



Custom Integration Solutions

# CIS-CRS112-8P MANAGED L2-L3 NETWORK SWITCH PRODUCT MANUAL



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## 1 - Welcome to Custom Integration Solutions™

This manual details the installation and setup of the hardware and the managed interface of your CIS-CR5112-8P network switch

## 2 - Package Contents

This manual details the installation and setup of the hardware and the managed interface of your CIS-CR5112-8P network switch



Switch (1)



Plug (1)



Rack Ears (2)

## 3 - Overview

The CIS-CR5112-8P is a network switch with eight gigabit ethernet ports and four SFP+ ports.

It is already configured, with all ports switched together. We recommend you to set up a password to secure your device.

This unit is compatible with 1.25G SFP and 10G SFP+ modules. The device is capable of powering other devices through PoE.

### Powering

The unit is powered via PoE power, however there is a secondary DC jack on the back of the enclosure that supports 48-57V power supply (not included, can be purchased separately.)

### PoE output

This device can supply PoE powering to external devices from its ethernet ports. The output voltage will be selected automatically, depending on what kind of voltage the connected device requires. The device can power both 802.3af/at devices and devices that accept passive PoE power. (if 48-57 V DC input is used)

If necessary, the output voltage can be switched manually.

By default the PoE mode is set to auto, it will not damage non PoE devices and will auto-detect devices with PoE support and the needed voltage. Once a PoE device is detected, it will be powered and the PoE LEDs will turn on.

CIS-CR5112-8P can power 802.3af/at devices if 48-57V DC input is used (unit will automatically detect and provide correct power to devices). Max Current is 1 A per port if input voltage is 18-28 V, 450 mA if 48-57 V. Total limit is 2.8A@24V and 1.4A@48-57V

### Configuration

This device is not preconfigured other than an IP address on the master ethernet port. You can connect from any port, as all ports are switched together by default.

Initial connection must be done via the ethernet cable, using a web browser. The switch has DHCP enabled by default and will acquire an IP from your router. Connect to any port, with the username **cis** and password **integration**.

For recovery purposes, it is possible boot the device from network, see Buttons and Jumpers.

## Extension slots and ports

- 8 gigabit ethernet ports (With Auto MDI/X so you can use either straight or cross-over cables for connecting to other network devices).
- 4 SFP+ cages, which accept both 1.25 Gb SFP and 10 Gb SFP+ modules.
- RJ45 serial port.

## LED indicators

- PWR LED is lit when the router is powered on.
- The USR LED can be configured from RouterOS.
- Top Row LEDs indicate PoE out status. Green LED indicates that the respective port uses low voltage, a red LED indicates high voltage. Flashing single green LED: problem to start low voltage device.
- Flashing single red LED: problem with high voltage device.
- Bottom Row LEDs indicate the individual ethernet, SFP port activity.

## Buttons and Jumpers

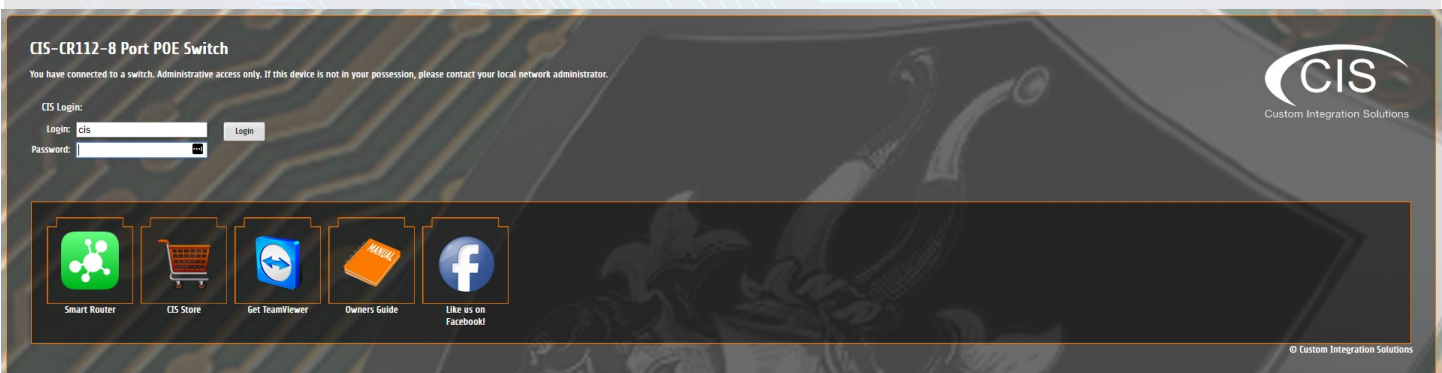
Reset button: Hold this button during boot time until the USR LED light starts flashing, (5 seconds) then release the button to reset to the default CIS configuration.

## PoE

The device consumes up to 44 W leaving guaranteed 450 W (3x150 W per every 8 Ethernet ports) to power your PoE devices. Each port can provide up to 30 W with high voltage, and 26 W with low voltage power output.

## 4 - Interface Access

1. Connect your laptop to any remaining port on the front of the CIS Switch. Be sure that your computer is configured to DHCP mode.
2. Integrators may click the free TeamViewer link and contact CIS for remote assistance.
3. Discover the IP of the CIS Switch in the DHCP leases of your CIS Router. Open a web browser and enter the IP address in the address bar of your web browser.



CIS-CR112-8 Port POE Switch

You have connected to a switch. Administrative access only. If this device is not in your possession, please contact your local network administrator.

