address 195.113.144.201
```
metel@10.93.0.3(config)# sntp server1 195.113.144.201
```

Note:
Only IP entry is allowed for server settings, hostname entry is currently not supported.

INPUT
Configure input signal settings

Example showing available input
```
metel@192.168.6.13(config)# input ?
Exec commands:
  IN1                 IN1
  IN2                 IN2
```

Example selecting Input 2 for next configuration
```
metel@192.168.6.13(config)# input IN2
metel@192.168.6.13(config-input-IN2)#
```

IN1

```
end                 Return to the previous level
exit                Return to the previous level
do                  Do command from privileged mode
label               Set digital input label
negation-enable     Enable negation of digitial input
negation-disable    Disable negation of digitial input
min-duration        Set Minimal pulse duration in miliseconds with step 10ms
snmp                Set SNMP traps
```

SNMP

Set trap

```
trap                Set SNMP traps
  digital-state-enable Enable SNMP trap when digital input state changes
  digital-state-disable Disable SNMP trap when digital input state changes
```

IN2

```
end                 Return to the previous level
exit                Return to the previous level
do                  Do command from privileged mode
label               Set digital input label
negation-enable     Enable negation of digitial input
negation-disable    Disable negation of digitial input
min-duration        Set Minimal pulse duration in miliseconds with step 10ms
snmp                Set SNMP traps
```

Example set minimum duration to 500ms

```
metel@192.168.6.13(config-input-IN2)# min-duration 500
```

Example set label to "tamper"

```
metel@192.168.6.13(config-input-IN2)# label tamper
```

SNMP

Set trap

```
trap                Set SNMP traps
  digital-state-enable Enable SNMP trap when digital input state changes
  digital-state-disable Disable SNMP trap when digital input state changes
```

Example enable state trap

```
metel@192.168.6.13(config-input-IN2)# snmp trap digital-state-enable
```

IP

Configure IP protocol settings

```
addr-mask           Set IP address and mask in slash format <IP>/<MASKNUMBER>
addr                Set IP address
dns                 Specify DNS
gate                Set gateway IP address
mask                Set mask
icmp-echo-disable   Disable ICMP echo
icmp-echo-enable    Enable ICMP echo
vlan-disable        Disable VLAN tagging for IP management of switch
```

vlan-enable Enable VLAN tagging for IP management of switch
vlan-id Specify VLAN ID (1-4094) for management of switch
vlan-pri Specify VLAN priority (0-7) for management of switch

Example set IP to 10.93.0.4
```
metel@10.93.0.3(config)# ip addr 10.93.0.4
```

Example changes management VLAN ID to 99
```
metel@10.93.0.3(config)# ip vlan-id 99
```

Example set IP and MASK
```
metel@10.93.0.3(config)# ip addr-mask 192.168.6.27/24
```

MIRROR

Data src and dst port mirroring settings
ingress-dst Set the destination port for ingress mirrored data
no-ingress-dst Disables destination port for ingress mirrored data
egress-dst Set the destination port for egress mirrored data
no-egress-dst Disables destination port for egress mirrored data
cpu-ingress-src Selects CPU port ingress data as mirroring source
no-cpu-ingress-src Selects CPU port egress data as mirroring source
cpu-egress-src Disables CPU port ingress data as mirroring source
no-cpu-egress-src Disables CPU port egress data as mirroring source

Example mirroring ingress data from ***port*** x to port P5
```
metel@10.93.0.3(config)# mirror ingress-dst P5
```

RADIUS

Configure RADIUS
server1 RADIUS server 1 settings
server2 RADIUS server 2 settings

SERVER1

disable Disable server
enable Enable server
host Set host for server
key Set communication encryption key
timeout Set communication timeout in seconds

SERVER2

disable Disable server
enable Enable server
host Set host for server
key Set communication encryption key
timeout Set communication timeout in seconds

SYSLOG

Configuration syslos server, default UDP port 514, not possible change in the actual firmware.
server1 SYSLOG server 1 settings
server2 SYSLOG server 2 settings

SERVER1

Syslog server 1 (primary) settings
disable Disable server

```
enable               Enable server
host                 Set host for server

Example set host IP
metel@192.168.6.13(config)# syslog server1 host 192.168.6.59
```

SERVER2

```
Syslog server 1 (secondary) settings
disable              Disable server
enable               Enable server
host                 Set host for server

Example enable secondary syslog server
metel@192.168.6.13(config)# syslog server2 enable
```

TACACS

```
Configure TACACS+
server1              TACACS+ server 1 settings
server2              TACACS+ server 2 settings
```

SERVER1

```
TACACS+ server 1 (primary) settings
disable              Disable server
enable               Enable server
host                 Set host for server
key                  Set authentication key
timeout              Set communication timeout in seconds
```

