



**Korenix JetNet 4706/4706f  
Industrial Managed PoE Switch**

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**User Manual**

Version 1.02, Sep. 2007



**[www.korenix.com](http://www.korenix.com)**



# **Korenix JetNet 4706/4706f Industrial Managed PoE Switch User Manual**

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## **Federal Communications Commission (FCC) Statement**

This equipment 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 equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

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# 1 Introduction

Welcome to the *Korenix JetNet 4706/4706f Industrial Managed Power over Ethernet (PoE) Switch User Manual*. The following topics are covered in this chapter:

- 1.1 Overview
- 1.2 Product Features
- 1.3 Package Checklist

## 1.1 Overview

The *Korenix JetNet 4706/4706f* is a 6-port Fast Ethernet Industrial Managed Switch with 4-Port Power over Ethernet injector (10/100Base-TX). *JetNet 4706* features 2-Port 10/100Base-TX for uplink; *JetNet 4706f* features 2-Port *Fiber* 100Base-FX for long-haul connection. Fiber provides 30km link ability for single mode fiber or 2km link ability for multi-mode fiber. *JetNet 4706/4706f* is in compliance with IEEE 802.3af Power over Ethernet standards and provides 30W PoE high power forwarding capability.

In order to apply to a non-standard power source system, *JetNet 4706/4706f* is equipped with dual mode PoE powering mechanisms, which detects power voltage and executes different powering and disconnecting processes. This feature is suitable for DC24V transit power systems or any application without a DC48V power source.

The additional 2-Port allows users to extend network infrastructure for any uplink or connection as redundant ring architecture with nonstop transmission mechanism – Rapid Super Ring (RSR). The RSR function provides network redundancy with 5ms backup time when the main path is disconnected and also integrates the 2004-edition of IEEE 802.1d standard for Rapid Spanning Tree protocol including STP function.

To obtain superior transmission performance, *JetNet 4706/4706f* adopts QoS function with WRR forward scheduling and Port-based VLAN. These features make sure real-time service can be processed with low forwarding latency.

*JetNet 4706/4706f* provides various software features including PoE schedule control and Link Partner Live Detect Function (LPLD), Port-based VLAN, DHCP Client/Server, IGMP snooping, IGMP query, RSTP, Network Time Protocol (NTP), Rate Control, and firmware upgrade functions. In particular, the Link Partner Line Detect (LPLD) and PoE Scheduling Control functions can save maintenance time and effort with pre-defined scheduling control and auto recovery of remote devices without a manual reboot.

*JetNet 4706/4706f* uses IP-31 aluminum mechanical housing to deliver superior thermal radiation and protection for non-stop operation under high operating temperatures.

In addition, *JetNet 4706/4706f* supports comprehensive and user-friendly management interfaces including SNMP, Web interface, Telnet and local RS-232 console with Command Line Interface (CLI), and JetView. Most commands are familiar with *Cisco* products and do not need to relearn rules (with the exception of PoE control commands).

To build a smart, cost-efficient IP surveillance infrastructure, *JetNet 4706/4706f* is the best choice.

## 1.2 Product Features

The *Korenix JetNet 4706/4706f* has the following features:

- SNMP, Web, Console Management, and JetView Windows Utility
- 4 10/100TX with PoE injector
- 2-Port 10/100Base-TX for uplink (*JetNet 4706*)  
2-Port Fiber 100Base-FX for uplink (*JetNet 4706f*)
- IEEE 802.3af Power over Ethernet compliance
- Supports PoE 30W High Power on each PoE Port
- End-Span PoE wiring architecture with 4,5,7,8 powering Pins
- Provides Scheduling PoE Power Control
- Active Link Partner Live Detect (LPPD) function
- DC48V or DC24V PoE System
- Redundancy power function
- Over current protection
- Rapid Super Ring within 20ms Network backup time
- Ring Coupling
- Dual Homing
- IEEE 802.1D RSTP
- Port Based VLAN
- IEEE 802.1p class of service and TOS DiffServ QoS
- Rate Control and Flow Control
- IGMP Snooping and IGMP query
- DHCP Client / Server
- IP31 aluminum housing for improved thermal radiation
- -10~60 °C (14~140°F) operating temperature for hazardous environments
- 1.2KV Hi-Pot testing passed (IEEE standard compliance)

**Note: Detailed specifications are listed in *Appendix 5.1*.**

## 1.3 Package Checklist

The *Korenix JetNet 4706/4706f* includes the following items:

- One Industrial Managed PoE switch- *JetNet 4706* or *JetNet 4706f*
- One DIN-Rail clip
- One wall mounting plate and screws
- One RS-232 DB-9 to RJ-45 console cable
- Documentation and Software CD
- Quick Installation Guide

If any of the above items are missing or damaged, please contact your local sales representative.

## 2 Hardware Installation

The following topics are covered in this chapter:

### 2.1 Hardware Introduction

- Dimensions
- Panel Layout
- Bottom View

### 2.2 Wiring Power Inputs

### 2.3 Wiring Digital Input

### 2.4 Wiring Relay Output

### 2.5 Wiring Fast Ethernet Ports

### 2.6 Wiring Combo Ports

### 2.7 Wiring RS-232 console cable and pin assignment

### 2.8 DIN-Rail Mounting Installation

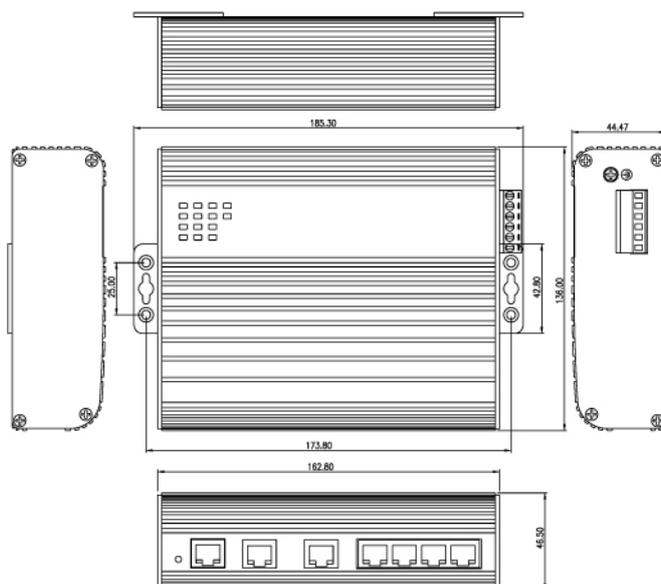
### 2.9 Wall-Mount Installation

## 2.1 Hardware Introduction

### Dimensions

*JetNet 4706/4706f* Industrial Gigabit Switch dimensions:

**174.8mmW x 46.5mmH x 136mmD (6.98"W x 1.82"H x 5.31"D)**



## Mylar Layout

There is one Mylar stick on the top side of the *JetNet 4706/4706f*. It includes four LEDs for the system alarm, power, and Ring Master; and ten LEDs for the port operating status. For details, please check the following figure *Mylar Layout*.



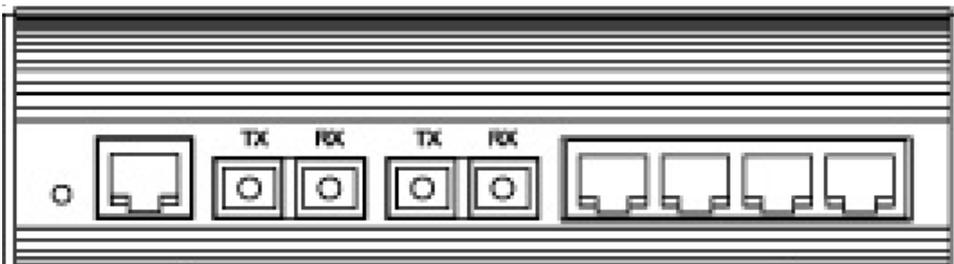
*Mylar Layout*

## Port Layout

*JetNet 4706/4706f* includes 4-Port 10/100TX with embedded PoE injector function in ports #1 ~#4; each PoE port can deliver a maximum of 30w. There is also 1 reset button and 1 console port in RJ-45 type connector. *JetNet 4706* comes with 2-Port 10/100Base-TX for uplink; *JetNet 4706f* comes with 2-Port Fiber 100Base-FX. See the following figures.



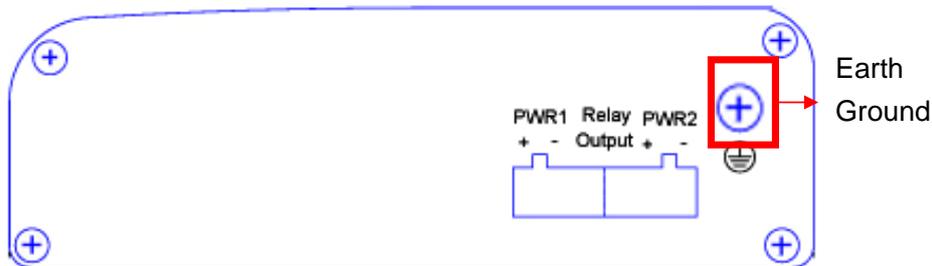
*JetNet 4706*



*JetNet 4706f*

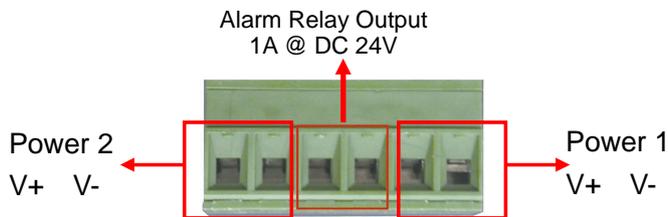
## Side View

On the right-side of the *JetNet 4706/4706f* Industrial Managed PoE Switch, there is a terminal block connector and earth ground screw. The terminal block connector includes 2 power inputs and 1 relay alarm output.



## 2.2 Wiring Power Inputs

Follow the steps below to wire *JetNet 4706/4706f* redundant DC power inputs.



1. Make sure the power terminal block is unplugged.
2. Insert the positive and negative wires into the respective V+ and V- terminal block connector contacts.
3. Tighten the wire-clamp screws to prevent DC wires from becoming loose.
4. Power 1 and Power 2 support power redundancy and polarity reverse protection functions.
5. Positive and negative power system inputs are both accepted, but Power 1 and Power 2 must apply the same mode.

**Note 1:** Remember to unplug the power terminal block before making wire connections. Otherwise, your screwdriver can inadvertently short your terminal connections to the grounded enclosure.

**Note 2:** Suitable electric wire ranges from 12 to 24 AWG.

**Note 3:** If the 2 power inputs are both connected, *JetNet 4706/4706f* will be powered from the highest connected voltage. The unit will signal an alarm for loss of power in either PWR1 or PWR2.

### 2.3 Wiring Digital Output

*JetNet 4706/4706f* provides one digital output, also known as Relay Output. The relay contacts are energized (open) for normal operation and will close under faulty conditions; faulty conditions can include power failure, Ethernet port link break, or other predefined events configurable in the *JetNet 4706/4706f* user interface.

Wiring the digital output is exactly the same as wiring power inputs introduced in section 2.2 (see 2.2 *Wiring Power Inputs*).

### 2.4 Wiring Earth Ground

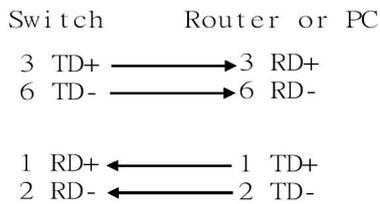
To ensure the system will not be damaged by noise or electric shock, we suggest making a direct connection between the *JetNet 4706/4706f* and earth ground to avoid system damage.

1. On the right side of the *JetNet 4706/4706f*, there is one earth ground screw.
2. Loosen the earth ground screw with a screwdriver
3. Tighten the screw after the earth ground wire is connected.

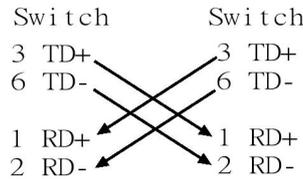
### 2.5 Wiring 10/100Base-TX Fast Ethernet Ports

The *JetNet 4706/4706f* is equipped with 4-Port Power over Ethernet (PoE) injectors with 30w forwarding capability in ports #1~#4. The 10/100Base-TX Fast Ethernet ports support 10Base-T and 100Base-TX, full or half duplex modes. All the 10/100Base-TX Fast Ethernet ports will auto-detect signals from connected devices in order to decide the correct link speed and duplex mode. Auto MDI/MDIX allows users to connect another switch, hub or workstation without changing Straight-Through or Crossover Cables.

Note that Crossover Cables cross-connect the transmitter lines to the receiver lines at the opposite end.



Straight-Through Cabling Schematic



Crossover Cabling Schematic

**Note:** The Ethernet cables use pins 1, 2, 3, and 6 of an 8-pin RJ-45 connector. The signals of these pins are converted by the automatic MDI-X function, as shown in the table below:

Pin MDI-X	Signals	MDI Signals
1	RD+	TD+
2	RD-	TD-
3	TD+	RD+
6	TD-	RD-

Connect one side of an Ethernet cable into any switch port and connect the other side to your attached device. The LINK LED will light up when the cable is correctly connected. Refer to the **LED Indicators** section for descriptions of each LED indicator. Always make sure that the cables between the switches and attached devices (e.g. switch, hub, or workstation) are less than 100m (328 ft) apart.

The wiring cable types are as follows:

10Base-T: 2-pair UTP/STP Cat. 3, 5e, 6 cable, EIA/TIA-568-B.2 100-ohm (up to 100m)

100Base-TX: 2-pair UTP/STP Cat. 5e, 6 cable, EIA/TIA-568-B.2 100-ohm (up to 100m)

## 2.6 Connecting Powered Device (PD)

*JetNet 4706/4706f* is equipped with 4-Port PoE injectors which are in compliance with IEEE 802.3af standards for 15.4w forwarding capability and 30w High power. The powering architecture of *JetNet 4706/4706f* follows IEEE 802.3af Alternative B mode standards of conductor assignment. The following table shows the pin assignment of alternative A and B for the PSE (Power Source Equipment).

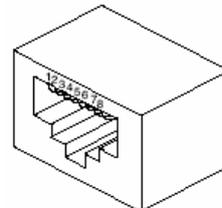
Conductor	Alternative A (MDI-X)	Alternative A (MDI)	Alternative B (All)
1	RX & Negative Vport	Tx & Positive Vport	
2	RX & Negative Vport	TX & Positive Vport	
3	TX & Positive Vport	RX & Negative port	
4			Positive Vport
5			Positive Vport
6	TX & Positive Vport	RX & Negative Vport	
7			Negative Vport
8			Negative Vport

### Pin assignment of PSE

Make sure the twisted pair cable is bound with the standard RJ-45 pin, especially pins 4, 5, 7 and 8.

If the RJ-45 is bound with the wrong pin number, *JetNet 4706/4706f* will not recognize the PD and will not forward DC power to the PD. This is because the *JetNet 4706/4706f* switch follows the Alternative B mode.

The IEEE 802.3af indicates that the PD should support mode A and B, but only receive power from **either** mode A **or** B.



The following table shows the RJ-45 pin out for the PD.

PD Pin out		
Conductor	Mode A	Mode B
1	Positive Vport, Negative Vport	
2	Positive Vport, Negative Vport	
3	Negative Vport, Positive Vport	
4		Positive Vport, Negative Vport
5		Positive Vport, Negative Vport
6	Negative Vport, Positive Vport	
7		Negative Vport, Positive Vport
8		Negative Vport, Positive Vport

**Note 1:** Before installing the Powered Device (PD), please ensure the PD pin assignment follows the IEEE 802.3af PD standards. There are some IEEE 802.3af pre-standard PDs that only accept mode A for power. IEEE 802.3af indicates that the PD should be powered by **either** Mode A **or** B.

**Note 2:** For PoE High Power feeding purpose, JetNet4706/JetNet4706f should be wall mounted on control panel to obtain great heat radiation.

## 2.7 Wiring RS-232 Console Cable and pin assignment

Korenix includes one RS-232 DB-9 to RJ-45 cable.

1. Connect the DB-9 connector to the serial communication port (RS-232) of your PC
2. Open Terminal tool and set up serial settings to 9600, N,8,1. (Baud Rate: 9600 / Parity Check: None / Data Bit: 8 / Stop Bit: 1) Then you can access the CLI interface through the console cable.

Note: If you lose the cable, please contact your sales representative to purchase a new one. The pin assignment spec is listed in the *Appendix*.

## 2.8 DIN-Rail Mounting Installation

There are 2 DIN-Rail Clips included. Each set of DIN Rail clips include 4 screws and 2 clips. If the DIN-Rail set is missing, please contact a *Korenix* distributor for help.

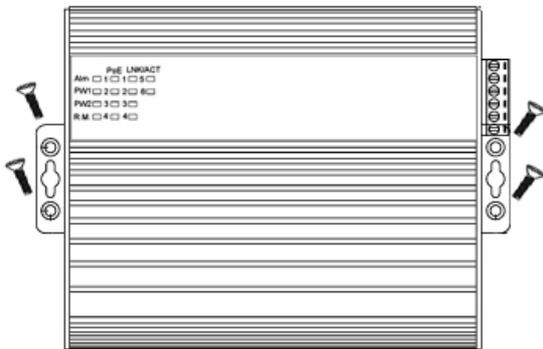


Use the screws provided to attach the DIN-Rail clip to the wall-mount plate of the *JetNet 4706/4706f*

## 2.9 Wall-Mount Installation

Follow the steps below to install the *JetNet 4706/4706f* wall-mount plate.

Use the hook holes located at the corners of the wall-mount plate to hang *JetNet 4706/4706f* onto a wall.



Wall-mount

## 3 Preparation for Management

The *Korenix JetNet 4706/4706f* Industrial Managed PoE Switch provides both in-band and out-band configurations.

With out-band management, you can configure the switch via RS232 console cable if you do not want to include your admin PC as part of your network. Also, in case you lose network connection, you will still be able to configure the switch via RS232 console cable. Out-band management is not affected by network performance.

In-band management allows you to remotely manage the switch via the network. You can choose Telnet or Web-based management. You just need to know the device's IP address and you can remotely connect to its embedded HTTP web pages or Telnet console.

The following topics are covered in this chapter:

### 3.1 Preparation for Serial Console

### 3.2 Preparation for Web Interface

### 3.3 Preparation for Telnet console

## 3.1 Preparation for Serial Console

In the *JetNet 4706/4706f* package, *Korenix* has included one RS-232 DB-9 to RJ-45 console cable. Attach the RS-232 DB-9 connector to your PC COM port, then connect the RJ-45 to the console port of *JetNet 4706/4706f*. If you lose the cable, please follow the console cable Pin assignment to find one (See *Appendix*).