CIS Login:

Login:  Login

Password:

Smart Router | CIS Store | Get TeamViewer | Owners Guide | Like us on Facebook

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## 5 - Status Page

The status page provides a glance at some basic information. There is a CIS Support Address should you require assistance. Router Identity will show you which switch you are accessing on your network, uptime, and load on the CPU.

Power cycle will allow you to power off, and then on again any specific port. You can adjust the interval of the power cycle.



The screenshot shows the RouterOS v6.42.2 (stable) status page. The left sidebar contains navigation options: Interfaces, CIS Support, Bridge, IP, System, Tools, Undo, Redo, and Hide Passwords. The main content area displays the following information:

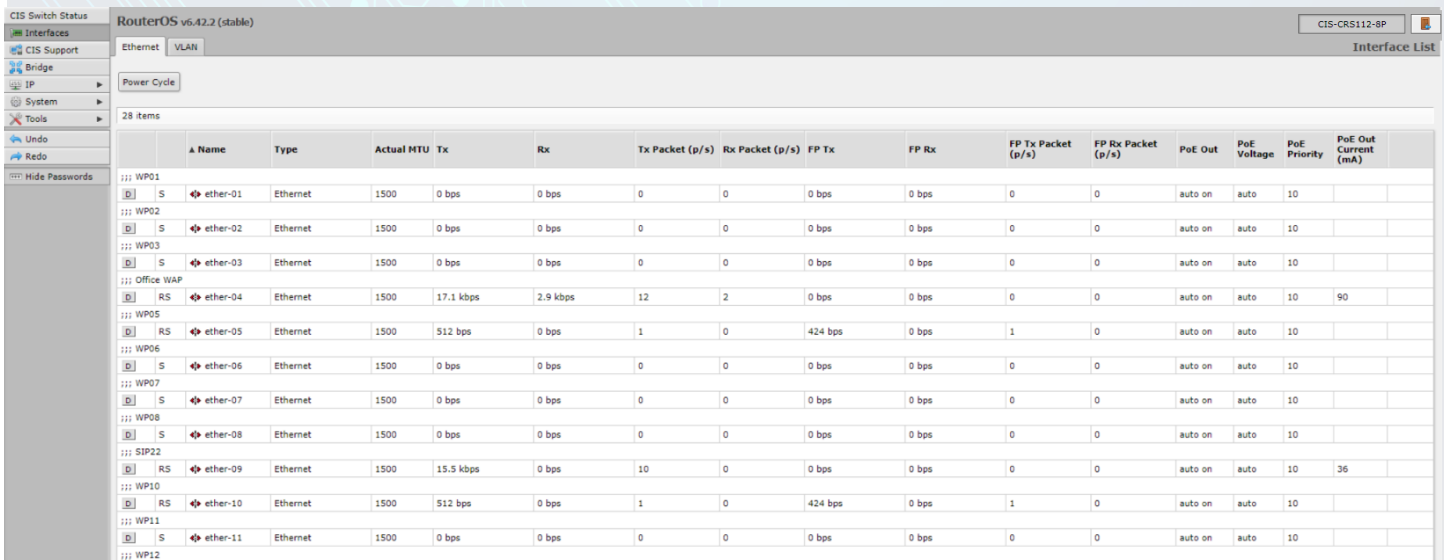
- RouterOS v6.42.2 (stable)**
- ISP**
- ISP Public Address**
- CIS Switch**
- CIS Switch Identity:** CIS\_Rack
- CIS Switch Uptime:** 76 20:46:44
- CIS Switch Address:** 10.1.1.2/24
- CPU Load:** 8 %
- Total Memory:** 503.3 MB
- Free Memory:** 466.2 MB
- CIS Platinum Support**
- CIS Support Address:** FOR INTEGRATOR PLATINUM SUPPORT PRESENT YOUR CIS SUPPORT ADDRESS ACCESS NUMBER

On the right side, there are two graphs under the heading "Bridge Traffic":

- Packet Graph:** Shows Tx Packet (blue) and Rx Packet (purple) rates. Current Tx is 30 p/s, Rx is 23 p/s. Average Tx is 17 p/s, Rx is 19 p/s. Maximum Tx is 489 p/s, Rx is 157 p/s.
- Byte Graph:** Shows Tx (blue) and Rx (purple) rates in kbps. Current Tx is 309.1 kbps, Rx is 27.6 kbps. Average Tx is 159.4 kbps, Rx is 24.8 kbps. Maximum Tx is 5.6 Mbps, Rx is 148.3 kbps.

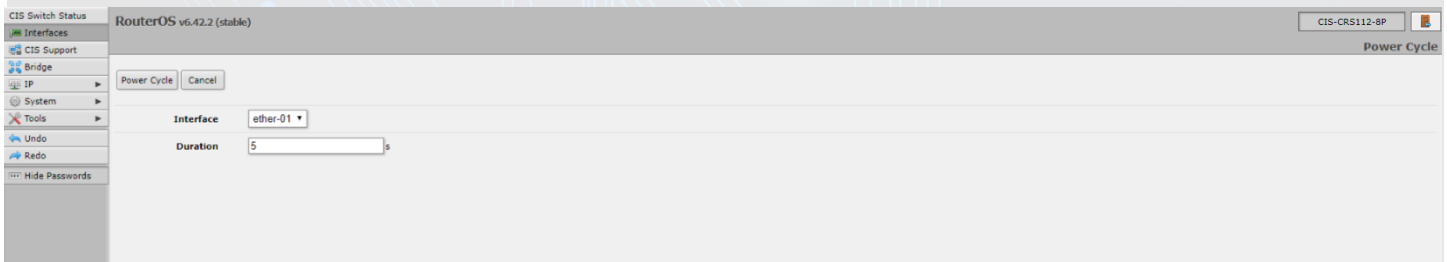
## 6 - Interfaces

Interface provide a glance at the activity on all ports. You will see status on PoE, PoE settings, PoE priority and current being drawn