SERVER2

```
TACACS+ server 2 (secondary) settings
disable              Disable server
enable               Enable server
host                 Set host for server
key                  Set authentication key
timeout              Set communication timeout in seconds
```

TOPOLOGY

```
Configure topology protocol
```

MODE

```
Selecting the mode
none                 No topology protocol
lan-ring             Select LAN-RING mode
rstp-m               Select RSTP-M mode
```

NONE

```
Any network protocol is not active. In the case of loops in the network congestion occurs.
```

LAN-RING

```
Proprietary protocol developed by METEL s.r.o. for pure ring topologies. It offers very fast
reconfiguration of the network in the event of failure of one ring network segment.
```

RSTP-M

This protocol is compatible with the standard RSTP, IEEE 802.1D-2004. Protocol version M is optimized for faster reconfiguration versus standard RSTP.

Example selecting lan-ring protocol
```
metel@10.93.0.3(config)# topology mode lan-ring
```

RSTP-M

Configure RSTP-M protocol
priority Set RSTP-M priority
hello-time Set RSTP-M hello time
max-age Set RSTP-M max age
forward-delay Set RSTP-M forward delay

PRIORITY

Bridge Priority, an unsigned value is used to represent the priority component of a Bridge Identifier. A lower numerical value means that the bridge has a higher priority.
Valid Bridge Priorities are in the range 0 through 61 440, in steps of 4096.

HELLO TIME

The amount of time between the transmission of Configuration bridge PDUs by this node on any port when it is the root of the spanning tree, or trying to become so.
This value must satisfy the following relationship:
Hello Time <= (Max Age/2) - 1
Valid value is in the range 1 through 2 (second)

MAX AGE

The maximum age of Spanning Tree Protocol information learnt from the network on any port before it is discarded.
This value must satisfy the following relationships:
Max Age <= 2x(Forward Delay - 1)
Max Age >= 2x(Hello Time +1)
Valid value is in the range 6 through 40 (second).

FORWARD DELAY

This time value, measured in units of second, controls how fast a port changes its spanning state when moving towards the Forwarding state. The value determines how long the port stays in each of the Listening and Learning states, which precede the Forwarding state. This value is also used when a topology change has been detected and is underway, to age all dynamic entries in the Filtering Database. According to RSTP standard IEEE 802.1D-2004 this value is not use due to synchronization process. It is used only for backward compatible with 802.1D STP.
This value must satisfy the following relationships:
Forward Delay >= (Max Age/2) + 1
Valid value is in the range 4 through 30 (second).

Note: Other settings about RSTP are under the ***port*** menu.

Example change priority to 40960 value
```
metel@10.93.0.3(config)# topology rstp-m priority 40960
```

USER-ADD

Add new local user with access to CLI via ethernet or USB. Is possible create maximum 4 users with access to console. If you want change password for current user, just use same username with new password.
user-add Add a user

Possible using hash algorithm
user-add USERNAME sha-512 PASSWORD (recommended)
user-add USERNAME hash HASH
user-add USERNAME md5 PASSWORD

user-add USERNAME sha-256 PASSWORD

System use **shadow password**, also known is a system file in Linux that stores encrypted user passwords, preventing unauthorized users or malicious actors from breaking into the system. In case you already have an existing password from the system in hash, you can insert it with using the ***hash*** command.
Supproted hashes starting with $ sign
1 = MD5
5 = SHA-256
6 = SHA-512

Example add a new user with username 'tester' and password 'test' which will be hashed by SHA-512

```
metel@10.93.0.3(config)# user-add tester sha-512 test
creating a new user(slot 1)
```

Example add a new user with knowing hash

```
metel@10.93.0.3(config)# user-add tester3 hash
$6$u33XmD69I8AAxrqB$RNYgau5/FKwJ5.UgI6le9v/QDyXKVSK5VwVtHkY01PxQuAEjViJ65WaRU7kWhk11OCkQtms8Appd
```

USER-DEL

Delete the user for access to console via ethernet or USB.
user-del Delete/Remove the user by USERNAME

Example of removing user with username tester2

```
metel@10.93.0.3(config)# user-del tester2
username found: 1
username removed: 1
```

USER-ERASE-ALL

Remove all users including the metel user. Please do not use this command, is it used automatically only for import configurations.
user-erase-all (IMPORT) Remove all users including the metel user

VLAN

vlan VLAN-specific commands

In this section, write the VLAN ID for which you will create a new or edit existing rules. Switch supports 64 different VLAN ID. If there is an already entered VLAN ID, the system informs that the ID has been found. If such an ID does not exist, the system automatically searches for the first available row, where is not ENABLE the vlan in which to create a new VLAN ID.

