Datacom Systems Inc

Access Your Network™

DS-1010 Bypass Switch

DURA*stream*™ 10 Gigabit DS-1010

USER*guide*

May 2010

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Product Description

Datacom Systems Inc. DURAstream™ DS-1010 Bypass Switch is a 10Gbps intelligent external active bypass that enables plug and play connectivity which includes an auto heartbeat and requires no additional drivers to be installed on any connected appliance. The DS-1010 consists of one 10Gbps segment which can support one network segment and one appliance.

DURA*stream*™

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1.5 Certifications and Marks

CAUTION: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The CE logo indicates that this equipment was tested and found to meet radiated and conducted emission to the European Community EMC Directive 89/336/EEC requirements as per EN 61000-6-3:2001, the generic emissions standard for residential, commercial and light industrial devices, the limits are those for an EN 55022 Class A product.

This equipment also has been tested and found to meet the immunity levels for residential, commercial and light industrial devices according to EN 61000-6-1:2001, the interference severity levels to the standards and requirements of EN 61000-3-2 Harmonic Current, EN 61000-3-3 Voltage Fluctuations and Flicker, EN 61000-4-2 Electrostatic Discharge, EN 610004-3 Radiated Susceptibility, EN 61000-4-4 Electrical Fast Transient/Burst, EN 61000-4-5 Surge and EN 61000-4-6 Conducted Susceptibility.

This equipment completed the Product Safety Review and meets the Low Voltage Directive 98/68/EEC requirements to the standards of EN 60950 Safety of Information Technology Equipment.

The RoHS compliant logo indicates that this electronic product does not exceed the limit requirements of toxic, hazardous substances or elements as set forth in Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

The crossed out wheelie bin logo signifies that the product can be recycled after being discarded, and should not be casually discarded as set forth in Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE).

Electromagnetic Compatibility (EMC) refers to the Electromagnetic Interference (EMI) generated and the level of resistance or immunity to external sources of EMI by a product. When products operate properly and harmoniously within a shared electromagnetic environment, they are considered "compatible." The International "EMC-Mark" illustrates compliance with the EU EMC Directive, U.S. FCC or Food and Drug Administration (FDA) requirements, the Voluntary Control Council for Interference (VCCI) in Japan, and the Australia Telecommunications Authority (AUSTEL).

This product has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Datacom Systems Inc's USERguide, may cause harmful interference with radio communications. Also this product accepts any interference received, including interference that may cause undesired operation.

The UL Mark on this product means that UL has tested and evaluated representative samples of the product and determined that they meet UL requirements. Under a variety of programs products are periodically checked by UL at the manufacturing facility to make sure they continue to meet UL requirements. The UL Marks may be only used on or in connection with the products certified by UL and under the terms of written agreement with UL.

1.6 Safety Notices and Warnings

These explanatory labels are included in this information for the user in accordance with the requirements of IEC 60825.1.

WARNING: Class 1 laser and LED product. A class 1 laser is safe under all conditions of normal use. Invisible laser radiation may be emitted from optical port openings when no fiber cable is connected, avoid exposure to laser radiation and do not stare into open optical ports.

IMPORTANT: Rack Mount Instructions are included here to call the attention of installation technicians to pertinent safety and warning issues prior to the the installation of the product as follows:

A. Elevated Operating Ambient — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified in the 'DS-1010 Series Common Specifications 12' section.

B. Reduced Air Flow — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C. Mechanical Loading — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D. Circuit Overloading — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

E. Reliable Earthing — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

2 Overview

Automatic Failover = Constant Link State — Deploying in-line monitoring devices such as intrusion prevention systems (IPS) or bridge devices like VPN gateways and firewalls used to mean a potential point of failure on the network. When one of these devices malfunctioned or became overwhelmed with traffic, network outages could occur. This posed serious challenges when deployed on mission critical links.

The DURA*stream*™ Bypass Switch ensures your network's most important data does not fail even when in-line devices do. Deploying a DURA*stream*™ Bypass Switch ensures uptime of critical links regardless of in-line device performance by diverting critical network traffic away from malfunctioning in-line devices until such devices are operating normally. This not only alleviates potential issues with traffic congestion affecting link behavior caused by an IPS, it allows maintenance and upgrades of attached in-line tools without network downtime.

The DURA*stream*™ DS-1010 10G Bypass Switch is an easy-to-manage external active bypass providing failover and TAP capabilities for data monitoring of critical Gigabit network segments. Each bypass switch offers up to four independent interface modules with a variety of media options (copper, fiber, and media conversion). Each of the four network modules operates independently to ensure link protection monitoring of one to four links at any time.

Line-rate throughput and real-time data forwarding hardware protects data and allows critical voice and data applications to perform uninterrupted and meet high demands for quality and security. Deployed with an in-line monitoring tool, a DURA*stream*™ Bypass Switch creates a comprehensive solution for intrusion prevention.

Heartbeat Mode — The DURA*stream*™ DS-1010 10G Bypass Switch can monitor the health of in-line appliances by sending and receiving a heartbeat packet. A user programmable heartbeat packet can be injected into the monitoring port link to determine availability of attached monitoring devices or help determine delay due to high traffic volume. Even if a connected in-line tool is powered on, the bypass switch can automatically switch traffic around it until the device returns to normal operation. At that time, traffic is re-routed back to the monitor port.

Passive Mode — In the event of power loss, the switch closes to create a physical connection, which in turn, creates a passive bypass path to help prevent traffic interruption. Robust Management, Security and Logging Manage your switch using built-in CLI or GUI, including secure web interface over HTTPS. Supports secure shell (SSH), SNMP, e-mail notifications, TACACS+ as well as Syslog to enable consolidation of log data from multiple systems into a central repository.

Reliable and Easy to Use — The DURA*stream*™ DS-1010 10G Bypass Switch is simple to deploy, enables plug-and-play connectivity, and is compatible with all major manufacturer's monitoring systems. Every unit not only comes with dual redundant power supplies to ensure monitoring uptime, the voltage of each power supply is continuously monitored for instances of power decline or outage. In such cases, the unit can initiate a switch to passive bypass mode.

2.1 Shipped Contents

DS-1010 Series Link Aggregation Taps

1 — Model: DS-1010 series Bypass Switch
1 — Console Cable (DB9 to RJ45)
1 — Management Cable (RJ45 to RJ45)
2 — Switching AC Adapters
2 — AC Line Cords

2.2 DURAstream™ Series Benefits and Features

Benefits

- Optimized reliability of critical network links
- Achieve fail-safe monitoring with in-line monitoring tools such as IPS and DPI
- Improved network uptime and security
- Increased application availability
- Upgrade, maintain, or replace in-line devices without interrupting network operations
- Datacom Customer Service Support is available via:
  Phone: (315) 463-9541
  Fax: (315) 463-9557
  Website: www.datacomsystems.com
  E-mail: support@datacomsystems.com

Features

- Passive bypass maintains network integrity during power loss
- Active switching of traffic in case of system failure to prevent network interruptions
- Heartbeat Mode - several user-configurable options to monitor link status and health of inline appliances including bridge devices like firewalls and VPN gateways
- Flexible deployment options - single mode and multi-mode
- Dual redundant power supplies ensure monitoring uptime
- Power fail protection monitors power supplies for power decline or outage and can switch to passive mode
- Manage device remotely or locally with Web based management (HTTPS) or extensive CLI
- Management port with SSH connectivity
- SNMP traps and e-mail event notifications on defined events
- Interfaces with authentication servers such as TACACS+
- Syslog support

2.3 DS-1010 Series Common Specifications

One In-Line Gigabit Network Port: various see 'Specific Specifications 12' section

Ethernet Management Port: RJ45

The factory configured IP Address, Subnet Mask and default Gateway are as follows:

IP Address: 192.168.0.111
Subnet Mask: 255.255.255.0
default Gateway: 192.168.0.1

Serial Console Port: RJ45

In-Line Insertion Loss (front): — less than 0.5dB

Power Adapter Input Requirement: 100 - 240VAC 47 - 63Hz 1.4A MAX

Power Adapter Output: 12VDC 5.0A

Power Consumption: 60.0W MAX

BTU/h: 204.6 MAX

Operating Temperature (Tma): 32º to 131° F — 0º to 55° C

Storage Temperature: -22º to 149° F — -30º to 65° C

Operating Range Relative Humidity: 5 to 90% non-condensing

Dimensions (H x W x D): includes rack mount bracket
1.75 x 19.00 x 21.00 inch
4.44 x 48.26 x 53.34 cm

Weight: 13.5 lbs; shipping: 21.0 lbs — 6.12 kg; shipping; 9.53 kg

Warranty: One (1) year - see 'Warranty' 38 section for details.