The screenshot shows the RouterOS v6.42.2 (stable) Interface List page. The left sidebar is the same as in the status page. The main content area shows a table of 28 items, with columns for Name, Type, Actual MTU, Tx, Rx, Tx Packet (p/s), Rx Packet (p/s), FP Tx, FP Rx, FP Tx Packet (p/s), FP Rx Packet (p/s), PoE Out, PoE Voltage, PoE Priority, and PoE Out Current (mA).

	Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)	PoE Out	PoE Voltage	PoE Priority	PoE Out Current (mA)
WPO1	S ether-01	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
WPO2	S ether-02	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
WPO3	S ether-03	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
Office WAP	RS ether-04	Ethernet	1500	17.1 kbps	2.9 kbps	12	2	0 bps	0 bps	0	0	auto on	auto	10	90
WPO5	RS ether-05	Ethernet	1500	512 bps	0 bps	1	0	424 bps	0 bps	1	0	auto on	auto	10	
WPO6	S ether-06	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
WPO7	S ether-07	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
WPO8	S ether-08	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
SIP22	RS ether-09	Ethernet	1500	15.5 kbps	0 bps	10	0	0 bps	0 bps	0	0	auto on	auto	10	36
WPO10	RS ether-10	Ethernet	1500	512 bps	0 bps	1	0	424 bps	0 bps	1	0	auto on	auto	10	
WPO11	S ether-11	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	
WPO12	S ether-12	Ethernet	1500	0 bps	0 bps	0	0	0 bps	0 bps	0	0	auto on	auto	10	



The screenshot shows the RouterOS v6.42.2 (stable) Power Cycle dialog box. The left sidebar is the same as in the status page. The dialog has a "Power Cycle" button and a "Cancel" button. Below the buttons, there are two input fields:

- Interface:** ether-01
- Duration:** 5 s

Selecting a specific interface will provide greater detail and additional control. Specific

### PoE-Out Modes:

#### Auto-on mode

If auto-on is selected on PoE-Out interface, then port operates in this strict order:

PSE with low voltage checks for a resistance on the connected port. If detected resistance range is between (3kΩ to 26.5kΩ) power is turned on;

When power is applied, the PSE continuously checks if overload limit is not reached or short circuit detected

If the cable is unplugged, the port returns in detection state and will remain off until suitable PD is detected

#### Forced-on mode

If forced-on is selected then port operates in this strict order:

PSE disables resistance check on the port, and apply power on pins 4,5 (+) and 7,8 (-), even if no cable is attached

When power is applied, PSE still continuously checks if an overload or short circuit is not detected

After the cable is unplugged, the power still remains enabled on the port.

#### Off mode

If off mode is used, PoE-Out on the port will be turned off, no detection will take place, and interface will behave as a simple Ethernet port.

### PoE-Out limitations

It is important to check PoE-Out specification to find out hardware limitations because it can differ between models

#### PoE-Out port limitation

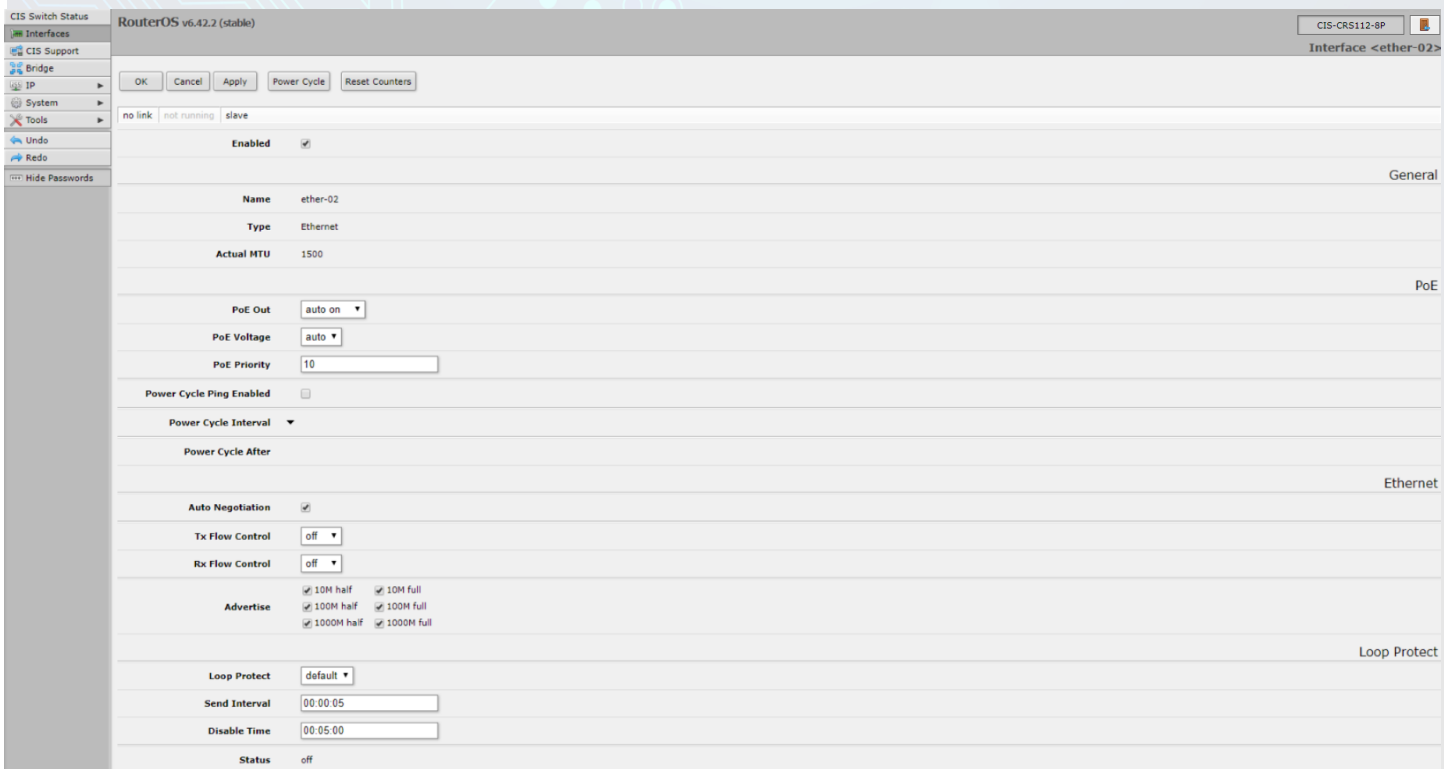
PoE-Out ports are limited with max amp values which are supported in particular voltage, usually max current will differ for low voltage devices (up to 30 V), and for high voltage devices (31 to 57 V).