Example selecting VLAN ID 100, which is in the system already

```
metel@10.93.0.3(config)# vlan 100
VID was found at row: 1
```

Example selecting VLAN ID 50, which is not yet in the system.

```
metel@10.93.0.3(config)# vlan 50
first empty row is: 2
```

NOTE
The changes are applied only after exiting the menu (command ***end***, ***exit*** or CTRL+D).

NOTE
If a new VLAN ID is created, after exiting the menu (command ***end***, ***exit*** or CTRL+D) is automatically set ***enable command for this VLAN***.

VLAN ID X

do	Do command from privileged mode
end	Exit VLAN configuration
exit	Exit VLAN configuration
member-none	Remove VLAN membership
member-tagged	Tag VLAN membership
member-unmodified	Set VLAN membership to unmodified
member-untagged	Untag VLAN membership
priority-override	Override VLAN priority (0-7)
remove	Remove VLAN
disable	Disable VLAN
enable	Enable VLAN

MEMBER-UNMODIFIED

The ports are a member of this VLAN and packets will be leaving this port unmodified.

MEMBER-UNTAGGED

The ports are a member of this VLAN and packets will be leaving this port without IEEE tag (without VID).

MEMBER-TAGGED

The ports are a member of this VLAN and packets will be leaving this port with IEEE tag (with VID).

MEMBER-NONE

The ports are not a member of this VLAN.

PRIORITY-OVERRIDE

Frame priority will be overridden from field Priority, if this checkbox is checked. Priority of transmitted data via Ethernet is used for overriding. The default value is 0 (lowest priority). The highest priority is 7.

NOTE:
CPU Port - for data that is intended for the CPU as management, RS485, IO. Data can be tagged and untagged as well.

Example creating the rule for VLAN ID 50. P1, P2, P3 will be member untagged (end devices), P4, P5 not member, G1, G2 member tagged (TRUNK). CPU port not member.

```
metel@10.93.0.3(config-vlan-50)# member-tagged G1
metel@10.93.0.3(config-vlan-50)# member-tagged G2
metel@10.93.0.3(config-vlan-50)# member-none CPU
metel@10.93.0.3(config-vlan-50)# member-none P4
metel@10.93.0.3(config-vlan-50)# member-none P5
metel@10.93.0.3(config-vlan-50)# member-untagged P1
metel@10.93.0.3(config-vlan-50)# member-untagged P2
metel@10.93.0.3(config-vlan-50)# member-untagged P3
metel@10.93.0.3(config-vlan-50)# enable
metel@10.93.0.3(config-vlan-50)# end
```

Example change the priority

```
metel@10.93.0.3(config-vlan-50)# priority-override 5
```

VLAN-INIT-TAB

vlan-init-tab	Initialize VLAN tables

The vlan table will be set to default values.

WARNING:
This only applies to the VLAN table, it does not apply to VLAN settings on ports.

IMPORT

Import configuration from file
nvm Import configuration from NVM
ram Import configuration from RAM

Example import configuration from nvm

```
metel@192.168.6.13(config)# import nvm backup.txt
modifying an existing user (slot 0)
Disabled VID was found at row: 0
VID was found at row: 1
VID was found at row: 2
Import configuration successfull
```

NOTE
Export is via command ***copy running-config***

COPY

Copy data from one file to another
nvm Copy from NVM (non-volatile memory)
ram Copy from RAM (volatile memory)
running-config Copy running-config
sftp Copy from SFTP to ram, nvm
tftp Copy from TFTP to ram, nvm

NVM is a part of memory where are stored files after reboot. In this part is available 750KB memory for user, just only for configuration file for example.
RAM is a part of memory, which is after reboot deleted. In this part is available 50MB memory for user, for copying the new firmware for example.

SFTP syntax
arguments: IP address (remote), source filename, destination (nvm or ram), username (remote)

TFTP syntax
arguments: IP address (remote), source filename, destination (nvm or ram)

WARNING
If a file is copied to a destination where a file with the same name has already been created, it will be automatically overwritten.

Example copy backup file from sftp server to ram

```
metel@10.93.0.3# copy sftp 10.70.0.65 /tmp/backup.txt ram root
copying from sftp://root@10.70.0.65//tmp/backup.txt to RAM:backup.txt
Warning: Permanently added '10.70.0.65' (ED25519) to the list of known hosts.
```

Example copy firmware file from tftp server to ram

```
metel@10.93.0.3# copy tftp 10.15.15.25 2.1815.15599_secure.tar ram
copying from tftp://10.15.15.25/2.1815.15599_secure.tar to RAM
2.1815.15599_secure. 100%
|*******************************************************************************************
44.0M  0:00:00 ETA
```

NVM

NVM is a part of memory where are stored files after reboot. In this part is available 750KB memory for user, just only for configuration file for example.
Copy from ***nvm name_file*** to:
running-config Copy NVM file to running-config
ram Copy NVM file to RAM (volatile memory)
sftp Copy NVM file to SFTP server
tftp Copy NVM file to TFTP server

SFTP syntax
arguments: IP address (remote), destination filename, username (remote)

TFTP syntax
arguments: IP address (remote), destination filename
If the destination path ends with '/', the command will automatically fill in the same filename as the source.
If the destination path does not end with '/', it is considered a file and if a directory with the same name exists in the destination, it will result in an error.