2.4 DS-1010 Series Specific Specifications

DS-1010LR-10G:
1 single mode fiber segment active bypass

DS-1010SR-10G-50:
1 multi mode fiber (50µ) segment active bypass

DS-1010SR-10G-62:
1 multi mode fiber (62.5µ) segments active bypass

2.5 Technical Brief

DS-1010 is Datacom Systems' 10Gbps intelligent external Active Bypass Switch. The external active bypass enables plug and play connectivity, includes an auto heartbeat and requires no additional drivers to be installed on any connected appliance. DS-1010 consists of 1 segment which can support one network segment and one appliance which provides these features:

- 1 segment 10Gb active bypass switch
- Supports Fiber Multi Mode and Fiber Single Mode
- Comprehensive management tools:
- Secure Web management Interface (SSL),
  - SNMP
  - CLI by serial console
  - SSH
- Different Heartbeat Modes that monitor appliance system health without appliance driver, including: Internal Loop-back Heartbeat Frame Mode, and Link Status Mode
- Email Notification for appliance status changes
- Power Outage Network Bypass Protection
- Field Programmability over Ethernet or Serial Console Port
- Syslog support
- TACACS+ authentication server

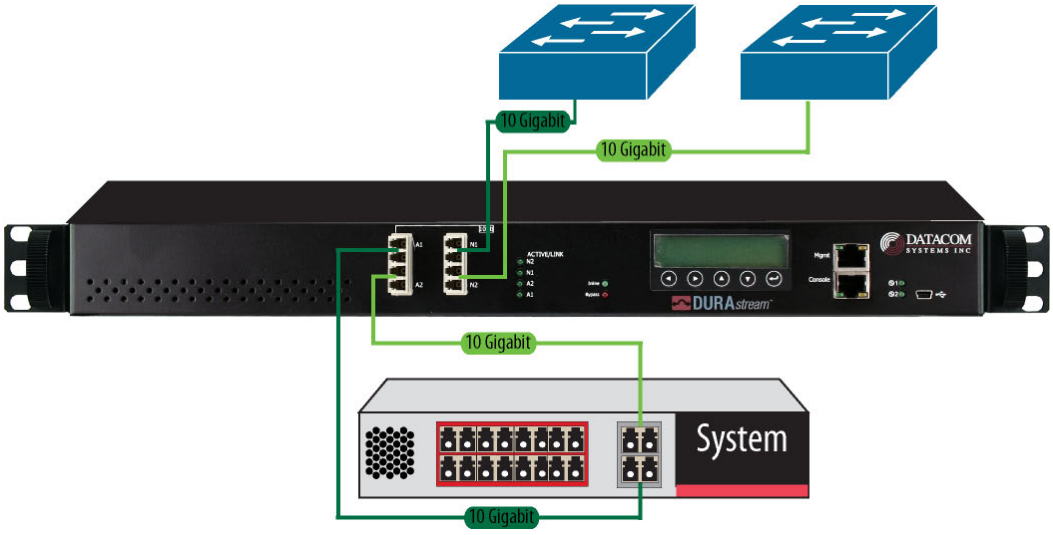


Figure 1. Connectivity example, DS-1010 can connect to 1 network segment

3 Hardware Interface

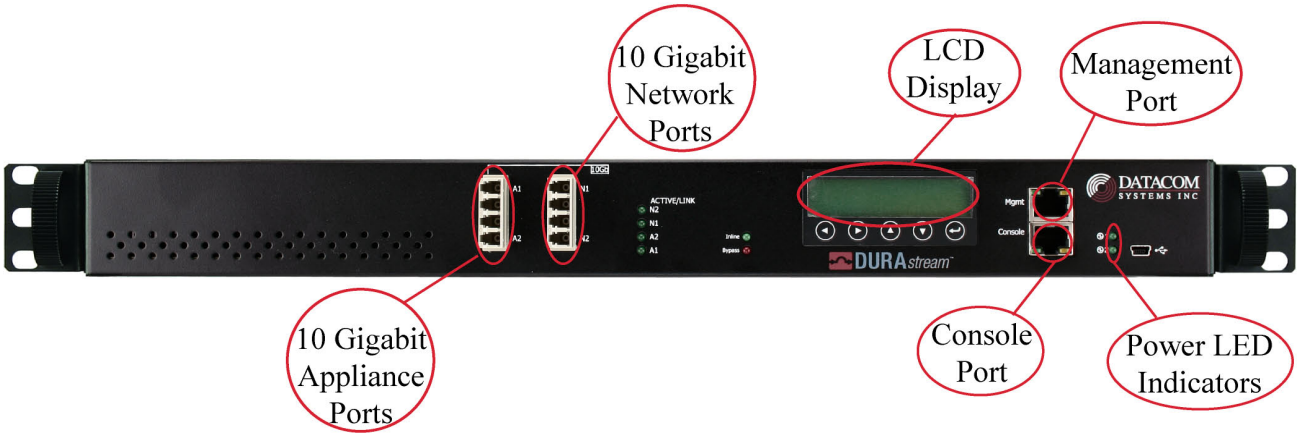


Figure 2. Front Panel of DS-1010

3.1 Device Management

- LCD display to show system name and firmware version
- Ethernet Management Port
- Serial Console Port via Serial Console Cable
- LED Power Indicators and LED Link Indicators

3.2 Port LED Interface

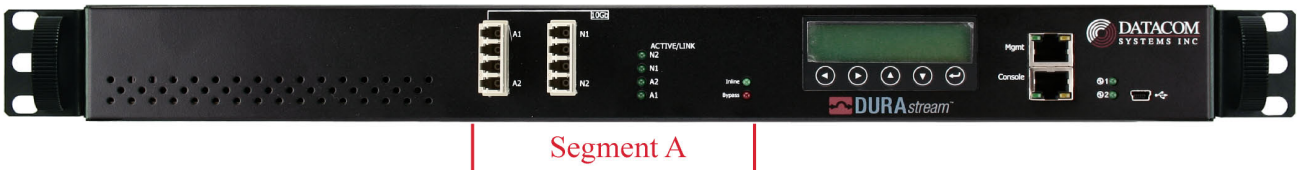


Figure 3. Front Panel Segment of DS-1010

- 10Gigabit N1 and N2 Ports which connect to an ingress network and egress network
- 10Gigabit A1 and A2 Ports which connect to a network appliance (i.e., IDS, UTM or Firewall)
- Link/Active LEDs for 10Gigabit Ports — Link status of the port. Green LED **ON** signifies link is stable. Blinking LED signifies there is traffic on that port.
- Inline LED — **ON** for Inline state or **OFF** for Bypass state
- Bypass LED — **OFF** for Inline state or **ON** for Bypass state

3.3 LCD Interface

The LCD displays the DURA*stream*™ 10G firmware version. The < and > keys and up arrow and down are reserved for future use.

4 Theory of Operation

Modules:

The single mode or multi-mode optical module installed at the factory in each Bypass Switch has 4 ports. The top two ports are used to connect network devices, these are the network ports and the bottom two ports of the module direct traffic through the inline appliance, these are the appliance ports. Heartbeat packets flow between the bottom ports to ensure the appliance is working properly. Heartbeat packets are not passed beyond the bottom ports.

An inline appliance is connected on the single module using the following diagram:

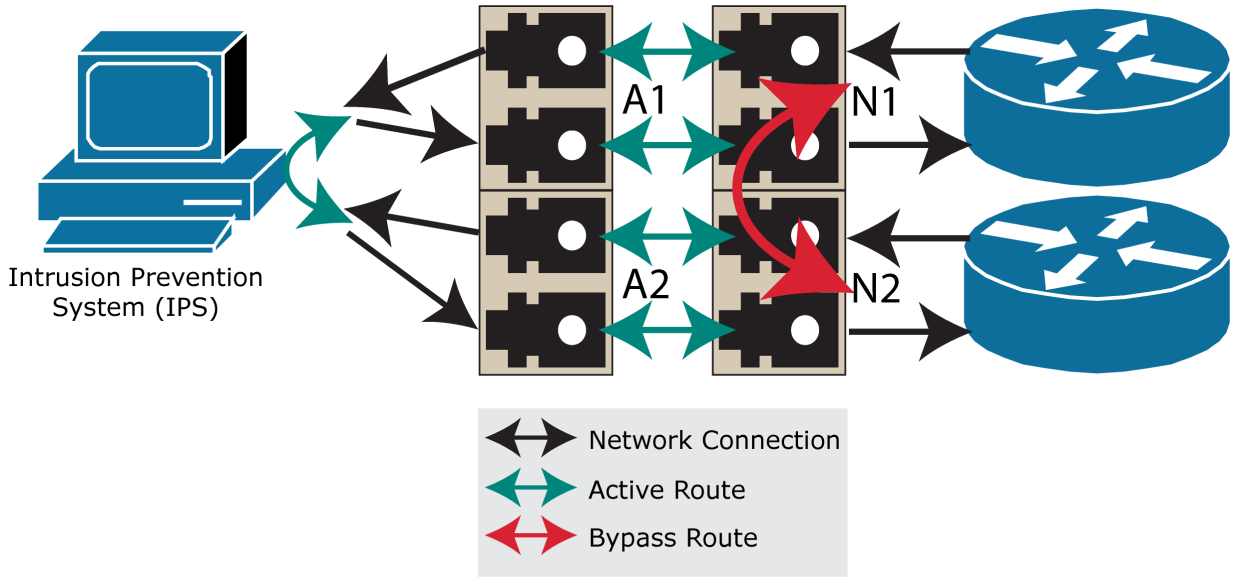


Figure 5. DS-1010 Bypass Switching Mode and Active Switching Mode

Ports are designated as Appliance or Network Ports as shown below:

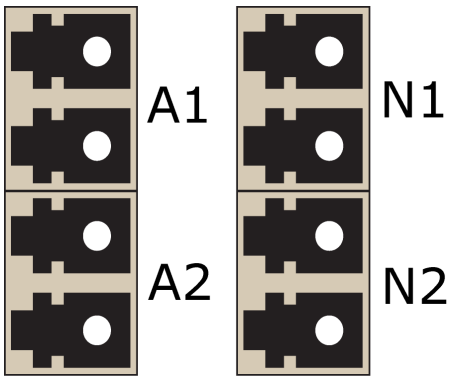


Figure 6. Network and Appliance Ports

4.1 Operation Modes

DS-1010 has four Operation Modes with Mode 0 being the default Operation Mode:

Mode 0: Normal Active Bypass

If DS-1010 receives heartbeat signals within the TIMEOUT time period, the switching mode remains or is changed to Active Switching Mode. If DS-1010 does not receive heartbeat signals within the TIMEOUT time period, it will change to or remain in Bypass Switching Mode. By default (without any heartbeat), DS-1010 will remain in Bypass Switching mode.

Mode 1: Normal Active Inline

If DS-1010 receives heartbeat signals within the TIMEOUT time period, the switching mode remains or is changed to Bypass Switching Mode. If DS-1010 does not receive heartbeat signals within the TIMEOUT time period, it will change to or remain in Active Switching Mode. By default (without any heartbeat), DS-1010 will remain in Active Switching mode.

Mode 2: Manual Active Inline

DS-1010 is always in Active Switching Mode.

Mode 4: Manual Active Bypass

DS-1010 is always in Bypass Switching Mode.

Mode 5: Manual Passive Bypass

DS-1010 is in passive bypass, where the optical switch is close in bypass mode.

4.1.1 Normal Active Bypass

Traffic will flow between the network and appliance ports as shown in the following diagram. If heartbeat signals are not received within the timeout period, traffic will be routed between N1 and N2. Ports A1 and A2 will be bypassed. Heartbeat packets will continue to be sent out the Appliance port. This allows the module to automatically route traffic back through the appliance once it is repaired, or placed back into service.

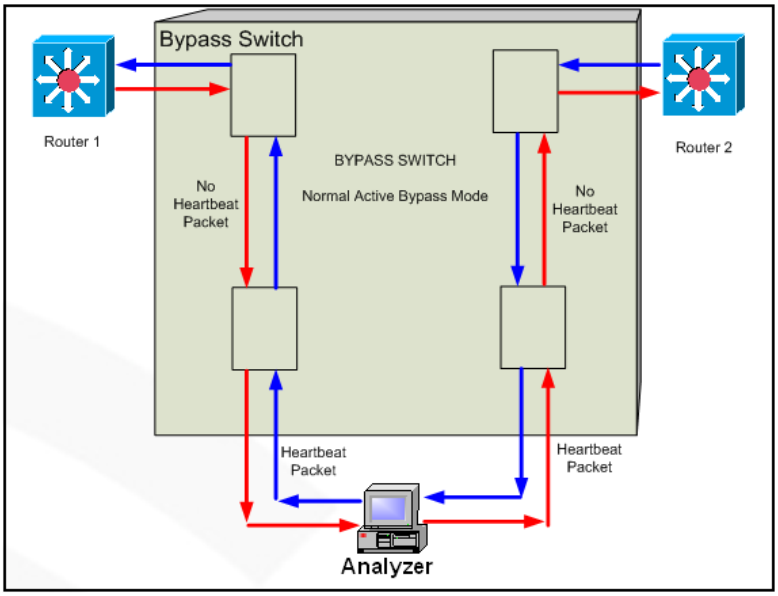


Figure 7. Normal Active Bypass

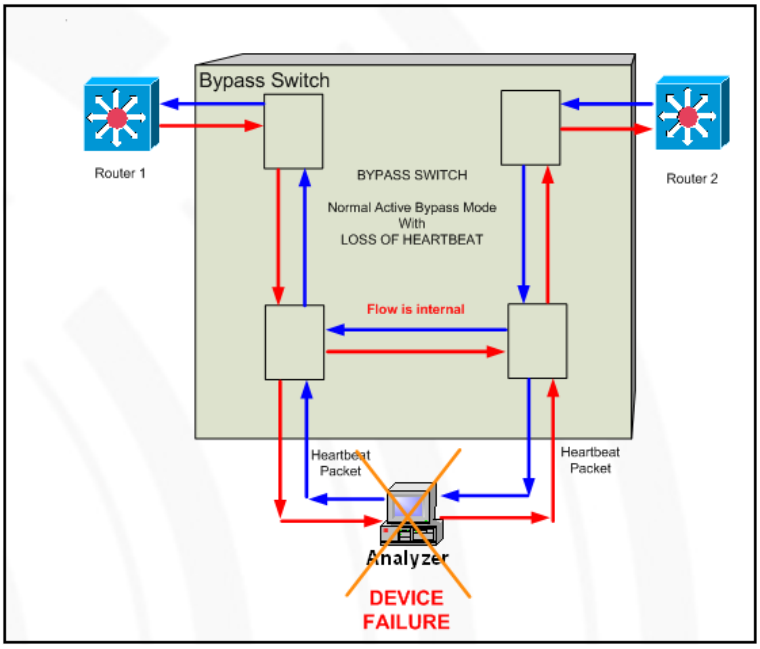


Figure 8. Normal Active Bypass Device Failure

4.1.2 Normal Active Inline

This setting allows traffic to flow between N1 and N2 while heartbeats continue to flow between A1 and A2. Loss of heartbeats will direct traffic from N1 to A1 and N2 to A2. This mode may be used to make sure the heartbeat is flowing through the appliance, while network traffic is not flowing through the appliance.

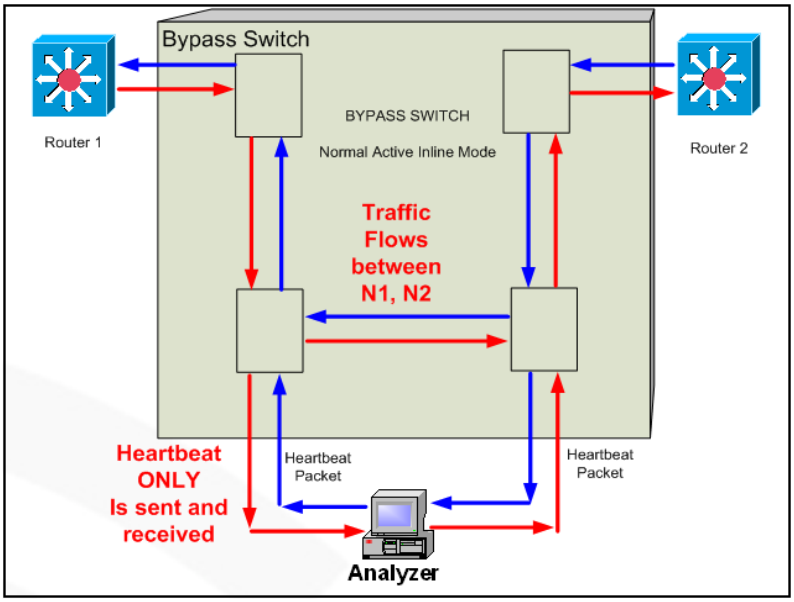


Figure 9. Normal Active Inline

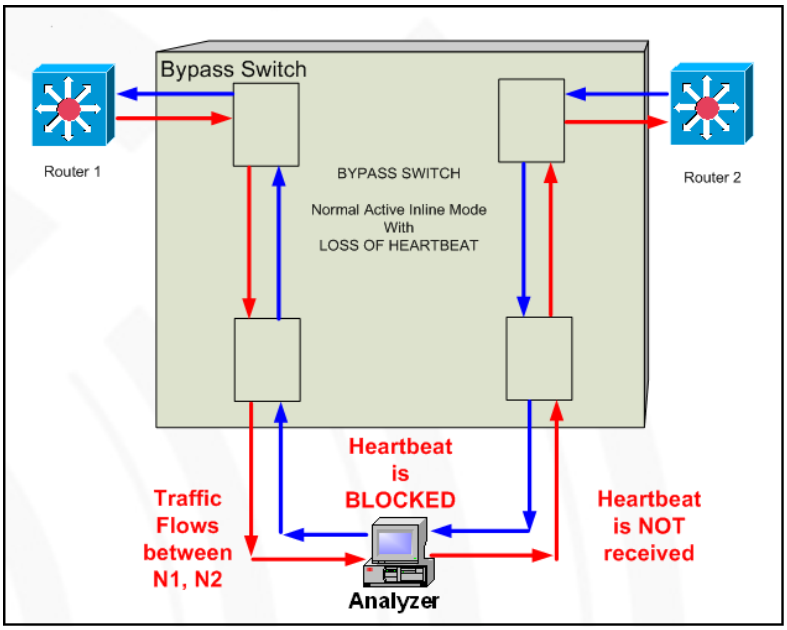


Figure 10. Normal Active Inline Heartbeat is Blocked

4.1.3 Manual Active Inline

Traffic flows from N1 to A1 and N2 to A2 until changed. No heartbeat packets are sent.

