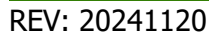


CLI in Metel Switches

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is available for all switches G series.

You can start a CLI session through an SSH connection via network or locally via USB. These connections could be disabled in the [configuration](#). By default, local users are enabled. It is possible to use the tacacs server for user authentication and authorization.

```
user: metel
```

```
password: metel
```

```
login as: metel
```

Keyboard-interactive authentication prompts from server:

| Password:

End of keyboard-interactive prompts from server



SECURITY & AUTOMATION

Default credential to CLI via USB

Service: metel (not possible change)

```
user: metel
```

```
password: metel
```

Service: metel

```
metel login: metel
```

Password:



SECURITY & AUTOMATION

Default password for command *enable*

In the factory settings command **enable** is without password. The password is possible set-in menu **Enable-password**.

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.

Device list										
	IP	Product	Description	Serial	Firmware	SNMP	Loaded	Virtual	Running -> Boot	Pending Reboot
1	10.92.0.3	2G-2S.0.3.GC-BOX	METEL s. r. o.	20240612004	2.1802.15564.rc	v3	☒	☐	☐	- :-
2	10.93.0.3	2G-2S.1.4.G-BOX-PoE-PP (HiPoE)	METEL s. r. o.	20240614002	2.1802.15564.rc	v3	☒	☐	☒	- :-

 Quick config

 Copy config

 Download

 Copy config

 Download

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 2.1814.15599.rc

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 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>

Commands for "USER MODE"

Command	Description
<code>enable</code>	After password authentication enable privileged mode
<code>help</code>	Access to the help
<code>logout</code>	Log out of the system

Main commands for "PRIVILIGED MODE"

Command	Description
<code>boot</code>	Set system boot parameters, upgrade FW

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

Main commands for "enable-view"

Command	Description
<i>bootvar</i>	View boot information
<i>boot-config</i>	View boot configuration
<i>clock</i>	View current system time and date
<i>diff</i>	Compare boot configuration with running configuration
<i>ports</i>	View information about ports
<i>ip</i>	View information about network settings
<i>mac</i>	View MAC status
<i>poe</i>	View PoE power status
<i>power</i>	View power supply information
<i>ring</i>	View LAN-RING protocol status
<i>running-config</i>	View current (running) configuration
<i>sntp</i>	View SNTP
<i>topology</i>	View topology configuration
<i>system</i>	View basic system information
<i>tacacs</i>	View TACACS configuration
<i>version</i>	View hardware and firmware details
<i>vlan</i>	View VLAN configuration and status

Main commands for "enable-configure"

Command	Description
<i>accounting</i>	Accounting configurations parameters
<i>authorization</i>	Authorization configurations parameters
<i>description</i>	Set system description
<i>enable-password</i>	Set enable password
<i>end</i>	Return to the previous level
<i>exit</i>	Return to the previous level
<i>port</i>	Port configuration
<i>ring</i>	Set METEL LAN-RING protocol
<i>line</i>	Configure line (USB/SSH) settings
<i>snmp</i>	Configure SNMP settings
<i>sntp</i>	Configure SNTP
<i>ip</i>	Configure IP protocol settings
<i>mirror</i>	Data src and dst port mirroring settings
<i>tacacs</i>	Configure TACACS+
<i>topology</i>	Configure topology protocol
<i>user-add</i>	Add a user. Use: user-add USERNAME sha-512 PASSWORD
<i>user-del</i>	Delete/Remove the user by USERNAME
<i>vlan</i>	VLAN-specific commands
<i>import</i>	Import configuration from file, TBD

ENABLE

After password authentication enable privileged mode

Example

```
metel@10.92.0.3> enable
```

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 directly in the tmp file

```
metel@10.93.0.3(config)# boot upgrade 2.1802.15564_secure.tar  
Upgrade file /tmp/2.1802.15564_secure.tar  
.....
```

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

```
metel@10.93.0.3# reboot  
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
```

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
description	Set port description
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
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
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 VLAN initial 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 identifier) 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 must enter values 0-7 in the field, where the value 7 is 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 to avoid overwriting identifiers to the one VLAN.

ATU-EGRESS-MODE

<i>all</i>	All
<i>no-unknown-unicast</i>	No unknown unicast
<i>no-unknown-multicast</i>	No unknown multicast
<i>no-unknown-DA</i>	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

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

VLAN-DEFAULT-PRI

<i>end</i>	Return to the previous level
<i>default</i>	Default priority
<i>tag-only</i>	Tag-only mode
<i>ip-only</i>	IP-only mode
<i>iptag-comb</i>	Combined IP and tag mode
<i>iptag-tag</i>	IP-tag mode

VLAN-MODE

<i>fallback</i>	Enable fallback mode
<i>check</i>	Enable check mode
<i>secure</i>	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**

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
ring-enable	Enable METEL LAN-RING protocol
ring-disable	Disable METEL LAN-RING protocol
ring-id	Set Ring ID
ring-master	Ring Master (v1) / ATU clear enable (v2)
ring-slave	Ring Slave (v1) / ATU clear disable (v2)
ring-version	Set the LAN-RING version
v1	Ring version 1
v2	Ring version 2

RING-ID

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)# ring-id 6
```

RING-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)# ring-version v2
```

RING-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.