Example copy file from nvm to sftp server in path /tmp/

```
metel@10.93.0.3# copy nvm backup.txt sftp 10.70.0.65 /tmp/ root
```

RAM

RAM is a part of memory, which is after reboot deleted. In this part is available 50MB memory for user, for copying the new firmware for example.
Copy from ***ram name_file*** to:

running-config	Copy RAM file to running-config
ram	Copy RAM file to RAM (volatile memory)
sftp	Copy RAM file to SFTP server
tftp	Copy RAM file to TFTP server

SFTP syntax
arguments: IP address (remote), destination filename, username (remote)

TFTP syntax
arguments: IP address (remote), destination filename
If the destination path ends with '/', the command will automatically fill in the same filename as the source.
If the destination path does not end with '/', it is considered a file and if a directory with the same name exists in the destination, it will result in an error.

Example copy file from ram to sftp server in path /tmp/

```
metel@10.93.0.3# copy ram backup.txt sftp 10.70.0.65 /tmp/ root
```

Example copy from ram to nvm memory

```
metel@10.93.0.3# copy ram backup.txt nvm
```

RUNNING-CONFIG

Copy running-config to:

boot-config	Copy running-config to boot-config
nvm	Copy running-config to NVM (non-volatile memory)
ram	Copy running-config to RAM (volatile memory)
sftp	Copy running config to SFTP server
tftp	Copy running config to TFTP server

Example copy running config to boot config

```
metel@10.93.0.3# copy running-config boot-config
copying running to boot...
boot-config = running-config
```

SFTP syntax
arguments: IP address (remote), destination filename, username (remote)

TFTP syntax
arguments: IP address (remote), destination filename
If the destination path ends with '/', the command will automatically fill in the same filename as the source.
If the destination path does not end with '/', it is considered a file and if a directory with the same name exists in the destination, it will result in an error.

Example copy running config to sftp server

```
metel@10.93.0.3# copy running-config sftp 10.70.0.65 /home/metel/202411_config metel
copying to sftp://metel@10.70.0.65/home/metel/konfig2G2
Warning: Permanently added '10.70.0.65' (ED25519) to the list of known hosts.
metel@10.70.0.65's password:
running-config.txt
```

Example copy running config to ram

```
metel@10.93.0.3# copy running-config ram backup.txt
```

Example copy running config to tftp server

```
metel@192.168.6.13# copy running-config tftp 192.168.6.59 /2g2s14f/29_11_2024.txt
copying to tftp://192.168.6.59/2g2s14f/29_11_2024.txt
29_11_2024.txt       100%
|*****************************************************************************************|
1298  0:00:00 ETA
```

DIR

List files from local storage

nvm	List files from NVM (non-volatile memory)
ram	List files from RAM (volatile memory)

NVM is a part of memory where are stored files after reboot. In this part is available 750KB memory for user, just only for configuration file for example.
RAM is a part of memory, which is after reboot deleted. In this part is available 50MB memory for user, for copying the new firmware for example.

Example list from ram

```
metel@192.168.6.13# dir nvm
  Filename                        Size

  backup                          1486
Usage 20%, 768000 bytes free, 962560 bytes total.
```

DISABLE

disable	Disable privileged commands

EXIT

exit	Return to the previous level

EXPORT-HELP

export-help	View help of all commands

HELP

help	Access to the help

Example:

```
metel@10.92.0.3> help
Help can be opened by entering a question mark '?'.
If nothing matches (wrong command), the output will be empty.

The METEL devices provide two styles of help:
1. A complete help is available when you enter the entire command argument (for example, 'config
?').
In that case, help will provide descriptions for each available option.

2. When you enter an abbreviated argument, partial assistance is offered to display all argument
that match your input.
For example, typing 'config int ?' will list any possible completions that begin with 'int'.
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
For further help, we recommend visiting https://www.metel.eu/solutions/cli
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

REBOOT

reboot now It will perform a restart of the device

Argument: 'now', or 'timeout 0-999' (seconds, 0 = stop)

Example reboot

```
metel@10.93.0.3# reboot now
restarting...
```

Example set reboot after 20s

```
metel@10.93.0.3# reboot timeout 20
```

Example stop rebooting if was before start in timeout and not start rebooting yet