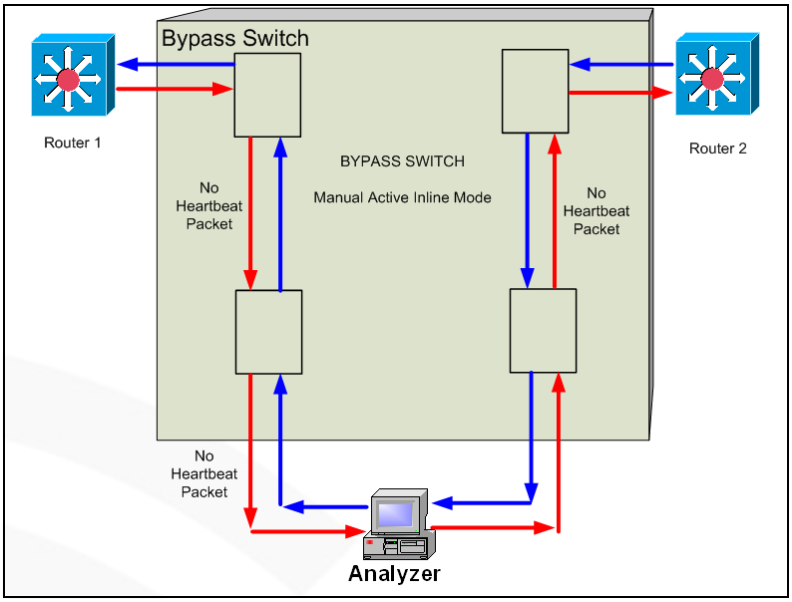


Figure 11. Manual Active Inline

4.1.4 Manual Active Bypass

Traffic flows between N1 and N2. No heartbeat packets are sent, and the device will remain in this mode until changed.

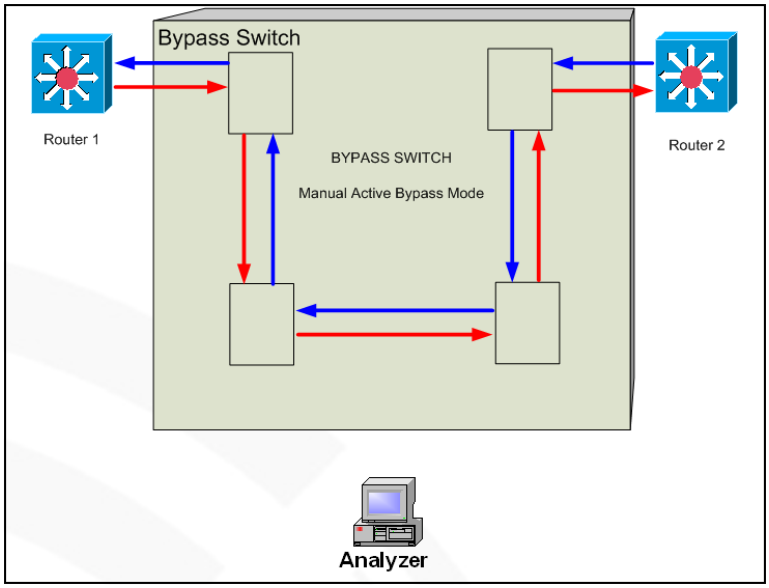


Figure 12. Manual Active Bypass

4.1.5 Manual Passive Bypass

This mode forces connectivity directly between N1 and N2. If the Bypass Switch loses power from both of its redundant power supplies, the mode will automatically occur, to maintain the network link. Note that switching to the mode will cause a brief interruption of the network link, which may force routing and link protocol algorithms to recalculate and renegotiate. This may cause link downtime.

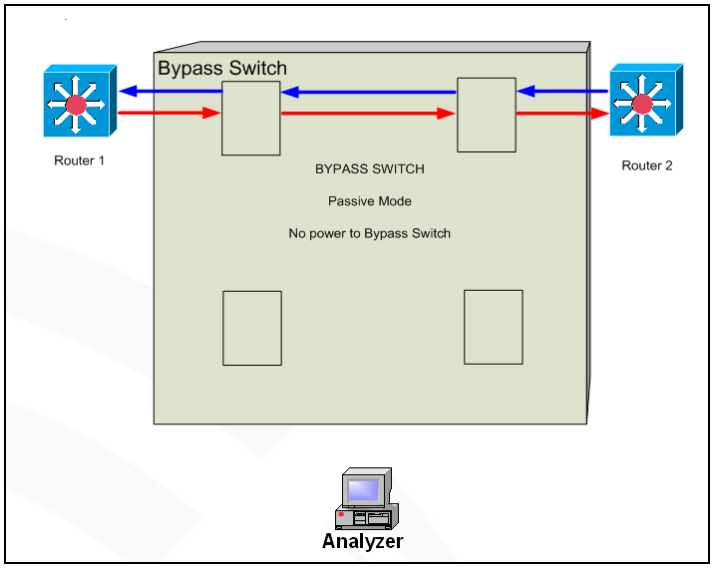


Figure 13. Manual Passive Bypass

4.2 Heartbeat (Hb)

DS-1010 can monitor the continual health of the appliance by sending and receiving Heartbeat (Hb) pulses. This functionality ensures the real-time safety and accuracy of the data stream. Heartbeat frames are generally configured to be sent from DS-1010 on one appliance port and received on the other under a set time limit defined by a customer configured TIMEOUT value. For more information on TIMEOUT value, see section '<variable> List for CLI 23.'

DS-1010 provides various heartbeat modes to correspond with different appliance configurations including:

Heartbeat Mode 1: Internal Heartbeat Frame Loop-back Mode:

In Heartbeat Mode 1, the heartbeat signal is a user programmable Ethernet "Heartbeat Frame" and is generated by DS-1010 itself. The Heartbeat frames are sent out from DS-1010 Ethernet Port A1 every 100ms, and DS-1010 Ethernet Port A2 expects to receive the same Heartbeat Frame from the appliance. Heartbeat Mode 1 for the DS-1010 is designed for network appliance units that act as a bridge, like IPS or Firewall. The user needs to make sure the Network appliance is properly configured so that the device will not filter out the "Heartbeat Frame".

In heartbeat Mode 1, no driver is needed for Appliance systems.

Heartbeat Mode 3: Link Status Heartbeat Mode:

In Heartbeat Mode 3, the heartbeat signal acts as the link up status indicator of the DS-1010 Ethernet Port A1 and A2. If any ports of A1 and A2 lose the link, DS-1010 will shut off heartbeat transmission and activate bypass mode.

4.3 Power Failure Protection

DS-1010 provides two redundant power supply inputs to minimize the chance of power loss or failure.

In addition, DS-1010 continuously monitors the power supply voltage to detect any instance of power decline or outage. If a power failure is detected, Power Fail Protection Operation is triggered, which initiates a switch to Bypass Switch. During this no power state, the N1 and N2 ports will physically connect to create a passive bypass path without any traffic interruption between port N1 and port N2.

5 Initial Configuration

IMPORTANT: ***Prior to initial configuration of the hardware, it is imperative to review the entire Initial Configuration section before proceeding.***

This section explains the considerations and requirements for the initial configuration of the DS-1010 series by a Command Line Interface (CLI) with a management PC using a terminal emulation application connected with the provided Console Cable (DB9 to RJ45) through the serial **CONSOLE** RJ45 port.