1. Go to Start -> Program -> Accessories -> Communication -> Hyper Terminal
2. Give a name to the new console connection.
3. Choose the COM name
4. Select correct serial settings. The serial settings for the *JetNet 4706/4706f* are:  
Baud Rate: 9600 / Parity Check: None / Data Bit: 8 / Stop Bit: 1
5. After connected, you will see a switch login request.
6. Login to the switch. The default username and password are **admin**.

```
Booting...
Switch login: admin
Password:

JetNet 4706 (version 0.30-20061211).
Copyright 2006-2010 Korenix Technology Co., Ltd.

Switch>
```

## 3.2 Preparation for Web Interface

The *JetNet 4706/4706f* provides HTTP Web Interface and Secure HTTPS Web Interface for web management.

### 3.2.1 Web Interface

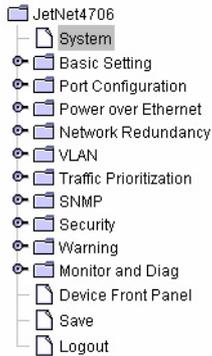
The *Korenix* web management page uses JavaScript. This allows you to use a standard Web browser such as Microsoft Internet Explorer or Mozilla FireFox to configure the switch from anywhere while connected to the network.

Before you attempt to use the embedded web interface to manage switch operation, verify that your *JetNet 4706/4706f* Industrial Ethernet Switch is properly installed on your network and that every PC on the network can access the switch via Web browser.

1. Verify that your network interface card (NIC) is operational, and that your operating system supports TCP/IP protocol.
2. Wire the DC power to the switch and connect your switch to your computer.
3. Make sure that the switch default IP address is 192.168.10.1.
4. Change your computer IP address to 192.168.10.2 or another IP address in the 192.168.10.x subnet (Network Mask: 255.255.255.0).
5. Switch to DOS command mode and ping 192.168.10.1 to verify a normal response time.
6. Launch a web browser (Internet Explorer or Mozilla FireFox) on your PC.
7. Type **http://192.168.10.1** (or the IP address of the switch) into the Web address window. Press **Enter**.
8. Key in the username and password. The default username and password are **admin**.



9. Click **OK**. The welcome page of the web-based management interface will now appear.



### Welcome to the JetNet 4706 Industrial Managed Switch

System Name	JetNet 4706
System Location	
System Contact	
System OID	1.3.6.1.2.24062.2.1.3
System Description	JetNet 4706 Industrial Managed Switch
Firmware Version	v0.0.9 20070514
Device MAC	00:12:77:ff:03:00

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10. Once you enter the web-based management interface, you can change the *JetNet 4706/4706f*'s IP address to fit your network environment.

**Note 1:** Internet Explorer Version 5.0 or later does not allow Java applets to open sockets by default. Users must directly modify the browser settings to selectively enable Java applets in order to use network ports.

**Note 2:** The Web UI connection session of *JetNet 4706/4706f* will logout automatically if you do not input anything after 30 seconds. Re-login if this occurs.

### 3.2.2 Secured Web Interface

The *Korenix* web management page also provides a secure HTTPS login. All the configuration commands will be secure, making it hard for hackers to figure out login password and configuration commands.

1. Launch a web browser (Internet Explorer or Mozilla FireFox) on your PC.
2. Type **https://192.168.10.1** (or the IP address of the switch) into the web address window. Press **Enter**.
3. A popup screen will appear and request you to trust the secure HTTPS connection distributed by *JetNet 4706/4706f*. Press **Yes**.
4. The login screen will appear next.
5. Key in the username and password. The default username and password are **admin**.
6. Click **OK**. The welcome page of the web-based management interface will now appear.



7. Once you enter the web-based management interface, all the commands you see will be the same as what appeared through HTTP login.

## 3.3 Preparation for Telnet Console

### 3.3.1 Telnet

The *Korenix JetNet 4706/4706f* supports Telnet. You can connect to the switch through Telnet-- the command lines are the same as the RS232 console port. Below are the steps for opening a Telnet connection.

1. Go to Start -> Run -> cmd. Press **Enter**
2. Type **Telnet 192.168.10.1** (or the IP address of the switch). Press **Enter**

### 3.3.2 SSH (Secure Shell)

The *Korenix JetNet 4706/4706f* also supports SSH. You can remotely connect to the switch by command line interface. The SSH connection can secure all the configuration commands you send to the switch.

SSH is a client/server architecture in which *JetNet 4706/4706f* is the SSH server. When you want to make a SSH connection with the switch, you should download the SSH client tool first.

#### SSH Client

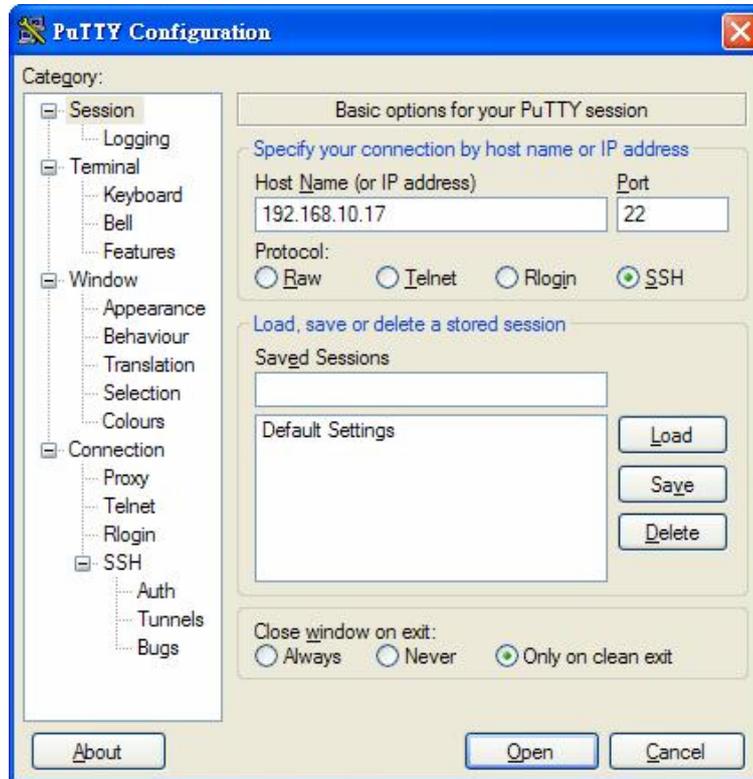
There are many SSH clients you can find on the internet. For example, *PuTTY* is a free and popular Telnet/SSH client. We will use this tool to demonstrate how to log in to the *JetNet 4706/4706f* through SSH.

Note: *PuTTY*, Copyright 1997-2006 Simon Tatham.

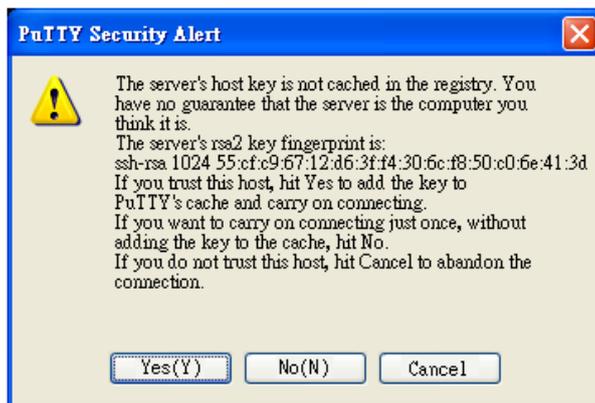
**Download PuTTY:** <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

## 1. Open SSH Client (PuTTY)

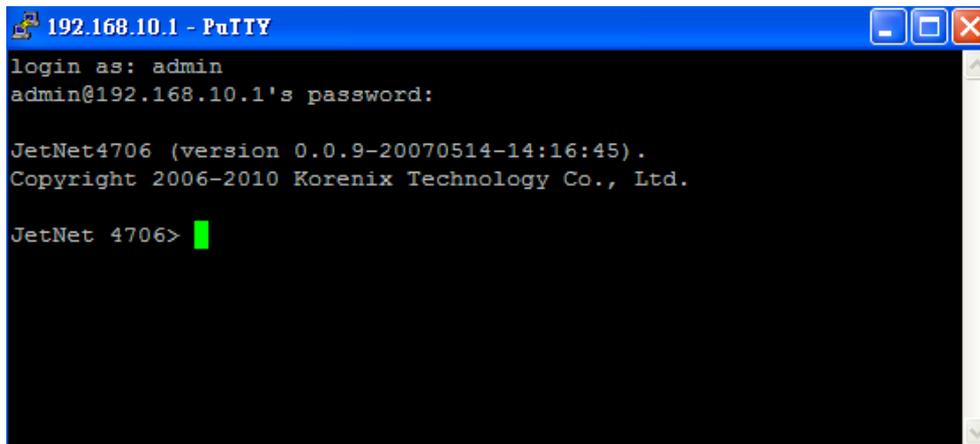
In the **Session** configuration, enter the **Host Name** (IP Address of your *JetNet 4706/4706f*) and **Port number** (default = 22). Choose the “**SSH**” protocol. Then click on “**Open**” to start the SSH session console.



2. After clicking on **Open**, you will see the cipher information in the popup screen. Press “**Yes**” to accept the Security Alert.



3. After a few seconds, the SSH connection to *JetNet 4706/4706f* will open.



```
192.168.10.1 - PuTTY
login as: admin
admin@192.168.10.1's password:

JetNet4706 (version 0.0.9-20070514-14:16:45).
Copyright 2006-2010 Korenix Technology Co., Ltd.

JetNet 4706> █
```

4. Type in the login name and password. The default login name and password are **admin**.
5. All the commands you see in SSH are the same as the CLI commands you see via RS232 console. The next chapter will introduce in detail how to use the command line to configure the switch.

## 4 Feature Configuration

This chapter explains how to configure the *JetNet 4706/4706f* software and its features.

The following topics are covered in this chapter:

- 4.1 Command Line Interface (CLI) Introduction
- 4.2 Basic Settings
- 4.3 Port Configuration
- 4.4 Power over Ethernet
- 4.5 Network Redundancy
- 4.6 VLAN
- 4.7 Traffic Prioritization
- 4.8 Multicast Filtering
- 4.9 SNMP
- 4.10 Security
- 4.11 Warning
- 4.12 Monitor and Diag
- 4.13 Device Front Panel
- 4.14 Save to Flash
- 4.15 Logout

## 4.1 Command Line Interface (CLI) Introduction

The Command Line Interface (CLI) is the user interface of the switch's embedded software system. You can view the system information, see the status, configure the switch and receive a response back from the system by keying in a command.

There are different command modes. Each command mode has its own access ability, its own available command lines, and its own different command lines to enter and exit. These modes are **User EXEC, Privileged EXEC, Global Configuration, and (Port/VLAN) Interface Configuration modes.**

**User EXEC mode:** As long as you login to the switch through CLI, you will be in the User EXEC mode. You can ping, telnet remote device, and show some basic information.

Types **enable** to enter the next mode, and **exit** to logout. Below is a full command list.

JetNet 4706>	
enable	Turn on privileged mode command
exit	Exit current mode and down to previous mode
list	Print command list
ping	Send echo messages
quit	Exit current mode and down to previous mode
show	Show running system information
telnet	Open a telnet connection
traceroute	Trace route to destination

**Privileged EXEC mode:** Type **enable** in the User EXEC mode to enter the Privileged EXEC mode. In this mode, the system allows you to view current configurations, reset to default, reload the switch, show the system's information, save a configuration, and enter the global configuration mode.

You can type **configure terminal** to enter the next mode or **exit** to leave. To see a list of available command types **?**.

JetNet 4706(config)# ?	
access-list	Add an access list entry
administrator	Administrator account setting
arp	Set a static ARP entry
clock	Configure time-of-day clock
default	Set a command to its defaults
end	End current mode and change to enable mode
exit	Exit current mode and down to previous mode
hostname	Set system's network name
interface	Select an interface to configure
ip	IP information
list	Print command list
log	Logging control
mac	Global MAC configuration subcommands
mac-address-table	mac address table
no	Negate a command or set its defaults
ntp	Configure NTP
password	Assign the terminal connection password
qos	Quality of Service (QoS)
relay	relay output type information
rmon	Remote monitoring
router	Enable a routing process
smtp-server	SMTP server configuration

**Global Configuration mode:** Type **configure terminal** in privileged EXEC mode. You can then enter the global configuration mode. In global configuration mode, you can configure all the features that the system provides.

Type **interface IFNAME/VLAN** to enter interface configuration mode and **exit** to leave, or **?** for command list.

Available commands for global configuration mode are shown below.

JetNet 4706# configure terminal	
JetNet 4706(config-if)#	
auto-negotiation	Enables auto-negotiation state of a given port
description	Interface specific description
duplex	Specifies the duplex mode of operation for a port
end	End current mode and change to enable mode
exit	Exit current mode and down to previous mode
flowcontrol	Sets the flow-control value for an interface
list	Print command list
loopback	Specifies the loopback mode of operation for a port
mac	MAC interface commands
mdix	Enables mdix state of a given port
no	Negate a command or set its defaults
poe	Configure power over ethernet
qos	Quality of Service (QoS)
quit	Exit current mode and down to previous mode
rate-limit	Rate limit configuration
shutdown	Shutdown the selected interface
spanning-tree	The spanning-tree protocol
speed	Specifies the speed of a Fast Ethernet port or a Gigabit Ethernet port.
switchport	Set switching mode characteristics

**(Port) Interface Configuration:** Type **interface IFNAME** in global configuration mode. You can then enter interface configuration mode. In this mode, you can configure port settings.

The port interface name for fast Ethernet port 1 is fa1; fast Ethernet 6 is fa6. You can type the interface name accordingly when you want to enter a specific interface configuration mode.

You can type **exit** to leave or **?** for a list of available commands.

Below are the available commands for port interface configuration mode.

JetNet 4706(config)# interface fa2	
JetNet 4706(config-if)#	
auto-negotiation	Enables auto-negotiation state of a given port
description	Interface specific description
duplex	Specifies the duplex mode of operation for a port
end	End current mode and change to enable mode
exit	Exit current mode and down to previous mode
flowcontrol	Sets the flow-control value for an interface
list	Print command list
loopback	Specifies the loopback mode of operation for a port
mac	MAC interface commands
mdix	Enables mdix state of a given port
no	Negate a command or set its defaults
poe	Configure power over ethernet
qos	Quality of Service (QoS)
quit	Exit current mode and down to previous mode
rate-limit	Rate limit configuration
shutdown	Shutdown the selected interface
spanning-tree	the spanning-tree protocol
speed	Specifies the speed of a Fast Ethernet port or a Gigabit Ethernet port.
switchport	Set switching mode characteristics
JetNet 4706(config-if)# rate-limit	Rate limit configuration
shutdown	Shutdown the selected interface
spanning-tree	spanning-tree protocol

**(VLAN) Interface Configuration:** Type **interface VLAN VLAN-ID** in global configuration mode. You can then enter the VLAN interface configuration mode. In this mode, you can configure the settings for a specific VLAN.

The VLAN interface name for VLAN 1 is VLAN 1; VLAN 2 is VLAN 2.

You can type **exit** to leave or **?** for a list of available commands.

Available commands for the VLAN interface configuration mode appear below.

Switch(config)# interface vlan 1	
Switch(config-if)#	
description	Interface specific description
end	End current mode and change to enable mode
exit	Exit current mode and down to previous mode
ip	Interface Internet Protocol config commands
list	Print command list
no	Negate a command or set its defaults
quit	Exit current mode and down to previous mode
shutdown	Shutdown the selected interface

The following is a summary of command modes.

Command Mode	Main Function	Enter and Exit Method	Prompt
User EXEC	This is the first level of access. Users can ping, telnet remote device, and show basic information	Enter: Type <b>login</b> to login Exit: Type <b>exit</b> to logout Next mode: Type <b>enable</b> to enter privileged EXEC mode.	Switch>
Privileged EXEC	In this mode, the system allows you to view current configuration, reset to default, reload the switch, show the system's information, save a configuration, and enter global configuration mode.	Enter: Type <b>enable</b> in User EXEC mode. Exec: Type <b>disable</b> to exit to user EXEC mode. Type <b>exit</b> to logout Next Mode: Type <b>configure terminal</b> to enter global configuration command.	Switch#
Global configuration	In global configuration mode, you can configure all the features that the system provides	Enter: Type <b>configure terminal</b> in privileged EXEC mode Exit: Type <b>exit</b> or <b>end</b> or press <b>Ctrl-Z</b> to exit. Next mode: Type <b>interface IFNAME/ VLAN VID</b> to enter interface configuration mode	Switch(config)#
Port Interface configuration	In this mode, you can configure port-related settings.	Enter: Type <b>interface IFNAME</b> in global configuration mode. Exit: Type <b>exit</b> or <b>Ctrl+Z</b> to global configuration mode. Type <b>end</b> to privileged EXEC mode.	Switch(config-if)#
VLAN Interface Configuration	In this mode, you can configure settings for specific VLAN.	Enter: Type <b>interface VLAN VID</b> in global configuration mode. Exit: Type <b>exit</b> or <b>Ctrl+Z</b> to global configuration mode. Type <b>end</b> to privileged EXEC mode.	Switch(config-vlan)#

Here are some useful commands for you to see all or specific commands available to you. Save time and avoid typing errors.

**?** Shows all the available commands in the mode you are currently in. It also shows you the next command you can/should type.

```
Switch(config)# interface (?)
IFNAME          Interface's name
vlan            Select a vlan to configure
```

**(Character)?** Shows all the available commands for what you input as "Character."

```
Switch(config)# a?
access-list      Add an access list entry
administrator    Administrator account setting
arp              Set a static ARP entry
```

**Tab Key** Helps you input commands quicker. If there is only one available command, hitting the tab key can help you automatically generate the command.

```
Switch# co (tab) (tab)
Switch# configure terminal

Switch(config)# ac (tab)
Switch(config)# access-list
```

**Ctrl+C** Stops an unfinished command.

**Ctrl+S** Locks the screen of the terminal. You will not be able to input a command.

**Ctrl+Q** Unlocks a locked screen.

**Ctrl+Z** Exits configuration mode.

An alert message appears when multiple users try to configure the switch. If the administrator is in configuration mode, then Web users will not be able to change the settings. *JetNet 4706/4706f* only allows one administrator at a time to configure the switch.



## 4.2 Basic Settings

This section provides you with instructions on how to configure switch information, set the IP address, and configure the username and password of the system. It also allows you to upgrade the firmware, backup and restore a configuration, reload the system to factory default, and reboot the system.

The following is included in this section:

- 4.2.1 Switch Setting
- 4.2.2 Admin Password
- 4.2.3 IP Configuration
- 4.2.4 Time Setting
- 4.2.5 Backup and Restore
- 4.2.6 Firmware Upgrade
- 4.2.7 Factory Default
- 4.2.8 System Reboot

### 4.2.1 Switch Setting

You can assign a System name, Location, Contact and view the system information.

The following figure is the Web UI for Switch Setting.