```
metel@10.93.0.3# reboot timeout 0
```

RMFILE

Remove a file from nvm and ram

nvm Remove a file from NVM (non-volatile memory)
ram Remove a file from RAM (volatile memory)

Example remove file with name zaloha from ram

```
metel@10.93.0.3# rmfile ram zaloha
rm: remove '/tmp/cif/ram/zaloha'? y
```

VIEW

View information about the running system

BOOTVAR

bootvar View boot information

Active image is actual running image.
An inactive image is an image that will be loaded after a switch reboot, i.e. the firmware upgrade has been completed, but the switch has not yet been restarted.
Example using ***bootvar***

```
metel@192.168.6.13# view bootvar
Active-image: --
  Version 3.1851.15742
Inactive-image: --
  Version 3.1852.15742
```

BOOT-CONFIG

boot-config View boot configuration

Example using ***boot-config***

```
metel@10.92.0.3# view boot-config
#SW version 2.1802.15564
description "METEL s. r. o."
ip addr 10.92.0.3
ip mask 255.0.0.0
ip gate 10.1.0.1
ip vlan-pri 7
user-add metel hash metel
line usb
  banner "Default banner for metel CLI"
  authentication method1 local
  exit
line ssh
  banner "Default banner for metel CLI"
  authentication method1 local
  exit
authorization all method1 permit
port P1
  vlan-mode disabled
  exit
port P2
  vlan-mode disabled
  exit
port P3
  vlan-mode disabled
  exit
port G1
  vlan-mode disabled
  exit
port G2
  vlan-mode disabled
  exit
vlan 1
  member-tagged CPU
  member-untagged P1
  member-untagged P2
  member-untagged P3
  member-untagged G1
  member-untagged G2
  exit
topology mode lan-ring
ring R1
  ring-enable
  ring-master
  exit
sntp server2 195.113.144.201
end
```

CLOCK

clock View current system time and date

Example

```
metel@10.92.0.3# view clock
*05:37:19 UTC Thu Nov 14 2024
```

DIFF

diff Compare boot configuration with running configuration

Example if boot and running configuration is different

```
metel@10.92.0.3# view diff
boot config differs from current running config
```

Example if boot and running configuration is same

```
metel@10.93.0.3# view diff
boot-config = running-config
```

DOT1X

View DOT1X settings

authenticator	View Authenticator status
supplicant	View Supplicant status

AUTHENTICATOR

View authenticator settings

state	View authenticator state
statistics	View authenticator statistics
diagnostics	View authenticator diagnostics
session	View authenticator session
port	View authenticator port

STATISTICS

FramesRx	View column Frames Rx
FramesTx	View column Frames Tx
StartFramesRx	View column Start Frames Rx
LogoffFramesRx	View column Logoff Frames Rx
RespIdFramesRx	View column Resp IdFrames Rx
RespFramesRx	View column Resp Frames Rx
ReqIdFramesTx	View column ReqId Frames Tx
ReqFramesTx	View column Req Frames Tx
InvalidFramesRx	View column Invalid Frames Rx
LengthErrorFramesRx	View column Length Error Frames Rx
LastFrameVersion	View column Last Frame Version
LastFrameSource	View column Last Frame Source

DIAGNOSTICS

EntersConn	View column Enters connecting
LogoffsWhileConn	View column Logoffs while connecting
EntersAuth	View column Enters authenticating
SuccessWhileAuth	View column Success while authenticating
TimeoutsWhileAuth	View column Timeouts while authenticating
FailWhileAuth	View column Fail while authenticating
ReauthsWhileAuthing	View column Reauths while authenticating
StartsWhileAuthing	View column Starts while authenticating
LogoffWhileAuthing	View column Logoff while authenticating
ReauthsWhileAuthed	View column Reauths while authenticated
StartsWhileAuthed	View column Starts while authenticated
LogoffWhileAuthed	View column Logoff while authenticated
BackendResponses	View column Backend responses
AccessChallenges	View column Access challenges
OtherRequests	View column Other Requests to supplicant
NonNakResponses	View column NonNak Responses from supplicant
AuthSuccesses	View column Auth Successes
AuthFails	View column Auth Fails

PORT

List of available ports in the switch.

Example