#### PoE-Out total limitation

PSE has also a total PoE-Out current limitation which can't be exceeded, even if individual port limit allows it.

#### PoE Out polarity

All CIS PSE uses the same PoE-Out pin polarity Mode B 4,5 (+) and 7,8 (-), however other vendors can use opposite or Mode A pinout on PD, this would require using a special crossover cable

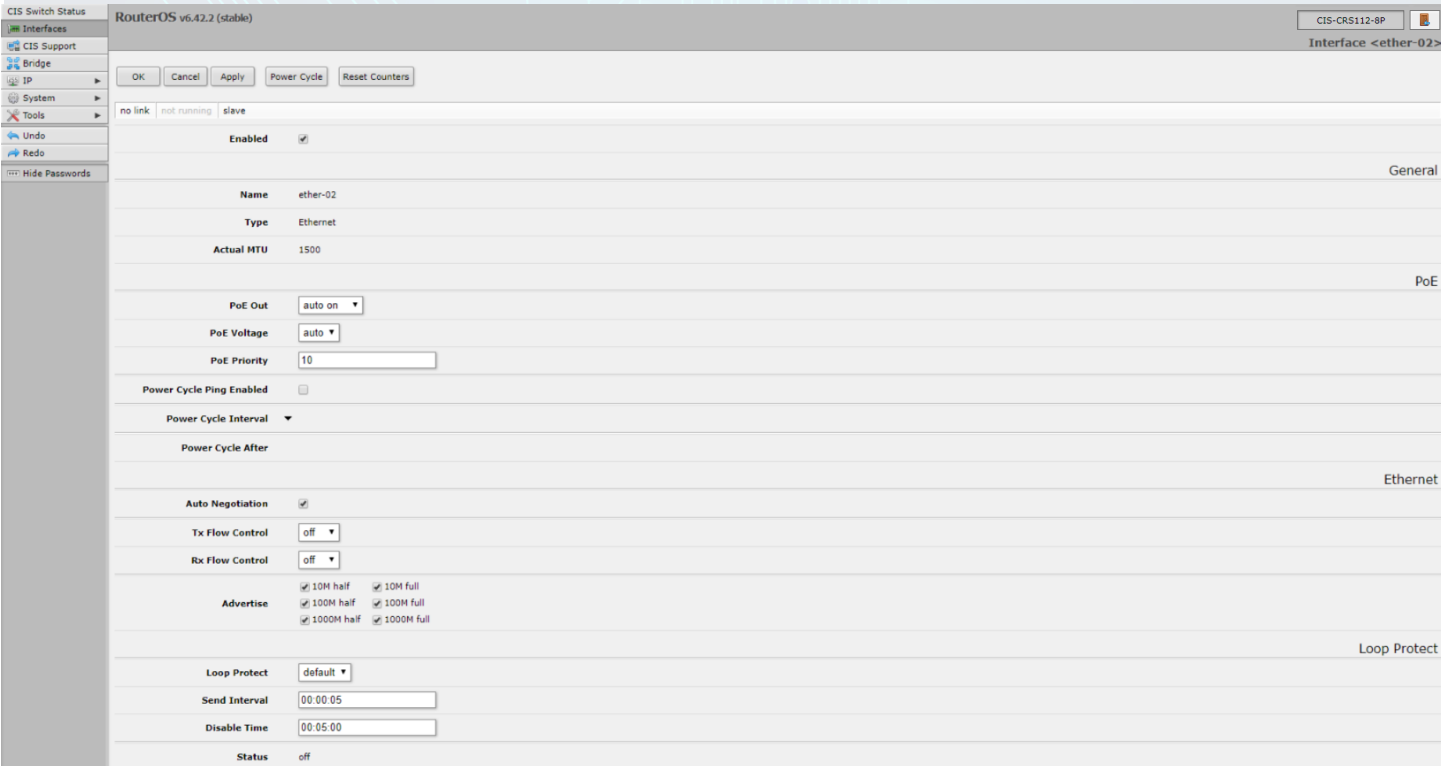


The screenshot shows the configuration page for interface ether-02 in RouterOS v6.42.2 (stable). The page is divided into several sections:

- General:** Name: ether-02, Type: Ethernet, Actual MTU: 1500.
- PoE:** PoE Out: auto on (dropdown), PoE Voltage: auto (dropdown), PoE Priority: 10 (input field), Power Cycle Ping Enabled: , Power Cycle Interval: (dropdown), Power Cycle After: (dropdown).
- Ethernet:** Auto Negotiation: , Tx Flow Control: off (dropdown), Rx Flow Control: off (dropdown), Advertise:  10M half,  10M full,  100M half,  100M full,  1000M half,  1000M full.
- Loop Protect:** Loop Protect: default (dropdown), Send Interval: 00:00:05 (input field), Disable Time: 00:05:00 (input field), Status: off.

## Loop Protect

Loop protect feature can prevent Layer2 loops by sending loop protect protocol packets and shutting down interfaces in case they receive loop protect packets originated from themselves. The feature works by checking source MAC address of received loop protect packet against MAC addresses of loop protect enabled interfaces. If the match is found, loop protect disables the interface which received the loop protect packet. Loop protect works on ethernet, vlan, eoip and eoipv6 interfaces. It supports adjusting loop protect packet sending interval and interface disable time. Configuration changes or expiration of disable time resets loop protection on interface.



## Switch LED indicators

The front of the CIS-CR112-8P has LED indicators to determine the state of connected devices.

Green colour triangle LED – PoE-Out port state is powered-on (auto or forced-on mode), PD uses low voltage.

Red colour triangle LED – PoE-Out port state is powered-on (auto or forced-on mode), PD uses high voltage (af/at or passive).

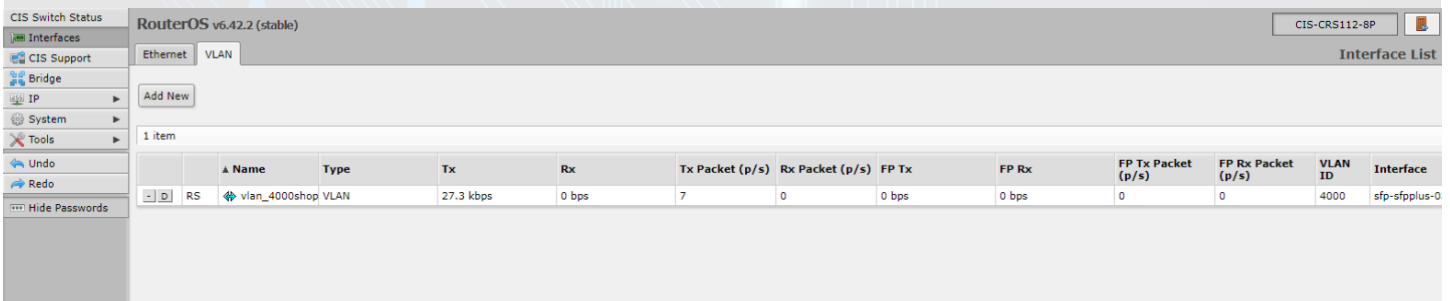
Blinking Green colour triangle LED – PoE-Out port state is short-circuit or overload

Blinking Red colour triangle LED – PoE-Out port state is short-circuit or overload

CIS- CR112-8P indicates an exceeded overall max PoE output limit. Port PoE-Out priorities will work in 3 independent sections (8 ports each) and overload will happen in any section that breach 150W consumption.

## VLAN

Add new to create a VLAN interface



	A Name	Type	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)	VLAN ID	Interface
[-]	RS	vlan_4000shop VLAN	27.3 kbps	0 bps	7	0	0 bps	0 bps	0	0	4000	sfp-sfpplus-0

## VLAN

For a complete model, router, access points and switching all require configuration for a complete model.

VLANs and additional network are available on the CIS Store.

Additional components are required for VLANs to function.