RING-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.

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
enable	Enable terminal
end	Return to the previous level
exit	Return to the previous level

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

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
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
```

SNTP

Configure SNTP

disable	Disable SNTP
enable	Enable SNTP
server1	Configure primary SNTP server
server2	Configure secondary SNTP server
server3	Configure tertiary SNTP server
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
```

IP

Configure IP protocol settings

addr-mask	Set IP address and mask in slash format <IP>/<MASKNUMBER>
------------------	---

addr	Set IP address
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
```

TACACS

Configure TACACS+

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

SERVER1

TACACS+ server 1 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 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

<i>none</i>	No topology protocol
<i>lan-ring</i>	Select LAN-RING mode
<i>rstp-m</i>	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

<i>priority</i>	Set RSTP-M priority
<i>hello-time</i>	Set RSTP-M hello time
<i>max-age</i>	Set RSTP-M max age
<i>forward-delay</i>	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 $\leq$ (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 $\leq$ 2x(Forward Delay - 1)

Max Age $\geq$ 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 $\geq$ (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/QDyXKVS5VwVtHkY01PxQuAEjViJ65WaRU7kWhk110CkQtms8Appa
```

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
```

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

If a new VLAN ID is created, the changes are applied only after exiting the menu (command **end**, **exit** or CTRL+D) or by the command **enable**.

VLAN ID X

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
```

IMPORT

import Import configuration from file
TBD

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.

RAM is a part of memory, which is after reboot deleted.

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 from sftp 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.
```

NVM

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

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

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

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)

<i>ram</i>	Copy running-config to RAM (volatile memory)
<i>sftp</i>	Copy running config to SFTP server
<i>tftp</i>	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

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**

DIR

List files from local storage

<i>nvm</i>	List files from NVM (non-volatile memory)
<i>ram</i>	List files from RAM (volatile memory)

Example list from ram
metel@10.93.0.3# **dir ram**

Filename	Size
zaloha	1038

DISABLE

<i>disable</i>	Disable privileged commands
----------------	-----------------------------

EXIT

<i>exit</i>	Return to the previous level
-------------	------------------------------

EXPORT-HELP

<i>export-help</i>	View help of all commands
--------------------	---------------------------

HELP

<i>help</i>	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

Example using **bootvar**

```
metel@10.92.0.3# view bootvar
Active-image: --
    Version 2.1802.15564
Inactive-image: --
    Version: --
```

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
snmp 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
```

PORTS

description View descriptions 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 description
```

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
```

Port	Discard In	Discard Out	Error In	Error Out	Unknown 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
```

Port	Total In [Byte/s]	Total Out [Byte/s]	Brdcst In [Pkts/s]	Brdcst Out [Pkts/s]	Multi In [Pkts/s]	Multi Out [Pkts/s]	Uni In [Pkts/s]	Uni Out [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	--	--	--	--

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
```

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
```

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
snmp server2 195.113.144.201
end
```

SNTP

View SNTP

configuration

SNTP configuration

status

SNTP status

Example view SNTP configuration

```
metel@10.93.0.3# view sntp configuration
```

SNTP destination port : 123 .

No MD5 authentication keys.

Unicast Clients: Disabled

Unicast Clients Polling: Disabled

```
Server          : 195.113.144.201
  Polling        : Enabled
  Encryption Key : Disabled
```

```
Server          : 195.113.144.201
  Polling        : Enabled
  Encryption Key : Disabled
```

Broadcast Clients: disabled

Anycast Clients: disabled

No Broadcast Interfaces.

Source IPv4 interface:

Source IPv4 interface:

Example view SNTP status

```
metel@10.93.0.3# view sntp status
```

Clock is unsynchronized

Unicast servers:

```
Server          : 195.113.144.201
  Source         : Static
  Stratum        : 255
  Status         : down
  Last Response  : 00:00:00.0 Jan 1 1900
  Offset         : 0.0000000 mSec
  Delay          : 0 mSec
```

```
Server          : 195.113.144.201
  Source         : Static
  Stratum        : 255
  Status         : down
  Last Response  : 00:00:00.0 Jan 1 1900
  Offset         : 0.0000000 mSec
  Delay          : 0 mSec
```

Anycast server:

Broadcast:

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
```

TACACS

tacacs View TACACS configuration

Example

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

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'.

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For further help, we recommend visiting <https://www.metel.eu/solutions/cli>

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LOGOUT

Close the terminal
