

Garland Technology Modular Bypass TAP System User Guide

**Garland Technology, LLC
M10GMSBP module
M10GSSBP module
M10GESBP module
M10G1AC 1U, 4 slot chassis
M10G1DC 1U, 4 slot chassis
Modular Bypass TAP System
Version 2.9**

10G BYPASS TAP/CHASSIS USER GUIDE

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DOCUMENT No.: GT-10GBP-FW_3.0.5-Rev1

Revision	Date	Change description
1.0	30-Nov-08	Garland Technology Intelligent Bypass TAP guide – Initial version
1.1	28-Dec-08	Added SNMP commands and trap
1.2		Added WEB interface, added additional SNMP commands, change CLI interface
1.3	17-Mar-09	Update keep_hb_act_mode explanation
1.4	24-Mar-09	Added whoami command Added HTTP firmware update. Added Management push button interface
1.5	28-Apr-09	Firmware 0.1.0.5 updates: Updates hb_interval, hb_holdtime and apply_snmp commands explanation.
1.6	7-Jun-09	Add Safety Precautions section
1.7	6-Jul-09	Updates for firmware 1.06
1.8	6-Oct-09	Updates for firmware 1.10
1.9	23-Dec-09	Update for new firmware 2.0
2.0	23-Feb-10	Update section 8.1 – web interface
2.1	15-Apr-10	Updates for firmware 2.0.2 Updates for -48v products
2.2	28-Aug-11	Add get/set_rs232_speed command, set_link command
2.3	27-Sep-11	Add support for the different TAP modes
2.4	26-Oct-11	Add support for permitted IP. Add support for product part number.
2.5	8-Apr-2012	Added support for TACACS multi users. Added support for SNMP multi trap destinations.
2.6	5-Aug-2012	Added support for M2N mode. Added support for power supply monitoring. Added support for disabling WEB interface. Added support for security update. Added support for remote save/restore configuration. Added support for power off module
2.7	15-Sep-13	Update Spec and order information PN for M10GBP – HW with power supply trap capabilities
2.8	17-Oct-13	Added support for Reporting of RX/TX errors in the Web interface / CLI. Added support for disconnect mode at power off
2.9	24-Nov-13	Update for FW 0.3.0.5 Added commands (CLI, WEB SNMP): get_rx_tx_err_mode set_rx_tx_err_mode Added to WEB, SNMP interface FAN status Added support for reporting good link is admin down due to 2PL/M2M Added support for reporting manual mode device change status events in log file

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1 Introduction

Garland Technology's Intelligent Bypass TAP (M10GBP) is an active external Bypass TAP that protects network integrity by preventing network failures and accommodating network maintenance on inline devices. The M10GBP generates a heartbeat and supports several modes of operation.

The M10GBP includes two duplex LC ports for network ports, two SFP+ ports for the attached inline network system and two management ports: one RS232 Console serial port (RJ-11) and one 1Gb Ethernet port (RJ-45). The M10GBP supports 10 Gigabit Multimode Fiber (10GBase-SR) and 10 Gigabit single mode fiber (10GBase-LR) network standards. The M10GBP also supports 10 Gigabit Extended Range (10GBase-ER).

The M10G1xC is a 1U host chassis that supports up to four Garland Intelligent Bypass TAPs. The Bypass TAP host includes two redundant 110-220V AC power supplies or two redundant -48V DC power supplies.

1.1 Product part numbers and descriptions

P/N	Description	Notes:
M10GMSBP	<i>10 Gigabit (SR) Fiber Intelligent Bypass TAP</i>	10G - Multimode
M10GSSBP	<i>10 Gigabit (LR) Fiber Intelligent Bypass Switch</i>	10G— Single mode
M10GESBP	<i>Gigabit (ER) Fiber Intelligent Bypass Switch</i>	10G – SM Extended Range
M10G1AC	<i>Modular 10G Bypass 1U Chassis, AC Power</i>	1U AC Host System
M10G1DC	<i>Modular 10G Bypass 1U Chassis, DC Power</i>	1U DC Host system

2 Features

2.1 General

The M10GBP supports four operation modes: **Inline**, **Bypass**, **TAP** and **Linkdrop** modes.

In **Inline** mode, the M10GBP diverts in-line network traffic to attached in-line network system.

In **Bypass** mode, the M10GBP diverts in-line network traffic to the other network link only.

In **TAP** mode, incoming traffic in port NET0 is mirrored to port MON0 and incoming traffic in port NET1 is mirrored to port MON1.

In **Linkdrop** mode the M10GBP disables the links on the network ports (NET0, NET1). The M10GBP simulates switch / router cable disconnection.

The M10GBP continuously generates heartbeat packets to the in-line Monitor / Network appliance port, the Monitor Network appliance receives heartbeat packets and transmits it to its other port (bridges the heart beat packet). As long as the M10GBP detects the heartbeat packet coming back it maintains the **Inline** mode state.

When the M10GBP does not detect the heartbeat packet from the Network / Monitor the M10GBP sets to **Bypass**. When the Network / Monitor appliance recovers, it transmits the heartbeat packet back and the M10GBP sets from **Bypass** to **Inline**.

The M10GBP includes a "Double Safe" Bypass architecture. The Garland Technology "Double safe" bypass architecture is based on two separate Bypass routing circuitries: An Active Bypass circuitry and a Passive Bypass circuitry. If the internal active bypass routing circuitry fails, the passive Bypass routing circuitry is activated.

The M10GBP can be configured via a management serial communication port and via management Ethernet port using telnet, SSH or SNMP.

2.2 Bypass Modes

The M10GBP sets to **Bypass /TAP /Linkdrop** mode when one of the following events occurs:

- Application failure (Heartbeat)
- Monitor Link failure.
- Manual Bypass.
- Power failure or power off.

2.3 Application failure (Heartbeat)

The M10GBP continuously generates heartbeat packets to the in-line Monitor / Network appliance port, the Monitor/ Network appliance receives heartbeat packets and transmits it to its other port (bridges the heartbeat packet).

As long as the M10GBP detects the heartbeat packet is received from the Monitor/ Network appliance, it will maintain the Normal / In-Line mode state.

In event of application failure (including power failure of the Monitor /Network appliance) the heartbeat packets are not transmitted back by the Monitor / Network appliance and since the M10GBP does not receive the heartbeat packet it sets to **Active Bypass** or **TAP** or **Linkdrop** mode according to the predefined settings of the heartbeat expiration state.

During **Active Bypass** and **TAP** modes the network traffic continues to flow through the network ports and is not diverted to the monitor ports. As soon as the Monitor / Network appliance recovers and starts transmitting back the heartbeat packets, the M10GBP will set to Normal / In-Line mode after detecting the heartbeat packets for period set by the "hb_holdtime" parameter.

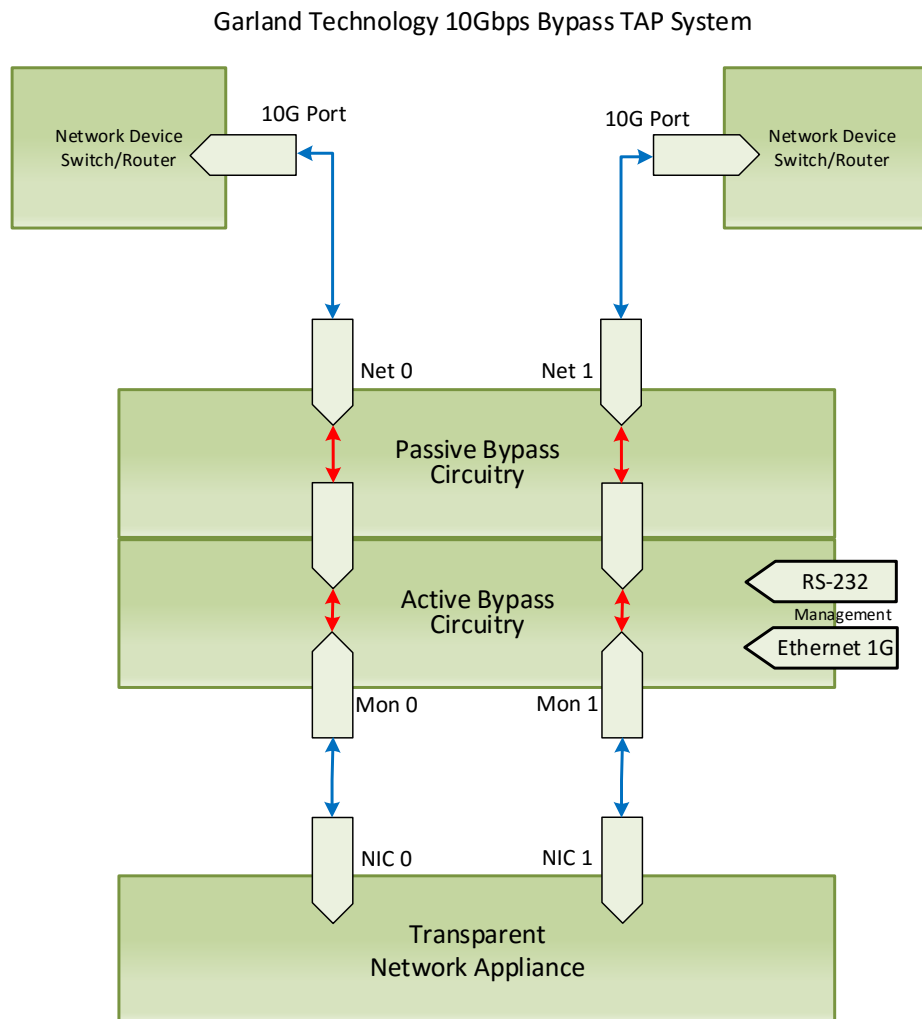


Figure 1: M10GBP TAP System – Normal Mode

2.4 Monitor Link Failure

The M10GBP supports Monitor ports failure detection. In an event of Link failure on one of the monitor ports, the M10GBP bypasses the Ethernet ports by switching to "Active Bypass" mode. The network traffic continues to flow through the network ports and is not diverted to the monitor ports. When the Monitor link is restored, it transmits back the heartbeat packet, the M10GBP will then set to **Inline** mode state after detecting the heartbeat packets for period set by the "hb_holdtime" parameter.

The "hb_holdtime" parameter can be changed via the management port from its initial default mode.

2.5 Power Failure

The M10GBP supports Bypass on Power failure. In event of power loss the M10GBP bypasses the Ethernet ports by switching to Passive Bypass Mode. The network traffic continues to flow through the network ports and is not diverted to the monitor ports. When power is restored, the M10GBP will set to Normal / **Inline** mode state after detecting the heartbeat packets for the period set by the "hb_holdtime" parameter.

The "hb_holdtime" parameter can be change via management port from their initial default mode.

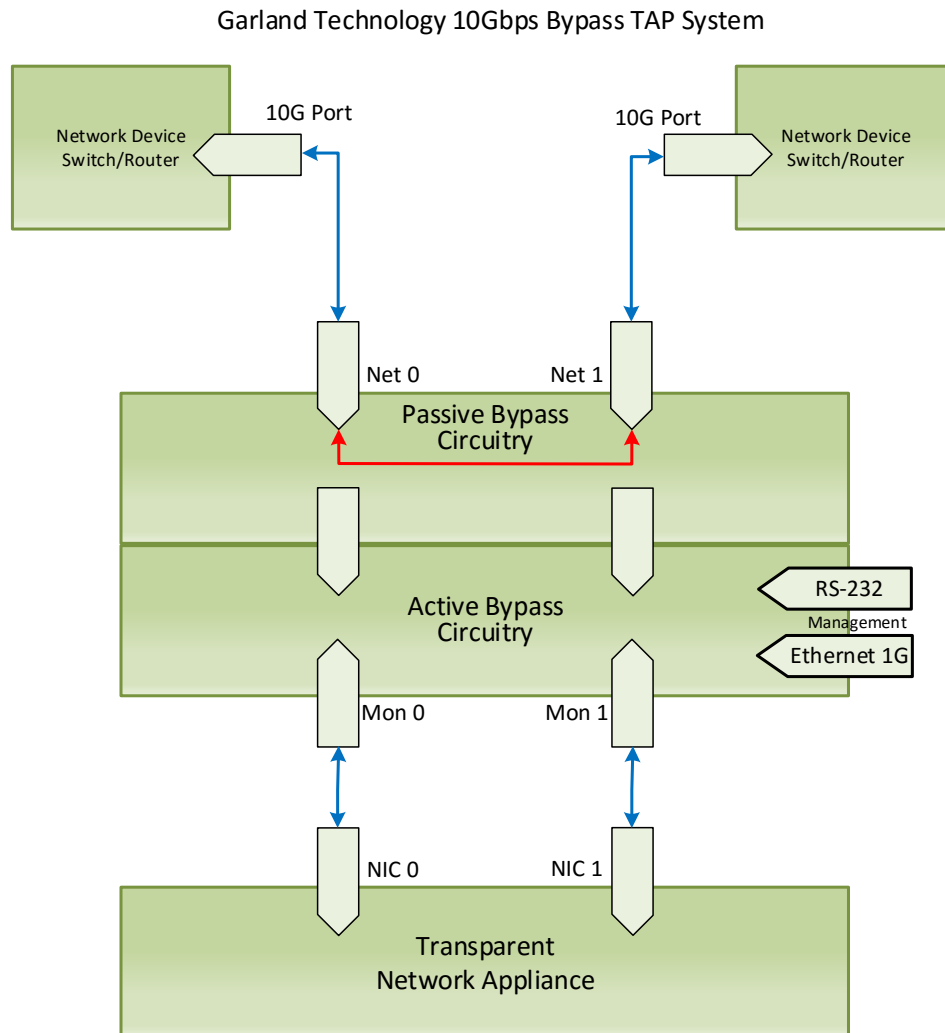


Figure 2: M10GBP TAP System – Bypass Mode

2.6 TAP Mode

The M10GBP support TAP Mode, when it is enabled, incoming traffic in port NET0 is mirrored to port MON0 and incoming traffic in port NET1 is mirrored to port MON1.

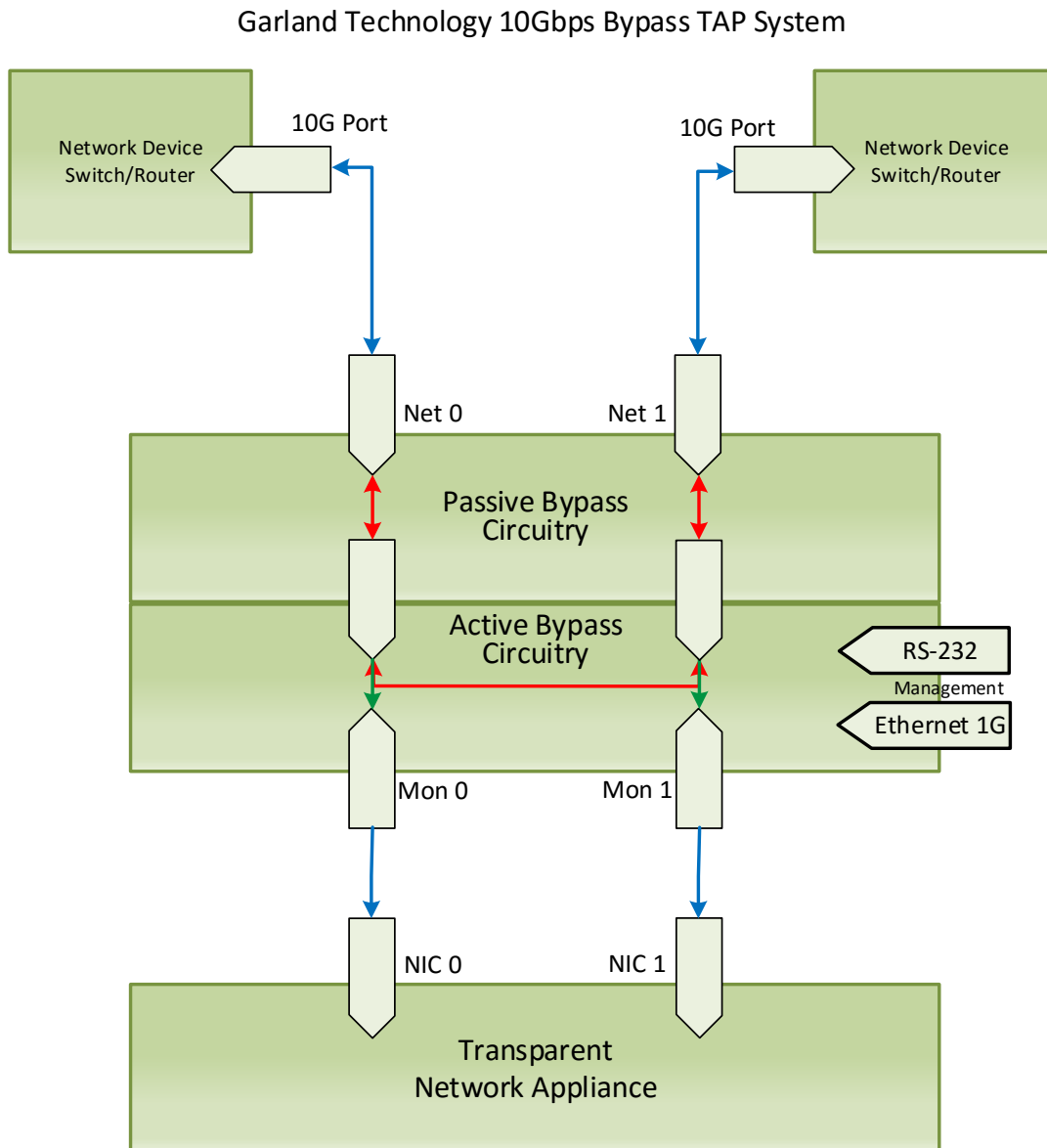


Figure 3: M10GBP TAP System – TAP Mode

2.7 TAPI12 mode

The M10GBP support TAPI12 Mode, when it is enabled, incoming traffic in port NET0 is mirrored to port MON0 and incoming traffic in port NET1 is mirrored to port MON1. Packets can be injected from port MON0 to port NET0 and from port MON1 to port NET1.

Garland Technology 10Gbps Bypass TAP System

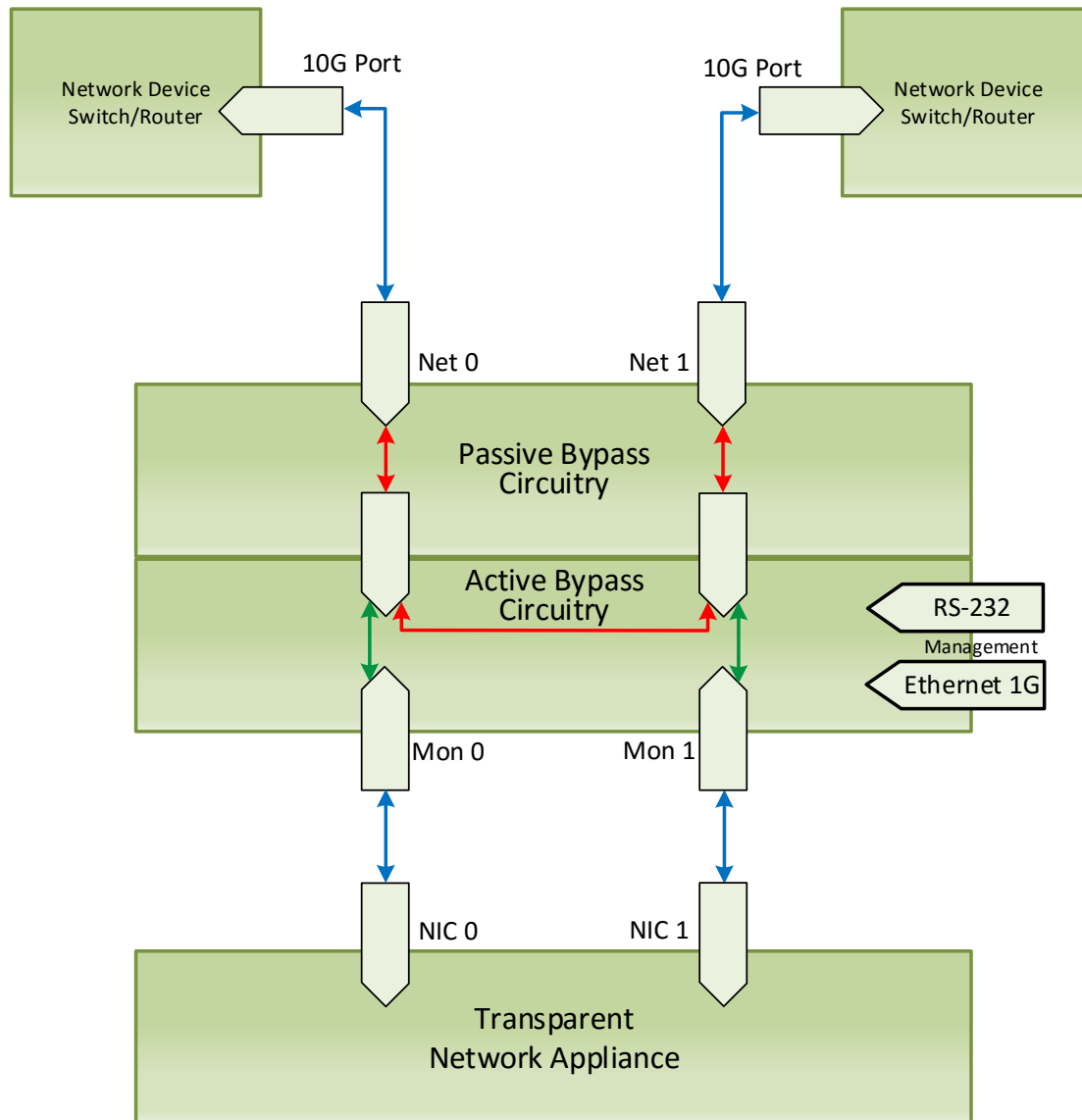


Figure 4: M10GBP TAP System – TAPI12 Mode

2.8 TAPA mode

The M10GBP support TAPA Mode, when it is enabled, incoming traffic in port NET0 is mirrored to both monitor ports and incoming traffic in port NET1 is mirrored to both monitor ports.