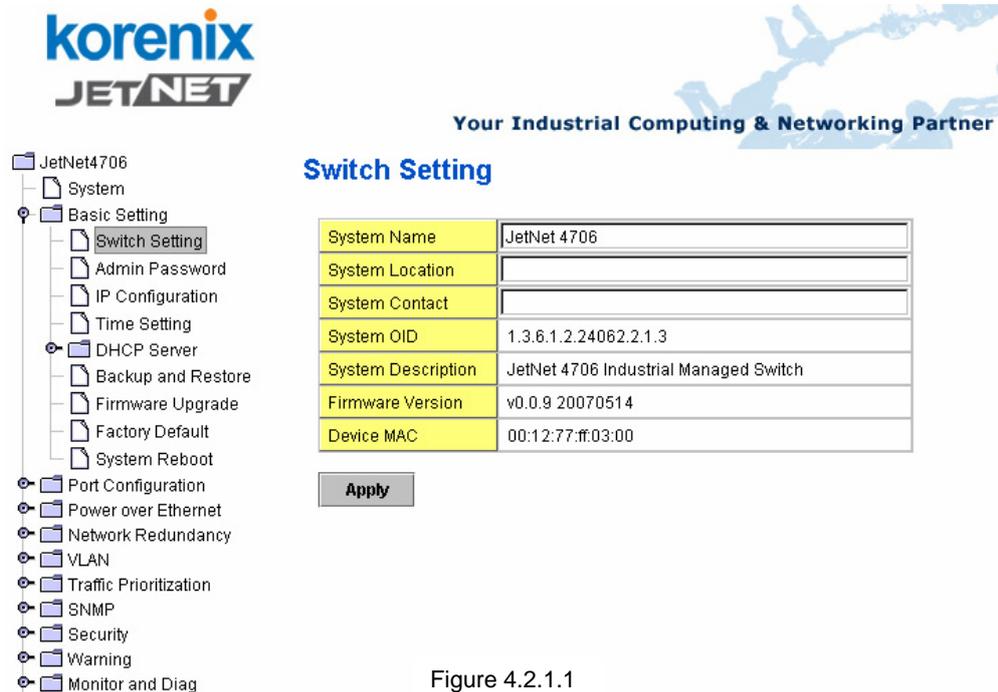


Figure 4.2.1.1

**System Name:** Assign a name to the device. You can input up to 64 characters.

After you configure the name, the CLIP system will select the first 12 characters as the name for the CLIP system.

**System Location:** Specify the switch's physical location. You can input up to 64 characters.

**System Contact:** Specify contact people. Type in the name, e-mail address or other information about the administrator. You can input up to 64 characters.

**System OID:** Set the SNMP object ID of the switch. You can follow the path to find its private MIB in the MIB browser. **Note:** When you attempt to view a private MIB, you should compile private MIB files into your MIB browser first.

**System Description:** View a description of the system. *JetNet 4706/4706f* Industrial Management Ethernet Switch is the name of this product.

**Firmware Version:** Display the firmware version installed on this device.

**MAC Address:** Display the unique hardware address (MAC address) assigned by the manufacturer.

Once you have finished the configuration, click **Apply** to apply your settings.

**Note:** Always remember to select **Save** to save your settings. Otherwise, the settings you made will be lost when the switch is powered off.

## 4.2.2 Admin Password

You can change the username and password to enhance security

The following figure is the Web UI for Admin Password

### Admin Password

Name	admin
Password	*****
Confirm Password	*****

**Apply**

**Username:** Key in a new username. The default setting is **admin**.

**Password:** Key in a new password. The default setting is **admin**.

**Confirm Password:** Re-enter the new password to confirm it.

Once you finish configuring the settings, click **Apply** to apply your configuration.

The following figure is the popup alert window when the incorrect username is entered.



### 4.2.3 IP Configuration

This function allows users to configure the switch's IP address settings.

## IP Configuration

**DHCP Client**

IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Default Gateway	192.168.10.254

**DHCP Client:** **Enable** or **Disable** DHCP Client function. When DHCP Client function is enabled, an IP address will be assigned to the switch from the network's DHCP server. In this mode, the default IP address will be replaced by the one assigned by the DHCP server. If DHCP Client is disabled, then the IP address that you specified will be used instead.

**IP Address:** You can assign the IP address reserved by your network for your *JetNet*. If DHCP Client function is enabled, you don't need to assign an IP address, as it will be overwritten by the DHCP server. The default IP address is 192.168.10.1.

**Subnet Mask:** Assign the subnet mask for the IP address. If DHCP Client function is enabled, you don't need to assign the subnet mask. The default Subnet Mask is 255.255.255.0. **Note:** In the CLI, we use the enabled subnet mask to represent the number displayed in the web UI. For example, 8 stands for 255.0.0.0; 16 stands for 255.255.0.0; 24 stands for 255.255.255.0.

**Gateway:** Assign the gateway for the switch. The default gateway is 192.168.10.254. **Note:** In the CLI, we use 0.0.0.0/0 to represent the default gateway.

Once you finish configuring the settings, click **Apply** to apply your configuration.

#### 4.2.4 Time Setting

Time Setting source allow user to set the time by manually or through NTP server. It also provide time synchronize from PC. Network Time Protocol (NTP) is used to synchronize computer clocks on the internet. You can configure NTP settings here to synchronize the clocks of several switches on the network.

JetNet4706/4706f also provide Daylight Saving function.

**Manual Setting:** User can select Manual setting to change time as user want and also click the icon “Get Time From PC” to sync time from your PC.

**NTP client:** Select the Time Setting Source to NTP client can let device enable the NTP client. It allow JetNet4706/4706f get time from 2 different NTP servers. The system will send request packet to acquire current time from the NTP server.

<b>Time Setting Source</b>	NTP Client
NTP Client	Manual Setting
Primary Server Address	NTP Client
Secondary Server Address	192.168.10.120
	192.168.10.121

**Time zone:** Select the time zone where the switch is located. For your reference, the following table lists the time zones of different locations. The default time zone is GMT (Greenwich Mean Time).

Switch(config)#	clock	timezone
01	(GMT-12:00)	Eniwetok, Kwajalein
02	(GMT-11:00)	Midway Island, Samoa
03	(GMT-10:00)	Hawaii
04	(GMT-09:00)	Alaska
05	(GMT-08:00)	Pacific Time (US & Canada) , Tijuana
06	(GMT-07:00)	Arizona
07	(GMT-07:00)	Mountain Time (US & Canada)
08	(GMT-06:00)	Central America
09	(GMT-06:00)	Central Time (US & Canada)
10	(GMT-06:00)	Mexico City
11	(GMT-06:00)	Saskatchewan
12	(GMT-05:00)	Bogota, Lima, Quito
13	(GMT-05:00)	Eastern Time (US & Canada)
14	(GMT-05:00)	Indiana (East)
15	(GMT-04:00)	Atlantic Time (Canada)
16	(GMT-04:00)	Caracas, La Paz
17	(GMT-04:00)	Santiago
18	(GMT-03:00)	Newfoundland
19	(GMT-03:00)	Brasilia
20	(GMT-03:00)	Buenos Aires, Georgetown
21	(GMT-03:00)	Greenland
22	(GMT-02:00)	Mid-Atlantic
23	(GMT-01:00)	Azores
24	(GMT-01:00)	Cape Verde Is.
25	(GMT)	Casablanca, Monrovia
26	(GMT)	Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
27	(GMT+01:00)	Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
28	(GMT+01:00)	Belgrade, Bratislava, Budapest, Ljubljana, Prague
29	(GMT+01:00)	Brussels, Copenhagen, Madrid, Paris
30	(GMT+01:00)	Sarajevo, Skopje, Sofija, Vilnius, Warsaw, Zagreb
31	(GMT+01:00)	West Central Africa
32	(GMT+02:00)	Athens, Istanbul, Minsk
33	(GMT+02:00)	Bucharest
34	(GMT+02:00)	Cairo
35	(GMT+02:00)	Harare, Pretoria
36	(GMT+02:00)	Helsinki, Riga, Tallinn
37	(GMT+02:00)	Jerusalem
38	(GMT+03:00)	Baghdad
39	(GMT+03:00)	Kuwait, Riyadh
40	(GMT+03:00)	Moscow, St. Petersburg, Volgograd
41	(GMT+03:00)	Nairobi
42	(GMT+03:30)	Tehran
43	(GMT+04:00)	Abu Dhabi, Muscat
44	(GMT+04:00)	Baku, Tbilisi, Yerevan
45	(GMT+04:30)	Kabul
46	(GMT+05:00)	Ekaterinburg
47	(GMT+05:00)	Islamabad, Karachi, Tashkent
48	(GMT+05:30)	Calcutta, Chennai, Mumbai, New Delhi
49	(GMT+05:45)	Kathmandu

- 50 (GMT+06:00) Almaty, Novosibirsk
- 51 (GMT+06:00) Astana, Dhaka
- 52 (GMT+06:00) Sri Jayawardenepura
- 53 (GMT+06:30) Rangoon
- 54 (GMT+07:00) Bangkok, Hanoi, Jakarta
- 55 (GMT+07:00) Krasnoyarsk
- 56 (GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi
- 57 (GMT+08:00) Irkutsk, Ulaan Bataar
- 58 (GMT+08:00) Kuala Lumpur, Singapore
- 59 (GMT+08:00) Perth
- 60 (GMT+08:00) Taipei
- 61 (GMT+09:00) Osaka, Sapporo, Tokyo
- 62 (GMT+09:00) Seoul
- 63 (GMT+09:00) Yakutsk
- 64 (GMT+09:30) Adelaide
- 65 (GMT+09:30) Darwin
- 66 (GMT+10:00) Brisbane
- 67 (GMT+10:00) Canberra, Melbourne, Sydney
- 68 (GMT+10:00) Guam, Port Moresby
- 69 (GMT+10:00) Hobart
- 70 (GMT+10:00) Vladivostok
- 71 (GMT+11:00) Magadan, Solomon Is., New Caledonia
- 72 (GMT+12:00) Auckland, Wellington
- 73 (GMT+12:00) Fiji, Kamchatka, Marshall Is.
- 74 (GMT+13:00) Nuku'alofa

**Daylight Saving Time:** Set when Enable Daylight Saving Time start and end, During the Daylight Saving Time, the device's time is one hour earlier than the actual time.

<input type="checkbox"/> <b>Daylight Saving Time</b>					
Daylight Saving Start	Jan	01	,	00	: 00
Daylight Saving End	Jan	01	,	00	: 00

Once you have finished the configuration, click **Apply** to apply your configuration.

#### 4.2.5 DHCP Server

You can select to **Enable** or **Disable** DHCP Server function. *JetNet 4706/4706f* will assign a new IP address to link partners.

##### DHCP Server configuration

After selecting to enable DHCP Server function, type in the Network IP address for the DHCP server IP pool, Subnet Mask, Default Gateway address and Lease Time for client.

**DHCP Server** Enable ▾

##### DHCP Server Configuration

Network	192.168.10.0
Subnet Mask	255.255.255.0
Default Gateway	192.168.10.1
Lease Time(s)	604800

**Apply**

Once you have finished the configuration, click **Apply** to apply your configuration

### Excluded Address:

You can type a specific address into the **IP Address field** for the DHCP server reserved IP address.

The IP address that is listed in the **Excluded Address List Table** will not be assigned to the network device. Add or remove an IP address from the **Excluded Address List** by clicking **Add** or **Remove**.

### Excluded Address

IP Address	192.168.10.200
------------	----------------

**Add**

### Excluded Address List

Index	IP Address
1	192.168.10.200

**Remove**

**Manual Binding:** *JetNet 4706/4706f* provides a MAC address and IP address binding and removing function. You can type in the specified IP and MAC address, then click **Add** to add a new MAC&IP address binding rule for a specified link partner, like PLC or any device without **DHCP client** function. To remove from the binding list, just select the rule to remove and click **Remove**.

### Manual Binding

IP Address	
MAC Address	

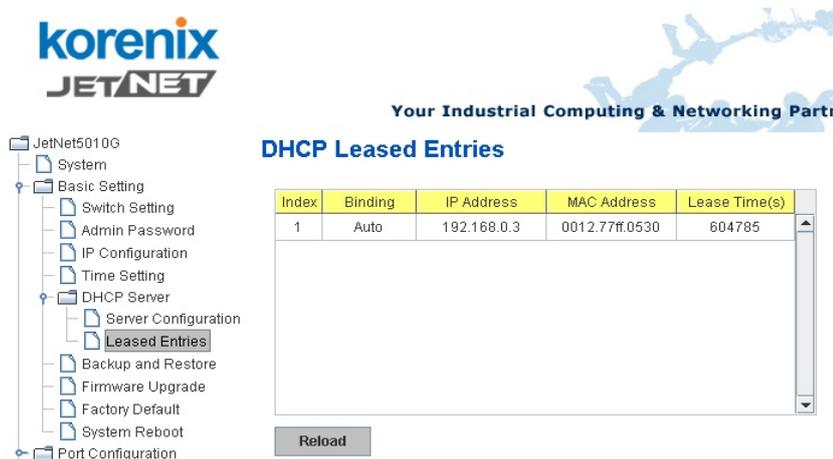
**Add**

### Manual Binding List

Index	IP Address	MAC Address
-------	------------	-------------

**Remove**

**DHCP Leased Entries:** *JetNet 4706/4706f* provides an assigned IP address list for user check. It will show the MAC and IP address that was assigned by *JetNet 4706/4706f*. Click the **Reload** button to refresh the listing.



#### 4.2.6 Backup and Restore

With the Backup command, you can save current configuration files saved in the switch's flash to the admin PC or TFTP server. This will allow you to go to the **Restore** command later, in order to restore the configuration file back to the switch. Before you restore the configuration file, you must place the backup configuration file into the PC or TFTP server. The switch will then download this file back to the flash.

There are 2 modes for users to backup/restore the configuration file, Local File mode and TFTP Server mode.

**Local File mode:** In this mode, the switch acts as the file server. Users can browse the target folder and then type in the file name to backup the configuration. Users can also browse the target folder and select existing configuration files to restore the configuration back to the switch. This mode is only provided by Web UI; CLI is not supported.

**TFTP Server mode:** In this mode, the switch acts as TFTP client. Before you do so, make sure that your TFTP server is ready. Then type in the IP address of the TFTP Server. The system uses the default configuration file name, **Quagga.conf**. You do not need to enter a new file name. This mode can be used in both Web UI and CLI.

**TFTP Server IP Address:** Key in the IP address of your TFTP Server here.

**Backup/Restore File Name:** The system uses a default file name.

**Configuration File:** The configuration file of the switch is a text file. You can open it with *Microsoft Word* or any program that can read .txt files, modify the file, add/remove configuration settings, and then restore it back on to the switch.

**Startup Configuration File:** After you have saved the running-config to flash, the new settings will be updated after a power cycle. You can use **show startup-config** to view it in the CLI. The Backup command can only backup such configuration files to your PC or TFTP server.

**Technical Tip:**

**Default Configuration File:** The switch provides the default configuration file in the system. You can use the Reset button, Reload command to reset the system.

**Running Configuration File:** The switch's CLI allows you to view the latest settings running on the system. The information shown here are the settings you set up but have not saved to flash. The settings not yet saved to flash will not work after a power cycle. You can use **show running-config** to view it in the CLI.

The following figure is the Main UI for Backup & Restore

## Backup & Restore

**Backup Configuration** Local File ▼

Backup File Name D:\TFTP\backup.conf 

**Backup**

**Restore Configuration** TFTP Server ▼

TFTP Server IP 192.168.10.100

Restore File Name backup.conf

**Restore**

The following figure is the WEB UI for Backup/Restore Configuration - Local File mode.

**Backup Configuration** Local File ▼

Backup File Name D:\TFTP\backup.conf 

**Backup**



Click on the Folder icon to select the target file you want to backup/restore.

**Note:** The folders of the path to the target file do not allow you to input space key.

The following figure is the Web UI for Backup/Restore Configuration - TFTP Server mode

Type in the IP address of TFTP Server IP. Then click on **Backup/Restore**.

**Note:** The file is named **Quagga.conf**. This file name can not be modified. Before you attempt to restore the configuration file, please make sure it is named Quagga.conf.

#### 4.2.7 Firmware Upgrade

In this section, you can update the switch with the latest firmware. *Korenix* provides the latest firmware on their Web site ([www.korenix.com](http://www.korenix.com)). New firmware may include new features, bug fixes or other software changes. The Web site also provides release notes for the update as well. We suggest you use the latest firmware *before* installing the switch.

**Note:** The system will automatically rebooted after you finish upgrading the new firmware. Please inform all attached users before doing this.

The following figure is the Web Main UI for Firmware Upgrade.

### Firmware Upgrade

System Firmware Version: v0.0.9  
System Firmware Date: 20070514

**Note:** When firmware upgrade is finished, the switch will restart automatically.

There are 2 modes for users to backup/restore the configuration file, Local File mode and TFTP Server mode.

**Local File** mode: In this mode, the switch acts as the file server. Users can browse the target folder and then type in the file name to backup the configuration. Users can also browse the target folder and select the existing configuration file to restore the configuration back to the switch. This mode is only provided by Web UI; CLI is not supported.

**TFTP Server** mode: In this mode, the switch acts as the TFTP client. Before you do so, make sure that your TFTP server is ready. Then, type in the TFTP Server IP address. This mode can be used in both Web UI and CLI.

**TFTP Server IP Address:** Key in the IP address of your TFTP Server here.

**Firmware File Name:** View the file name of the new firmware.

The UI also shows you the latest firmware version and build date. Please check the version number after you reboot the switch.

The following Web UI is for Firmware Upgrade - Local File mode.

## Firmware Upgrade

System Firmware Version: v0.0.9

System Firmware Date: 20070514

**Firmware Upgrade** Local File ▼

Firmware File Name J.8\JetNet4706-v0.0.8.bin 

Note: When firmware upgrade is finished, the switch will restart automatically.

**Upgrade**



Click on the Folder icon to select the target file you want to backup/restore.

The following Web UI is for Firmware Upgrade – TFTP Server mode.

## Firmware Upgrade

System Firmware Version: v0.0.9

System Firmware Date: 20070514

**Firmware Upgrade** TFTP Server ▼

TFTP Server IP 192.168.10.200

Firmware File Name jetnet4706 v11.bin

Note: When firmware upgrade is finished, the switch will restart automatically.

**Upgrade**

Type in the IP address of the TFTP Server and the Firmware File Name. Then click **Upgrade** to start the process.

After finishing the transmission of the firmware, the system will copy the firmware file and replace the firmware in the flash. The CLI will show until the process is finished.