<https://www.custom-integration-solutions.com/store/cis-vlan-interface/>

<https://www.custom-integration-solutions.com/store/cis-additional-network/>



RouterOS v6.42.2 (stable) CIS-CRS112-8P New Interface

OK Cancel Apply

not running not slave

Enabled

Name

Type VLAN

VLAN ID

Interface

Use Service Tag

Last Link Down Time

Last Link Up Time

Link Downs 0

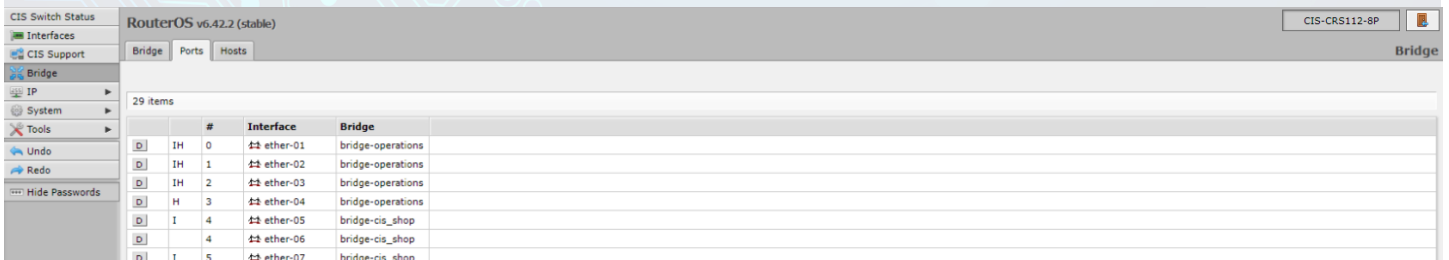
Tx/Rx Rate 0 bps / 0 bps

Tx/Rx Packet Rate 0 p/s / 0 p/s

FP Tx/Rx Rate 0 bps / 0 bps

FP Tx/Rx Packet Rate 0 p/s / 0 p/s

Once an additional network has been created a bridge interface will be selectable on Bridge Ports tab. Select the ethernet port that you would like link to your VLAN



RouterOS v6.42.2 (stable) CIS-CRS112-8P Bridge

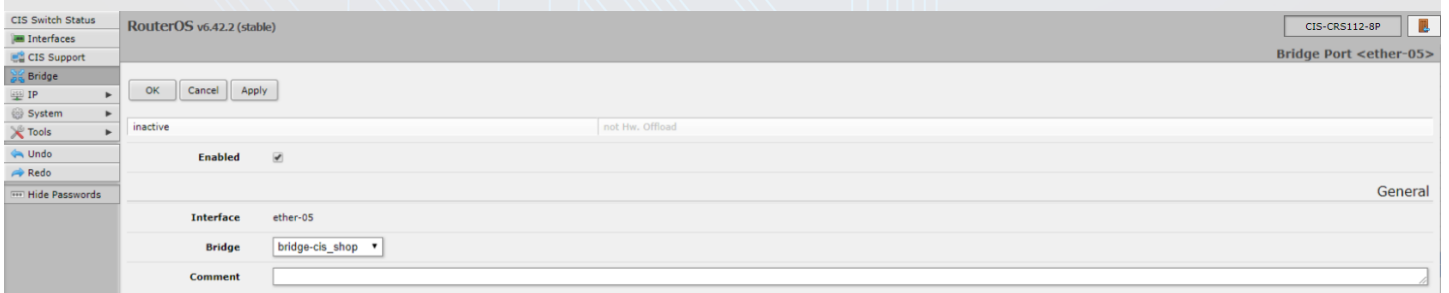
Bridge Ports Hosts

29 items

#	Interface	Bridge
0	ether-01	bridge-operations
1	ether-02	bridge-operations
2	ether-03	bridge-operations
3	ether-04	bridge-operations
4	ether-05	bridge-cis_shop
4	ether-06	bridge-cis_shop
5	ether-07	bridge-cis_shop

Select the Bridge of choice from the drop down menu. This port will now access the IP address and configuration broadcast by the router.

You may select any remaining ports to host this specific configuration.



RouterOS v6.42.2 (stable) CIS-CRS112-8P Bridge Port <ether-05>

OK Cancel Apply

inactive not Hw. Offload

Enabled

Interface ether-05

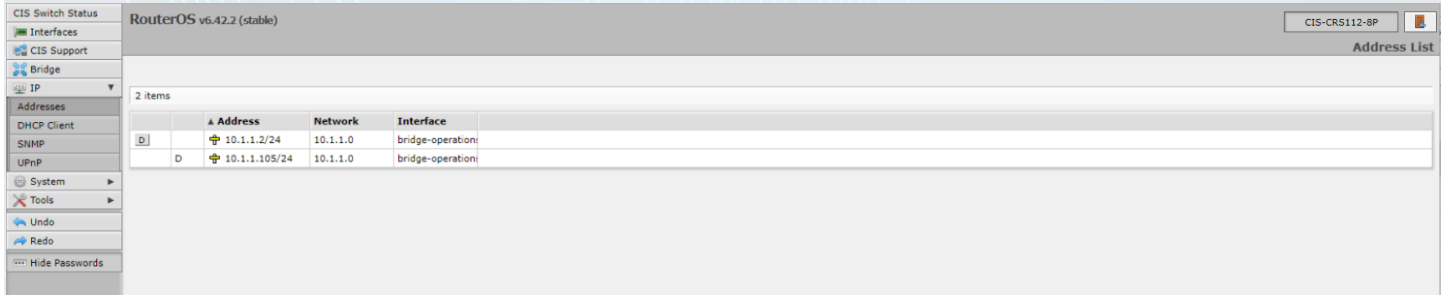
Bridge

Comment



## 7 - Addresses

The IP address is the master interface for the switch. By default the switch is set to DHCP and will acquire an IP address. In this case the switch has a dynamic IP of 10.1.1.5. We have created a disabled interface that you may set to a static address. The switch will support 172.16.1.0/24, 10.100.1.0/24, 192.168.1.0/24, and 192.168.0.0/24 networks by default. Should you have a different network address please contact CIS Services for assistance.