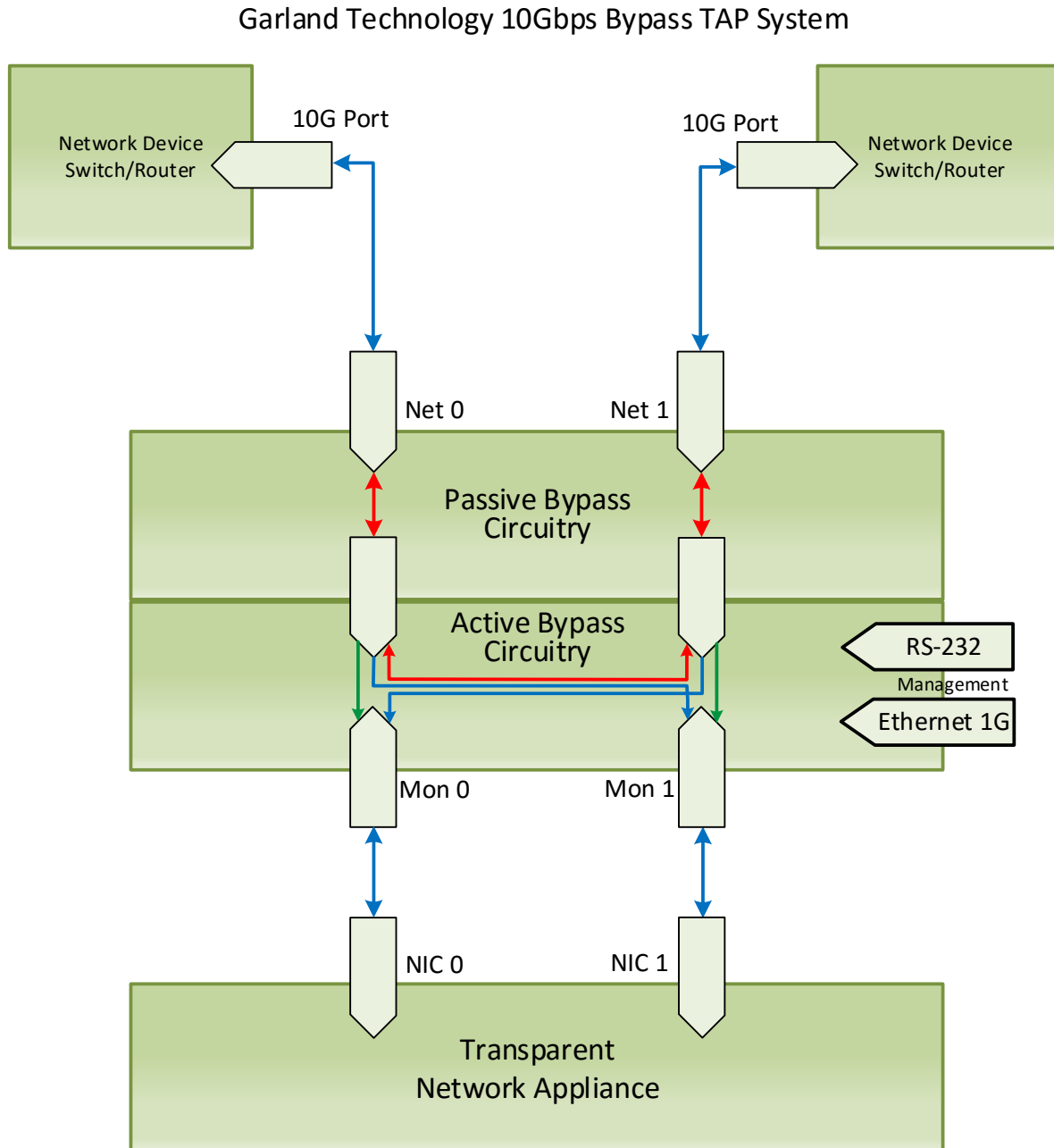


Figure 5: M10GBP TAP System – TAPA Mode

2.9 TAPAI1 mode

The M10GBP support TAPAI1 Mode, when it is enabled, incoming traffic in port NET0 is mirrored to both monitor ports and incoming traffic in port NET1 is mirrored to both monitor ports. Packets can be injected from port MON0 to both network ports.

Garland Technology 10Gbps Bypass TAP System

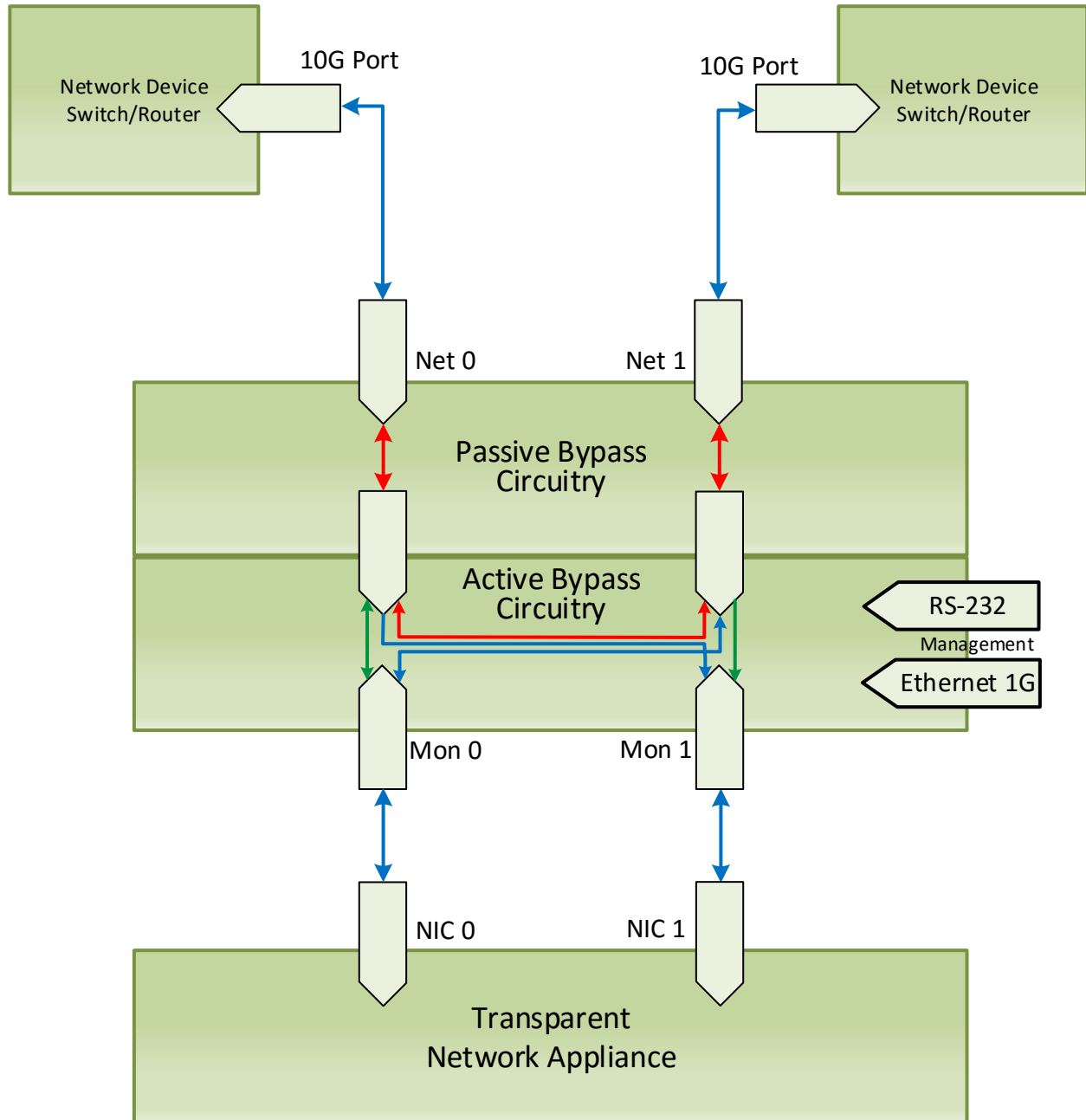


Figure 6: M10GBP TAP System – TAPAI1 Mode

2.10 TAPAI2 mode

The M10GBP support TAPAI2 Mode, when it is enabled, incoming traffic in port NET0 is mirrored to both monitor ports and incoming traffic in port NET1 is mirrored to both monitor ports. Packets can be injected from port MON1 to both network ports.

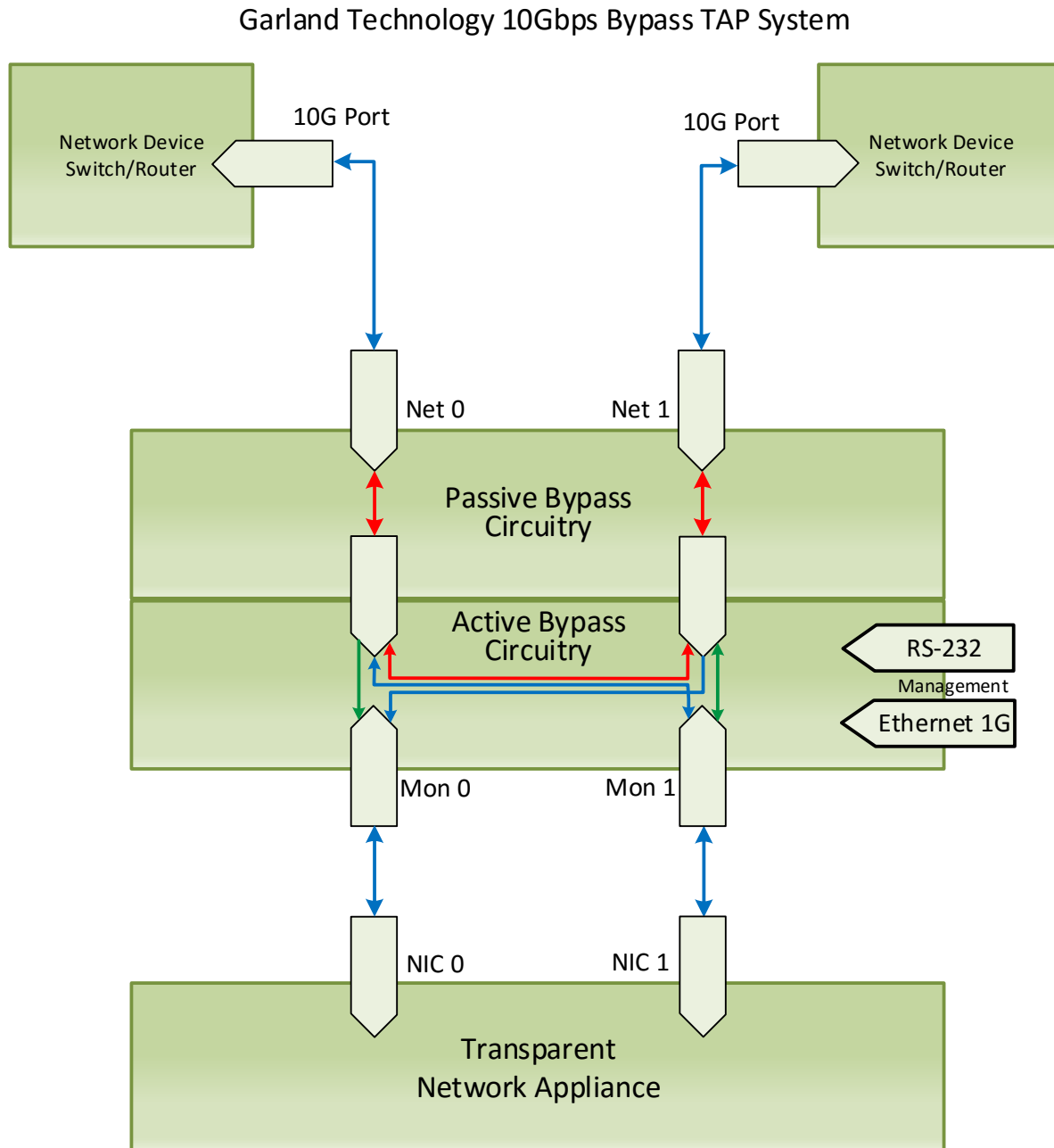


Figure 7: M10GBP TAP System – TAPAI2 Mode

2.11 TAPAI12 mode

The M10GBP support TAPAI12 Mode, when it is enabled, incoming traffic in port NET0 is mirrored to both monitor ports and incoming traffic in port NET1 is mirrored to both monitor ports. Packets can be injected from each monitor port to both network ports.

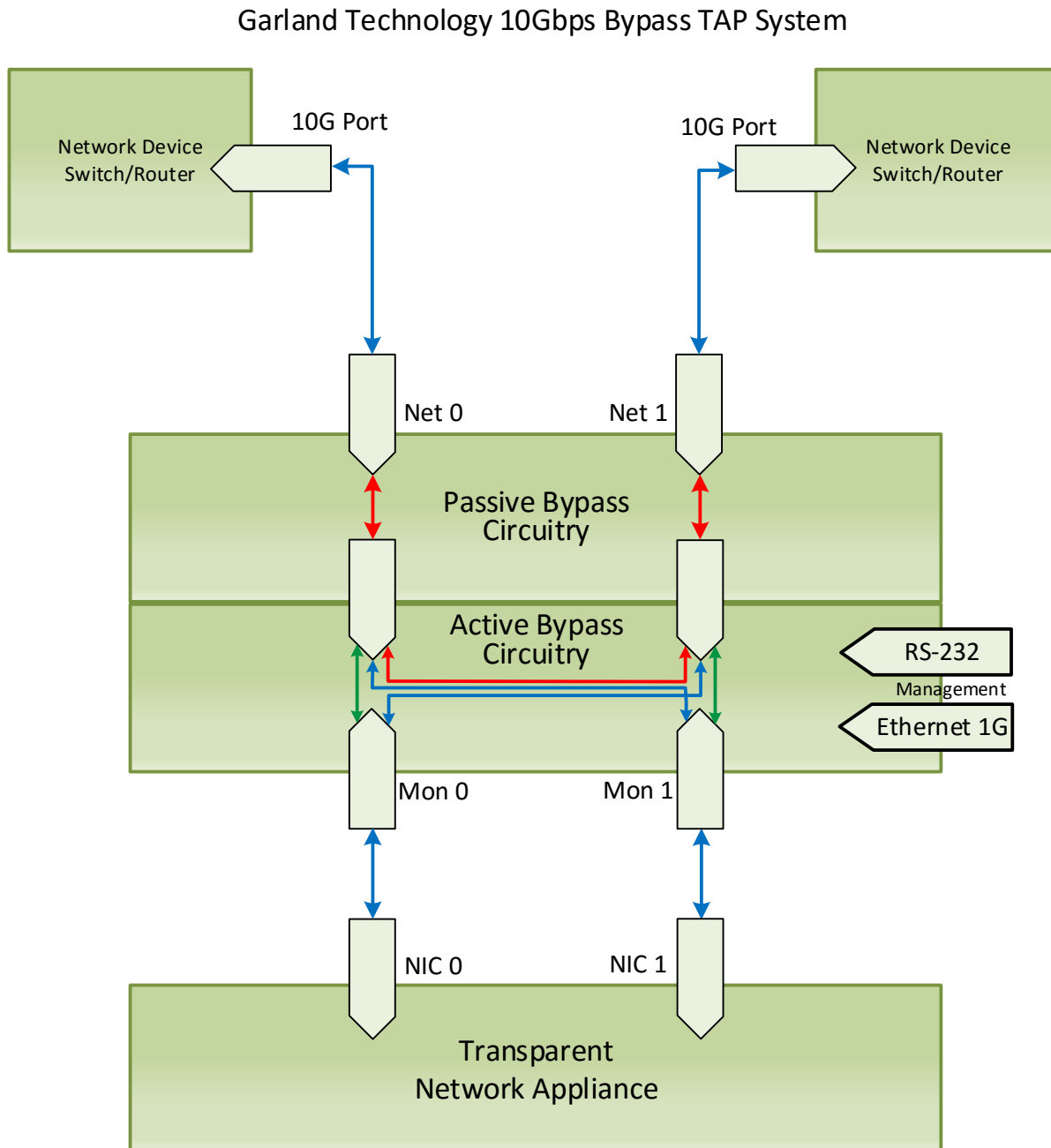


Figure 8: M10GBP TAP System – TAPAI12 Mode

2.12 Linkdrop mode

In **Linkdrop** mode the M10GBP disables the links on the network ports (NET0, NET1). The M10GBP simulates switch / router cable disconnection.

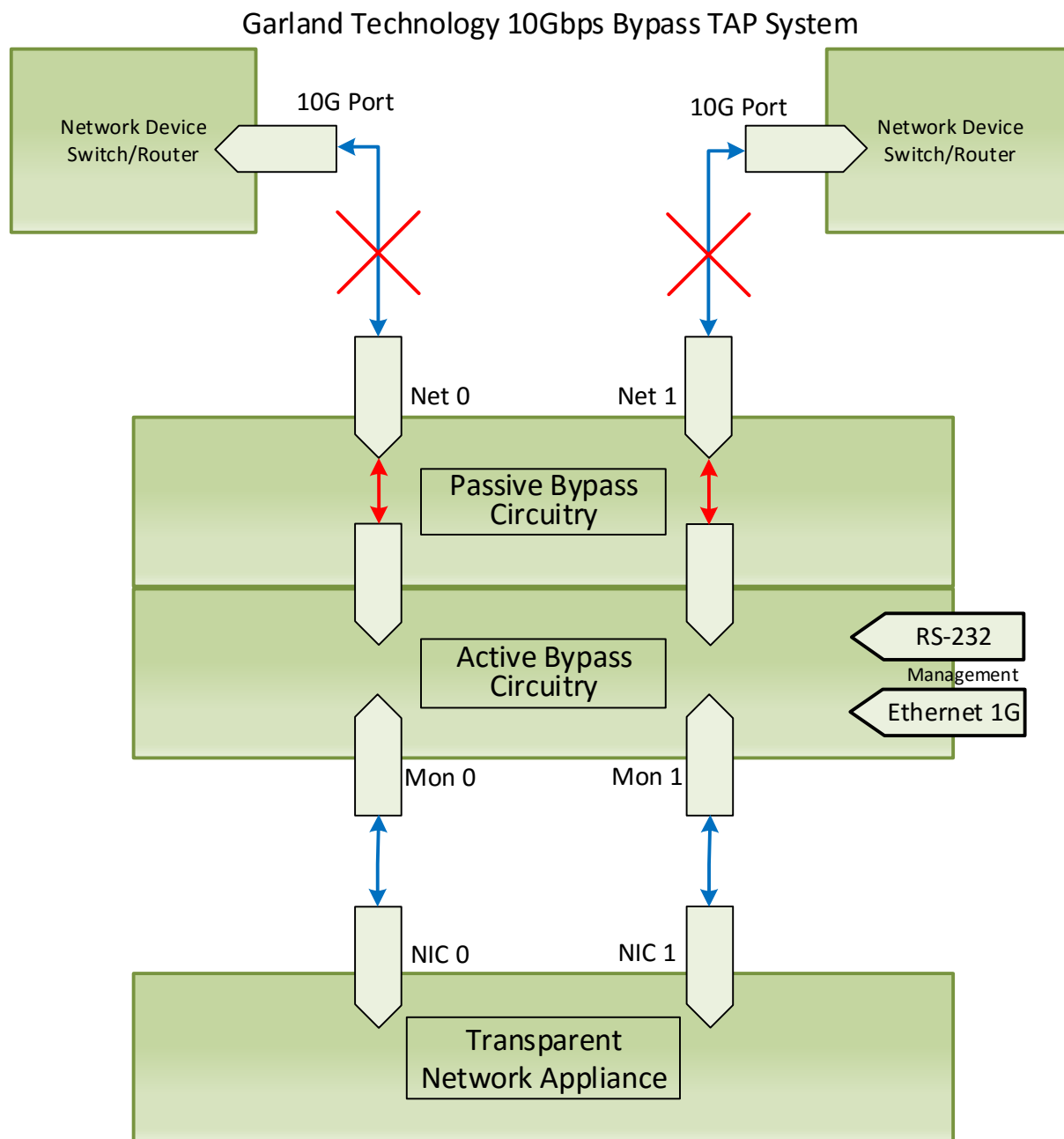


Figure 9: M10GBP TAP System – Linkdrop Mode

2.13 Link Failure Propagation (LFP)

The M10GBP supports Link Failure Propagation. When enabled, if one of the network ports link fails it will drop the link on the other network port as well.

2.14 Restore from active expire state

The M10GBP supports manual and auto restoring from heartbeat expiration event.

2.15 Heartbeat active mode

When heartbeat active mode is ON and the M10GBP does not detect the heartbeat packet received from the monitor port the M10GBP will switch to **Active Bypass** or **TAP** or **Linkdrop** mode according to the predefined settings of the switch expire state.