## 4.2.8 Factory Default

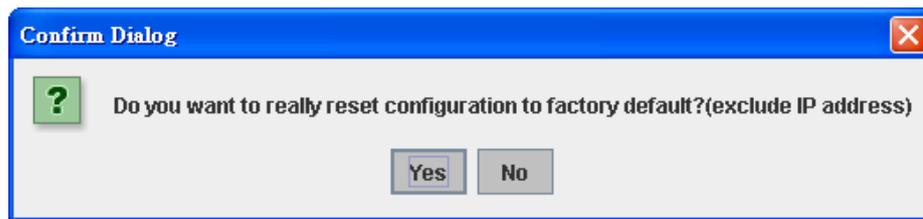
In this section, you can reset all the configurations of the switch to its default settings. By clicking on **Reset** the system will reset all configurations to its default settings. The system will show you a popup message window after running this command. Default settings will be in effect after rebooting the switch.



The Web UI figure for Reset to Default

### Factory Default

The following figure is the popup alert screen to confirm the command. Click on **Yes** to reset the system.



The following UI is a popup message screen to show you that the reset is complete. Click **OK** to close the screen. Then go to the **Reboot** page to reboot the switch.



Click **OK**. The system will then automatically reboot the device.

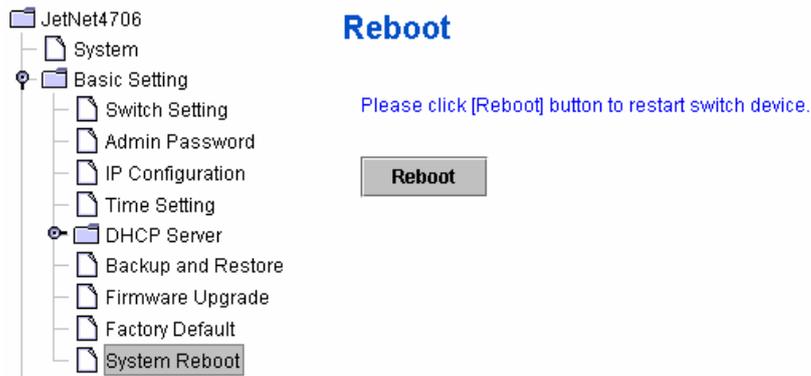
**Note:** If you have already configured the IP of your device to another IP address; when you use this command through CLI and Web UI, our software will not reset the IP address to the default IP. The system will maintain the IP address so that you can still connect to the switch via the network.

## 4.2.9 System Reboot

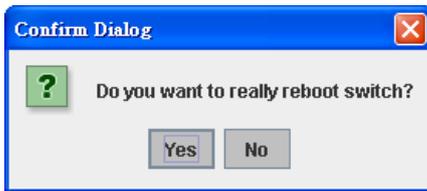
System Reboot allows you to reboot the device. Some of the feature changes require you to reboot the system. Click on **Reboot** to reboot your device.

**Note:** Remember to click on the **Save** button to save your settings. Otherwise, the settings you made will be gone once the switch is powered off.

Below is the Main screen for Reboot



Below is the popup alert screen to request confirmation for the Switch Reboot. Click on **Yes** to reboot the switch.



The popup message screen below appears when rebooting the switch.



## 4.2.10 CLI Commands for Basic Settings

Feature	Command Line
<b>Switch Setting</b>	
System Name	Switch(config)# hostname WORD Network name of this system

	Switch(config)# hostname JetNet 4706 JetNet 4706(config)#
System Location	JetNet 4706(config)# snmp-server location Taipei
System Contact	JetNet 4706(config)# snmp-server contact korecare@korenix.com
Display	JetNet 4706# show snmp-server name JetNet 4706  JetNet 4706# show snmp-server location Taipei  JetNet 4706# show snmp-server contact <a href="mailto:korecare@korenix.com">korecare@korenix.com</a>  JetNet 4706> show version 0.31-20061218  Switch# show hardware mac MAC Address : 00:12:77:FF:01:B0
<b>Admin Password</b>	
User Name and Password	JetNet 4706(config)# administrator NAME Administrator account name JetNet 4706(config)# administrator admin % Command incomplete. JetNet 4706(config)# administrator orwell PASSWORD Administrator account password JetNet 4706(config)# administrator orwell orwell Change administrator account orwell and password orwell success.
Display	JetNet 4706# show administrator Administrator account information name: orwell password: orwell
<b>IP Configuration</b>	
IP Address/Mask (192.168.10.8, 255.255.255.0)	JetNet 4706(config)# int vlan 1 JetNet 4706(config-if)# ip address 192.168.10.8/24
Gateway	JetNet 4706(config)# ip route 0.0.0.0/0 192.168.10.254/24
Remove Gateway	JetNet 4706(config)# no ip route 0.0.0.0/0 192.168.10.254/24
Display	JetNet 4706# show running-config ..... ! interface vlan1 ip address 192.168.10.8/24 no shutdown ! ip route 0.0.0.0/0 192.168.10.254/24 !
<b>Time Setting</b>	
NTP Server	JetNet 4706(config)# ntp peer 192.168.10.100
Time Zone	JetNet 4706(config)# clock timezone 26 Sun Jan 1 04:13:24 2006 (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London

	<p><b>Note:</b> By typing clock timezone ?, you can see the timezone list. Then choose the number of the timezone you want to select.</p>
Display	<pre>JetNet 4706# sh ntp associations 1 192.168.10.100 2 192.168.10.101  JetNet 4706# show clock Sun Jan 1 04:14:19 2006 (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London  JetNet 4706# show clock timezone clock timezone (26) (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London</pre>
<b>Backup and Restore</b>	
Backup Startup Configuration file	<pre>Switch# copy startup-config tftp: 192.168.10.33 Writing Configuration [OK]</pre> <p><b>Note 1:</b> To backup the latest startup configuration file, you should save current settings to flash first. You can refer to 4.12 to see how to save settings to the flash.  <b>Note 2:</b> 192.168.10.33 is the TFTP server's IP. Your environment may use different IP addresses. Please type target TFTP server IP in this command.</p>
Restore Configuration	Switch# copy tftp: 192.168.10.33 startup-config
Show Startup Configuration	Switch# show startup-config
Show Running Configuration	Switch# show running-config
<b>Firmware Upgrade</b>	
Firmware Upgrade	<pre>Switch# archive download-sw /overwrite tftp 192.168.10.33 JetNet 4706.bin Firmware upgrading, don't turn off the switch! Tftping file JetNet 4706.bin Firmware upgrading ..... ..... ..... Firmware upgrade success!! Rebooting.....</pre>
<b>Factory Default</b>	
Factory Default	<pre>Switch# reload default-config file Reload OK! Switch# reboot</pre>
<b>System Reboot</b>	
Reboot	Switch# reboot

### 4.3 Port Configuration

This section shows you how to enable/disable port state, or configure port auto-negotiation, speed, duplex, flow control, rate limit control and port aggregation settings. It also allows you to view port status and aggregation information.

The following commands are covered in this section:

- 4.3.1 Port Control
- 4.3.2 Port Status
- 4.3.3 Rate Control

#### 4.3.1 Port Control

Port Control commands allow you to enable/disable port state, or configure port auto-negotiation, speed, duplex, and flow control.

Port	State	Speed/Duplex	Flow Control
1	Enable	AutoNegotiation	Disable
2	Enable	AutoNegotiation	Disable
3	Enable	AutoNegotiation	Disable
4	Enable	AutoNegotiation	Disable
5	Enable	AutoNegotiation	Disable
6	Enable	AutoNegotiation	Disable

**Apply**

Select the port you want to configure and make changes to the port.

**State** column: Enable or disable the state of this port. Once you disable the port, it stops linking and forwarding traffic. The default setting when you receive the device is Enable, which means all the ports are working.

**Speed/Duplex** column: Configure the port speed and duplex mode of this port. Below are the selections you can choose:

Fast Ethernet Port 1~6 (fa1~fa6) : Auto Negotiation, 10M Full Duplex(10 Full), 10M Half Duplex(10 Half), 100M Full Duplex(100 Full) and 100M Half Duplex(100 Half).

The default mode is Auto Negotiation mode.

**Flow Control** column: Enable or disable the flow control function. "Enable" means that you need to activate the flow control function of the remote network device in order to let the flow control of that corresponding port on the switch to work. "Disable" means that you do not need to activate the flow control function of the remote network device, as the flow control of that corresponding port on the switch will work either way.

Once you have finished configuring the settings, click **Apply** to save the configuration.

**Technical Tips:** If both ends are going at different speeds, they will not link to each other. If both ends are in different duplex modes, they will be connected by half mode.

#### 4.3.2 Port Status

Port Status shows you the current port status.

### Port Status

Port	Type	Link	State	Speed/Duplex	Flow Control
1	100BASE	Down	Enable	--	Disable
2	100BASE	Down	Enable	--	Disable
3	100BASE	Down	Enable	--	Disable
4	100BASE	Down	Enable	--	Disable
5	100BASE-TX	Up	Enable	100 Full	Disable
6	100BASE	Down	Enable	--	Disable

A description of each column is as follows:

**Port:** Port interface number.

**Type:** 100BASE -> Fast Ethernet port.

**Link:** Link status. Up -> Link UP. Down -> Link Down.

**State:** Enable -> State is enabled. Disable -> The port is disabled by user configured.

**Speed/Duplex:** Current working status of the port.

**Flow Control:** The state of the flow control.

#### 4.3.3 Rate Control

Rate limiting is a form of flow control used to enforce a strict bandwidth limit of a port. You can program separate transmitting (Egress Rule) and receiving (Ingress Rule) rate limits for each port, and even apply the limit to certain packet types as described below.

### Rate Control

#### Limit Packet Type and Rate

Port	Ingress Rule		Egress Rule	
	Packet Type	Rate(Kbps)	Packet Type	Rate(Kbps)
1	Broadcast Only ▼	8192 ▼	All	no-limit ▼
2	Broadcast Only ▼	8192 ▼	All	no-limit ▼
3	Broadcast Only ▼	8192 ▼	All	no-limit ▼
4	Broadcast Only ▼	8192 ▼	All	no-limit ▼
5	Broadcast Only ▼	8192 ▼	All	no-limit ▼
6	Broadcast Only ▼	8192 ▼	All	no-limit ▼

**Apply**

**Packet type:** You can select the packet type that you want to filter. The packet types of the Ingress Rule (incoming) listed here include **Broadcast Only**, **Broadcast/multicast**, **Broadcast/Multicast/UnknownUnicast**, and **All**. The packet types of the Egress Rule (outgoing) only support **All** packet types.

**Rate:** This column allows you to manually assign the limit rate of the port. Valid values support **128Kbps**, **256Kbps**, **512Kbps**, **1024Kbps**, **2048Kbps**, **4096Kbps** and **8192Kbps**.

To enable rate control function, please click “**Apply**” to apply the configuration.

#### 4.3.4 Command Lines for Port Configuration

Feature	Command Line
<b>Port Control</b>	
Port Control – State	Switch(config-if)# shutdown -> Disable port state Port1 Link Change to DOWN interface fastethernet1 is shutdown now.  Switch(config-if)# no shutdown -> Enable port state Port1 Link Change to DOWN Port1 Link Change to UP interface fastethernet1 is up now. Switch(config-if)# Port1 Link Change to UP
Port Control – Auto Negotiation	Switch(config)# interface fa1 Switch(config-if)# auto-negotiation Auto-negotiation of port 1 is enabled!
Port Control – Force Speed/Duplex	Switch(config-if)# speed 100 Port1 Link Change to DOWN set the speed mode ok! Switch(config-if)# Port1 Link Change to UP  Switch(config-if)# duplex full Port1 Link Change to DOWN set the duplex mode ok! Switch(config-if)# Port1 Link Change to UP
Port Control – Flow Control	Switch(config-if)# flowcontrol on Flowcontrol on for port 1 set ok!  Switch(config-if)# flowcontrol off Flowcontrol off for port 1 set ok!
<b>Port Status</b>	
Port Status	Switch# show interface fa1 Interface fastethernet1 Administrative Status : Enable Operating Status : Connected Duplex : Full Speed : 100 Flow Control :off Default Port VLAN ID: 1

	<p>Ingress Filtering : Disabled          Acceptable Frame Type : All          Port Security : Disabled          Auto Negotiation : Disable          Loopback Mode : None          STP Status: forwarding          Default CoS Value for untagged packets is 0.          Mdx mode is Disable.          Medium mode is Copper.</p> <p><i>Note: Administrative Status -&gt; Port state of the port. Operating status -&gt; Current status of the port. Duplex -&gt; Duplex mode of the port. Speed -&gt; Speed mode of the port. Flow control -&gt; Flow Control status of the port.</i></p>
<b>Rate Control</b>	
Rate Control – Ingress or Egress	<p>JetNet 4706(config-if)# rate-limit              egress    Outgoing packets              ingress   Incoming packets</p> <p><b><i>Note: To enable rate control, you should select the Ingress or Egress rule first; then assign the packet type and bandwidth.</i></b></p>
Rate Control – Filter Packet Type	<p>JetNet 4706(config-if)# rate-limit ingress mode              all            Limit all frames              broadcast     Limit Broadcast frames              flooded-unicast Limit Broadcast, Multicast and flooded unicast frames              multicast     Limit Broadcast and Multicast frames</p> <p>JetNet 4706(config-if)# rate-limit ingress mode broadcast          Set the ingress limit mode broadcast ok.</p>
Rate Control - Bandwidth	<p>JetNet 4706(config-if)# rate-limit ingress bandwidth              &lt;0-100&gt;    Limit in magabits per second (0 is no limit)</p> <p>JetNet 4706(config-if)# rate-limit ingress bandwidth 8          Set the ingress rate limit 8Mbps for Port 1.</p>

## 4.4 Power over Ethernet

Power over Ethernet is one of the key features of *JetNet 4706/4706f*. It is in compliances with IEEE 802.3af standards and supports 30w High power forwarding capability. *JetNet 4706/4706f* adopts 4-Port PoE injectors in port 1 to port 4, each port with the ability to deliver a 0.615mA current.

The following commands are included in this section:

4.4.1 PoE Control

4.4.2 PoE Scheduling

4.4.3 PoE Status

4.4.4 Command Line for PoE control

#### 4.4.1 PoE Control

You can pull down the **PoE state** column to enable/disable ports, or set it to scheduling control mode.

The Power Mode provides **Standard** mode for IEEE 802.3af PD, **Manual** mode for user configuration of the power limit to IEEE 802.3af standard PD, or Ultra mode for user configuration to perform at the 30w power limitation.

The following figure shows the Web UI interface for Power over Ethernet Control.

### Power over Ethernet Control

Port	PoE Mode	Power Mode	Power Limit(W)
1	Enable	Standard	
2	Schedule	Standard	
3	Enable	Manual	15.40
4	Enable	Ultra	30.0

**Apply**

You can type a value into the **Power Limit** column to set the limitation of power consumption.

If *JetNet 4706/4706f* is set to **Standard** mode, *JetNet 4706/4706f* will execute IEEE 802.3af power limiting rule by PD class.

The maximum value of Manual mode is 15.4w; Ultra mode is 30w.

**Note 1:** For high power feeding, *JetNet 4706/ 4706f* must powering with DC 55V to deliver maximum power.

**Note 2:** Ensure *JetNet 4706/4706f* mounted on well heat radiated panel and under 60°C environment during PoE port progress High Power forwarding . High Power PoE Feeding will cause system temperature rised up.



**DO NOT TOUCH DEVICE SURFACE DURING PoE PROGRESS HIGH POWER FEEDING**

**PD Status Detection**

JetNet 4706/4706f delivers a useful function – PD Status Detection. This provides automatic detection of a remote device powered by JetNet 4706/4706f. If the remote system crashes or is unstable, JetNet 4706/4706f will perform a system reboot by turning off and on again to trigger the remote device. The following figure shows the Web configure interface for Power over Ethernet PD Status Detection.

PD Status Detection Enable ▾

PD	IP Address	Cycle Time(s)
1	192.168.10.100	10
2	192.168.10.200	20
3	192.168.10.15	30
4	192.168.10.20	40

**Apply**

You can enable/disable PD Status Detection function and type in the IP address that you want to detect. The **Cycle Time** is the gap per detection.

After configuring, please click **Apply** to enable and perform the functions.

**4.4.2 PoE Scheduling**

The PoE Scheduling control is a powerful function to help you save power and money.

You need to configure **PoE Scheduling** and select a target port manually to enable this function.

**Power over Ethernet Schedule**



#### 4.4.3 PoE Status

The PoE Status page shows the operating status of each PoE Port. The information includes Detection status, current **PD class**, **Power Consumption**, and delivered **Voltage** and **Current**.

#### Power over Ethernet Status

Port	PoE Mode	Status	PD Class	Consumption(W)	Voltage(V)	Current(mA)
1	Disable	Disabled	N/A	0.0	0.0	0.0
2	Enable	Delivering Power	Class3	0.7	45.5	16.1
3	Enable	Searching	N/A	0.0	0.0	0.0
4	Schedule	Disabled	N/A	0.0	0.0	0.0

Reload

#### 4.4.4 Command Line for PoE control

**Syntax** `show poe status IFNAME`

**Parameters** IFNAME : interface name

**Command Mode** Enable mode

**Description** Display the PoE status of interface.

**Examples**

```

JetNet 4706> enable
JetNet 4706# show poe status fa1
Interface fastethernet1
  POE Status : Secheduler
  Admin status : Enable
  Detection status : Searching
  Port Type : POE Port 1
  Classification : Class0
  POE Usage
  Power : 0.0 Watts, Voltage : 0.0 V, Current : 0.0 mA
  POE Limitation
  Limitation Mode : Ultra
  Max Power : 25.0 Watts
  POE Counter
  MPS Absent Counter : 0
  Invalid Signature Counter : 0
  Denied Counter : 0
  Overload Counter : 0
  Short Counter : 0
    
```

**Syntax** `show poe pd_detect`

**Parameters** --

**Command Mode** Enable mode

**Description** Display the status of pd status detection.

**Examples**

```

JetNet 4706# show poe pd-detect
PD Status Detection
Status : Enabled
Host 1 :
  Target IP : 192.168.10.100
  Cycle Time : 10
Host 2 :
  Target IP : 192.168.10.200
  Cycle Time : 20
Host 3 :
  Target IP : 192.168.10.15
  Cycle Time : 30
Host 4 :
  Target IP : 192.168.10.20
  Cycle Time : 40
  
```

<b>Syntax</b>	<b>show poe schedule IFNAME</b>
<b>Parameters</b>	IFNAME : interface name
<b>Command Mode</b>	Enable mode
<b>Description</b>	Display the status of schedule of interface.
<b>Examples</b>	<pre> JetNet 4706# show poe schedule fa1 Interface fastethernet1 POE Schedule Status : Disable Weekly Schedule :   Sunday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23   Monday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23   Tuesday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23   Wednesday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23   Thursday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23   Friday : 0,1,2,3,4,5,6,7,8,19,20,21,22,23   Saturday : 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20           </pre>

<b>Syntax</b>	<b>poe control-mode user/schedule</b>
<b>Parameters</b>	user: user mode schedule: schedule mode
<b>Command Mode</b>	Interface mode
<b>Description</b>	Set the control mode of port
<b>Examples</b>	<pre> Set PoE port 2 to user mode. EX 1: JetNet 4706(config)# interface fa2 JetNet 4706(config-if)# poe control-mode user Set PoE port 2 to schedule mode. EX 2: JetNet 4706(config-if)# poe control-mode schedule           </pre>

<b>Syntax</b>	<b>poe user enable/disable</b>
<b>Parameters</b>	enable: enable port in user mode disable: disable port in user mode
<b>Command Mode</b>	Interface mode
<b>Description</b>	Enable/Disable the PoE of the port in user mode. If in schedule mode, it will come into affect when the control mode

changes to user mode.