```
metel@192.168.6.13# view dot1x authenticator port P3
Authenticator port status: P3
  Backend: Initialize
  State: Initialize
  Auth: Authorized
  Frames Rx: 0
  Frames Tx: 0
  Start Frames Rx: 0
  Logoff Frames Rx: 0
  Resp IdFrames Rx: 0
  Resp Frames Rx: 0
  ReqId Frames Tx: 0
  Req Frames Tx: 0
  Invalid Frames Rx: 0
  Length Error Frames Rx: 0
  Last Frame Version: 0
  Last Frame Source: 00:00:00:00:00:00
  Enters connecting: 0
  Logoffs while connecting: 0
  Enters authenticating: 0
  Success while authenticating: 0
  Timeouts while authenticating: 0
  Fail while authenticating: 0
  Reauths while authenticating: 0
  Starts while authenticating: 0
  Logoff while authenticating: 0
  Reauths while authenticated: 0
  Starts while authenticated: 0
  Logoff while authenticated: 0
  Backend responses: 0
  Access challenges: 0
  Other Requests to supplicant: 0
  NonNak Responses from supplicant: 0
  Auth Successes: 0
  Auth Fails: 0
  Duration: 0:0:00:00.00
  Termination: Not Terminated Yet
  Username:
```

SUPPLICANT

View supplicant settings

state	View supplicant state
statistics	View supplicant statistics
port	View supplicant port

STATISTICS

FramesRx	View column Frames Rx
FramesTx	View column Frames Tx
StartFramesTx	View column Start Frames Tx
LogoffFramesTx	View column Logoff Frames Tx
RespIdFramesTx	View column Resp IdFrames Tx
RespFramesTx	View column Resp Frames Tx
ReqIdFramesRx	View column ReqId Frames Rx
ReqFramesRx	View column Req Frames Rx
InvalidFramesRx	View column Invalid Frames Rx
LengthErrorFramesRx	View column Length Error Frames Rx
LastFrameVersion	View column Last Frame Version
LastFrameSource	View column Last Frame Source

PORT

List of available ports in the switch.

Example

```
metel@192.168.6.13# view dot1x supplicant port P3
Supplicant port status: P3
  Backend: Initialize
  State: Disconnected
  Auth: Unauthorized
  Frames Rx: 0
  Frames Tx: 0
  Start Frames Tx: 0
  Logoff Frames Tx: 0
  Resp IdFrames Tx: 0
  Resp Frames Tx: 0
  ReqId Frames Rx: 0
  Req Frames Rx: 0
  Invalid Frames Rx: 0
  Length Error Frames Rx: 0
  Last Frame Version: 0
  Last Frame Source: 00:00:00:00:00:00
```

PORTS

alias	View alias (description) of ports
errorCounters	View error counters for ports
summary	View summary of ports
stats	View statistics for ports
status	View status of all device ports

Example showing description(alias) on the ports

```
metel@10.92.0.3# view ports alias
 Port  Description
 ----  -----------
 P1    Phone
 P2    Camera
 P3    Notebook
 G1    Root
 G2    Root
```

Example view counter of error packet

```
metel@10.92.0.3# view ports errorCounters
                                                    Unknown
 Port  Discard In  Discard Out  Error In  Error Out  Proto In
 ----  ----------  -----------  --------  ---------  --------
 P1    0           0            0         0          0
 P2    0           0            0         0          0
 P3    0           0            0         0          0
 G1    0           0            0         0          0
 G2    0           0            0         0          0
```

Example view statistic

```
metel@10.92.0.3# view ports stats
       Total In  Total Out  Brdcst In  Brdcst Out  Multi In  Multi Out  Uni In    Uni Out
 Port  [Byte/s]  [Byte/s]   [Pkts/s]   [Pkts/s]    [Pkts/s]  [Pkts/s]   [Pkts/s]  [Pkts/s]
 ----  --------  ---------  ---------  ----------  --------  ---------  --------  --------
 P1    0         0          0          0           0         0          0         0
 P2    0         0          0          0           0         0          0         0
 P3    192       0          2          0           1         0          0         0
 G1    0         0          0          0           0         0          0         0
 G2    0         0          0          0           0         0          0         0
```

Example view ports status

```
metel@10.92.0.3# view ports status
 Port  Name      Status      Vlan  Duplex  Speed  Mdix  AN done
 ----  --------  ----------  ----  ------  -----  ----  ---------
 P1    Phone     notconnect  1     --      --     --    --
 P2    Camera    notconnect  1     --      --     --    --
 P3    Notebook  connected   1     Full    100    MDIX  completed
 G1    Root      notconnect  1     --      --     --    --
 G2    Root      --          1     --      --     --    --
```

INPUT

input View digital inputs

Example view status

```
metel@192.168.6.13# view input
 Index  State  Label    Negation  Min. Pulse Duration
 -----  -----  -------  --------  -------------------
 IN1    LOW    Input 1  disable   0
 IN2    HIGH   tamper   disable   500
```

IP

View information about network settings

ip View information about network settings

Example

```
metel@10.92.0.3# view ip
  IP: 10.92.0.3
  Mask: 255.0.0.0
  Gateway: 10.1.0.1