When heartbeat active mode is set to OFF the M10GBP stops sending the heartbeats and the M10GBP can be set manually via the management port to one of the following modes;

- **Normal (Inline) Mode**
- **Active Bypass Mode**
- **TAP Mode** or
- **Linkdrop Mode**

By default Heartbeat active mode is not preserved after reset or after power off cycle. The Heartbeat active mode can be configured to be preserved after reset or power off cycle by enabling the [keep hb act mode](#) parameter.

3 Front Panel/Rear Panel

3.1 M10GBP Module

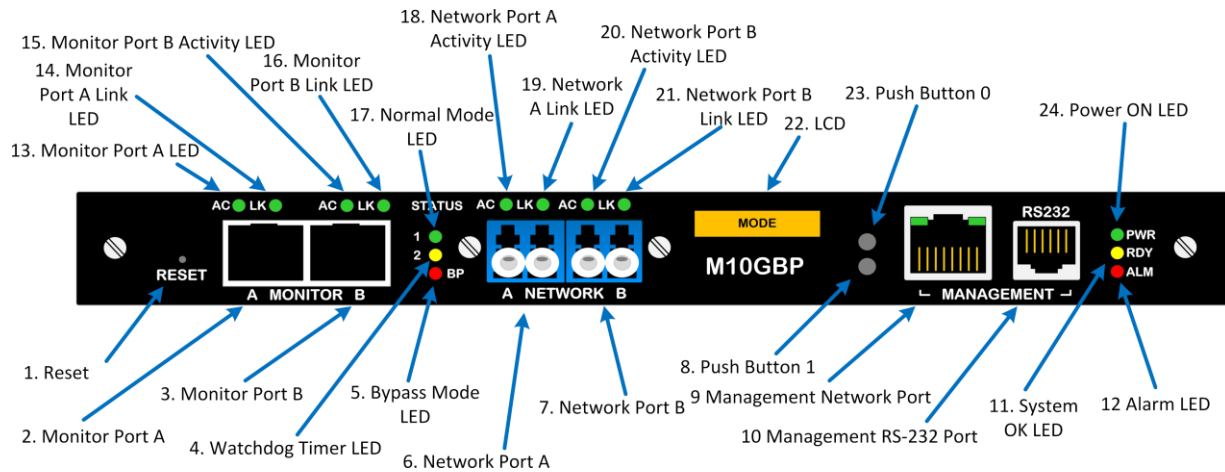


Figure: 10. M10GLRBP module front panel.

1. "Reset" (RST) button – reset the M10GBP Intelligent Bypass TAP Module.
2. Ethernet monitor port #0 – port to connect transparent network appliance (10G port on the M10GBP).
3. Ethernet monitor port #1 – port to connect transparent network appliance (10G port on the M10GBP).
4. Watchdog timer (WDT) LED
 - ON - indicate that Passive Bypass circuitry watchdog timer expired,
 - OFF - indicate that Passive Bypass circuitry watchdog timer disabled,
 - BLINK – indicate that heartbeat pulse sent to Passive Bypass circuitry.
5. Bypass mode (BYP) LED – ON -indicate that:
 - Passive Bypass circuitry is set to Bypass
 - OR
 - Active Bypass circuitry is set to **Bypass** or **TAP** or **Linkdrop**.
6. 10G Ethernet network port 0 – port to connect network device.
7. 10G Ethernet network port 1 – port to connect network device.
8. Push button 1 – Garland Technology Intelligent Bypass TAP management button 1.
9. Management 1G Ethernet network port - Garland Technology Intelligent Bypass TAP management Ethernet port
10. Management RS232 port - Garland Technology Intelligent Bypass TAP management serial port.
11. System OK (S.OK) LED – indicate Garland Technology Intelligent Bypass TAP boot status.
12. Alarm (ALM) LED – indicate serious hardware problem.
13. Monitor port 0 activity (AC) LED – indicate network activity for monitor port 0.
14. Monitor port 0 link (LK) LED – indicate network link for monitor port 0.
15. Monitor port 1 activity (AC) LED – indicate network activity for monitor port 1.
16. Monitor port 1 link (LK) LED – indicate network link for monitor port 1.
17. Normal mode (NRM) LED – indicate when ON that Normal mode is set.
18. Network port 0 activity (AC) LED – indicate network activity for network port 0.

19. Monitor port 0 link (LK) LED – indicate network link for network port 0.
20. Network port 1 activity (AC) LED – indicate network activity for network port 1.
21. Network port 1 link (LK) LED – indicate network link for network port 1.
22. LCD – indicate Garland Technology Intelligent Bypass TAP current status.
23. Push button 0 – Garland Technology Intelligent Bypass TAP management button 0.
24. Power ON (PWR) LED – indicate power ON.

3.2 M10G1XC – 4 slot Chassis with 4 M10GLRBP modules

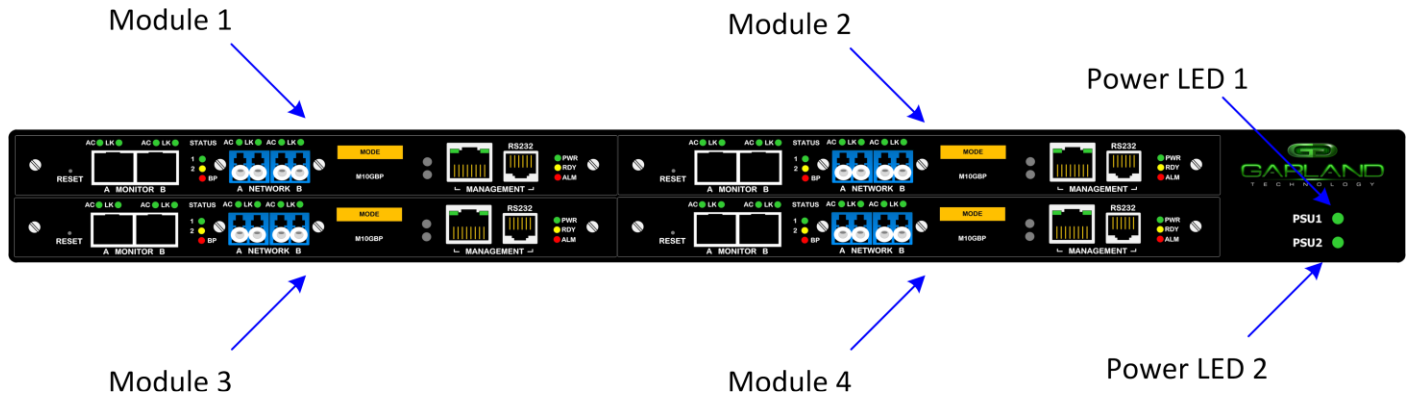


Figure: 11. M10G1XC Chassis with 4 Modulesl.

3.3 M10GSRBP Module – Front Panel

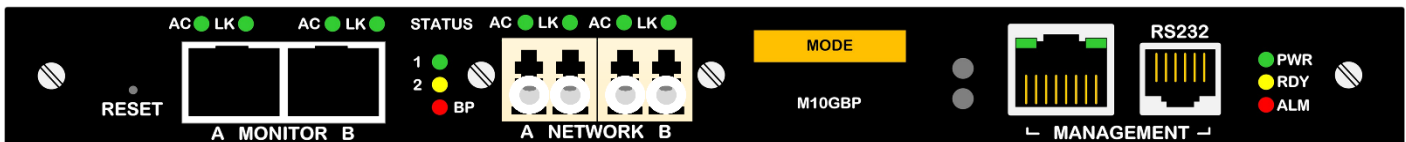


Figure: 12. M10GSRBP Module Front Panel

4 M10G1XC Chassis Rear Panel

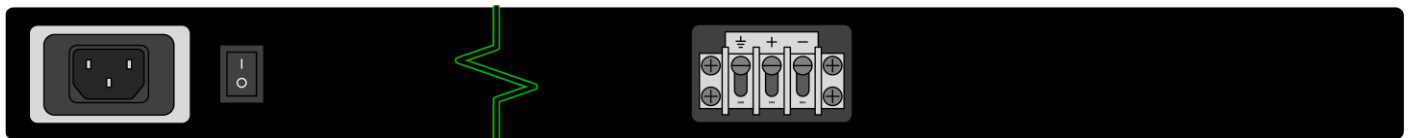


Figure: 13. M10G1XC Rear Panel.

5 Garland Technology Intelligent Bypass TAP Installation

5.1 Rack mount the M10G1xC

The M10G1xC is a rack mounting ready box. To rack mount the M10G1xC:

1. Attach the 2 mounting flanges to the M10G1xC using 3 screws for each mounting flange.
2. Slide the M10G1xC into a 1U slot and screw the M10G1xC to the rack using 2 screws on each mounting flange.

5.2 Connecting Power to the AC M10G1AC unit (230V/120V)

5.2.1 Verify that the power switch on the M10G1AC unit is OFF.

5.2.2 Connect two power cables to the power supplies on to the back of the M10G1AC.

The PWR LED's on the front panel of the M10G1AC will illuminate when switching on the power switch power.

5.3 Connecting Power to the DC M10G1DC unit (-48VDC)

5.3.1 Use DC power source -48V DC with circuit breaker 5A

5.3.2 Verify that the power is OFF on the DC power source

5.3.3 Verify that the power switch on the M10G1DC unit is OFF

5.3.4 Connect the DC input wires to the DC input terminal on the M10G1DC as follows:

- i. Connect wire to ground terminal M10G1DC (left)
- ii. Connect 0V return to "+" terminal M10G1DC (center)
- iii. Connect -48V wire to "-" terminal (right) M10G1DC
- iv. Turn on the DC power source The PWR LED's on the front panel of the M10G1DC will illuminate.

5.4 Connecting the RS232 DB9 management cable

1. Connect the RS232 DB9 cable supplied with the M10GBP to the M10GBP Management RS232 port
2. Connect the other side of the RS232 cable to your Appliance RS232 port.
3. Use any terminal emulation software (Minicom, HyperTerminal ...) to connect to the CLI interface to in order manage the M10GBP.
4. Set the following terminal communication parameters:
 - 115200 – default or 9600 if set by CLI command
 - 8 bits
 - no parity
 - 1 stop bit
 - no flow control
5. Power on the M10G1xC
6. Login prompt will appear in terminal window.
7. The login name: **admin**, the default password: **gtadmin1**
8. After login you should change password, user and date. If you plan to use management Ethernet port, set IP address, net mask and gateway parameters.

5.5 Connecting the Ethernet management port

1. Connect Ethernet cable (CAT5) to the Management 1G Ethernet network port
2. Use any Telnet or SSH client to connect to the CLI interface in order to manage the M10GBP
3. The following are the default IP and login parameters
 - IP address: 192.168.0.100
 - Net mask: 255.255.255.0
 - Gateway: 192.168.0.1
 - Login name: admin
 - Password: gtadmin1
4. The following are default snmp user/community name and password (for snmp 3 and TACACS+)
 - user/community name: admin
 - password: Gtadmin1

6 Command line interface (CLI)

Login to the command line interface (CLI) using the Rs232 management port or the Ethernet management port. The main menu will prompt after login.

The "help" command displays list of all CLI commands.

The "help full" command displays help for all CLI commands.

The Command parameters can include any letter or number and '_', '/', ':', ';', ',', '-' characters. It cannot include space symbols.

Tip: In case of entering partial command the M10GBP will display all the commands which containing this part.

6.1 CLI Main menu

M10GBP command line interface:

help	- this screen,
help full	- full help,
exit	- exits from CLI (logoff).
M10GBP\$	

6.2 Commands list

To see a list of available commands, type "help" and press Enter key.

Garland Technology M10GBP command line interface:		
get/set_hb_act_mode,	get/set_bypass_mode,	get/set_2pl,
get/set_hb_interval,	get/set_hb_holdtime,	get/set_keep_hb_act_mode,
get/set_hb_exp_state,	get/set_en_act_hb_restore,	
get/set_ip,	get/set_netmask,	get/set_gateway,
get/set_time,	set_user,	set_psw,
get/set_log_dest,	get/set_unit_name,	whoami,
get_ver,	get_params,	get_dev_state,
get_hw_ver,	get_fw_ver,	get_dev_tk_num,
get_fan_state,	get_appl_state,	get_term_state,
get/set_link,	get_log,	get_current_user,
get/set_snmp_ver,	get/set_snmp_srv_ip,	get/set_snmp_user,
set_snmp_user_psw,	apply_snmp,	get/set_trap,
reset_log,	set_default,	update,
reboot,	reset_err,	get/set_web_https_state,
get_hb_pkt,	load_hb_pkt,	set_default_hb_pkt,
get/set_web_exp_time,	get/set_mgmt_port_state,	
get/set_hb_tx_dir,	get/set_hb_fail,	get/set_mgmt_port_params,
get/set_remote_log_server_ip,		get/set_remote_log_state,
get/set_ntp_state,	get/set_ntp_server_ip,	send_ntp_request,
get_timezone_list,	get/set_timezone,	get_daylight_state,
Continue? (Y/n)		
get_support_info,	get/set_web_user,	set_web_user_psw,
save_conf,	restore_conf,	get_list_conf,
remove_conf,	get/set_tacacs_multi_users,	
get/set_tacacs_state,	set_tacacs_key,	get/set_tacacs_server_ip,
get/set_telnet_state,	get/clear_stat,	get/set_rs232_speed,
set/del_mgmt_permit_ip,	get/check_mgmt_permit_ip,	
set/del_trap_account,	get_trap_account,	get/set_m2n,
get_power_state,	power_off,	
get/set_hb_dst_mac,	get/set_hb_src_mac,	set_default_hb_macs,
get/set_web,	get_set_pwoff_state	set/get_rx_tx_err_mode
help - this screen,		
help full - full help,		
exit - exit from CLI (logoff).		

command succeeded.

M10GBP10G\$

Garland 10G Bypass Command Line Interface:

Help -Lists supported commands.
Help Full - Displays commands with descriptions.
Exit - Exits from CLI and ends session (logoff).

M10GBP\$ help

Garland 10G Bypass Command Line Interface:

show/set_hb_emit,	show/set_op_mode,	show/set_lfp,
show/set_hb_interval,	show/set_hb_holdtime,	show/set_preserve_hb_mode,
show/set_bypass_mode,	show/set_inline_restore,	show/set_current_user,
show/set_ip,	show/set_netmask,	show/set_gateway,
show/set_time,	set_username,	set_password,
show/set_log_dest,	show/set_device_name,	whoami,
show_ver,	show_config,	show_status,
show_hw_ver,	show_fw_ver,	show_tk_num,
show_fan_status,	show_appl_status,	show_terminal,
show_link,	show_log,	show/set_mgmt_port_params,
show/set_snmp_ver,	show/set_snmp_srv_ip,	show/set_snmp_username,
set_snmp_password,	apply_snmp,	show/set_trap,
reset_log,	set_default,	update,
reboot,	clear_errors,	show/set_web_https,
show_hb_pkt,	set_hb_defaults,	show/set_web_exp_time,
show/set_mgmt_port,	show/set_hb_dir,	show/set_hb_fail_mode,
show/set_hb_tx_dir,	show/set_hb_fail,	show/set_mgmt_port_params,
show/set_remote_log_server_ip,		show/set_remote_log_status,
show/set_ntp_status,	show/set_ntp_server_ip,	send_ntp_request,
show_timezone_list,	show/set_timezone,	show_daylight_status,
show_support_info,	show/set_web_username,	set_web_password,
Continue? (Y/n)		
save_conf,	restore_conf,	show_list_conf,
remove_conf,	show/set_tacacs_multi_users,	
show/set_tacacs_status,	set_tacacs_key,	show/set_tacacs_server_ip,
show/set_telnet_status,	show/clear_stat,	show/set_rs232_speed,
set/del_mgmt_permit_ip,	show/check_mgmt_permit_ip,	
set/del_trap_account,	show_trap_account,	

Help - List supported commands.
Help Full - Displays commands with descriptions.
Exit - exits from CLI and ends session (logoff).

command succeeded.

M10GBP\$

6.3 Heartbeat active mode. (hb_act_mode)

When heartbeat active mode is ON the M10GBP sends heartbeat packets on its monitor ports. If the M10GBP does not detect the heartbeat packet received from the monitor ports the M10GBP will switch to **Active Bypass** or **TAP** or **Linkdrop** mode according to the predefined settings of the [Heartbeat Expiration state](#).

When heartbeat active mode is set to OFF the M10GBP stops sending the heartbeats and the Active Bypass circuitry can be set manually via the management port to one of the following modes;

- Normal (Inline)
- Active Bypass
- TAP Mode or
- Linkdrop mode

Examples:

```
M10GBP$ show_hb_emit
heartbeat emit:                on.
command succeeded.

M10GBP$ set_hb_emit            off
command succeeded.

M10GBP(manual)$ show_hb_emit
heartbeat emit:                off.
command succeeded.

M10GBP$
```

Notes:

- “set_heartbeat emit_on” results in the module switching from passive bypass switch to inline state.
- If “set_preserve_hb_mode” is OFF the heartbeat emit mode is always ON after power on or restart event.
- If “set_preverve_hb_mode” is ON the heartbeat emit mode preserves its state after power on or restart event.

6.4 Active Bypass mode

When heartbeat Emit mode is set to OFF the M10GBP stops sending the heartbeats packets. The Active Bypass circuitry can be controlled manually to be set to one of the following modes;

- Normal (Inline)
- Active Bypass
- TAP
- TAPI12
- TAPA
- TAPAI1
- TAPAI2
- TAPAI12 or Linkdrop

To check the current mode of the Active bypass circuitry use the command "show_bypass_mode". In order to change set the Active bypass circuitry use the command "set_bypass_mode".

Examples:

```
M10GBP(manual)$ show_op_mode
operating mode: inline.
command succeeded.
M10GBP (manual)$ set_op_mode bypass
command succeeded.
M10GBP (manual)$ show_op_mode
operating mode: bypass.
command succeeded.
M10GBP(manual)$ set_op_mode tap
command succeeded.
M10GBP(manual)$ show_op_mode
operating mode: tap.
command succeeded.
M10GBP(manual)$ set_op_mode linkdrop
command succeeded.
M10GBP(manual)$ show_op_mode
operating mode: linkdrop.
command succeeded.
M10GBP(manual)$ set_op_mode tapi2
command succeeded.
M10GBP(manual)$ show_op_mode
operating mode: tapi2.
command succeeded.
M10GBP(manual)$ set_op_mode tapa
command succeeded.
M10GBP(manual)$ show_op_mode
operating mode: tapa.
command succeeded.
M10GBP(manual)$ set_op_mode tapai1
command succeeded.
M10GBP(manual)$ show_op_mode
operating mode: tapai1.
command succeeded.
M10GBP(manual)$ set_op_mode tapai2
command succeeded.
M10GBP(manual)$ show_op_mode
operating mode: tapai2.
command succeeded.
M10GBP(manual)$ set_op_mode tapai12
```

```
command succeeded.  
M10GBP(manual)$ show_op_mode  
operating mode: tapai12.  
command succeeded.  
M10GBP$
```


6.5 Power off state (pwoff_status)

The M10GBP supports Disconnect or Bypass mode at power off. When in Disconnect, in any event of power off the M10GBP will be in Disconnect mode - simulates switch / router cable disconnection on the two network ports. When in Bypass, in any event of power off the M10GBP will be in bypass mode. Pwoff_status is set to Bypass mode by default Bypass.

Supported only with new HW devices (M10GBP hardware version 0.3.2.0 and up).

Example:

```
M10GBP$ get_pwoff_status
Power off state: bypass.
command succeeded.

M10GBP$ set_pwoff_status disconnect
command succeeded.

M10GBP$ get_pwoff_status
Power off state: disconnect
command succeeded.
M10GBP$
```

6.6 Two port link

The M10GBP supports two ports link. When enabled (on), if one of the network ports link fails it drops the link on the other network port. Two ports link is disabled (off) by default.

Example:

```
M10GBP$ get_2pl
two port link: off.
command succeeded.

M10GBP$ set_2pl on
command succeeded.

M10GBP$ get_2pl
two port link: on.
command succeeded.

M10GBP$ set_2pl off
command succeeded.

M10GBP$ get_2pl
two port link: off.
command succeeded.
M10GBP$
```

6.7 hb_interval (hb_interval)

The M10GBP generates a heartbeat packet to monitor PORT0 every "hb_interval" msec. (default - 5, min - 3, max - 10000). The Heartbeat interval should be at least 3 times less than heartbeat hold time. The "hb_interval" value is preserved after reset and power off events.

Example:

```
M10GBP$ get_hb_interval
hb_interval: 5 ms.
command succeeded.

M10GBP$ set_hb_interval 3
command succeeded.

M10GBP$ get_hb_interval
hb_interval: 3 ms.
```

6.8 hb_holdtime (hb_holdtime)

The M10GBP monitors the received packets on monitor port1, if heartbeat packets do not arrive within "hb_holdtime" msec, the M10GBP will set the Active Bypass to **Bypass/TAP/Linkdrop** mode, depend on active switch expire state .

To secure reliable detection of Application failure, the " hb_holdtime " value should be at least 3 times the "hb_interval" parameter value. (default - 20, min - 10, max - 50000)

The " hb_holdtime " value is preserved after reset and power off events.

Example:

```
M10GBP$ get_hb_holdtime
hb_holdtime: 20 ms.
command succeeded.

M10GBP$ set_hb_holdtime 10
command succeeded.

M10GBP$ get_hb_holdtime
hb_holdtime: 10 ms.
command succeeded.
M10GBP$
```

6.9 Keep heartbeat active mode (keep_hb_act_mode)

When "keep_hb_act_mode" is ON the state of heartbeat active mode is preserved after reboot or after power on events. When the keep_hb_act_mode is OFF the state of heartbeat active mode is automatically set to ON after reboot or after power on.