**Examples** To enable the PoE function in user mode  
 Switch(config-if)# poe user enable  
 To disable the PoE function in user mode  
 Switch(config-if)# poe user disable

**Syntax** **poe limit power (standard|manual|ultra) [POWER]**

**Parameters** Standard : Standard 802.3af mode  
 Manual : Manual mode  
 Ultra : Ultra mode  
 POWER :  
 802.3af mode: N/A  
 Manual mode: 0.44 - 15.4  
 Ultra mode: 0.44 - 30

**Command Mode** Interface mode

**Description** Set the mode and the max value of power consumption.

**Examples** Set the mode to standard (802.3af). Ps. There is no POWER parameter in standard mode.  
 Switch(config-if)# poe limit power standard  
 Set the max value of power consumption to 12 W with manual mode.  
 Switch(config-if)# poe limit power manual 12

**Syntax** **poe schedule weekday hour**

**Parameters** Weekday : Valid range 0-6 (0=Sunday, 1=Monday, ..., 6=Saturday)  
 Hour : Valid range 0-23, Valid format a,b,c-d

**Command Mode** Interface mode

**Description** Add a day schedule to an interface.

**Examples** Add a schedule which enables PoE function at hour 1, 3, 5 and 10 to 23 on Sunday.  
 Switch(config-if)# poe schedule 0 1,3,5,10-23

**Syntax** **no poe schedule weekday**

**Parameters** Weekday : Valid range 0-6 (0=Sunday, 1=Monday, ..., 6=Saturday)

**Command Mode** Interface mode

**Description** Remove a day schedule

**Examples** Remove the Sunday schedule.  
 Switch(config-if)# no poe schedule 0

**Syntax** **poe pd\_detect enable/disable**

**Parameters** enable: enable PD Status Detection function  
 disable: disable PD Status Detection function

**Command Mode** Configuration mode

**Description** Enable/Disable the PD Status Detection function

**Examples** To enable the function of pd status detect function  
 Switch(config)# poe pd\_detect enable  
 To disable the function of pd status detect function  
 Switch(config)# poe pd\_detect disable

<b>Syntax</b>	<code>po e pd_detect ip_address cycle_time</code>
<b>Parameters</b>	IP address : A.B.C.D Cycle time : Valid range 10-3600 second and must be multiple of 10
<b>Command Mode</b>	Configuration mode
<b>Description</b>	Apply a rule of PD Status Detection.
<b>Examples</b>	Apply a rule which ping 192.160.1.2 per 20 seconds. And if 192.160.1.2 is timeout, pd status detection will re-enable the PoE. Switch(config)# po e pd_detect 192.160.1.2 20

## 4.5 Network Redundancy

It is critical for industrial applications for networks to continue working non-stop. *JetNet 4706/4706f* supports standard RSTP, Rapid Super Ring, Dual Homing II and Legacy Super Ring Client modes.

Rapid Super Ring (RSR) technology is *Korenix's* 2<sup>nd</sup> generation Ring redundancy technology. This is patented and protected by *Korenix* and is used in countries all over the world. RSR ranks the fastest failover time in the world, less than 5 milliseconds, up to 20 units connected in a Gigabit Fiber Ring topology.

Advanced Dual Homing II technology also facilitates *JetNet 4706/4706f* to connect with a core managed switch via standard Rapid Spanning Tree Protocol. With Dual Homing II technology, you can also run RSTP to couple several Rapid Super Rings, which is also known as Auto Ring Coupling.

To become backwards compatible with the Legacy Super Ring technology implemented in *JetNet 4000/4500* switches, *JetNet 4706/4706f* also supports Super Ring Client mode. The Super Ring ports can pass through Super Ring control packets extremely well and works with Super Ring.

Besides *Korenix* ring technology, *JetNet 4706/4706f* also supports 802.1D-2004 version Rapid Spanning Tree Protocol (RSTP). The new version of RSTP standard includes 802.1D-1998 STP, 802.1w RSTP.

The following commands are included in this section:

### 4.5.1 RSTP

#### 4.5.2 RSTP Info

#### 4.5.3 Rapid Super Ring

#### 4.5.4 Ring Info

### 4.5.1 RSTP

RSTP stands for Rapid Spanning Tree Protocol. If a switch has more than one path to a destination, it will lead to message loops that can generate broadcast storms and quickly bog down a network. The spanning tree was created to combat the negative effects of message loops in switched networks. A spanning tree uses a spanning tree algorithm (STA) to automatically sense whether a switch has more than one way to communicate with a node. It will then select the best path (primary), and block the other path(s). It will also keep track of the blocked path(s) in case the primary path fails. Spanning Tree Protocol (STP) introduced a standard method to accomplish this. It is specified in IEEE 802.1D-1998. Later, Rapid Spanning Tree Protocol (RSTP) was adopted and represents the evolution of STP, providing for a much faster spanning tree convergence after a topology change. This is specified in IEEE 802.1w. In 2004, 802.1w was

included into the 802.1D-2004 version. This switch supports both RSTP and STP (all switches that support RSTP are also backwards compatible with switches that support only STP).

This page allows you to enable/disable RSTP, and configure the global setting and port settings.

- JetNet4706
  - System
  - Basic Setting
  - Port Configuration
  - Power over Ethernet
    - PoE Control
    - PoE Scheduling
    - PoE Status
  - Network Redundancy
    - RSTP**
    - RSTP Information
    - Rapid Super Ring
    - Ring Information
  - VLAN
    - Port-Based VLAN
  - Traffic Prioritization
  - SNMP
  - Security
  - Warning
  - Monitor and Diag
    - Device Front Panel
    - Save
    - Logout

## Rapid Spanning Tree Protocol

**RSTP** Enable ▼

**Bridge Configuration**

Priority	32768 ▼
Max Age(6-40 sec)	20
Hello Time(1-10 sec)	2
Forward Delay(4-30 sec)	15

**Port Configuration**

Port	Path Cost	Priority	Admin P2P	Admin Edge
1	200000000	128 ▼	Auto ▼	Enable ▼
2	200000000	128 ▼	Auto ▼	Enable ▼
3	200000000	128 ▼	Auto ▼	Enable ▼
4	200000000	128 ▼	Auto ▼	Enable ▼
5	2000000	128 ▼	Auto ▼	Enable ▼
6	200000000	128 ▼	Auto ▼	Enable ▼

Apply

**RSTP Mode:** You must first enable STP/RSTP mode before configuring any related parameters. Parameter settings required for both STP and RSTP are the same. Note that 802.1d refers to STP mode, while 802.1w refers to faster RSTP mode.

**Bridge Configuration**

**Priority (0-61440):** RSTP uses bridge ID to determine the root bridge, the bridge with the highest bridge ID becomes the root bridge. The bridge ID is composed of bridge priority and bridge MAC address. So that the bridge with the highest priority becomes the highest bridge ID. If all of the bridge IDs have the same priority, the bridge with the lowest MAC address will then become the root bridge.

**Note:** The bridge priority value must be in multiples of 4096. A device with a lower number has a higher bridge priority. Ex: 4096 is higher than 32768.

**Max Age (6-40):** Enter a value from 6 to 40 seconds here. This value represents the time that a bridge will wait without receiving Spanning Tree Protocol configuration messages before attempting to reconfigure.

If *JetNet 4706/4706f* is not the root bridge, and if it has not received a hello message from the root bridge in the amount of time equal to the Max Age, then *JetNet 4706/4706f* will reconfigure itself as a root bridge. Once two or more devices on the network are recognized as a root bridge, the devices will renegotiate to set up a new spanning tree topology.

**Hello Time (1-10):** Enter a value from 1 to 10 seconds here. This is a periodic timer that drives the switch to send out a BPDU (Bridge Protocol Data Unit) packet to check current STP status.

The root bridge of the spanning tree topology periodically sends out a “hello” message to other devices on the network to check if the topology is “healthy.” The “hello time” is the amount of time the root has waited in between sending hello messages.

**Forward Delay Time (4-30):** Enter a value between 4 and 30 seconds. This value is the time that a port waits before changing from Spanning Tree Protocol learning and listening states to forwarding state.

This is the amount of time *JetNet 4706/4706f* will wait before checking to see if it should be changed to a different state.

Once you have completed your configuration, click on **Apply** to apply your settings.

**Note:** You must observe the following rules to configure Hello Time, Forwarding Delay, and Max Age parameters.

**$2 \times (\text{Forward Delay Time} - 1 \text{ sec}) \geq \text{Max Age Time} \geq 2 \times (\text{Hello Time value} + 1 \text{ sec})$**

### **Port Configuration**

Select the port you want to configure; you will be able to view the current settings and status of the port.

**Path Cost:** Enter a number between 1 and 200,000,000. This value represents the “cost” of the path to the other bridge from the transmitting bridge at the specified port.

**Priority:** Enter a value between 0 and 240 using multiples of 16. This is the value that decides which port should be blocked by priority in a LAN.

**Admin P2P:** Some of the rapid state transitions that are possible within RSTP depend upon whether the port of concern can only be connected to another bridge (i.e. it is served by a point-to-point LAN segment), or if it can be connected to two or more bridges (i.e. it is served by a shared-medium LAN segment). This function allows P2P status of the link to be manipulated administratively. **Auto** means to auto select P2P or Share mode. **P2P** means P2P is enabled, while **Share** means P2P is disabled.

**Admin Edge:** A port directly connected to the end stations cannot create a bridging loop in the network. To configure this port as an edge port, set the port to the **Enable** state.

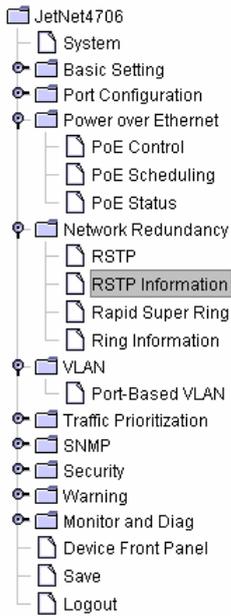
Once you have finished your configuration, click **Apply** to save your settings.

#### **4.5.2 RSTP Info**

This page allows you to see the information of the root switch and port status.

**Root Information:** You can see Root Bridge ID, Root Priority, Root Port, Root Path Cost and the Max Age, Hello Time and Forward Delay of BPDU sent from the root switch.

**Port Information:** You can see port path cost, port priority, P2P mode, Edge port mode and Port State.



## RSTP Information

### Root Information

Bridge ID	8000.0012.77ff.0351
Root Priority	32768
Root Port	N/A
Root Path Cost	0
Max Age(6-40)	20 sec
Hello Time(1-10)	2 sec
Forward Delay(4-30)	15 sec

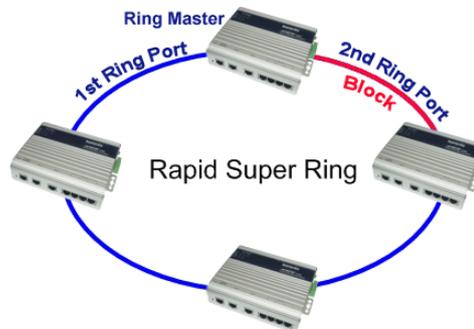
### Port Information

Port	Path Cost	Port Priority	P2P	Edge	Port State
1	200000000	128	Auto	Edge	Disabled
2	200000000	128	Auto	Edge	Disabled
3	200000000	128	Auto	Edge	Disabled
4	200000000	128	Auto	Edge	Disabled
5	200000	128	Auto	Edge	Forwarding
6	200000000	128	Auto	Edge	Disabled

### 4.5.3 Rapid Super Ring (RSR)

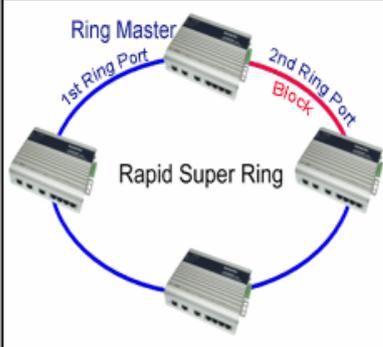
The most common industrial network redundancy is to form a ring or loop. Typically, the managed switches are connected in a series and the last switch is connected back to the first one. In such a connection, you can use *Korenix* Super Ring and Rapid Super Ring technology.

Super Ring is *Korenix*'s 1<sup>st</sup> generation ring redundancy technology released with *JetNet 4000/4500*. Rapid Super Ring (RSR) is *Korenix*'s 2<sup>nd</sup> generation Ring redundancy technology. This is patented and protected by *Korenix* and is used in countries all over the world. The Rapid Super Ring has an enhanced Ring Master selection and shorter recovery time.



## Rapid Super Ring

**Rapid Super Ring**



**Ring Port** Port 5

**Ring Port** Port 6

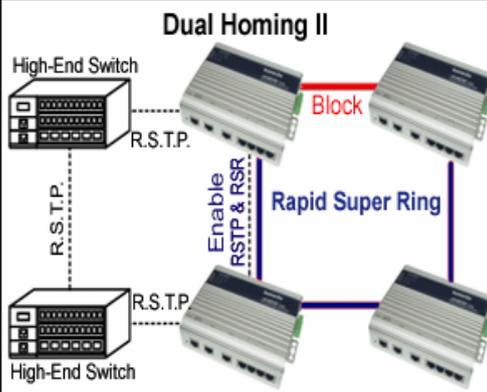
Version 2

**Priority** 128

Version 1

**Apply**

**Dual Homing II**



This page allows you to enable the settings for Rapid Super Ring and Dual Homing II.

### Rapid Super Ring

The checkbox seen below is for you to enable the Rapid Super Ring. Enable this and then configure Priority for the Ring Master selection. Select Ring ports for primary and backup path and super ring version.

**Rapid Super Ring**

### Ring Master (R.M.)

In the Rapid Super Ring environment, you should have one Ring Master. The ring master has the rights to negotiate and decide the forwarding port and blocking port of the ring. One of the ring ports will become the blocking port to prevent data loop from happening. When detecting a topology change, the ring master will automatically change the blocking port to forwarding so that traffic transmission will not be terminated.

Unlike *JetNet 4000/4500*, there is no additional DIP switch to enable the Ring Master function in *JetNet 4706/4706f*. But provides **Priority** parameter for the Ring Master election.

**Priority:** The switch with the highest priority (lowest value) will be automatically selected as the Ring Master. Then one of the ring ports in this switch will become the Forwarding port, with the other becoming the Blocking port. If all of the switches have the same priority, the switch with the lowest MAC address will be selected as the Ring Master.

### Ring Port

In a Rapid Super Ring environment, you should have 2 Ring Ports. Whether the switch is Ring Master or not, when configuring RSR, 2 ports should be selected to be Ring Ports. After the Ring Master is selected, one Ring Port will become the forwarding port and the other will become the blocking port.

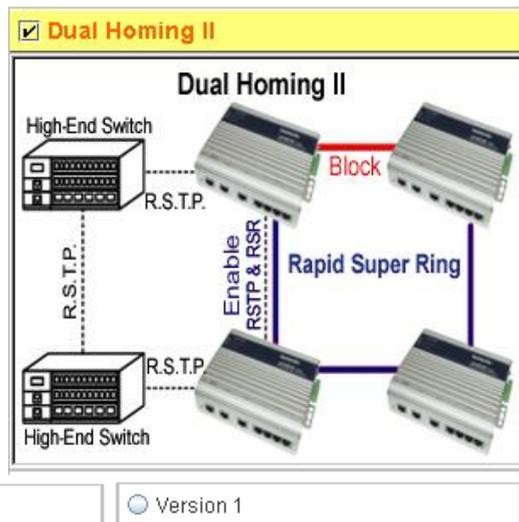
Ring Port	Port 1
Ring Port	Port 2

### Version

There are 2 versions provided with *JetNet 4706/4706f*.

**Version 1:** Version 1 is Legacy Super Ring Client mode for users who need backward compatibility with *JetNet 4000/4500*. *JetNet 4706/4706f* supports **Client** mode only. After connecting the Ring Ports the *JetNet 4000/4500* Super Ring switches, the 2 Ring Ports can pass through the hello packets sent from ring master of the Super Ring. Then, ring master of the Super Ring can detect the link status well.

**Version 2:** Version 2 is Rapid Super Ring mode. Version 2 is the default setting when you select the checkbox for Rapid Super Ring.



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### Dual Homing II

Dual Homing II is an important feature of *Korenix's 2<sup>nd</sup>* generation Ring redundancy technology. When you want to connect multiple RSR or form redundant topology with other vendors, Dual Homing II allows you to enable RSTP and RSR from one single device. Thus you have more flexibility and a standard (RSTP) way of constructing your network topology.

As shown in the last figure, you can enable RSTP and RSR from *JetNet 4706/4706f* at the same time. Then the *JetNet 4706/4706f* ring can be protected by Rapid Super Ring while the connection to the other vendors can be protected by RSTP.

In Dual Homing I, which was released with *JetNet 4000/4500*, you had to configure additional ports as a Dual Homing port to 2 uplink switches. However, in Dual Homing II, you no longer need to configure a specific port to connect to another protocol. Just by keeping RSTP enabled, Dual Homing II will be able to make the connection and be protected by standard RSTP.

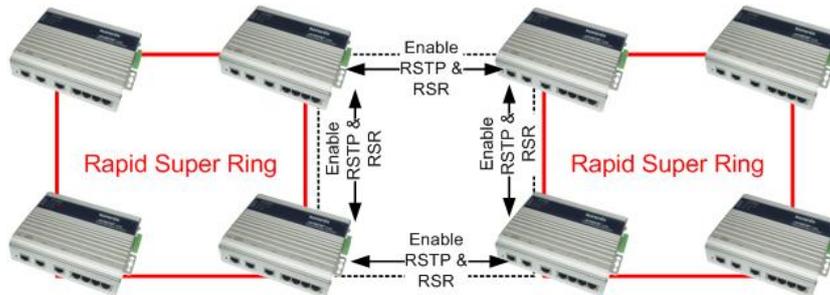
Once you finish configuring the settings, click **Apply** to apply your configuration.