5.1 Command Line Interface (CLI)

The Command Line Interface (CLI) is used to set IP address (default 192.168.0.111), Subnet Mask (default 255.255.255.0) and default Gateway (default 192.168.0.1) and other options as detailed in the 'Basic Command Set 22' and 'Serial Port Configuration (RJ45) 27' sections.

5.1.1 Basic Functionality

Window Size Functionality: The CLI window has a limited number of character spaces available (24 lines per screen, 80 characters per line). If more data than can fit is presented, the number of lines is one less and a "—more—" prompt is shown on the last line.

Character Handling: Printable characters (ASCII codes 32-126) and non-printable codes noted below:

Non-Printable Character	Description
• <enter key>	Executes command; places command in history buffer
• <backspace key>	Erases previous character entry; removes history buffer entry

Connectivity/Authentication Functionality: Connectivity to the bypass product is made through the Management RJ45 or Console RJ45 port and authentication is required.

Base Prompt: This is the text presented to the user logging in to use the CLI (default values shown). All Usernames and Passwords are case-sensitive.

```
Enter Username: admin
Enter Password: admin
>
```

CLI command usage: Only the "admin" account has permission to configure and check system options.

5.1.2 Basic Command Set

There are two basic commands that you need:

1. cli get | more
2. cli set <variable> <option>

With the "cli get | more" command, on the left side of the screen, a list of variables are displayed and usually the right side of the screen shows the <option> that the <variable> can be set. The "cli get | more" command reduces flooding the screen as opposed to just the "cli get" command.

For example, towards the end of the "cli get" output for the DS-1010 will list the tap settings available. To set segment B N1 to receive on the tap port, type "cli set tap_b_n1 1" where "tap_b_n1" is the <variable> and "1" is the <option> for receive.

To view specifically what <variable> has what setting in it, type "cli get <variable>."

For example, you want to know if SNMP is enabled, type "cli get snmp." An output will be displayed showing what SNMP is set to; in this case, it will be either 0 (disabled) or 1 (enabled).

A description of each <variable> and their <options> follows in the '<variable> List for CLI 23' table.

5.1.3 <variable> List for CLI

DS-1010 <variable> <option> list for CLI get/set command.

<variable>	description	<option>
active_hb_cnt	value stores the active heartbeat signal count, segment will switch to active switch mode only if it receives "active_hb_cnt" number for a consecutive heartbeat.	default: 1 1-10
bypass_hb_cnt	value stores the bypass heartbeat signal count, segment will switch to bypass switch mode only if it loses "bypass_hb_cnt" heartbeat signal number.	default: 1 1-10
current_ip	current ip address for management port.	
dhcp	dhcp client enable/disable, setting option to dhcp will enable dhcp client on Management Port, setting option to static will disable dhcp client on Management Port.	default: dhcp active
dns	dns server ip address.	
dns2	2ND dns server ip address.	
domain	domain name for local host.	default: local
email	setting option value to 1 will enable mail notification feature.	default: 1
email_from	email from field for email report.	
email_password	email account password.	
email_security	setting option to 1 will enable email security feature.	default: 1
email_server	smtp server address for email report.	
email_subject	email report subject.	
email_to	email recipient lists.	
email_username	email account user name.	

<variable>	description	<option>
force	configure force (debug) mode for each I/O unit: default is 0. Force (debug) mode is disabled. Setting option to value 2 will force segment to Active switch mode. Setting option to value 4 will force segment to Bypass Switch mode.	default: 0
gw	gateway ip address.	default: 192.168.0.1
hb_mode	configure the heartbeat mode for DS-1010 bypass unit: hb_mode 1, system is generating the heartbeat. hb_mode 3, the system activates bypass depending on link detection on the appliance side.	default: 1
host	hostname for DS-1010.	default: datacom
https	https server allows: a value 0 disables the secure WEB Management interface. a value 1 enables access to secure WEB Management interface.	default: 1
ip	static IP address for Management Port.	default: 192.168.0.111
lfd	1 – enabled, the system will detect and activate the lfd 0 – disabled, the system will not detect lfd	default: 1
mac	shows mac address for the Management Ethernet Port.	read only
mask	subnet mask for Management Port.	default: 255.255.255.0
ntp	ntp service is enabled	0 = disable, 1 = enable
op_mode	configure default operation mode for DS-1010 bypass unit: 0 – Normal Active Bypass. If the heartbeat is received the system will be inline. 1 – Normal Active Inline. If the heartbeat is received the system will be in bypass. 2 – Manual Active Inline. 4 – Manual Active Bypass. 5 – Manual Passive Bypass. The bypass switch will be closed, in bypass mode.	default: 0
password	administrator password.	default: admin

<variable>	description	<option>
snmp	snmp function allows: value 1 enables snmp function. value 0 disables snmp function.	default: 1
snmp_community	snmp_community name	datacomc
snmp_destination	snmp_destination name	localhost
state	show state of Datacom bypass unit: 0 – bypass switch state. 1 – active/Inline switch state.	read only
syslog	syslog service is enabled	0 = disable, 1 = enable
syslog_host	host name	
syslog_port	syslog port number	default: 514
tacacs	enable tacacs service	0 = disable, 1 = enable
tacacs_encryption	enable tacacs encryption	0 = disable, 1 = enable
tacacs_protocol		
tacacs_secret	define the tacacs+ secret	
tacacs_server	ip address of tacacs+ server	
tacacs_service		
timeout	timeout values for DS-1010 bypass unit, each timeout unit is 100ms, timeout range is 100ms to 255ms. in default bypass operation mode, if the unit does not detect a heartbeat frame within the set timeout time value, the segment will switch from active to bypass.	1-255
tz	time zone 3 letter definition	default: PST
username	administrator account name: datacom login:	default: admin
web_theme	web themes enable.	0 = disable, 1 = enable

5.1.4 Command Line Interface Usage

Only the “admin” account has permission to configure and check the system <variables>.

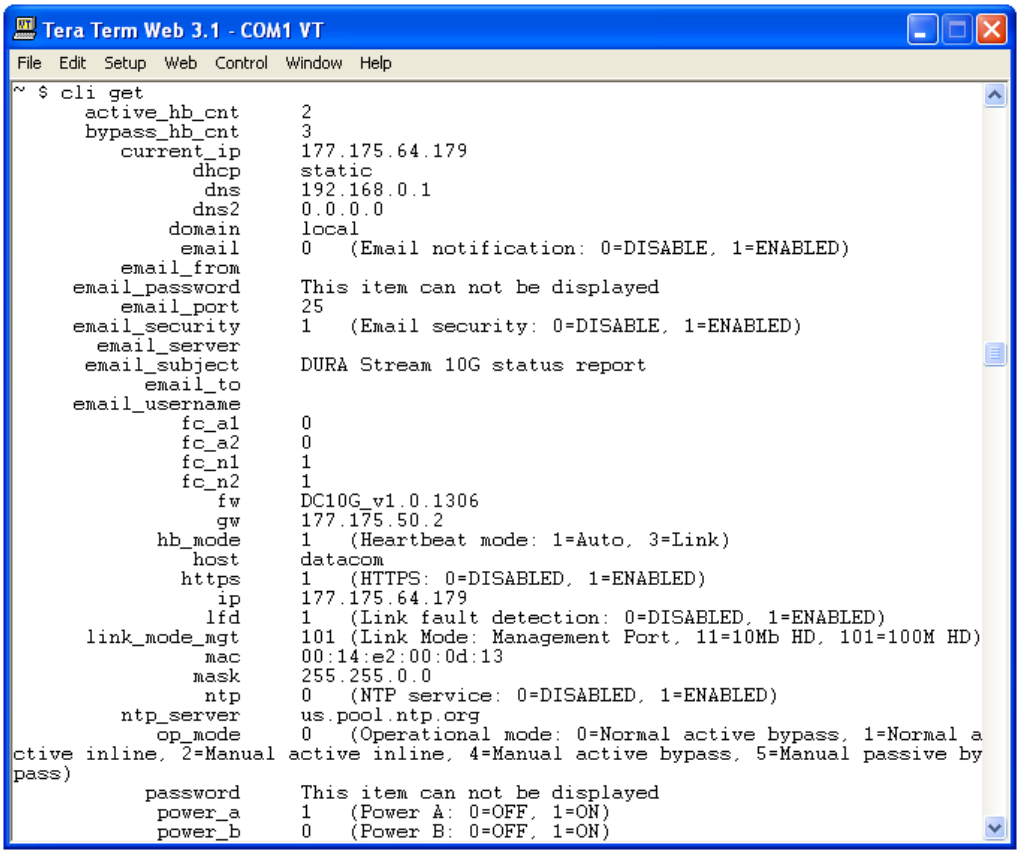


Figure 14. "CLI get" output

To dump values for all <variables>, “cli get | more”

To display a value for individual <variable>, “cli get <variable>”

For example, “cli get timeout” will display timeout value in decimal form.