Default value of the keep_hb_act_mode is OFF (disabled).

Example:

```
M10GBP$ get_keep_hb_act_mode
keep_hb_act_mode: off.
command succeeded.

M10GBP$ set_keep_hb_act_mode on
command succeeded.

M10GBP$ set_keep_hb_act_mode off
command succeeded.

M10GBP$
```

6.10 Heartbeat expiration state (hb_exp_state)

When the M10GBP does not receive the heartbeat packet within the hb_holdtime time it will set the Active Bypass circuitry to the state that was set by the hb_exp_state (Bypass, Tap, Tapi12, Tapa, Tapi1, Tapi2, Tapi12 or linkdrop mode).

Example:

```
M10GBP$ get_hb_exp_state
hb expired state: bypass.
command succeeded.

M10GBP$ set_hb_exp_state tap
command succeeded.

M10GBP$ get_hb_exp_state
hb expired state: tap.
command succeeded.

M10GBP$ set_hb_exp_state linkdrop
command succeeded.

M10GBP$ get_hb_exp_state
hb expired state: linkdrop.
command succeeded.

M10GBP$ set_hb_exp_state tapi12
command succeeded.

M10GBP$ set_hb_exp_state tapa
command succeeded.

M10GBP$ set_hb_exp_state tapi1
command succeeded.

M10GBP$ set_hb_exp_state tapi2
command succeeded.

M10GBP$ set_hb_exp_state tapi12
command succeeded.

M10GBP$
```

6.11 Restore from Heartbeat expiration event (en_act_hb_restore)

The M10GBP support automatic or manual heartbeat restore after a heartbeat expiration event.

The default value for the en_act_hb_restore is ON.

When the en_act_hb_restore is ON the M10GBP will restore to **Inline (Normal)** state when the heartbeat packets will be received from the Monitor port.

When the en_act_hb_restore is OFF the M10GBP preserves its state and no heartbeat packets are generated.

The following actions should be taken to restore the normal operation:

- Restore external environment to normal work.
- Send command "set_bypass_mode inline"
- Send command "set_hb_act_mode on"

Example:

```
M10GBP$ get_en_act_hb_restore  
restore active state: on.  
command succeeded.
```

```
M10GBP$ set_en_act_hb_restore off  
command succeeded.
```

```
M10GBP$ get_en_act_hb_restore  
restore active state: off.  
command succeeded.
```

```
M10GBP$
```

6.12 Change Bypass state on RX/TX error detection (rx_tx_err_mode)

The M10GBP can place itself into Bypass or Linkdrop in case it detects RX/TX errors on the Monitor ports or on the Network ports.

Example:

```
M10GBP$ get_rx_tx_err_mode
rx and tx error processing mode:
trap:          enable
timeout:       5 sec
mon:           bypass
net:           none
threshold:     10 err/sec
command succeeded.

M10GBP$ set_rx_tx_err_mode trap timeout mon net threshold
- set rx and tx error processing mode
trap: on|off - enable/disable trap
timeout: >0 - minimal time between traps
mon: none/bypass/linkdrop - changing
Bypass mode when number of errors per
second on MONx ports exceeds threshold
net: none/linkdrop -
changing Bypass mode when number of
errors per second on NETx ports exceeds
threshold
threshold: >0 (default - 10)

M10GBP$ set_rx_tx_err_mode on 4 linkdrop linkdrop 20
```

6.13 Ethernet management port IP address

The Ethernet management port default IP address: 192.168.0.100

The IP address can be set to different IP address using the command set_ip .

Example:

```
M10GBP$ get_ip
device ip address: 192.168.0.100
command succeeded.

M10GBP$ set_ip 192.168.0.101
New system IP will take effect after reboot.
command succeeded.

M10GBP$ get_ip
device ip address: 192.168.0.101
command succeeded.
M10GBP$
```

Notes:

- New IP address will take effect only after performing device reboot.
- Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new IP address.

6.14 Ethernet management port net mask address

The Ethernet management port default net mask address is 255.255.255.0.

The net mask address can be set to different IP address using the command: `set_netmask`

Example:

```
M10GBP$ get_netmask
netmask: 255.255.255.0
command succeeded.

M10GBP$ set_netmask 254.255.255.0
New network mask will take effect after reboot.
command succeeded.

M10GBP$ get_netmask
netmask: 254.255.255.0
command succeeded.
M10GBP$
```

Notes:

- New net mask address will take effect only after performing device reboot.
- Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new net mask address.

6.15 Ethernet management port gateway IP address

The Ethernet management port default gateway IP address is 192.168.0.1.

The net default gateway IP address can be set to different IP address using the command: `set_gateway`

Example:

```
M10GBP$ get_gateway
default gateway ip address: 192.168.0.1
command succeeded.

M10GBP$ set_gateway 192.168.0.2
New default gateway will take effect after reboot.
command succeeded.

M10GBP$ get_gateway
default gateway ip address: 192.168.0.2
command succeeded.
M10GBP$
```

Notes:

- New gateway address will take effect only after performing device reboot.
- Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new gateway address.

6.16 Time

To change the M10GBP date and time use the command "set_time mm DD HH MM YYYY"

Where:

- mm - month,
- DD - day,
- HH - hour (24 hours format),
- MM - minute,
- YYYY -year

Example:

```
M10GBP$ get_time
Time: Thu Feb 5 13:10:00 2009
command succeeded.

M10GBP$ set_time 2 5 13 10 2010
Thu Feb 5 13:10:34 2009 0.000000 seconds
Fri Feb 5 13:10:00 2010 0.000000 seconds
command succeeded.

M10GBP$ get_time
Time: Fri Feb 5 13:10:02 2010
command succeeded.
M10GBP$
```

6.17 System user (set_user)

To change the M10GBP user name (factory default user name is: "admin") use the command "set_user" . The new user name (Tomcat) will take effect after the next login.

Example:

```
M10GBP$ set_user Tomcat
System user name changed, this operation requires logoff.
Continue? (Y/n).
n
command succeeded.
M10GBP$
```


6.18 System password (set_psw)

To change the M10GBP system password (factory default is "gtadmin1") Use the command "set_psw" . The new password will take effect after the next login.

Example:

```
M10GBP$ set_psw
Changing password for customer
Old password:
Enter the new password (minimum of 5, maximum of 8 characters)
Please use a combination of upper and lower case letters and numbers.
Enter new password:
Re-enter new password:
Password changed.
command succeeded.

M10GBP$
```

6.19 Log file destination (log_dest)

The log file can be saved in RAM or in a FLASH memory. The default M10GBP log file destination is the internal FLASH memory. When the log file is saved in the FLASH memory it is preserved after reboot or power off. The Maximum log file size in flash is 512KB. When the log file reach the maximum size a message will appear on the terminal window and the log will not be updated until it will be reset by "reset_log" command.

When the log file is saved in the RAM, the log file will be erased in event of reboot or power OFF.

Example:

```
M10GBP$ get_log_dest
log file destination: flash.
command succeeded.

M10GBP$ set_log_dest ram
command succeeded.

M10GBP$ get_log_dest
log file destination: ram.
command succeeded.

M10GBP$
```

6.20 Unit name.

The M10GBP supports individual names for each M10GBP unit on the network. The User can set the M10GBP unit name (default unit name: M10GBP) using the command: `set_unit_name`. Unit name can be up to 25 symbols

Example:

```
M10GBP$ get_unit_name
unit name: M10GBP
command succeeded.

M10GBP$ set_unit_name first
command succeeded.

M10GBP$
```

6.21 Who am I (whoami)

Blink the **S.OK** LED on currently controlled M10GBP unit in order to identify the relevant unit.

Example:

```
M10GBP$ whoami on
command succeeded.

M10GBP$ whoami off
command succeeded.

M10GBP$
```

6.22 Display M10GBP versions (get_ver)

Display the M10GBP hardware, firmware and software versions.

Example:

```
M10GBP$ get_ver
hardware version:    0.2.0.0
firmware version:    0.2.0.0
swdaemon version:    1.0.2.24
swctl version:       1.0.2.24
u-boot version:      U-Boot 1.3.0, Dec 7 2009, 09:05:02
kernel version:      2.6.23-S-001, #29 Thu Dec 3 16:57:36 IST 2009
command succeeded.

M10GBP$
```

6.23 Display M10GBP parameters (get_params)

Show the current M10GBP parameters values.

Example:

```
M10GBP$ get_params
Time: Thu Feb 5 13:12:08 2009
hb expired state: bypass.
hb active mode: on.
keep_hb_act_mode: off.
restore active state: on.
restore passive state: on.
two port link: off.
hb_interval: 5 ms.
hb_holdtime: 20 ms.
hb_dir: bidirectional.
hb_fail: unidirectional.
device ip address: 192.168.0.100
netmask: 255.255.255.0
gateway ip address: 192.168.0.1
log file destination: flash.
https: off.
web expire time: 900 sec.
snmp version: 1
snmp server ip address: 192.168.0.6
tftp server ip address: 192.168.0.6
tftp root path: "tftpboot".
eth management port params:speed:auto, duplex:auto

M10GBP$
```

6.24 Display M10GBP state (get_dev_state)

Show the current M10GBP Bypass and operational mode state.

Note: This command resets the Alarm LED.

Example:

```
M10GBP$ info get_dev_state
Time: Thu Feb 5 13:12:16 2009
Module fan status: operate
Box fan status: operate
active state: inline.
passive state: inline.
eth management port: on.
application: alive.
rs232 terminal: connected.
network port 0: link up.
network port 1: link up.
monitor port 0: link up.
monitor port 1: link up.
command succeeded.

M10GBP$ M10GBP$
```

6.25 Display device hardware version (get_hw_ver)

Example:

```
M10GBP$ get_hw_ver
hardware version: 00.00.00.01.
command succeeded.
M10GBP$
```

6.26 Display device firmware version (get_fw_ver)

Device firmware version is the generalize version that allow to determine versions of all software components.

Example:

```
M10GBP$ get_fw_ver
firmware version: 0.0.99.2
command succeeded.

M10GBP$
```

6.27 Display device Tracking number (get_dev_tk_num)

Example:

```
M10GBP$ get_dev_tk_num
product tracking number: C083101000007
command succeeded.

M10GBP$
```

6.28 Display device fan state (get_fan_state)

Fan status displayed if hardware version is 0.1.0.0 or higher.

Example:

For the M10GBP:

```
M10GBP$ get_fan_state
Module fan status: operate.
Box fan status: operate.

M10GBP$
```

For the M10GBPG:

```
M10GBP$ get_fan_state
Box fan status: operate.

M10GBP$
```

6.29 Display application state (get_appl_state)

The command get_appl_state display the current status of the application installed on the monitor appliance that is connected to the M10GBP monitor ports:

- Alive – The link on the monitor ports are ON and the M10GBP receives the heartbeat packets
- fail, - The link on the monitor ports are ON and the M10GBP does not receive the heartbeat packets
- unknown - The link on the monitor ports are OFF

Example:

```
M10GBP$ get_appl_state
application: alive.
command succeeded.

M10GBP$
```

6.30 Display rs232 terminal connection state (get_term_state)

Example:

```
M10GBP$ get_term_state
rs232 terminal: connected.
command succeeded.

M10GBP$
```

6.31 Display/change rs232 terminal port speed (get/set_rs232_speed)

Default rs232 port speed set to 115200. It can be changed to 9600. Changing rs232 port speed requires rebooting the device.

Example:

```
M10GBP$ get_rs232_speed
rs232 speed: 115200
command succeeded.

M10GBP$ set_rs232_speed 9600
Completing the rs232 speed settings requires a reboot of the device.
Continue? (Y/n)
```

6.32 Display Ethernet port state (get_link)

The command "get_link XXX" display the port link state.

Where XXX:

- MON0 – monitor port 0
- MON1 – monitor port 1
- NET0 – network port 0
- NET1 – network port 1

Example:

```
M10GBP$ get_link MON0
monitor port 0: link up.
command succeeded.

M10GBP$
```

6.33 Change Ethernet port auto-negotiation status.

The command "set_link XXX enable_autoneg|disable_autoneg" is used to set Ethernet port auto-negotiation mode.

By default auto-negotiation enabled. This command supported only by M10GBPG devices.

Where XXX:

- MON0 – monitor port 0
- MON1 – monitor port 1
- NET0 – network port 0
- NET1 – network port 1

Example:

```
M10GBP$ set_link MON0 disable_autoneg
command succeeded.
M10GBP$
```

6.34 Display device log file (get_log)

The command get_log display the M10GBP log file

Example:

```
M10GBP$ get_log
log file destination: flash.
swdaemon (version 1.0.0.4) started: Thu Feb 5 13:02:40 2009
Mon port 0: link up Thu Feb 5 13:02:48 2009
Mon port 1: link up Thu Feb 5 13:02:48 2009
Net port 0: link up Thu Feb 5 13:02:48 2009
Net port 1: link up Thu Feb 5 13:02:48 2009
Appliance recovered: Thu Feb 5 13:02:49 2009
command succeeded.
M10GBP$
```

6.35 version (snmp_ver)

The M10GBP support SNMP versions 1, 2c and 3. The trap format is defined by the snmp_ver command (Default SNMP version is 1).

Example:

```
M10GBP$ get_snmp_ver
snmp version: 1
command succeeded.
M10GBP$ set_snmp_ver 3
command succeeded.
M10GBP$ get_snmp_ver
snmp version: 3
M10GBP$
```

Notes:

- New SNMP version setting will be activated only after performing "apply_snmp" command.
- SNMP v1, 2c requests and trap are sent over the Ethernet port without any encryption.

6.36 Reset log file (reset_log)

The default M10GBP log file destination is the internal FLASH memory. The log is preserved after reboot or power off. The Maximum log file size in flash is 512KB. When the log file reach the maximum size, a message will appear on the terminal window and the log will not be updated until it will be reset by "reset_log" command.

Example:

```
M10GBP$ reset_log
command succeeded.
M10GBP$
```

6.37 Reset error condition (reset_err)

The Command "reset_err" is used to reset error condition in the M10GBP.

Example:

```
M10GBP$ reset_err
command succeeded.
M10GBP$
```


6.38 Set default parameters (set_default)

Restore the factory default settings for all parameters including system user name and password. Command does not restore rs232 port speed.

Example:

```
M10GBP$ set_default
command succeeded.

M10GBP$
```

The factory default settings are:

- IP address: 192.168.0.100
- Net mask: 255.255.255.0
- Gateway: 192.168.0.1
- hb_interval : 5 ms
- hb_holdtime: 20 ms
- enable snmp traps: disabled all snmp trap -
- snmp server ip: 192.168.0.6
- snmp version: 1
- WEB expired time: 900 sec
- WEB https: disabled
- TFTP server ip: 192.168.0.6
- SNMP user: customer
- SNMP password: gtadmin1
- Unit name: M10GBP
- TFTP root: tftpboot
- Two port link: disabled
- Expire state: Bypass
- Keep heartbeat active mode: disabled
- Management port: enabled
- Heartbeat active mode: ON
- System user: admin
- System user password: gtadmin1
- Heartbeat packet transmit direction: mon0
- Heartbeat packet fail criteria: unidir
- Ethernet Management port parameters: auto
- Remote log state: disabled
- NTP: off
- Telnet: on
- Remote log server IP: 192.168.0.6
- NTP server IP: 192.168.0.6
- Timezone: UTC
- Tacacs state: off
- Tacacs server IP: 192.168.0.6
- WEB user name: admin
- WEB user password: gtadmin1
- Tacacs secret key: default_tac_key

6.39 Firmware Update

Follow the instructions on the firmware update user guide to perform the firmware update:

- M10GBP10g.ppc1_fw_update_xxx.doc – M10GBP10G with PPC rev 1.0
- M10GBP10g.ppc2_fw_update_xxx.doc – M10GBP10G with PPC rev 2.1
- M10GBPg.ppc1_fw_update_xxx.doc – M10GBP G with PPC rev 1.0
- M10GBPg.ppc2_fw_update_xxx.doc – M10GBP G with PPC rev 2.1

SCP protocol supported by firmware update:
update user@ScpSrvIP:[Path_to_fw_update] [force]

NOTE: If the firmware update process is interrupted, the M10GBP\$ may not function properly. We recommend the process be done in an environment with a steady power supply (preferably with UPS).

6.40 Reboot

The reboot command forces a reboot of the M10GBP.

Example:

```
M10GBP$ reboot
rebooting...
```

6.41 Get/Set WEB HTTPS state (web_https_state)

The M10GBP Web interface supports HTTPS and HTTP protocol

While the HTTPS is set to OFF (default OFF) the Web interface will use HTTP protocol.

Example:

```
M10GBP$ get_web_https_state
https:                off.
command succeeded.
M10GBP$ set_web_https_state on
command succeeded.
M10GBP$ get_web_https_state
https:                on.
command succeeded.
M10GBP$
```

6.42 Get/Set WEB management session timeout (web_exp_time)

The web_exp_time command sets the time that the WEB session can be passive (does not send request to the M10GBP) before the session will be terminated by the M10GBP (default 900 sec). In case that the WEB session was terminated the Login screen will appear on the WEB browser.

Example:

```
M10GBP$ get_web_expired_time
session timeout: 900 sec.
command succeeded.
M10GBP$ set_web_expired_time 1000
command succeeded.
M10GBP$ get_web_expired_time
session timeout: 1000 sec.
command succeeded.
M10GBP$
```

6.43 Get/Set Ethernet management port status (mgmt_port_state)

The M10GBP Ethernet management port can be disabled /enabled (factory default = enabled) When enabled all management operation can be performed remotely via this port. When disabled – WEB interface, SNMP, Telnet, SSH management protocols are disabled.

Example:

```
M10GBP$ get_mgmt_port_state
eth management port: on.
command succeeded.
M10GBP$ set_mgmt_port_state off
command succeeded.
M10GBP$ get_mgmt_port_state
eth management port: off.
command succeeded.
M10GBP$
```

6.44 Get/Set Ethernet management port parameters (mgmt_port_params)

The M10GBP Ethernet management port can set to auto negotiation mode or to force 10 Mbit/s half duplex mode (factory default = auto)

Example:

```
M10GBP$ get_mgmt_port_params
eth management port params: speed:auto, duplex:auto.
command succeeded.
M10GBP$ set_mgmt_port_params 10h
command succeeded.
M10GBP$ get_mgmt_port_state
eth management port params: speed:10, duplex:half.
command succeeded.
M10GBP$ set_mgmt_port_params auto
command succeeded.
M10GBP$ get_mgmt_port_state
eth management port params: speed:auto, duplex:auto.
command succeeded.
M10GBP$
```

6.45 Get/Set snmp traps enable state. (get/set_trap)

SNMP traps can be enabled or disabled from CLI interface by using set_trap command.

Default – all traps disabled.

Command gets several parameters:

set_trap [trap,..] trap new_state

- new_state – on/off
- trap –
 - appl - application state change trap.
 - bp - bypass state change trap.
 - mon - monitor ports state change trap.
 - net - network ports state change trap.
 - term - terminal port state change trap.
 - error - error happened trap, power supply restored, CPU fan restored.
 - log - log file exceed size trap.
 - update - update finished trap.
 - all - all traps.

SNMP trap enable state can be get by get_en_trap command. Command does not get parameters.

```

M10GBPG$ get_trap
trap status: 0x00000000
trap m10gbpTrapApplFailed :      off
trap m10gbpTrapApplRecovered :   off
trap m10gbpTrapMon0LinkDown :    off
trap m10gbpTrapMon0LinkUp :      off
trap m10gbpTrapMon1LinkDown :    off
trap m10gbpTrapMon1LinkUp :      off
trap m10gbpTrapNet0LinkDown :    off
trap m10gbpTrapNet0LinkUp :      off
trap m10gbpTrapNet1LinkDown :    off
trap m10gbpTrapNet1LinkUp :      off
trap m10gbpTrapTermDisc :        off
trap m10gbpTrapTermConnect :     off
trap m10gbpTrapError :           off
trap m10gbpTrapLogSize :         off
trap m10gbpTrapPasBypassOff :    off
trap m10gbpTrapPasBypassOn :     off
trap m10gbpTrapActNormalOn :     off
trap m10gbpTrapActBypassOn :     off
trap m10gbpTrapActTrapOn :       off
trap m10gbpTrapUpdate :          off
trap m10gbpTrapLinkDropOn :      off
trap m10gbpTrapUpdateReboot :    off
trap m10gbpTrapTapi12On :        off
trap m10gbpTrapTapaOn :          off
trap m10gbpTrapTapai1On :        off
trap m10gbpTrapTapai2On :        off
trap m10gbpTrapTapai12 :         off
trap m10gbpTrapPower1OK :        off (only for hw 0.3.0.11 and up)
trap m10gbpTrapPower2OK :        off (only for hw 0.3.0.11 and up)
trap m10gbpTrapCpuFanOK :        off (only for hw 0.3.0.11 and up)
PASS
M10GBPG$

```

```
M10GBPG$ set_trap on all
PASS
M10GBPG$
M10GBPG$ set_trap off appl bp mon
PASS
M10GBPG$
```

6.46 Heartbeat packet

6.46.1 Get heartbeat packet content

Display the current heartbeat packet content:

```
M10GBPG$ get_hb_pkt
0000: 00 e0 ed 13 24 ff 00 e0 ed 13 24 fe 81 00 00 04
0010: 81 37 ff ff 00 30 00 00 00 00 40 04 ec a2 c6 13
0020: 01 02 c6 13 01 01 00 00 00 00 00 00 00 00 00 00
0030: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0040: a0 07 37 99
command succeeded.
M10GBPG$
```

6.46.2 Load Heartbeat packet content

The new Heartbeat packet content should be loaded from tftp server. The file name for the new heartbeat packet should be “hb.bin”

Heartbeat packet length: 24 – 1024 bytes.