	Address	Network	Interface
D	10.1.1.2/24	10.1.1.0	bridge-operations
D	10.1.1.105/24	10.1.1.0	bridge-operations

To set a static IP select the disabled interface. Prior to setting a static address scan the LAN to confirm available addresses. In the address field set address that you would like the switch to be set to. Ping the switch to confirm the IP address responds. The format



not invalid

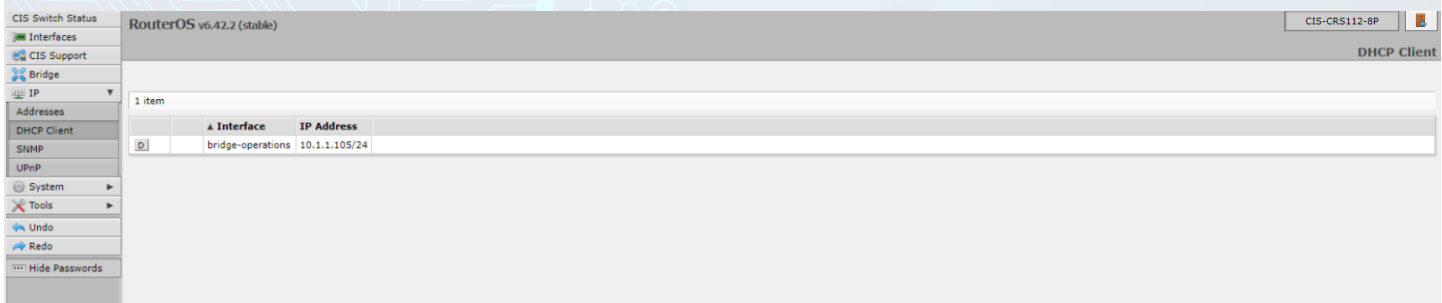
Enabled

Address 10.1.1.2/24

Network 10.1.1.0

Interface bridge-operations

DHCP Client will present you with the current IP handed out from your router to the switch. This interface can be enabled, or disabled by clicking on the "D" on the left column. Alternatively you may select to advance to the interface by clicking on the IP address.



	Interface	IP Address
D	bridge-operations	10.1.1.105/24

Confirming that you have a static IP set you may disable the DHCP client and click Apply to complete setting your switch to a static address. Should you simply need to renew the DHCP client, click renew and the IP will populate with the current IP on the switch.



Status: bound not invalid

Enabled

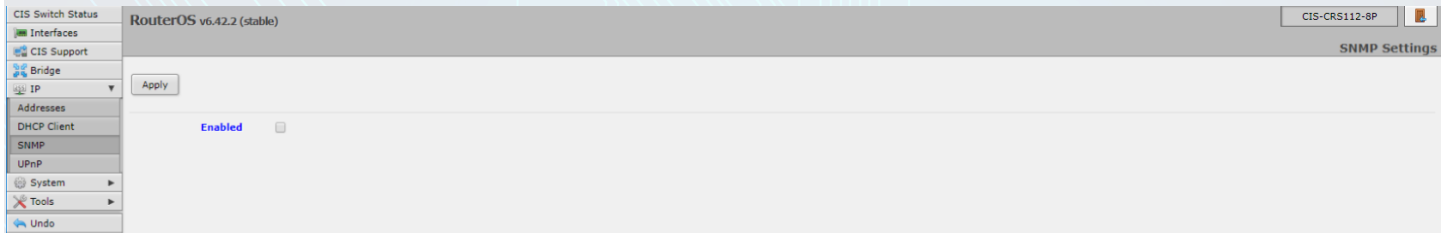
Interface bridge-operations

IP Address 10.1.1.105/24

Comment

## 8 – SNMP

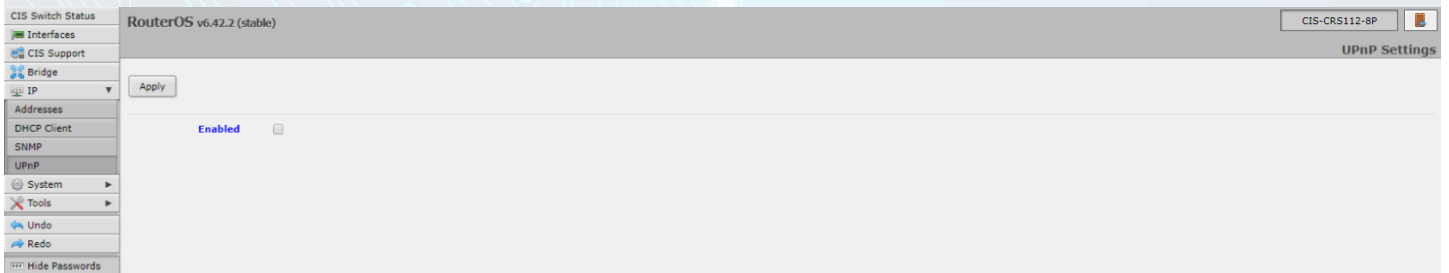
Simple Network Management Protocol (SNMP) is an Internet-standard protocol for managing devices on IP networks. This is off by default.



## 9 – UPnP

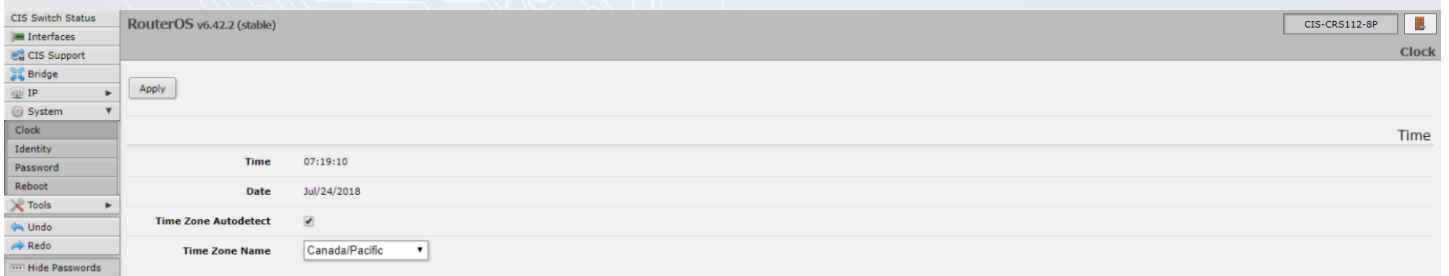
CIS supports Universal Plug and Play architecture for transparent peer-to-peer network connectivity of network-enabled intelligent devices or appliances.