### Auto Ring Coupling

With *JetNet 4000/4500*, we released Ring Coupling for users to couple 2 Super Rings. In *JetNet 4706/4706f*, we use Dual Homing II to meet the same requirements. *JetNet 4706/4706f*'s rings are protected by Rapid Super Ring with RSTP&RSR enabled in intermediate switches. There is no need to configure Couple Ring ports. You can freely connect Rapid Super Rings and all the Rapid Super Rings can be protected by Dual Homing II.

This is called Auto Ring Coupling. You can connect 2 or more Rapid Super Rings with ease.

The following chart is an example of auto ring coupling.



**Note:** These are not commands to enable Auto Ring Coupling. You just need to enable RSTP and RSR for the same device.

#### 4.5.4 Ring Information

This page shows RSR information.

Protocol Status: Enable or Disable.

Ring Status: Normal State means the switch is running Rapid Super Ring well. Abnormal State means RSR is enabled but is not running well. The reason could be a ring port failure, no neighbor switches...etc.

Role Type: Ring Manager or Redundancy Manager.

Version: 1 is Super Ring, 2 is Rapid Super Ring.

The other parameters are the same as the above descriptions.

### Ring Information

#### Ring Information

Protocol Status	Enable
Ring Status	Abnormal state
Role Type	Redundancy Manager
Version	2
Ring Port	5
Ring Port	6
Priority	128
Hello Time	1000 msec
Operate Hello Time	1000 msec

#### Dual Homing II

Protocol Status	Enable
-----------------	--------

#### 4.5.5 Command Lines:

Feature	Command Line
<b>RSTP</b>	
Enable	JetNet 4706(config)# spanning-tree enable
Disable	JetNet 4706(config)# spanning-tree disable Warning: STP disable will cause Dual Homing II not working.
RSTP mode	JetNet 4706(config)# spanning-tree mode rapid-stp Spanning Tree Mode change to be RSTP (802.1w).
STP mode	JetNet 4706(config)# spanning-tree mode stp Spanning Tree Mode change to be STP (802.1d).
Priority	JetNet 4706(config)# spanning-tree priority <0-61440> valid range is 0 to 61440 in multiple of 4096 JetNet 4706(config)# spanning-tree priority 4096
Max Age	JetNet 4706(config)# spanning-tree max-age <6-40> Valid range is 6~40 seconds JetNet 4706(config)# spanning-tree max-age 10
Hello Time	JetNet 4706(config)# spanning-tree hello-time <1-10> Valid range is 1~10 seconds JetNet 4706(config)# spanning-tree hello-time 2
Forward Delay	JetNet 4706(config)# spanning-tree forward-time <4-30> Valid range is 4~30 seconds JetNet 4706(config)# spanning-tree forward-time 15
Port Path Cost	JetNet 4706(config-if)# spanning-tree cost <1-200000000> 16-bit based value range from 1-65535, 32-bit based value range from 1-200,000,000 JetNet 4706(config-if)# spanning-tree cost 200000
Port Priority	JetNet 4706(config-if)# spanning-tree port-priority <0-240> Number from 0 to 240, in multiple of 16 JetNet 4706(config-if)# spanning-tree port-priority 128
Link Type - Auto	JetNet 4706(config-if)# spanning-tree link-type auto
Link Type - P2P	JetNet 4706(config-if)# spanning-tree link-type point-to-point
Link Type - Share	JetNet 4706(config-if)# spanning-tree link-type shared
Edge Port	JetNet 4706(config-if)# spanning-tree edge-port enable JetNet 4706(config-if)# spanning-tree edge-port disable
<b>RSTP Info</b>	
Active status	<pre> JetNet 4706# show spanning-tree active Rapid Spanning-Tree feature           Enabled Spanning-Tree BPDU transmission-limit 3 Root Address    0012.7701.0386  Priority 4096 Root Path Cost : 200000          Root Port : 7 Root Times :    max-age 20 sec, hello-time 2 sec, forward-delay 15 sec Bridge Address  0012.77ff.0102  Priority 4096 Bridge Times :  max-age 10 sec, hello-time 2 sec, forward-delay 15 sec Aging time : 300  Port      Role      Port-State   Cost      Prio.Nbr   Type ----- fa6      Designated Forwarding   200000    128.6     Auto(RST) fa7      Root      Forwarding   200000    128.7     Shared(STP) </pre>

RSTP Summary	<pre> JetNet 4706# show spanning-tree summary Switch is in rapid-stp mode. BPDU skewing detection disabled for the bridge. Backbonefast disabled for bridge. Summary of connected spanning tree ports : #Port-State Summary Blocking  Listening  Learning  Forwarding  Disabled -----  -           0          0          0           2           8 #Port Link-Type Summary AutoDetected  PointToPoint  SharedLink  EdgePort -----  -           9           0           1           9 </pre>
Port Info	<pre> JetNet 4706# show spanning-tree port detail fa7 (Interface_ID) Rapid Spanning-Tree feature           Enabled IEEE compatible Spanning-Tree Protocol Enabled Spanning-Tree BPDU transmission-limit 3 Bridge identifier has priority 4096, address 0012.77ff.0102 Configured hello time 2, max age 10, forward delay 15 Current root has priority 4096, address 0012.7701.0386 Root port is 7 , cost of root path is 200000 Topology change flag not set, detected flag not set Number of topology changes 0, last change occurred from 0000.0000.0000 Times: hello 2 , max age 20 , forward delay 15 Timers: hello 0 , topology change 0  Rapid Spanning-Tree link-type : Shared Rapid Spanning-Tree edge-port : Disabled Port 128.7 as Root Role is in Forwarding State Port Path Cost 200000, Port Identifier 128.7 Designated root has priority 4096, address 0012.7701.0386 Designated bridge has priority 4096, address 0012.7701.0386 Designated Port ID is 128.1, Root Path Cost is 0 Timers : message-age 4 sec, forward-delay 0 sec Forwarding-State Transmit count 2 BPDU: sent 624 , received 3600 TCN : sent 0 , received 0 </pre>
<b>Rapid Super Ring</b>	
Super Ring Enable	<pre> JetNet 4706(config)# super-ring enable </pre>
Super Ring Version	<pre> JetNet 4706(config)# super-ring version &lt;1-2&gt; valid range is 1 or 2 JetNet 4706(config)# super-ring version 2  <b>Note: 1=Super Ring, 2=Rapid Super Ring.</b> </pre>
Priority	<pre> JetNet 4706(config)# super-ring priority &lt;0-255&gt; valid range is 0 to 255 JetNet 4706(config)# super-ring priority 100 </pre>
Ring Port	<pre> JetNet 4706(config)# super-ring port IFLIST Interface list, ex: fa1,fa3-5,gi8-10 JetNet 4706(config)# super-ring port fa1,fa2 </pre>
Dual Homing II	<pre> JetNet 4706(config)# super-ring dual-homing enable  JetNet 4706(config)# super-ring dual-homing disable </pre>
<b>Ring Info</b>	
Ring Info	<pre> JetNet 4706# show super-ring summary Super-Ring protocol status: Enable </pre>

	Ring state : Abnormal state Role type : Redundancy Manager Protocol Version : 2 Ring Port : fa1, fa2 Switch Priority : 100 Hello time : 1000 msec , Operate hello time : 1000 msec Dual Homing II status: Enable Super-Ring Statistics of Switch WPDU: sent 0 , received 0 TCN : sent 0 , received 0 Ring State Transmit count    0 Role Type Transmit count    3
--	--

## 4.6 VLAN

*JetNet 4706/4706f* supports Port-Based VLAN functionality for the purpose of limiting a broadcast domain to specific members of a group by physically grouping the members together.

*JetNet 4706/4706f* determines the membership of a data frame by examining the configuration of the port that received the transmission, or by reading a portion of the data frame's tag header. A four-byte field in the header is used to identify the VLAN. This VLAN identification indicates which VLAN the frame belongs to. If the frame has no tag header, the switch checks the VLAN setting of the port that received the frame. If the switch has been configured for port based VLAN support, it assigns the port's VLAN identification to the new frame.

The following commands are included in this section:

### 4.6.1 Management VLAN

#### 4.6.2 Port Based VLAN Configuration

#### 4.6.3 CLI command of Port Based VLAN

### 4.6.1 Management VLAN

The Management VLAN ID configuration is for the *JetNet 4706/4706f* management interface security. Only the management packet with the same VLAN ID will forward to a CPU interface. You can assign an ID number from 1 to 4094, then click **Apply** to assign Management VLAN ID. The following is the UI interface.

Management VLAN ID

**Apply**

### 4.6.2 Port Based VLAN Configuration

**PVID:** The abbreviation of **Port VLAN ID**. Enter the port VLAN ID here. PVID allows the switches to identify which port belongs to which VLAN. To keep things simple, it is recommended that PVID is equivalent to VLAN IDs. The values of PVIDs are from 1 to 4094. But, 0 and 4095 are reserved. You can not input these 2 PVIDs. 1 is the default value. 2 to 4094 are valid and available in this column. Type the PVID you'd like to configure here.

**Allow Send To:** This column defines the port that traffic could be forwarded to. You can click the icon to join the port as a Port Based VLAN group. The following figure is the Web user interface for Port Based VLAN configuration.

Port	PVID	Allow to Send to						Egress Tagged/Untagged
		1	2	3	4	5	6	
1	<input type="text" value="1"/>	--	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Untagged

**Egress Tagged/ Untagged:** Each port of *JetNet 4706/4706f* supports Tag modify function. It includes Untagged, Tagged or Un-modify modes. The packets egress from this port are modified according to the selected rule.

The following figure is the Web user interface for a Port Based VLAN.

## Port-Based VLAN

Management VLAN ID

**Apply**

### Port-Based VLAN

Port	PVID	Allow to Send to						Egress Tagged/Untagged
		1	2	3	4	5	6	
1	<input type="text" value="1"/>	--	<input checked="" type="checkbox"/>	Untagged ▼				
2	<input type="text" value="1"/>	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Untagged ▼
3	<input type="text" value="1"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Untagged ▼
4	<input type="text" value="1"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Untagged ▼
5	<input type="text" value="1"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	Untagged ▼
6	<input type="text" value="1"/>	<input checked="" type="checkbox"/>	--	Untagged ▼				

**Apply**

#### 4.6.3 CLI Commands of the VLAN

Command Lines of the VLAN port configuration, VLAN configuration and VLAN table display

Description	CLI Command
Displays the current port based vlan configuration for each port, which include the default PVID, the ports for forwarding, and the egress mode of the port.	<pre>show vlan ex: ManagedSwitch# sh vlan Port-based vlan mode: Port PVID EgressMode          Egress Ports ----- fa1    1    Tagged fa2-3 fa2    1    Untagged fa3-4 fa3    1    Untagged fa1-2,fa4-6 fa4    1    Untagged fa1-3,fa5-6 fa5    3    Untagged fa1-4,fa6 fa6    1    Untagged fa1-5 ManagedSwitch#</pre>

The ports where the frame comes in to this port are allowed to forward to.

```
switchport port-based-vlan egress-ports [IFLIST]
ex: port 1 can forward packet to port 2,3
ManagedSwitch(config-if)# switchport port-based-vlan
egress-ports fa2,fa3
Set port-based vlan success
```

Assign default PVID for this port

```
switchport trunk native vlan VID
ex: assign VID 1 to port 1
ManagedSwitch# configure terminal
ManagedSwitch(config)# interface fa1
ManagedSwitch(config-if)# switchport trunk native vlan 1
Set port default vlan id to 1 success
ManagedSwitch(config-if)#
```

Specify when a frame that is egressing from this port should be tagged, untagged or unmodified

```
switchport port-based-vlan mode
(untagged|tagged|unmodified)
ex: Egress packet of port 1 with tagged.
ManagedSwitch(config-if)# switchport port-based-vlan
mode tagged
Set port-based vlan mode success
```

## 4.7 Traffic Prioritization

Quality of Service (QoS) provides a traffic prioritization mechanism that allows users to deliver better service to certain flows. QoS can also help to alleviate congestion problems and ensure that high priority traffic is delivered first. This section allows you to configure Traffic Prioritization settings for each port in regards to setting priorities.

The *JetNet 4706/4706f* QoS supports 4 physical queues, weighted fair queuing (WRR) and Strict Priority scheme, which follows 802.1p COS tag and IPv4 TOS/DiffServ information to prioritize the traffic of your industrial network.

The following commands are explained in this section:

4.7.1 QoS Setting

4.7.2 CoS-Queue Mapping

4.7.3 DSCP-Queue Mapping

### 4.7.1 QoS Setting

#### Queue Scheduling

**Use an 8,4,2,1 weighted fair queuing scheme.** This is also known as **WRR** (Weight Round Robin). *JetNet* will follow a 8:4:2:1 rate to process the packets in a queue from the highest priority to the lowest. For example, the system will simultaneously process 8 packets with the highest priority in the queue, 4 packets with middle priority, 2 packets with low priority, and 1 packet with the lowest priority.

**Use a strict priority scheme.** Packets with the highest priority in the queue will always be processed first.

### QoS Setting

#### Queue Scheduling

- Use an 8,4,2,1 weighted fair queuing scheme
- Use a strict priority scheme

#### Port Setting

Port	Priority	Trust Mode
1	0	COS Only
2	0	COS Only
3	0	COS Only
4	0	COS Only
5	0	COS Only
6	0	COS Only

Apply

#### Port Setting

The **Priority** column is to indicate the default port priority value for untagged or priority-tagged frames. When *JetNet 4706/4706f* receives the frames, *JetNet 4706/4706f* will assign the value to the priority. You can enable 0,1,2,3,4,5,6 or 7 to the port. The priority is directly mapping to queue id, queue 3 is the highest priority queue.

**Trust Mode:** This indicates Queue Mapping types for you to select.

**CoS Only:** Port priority will only follow CoS-Queue Mapping that you have assigned.

**DSCP Only:** Port priority will only follow DSCP-Queue Mapping that you have assigned.

**CoS first:** Port priority will follow CoS-Queue Mapping first, and then DSCP-Queue Mapping rule.

**DSCP first:** Port priority will follow DSCP-Queue Mapping first, and then CoS-Queue

Mapping rule.

Port Based: The port priority will follow the queue priority that you have assigned.

The default priority type is **CoS Only**. The system will provide a default CoS-Queue table that you can refer to for the next command.

After configuring, press **Apply** to enable the settings.

### 4.7.2 CoS-Queue Mapping

This area is where the user can set CoS values to the Physical Queue mapping table. Since the switch fabric of *JetNet 4706/4706f* supports 4 physical queues (Lowest, Low, Middle and High), users should assign CoS value to the level of the physical queue.

With the *JetNet 4706/4706f* users can easily assign the mapping table or follow suggestions from the 802.1p standard. *Korenix* uses 802.p standards for its default values. You will find that the CoS values 1 and 2 are mapped to physical Queue 0 (lowest queue). CoS values 0 and 3 are mapped to physical Queue 1, (low/normal physical queue), CoS values 4 and 5 are mapped to physical Queue 2 (middle physical queue), and CoS values 6 and 7 are mapped to physical Queue 3 (highest physical queue).

## CoS-Queue Mapping

### CoS-Queue Mapping

CoS	0	1	2	3	4	5	6	7
Queue	0	0	0	1	2	2	3	3

Note: Queue 3 is the highest priority queue.

**Apply**

After configuring, press **Apply** to enable the settings.

### 4.7.3 DSCP-Queue Mapping

This is where users can change DSCP values to a Physical Queue mapping table. Since the switch fabric of the *JetNet 4706/4706f* supports 4 physical queues, (lowest, low, middle and high), users should assign a DSCP value to the level of the physical queue. With the *JetNet 4706/4706f* users can easily change the mapping table to follow the upper layer 3 switch or routers' DSCP setting.

After configuring, press **Apply** to

### Traffic Prioritization

#### DSCP-Queue Mapping

DSCP	0	1	2	3	4	5	6	7
Queue	1	1	1	1	1	1	1	1
DSCP	8	9	10	11	12	13	14	15
Queue	0	0	0	0	0	0	0	0
DSCP	16	17	18	19	20	21	22	23
Queue	0	0	0	0	0	0	0	0
DSCP	24	25	26	27	28	29	30	31
Queue	1	1	1	1	1	1	1	1
DSCP	32	33	34	35	36	37	38	39
Queue	2	2	2	2	2	2	2	2
DSCP	40	41	42	43	44	45	46	47
Queue	2	2	2	2	2	2	2	2
DSCP	48	49	50	51	52	53	54	55
Queue	3	3	3	3	3	3	3	3
DSCP	56	57	58	59	60	61	62	63
Queue	3	3	3	3	3	3	3	3

Note: Queue 3 is the highest priority queue.