Destination MAC	XX XX XX XX XX XX	This value will be replaced by the M10GBB to the M10GBP port0/port1 MAC address
Source MAC	XX XX XX XX XX XX	This value will be replaced by the M10GBB to the M10GBP port0/port1 MAC address
VLAN	81 00 00 04	This value will be removed by device before transmitting. The user MUST include this field when preparing heartbeat packet.
Packet content		Any data can be included
Checksum placeholder	00 00 00 00	Real packet checksum will be put here.

```
M10GBP$ load_hb_pkt 192.168.0.2 tftpboot
command succeeded.
M10GBP$
```

6.46.3 Restore default heartbeat packet content

Default heartbeat packet content can be restored by command:

```
M10GBP$ set_default_hb_pkt
command succeeded.
M10GBP$
```

6.46.4 Get/Set heartbeat packet transmit direction

Heartbeat packets can be transmitted from either MON0 or MON1 or from both ports.

By default the heartbeat packets are transmitted from MON0 port and are received by MON1 port.

```
M10GBP$ get_hb_tx_dir
hb_dir: mon0.
command succeeded.
M10GBP$
M10GBP$ set_hb_tx_dir mon1
command succeeded.
M10GBP$ set_hb_tx_dir bidir
command succeeded.
M10GBP$ set_hb_tx_dir mon0
command succeeded.
M10GBP$
```

6.46.5 Get/Set criteria for determine heartbeat packet failure.

The heartbeat packet failure criteria can be set to Unidirectional or Bidirectional.

The heartbeat packet failure criteria function varies according to the heartbeat packet transmit direction

While the heartbeat packets transmit direction is set to MON0 or MON1, the heartbeat packets failure criteria will be set to unidirectional state and the heartbeat packets are expected to be received by the second monitor port. If the second monitor port does not receive the heartbeat packets within the hb_holdtime time it will set the Active Bypass circuitry to the state that was set by the hb_exp_state (Bypass, Tap or linkdrop mode).

While the heartbeat packets transmit direction is set to Bidirectional (HB packets are transmitted from both monitor ports) the heartbeat packet failure criteria can be set to unidirectional or bidirectional.

Unidirectional: The M10GBP will change its state if one of the monitor ports does not receive heartbeat packets. The M10GBP will restore to its default state when both monitor ports receives the heartbeat packets.

Bidirectional: The M10GBP will change its state if both monitor ports do not receive the heartbeat packets. The M10GBP will restore to its default state if at least one of the monitor ports receives the heartbeat packets.


```
M10GBP$ get_hb_fail
hb_fail: unidirectional.
command succeeded.
M10GBP$
M10GBP$ set_hb_fail bidir
hb_dir: bidirectional.
command succeeded.
M10GBP$
```

6.47 Remote log

The M10GBP is capable to send the log messages to remote log server (factory default = disable)

The Remote log should be enabled on remote server to receive messages from device.

6.47.1 Get remote log state

The M10GBP remote log state can be retrieved by command “get_remote_log_state”.

```
M10GBPG$ get_remote_log_state
remote log state: off.
command succeeded.
M10GBPG$
```

6.47.2 Set remote log state

The M10GBP remote log state can be set by command “set_remote_log_state”.

```
M10GBPG$ set_remote_log_state on
command succeeded.
M10GBPG$ get_remote_log_state
remote log state: on.
command succeeded.
M10GBPG$ set_remote_log_state off
command succeeded.
M10GBPG$
```

6.47.3 Get remote log server IP

The Remote log server IP can be retrieved by command “get_remote_log_server_ip”.

Default remote log server IP: 192.168.0.6.

```
M10GBPG$ get_remote_log_server_ip
remote log server ip: 192.168.0.6
command succeeded.
M10GBPG$
```

6.47.4 Set remote log server IP

The M10GBP remote log server IP can be set by command “set_remote_log_server_ip”.

```
M10GBP10G$ set_remote_log_server_ip 192.168.0.6
command succeeded.
M10GBP10G$
```

6.48 NTP (Network Time Protocol)

The M10GBP clock can be synchronized using the NTP protocol
NTP can be enabled or disabled (default: disable).

6.48.1 Get NTP state

The M10GBP NTP state can be retrieved by command “get_ntp_state”.

```
M10GBP10G$ get_ntp_state
NTP state: off.
command succeeded.
M10GBP10G$
```

6.48.2 Set NTP state

The M10GBP NTP can be enabled or disabled by command “set_NTP_state”.

```
M10GBP10G$ set_ntp_state on
command succeeded.
M10GBP10G$ get_ntp_state
NTP state: on.
command succeeded.
M10GBP10G$ set_ntp_state off
command succeeded.
M10GBP10G$
```

6.48.3 Get NTP server IP

The NTP server IP can be retrieved by command “get_ntp_server_ip”.
Default NTP server IP: 192.168.0.6.

```
M10GBP10G$ get_ntp_server_ip
NTP server ip: 192.168.0.6
command succeeded.
M10GBP10G$
```

6.48.4 Set NTP server IP

The M10GBP NTP server IP can be set by command “set_ntp_server_ip”.

```
M10GBP10G$ set_ntp_server_ip 192.168.0.6
command succeeded.
M10GBP10G$
```

6.49 Timezone

6.49.1 Get timezone list

The Command “get_timezone_list” displays the supported time zones. The Time zones are united to groups. The Command timezone can retrieve time zone group names, all time zone in group, all time zones or all time zone which names contain some characters.

```
get_timezone_list XXX      - get timezone list (
                           all - get all timezones,
                           group - get all timezone groups,
                           "Name" - displays timezone group "Name",
                           "XXX" - get all timezones contain "XXX").
```

```
M10GBP$ get_timezone_list group
Timezone group list:
Africa
America/Argentina
America/Indiana
America/Kentucky
America/North_Dakota
America
Antarctica
Arctic
Asia
Atlantic
Australia
Brazil
Canada
Chile
Etc
Europe
Indian
Mexico
Mideast
Pacific
US
command succeeded.
M10GBP$
```

```
M10GBP$ get_timezone_list Ala
Timezone group: Africa
Dar_es_Salaam (GMT+3)
Is the above information OK? (Y/n)n
Timezone group: Africa
Douala (GMT+1)
Is the above information OK? (Y/n)n
Timezone group: Africa
Kampala (GMT+3)
Is the above information OK? (Y/n)n
Timezone group: Africa
Malabo (GMT+1)
Is the above information OK? (Y/n)n
Timezone group: America
Guatemala (GMT-6)
Is the above information OK? (Y/n)n
Timezone group: Asia
Kuala_Lumpur (GMT+8)
Is the above information OK? (Y/n)n
Timezone group: Pacific
Galapagos (GMT-6)
Is the above information OK? (Y/n)n
Timezone group: Pacific
Palau (GMT+9)
Is the above information OK? (Y/n)n
Timezone group: US
Alaska (GMT-9)
Is the above information OK? (Y/n)n
FAILED on error: "Not found"
M10GBP$
```

6.49.2 Get timezone

Command “get_timezone” retrieves current time zone. Default time zone is UTC (GMT+0) time zone.

```
M10GBP$ get_timezone
timezone: Etc/UTC (GMT-0).
command succeeded.
M10GBP$
```

6.49.3 Set timezone

Several time zones supported daylight saving changes. When setting time zone the daylight saving mode can be disabled or enabled. Also can be set timezone GMT-/+ X from “Etc” group.

```
set_timezone [daylight] XXX - set current timezone (daylight - off,
                             see get_timezone_list for possible timezones).
```

```
M10GBP$ set_timezone off Mountain
Timezone group: Canada
Mountain (GMT-7)
Is the above information OK? (Y/n)y
command succeeded.
M10GBP$ set_timezone Mountain
Timezone group: Canada
Mountain (GMT-7)
Is the above information OK? (Y/n)n
Timezone group: US
Mountain (GMT-7)
Is the above information OK? (Y/n)
command succeeded.
M10GBP$
```

6.49.4 Get daylight saving state

Daylight saving state can be retrieved by command “get_daylight_state”.

```
M10GBP$ get_daylight_state
daylight saving state: off.
command succeeded.

M10GBP$
```

6.50 Get technical support information.

The command gather all the necessary information needed for the Technical Support team in order to help resolving technical problems.

```
get_support_info [XXX] - get technical support information.
without parameters - get versions, build dates
and configuration information.
swd_log X - get last X lines of swdaemon log file.
pas_log X - get last X lines of passive bypass
daemon log file.
swctl_log X - get last X lines of swctl log file.
kern_log X - get last X lines of kernel (dmesg)
log file.
snmp_log X - get last X lines of snmp log file.
auth_log X - displays the last X lines of
authentication log file.
```

```
M10GBP$ get_support_info
--- Technical support information ---
Tue Apr 13 22:29:45 2010
full device part number: M10GMSBP
device product part_number: M10GBP
Unit name: M10GBP
product tracking number: C164301300011
device hardware version: 0.2.0.0
device firmware version: 0.2.0.2
device swdaemon version: 1.0.2.60
device swctl version: 1.0.2.60
u-boot version and date: U-Boot 1.3.0, Jan 19 2010, 12:39:21
kernel version and date: 2.6.23-S-001, #171 Wed Mar 10 17:28:38 IST 2010
swdaemon build date: Wed Mar 24 10:30:05 2010
swctl build date: Wed Mar 24 10:30:05 2010
badas build date: Wed Mar 24 10:30:05 2010
snmpd build date: Wed Mar 24 10:30:06 2010
passive bypass build date: Wed Mar 24 10:30:04 2010
kernel bde driver build date: Wed Mar 24 10:30:04 2010
user bde driver build date: Wed Mar 24 10:30:04 2010
```

 Configuration information

.....
 M10GBP\$

```
M10GBP$ get_support_info kern_log 20
Freescall eLBC NAND Driver (C) 2006-2007 Freescall
NAND device: Manufacturer ID: 0xec, Chip ID: 0x75 (Samsung NAND 32MiB
3,3V 8-bit)
Scanning device for bad blocks
fsl-elbc fsl-elbc.0: Using OF partition information
Creating 3 MTD partitions on "nand":
0x00000000-0x00100000 : "log"
0x00100000-0x00200000 : "params"
0x00200000-0x02000000 : "fs"
i2c /dev entries driver
rtc-ds1307 0-0068: rtc core: registered ds1339 as rtc0
TCP cubic registered
NET: Registered protocol family 1
NET: Registered protocol family 17
turn off boot console udbg0
rtc-ds1307 0-0068: setting the system clock to 2010-04-14 04:36:52
(1271219812)
RAMDISK: Compressed image found at block 0
VFS: Mounted root (ext2 filesystem).
Freeing unused kernel memory: 140k init
command succeeded.
```

M10GBP\$

6.51 WEB user

The command controls the WEB user name and password used for WEB interface logging.

Default WEB user name: customer.

Default WEB user password: gtadmin1.

WEB user name length can be from 5 to 30 characters.

WEB user password length can be from 8 to 60 characters.

6.51.1 Get WEB user name

WEB user name can be retrieved by command “get_web_user”.

```
M10GBP$ get_web_user
web user: customer
command succeeded.
M10GBP$
```

6.51.2 Set WEB user name

WEB user name can be set by command “set_web_user”.

```
M10GBP$ set_web_user customer
command succeeded.
M10GBP$
```

6.51.3 Set WEB user password

WEB user password can be set by command “set_web_user_psw”.

```
set_web_user_psw OLD NEW - set web user password (8 - 60 characters).
```

6.52 Multi configuration mechanism

The user can save and restore several (~100) different configurations of the M10GBP parameters.

The M10GBP saves these different configurations on internal flash memory (~1 MB).

Configuration can be saved locally or on remote server by SCP protocol.

To work with remote server should be used additional parameter:

user@ScpSrvIP:[Path]/[ConfName]

6.52.1 Display saved M10GBP configurations.

Command “get_list_conf” used for display the local saved M10GBP configurations.

```
M10GBP$ get_list_conf
saved configurations:
cust1_03
cust2_31
command succeeded.
M10GBP$
```

6.52.2 Save M10GBP configuration.

Command “save_conf” used for local and remote saving the M10GBP configuration.

```
M10GBP$ save_conf cust2_31
command succeeded.
M10GBP$
```

6.52.3 Restore the M10GBP saved configuration.

To restore saved configuration the command “restore_conf” should be used (to display saved configurations run “get_list_conf”).

After restoring configuration the M10GBP must be rebooted.

```
M10GBP$ restore_conf cust2_31
Restoring configuration require reboot device.
Continue? (Y/n)
y
rebooting...
```

6.52.4 Remove saved configuration.

The command “remove_conf” is used to remove saved configuration form the Flash memory.

6.53 Telnet access

The M10GBP support Telnet protocol. By default the Telnet access is enabled.

The Command “get_telnet_state” is used to retrieve telnet access state.

The Command “set_telnet_state” is used to enable or disable telnet access.

```
M10GBP$ get_telnet_state
telnet state: on.
command succeeded.
M10GBP$ set_telnet_state off
command succeeded.
M10GBP$ get_telnet_state
telnet state: off.
command succeeded.
M10GBP$ set_telnet_state on
command succeeded.
M10GBP$
```

6.54 Statistics counters.

The M10GBP support several statistics counters. Statistics can be displayed and cleared.

```
M10GBP$ clear_stat
command succeeded.
M10GBP$
```



```
M10GBP$ get_stat
SUM      Mon0      Mon1      Net0      Net1
RxPkts:    0          0          0          0          0
RxOctets:   0          0          0          0          0
TxOctets:  30357184  30357184  0          0          0
RxPktGood:  0          0          0          0          0
RxUnicastPkts: 0          0          0          0          0
RxMulticastPkts: 0          0          0          0          0
RxBroadcastPkts: 0          0          0          0          0
TxPktGood:  474337   474337   0          0          0
TxUnicastPkts: 474339   474339   0          0          0
TxMulticastPkts: 0          0          0          0          0
TxBroadcastPkts: 0          0          0          0          0
RxDiscards: 0          0          0          0          0
TxDiscards: 0          0          0          0          0
command succeeded.
M10GBP$
```

Statistic description:

#	Name in M10GBP statistic	Name	RFC
1	RxPkts	snmpEtherStatsPkts	RFC 1757
2	RxOctets	snmpIfInOctets	RFC 1213
3	TxOctets	snmpIfOutOctets	RFC 1213
4	RxPktGood	snmpEtherStatsRXNoErrors	RFC 1757
5	RxUnicastPkts	snmpIfInUcastPkts	RFC 1213
6	RxMulticastPkts	snmpEtherStatsMulticastPkts	RFC 1757
7	RxBroadcastPkts	snmpEtherStatsBroadcastPkts	RFC 1757
8	TxPktGood	snmpEtherStatsTXNoErrors	RFC 1757
9	TxUnicastPkts	snmpIfHCOOutUcastPkts	RFC 2233
10	TxMulticastPkts	snmpIfHCOOutMulticastPkts	RFC 2233
11	TxBroadcastPkts	snmpIfHCOOutBroadcastPckts	RFC 2233
12	RxDiscards	snmpIfInDiscards	RFC 1213
13	TxDiscards	snmpIfOutDiscards	RFC 1213

6.55 TACACS+ (Terminal Access Controller Access Control System Plus) support.

The M10GBP support TACACS+ for remote access (WEB access, SNMP access, SSH access, Telnet access).

The M10GBP TACACS+ supports:

- clear and encrypted mode.
- Authentication and Accounting (tac_plus.rfc.1.78.txt).
- Inbound PAP Login (Password Authentication Protocol).

TACACS+ disabled by default.

TACACS+ secret key length can be from 8 to 127 characters.

Default secret key: default_tac_key.

Default TACACS server IP: 192.168.0.6

Serial port access does not support TACACS+.

6.55.1 TACACS+ state

TACACS+ can be enabled or disabled by command “set_tacacs_state”.

TACACS+ state can be retrieved by command “get_tacacs_state”.

```
M10GBP$ get_tacacs_state
TACACS state: off.
command succeeded.
M10GBP$ set_tacacs_state on_clear
command succeeded.
M10GBP$ set_tacacs_state on_encrypted
command succeeded.
M10GBP$ set_tacacs_state off
command succeeded.
M10GBP$
```

6.55.2 Get TACACS+ server IP

TACACS+ server IP can be retrieved by command “get_tacacs_server_ip”

```
M10GBP$ get_tacacs_server_ip
TACACS server ip: 192.168.0.6
command succeeded.
M10GBP$
```

6.55.3 Set TACACS+ server IP

TACACS+ server IP can be set by command “set_tacacs_server_ip”

```
M10GBP$ set_tacacs_server_ip 192.168.0.6
command succeeded.
M10GBP$
```

6.55.4 Set TACACS+ secret key

TACACS+ secret key can be set by command “set_tacacs_key”.

```
M10GBP$ set_tacacs_key default_key
command succeeded.
M10GBP$
```

6.55.5 Set TACACS multi users flag.

Multi users control allows enable/disable TACACS multi users mode.

When TACACS multi users flag is set device will not check the user account, it will rely on TACACS server.

When TACACS multi users flag is reset user can login if the M10GBP and TACACS server have this account.

TACACS multi users flag can be set by command “set_tacacs_multi_users” (default: on)

```
M10GBP$ set_tacacs_multi_users off|on
command succeeded.
M10GBP$
```

5.55.6 Display TACACS multi users flag.

The state of TACACS multi users flag can be displayed by command “get_tacacs_multi_users”

```
M10GBP$ get_tacacs_multi_users
TACACS multi-users: off.
command succeeded.
M10GBP$
```

6.56 Permitted IP support.

The M10GBP support restricted IP address access from HTTP (HTTPS), SSH, TELNET and SNMP.

By default access allowed from any IP address.

Restricted IP access rules:

Three parameters participate in acceptance of host IP address:

- 1) Network IP (NetIP)
- 2) Network MASK (NetMask)
- 3) Host IP (IP)

The access is accepted only if NetIP == IP & NetMask.

Maximum number of permitted IP ranges – 20.

6.56.1 Set/delete permitted IP range

New permitted IP range can be added by command “set_mgmt_permit_ip”

```
M10GBP$ set_mgmt_permit_ip 192.168.0.0/24
command succeeded.
M10GBP$
```

Permitted IP range can be removed by command “del_mgmt_permit_ip”

Command get parameter NetIp/NetMask or “all”

With parameter “all” command remove all permitted IP ranges and device will receive commands from all IP.

```
M10GBP$ del_mgmt_permit_ip 192.168.0.0/24
command succeeded.
M10GBP$
```

6.56.2 Display permitted IP range

Permitted IP range can be displayed by command “get_mgmt_permit_ip”

```
M10GBP$ get_mgmt_permit_ip
permitted ip: 192.168.0.0/24
command succeeded.
M10GBP$
```

6.56.3 Check permitted IP range

Permitted IP range can be checked by command “check_mgmt_permit_ip”

```
M10GBP$ check_mgmt_permit_ip 192.168.0.0/24
All management servers can be accessed.
command succeeded.
M10GBP$
```

6.56.4 Display current user

Current user can be displayed by command “get_current_user”

```
M10GBP$ get_current_user
current user: customer
M10GBP$
```

6.56.5 M2N mode

M2N (monitor port to network port link fail) mode support link drop on network port if correspondent monitor port link gone. This Mode can be set independent for each monitor port.

```
M10GBP$ get_m2n
m2n (Mon port 0): off.
m2n (Mon port 1): off.
command succeeded.
M10GBP$ set_m2n MON0 on
command succeeded.
M10GBP$ get_m2n
m2n (Mon port 0): on.
m2n (Mon port 1): off.
command succeeded.
M10GBP$ set_m2n MON1 on
command succeeded.
M10GBP$ get_m2n
m2n (Mon port 0): on.
m2n (Mon port 1): on.
command succeeded.
M10GBP$ set_m2n MON1 off
command succeeded.
M10GBP$ get_m2n
m2n (Mon port 0): on.
m2n (Mon port 1): off.
command succeeded.
M10GBP$
```

6.56.6 Disable/Enable WEB interface.

The command set_web is used for disable/enable WEB interface.

The command get_web is used for displaying WEB interface state.

```
M10GBP$ get_web
WEB interface: on.
command succeeded.
M10GBP$ set_web off
command succeeded.
M10GBP$ get_web
WEB interface: off.
command succeeded.
```

6.56.7 Displaying power supplies states.

The command `get_power_state` displays the status of the 1U chassis power supplies
This command supported only with hardware version 0.3.0.0.11 and up.

```
M10GBP$ get_power_state
Power 1: OK
Power 2: OK
PASS
M10GBP$ get_power_state
Power 1: FAIL
Power 2: OK
PASS
```

6.56.8 Module power off.

The command `power_off`, causing the individual M10GBP module to be powered off.
It enable the user to replace individual M10GBP module while the rest of the M10GBP modules on the same 1U chassis are powered on up and running.
This command supported only with hardware version 0.3.0.0.11 and up.

```
M10GBP $ power_off
Shutdown....
```

7 SNMP

The M10GBP supports SNMP version 1, 2c, and 3 (SHA and AES) and SNMP discovery.