UPnP enables data communication between any two devices under the command of any control device on the network. Universal Plug and Play is completely independent of any particular physical medium. It supports networking with automatic discovery without any initial configuration, whereby a device can dynamically join a network. DHCP and DNS servers are optional and will be used if available on the network. UPnP implements simple yet powerful NAT traversal solution, that enables the client to get full two-way peer-to-peer network support from behind the NAT.



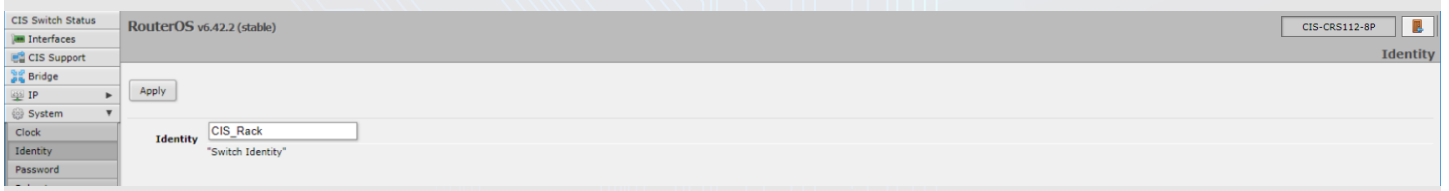
## 10 – Clock

CIS uses data from the tz database, Most of the time zones from this database are included, and have the same names. Currently only information starting from 2005 is included.



## 11 – Identity

Setting the System's Identity provides a unique identifying name for when the system identifies itself to other devices in the network and when accessing services such as DHCP, Neighbour Discovery etc.



## 12 - Password

The default username is cis and the password is integration. After you log in for the first time, please create a new a password



The screenshot shows the 'Change Password' interface in RouterOS. It includes a sidebar with navigation options like Interfaces, CIS Support, Bridge, IP, System, Clock, Identity, Password, Reboot, Tools, Undo, Redo, and Hide Passwords. The main area has 'Change' and 'Cancel' buttons at the top. Below are three password input fields: 'Old Password' (with a warning 'BE SURE TO REMOVE DEFAULT PASSWORD'), 'New Password', and 'Confirm Password' (with a warning 'RECORD YOUR NEW PASSWORD').

## 13 - Reboot

We discourage reboot. Clicking reboot will ask for confirmation of a reboot.

## 14 - IP Scan

IP Scan tool allows user to scan network based on some network prefix or by setting interface to listen to. Either way tool collects certain data from the network. When using IP scan tool user must choose what it wants to scan for:

1. Certain IPv4 prefix
  - Tool will attempt to scan all the addresses or address set in address.
  - Interface of the router
    - Tool will attempt to listen to packets that are "passing by" and attempt to compile results when something is found



The screenshot shows the 'IP Scan' interface in RouterOS. It features a sidebar with navigation options including IP Scan and Ping. The main area has 'Start', 'Stop', and 'Close' buttons. Below are dropdown menus for 'Interface' and 'Address Range'. At the bottom, there is a table with columns: #, Address, MAC Address, Time (ms), DNS, SNMP, and Netbios.

## 15 - Ping

Ping uses Internet Control Message Protocol (ICMP) Echo messages to determine if a remote host is active or inactive and to determine the round-trip delay when communicating with it. Ping tool sends ICMP (type 8) message to the host and waits for the ICMP echo-reply (type 0). The interval between these events is called round trip. If the response (that is called pong) has not come until



The screenshot shows the 'Ping' interface in RouterOS. It includes a sidebar with navigation options like IP Scan and Ping. The main area has 'Start', 'Stop', and 'Close' buttons. Below are input fields for 'Ping To' (set to 0.0.0.0), 'Timeout' (set to 1000 ms), and 'Packet Size' (set to 50). The interface is divided into 'General' and 'Advanced' sections. At the bottom, there is a table with columns: #, Seq #, Host, Time, Reply Size, TTL, and Status.

## 16 - Undo Redo

On the Main toolbar's left side is located undo and redo buttons to quickly undo any changes made to configuration.



	A Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)	PoE Out	PoE Voltage	PoE Prior
;;;	WP01													

## 17 - Hide Password



	A Name	Type	Actual MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)	FP Tx	FP Rx	FP Tx Packet (p/s)	FP Rx Packet (p/s)	PoE Out	PoE Voltage	PoE Prior
;;;	WP01													

## 18 - Warranty Information

Custom Integration Solutions™ products have a 2-Year Limited Warranty. This warranty includes parts and labor repairs on all components found to be defective in material or workmanship under normal conditions of use. This warranty shall not apply to products that have been abused, modified, or disassembled. Products to be repaired under this warranty must be returned to Custom Integration Solutions™ or a designated service center with prior notification and an assigned return authorization (RA) number.

Contact Information Web: [www.custom-integration-solutions.com](http://www.custom-integration-solutions.com)



The CIS-CR112-8P is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EC.