  DHCP client: disable
  ICMP echo: enable

  MGMT: enable
  MGMT VLAN: disable
  MGMT VLAN ID: 1
  MGMT VLAN Priority: 7
```

LOG

log View log contents
  count Count all events
  list List all events

The table with all logs divided to priorioty will be available at www.metel.eu.
Total 20MB in memory, which is deleted after reboot the switch.
0-7: 1MB reserved for each level.
8: mix of all levels, 1MB.

Supported logs

Port link state
PoE state
FW state
System - Booting
System - Booted up
User - authentication and accounting

Note:

All log(s) are sent to ***SYSLOG*** server, if it is configured and are divided to priority.

Priority of logs
0 = Emergency
1 = Alert
2 = Critical
3 = Error
4 = Warning
5 = Notice
6 = Informational
7 = Debug

COUNT

count Count all events

Example

```
metel@192.168.6.13# view log count
Total emergency event(s): 0
Total alert event(s):     0
Total critical event(s):  0
Total error event(s):     0
Total warning event(s):   0
Total notice event(s):    2
Total info event(s):      24
Total debug event(s):     0
Total summary event(s):   26
```

LIST

emergency List only emergency severity
alert List only alert severity
critical List only critical severity
error List only error severity
warning List only warning severity
notice List only notice severity
info List only info severity
debug List only debug severity

Example list all events

```
metel@192.168.6.13#view log list
2024-12-11T14:13:16.292511 5-SYST: FW ver. 3.1846.15742.rc starting
2024-12-11T14:13:23.521613 6-PORT: Port P1 link down
2024-12-11T14:13:23.692418 6-PORT: Port P2 link down
2024-12-11T14:13:23.822205 6-PORT: Port P3 link down
2024-12-11T14:13:23.953214 6-PORT: Port P4 link down
2024-12-11T14:13:24.157589 6-PORT: Port P5 link down
2024-12-11T14:13:24.317518 6-PORT: Port G1 link down
2024-12-11T14:13:24.394288 6-PORT: Port G2 link unsupported
2024-12-11T14:13:24.955713 5-SYST: FW ver. 3.1846.15742.rc started
2024-12-11T14:13:26.109526 6-PORT: Port P2 link up
2024-12-11T14:13:26.180577 6-PORT: Port G1 link up
2024-12-11T14:13:26.669491 6-PORT: Port P5 link up
2024-12-11T14:13:30.134086 6-LINE: Terminal started
2024-12-11T14:13:30.808524 6-LINE: Executing 'view running-config'
2024-12-11T14:13:44.122500 6-PORT: PoE on port P1 inactive
2024-12-11T14:13:45.662262 6-PORT: PoE on port P2 inactive
2024-12-11T14:13:47.205056 6-PORT: PoE on port P3 inactive
2024-12-11T14:13:48.715265 6-PORT: PoE on port P4 inactive
2024-12-11T14:37:38.702068 6-LINE: User 'metel' succesfully verified
2024-12-11T14:37:39.173014 6-LINE: User 'metel' connected (ssh / 192.168.6.29)
2024-12-11T14:37:39.822805 6-LINE: Terminal started
2024-12-11T14:37:45.724588 6-LINE: Executing 'configure'
2024-12-11T14:38:34.875215 6-LINE: Executing 'syslog server1 host'
```

Example list all notice event(s)

```
metel@192.168.6.13# view log list notice
2024-12-11T14:13:16.292511 5-SYST: FW ver. 3.1846.15742.rc starting
2024-12-11T14:13:24.955713 5-SYST: FW ver. 3.1846.15742.rc started
```

MAC

address-table View MAC status

Example

```
metel@10.92.0.3# view mac address-table
  Aging time is 15 sec

    Vlan          Mac Address         Port       Type
------------ -------------------- ---------- ----------
       1       00:23:36:5C:00:03      CPU        self
       1       00:23:36:37:00:6c       P3      dynamic
       1       00:23:36:46:00:42       P3      dynamic
       1       b8:69:f4:67:90:24       P3      dynamic
       1       b8:69:f4:67:90:25       P3      dynamic
       1       e4:e7:49:42:84:03       P3      dynamic
```

PoE

View PoE power status

consumption View PoE power consumption
status View PoE power status
version View PoE running SW version

Example view poer consumption

```
metel@10.93.0.3# view poe consumption
Total Consumed Power[W]: 5

 Port  Power[W]  Power Limit[W]  Current[A]  Voltage[V]
 ----  --------  --------------  ----------  ----------
 P1    0.0       30.0            0.0         0.0
 P2    0.0       30.0            0.0         0.0
 P3    0.0       30.0            0.0         0.0
 P4    4.8       30.0            0.1         49.5
```

Example view PoE status

```
metel@10.93.0.3# view poe status
 Unit  Consumed Power[W]
 ----  -----------------
 1     2