7.1 SNMP server IP address (`snmp_srv_ip`)

This `snmp_srv_ip` defines the IP address of the SNMP server to which the M10GBP will send/ respond to the SNMP traps

Example:

```
M10GBP$ get_snmp_srv_ip
snmp server ip address: 192.168.0.6
command succeeded.
M10GBP$ set_snmp_srv_ip 192.168.0.7
command succeeded.
M10GBP$ get_snmp_srv_ip
snmp server ip address: 192.168.0.7
command succeeded.
M10GBP$
```

Notes:

- New SNMP server IP address setting will be activated only after “`apply_snmp`” command.
- After changing the server IP address need to change the IP setting of the management station IP to match this change in the IP.
- SNMP v1, 2c requests and trap are sent over the Ethernet port without any encryption.

7.2 SNMP community name (get/set_snmp_user)

The set_snmp_usr defines the SNMP community name (default user/community name is “customer”)
User/community name length include from 5 to 30 symbols.

Example:

```
M10GBP$ set_snmp_user alexa
command succeeded.
M10GBP$ get _snmp_user
snmp snmp_user : alexa
M10GBP$
```

Notes:

- New SNMP user/community name will be activated only after issuing “apply_snmp” command.
- SNMP v1, 2c requests and trap are sent over the Ethernet port without any encryption.

7.3 SNMP user password (set_snmp_user_psw)

SNMP v3 requires using Password to encrypt and decrypt SNMP information.

The set_snmp_user_psw sets the SNMP password (The default password is sillicom2008).

SNMP user password length should include minimum 8 symbols and can be up to 60 symbols.

Example:

```
M10GBP$ set_snmp_user_psw sillicom2010
command succeeded.
M10GBP$
```

Note:

New SNMP user password will be activated only after performing “apply_snmp” command.

7.4 Apply SNMP parameters (apply_snmp)

The command apply_snmp will apply the new SNMP parameters settings.

Example:

```
M10GBP$ apply_snmp
M10GBP$
```

7.5 Set SNMP multi trap destination.

SNMP Multi trap destination allowing to add/remove/view additional destinations for SNMP traps.

Additional SNMP trap destinations can be set by the command “set_trap_account”

When SNMP multi trap destination is not set the M10GBP sends SNMP traps to the SNMP server defined by the command set_snmp_srv_ip .

```
M10GBP$ set_trap_account IP community_name [password]
New SNMP setting will take effect after apply_snmp.
M10GBP$
```

IP – additional SNMP server IP address,

community_name – community name for trap destination,

password – needed only for sending SNMP V3 traps.

New setting will take effect after running “apply_snmp” command.

7.6 Remove trap account.

SNMP trap destinations can be removed by command “del_trap_account”

```
M10GBP$ del_trap_account IP | all
New SNMP setting will take effect after apply_snmp.
M10GBP$
```

IP –SNMP server IP address,

New setting will take effect after running “apply_snmp” command.

7.7 Display SNMP trap accounts.

Display SNMP trap destination can be done by command “get_trap_account”.

```
M10GBP$ get_trap_account
SNMP trap account:
ip: 192.168.0.2
community: community1
psw: *****
ip: 192.168.2.2
community: community2
psw: not set
M10GBP$
```

SNMP variables

Variable code: .iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).garland(15694).M10GBP(2).X.0

Variable name	Variable code (X=)	Type	Attributes	Value	Description
m10gbp DevName	1.2	OCTET STRING (SIZE(1..32))	read-only		Unit name.
m10gbp DevTrackingNumber	1.3	OCTET STRING (SIZE(1..32))	read-only		Get device tracking number.
m10gbp DevHwVer	1.4	OCTET STRING (SIZE(1..32))	read-only		Get device hardware version.
m10gbp DevFwVer	1.5	OCTET STRING (SIZE(1..32))	read-only		Get device firmware version.
m10gbp SnmpAgentVer	1.6	OCTET STRING (SIZE(1..32))	read-only		SNMP agent version
m10gbp LogFileSize	1.7	INTEGER	read-only	ok(1), exceed(2)	Get log file size exceed flag.
m10gbp Mon0Link	1.8	INTEGER	read-only	down(1), up(2)	Monitor port 0 link status.
m10gbp Mon1Link	1.9	INTEGER	read-only	down(1), up(2)	Monitor port 1 link status.
m10gbp Net0Link	1.10	INTEGER	read-only	down(1), up(2)	Network port 0 link status.
m10gbp Net1Link	1.11	INTEGER	read-only	down(1), up(2)	Network port 1 link status.
m10gbp ApplState	1.12	INTEGER	read-only	unknown(1), fail(2), alive(3)	Application state.
m10gbp TermStatus	1.13	INTEGER	read-only	disconnected (1), connected(2)	Rs232 management port status.
m10gbp FanStatus	1.25	OCTET STRING (SIZE(30..256))	read-only		Get device Fan status
m10gbp LogLastLine	1.14	INTEGER	read-only		Get log file last line number.
m10gbp LogReadLine	1.15	INTEGER	read-write		Get/set log file line number to read from.
m10gbp GetLog	1.16	OCTET STRING (SIZE(1..2048))	read-only		Get log file content (20 lines beginning from the last read line).
m10gbp DevUbootVer	1.17	OCTET STRING (SIZE(1..128))	read-only		Get U-boot version.
m10gbp DevKernelVer	1.18	OCTET STRING (SIZE(1..128))	read-only		Get kernel version.
m10gbp LogType	1.19	INTEGER	read-write	swdaemon(1), swctl(2), passive(3), snmp(4), kern(5), auth(6)	Get/set log file type.
m10gbpSupportInfo	1.20	OCTET STRING (SIZE(1..2550))	read-only		Get technical support information.
m10gbpStatistics	1.21	OCTET STRING (SIZE(1..2550))	read-only		Get device statistics counters.
m10gbpClearStatistics	1.22	INTEGER	read-write	clear(1)	Clear device statistics. Set only variable, read will return zero.
m10gbpPowerStatus	1.23	OCTET STRING (SIZE(10..128))	read-only		Get device power status
m10gbp SnmpVer	2.1	INTEGER	read-write	1(1), 2c(2), 3(3)	Set SNMP version. Take effect after setting m10gbp SnmpApply
m10gbp SnmpServerIp	2.2	IpAddress	read-write		Set/Get SNMP server IP address. Take effect after setting m10gbp SnmpApply

m10gbp SnmpUser	2.3	OCTET STRING (SIZE(1..64))	read-write		Set SNMP user/community and WEB interface user name. Take effect after setting m10gbp SnmpApply
m10gbp SnmpPassword	2.4	OCTET STRING (SIZE(17..121))	write-only		Define the SNMP v3 and WEB interface password. Parameter consists of old and new passwords separated by semicolon. Take effect after setting m10gbp SnmpApply
m10gbp SnmpApply	2.5	INTEGER	write-only	apply (1)	Activate all the SNMP changes.
m10gbp SysTime	3.1	OCTET STRING (SIZE(1..32))	read-write		Set/Get device current time/Date.
m10gbp SysIp	3.3	IpAddress	read-write		Set/Get M10GBP IP address.
m10gbp SysNetmask	3.4	IpAddress	read-write		Set/Get M10GBP IP subnet mask.
m10gbp SysGateway	3.5	IpAddress	read-write		Set/Get M10GBP gateway IP address.
m10gbp SysResetLog	3.6	INTEGER	write-only	reset	Reset/Clear M10GBP log file.
m10gbp SysLogDest	3.7	INTEGER	read-write	ram (1), flash (2)	Get/set M10GBP log file location.
m10gbp SysReboot	3.8	INTEGER	write-only	reboot (1)	Reboot the M10GBP.
	3.9				
m10gbp UnitName	3.10	OCTET STRING (SIZE(1..32))	read-write		Set/Get unit name
m10gbp SysTftpIp	3.11	IpAddress	read-write		Set/Get TFTP server IP address.
m10gbp SysTftpRoot	3.12	OCTET STRING (SIZE(1..64))	read-write		Set/Get TFTP server root directory.
m10gbp SysUpdate	3.13	INTEGER	read-write	update(1), force(2)	Update the M10GBP firmware. .
m10gbp SysUpdateStatus	3.14	OCTET STRING (SIZE(1..1024))	read-only		Get M10GBP firmware update status.
m10gbp SysResetErr	3.14	INTEGER	read-write	reset(1)	Reset/Clear M10GBP errors.
m10gbp SysWhoami	3.15	INTEGER	read-write	on(1), off(2)	Unit identification. On/off system OK led blink.
m10gbp SysRemoteLog	3.16	INTEGER	read-write	on(1), off(2)	Get/set remote log state. NOTE: next SNMP command should be send not before 1 sec after this command
m10gbp SysRemoteLogServerIp	3.17	IpAddress	read-write		Set/Get remote log server IP address. NOTE: next SNMP command should be send not before 1 sec after this command
m10gbp SysNTP	3.18	INTEGER	read-write	on(1), off(2)	Get/set NTP state.
m10gbp SysNTPServerIp	3.19	IpAddress	read-write		Set/Get NTP server IP address.
m10gbp SysDayLight	3.20	INTEGER	read-write	default(1), off(2)	Get/set daylight saving mode. The daylight saving mode will be set finally by m10gbp SysTimezone.
m10gbp SysTimezone	3.21	OCTET STRING (SIZE(1..64))	read-write		Get/set device timezone. Timezone examples: America/Barbados, Asia/Bangkok. Full list of supported names can be found in Linux. Command sets the default daylight saving mode. To disable default daylight saving mode perform m10gbp SysDayLight with parameter OFF first.

					To complete timezone setting, reboot should be issued
--	--	--	--	--	---

m10gbpSysWebUser	3.22	OCTET STRING (SIZE(5..30))	read-write		Get/set the WEB user name.
m10gbpSysWebPassword	3.23	OCTET STRING (SIZE(17..121))	read-write		Set the WEB user password. Set only variable, read will return zero length string. Parameter consists of old and new passwords separated by semicolon.
m10gbpSysSaveConfig	3.24	OCTET STRING (SIZE(4..20))	read-write		Save device configuration. Set only variable, read will return zero.
m10gbpSysRestoreConfig	3.25	OCTET STRING (SIZE(4..20))	read-write		Restore device configuration. Set only variable, read will return zero. The unit will be rebooted.
m10gbpSysRemoveConfig	2.26	OCTET STRING (SIZE(4..20))	read-write		Remove device configuration. Set only variable, read will return zero.
m10gbpSysListConfig	2.27	OCTET STRING (SIZE(1..2550))	read-only		Get saved device configurations.
m10gbpSysGetConfigNext	3.28	OCTET STRING (SIZE(1..2550))	read-only		Get saved device configurations next buffer.
m10gbpSysTacacsKey	3.29	OCTET STRING (SIZE(8..127))	read-write		Set the Tacacs secret key. Set only variable, read will return zero length string.
m10gbpSysTacacsState	3.30	INTEGER	read-write	off(1), on_clear(2), on_encrypted(2)	Get/set TACACS state.
m10gbpSysTacacsServerIp	3.31	IpAddress	read-write		Get/set the IP address of the TACACS server.
m10gbpSysTelnetState	3.32	INTEGER	read-write	off(1), on(2)	Get/set Telnet state.
m10gbpSysSetMgmtPermitIP	3.35	OCTET STRING (SIZE(9..2550))	read-write		Add the management port permitted network IP address. String consists of IP and netmask separated by semicolon (192.168.0.0/24;193.151.0.0/22)
m10gbpSysRemoveMgmtPermitIP	3.36	OCTET STRING (SIZE(9..2550))	read-write		Remove one or all management port permitted network IP. String consists of IP address and netmask address separated by semicolon (192.168.0.0/24;193.151.0.0/22 all_permitted_ip)
m10gbpSysGetMgmtPermitIP	3.37	OCTET STRING (SIZE(9..2550))	read-write		Display management port permitted network IP. String consists of IP and netmask separated by semicolon (192.168.0.0/24;193.151.0.0/22)
m10gbpSysTacacsMultiUsers	3.38	INTEGER	read-write	off(1), on(2)	Get/set TACACS multi users state.
m10gbpSysSetTrapAccount	3.39	OCTET STRING (SIZE(9..2550))	read-write		Add the SNMP monitor server trap account. String consists of IP addresses, community name and password separated by semicolon. (192.168.0.0/community1/gt82d7yfr; 193.151.0.0/community2/) Take effect after setting m10gbpSnmpApply.

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m10gbpSysRemoveTrapAccount	3.40	OCTET STRING (SIZE(9..2550))	read-write		Remove one or all SNMP monitor server trap accounts. String consists of IP addresses separated by semicolon. (192.168.0.0;193.151.0.0 all_trap_accounts) Take effect after setting m10gbpSnmApply.
m10gbpSysGetTrapAccount	3.41	OCTET STRING (SIZE(9..2550))	read-only		"Display SNMP monitor server trap accounts. String consists of IP addresses

m10gbpSysPowerOff	3.42	INTEGER	read-write	Poweroff(1)	Power off the M10GBP module. Set only command, read will return zero.
m10gbpSysPwOffState	3.47	INTEGER	read-write	bypass (2) disconnect(4)	Device power off state: bypass or disconnect
m10gbpSysRxTxErrTrapTimeout	3.49	read-write	off(1), on(2)		Enable generating trap on rx/tx error
m10gbpSysRxTxErrMonAction	3.50	read-write			Allow to choose network ports state when errors detected on monitor port
m10gbpSysRxTxErrNetAction	3.51	read-write			Allow to choose network ports state when errors detected on network ports
m10gbpSysRxTxErrRateThreshold	3.52	read-write			Network ports state that was configured will be activated, when error rate threshold will be reached (err/sec). Error rate threshold value should be set more than zero
m10gbpConf2pl	4.1	INTEGER	read-write	enable (1), disable (2)	Get/Set two-port link mode
m10gbpConfHbExpState	4.2	INTEGER	read-write	bypass(2), tap(3), linkdrop(4) tapi12(5), tapa(6), tapai1(7), tapai2(8), tapai12(9)	Get/Set heartbeat expiration mode.
m10gbpConfHbInterval	4.3	INTEGER	read-write		Get/Set heartbeat interval.
m10gbpConfHbHoldTime	4.4	INTEGER	read-write		Get/Set heartbeat hold time
m10gbpConfHbActModeLock	4.5	INTEGER	read-write	enable (1), disable (2)	Get/Set heartbeat active mode lock state.
m10gbpConfHttps	4.6	INTEGER	read-write	enable (1), disable (2)	Get/Set HTTPS protocol enable status.
m10gbpConfSesTimeout	4.7	INTEGER	read-write		Get/Set WEB session timeout.
m10gbpConfEnActHbRestore	4.8	INTEGER	read-write	enable (1), disable (2)	Set/Get enable active heartbeat restore.
m10gbpConfHbPkt	4.11	OCTET STRING (SIZE(48..2048))	read-write		Get current heartbeat packet content. Set new heartbeat packet content. Packet size: 24-1024 bytes.
m10gbpConfHbTxDir	4.12	INTEGER	read-write	mon0(1) mon1(2) bidir(3)	Set/Get heartbeats transmit port. If m10gbpConfHbTxDir is set to either mon0 or mon1 the m10gbpConfHbFail will be reset to unidir.
m10gbpConfHbFail	4.13	INTEGER	read-write	unidir(1) bidir(2)	Set/Get criteria for determine heartbeat failure. If m10gbpConfHbTxDir set to either mon0 or mon1, the m10gbpConfHbFail must be set to unidir.

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m10gbpConfDefHbPkt	4.14	INTEGER	read-write	default(1)	Restore default heartbeat packet content. Set only variable, read will return zero.
m10gbpConfMgmtPortParams	4.15	INTEGER	read-write	auto(1), force_10h(2)	Set/Get ethernet management port parameters. auto - autonegotiation with counterpart ethernet port. force_10H - force 10 Mbit/s half duplex mode.

m10gbpConfM2n	4.16	OCTET STRING	Read-write		Set/Get the monitor port link to network link feature state. Set example: 'on;off – enables this feature for MON0 and disables for MON1 Get example: 'MON0: on;MON1: off.
m10gbpConfWeb	4.17	INTEGER	read-write	off(1), on(2)	Set/Get WEB interface state (on/off)
m10gbpOpHbActMode	5.1	INTEGER	read-write	on (1), off (2)	Get/Set heartbeat active mode on/off.
m10gbpOpActBypass	5.2	INTEGER	read-write	off (1), on (2), tap (3), linkdrop(4), tapi12(5), tapa(6), tapai1(7), tapai2(8), tapai12(9)	Get/Set the state of the active bypass state (inline/bypass/tap/linkdrop).
m10gbpOpPasBypass	5.3	INTEGER	read-only	off (1), on (2)	Get the state of the passive bypass state.
m10gbpRecoveryDefault	6.1	INTEGER	write		Restore system default parameter.
m10gbpTrapConfApplFail	7.2	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on application failed/restored events status change: m10gbp TrapApplFail / m10gbpTrapApplRecover.
m10gbpTrapConfBypass	7.3	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on bypass(passive and Active) status change events: m10gbpTrapActBypassOn / m10gbp TrapActInlineOn, m10gbp TrapPasBypassOn / m10gbpTrapPasBypassOff, m10gbp TrapTapOn, m10gbpTrapLinkDropOn, m10gbp TrapTapi12On, m10gbp TrapTapaOn, m10gbp TrapTapai1On, m10gbp TrapTapai2On, m10gbp TrapTapai12On.
m10gbpTrapConfMonLink	7.4	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on Monitor ports Link status change events: m10gbp TrapMon0LinkDown / m10gbpTrapMon0LinkUp, m10gbp TrapMon1LinkDown / m10gbpTrapMon1LinkUp.
m10gbpTrapConfNetLink	7.5	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on Network ports Link status change events: m10gbp TrapNet0LinkDown / m10gbp TrapNet0LinkUp, m10gbp TrapNet1LinkDown / m10gbpTrapNet1LinkUp.

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m10gbpTrapConfTerm	7.6	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on Terminal connect / disconnect status change events: m10gbp TrapTermDisc / m10gbp TrapTermCon.
m10gbpTrapConfErr	7.7	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on error reports from the system: m10gbpTrapErr.
m10gbpTrapConfLogSize	7.8	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on Log size overflow: m10gbp TrapLogSize.
m10gbpTrapConfUpdate	7.10	INTEGER	read-write	enable (1), disable (2)	Enable/Disable getting trap info on update finish event: m10gbpTrapUpdate, m10gbpTrapUpdateReboot

7.8 SNMP traps.

Trap	Value	Description
m10gbpTrapStart	1	Reserved
m10gbpTrapApplFail	2	Trap is sent when the Monitor application does not send back the HB packets within the hold time Interval defined by hb_holdtime variable.
m10gbpTrapApplRecover	3	Trap is sent when the Monitor application starts again to send the HB packets
m10gbpTrapPasBypassOn	4	Trap is sent when passive bypass changes to bypass mode.
m10gbpTrapPasBypassOff	5	Trap is sent when passive bypass changes to inline mode.
m10gbpTrapActBypassOn	6	Trap is sent when active bypass changes to bypass mode.
m10gbpTrapActInlineOn	7	Trap is sent when active bypass changes to inline mode.
m10gbpTrapMon0LinkDown	8	Trap is sent when monitor port-0 link drops.
m10gbpTrapMon0LinkUp	9	Trap is sent when monitor port-0 link is restored.
m10gbpTrapMon1LinkDown	10	Trap is sent when monitor port-1 link drops.
m10gbpTrapMon1LinkUp	11	Trap is sent when monitor port-1 link is restored.
m10gbpTrapNet0LinkDown	12	Trap is sent when network port-0 link drops.
m10gbpTrapNet0LinkUp	13	Trap is sent when network port-0 link is restored.
m10gbpTrapNet1LinkDown	14	Trap is sent when network port-1 link drops.
m10gbpTrapNet1LinkUp	15	Trap is sent when network port-1 link is restored.
m10gbpTrapTermDisc	16	Trap is sent when local serial RS232 connection is disconnected.
m10gbpTrapTermCon	17	Trap is sent when local serial RS232 connection is connected.
m10gbpTrapErr	18	Trap is sent as indication of an error within the M10GBP, with some description of the error.
m10gbpTrapLogSize	19	Trap is sent when the log file size exceed its maximum allowed size.
m10gbpTrapTapOn	20	This trap is sent when switch changes mode to tap.
m10gbpTrapUpdate	21	Trap is sent when firmware update is finished.
m10gbpTrapLinkDropOn	22	This trap is sent when switch changes mode to linkdrop.
m10gbpTrapUpdateReboot	23	Trap is sent when firmware update is finished and device is rebooted.
m10gbpTrapTapi12On	24	Trap is sent when active bypass changes to TAPI12 mode.
m10gbpTrapTapaOn	25	Trap is sent when active bypass changes to TAPA mode.
m10gbpTrapTapai1On	26	Trap is sent when active bypass changes to TAPAI1 mode.
m10gbpTrapTapi2On	27	Trap is sent when active bypass changes to TAPAI2 mode.

m10gbpTrapTapi12On	28	Trap is sent when active bypass changes to TAPAI12 mode.
m10gbpTrapPower1OK	29	This trap is sent when power supply 1 restored from failure. (only for hardware 0.3.0.11 and up)
m10gbpTrapPower2OK	30	This trap is sent when power supply 2 restored from failure. (only for hardware 0.3.0.11 and up)
m10gbpTrapCpuFanOK	31	This trap is sent when CPU FAN restored from failure. (only for hardware 0.3.0.00 and up)
m10gbpTrapRxTxError	32	This trap is sent when device detect RX or TX error. Next trap can be send in 5 sec
m10gbpTrapNet0Disable2pl	33	This trap is sent when network port 0 was disable by 2pl function
m10gbpTrapNet0Enable2pl	34	This trap is sent when network port 0 was enable by 2pl function
m10gbpTrapNet1Disable2pl	35	This trap is sent when network port 1 was disable by 2pl function
m10gbpTrapNet1Enable2pl	36	This trap is sent when network port 1 was enabled by 2pl function

m10gbpTrapNet0Disable2pl M2n	37	This trap is sent when network port 0 was disable by 2pl/m2n function
m10gbpTrapNet0Enable2pl M2n	38	This trap is sent when network port 0 was enable by 2pl/m2n function
m10gbpTrapNet1Disable2pl M2n	39	This trap is sent when network port 1 was disable by 2pl/m2n function
m10gbpTrapNet1Enable2pl M2n	40	This trap is sent when network port 1 was enable by 2pl/m2n function

7.9 SNMP request examples (net-snmp application)

SNMP v1 get request:

```
snmpget -v 1 -c customer 192.168.0.100 GARLAND-M10GBP-MIB::m10gbp TrapConfTerm.0
```

SNMP v1 set request:

```
snmpset -v 1 -c customer 192.168.0.100 GARLAND-M10GBP-MIB::m10gbp TrapConfTerm.0 = on
```

SNMP v2c get request:

```
snmpget -v 2c -c customer 192.168.0.100 GARLAND-M10GBP-MIB::m10gbp TrapConfTerm.0
```

SNMP v2c set request:

```
snmpset v 2c -c customer 192.168.0.100 GARLAND-M10GBP-MIB::m10gbp TrapConfTerm.0 = on
```

SNMP v3 get request:

```
snmpget -v 3 -u customer -l authPriv -a SHA -A Gtadmin1 -x AES -X Gtadmin1
```

```
192.168.0.100 GARLAND-M10GBP-MIB:: m10gbp TrapConfTerm.0
```

SNMP v3 set request:

```
snmpset -v 3 -u customer -l authPriv -a SHA -A gtadmin1 -x AES -X Gtadmin1
```

```
192.168.0.100 GARLAND-M10GBP-MIB:: m10gbp TrapConfTerm.0 = on
```

7.10 Dispalying log file via SNMP

Use the following command to control the log display via SNMP

- 1) m10gbpLogType xxx – set log file type (swdaemon, swctl, passive, snmp, kernel, auth)
- 2) m10gbpLogLastLine – Get log file last line number.
- 3) m10gbpLogReadLine 0 (xxx) - Read the log file from line xxx
- 4) m10gbpGetLog - Read 20 lines form the log file

Note: When reading the log file forward incrementing read line number is automatic.