To set a value for individual <variable>, “cli set <variable> <option>

For example, “cli set timeout 20” will set timeout value to 20.

5.2 SERIAL Port Configuration (RJ45)

Note: Use the Console Cable (DB9 to RJ45) through the **CONSOLE** RJ45 port for initial configuration of the hardware. Once DS-1010 series connection is made, open the terminal emulation application and create a connection with settings that fit your needs as described in the 'HyperTerminal 27' section.

5.2.1 HyperTerminal

Any freely available terminal emulator may be utilized, but please take note of the specific Microsoft HyperTerminal settings in the following example, if an alternate terminal emulator is used.

HyperTerminal (terminal emulator) enter:
115,200 bits per second; 8 data bits; Parity none; 1 stop bit; Flow control none

After completing review of the Command Line Interface (CLI) 22 section, detailed IP Address configuration can be found in the IP Address Configuration 27 section.

5.2.2 IP Address Configuration

All DS-1010 series units are shipped with a ***factory default*** configuration as follows:

IP Address:192.168.0.111; Subnet Mask: 255.255.255.0; default Gateway: 192.168.0.1

IMPORTANT: If you expect to remotely connect to the DS-1010 series, you must change the IP Address, Subnet Mask and default Gateway to match your Local Area Network.

The IP address can be configured via a serial connection with either Microsoft's **HyperTerminal** application (available on most Windows PCs) or an open source free software terminal emulator for MS-Windows.

Step 1. Using a supplied AC switching adapter and line cord, plug the DS-1010 into an AC power source.

Step 2. Connect your PC and DS-1010 using the provided Datacom Systems **CONSOLE** cable. Create a HyperTerminal (terminal emulator) **COM** port (115,200, 8, None, 1, None) serial link.

Step 3. You are now connected to your DS-1010 series. All Usernames and passwords are case-sensitive.
datacom login: admin (default value) **<enter>**
Password: admin (default value) **<enter>**

Step 4. Set IP, MASK and GATEWAY at the ~ $ prompt as follows:
cli set ip xxx.xxx.xxx.xxx <enter>
cli set mask xxx.xxx.xxx.xxx <enter>
cli set gw xxx.xxx.xxx.xxx <enter>

Step 5. Close HyperTerminal and disconnect the **CONSOLE** serial cable.

Step 6. Install the DS-1010 series in your chosen network location.

6 MANAGEMENT Port Configuration (RJ45)

DS-1010 users can log into and manage the DS-1010 through a Command Line Interface Environment via the Console Port (serial terminal emulator) or via the Management Port (SSH remote shell emulator) through a Web browser secure "HTTPS" connection.

Once DS-1010 series connection is made to the **MANAGEMENT** RJ45 port, open the terminal emulation application and create a connection with settings that fit your needs:

The factory default DS-1010 series IP Address, Subnet Mask and default Gateway are as follows:

IP Address: 192.168.0.111; Subnet Mask: 255.255.255.0; default Gateway: 192.168.0.1

6.1 SSH Setting

DS-1010 SSH server uses standard port 22.

6.2 User Account

The "admin" account allows system administrators to configure programmable options and monitor unit status.

6.3 Password

The default Password for the admin account is "admin". The password can be changed using the CLI command.

6.4 SNMP

DS-1010 supports SNMP traps on predefined events.

6.4.1 Support

The Events that will be triggering traps are as follows:

- SNMP trap LFD (Link Fault Detection), will be generated following detection of a network port going down. The usual case will be that first a network port trap will be received following by LFD.
- SNMP trap on link up or down – when any of the links (network link or appliance link) change state (up or down) a trap will be generated, specifying the link name and the link status (up or down)
- SNMP TRAP- on system state change (bypass or Inline). In this mode the trap will provide the state (bypass or Inline) with the op_mode, defining the operation mode of the system:
  - [0]"Normal Active Bypass",
  - [1]"Normal Active Inline",
  - [2]"Always Active Inline",
  - [4]"Always Active Bypass",
  - [5]"Manual Passive Bypass"
- SNMP TRAP- For Cold or Warm power up (when device is powered up)

6.4.2 CLI Setup

snmp	Defalut <option> is *0 (SNMP: 0=DISABLED, 1=ENABLED*)
snmp_community	default <option> is -- *datacomc*
snmp_destination	default <option> is -- *localhost*
snmp_ifalias	default <option> is – *datacomif*

6.5 TACACS+ Setup

Configuring TACACS+ from the CLI:

~ $ cli set tacacs_server <IP>

~ $ cli tacacs_enabled 1

~ $ cli get – to show all the TACACS+ options:

tacacs_enabled	1
tacacs_server	192.168.3.55 (this is the TACACS+ server IP address)
tacacs_encrypt	0
tacacs_secret	None
tacacs_service	all
tacacs_protocol	all

6.6 NTP Definitions

ntp 0 (NTP service: 0=DISABLED, 1=ENABLED)

ntp_server default value is: us.pool.ntp.org

6.7 SYSLOG Definitions

syslog	default value = 0 (Syslog service: 0=DISABLED, 1=ENABLED
syslog_host	default value = localhost
syslog_ident	default value = datacom
syslog_port	default value = 514

7 Secure Web Management

DS-1010 provides a Secure Web Management Interface for system administrators to manage and monitor DS-1010 via any web browser. To access the management web page, the Ethernet Management port needs to be connected to the local network or host computer.The URL to access the Web Management interface, “https://<Mgnt Port IP>”, can be found though “CLI interface” or LCD interface. The default Management Port IP is 192.168.0.111.

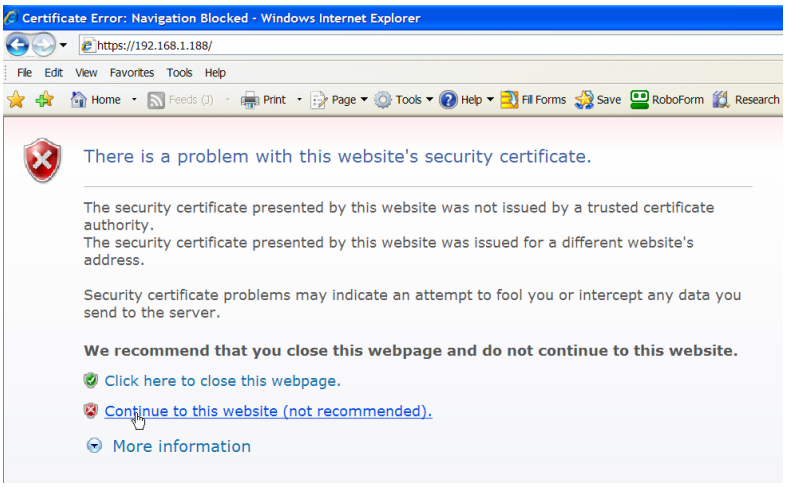


Figure 15. Certificate Error Page, shows the first page that appears on the web browser after entering the URL. Currently, DS-1010’s website security certification is in the process of being approved. You will need to accept the fact that the certificate has not been approved to continue. Therefore, the user needs to click “Continue to this website (not recommended)” to go to the login page

Figure 15. Certificate Error Page

7.1 Login

Figure 16. Login**,** shows the User Login Page where the default user name is “admin” and “admin” is the password

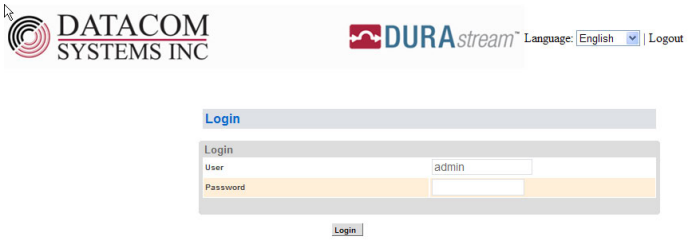


Figure 16. Login

7.2 Status

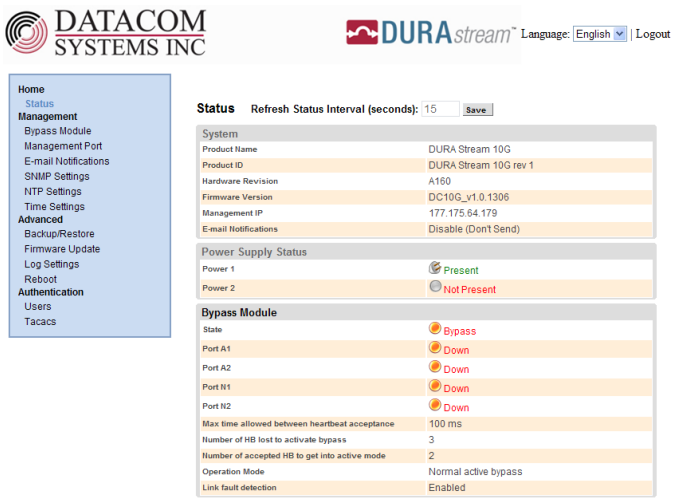


Figure 17. DS-1010 Status Page, shows the Status page provides the system information including: revision information, power supply status, unit link status and the operation mode.