**Apply**

#### 4.7.4 CLI Commands for Traffic Prioritization

Command Lines for Traffic Prioritization configuration

Feature	Command Line
<b>QoS Setting</b>	
Queue Scheduling – Strict Priority	<pre>JetNet 4706(config)# qos queue-sched   sp Strict Priority   wrr Weighted Round Robin (Use an 8,4,2,1 weight) JetNet 4706(config)# qos queue-sched sp &lt;cr&gt;</pre>
Queue Scheduling - WRR	<pre>JetNet 4706(config)# qos queue-sched wrr</pre>
Port Setting – priority (Default Port Priority)	<pre>JetNet 4706(config)# interface fa1 JetNet 4706(config-if)# qos priority   DEFAULT-PRIORITY Assign an priority (3 highest) JetNet 4706(config-if)# qos cos 3</pre> <p>The default port priority value is set 3 ok.</p> <p><b>Note: When change the port setting, you should Select the specific port first. Ex: fa1 means fast Ethernet port 1.</b></p>
Port Setting – Trust Mode- CoS Only	<pre>JetNet 4706(config)# interface fa1 JetNet 4706(config-if)# qos trust cos</pre> <p>The port trust is set CoS only ok.</p>
Port Setting – Trust Mode- CoS Frist	<pre>JetNet 4706(config)# interface fa1 JetNet 4706(config-if)# qos trust cos-first</pre> <p>The port trust is set CoS first ok.</p>
Port Setting – Trust Mode- DSCP Only	<pre>JetNet 4706(config)# interface fa1 JetNet 4706(config-if)# qos trust dscp</pre> <p>The port trust is set DSCP only ok.</p>
Port Setting – Trust Mode- DSCP First	<pre>JetNet 4706(config)# interface fa1 JetNet 4706(config-if)# qos trust dscp-first</pre> <p>The port trust is set DSCP first ok.</p>
Port Setting – Trust Mode- Port Based	<pre>JetNet 4706(config)# interface fa1 JetNet 4706(config-if)# qos trust port-based</pre> <p>The port trust is set port based ok.</p>
Display – Queue Scheduling	<pre>JetNet 4706# show qos queue-sched</pre> <p>QoS queue scheduling scheme : Weighted Round Robin (Use an 8,4,2,1 weight)</p>
Display – Port Setting - Trust Mode	<pre>JetNet 4706# show qos trust</pre> <p>QoS Port Trust Mode :</p> <p>Port Trust Mode</p> <pre>-----+-----  1      DSCP first  2      COS only  3      COS only  4      COS only  5      COS only  6      COS only  7      COS only  8      COS only</pre>

	<pre> 9    COS only 10   COS only </pre>
Display – Port Setting – CoS (Port Default Priority)	<pre> JetNet 4706# show qos port-cos Port Default Cos : Port  CoS ----- 1     7 2     0 3     0 4     0 5     0 6     0 </pre>
<b>CoS-Queue Mapping</b>	
Format	<pre> JetNet 4706(config)# qos cos-map PRIORITY  Assign an priority (7 highest) JetNet 4706(config)# qos cos-map 1 QUEUE    Assign an queue (0-3) </pre> <p><b>Note: Format: qos cos-map priority_value queue_value</b></p>
Map CoS 0 to Queue 1	<pre> JetNet 4706(config)# qos cos-map 0 1 The CoS to queue mapping is set ok. </pre>
Map CoS 1 to Queue 0	<pre> JetNet 4706(config)# qos cos-map 1 0 The CoS to queue mapping is set ok. </pre>
Map CoS 2 to Queue 0	<pre> JetNet 4706(config)# qos cos-map 2 0 The CoS to queue mapping is set ok. </pre>
Map CoS 3 to Queue 1	<pre> JetNet 4706(config)# qos cos-map 3 1 The CoS to queue mapping is set ok. </pre>
Map CoS 4 to Queue 2	<pre> JetNet 4706(config)# qos cos-map 4 2 The CoS to queue mapping is set ok. </pre>
Map CoS 5 to Queue 2	<pre> JetNet 4706(config)# qos cos-map 5 2 The CoS to queue mapping is set ok. </pre>
Map CoS 6 to Queue 3	<pre> JetNet 4706(config)# qos cos-map 6 3 The CoS to queue mapping is set ok. </pre>
Map CoS 7 to Queue 3	<pre> JetNet 4706(config)# qos cos-map 7 3 The CoS to queue mapping is set ok. </pre>
Display – CoS-Queue mapping	<pre> JetNet 4706# sh qos cos-map CoS to Queue Mapping : CoS  Queue ---- +  ----- 0     1 1     0 2     0 3     1 4     2 5     2 6     3 7     3 </pre>
<b>DSCP-Queue Mapping</b>	
Format	<pre> JetNet 4706(config)# qos dscp-map PRIORITY  Assign an priority (63 highest) JetNet 4706(config)# qos dscp-map 0 QUEUE    Assign an queue (0-3) </pre> <p><b>Format: qos dscp-map priority_value queue_value</b></p>

Map DSCP 0 to Queue 1	JetNet 4706(config)# qos dscp-map 0 1 The TOS/DSCP to queue mapping is set ok.
Display – DSCO-Queue mapping	JetNet 4706# show qos dscp-map DSCP to Queue Mapping : (dscp = d1 d2)  <pre> d2  0 1 2 3 4 5 6 7 8 9 d1   -----+----- 0   1 1 1 1 1 1 1 1 0 0 1   0 0 0 0 0 0 0 0 0 0 2   0 0 0 0 1 1 1 1 1 1 3   1 1 2 2 2 2 2 2 2 2 4   2 2 2 2 2 2 2 2 3 3 5   3 3 3 3 3 3 3 3 3 3 6   3 3 3 3 </pre>

## 4.8 Multicast Filtering

For multicast filtering, *JetNet 4706/4706f* uses IGMP Snooping technology. The IGMP (Internet Group Management Protocol) is an Internet Protocol that provides a way for an internet device to report its multicast group membership to adjacent routers. Multicasting allows one computer on the internet to send data to a multitude of other computers that have identified themselves as being interested in receiving the originating computers data.

Multicasting is useful for such applications as updating the address books of mobile computer users in the field, sending out newsletters to a distribution list, and broadcasting streaming media to an audience that has tuned into the event by setting up multicast group membership.

In effect, IGMP Snooping manages multicast traffic by making use of switches, routers, and hosts that support IGMP. Enabling IGMP Snooping allows the ports to detect IGMP queries, report packets, and manage multicast traffic through the switch. IGMP has three fundamental types of messages, as shown below:

Message	Description
<b>Query</b>	A message sent from the querier (an IGMP router or a switch) which asks for a response from each host that belongs to the multicast group.
<b>Report</b>	A message sent by a host to the querier to indicate that the host wants to be or is a member of a given group indicated in the report message.
<b>Leave Group</b>	A message sent by a host to the querier to indicate that the host has quit as a member of a specific multicast group.

You can enable **IGMP Snooping** and **IGMP Query** functions here. You will see the information of the IGMP Snooping function in this section, including different multicast member ports and IP multicast addresses that range from 224.0.0.0 to 239.255.255.255.

The following commands are included in this group:

4.7.1 IGMP Snooping

4.7.2 IGMP Query

## 4.8.1 IGMP Snooping

This page is to enable/disable the IGMP Snooping feature and view the IGMP Snooping table from dynamic learnt.

**IGMP Snooping**, you can select **Enable** or **Disable** here.

**IGMP Snooping**

IGMP Snooping Enable ▼

**Apply**

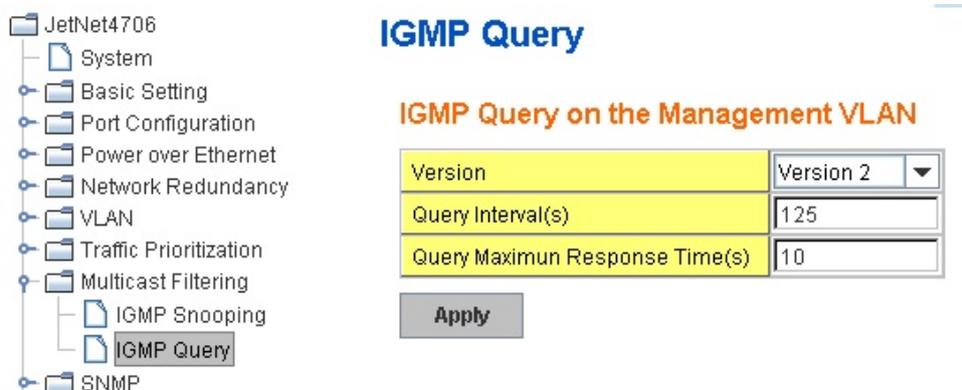
**IGMP Snooping Table**

IP Address	VID	1	2	3	4	5	6
239.255.255.250	SVL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Reload**

**IGMP Snooping Table:** In the table, you can see the multicast group IP address and the member ports of the multicast group. The *JetNet 4706/4706f* supports 256 multicast groups. Click **Reload** to refresh the table.

## 4.8.2 IGMP Query



This page allows user to configure the **IGMP Query** feature. Since *JetNet 4706/4706f* can only be configured by the member ports of the management VLAN, so that the IGMP Query can only be enabled on the management VLAN. If you want to run IGMP Snooping feature in several VLANs, you should notice that whether each VLAN have their own IGMP Querier first.

The IGMP querier periodically sends query packets to all end-stations on the LANs or VLANs that are connected to it. For networks with more than one IGMP querier, a switch with the lowest IP address becomes the IGMP querier.

In the IGMP Query selection, you can select V1, V2 or Disable. **V1** means IGMP V1 General Query. The query will be forwarded to all multicast groups in the VLAN. **V2** means IGMP V2 Specific Query. The query will be forwarded to specific multicast groups. **Disable** allows you to disable the IGMP Query.

Once you finish configuring the settings, click on **Apply** to apply your configuration.

## 4.8.3 CLI Commands of the Multicast Filtering

The Command Lines of the multicast filtering configuration.

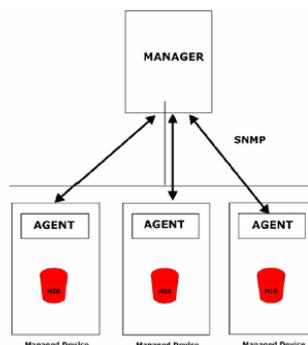
Feature	Command Line								
<b>IGMP Snooping</b>									
IGMP Snooping - Global	JetNet 4706(config)# ip igmp snooping IGMP snooping is enabled globally. Please specify on which vlans IGMP snooping enables								
Disable IGMP Snooping - Global	JetNet 4706(config)# no ip igmp snooping IGMP snooping is disabled globally ok.								
Display – IGMP Snooping Setting	JetNet 4706# sh ip igmp snooping IGMP snooping is globally enabled								
Display – IGMP Table	JetNet 4706# sh ip igmp snooping multicast all <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>VLAN</th> <th>IP Address</th> <th>Type</th> <th>Ports</th> </tr> </thead> <tbody> <tr> <td>SVL</td> <td>239.192.8.0</td> <td>IGMP</td> <td>fa6,</td> </tr> </tbody> </table>	VLAN	IP Address	Type	Ports	SVL	239.192.8.0	IGMP	fa6,
VLAN	IP Address	Type	Ports						
SVL	239.192.8.0	IGMP	fa6,						

	SVL 239.255.255.250 IGMP fa6,
<b>IGMP Query</b>	
IGMP Query V1	JetNet 4706(config)# int vlan 1 (Go to management VLAN) JetNet 4706(config-if)# ip igmp v1
IGMP Query V2	JetNet 4706(config)# int vlan 1 (Go to management VLAN) JetNet 4706(config-if)# ip igmp
IGMP Query version	JetNet 4706(config-if)# ip igmp version 1 JetNet 4706(config-if)# ip igmp version 2
IGMP Query Interval	JetNet 5010G(config)# int vlan 1 (Go to management VLAN) JetNet 5010G(config-if)# ip igmp JetNet 5010G(config-if)# ip igmp query-interval 60 (Change query interval to 60 seconds, default value is 125 seconds)
IGMP Query Max Response Time	JetNet 5010G(config)# int vlan 1 (Go to management VLAN) JetNet 5010G(config-if)# ip igmp JetNet 5010G(config-if)# ip igmp query-max-response-time 15 (Change query max response time to 15 seconds, default value is 10 seconds)
Disable	JetNet 4706(config)# int vlan 1 JetNet 4706(config-if)# no ip igmp
Display	JetNet 4706# sh ip igmp interface vlan1 enabled: Yes version: IGMPv2 query-interval: 125s query-max-response-time: 10s  JetNet 4706# show running-config .... ! interface vlan1 ip address 192.168.10.17/24 ip igmp no shutdown ! .....

## 4.9 SNMP

Simple Network Management Protocol (SNMP) is a protocol used for exchanging management information between network devices. SNMP is a member of the TCP/IP protocol suite. *JetNet 4706/4706f* supports SNMP v1, v2c and v3.

A SNMP managed network consists of two main components: agents and a manager. An agent is a management software module that resides in a managed switch. An agent translates the local management information from the managed device into a SNMP-compatible format. The manager is the console through the network.



The following commands are included in this section:

### 4.8.1 SNMP Configuration

### 4.8.2 SNMP v3 Profile

### 4.8.2 SNMP Traps

### 4.9.1 SNMP Configuration

This allows users to configure the SNMP V1/V2c Community. The community string can be viewed as a password because SNMP V1/V2c doesn't request you to enter a password before accessing the SNMP agent.

The community includes 2 privileges: Read Only, and Read and Write.

With **Read Only** privileges, you will only have the ability to read the values in the MIB tables. The default community string is set to Public.

With **Read and Write** privileges, you will have the ability to read and set the values in the MIB tables. The default community string is set to Private.

## SNMP

### SNMP V1/V2c Community

Community String	Privilege
public	Read Only ▼
private	Read and Write ▼
	Read Only ▼
	Read Only ▼

**Apply**

*JetNet 4706/4706f* allows users to assign 4 community strings. Type in each community string and select its privilege. Then press **Apply**.

**Note:** When you first install the device onto your network, we highly recommend that you change the community string. Because most SNMP management applications use Public

and Private as their default community name, this may cause a leak in network security.

## 4.9.2 SNMP v3 Profile

SNMP v3 can provide more security functions when the user performs remote management through SNMP protocol. It delivers SNMP information to the administrator with user authentication; all of data between *JetNet 4706/4706f* and the administrator are encrypted to ensure secure communication.

### SNMP V3 Profile

#### SNMP V3

User Name	<input type="text"/>
Security Level	Authentication ▼
Authentication Portocol	SHA ▼
Authentication Password	<input type="text"/>
DES Encryption Password	<input type="text"/>

**Security Level:** Here the user can select the following levels of security: None, User Authentication, and Authentication with privacy.

**Authentication Protocol:** Here the user can select either MD5 (Message-Digest algorithm 5) or SHA (Secure Hash Algorithm). MD5 is a widely used cryptographic hash function with a 128-bit hash value. SHA (Secure Hash Algorithm) hash functions refer to five Federal Information Processing Standard-approved algorithms for computing a condensed digital representation. *JetNet 4706/4706f* provides 2 user authentication protocols in MD5 and SHA. You will need to configure SNMP v3 parameters for your SNMP tool with the same authentication method.

**Authentication Password:** Here the user enters the SNMP v3 user authentication password.

**DES Encryption Password:** Here the user enters the password for SNMP v3 user DES Encryption.

### 4.9.3 SNMP Traps

SNMP Trap is a notification feature defined by SNMP protocol. All SNMP management applications can understand this type of trap information. You will not need to install new applications to read the notification information.

This page allows users to **Enable SNMP Trap**, configure the **SNMP Trap server IP**, **Community** name, and trap **Version V1 or V2**. After the configuration, you will be able to see the changes made to the SNMP pre-defined standard traps and the *Korenix* pre-defined traps. The pre-defined traps can be found in *Korenix's* private MIB.

## SNMP Trap

**SNMP Trap** Enable ▼

Apply

### SNMP Trap Server

Server IP	<input type="text"/>
Community	<input type="text"/>
Version	<input checked="" type="radio"/> V1 <input type="radio"/> V2c

Add

### Trap Server Profile

Server IP	Community	Version
192.168.10.200	public	V2c
192.168.10.200	public	V1

Remove

Reload

### 4.9.4 CLI Commands for SNMP

Command Lines for SNMP configuration

Feature	Command Line
<b>SNMP Community</b>	
Read Only Community	JetNet 4706 (config)# snmp-server community public ro

	community string add ok
Read Write Community	JetNet 4706(config)# snmp-server community private rw community string add ok
<b>SNMP Trap</b>	
Enable Trap	JetNet 4706(config)# snmp-server enable trap Set SNMP trap enable ok.
SNMP Trap Server IP without specific community name	JetNet 4706(config)# snmp-server host 192.168.10.33 SNMP trap host add OK.
SNMP Trap Server IP with version 1 and community	JetNet 4706(config)# snmp-server host 192.168.10.33 version 1 private SNMP trap host add OK. <b>Note: private is the community name, version 1 is the SNMP version</b>
SNMP Trap Server IP with version 2 and community	JetNet 4706(config)# snmp-server host 192.168.10.33 version 2 private SNMP trap host add OK.
Disable SNMP Trap	JetNet 4706(config)# no snmp-server enable trap Set SNMP trap disable ok.
Display	JetNet 4706# sh snmp-server trap SNMP trap: Enabled SNMP trap community: public  JetNet 4706# show running-config ..... snmp-server community public ro snmp-server community private rw snmp-server enable trap snmp-server host 192.168.10.33 version 2 admin snmp-server host 192.168.10.33 version 1 admin .....

## 4.10 Security

In the IP Security section, you will be able to set up specific IP addresses to perform authorization for management access to *JetNet 4706/4706f* via web browser, Telnet or SNMP.

Once you have finished configuring the settings, click on **Apply / Add** to apply your configuration.



### 4.10.1 IP Security

**Add Security IP:** You can assign any PC as an administrator workstation by adding a PC's IP address into the Security IP field. Only these IP addresses will be able to access and manage *JetNet 4706/4706f*. The maximum security IP is 10.

**Security IP List:** This table shows you each security IP address you have added. You can hit **Remove** to delete, and **Reload** to reload the table.

#### Add Security IP

Security IP

**Add**

#### Security IP List

Index	Security IP
1	192.168.10.200

**Remove**      **Reload**

Once you have finished configuring the settings, click on **Apply** to apply your configuration.

## 4.10.2 CLI Commands for Security

Command Lines for Security configuration

Feature	Command Line
<b>IP Security</b>	
IP Security	JetNet 4706(config)# ip security Set ip security enable ok. JetNet 4706(config)# ip security host 192.168.10.33 Add ip security host 192.168.10.33 ok.
Display	JetNet 4706# show ip security ip security is enabled ip security host: 192.168.10.33

## 4.11 Warning

JetNet 4706/4706f provides several types of warning features for remote monitoring and even provides a real-time alert mechanism. These features include a System Log for local and remote servers, SMTP E-mail alerts and a Fault Relay alarm.

The following commands are included in this section:

4.10.1 Fault Relay Setting

4.10.2 Event Selection

4.10.3 Syslog Configuration

4.10.3 SMTP Configuration

### 4.11.1 Fault Relay Setting

JetNet 4706/4706f provides 1 digital output, also known as Relay Output. The relay contacts are energized (open) for normal operation and will close under faulty conditions. Faulty conditions include Power Failure, Ethernet port Link Failure, Ping Failure and Super Ring Topology Change. You can enable and select relay trigger by clicking **Apply**.

**Relay 1:** Check the box **Relay 1**, then select the Event Type and its parameters.

**Event Type:** You will be given the following options: Dry Output, Power Failure, Link Failure, Ping Failure and Super Ring Failure. Each event type has its own parameters and are configurable. Each Relay can have one event type.

### Fault Relay Setting

<input checked="" type="checkbox"/> Relay 1	
Event Type	Ping Failure ▼
IP Address	Dry Output
Reset Time(Sec)	Power Failure
Hold Time(Sec)	Link Failure
	Ping Failure
	Super Ring Failure
<b>Apply</b>	

## Event Type: Dry Output

**On Period (Sec):** Type in the amount of time you would like Relay Output to be on. This can range from 0-4294967295 seconds.

**Off Period (Sec):** Type in the amount of time you would like Relay Output to be off. This can range from 0-4294967295 seconds.

When the amount of time is reached, the system will turn the Relay Output on or off.

<input checked="" type="checkbox"/> Relay 1	
Event Type	Dry Output
On Period(Sec)	5
Off Period(Sec)	10

## Event Type: Power Failure

**Power ID:** Select either Power 1 or Power 2. When power is shut down, the system will short Relay Out and light the DO LED.

<input checked="" type="checkbox"/> Relay 1	
Event Type	Power Failure
Power ID	Power 1

## Fault Relay Setting

### Event Type: Link Failure

**Link:** Select the port ID you would like to monitor.

How to configure: Check the box of the Ethernet ports you wish to monitor. You may select multiple ports. When the selected ports are unlinked, the system will short Relay Output and light the DO LED.