When reading the log file backward read line number should be set by “m10gbpLogReadLine xxx

7.11 SNMP agent, net-snmp and copyright

Device SNMP agent based on net-snmp-5.4.1 package. (see NET-SNMP Copyright.)

8 Web interface

8.1 Starting web interface

The M10GBP WEB interface can be access from any WEB browser. To connect to the M10GBP WEB interface use the following address on your WEB browser:

- If https enabled: “https://device_ip_address/index.html.en”
- If https disabled: “http:// device_ip_address/index.html.en”

Where device_ip_address – M10GBP Ethernet Management port IP address.

Note:

- If the WEB interface is inactive more than the web_expired_time, a login screen will be prompt.
- Most web application fields contain context help.
- The new settings in the WEB interface will take affect only after clicking the “**apply**” button.

8.2 Login



Figure 14: Sign-in Page

On the login screen type the user name and the password. (Default user name is “admin”. Default password is “gtadmin1”).

User name should include minimum 5 symbols and can be up to 64 symbols.

Password should include minimum 8 symbols and can be up to 128 symbols.

The first user that will be logged in to the WEB interface will get all the rights (Control /monitor) of the Web interface application, the next users will not able to control device, they will be able only to monitor the M10GBP parameters.

When first user will be logged off from the WEB interface, the next user will receive his rights and will be able to (Control /monitor) the WEB interface.

8.2.1 Logoff

The 10GBP will terminate the WEB session in case that the WEB session is passive (does not send request to the M10GBP) for more than the time defined by the web_expired_time (default 900 sec).

If the main WEB interface window will be closed others than by pressing on “Logoff” button, the WEB interface will be unavailable for the time defined by the web_expired_time (default 900 sec).

8.2.2 Information Page

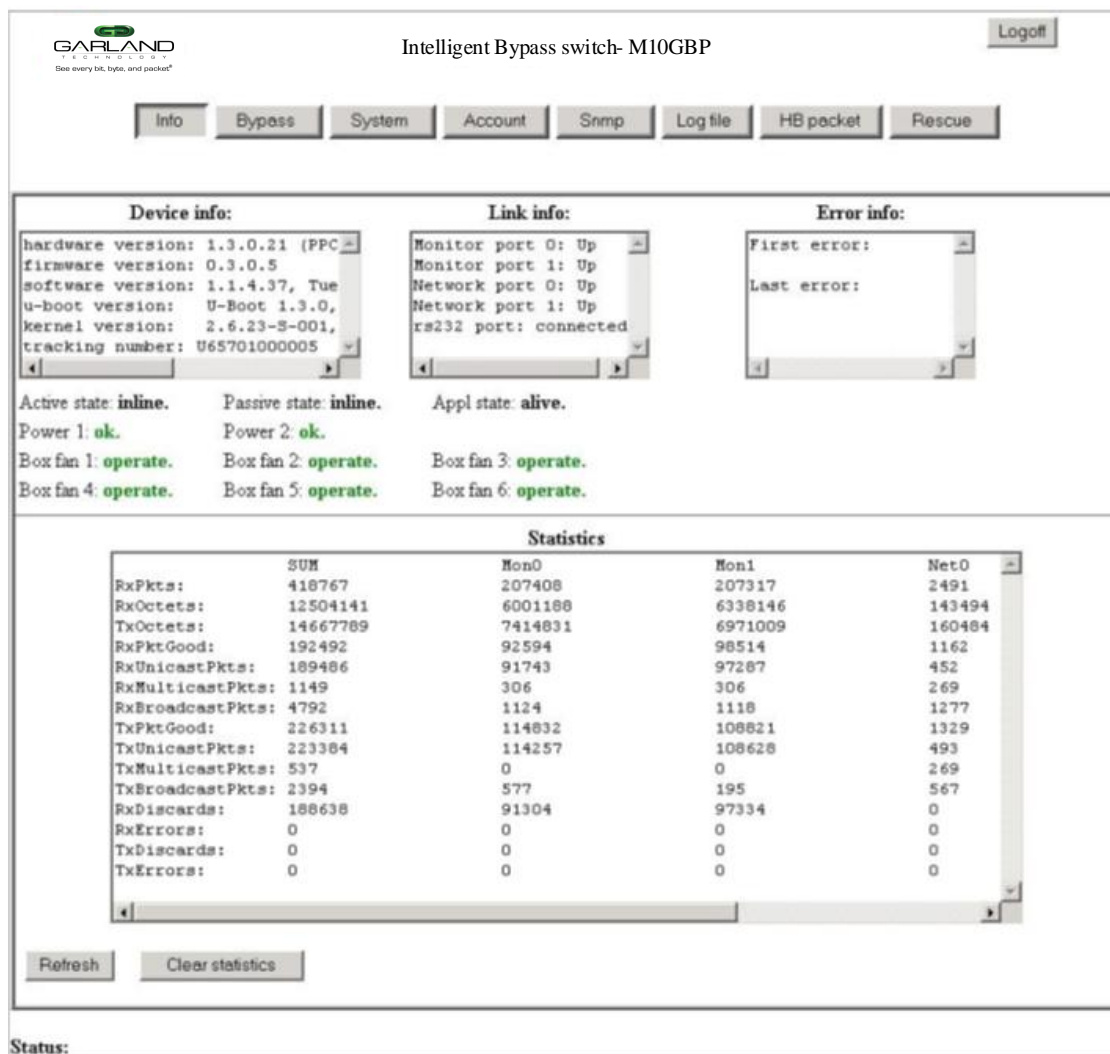


Figure 15: Information Page

8.2.3 Information area description.

The WEB interface includes five Information areas:

- Device info
- Link info
- Error info
- Status info
- Statistics

The Information area includes read only information

8.2.3.1 Device info area description

The Device info area contains common information:

- Device hardware version
- Device firmware version
- Device software version
- Device U-boot version
- Device Kernel version
- Device tracking number

8.2.3.2 Link info area description

The Link info area contains link information:

- Monitor ports link status (down/up)
- Network port link status (down/up)
- Rs232 management port connect status (connected/disconnected)

8.2.3.3 Error info

Error info area contains the first and last error (Hardware /software) descriptions.

8.2.3.4 Status information

The Status information area contains status information:

- Active state (bypass/inline/tap/linkdrop)
- Passive state (bypass/inline)
- Application state (alive/fail/unknown)
- Power supply (1 and 2) status (only for hardware 0.3.0.11 and up)
- Box Fan status (1-6) (only for hardware 0.3.0.11 and up)

8.2.3.5 Statistic information

The Statistic information area contains network statistic information on the different M10GBP ports:

8.2.4 Bypass Page

The screenshot shows the 'Intelligent Bypass switch- M10GBP' web interface. At the top, there's a 'Logoff' button and a navigation bar with tabs: Info, Bypass (selected), System, Account, Snmp, Log file, HB packet, and Rescue. The main content area is titled 'Bypass configuration' and contains several settings:

- HB active mode:** on (dropdown)
- HB active mode lock:** off (dropdown)
- HB active restore:** on (dropdown)
- HB interval:** 5 (text input)
- HB hold time:** 20 (text input)
- Active bypass:** inline (dropdown)
- HB active expire:** bypass (dropdown)
- Device power off state:** bypass (dropdown)

Below these settings is a list of bypass modes:

- 1 BYPASS Bypass mode
- 2 INLINE Appliance Inline mode
- 3 TAP TAP Mode (Directional Monitoring)
- 4 LINKDROP Failed Appliance Disables Live Link
- 5 TAPI12 TAP Mode with Injection
- 6 TAPA Aggregate Mode (Combined Monitoring)
- 7 TAPAI1 Aggregate Mode with Dual Injection from Mon0
- 8 TAPAI2 Aggregate Mode with Dual Injection from Mon1
- 9 TAPAI12 Aggregate Mode with Dual Injection from Mon0 and Mon1

The 'Advanced features' section includes:

- 2 port link:** off (dropdown)
- Who am I:** off (dropdown)
- HB tx dir:** bidir (dropdown)
- HB fail:** unidir (dropdown)
- M2N:** disabled (dropdown)

The 'RX/TX errors processing' section includes:

- Trap:** off (dropdown)
- Timeout:** 5 (text input)
- Mon:** none (dropdown)
- Net:** none (dropdown)
- Rate threshold:** 10 (text input)

At the bottom, there is an 'Apply' button and a 'Status:' label.

Figure 16: Information Page

8.2.5 Bypass configuration area description

8.2.5.1 Heartbeat active mode select box

When heartbeat active mode is ON the M10GBP send heartbeat packets on its monitor ports. If the M10GBP does not detect the heartbeat packet received from the monitor ports the M10GBP will switch to **Active Bypass** or **TAP**, **TAPI12**, **TAPA**, **TAPAI1**, **TAPAI2**, **TAPAI12** or **Linkdrop** mode according to the predefined settings of the HB active expire select box.

When heartbeat active mode is set to OFF the M10GBP stops sending the heartbeats and the Active Bypass circuitry can be set manually via the management port to one of the following modes **Normal (Inline)**, **Active Bypass**, **TAP**, **TAPI12**, **TAPA**, **TAPAI1**, **TAPAI2**, **TAPAI12** or **Linkdrop**.

8.2.5.2 Heartbeat active mode lock select box

When HB active mode lock is ON the state of heartbeat active mode preserve after reboot or after power on events. When HB active mode lock is OFF the state of heartbeat active mode is automatically set to ON after reboot or after power on.

8.2.5.3 Heartbeat active restore select box

When the HB active mode is ON the M10GBP will restore to **Inline (Normal)** state when the heartbeat packets will be received from the Monitor port.

When HB active mode is OFF the M10GBP preserves its state and no heartbeat packets are generated.

The following actions should be taken to restore the normal operation:

- Restore external environment to normal work.
- Set the active Bypass select box to inline
- Set the HB active mode to on

8.2.5.4 Active bypass select box

When heartbeat active mode is set to OFF the M10GBP stops sending the heartbeats and the Active Bypass circuitry can be controlled manually by the Active bypass select box to one of the following modes **Normal (Inline)**, **Active Bypass**, **TAP**, **TAPI12**, **TAPA**, **TAPAI1**, **TAPAI2**, **TAPAI12** or **Linkdrop** mode.

8.2.5.5 HB active expire select box

When heartbeat active mode is ON the M10GBP send heartbeat packets on its monitor ports. If the M10GBP does not detect the heartbeat packet received from the monitor ports the M10GBP will switch to **Active Bypass** or **TAP**, **TAP**, **TAPI12**, **TAPA**, **TAPAI1**, **TAPAI2**, **TAPAI12** or **Linkdrop** mode according to the predefined settings of the HB active expire select box.

8.2.5.6 Device power off state select box

The M10GBP supports Disconnect or Bypass mode at power off. When in Disconnect, in any event of power off the M10GBP will be in Disconnect mode - simulates switch / router cable disconnection on the two network ports. When in Bypass, in any event of power off the M10GBP will be in bypass mode. Pwoff_status is set to Bypass mode by default Bypass. Supported only with new HW devices (M10GBPP hardware version 0.3.2.0 and up).

8.2.5.7 Heartbeat interval textbox

The M10GBP generates heartbeat packet to monitor PORT0 every "hb_interval" msec. (default - 5, min - 3, max - 10000). Heartbeat interval should be at least 3 times less than heartbeat hold time.

8.2.5.8 Heartbeat hold time textbox

The M10GBP monitor the received packets on monitor port1, if heartbeat packets do not arrive within "hb_holdtime" msec, the M10GBP will set the Active Bypass to Bypass/Tap/Linkdrop mode, depend on active switch expire state .

To secure reliable detection of Application failure, the " hb_holdtime " value should be at least 3 times the "hb_interval" parameter value. (default - 20, min - 10, max - 50000)

The " hb_holdtime " value is preserved after reset and power off events.

8.2.6 Advanced features configuration area

8.2.6.1 2 port link

The M10GBP supports two ports link. When enabled (on), if one of the network ports link fails it drop the link on the other network port. Two ports link is disabled (off) by default.

8.2.6.2 Who am I

Blink the S.OK LED on currently controlled M10GBP unit in order to identify the relevant unit.

8.2.6.3 Hb tx dir

Set/Get the heartbeats transmit port. The heartbeats can be transmitted for port mon0, port mon1 or form both of them (bidir)

8.2.6.4 HB fail

Set /get the HB fail criteria.

While the HB tx dir is set to bidirectional (HB packets are transmitted from both ports (mon0 and mon1) the HB fail criteria can be set to:

Bidirectional: The M10GBP will change its state if both monitor ports do not receive the heartbeat packets. The M10GBP will restore to its default state if at least one of the monitor ports receives the heartbeat packets.

Unidirectional: The M10GBP will change its state if one of the monitor ports do not receive heartbeat packet. The M10GBP will restore to its default state when both monitor ports receives the heartbeat packets.

Intelligent Bypass switch- M10GBP

Logoff

Info

Bypass

System

Account

Snmp

Log file

HB packet

Rescue

System

Unit name	Telnet	Device power off state	Configuration
<input type="text" value="jbs"/>	<input type="button" value="on"/>	<input type="button" value="bypass"/>	<input type="button" value=""/>

TACACS

TACACS state	TACACS server ip	TACACS secret key	Multi users
<input type="button" value="off"/>	<input type="text" value="192.168.0.6"/>	<input type="text" value=""/>	<input type="button" value="off"/>

Time

Fri Oct 18 02:37:55 2013	DayLight	Timezone group	Timezone
<input type="text" value=""/>	<input type="button" value="off"/>	<input type="button" value="Europe"/>	<input type="button" value="Dublin"/>

NTP

NTP	NTP server ip
<input type="button" value="off"/>	<input type="text" value="192.168.0.6"/>

Ethernet management port	Permitted Network IP list										
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">System IP</td> <td style="width: 25%;">Netmask</td> <td style="width: 25%;">Default Gateway</td> </tr> <tr> <td><input type="text" value="192.168.0.100"/></td> <td><input type="text" value="255.255.255.0"/></td> <td><input type="text" value="192.168.0.1"/></td> </tr> </table>	System IP	Netmask	Default Gateway	<input type="text" value="192.168.0.100"/>	<input type="text" value="255.255.255.0"/>	<input type="text" value="192.168.0.1"/>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Operations</td> <td style="width: 50%;">Permitted IP</td> </tr> <tr> <td><input type="button" value="view"/></td> <td><input type="button" value="all"/></td> </tr> </table>	Operations	Permitted IP	<input type="button" value="view"/>	<input type="button" value="all"/>
System IP	Netmask	Default Gateway									
<input type="text" value="192.168.0.100"/>	<input type="text" value="255.255.255.0"/>	<input type="text" value="192.168.0.1"/>									
Operations	Permitted IP										
<input type="button" value="view"/>	<input type="button" value="all"/>										

Apply

Status:

Figure 17: System Page Configuration area

8.2.8 System Page Configuration area

8.2.8.1 Unit name

The M10GBP supports individual name for each M10GBP unit on the network. The User can set the M10GBP unit name (default unit name: m10gbp). Unit name can be up to 25 symbols

8.2.8.2 Telnet

The M10GBP supports Telnet protocol. The User can Enable/Disable the Telnet support (By default the Telnet support is: off).

8.2.8.3 Device power off state

The M10GBP supports Disconnect or Bypass mode at power off. The use can set the power off state to Bypass of disconnect mode (Disconnect mode - simulates switch / router cable disconnection on the two network ports.)

8.2.8.4 Configuration

The M10GBP support multi configuration save and restore. Use the scroll down menu to save new configuration or to restore an existing configuration/

The M10GBP saves these different configurations on internal flash memory(~1 MB).

8.2.9 TACACS configuration area

The M10GBP support TACACS+ for remote access (WEB access, SNMP access, SSH access, Telnet access).

8.2.9.1 TACACS+ state

Set the TACACS+ state ON/Off (default: Off)

8.2.9.2 TACACS+ Server Ip

Set the TACACS+ server IP address (default IP : 192.168.0.6)

8.2.9.3 TACACS+ secret key

Set the TACACS+ secret key (default: default_tac_key)

8.2.9.4 TACACS multi users

Multi users control allows enable/disable TACACS multi users mode.

When TACACS multi users flag is set device will not check the user account, it will rely on TACACS server.

When TACACS multi users flag is reset user can login if the M10GBP and TACACS server have this account.

8.2.10 Time configuration area

8.2.10.1 Time state

Time format: mm DD HH MM YYYY

Where:

- mm – month
- DD – day
- HH – hour
- MM – minute
- YYYY – year

8.2.10.2 Daylight state

Set the Daylight saving time mode ON/Off (default: OFF)

8.2.10.3 Timezone group state

Set the time zone group. Select from the dropdown menu (default: etc).

8.2.10.4 Timezone state

Set the time zone. Select from dropdown menu (default: UTS)

8.2.11 NTP configuration area

The M10GBP clock can be synchronized from NTP server on the network.

8.2.11.1 NTP

Set the NTP mode ON/OFF (default: OFF)

8.2.11.2 NTP Server Ip

Set the NTP server IP address (default IP: 192.168.0.6)

8.2.12 Ethernet management port area

8.2.12.1 System IP address

The System IP address is the Ethernet management port IP address.

The New IP address will take effect only after performing device reboot

Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new IP address

8.2.12.2 System IP address

The System IP address is the Ethernet management port IP address.

The New IP address will take effect only after performing device reboot
Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new IP address

8.2.12.3 Netmask

The System netmask IP address is Ethernet management port net mask address. The new Netmask IP address will take affect only after device reboot.
Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new NETMASK IP address

8.2.12.4 Default gateway

The default gateway IP address is the Ethernet management port default gateway address. The new default gateway IP address will take affect only after device reboot.
Remote control via telnet, SSH, WEB or SNMP applications should be reconfigured to use new gateway IP address

8.2.12.5 Permitted Network IP list

There are two fields which controls the permitted IP address:

- 1) Operations
- 2) Permitted IP

The operation filed control the operation to be performed (view, set, remove)
When view” operation is selected, the “Permitted IP” window will displayed the current permitted IP ranges.

When “set” operation is selected, the “Permitted IP” will enable the user to enter new permitted IP range in the following format:

nnn.nnn.nnn.nnn/mask

For examples:

192.168.2.0/24

10.0.0.0/8

When “remove” operation is selected, the “Permitted IP” window will display the current permitted IP range that can be removed. The user can select one of the IP ranges to be removed or to select “all” ranges.

8.3 Account Page

The screenshot shows the 'Intelligent Bypass switch- M10GBP' web interface. At the top, there is a 'Logoff' button. Below it is a navigation bar with buttons for 'Info', 'Bypass', 'System', 'Account' (which is highlighted), 'Snmp', 'Log file', 'HB packet', and 'Rescue'. The main content area is titled 'User account' and contains a table with the following columns: 'Interface', 'Name', 'Old Password', 'New Password', 'Confirm new Password', and 'WEB session timeout (sec)'. The 'Interface' column has a dropdown menu currently set to 'web'. The 'Name' column has a text input field containing 'customer'. The 'Old Password', 'New Password', and 'Confirm new Password' columns each have an empty text input field. The 'WEB session timeout (sec)' column has a text input field containing '900'. Below the table is an 'Apply' button and a 'Status:' label.