Figure 17. DS-1010 Status Page

7.3 Bypass Module

Figure 18. Bypass Module Setting, shows the options and allows the user to set and tune them according to the site requirements.

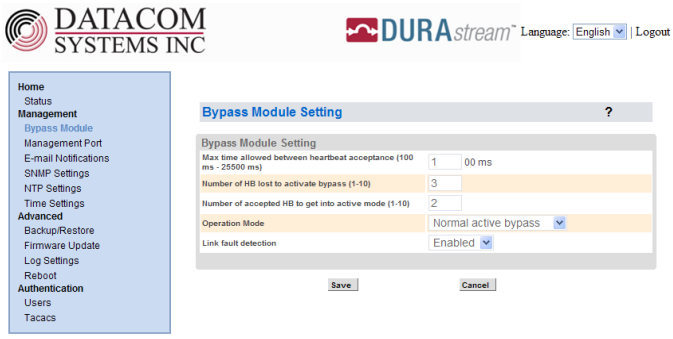


Figure 18. Bypass Module Setting

7.4 Management Port

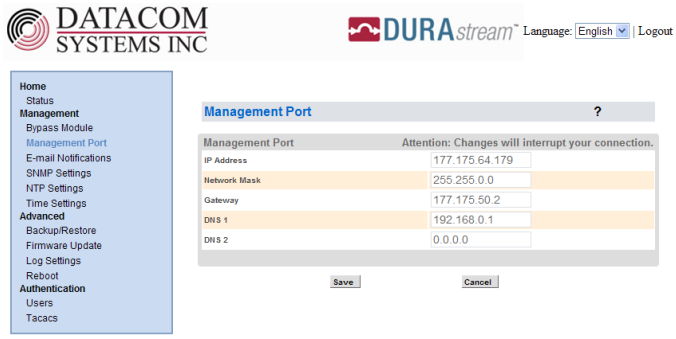


Figure 19. Management Port, shows the Management Port options which can configure IP settings of the management port.

Figure 19. Management Port

7.5 eMail Notifications

DS-1010 provides an Email Notifications function which initiates an email notification upon switching mode of an I/O segment. The mail server and email account settings can be configured through the Web management or CLI interface.

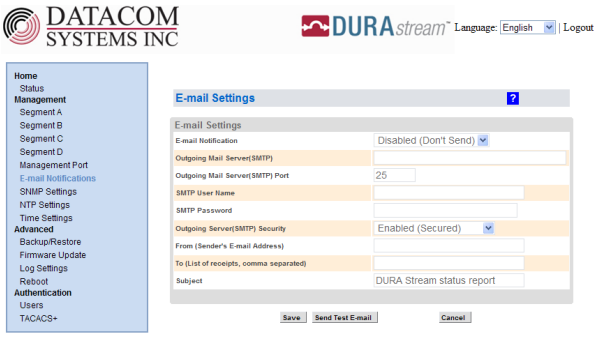


Figure 20. eMail Notifications

Figure 20. eMail Notifications, shows the email notification options which need to be filled properly by the system administrator to enable or disable the email notification function and configures the email servers and accounts.

7.6 SNMP Settings

DS-1010 provides SNMP Trap function which can send messages to a destination IP when the I/O segment status or Power Supply status is changed.

Figure 21. SNMP Settings, shows the SNMP options setting which enables or disables the SNMP Trap function and configures the SNMP destination IP and SNMPv2 community name.

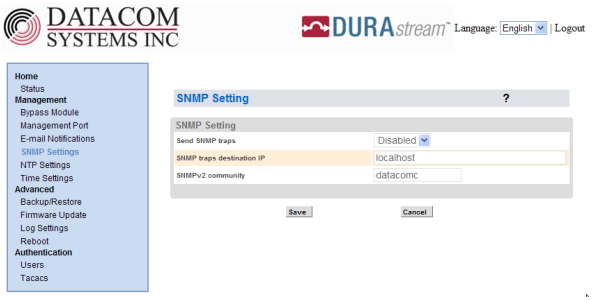


Figure 21. SNMP Settings

7.7 NTP Settings

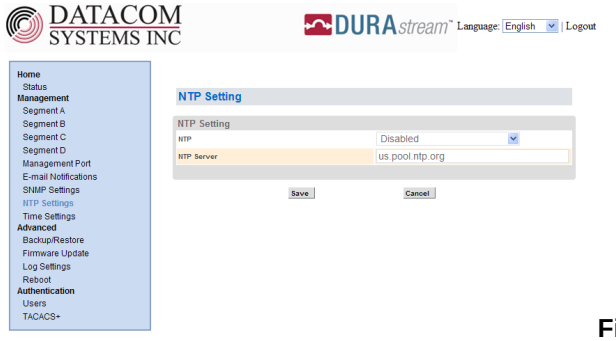


Figure 22. NTP Settings

Figure 22. NTP Settings, shows the Network Time Protocol (NTP) options setting which enables or disables synchronizing the computer system clock over packet-switched, variable-latency data networks. NTP uses UDP on port 123 as its transport layer. It is designed particularly to resist the effects of variable latency by using a jitter buffer.

7.8 Time Settings

Figure 23. Time Settings, shows the screen for time zone setting.

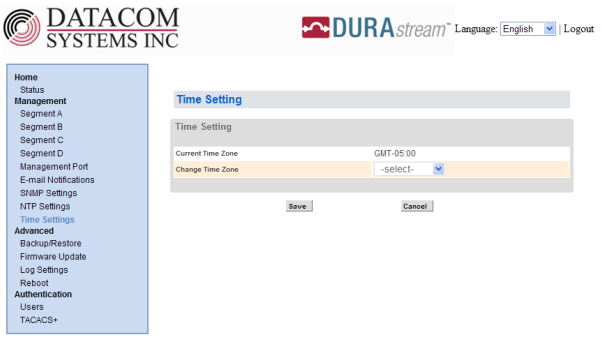


Figure 23. Time Settings

7.9 Backup/Restore

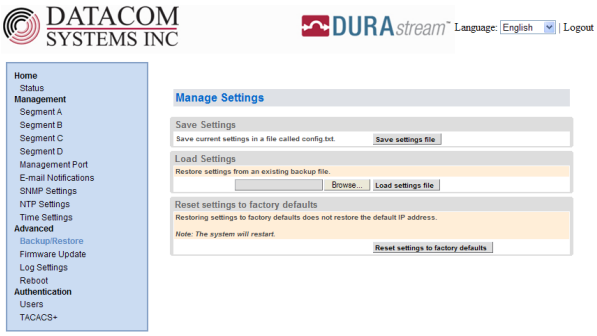


Figure 24. Backup/Restore Setting

Figure 24. Backup/Restore Setting, shows the back up and restore options which can restore the DS-1010 to default settings.

7.10 Firmware Update

Figure 25. Firmware Update, shows firmware update options which enable firmware update of DS-1010.

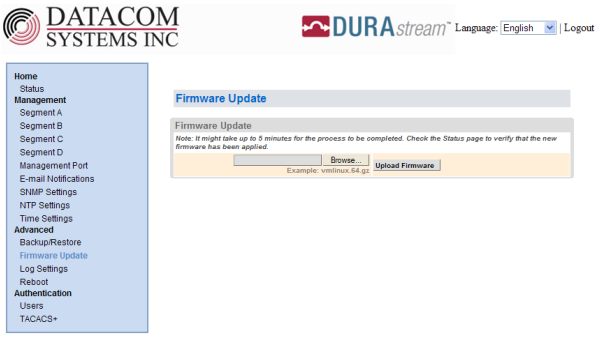


Figure 25. Firmware Update

7.11 Log Settings

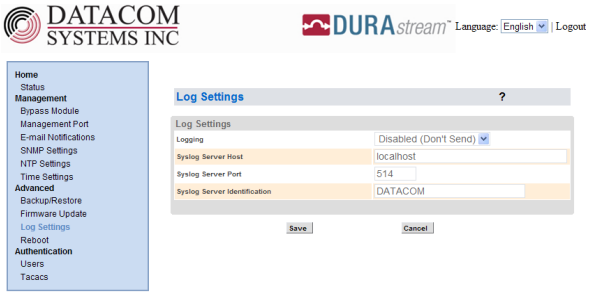


Figure 26. Log Settings

Figure 26. Log Settings**,** shows the Log Setting options which enables or disables forwarding log messages in an Internet Protocol (IP) computer network. It allows separation of the software that generates log messages from the system that stores the messages.