 Port  State  Status  Status Value  Admin Limit[W]  Temp (C)
 ----  -----  ------  ------------  --------------  --------
 P1    Never  Off     26            30              42.0
 P2    Never  Off     26            30              42.0
 P3    Never  Off     26            30              42.0
 P4    Auto   On      2             30              42.0
```

Example view PoE version

```
metel@10.93.0.3# view poe version
SW version: 27.2.2.3
IEEE Standard: 802.3af/at/PoH
```

POWER

supply View supply power status

Example

```
metel@10.93.0.3# view power supply
            Voltage[V]
 ---------  ----------
 Primary    49.6
 Secondary  0.0
```

RADIUS

View RADIUS configuration

server1	View RADIUS server 1 settings
server2	View RADIUS server 2 settings

RING

View LAN-RING protocol status

status	View LAN-RING protocol status

Example

```
metel@10.93.0.3# view ring status
 Name  ID  Enable  Role    Status      Version
 ----  --  ------  ------  ----------  -------
 R1    0   1       master  masterFail  2
```

RUNNING-CONFIG

running-config	View current (running) configuration

Example

```
metel@10.93.0.3# view running-config
#SW version 2.1802.15564
description "METEL s. r. o."
ip addr 10.93.0.3
ip mask 255.0.0.0
ip gate 10.1.0.1
ip vlan-enable
ip vlan-id 100
ip vlan-pri 7
user-add metel hash metel
line usb
  banner "Default banner for metel CLI"
  authentication method1 local
  exit
line ssh
  banner "Default banner for metel CLI"
  authentication method1 local
  exit
authorization all method1 permit
port P1
  poe-power-limit 30000
  vlan-default-id 100
  exit
port P2
  poe-power-limit 30000
  vlan-default-id 100
  exit
port P3
  poe-power-limit 30000
  vlan-default-id 100
  exit
port P4
  poe-enable
  poe-power-limit 30000
  vlan-default-id 100
  exit
port P5
  vlan-default-id 100
  exit
port G1
  vlan-default-id 100
  exit
port G2
  vlan-default-id 100
  exit
vlan 100
  member-tagged CPU
  member-untagged P1
  member-untagged P2
  member-untagged P3
  member-untagged P4
  member-untagged P5
  member-untagged G1
  member-untagged G2
  exit
topology mode lan-ring
ring R1
  ring-enable
  ring-master
  exit
sntp server2 195.113.144.201
end
```

TOPOLOGY

topology View selected topology protocol

Example

```
metel@10.93.0.3# view topology
Active topology protocol: lanRing2
```

SYSTEM

system View basic system information

Example

```
metel@10.93.0.3# view system
  Product: 2G-2S.1.4.G-BOX-PoE-PP (HiPoE)
  Serial number: 20240614002
  Firmware: 2.1802.-15564
  MAC: 00:23:36:5d:00:03
  Description: METEL s. r. o.
  Uptime: 0d 0h 35m 50s
```

SYSLOG

syslog View SYSLOG configuration

Example

```
metel@192.168.6.13# view syslog
 Server   Enable  Ip/Host
 -------  ------  ------------
 server1  enable  192.168.6.11
 server2  enable  192.168.6.29
```

TACACS

tacacs View TACACS configuration

Example

```
metel@10.93.0.3# view tacacs
 Server   Enable   Ip/Host  Key  Timeout
 -------  -------  -------  ---  -------
 server1  disable                10
 server2  disable                10
```

VERSION

version View hardware and firmware details

Example

```
metel@10.93.0.3# view version
SW version 2.1802.15564
HW version 2G-2S.1.4.G-BOX-PoE-PP (HiPoE)
```

VLAN

vlan View VLAN configuration and status

Example

```
metel@10.93.0.3# view vlan

VLAN Name                            Status    Ports
---- ------------------------------- --------- -------------------------------
100  VLAN0100                        active    CPU(T), P1(U), P2(U), P3(U)
                                               P4(U), P5(U), G1(U), G2(U)

Note
(T) - Member tagged
(U) - Member untagged
(M) - Member unmodified
If the port is not in list is NOT MEMBER
```

HELP

Access to the help

Example:

```
metel@10.92.0.3> help
Help can be opened by entering a question mark '?'.
If nothing matches (wrong command), the output will be empty.

The METEL devices provide two styles of help:
1. A complete help is available when you enter the entire command argument (for example, 'config
?').
In that case, help will provide descriptions for each available option.

2. When you enter an abbreviated argument, partial assistance is offered to display all argument
that match your input.
For example, typing 'config int ?' will list any possible completions that begin with 'int'.
- - - - - - - - - - - - - - - - - - - - - - - - - - -
For further help, we recommend visiting https://www.metel.eu/solutions/cli
- - - - - - - - - - - - - - - - - - - - - - - - - - -
```

LOGOUT

Close the terminal