Figure 18: Account Page Configuration Area

8.3.1 Interface

Select the M10GBP interface for which you would like to change the user account (CLI, WEB, SNMP)

8.3.2 User/community name

Set the User name for the selected interface on the Interface dropdown menu

8.3.3 Password

The "old password" , "new password" and the "confirm new password" are required in order to set the Password for the selected interface on the Interface dropdown menu

8.3.4 Session timeout

The web_exp_time command sets the time that the WEB session can be passive (does not send requests to the M10GBP) before the session will be terminated by the M10GBP (default 900 sec).

In case that the WEB session was terminated the Login screen will be appear on the WEB browser.

If the main WEB interface window will be closed in any way other than by pressing on “Logoff” button, the WEB interface will be unavailable for the time defined by the web_expired_time (default 900 sec).

The first user that will be logged in to the WEB interface will get all the rights (Control /monitor) of the Web interface application, the next users will not able to control device, they will be able only to monitor the M10GBP parameters.

When first user will be logged off from the WEB interface, the next user will receive his rights and will be able to (Control /monitor) the WEB interface.

8.4 SNMP page

Figure 19: SNMP Page Configuration Area

8.4.1 SNMP settings

8.4.1.1 SNMP version

The M10GBP support SNMP versions 1, 2c and 3.
SNMP version select box destined to change the SNMP version.

8.4.1.2 SNMP server IP address

SNMP server IP textbox destined to change used SNMP server IP address.

8.4.2 SNMP trap account

SNMP trap account allow to add/remove/view additional destinations for SNMP traps.

8.4.3 SNMP trap control

SNMP trap control destined to enable/disable SNMP trap groups. SNMP traps are disabled by default. It can be enabled by checking the check box for the relevant trap group.

a) Appl fail enable/disable following traps:

- m10gbpTrapApplFail
- m10gbp TrapApplRecover.

b) Bypass enable/disable following traps:

- m10gbp TrapActBypassOn
- m10gbp TrapActInlineOn
- m10gbp TrapPasBypassOn
- m10gbp TrapPasBypassOff
- m10gbp TrapTapOn
- m10gbp TrapTapi2On
- m10gbp TrapTapaOn

- m10gbp TrapTapai1On
 - m10gbp TrapTapai2On
 - m10gbp TrapTapai12On
- c) Mon link enable/disable following traps:
- m10gbp TrapMon0LinkDown
 - m10gbp TrapMon0LinkUp
 - m10gbp TrapMon1LinkDown
 - m10gbp TrapMon1LinkUp.
- d) Net link enable/disable following traps:
- m10gbp TrapNet0LinkDown
 - m10gbp TrapNet0LinkUp
 - m10gbp TrapNet1LinkDown
 - m10gbp TrapNet1LinkUp.
- e) Terminal enable/disable following traps:
- m10gbp TrapTermDisc
 - m10gbp TrapTermCon.
- f) Error enable/disable following traps:
- m10gbp TrapErr
 - m10gbpTrapPower1OK (only for hardware 0.3.0.11 and up)
 - m10gbpTrapPower1OK (only for hardware 0.3.0.11 and up)
 - m10gbpTrapCpuFanOK (only for hardware 0.3.0.00 and up)
- g) Log size enable/disable following traps:
- m10gbp TrapLogSize
- h) Update
- m10gbp TrapUpdate
 - m10gbp TrapUpdateReboot

8.5 Log file page

Intelligent Bypass switch- M10GBP Logoff

Info Bypass System Account Snmp Log file HB packet Rescue

Log file view

```

Mon port 0: link down   Sun Mar 28 05:23:25 2010
Mon port 0: link down   Sun Mar 28 05:24:12 2010
Mon port 0: link up     Sun Mar 28 05:25:33 2010
Appliance recovered:    Sun Mar 28 05:25:34 2010
Mon port 1: link down   Sun Mar 28 05:25:50 2010
Mon port 1: link up     Sun Mar 28 05:26:11 2010
Appliance recovered:    Sun Mar 28 05:26:11 2010
Passive bypass on:      Sun Mar 28 05:30:25 2010
swdaemon: Log closed:   Sun Mar 28 05:30:26 2010

swdaemon (version 1.0.2.60) started: Sun Mar 28 05:31:35 2010
Link dropped off:       Sun Mar 28 05:31:41 2010
Passive inline on:      Sun Mar 28 05:31:42 2010
  
```

swdaemon |< << >> >|

Swdaemon log file control

Log file flash ☐ Reset log file ☐ Log file size status: **within bound**

Remote log file control

Remote log off Remote log ip 192.168.0.6

Apply **Status:**

Figure 20: Log file Page Configuration Area

8.5.1 Log file control area

The log file can be saved in RAM or in a FLASH memory. The default M10GBP log file destination is the internal FLASH memory. When the log file is saved in the FLASH memory it is preserved after reboot or power off. The Maximum log file size in flash is 512KB. When the log file reach the maximum size a message will appear on the terminal window and the log will not be updated until it will be reset by “reset_log” command.

When the log file is saved in the RAM, the log file will be erased in event of reboot or power OFF.

The log file size status can be viewed in the “Log file size status” area.

The log file can be reset by checking the “Reset log file” check box.

8.5.2 Remote log file control area

The M10GBP is capable to send the log messages to remote log server (factory default = disable)

The Remote log should be enabled on remote server to receive messages from device.


8.5.2.1 Remote log

Set the remote log ON/OFF (default: OFF)

8.5.2.2 Remote log Server Ip

Set the Remote log server IP address (default IP: 192.168.0.6)

8.6 HB Packet page



Intelligent Bypass switch- M10GBP

Logoff

Info Bypass System Account Snmp Log file **HB packet** Rescue

Heartbeat packet

Current heartbeat packet content

```

000: 00 e0 ed 13 24 ff 00 e0   ed 13 24 fe 81 00 00 04
010: 81 37 ff ff 00 30 00 00   00 00 40 04 ec a2 c6 13
020: 01 02 c6 13 01 01 00 00   00 00 00 00 00 00 00 00
030: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00
040: a0 07 37 99
        
```

Select new heartbeat packet

Obtaining...

Load new HB

Load default HB

Status:

Figure 21: Heartbeat Packet page Configuration Area

This page enables the user to change or to load new Heartbeat packet content.

8.7 Rescue page

Figure 22: Rescue page Configuration Area

8.7.1 Device firmware update area

The Update command updates the M10GBP firmware's:

- root file system
- kernel image
- dtb
- u-boot

Follow the instructions on the firmware update user guide to perform the firmware update:

- m10gbp10g.1_update_manual.doc – M10GBP10G with PPC rev 1.0
- m10gbp10g.2_update_manual.doc – M10GBP10G with PPC rev 2.1
- m10gbpg.1_update_manual.doc – M10GBPG with PPC rev 1.0
- m10gbpg.2_update_manual.doc – M10GBPG with PPC rev 2.1

NOTE: If the firmware update process is interrupted, your M10GBP may not function properly. We recommend the process be done in an environment with a steady power supply (preferably with UPS).

8.7.2 System restore area

8.7.2.1 Set default parameters

Restore the factory default settings for all parameters including system user name and password.

8.7.2.2 Reset errors

Reset the M10GBP errors.

The M10GBP displays on the LCD the first error only, after resetting the error the M10GBP will display the next error if exist.

8.7.2.3 Reboot

Checking Reboot check box force the M10GBP to reboot

The following screen appears during the M10GBP reboot progress, when the M10GBP will load again the main screen will appear.

8.7.2.4 Power off (only for hardware 0.3.0.11 and up)

Module power will be off after select check box “Power off” and click “Apply” button.

8.7.3 Technical support area

The command gather all the necessary information needed for the Technical Support team in order to help resolving technical problems.

9 Management push button interface

The M10GBP includes 2 management push buttons (PB0 and PB1). Use PB0 and PB1 buttons to query and control the M10GBP unit.

PB0 button:

Hold PB0 for more than 3sec enters or exit from main menu.

Short press on the PB0 button moves to next menu

PB1 button:

Hold PB1 button for more than 3sec resets the M10GBP errors

Short press on the PB1 button selects the item or displays the next data item.

9.1 Main menu

Press the PB0 for more than 3sec. to enter to the main menu.

The main menu includes the following sub menus:

INFO

INFOMNF

OP

EXIT

Use short press on the PB0 button in order to move to the next submenu.

Use short press on the PB1 button to enter to the submenu

9.2 INFO menu

The INFO menu includes the following queries:

HW_VER	- Display the hardware version
FW_VER	- Display the firmware version
SW_VER	- Display the software version
UB_VER	- Display u-boot version
KERN_VER	- Display kernel version
UNIT	- Display the unit name
IP_ADDR	- Display the management port IP address.
EXIT	- Exit to the main menu

Use short press on the PB0 button in order to move to the next query.

Use short press on the PB1 button to select query and to displays the next data item on the query.

9.3 INFO MNF menu:

The INFO menu includes the following queries

PRODUCT	- Display the product name
TK_NUM	- Display product tracking number
MAC MGMT	- Display the management port MAC address
EXIT	- Exit to the main menu

Use short press on the PB0 button in order to move to the next query.

Use short press on the PB1 button to select query and to displays the next data item on the query.

9.4 OP menu

The OP menu includes the following actions:

SHUTDOWN	- Shutdown the M10GBP unit (the unit will reload by pressing on the RST button)
REBOOT	- Reset the M10GBP unit
DEFAULT	- Set factory default parameters
EXIT	- Exit to the main menu

Use short press on the PB0 button in order to move to the next query.

Use short press on the PB1 button to select query and to displays the next data item on the query.

10 Appendixes

10.1 Key features

- Self generating heartbeat pulses – No driver or management port is required to generate pulses.
- Sets to Bypass when it detects in-line system failure.
- Sets to Bypass when it detects in-line system link failure
- Sets to Bypass when it detects in-line software application system hang.
- Sets to Bypass on Power failure.
- Sets to Normal when it detects in-line system recovery.
- Double Safe Bypass architecture with two routing circuitries
- Two on Board Watch Dog Timer (WDT) Controllers
- Software programmable time out interval
- Support Two ports link feature - if one of the network ports link fails it will drop the link on the other network port as well
- Independent Bypass / Normal / Tap /Linkdrop operation in every module
- Supports up to four modules in a chassis
- Supports 6 different TAP mode of operation
- Simple CLI configuration management via serial port
- HTTP/HTTPS management interface via network management port
- Telnet management interface via network management port
- SSH management interface via network management port
- Supports SNMP version 1, 2c, 3 (SHA, AES)
- Support for SNMP multi trap destinations
- Supports remote log
- Supports TACACS+
- Support for TACACS multi users.
- Supports NTP
- Supports time zone
- Supports remote save/restore backup configuration
- Two redundant power supplies
- Support power supply monitoring
- Optional -48V DC power supplies

M10GMSBP

- Supports Multi-media Fiber 10 Gigabit Ethernet (Base-SR).

M10GSSBP

- Supports Single-mode Fiber 10 Gigabit Ethernet (Base-LR).

M10GESBP

- Supports Single Mode Fiber 10 Gigabit Ethernet (Base-ER).

10.2 Bypass specifications

WDT Interval (Software Programmable):	Routing <i>Transmit heart beat packet every 3mS – 10Sec. Default 5 mS</i> <i>Verification packets received every 10mS – 50Sec. Default 20 mSec</i> Double Bypass <i>Transmit heart beat packet every 300mS – 60Sec. Default 7Sec</i> <i>Verification packets received every 1S – 253Sec. Default 20Sec</i>
--	---

10.3 Product default specifications

Mode at Power up:	Bypass
Heartbeat:	Activated
Bypass Switch is ready and in-line device responds to heartbeat:	Change to Normal
In-line device responds to heartbeat:	Normal
in-line device does not respond heartbeat:	Bypass /Tap / Linkdrop
Mode at Power Off:	Bypass
Heartbeat Packet:	Internetwork Packet Exchange

10.4 Technical specifications

10.4.1 M10G1XC

10.4.1.1 M10G1AC/M10G1DC: Bypass TAP 1U Chassis System Technical Specifications

Dockings:	Front holders
Voltage Input:	100-120/200-240VAC, 5/2.5A, 50/60Hz or -48VDC
Power Consumption:	100W maximum - for 4 TAPs
Size:	444mm x 339.3mm x 44 mm (17.48” x 13.358” x 1.732”)
Operating Humidity:	0%–90%, non-condensing
Operating Temperature:	0°C – 50°C (32°F - 122°F)
Storage Temperature:	-20°C–65°C (-4°F–149°F)
EMC Certifications:	Class B FCC / CE / VCCI
Safety:	UL
MTBF*:	> 150,000 hours

10.4.1.2 M10GBP1U/M10GBP1UP: Bypass Switch 1U Host System LEDs / Connector Specifications

LEDs:	(2) Power LED – Green, Power is on, LED per power supply
Connectors:	

10.4.2 M10GMSBP

10.4.2.1 Fiber Gigabit Ethernet Technical Specifications - (Base-SR) Adapters:

IEEE Standard / Network topology:	Fiber Gigabit Ethernet, Base-SR (850nm)
Data Transfer Rate:	20Gbit/s in full duplex mode per port
Cables and Operating distance:	Multimode fiber: 62.5um 16.5m maximum at 62.5 um ** Theoretical Distance – Defined as half a distance as stated by the IEEE 802.3 standard
Output Transmit Power:	Typical: -2.6 dBm Minimum: -3 dBm
Optical Receive Sensitivity:	Typical: -14.6 dBm Maximum: -11.1 dBm
Insertion Loss (Passive: Normal Mode)	Typical: 0.8 dB Maximum: 1.9 dB
Insertion Loss (Passive: Bypass Mode)	Typical: 0.8 dB Maximum: 1.9 dB
Voltage:	12V
Power Consumption:	25W max.
Operating Humidity:	0%–90%, non-condensing
Operating Temperature:	0°C – 50°C (32°F - 122°F)
Storage Temperature:	-20°C–65°C (-4°F–149°F)
EMC Certifications:	Class B / FCC / CE / VCCI
Safety:	UL
MTBF*:	> 150,000 hours

10.4.2.2 LED and Connector Specifications

LEDs:	<p>Network / Monitor ports: Link LED – (Green) On Link partner is detected. Activity LED – (Yellow) Blinks on activity.</p> <p>Power - Green power is on Normal – Green, Switch in Normal mode.</p> <p>SysOK – Yellow when Sys is OK, WDT – Blink Yellow when WDT is activated Light Yellow WDT time out Off: WDT is disabled</p> <p>Bypass - Red when bypass, off on Normal Alarm – Red on system alarm</p>
Connectors:	<p>Network: 2 LC Duplex Monitor: 2 SFP+ Management: RJ-11 serial port, RJ-45 1G copper Ethernet</p>

10.4.3 M10GSSBP

10.4.3.1 Fiber Gigabit Ethernet Technical Specifications - (Base-LR) Adapters:

IEEE Standard / Network topology:	Fiber Gigabit Ethernet, Base-LR (1310nm)
Data Transfer Rate:	20Gbit/s in full duplex mode per port
Network ports Cables and Operating distance:	Single mode fiber: 5000m maximum at 9 um **
Insertion Loss (Passive: Normal Mode)	Typical: 1.2 dB Maximum: 1.6dB
Insertion Loss (Passive: Bypass Mode)	Typical: 1.2 dB Maximum: 1.6dB
Voltage:	12V
Power Consumption:	25W max.
Operating Humidity:	0%–90%, non-condensing
Operating Temperature:	0°C – 50°C (32°F - 122°F)
Storage Temperature:	-20°C–65°C (-4°F–149°F)
EMC Certifications:	Class B FCC / CE / VCCI /
Safety:	UL
MTBF*:	> 150,000 hours

10.4.3.2 LED and Connector Specifications

LEDs:	<p>Network / Monitor ports:</p> <p>Link LED – (Green) On Link partner is detected.</p> <p>Activity LED – (Yellow) Blinks on activity.</p> <p>Power - Green power is on</p> <p>Normal – Green, Switch in Normal mode.</p> <p>SysOK – Yellow when Sys is OK,</p> <p>WDT – Blink Yellow when WDT is activated</p> <p>Light Yellow WDT time out</p> <p>Off: WDT is disabled</p> <p>Bypass - Red when bypass, off on Normal</p> <p>Alarm – Red on system alarm</p>
Connectors:	<p>Network: 2 LC Duplex</p> <p>Monitor: 2 SFP+</p> <p>Management: RJ-11 serial port, RJ-45 1G copper Ethernet</p>

10.5 Safety Precautions



CAUTION:

- The battery requires special handling at end-of-life. The battery can explode or cause burns if disassembled, charged, or exposed to water, fire or high temperature. After replacing the battery, properly dispose of used battery according to instructions.
- There is a risk of explosion if the battery is replaced by an incorrect type. Ensure to replace the battery with the same type.
- To avoid the possibility of electric shock, all power cords must be disconnected from the switch before starting this procedure.



CAUTION:

The fiber optic ports contain a Class 1 laser device. When the ports are disconnected, always cover them with the provided plug. If an abnormal fault occurs, skin or eye damage may result if in close proximity to the exposed ports.

- Remove and save the fiber optic connector cover.
- Insert a fiber optic cable into the ports on the network adapter bracket as shown.

10.5.1 Safety considerations for the M10GBP rack mounting:

A. Verify that the maximum operating ambient temperature inside a rack assembly does not exceed 50°C.

B. Verify that a sufficient clear space is provided around the M10GBP unit to allow sufficient amount of air flow for safe operation of the product. Keep 25 mm clearance on the sides of the unit.

C. Serious injury could result due to improper handling and uneven mechanical loading. Use proper techniques to mount and secure to the rack to avoid uneven mechanical loading.

D. An external circuit breaker rated max. 20A should be provided in the building installation (end user's responsibility).

E. Verify that the M10GBP unit is reliably connected to protective grounding. Connect the product only to a grounded type socket-outlet in the building installation or in a rack. Use the grounding stud on the rear panel to connect the product to the rack.

10.6 TFTP server installation and configuration.

10.6.1 Windows TFTP server installation and configuration

Use any TFTP server utility to create TFTP server (for example: tftpd32 which is a free utility):

- 1) Create \tftp directory
- 2) Create \tftp\tftpboot directory. (The working directory for the TFTP software should be the \tftp)

10.6.2 Linux TFTP server installation and configuration

- 1) Connect the host computer to Internet
- 2) Install tftp-server (yum -y install tftp-server)
- 3) Disconnect the host computer from the Internet
- 4) Turn off firewall. Run the following command: iptables -F or type "setup"
- 5) Create the tftpboot directory: mkdir /tftpboot
- 6) For FC4 edit file /etc/sysconfig/selinux: SELINUX=PERMISSIVE
- 7) Disable iptable and ip6table in services
- 8) Edit /etc/xinetd.d/tftp to enable tftp:


```
{
disable = no
socket_type = dgram
protocol = udp
wait = yes
user = root
server = /usr/sbin/in.tftpd
server_args = /tftpboot
}
```
- 9) Restart the tftp servers on your host: /etc/init.d/xinetd restart

10.7 Management Serial (RS232) cable drawing

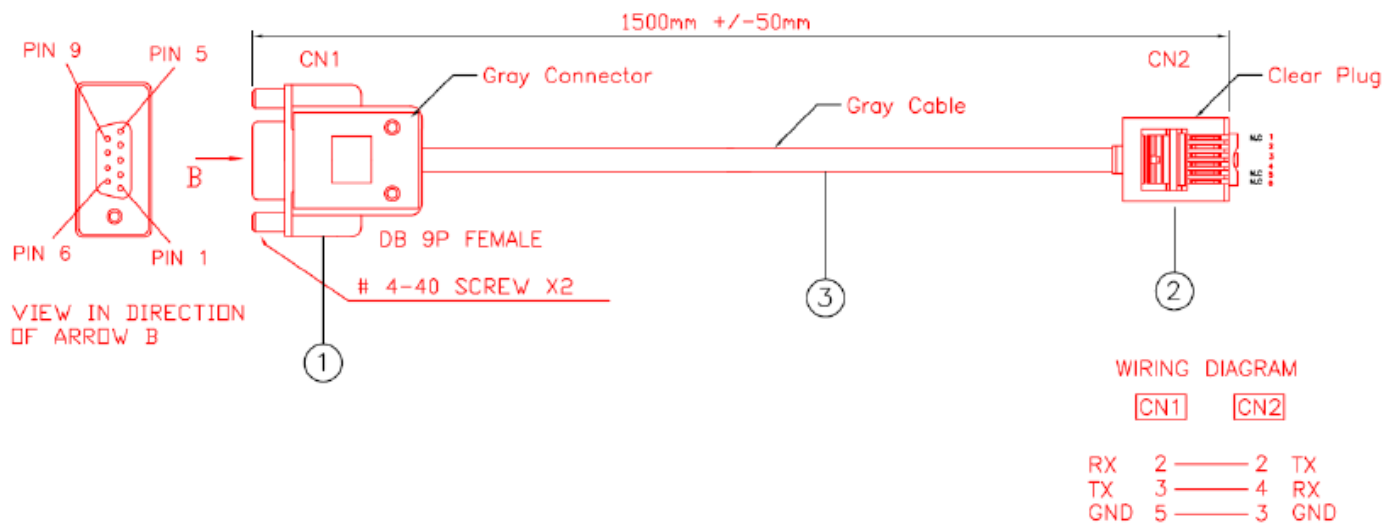


Figure: 23. MCB#RS232- RJ11 to DB9 Management serial cable.