7.12 Reboot

Figure 27. Reboot, shows Reboot which allows Restart of the appliance when you change the time settings or when directed to restart by technical support.

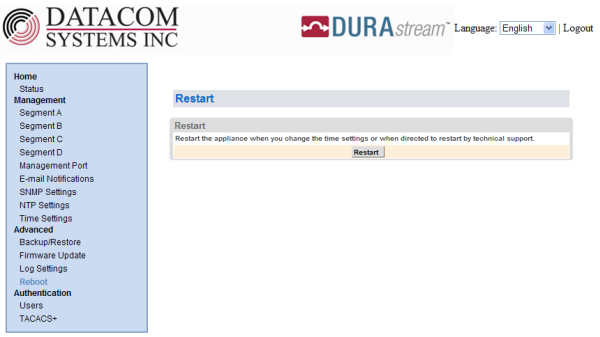


Figure 27. Reboot

7.13 Users

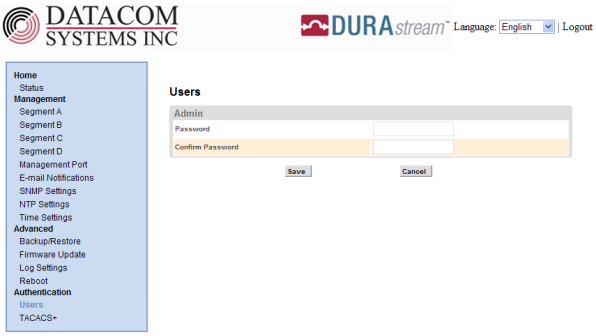


Figure 28. User Account Settings

Figure 28. User Account Settings, shows the User Account options which allows for the change of a user name and password via the WEB management page.

7.14 TACACS+

Figure 29. TACACS+, shows the Terminal Access Controller Access-Control System Plus (TACACS+) which enables or disables the protocol which provides access control for routers, network access servers and other networked computing devices via one or more centralized servers. TACACS+ provides separate authentication, authorization and accounting services.

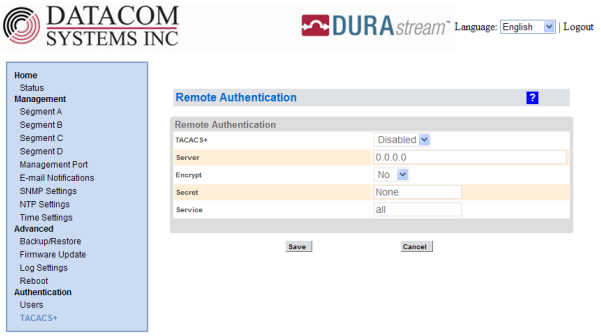


Figure 29. TACACS+

8 Appendix 1 Heartbeat frame format

DS-1010 Heartbeat frame format.

Total Frame Size: 128 Bytes (including CRC Checksum)

Byte : 0 - 11 byte (are Destination and Source Mac address)
==========
Destination MAC : 00:0C:BD:00:00:FF
Source MAC : 00:0C:BD:00:00:<Port Number>

Byte : 12 - 13 byte (are Ether Frame Type : 0x8000)
==========
EtherFrame : 0x80 0x00

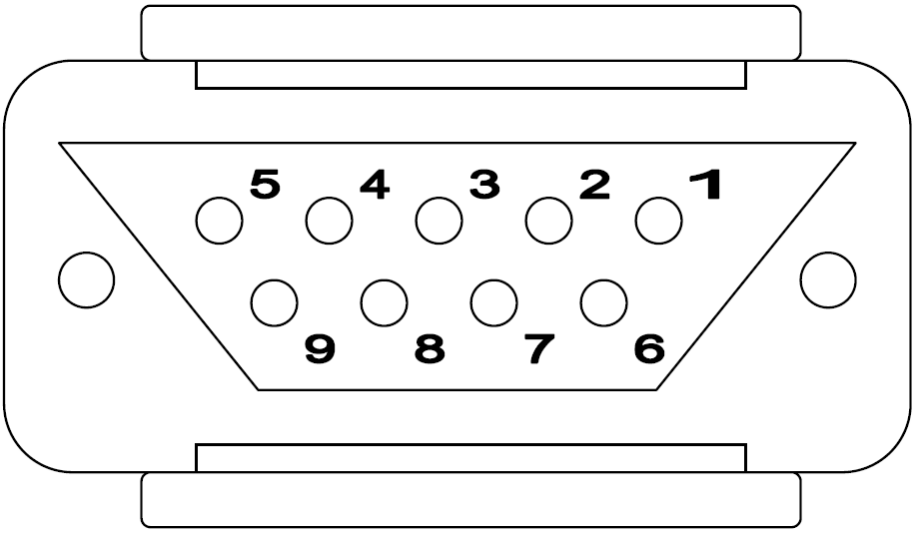
Byte : 14 - 63 byte (pattern count from 0x00 - 0x3F)
==========
Payload or Data : 0x00 0x01 0x02 0x03 0x04 0x05 .. 0x3F

Byte : 64 - 123 byte (pattern = 0x55)
==========
Payload or Data : 0x55 0x55 … 0x55

Byte : 123 - 127 byte (CRC Checksum field)
==========
This field is byte machine generated.

<= CRC checksum

9 Appendix 2 Console-Cable Drawing
Blue Elmech Console-Cable Drawing

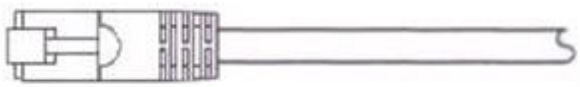


DB9 Connector Front View

DB9 Connector
Pin 1, Pin 4, Pin 6 - are shorted together
Pin 2 - Green Striped wire
Pin 3 - Solid Green wire
Pin 5 - Solid Blue/ Blue Stripe wire
Pin 7, Pin 8 - Short
Pin 9 - No Connect

Other 2 Sets of Wires: Orange/Orange Stripe and Brown/Brown Stripe
Solid Orange and Brown Stripe should be connected together
Stripe Orange and Solid Brown should be connected together

DB9 Connector Pin Description

CAT5e Cable Wire Colors Top to Bottom

Orange/White Stripe wire
Solid Orange wire
Green/White Stripe wire
Solid Blue wire
Blue/White Stripe wire
Solid Green wire
Brown/White Stripe wire
Solid Brown wire

CAT5e Cable Wire Colors (Top View)

CAT5e Cable Wire Colors Top to Bottom

Solid Brown wire
Brown/White Stripe wire
Solid Green wire
Blue/White Stripe wire
Solid Blue wire
Green/White Stripe wire
Solid Orange wire
Orange/White Stripe wire

CAT5e Cable Wire Colors (Bottom View)

10 Customer Service

This USER*guide* was written to help you get to know your new DURA*stream*™ Bypass Switch quickly and easily. We would welcome any comments or suggestions you may have regarding this USER*guide*. Please send your remarks and recommendations via mail, telephone, facsimile, or Internet E-mail.

Datacom Customer Service is available via telephone, facsimile, and Internet E-mail. Outside of support hours, please leave a voice message and our Customer Service Staff will return your call as soon as possible. You may also find assistance at our website: http://www.datacomsystems.com.

Tel: (315) 463-9541
Fax: (315) 463-9557
E-mail: support@datacomsystems.com
Web: www.datacomsystems.com

10.1 Internet

You can obtain additional information about Datacom Systems, Inc. and its products and services from the Internet at: http://www.datacomsystems.com

10.2 Warranty

Datacom Systems, Inc. (DSI) warrants that the hardware which it supplies will be free from significant defects in materials and workmanship for a period of two years from the date of delivery (Warranty Period), under normal use and conditions. In the event of any such defect, you can return an item of defective hardware, freight prepaid, to DSI during the Warranty Period, and DSI will repair or replace the defective equipment and return it to you, freight prepaid. If DSI determines that the equipment is not defective, it will return it to you, freight collect. DSI shall have no responsibility for any deficiency resulting from accidents, misuse, modifications, power disturbances (including use of a power supply not specified by DSI), or various other forms of disaster, e.g., earthquakes, floods, etc.

PLEASE DO NOT ATTEMPT TO RETURN ANY ITEM PRIOR TO RECEIVING A RETURN MATERIAL AUTHORIZATION (RMA) NUMBER FROM DATACOM CUSTOMER SERVICE AT (315) 463-9541 or support@datacomsystems.com

10.3 Limits of Liability

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No liability for consequential damages. Under no circumstances and under no theory of Liability shall DSI be liable for costs of procurement of substitute products or services, lost profits, lost savings, loss of information or data, or any other special, indirect, consequential or incidental damages, arising in any way out of the sale of, use of, or inability to use, any DSI product or service, even if DSI has been advised of the possibility of such damages.

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Datacom Systems Inc

Access Your Network™