<input checked="" type="checkbox"/> Relay 1						
Event Type	Link Failure					
Link	1	2	3	4	5	6
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Apply

### Event Type: Ping Failure

**IP Address:** Enter the IP address of the target device you want to ping.

**Reset Time (Sec):** Enter the amount of time after ping has failed that you would like the relay output to turn off

**Hold Time (Sec):** Enter the amount of time after ping has failed and relay output has

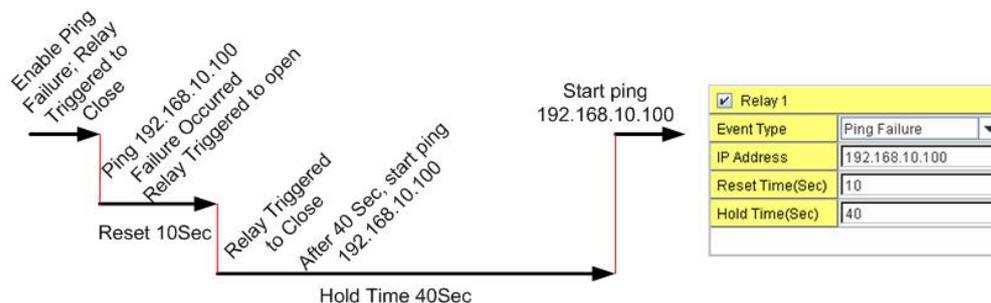
<input checked="" type="checkbox"/> Relay 1	
Event Type	Ping Failure
IP Address	192.168.10.100
Reset Time(Sec)	10
Hold Time(Sec)	40

been turned off, that you would like the relay output to be turned back on.

How to configure: After selecting the Ping Failure event type, the system will change the Relay Output to “short” state, light the alarm LED and continuously ping the target device. When the ping failure for Reset Time times out, the system will change the Relay Output to “open” state and turn off the alarm LED for the amount of time entered in **Hold Time**. After the Hold Time times out, the system will start sending ping commands to the remote device.

Ex: When the **Reset Time** is set to 10 sec while the **Hold Time** is set to 40 sec the following will occur: After ping has failed after 10 seconds (Reset Time), the system will turn the Relay Output and Alarm LED off. After 40 seconds (Hold Time), the system will turn the Relay Output and alarm LED on again.

The change of state of a Relay Output Ping Failure Event, see the chart below.



Select Super Ring Failure. When the Rapid Super Ring topology is changed, the system will short Relay Out and light the alarm LED.

<input checked="" type="checkbox"/> Relay 1	Event Type	Super Ring Failure
---	------------	--------------------

Once you have finished configuring the settings, click on **Apply** to apply your configuration.

#### 4.11.2 Event Selection

Event Types are divided into 3 basic groups: System Events ,Port Events and PoE Events. System Events relate to the overall function of the switch whereas Port Events relate to the activity of specific ports.

<b>System Event</b>	<b>Warning Event is sent when.....</b>
Device Cold Start	Power is cut off and then reconnected.
Device Warm Start	Reboot the device by CLI or Web UI.
Power 1 Failure	Power 1 is failure.
Power 2 Failure	Power 2 is failure.
Authentication failure	An incorrect password, SNMP Community String is entered.
Time Synchronize Failure	Time Synchronize Failure
Fault Relay	The DO/Fault Relay is on.
Super Ring Topology Changes	Master of Super Ring has changed or backup path is activated.
<b>Port Event</b>	<b>Warning Event is sent when.....</b>
Link-Up	The port is connected to another device
Link-Down	The port is disconnected (e.g. the cable is pulled out, or the opposing devices turns down)
<b>PoE Powering Event</b>	<b>Warning Event is sent when.....</b>
Enable	The PoE port is powering.
Disable	The PoE port is not powering.

## Warning - Event Selection

### System Event Selection

- Device Cold Start
- Device Warm Start
- Power 1 Failure
- Power 2 Failure
- Authentication Failure
- Time Synchronize Failure
- Fault Relay
- Super Ring Topology Change

### Port Event Selection

Port	Link State
1	Link Up ▼
2	Link Down ▼
3	Disable ▼
4	Disable ▼
5	Disable ▼
6	Disable ▼

### PoE Event Selection

Port	PoE Powering Event
1	Enable ▼
2	Enable ▼
3	Enable ▼
4	Enable ▼

**Apply**

Once you have finished configuring the settings, click on **Apply** to apply your configuration.

### 4.11.3 SysLog Configuration

System Log is useful in providing the system administrator both local and remote monitoring of the switch's history. There are 2 System Log modes provided by JetNet 4706/4706f: local mode and remote mode.

**Local Mode:** In this mode, *JetNet 4706/4706f* will print selected past events (selected in the Event Selection page) to the System Log table of *JetNet 4706/4706f*. You can monitor the system logs in the [Monitor and Diag] / [Event Log] page.

**Remote Mode:** The remote mode is also known as Server mode in the *JetNet 4500* series. In this mode, you should assign the IP address of the System Log server. *JetNet 4706/4706f* will send the selected occurrences, selected on the Event Selection page, to the System Log server that you have assigned.

**Both:** The 2 modes mentioned above can be enabled at the same time.

### Warning - SysLog Configuration

Syslog Mode	Disable ▼
Remote IP Address	Disable
	Local
	Remote
	Both

Note: When enabled Local or Remote, the system logs in the [Monitor and Diag] / [Event Log] page.

**Apply**

Once you have finished configuring the settings, click on **Apply** to apply your configuration.

**Note:** When enabling Local or Both modes, you can monitor the system logs in [Monitor and Diag] / [Event Log] page.

#### 4.11.4 SMTP Configuration

The JetNet 4706/4706f includes an E-mail Warning feature. The switch will send occurrences to a remote E-mail server. The receiver can then receive an E-mail notification by E-mail to SMTP standards.

This section, shown in the next image, allows you to enable the E-mail Alert, and assign the SMTP Server IP, Sender E-mail, and Receiver E-mail. If the SMTP server requests your authorization first, here you can also set up the username and password for that.

### Warning - SMTP Configuration

**E-mail Alert** Disable ▾

**SMTP Configuration**

SMTP Server IP	<input type="text" value="192.168.10.1"/>
Mail Account	<input type="text" value="admin@korenix.com"/>
<input type="checkbox"/> Authentication	
User Name	<input type="text"/>
Password	<input type="password"/>
Confirm Password	<input type="password"/>
Rcpt E-mail Address 1	<input type="text"/>
Rcpt E-mail Address 2	<input type="text"/>
Rcpt E-mail Address 3	<input type="text"/>
Rcpt E-mail Address 4	<input type="text"/>

Apply

Field	Description
SMTP Server IP Address	Enter the IP address of the email Server
Authentication	Click on check box to enable password
User Name	Enter email Account name (Max.40 characters)
Password	Enter the password of the email account
Confirm Password	Re-type the password of the email account
You can set up to 4 email addresses to receive email alarm from JetNet	

Rcpt E-mail Address 1	The first email address to receive email alert from JetNet (Max. 40 characters)
Rcpt E-mail Address 2	The second email address to receive email alert from JetNet (Max. 40 characters)
Rcpt E-mail Address 3	The third email address to receive email alert from JetNet (Max. 40 characters)
Rcpt E-mail Address 4	The fourth email address to receive email alert from JetNet (Max. 40 characters)

Once you have finished configuring the settings, click on **Apply** to apply your configuration.

#### 4.11.5 CLI Commands

Command Lines for Warning configuration

Feature	Command Line
<b>Relay Output</b>	
Relay Output	JetNet 4706(config)# relay 1 dry dry output ping ping failure port port link failure power power failure ring super ring failure
Dry Output	JetNet 4706(config)# relay 1 dry <0-4294967295> turn on period in second JetNet 4706(config)# relay 1 dry 5 <0-4294967295> turn off period in second JetNet 4706(config)# relay 1 dry 5 5
Ping Failure	JetNet 4706(config)# relay 1 ping 192.168.10.33 <cr> reset reset a device JetNet 4706(config)# relay 1 ping 192.168.10.33 reset <1-65535> reset time JetNet 4706(config)# relay 1 ping 192.168.10.33 reset 60 <0-65535> hold time to retry JetNet 4706(config)# relay 1 ping 192.168.10.33 reset 60 60
Port Link Failure	JetNet 4706(config)# relay 1 port PORTLIST port list JetNet 4706(config)# relay 1 port fa1-5
Power Failure	JetNet 4706(config)# relay 1 power <1-2> power id JetNet 4706 (config)# relay 1 power 1 JetNet 4706(config)# relay 1 power 2
Super Ring Failure	JetNet 4706(config)# relay 1 ring
Disable Relay	JetNet 4706(config)# no relay <1-2> relay id

	JetNet 4706 (config)# no relay 1 (Relay_ID: 1 or 2) <cr>
Display	JetNet 4706# show relay 1 Relay Output Type : Port Link Port : 1, 2, 3, 4, JetNet 4706# show relay 2 Relay Output Type : Super Ring
<b>Event Selection</b>	
Event Selection	JetNet 4706(config)# warning-event coldstart      Switch cold start event warmstart      Switch warm start event linkdown      Switch link down event linkup      Switch link up event all      Switch all event authentication      Authentication failure event fault-relay      Switch fault relay event power      Switch power failure event super-ring      Switch super ring topology change event time-sync      Switch time synchronize failure event
Ex: Cold Start event	JetNet 4706(config)# warning-event coldstart Set cold start event enable ok.
Ex: Link Up event	JetNet 4706(config)# warning-event linkup [IFNAME] Interface name, ex: fastethernet1 or gi8 JetNet 4706(config)# warning-event linkup fa5 Set fa5 link up event enable ok.
Display	JetNet 4706# show warning-event Warning Event: Cold Start: Enabled Warm Start: Disabled Authentication Failure: Disabled Link Down: fa4-5 Link Up: fa4-5 Power Failure: Super Ring Topology Change: Disabled Fault Relay: Disabled
<b>Syslog Configuration</b>	
Local Mode	JetNet 4706(config)# log syslog local
Server Mode	JetNet 4706(config)# log syslog remote 192.168.10.33
Both	JetNet 4706(config)# log syslog local JetNet 4706(config)# log syslog remote 192.168.10.33
Disable	JetNet 4706(config)# no log syslog local
<b>SMTP Configuration</b>	
SMTP Enable	JetNet 4706(config)# smtp-server enable email-alert SMTP Email Alert set enable ok.
Sender mail	JetNet 4706(config)# smtp-server server 192.168.10.100 ACCOUNT SMTP server mail account, ex: admin@korenix.com JetNet 4706(config)# smtp-server server 192.168.10.100 admin@korenix.com SMTP Email Alert set Server: 192.168.10.100, Account: admin@korenix.com ok.
Receiver mail	JetNet 4706(config)# smtp-server receipt 1 korecare@korenix.com SMTP Email Alert set receipt 1: korecare@korenix.com ok.
Authentication with username and	JetNet 4706(config)# smtp-server authentication username admin password admin

password	SMTP Email Alert set authentication Username: admin, Password: admin  <b>Note: You can assign string to username and password.</b>
Disable SMTP	JetNet 4706(config)# no smtp-server enable email-alert SMTP Email Alert set disable ok.
Disable Authentication	JetNet 4706(config)# no smtp-server authentication SMTP Email Alert set Authentication disable ok.
Display	JetNet 4706# sh smtp-server SMTP Email Alert is Enabled Server: 192.168.10.100, Account: admin@korenix.com Authentication: Enabled Username: admin, Password: admin SMTP Email Alert Receipt: Receipt 1: korecare@korenix.com Receipt 2: Receipt 3: Receipt 4:

## 4.12 Monitoring and Diagnostic

*JetNet 4706/4706f* provides several types of features for you to monitor the status of the switch or create a diagnostic for you to check the problem when issues with the switch occur. Features include MAC Address Table, Port Statistics, Port Mirror, Event Log and Ping.

The following commands are included in this section:

4.11.1 MAC Address Table

4.11.2 Port Statistics

4.11.3 Event Log

4.11.5 Ping

### 4.12.1 MAC Address Table

*JetNet 4706/4706f* provides 2K of entries in the MAC Address Table. On this page, users can change the Aging time, add Static Unicast MAC Address, monitor the MAC address or sort them by different packet types and ports. Click on **Apply** to change the value.

#### Aging Time (Sec)

Each switch fabric has a limited amount of space to write the learnt MAC address. To save more entries for new MAC address, the switch fabric will age out any unused MAC address entries with respect to the Aging Time. The default Aging Time is 300 seconds. The Aging Time can be modified on this page.

#### Static Unicast MAC Address

For some applications, users may need to type the static Unicast MAC address into its MAC address table. On this page, you can type in the MAC Address (format: xxxx.xxxx.xxxx), and select its VID and Port ID. Click on **Add** to add it to the MAC Address table.

#### MAC Address Table

In the MAC Address Table, you can see all the MAC Addresses learned by the switch fabric. The packet types include Management Unicast, Static Unicast, Dynamic Unicast, Static Multicast and Dynamic Multicast. The table allows users to sort the addresses by the packet types and the port.

**Packet Types: Management Unicast** refers to the MAC address of the switch. It belongs to the CPU port only. The **Static Unicast** MAC address can be added and deleted.

**Dynamic Unicast** MAC is the MAC address learned by the switch Fabric. **Static Multicast** can be added through CLI and can be deleted through the Web and CLI. **Dynamic Multicast** will appear after you have enabled IGMP and after the switch learns the IGMP report.

Click on **Remove** to remove the Static Unicast/Multicast MAC address. Click on **Reload** to refresh the table. Newly learned Unicast/Multicast MAC addresses will be updated to the MAC address table.

## MAC Address Table

**Aging Time (Sec)**

**Apply**

### Static Unicast MAC Address

MAC Address	VID	Port
<input type="text"/>	<input type="text"/>	Port 1 ▾

**Add**

**MAC Address Table**

MAC Address	Address Type	VID	1	2	3	4	5	6
000f.b079.cb93	Dynamic Unicast	SVL	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

**Remove**

**Reload**

### 4.12.2 Port Statistics

On this page, you can view operational statistics for each port. The statistics that can be viewed include Link Type, Link State, Rx Good, Rx Bad, Tx Good, and Collision. Rx means the received packets while Tx means the transmitted packets. The statistics can just show Rx Good and Tx Good or Rx Bad and Collision.

*Note: If you see an increase in Bad or Collision counts, this may mean that your network cable is not connected correctly or the network performance of the port is poor. Please check your network cable, Network Interface Card connected to your device, the network application, or reallocate the network traffic.*

Click on **Clear Selected** to reset the counts of the selected ports and on **Clear All** to reset the counts of all ports. Click on **Reload** to refresh the counts. Also, Click on **Bad-Collision Mode** to change counter mode to RxBad and TxCollisions mode and on **Good Mode** button to change counter mode to RxGood and TxGood mode.

*Note: If the mode is changed. The statistics counter will be reset to 0..*

## Port Statistics

Port	Type	Link	State	Rx Good	Rx Bad	Tx Good	Collision
1	100BASE	Down	Enable	0	--	0	--
2	100BASE	Down	Enable	0	--	0	--
3	100BASE	Down	Enable	0	--	0	--
4	100BASE	Down	Enable	0	--	0	--
5	100BASE	Down	Enable	0	--	0	--
6	100BASE-TX	Up	Enable	212	--	230	--

## Port Statistics

Port	Type	Link	State	Rx Good	Rx Bad	Tx Good	Collision
1	100BASE	Down	Enable	--	0	--	0
2	100BASE	Down	Enable	--	0	--	0
3	100BASE	Down	Enable	--	0	--	0
4	100BASE	Down	Enable	--	0	--	0
5	100BASE	Down	Enable	--	0	--	0
6	100BASE-TX	Up	Enable	--	0	--	0

### 4.12.3 Event Log

In section 4.10.3, we introduced the System Log feature. When System Log Local mode is selected, *JetNet 4706/4706f* will record past events in the local log table. This page shows the log table. The entries include the index, and data, time and content of the occurrences.

Click on **Clear** to delete the entries. Click on **Reload** to refresh the table.

## System Event Logs

Index	Date	Time	Event Log
1	Jan 1	05:00:16	Event: Link 1 Up.
2	Jan 1	05:00:11	Event: Link 1 Up.
3	Jan 1	05:00:11	Event: Link 1 Down.
4	Jan 1	05:00:09	Event: Link 2 Up.
5	Jan 1	05:00:09	Event: Link 2 Down.
6	Jan 1	05:00:07	Event: Link 1 Down.

#### 4.12.4 Ping Utility

This page provides **Ping Utility** for users to ping remote devices and to check whether the device is alive or not. Type the target IP address of the target device into **Target IP**. Click on **Start** to start the ping. You will be able to see the results in the **Result** field.

#### Ping Utility

##### Ping

Target IP

##### Result

```
PING 192.168.10.200 (192.168.10.200): 56 data bytes
64 bytes from 192.168.10.200: icmp_seq=0 ttl=128 time=0.0 ms
64 bytes from 192.168.10.200: icmp_seq=1 ttl=128 time=0.0 ms
64 bytes from 192.168.10.200: icmp_seq=2 ttl=128 time=0.0 ms
64 bytes from 192.168.10.200: icmp_seq=3 ttl=128 time=0.0 ms
64 bytes from 192.168.10.200: icmp_seq=4 ttl=128 time=0.0 ms

--- 192.168.10.200 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
```

#### 4.12.5 CLI Commands for Monitoring and Diagnostic

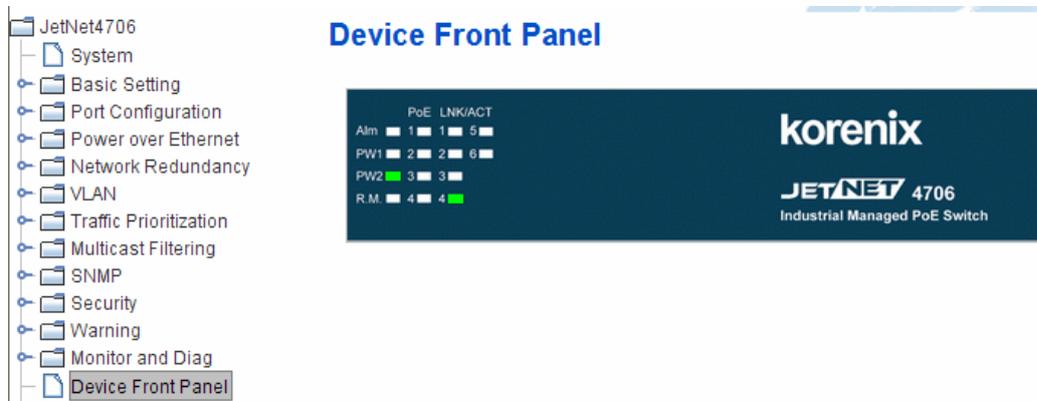
Command Lines for Monitoring and Diagnostic configuration

Feature	Command Line
<b>MAC Address Table</b>	
Ageing Time	JetNet 4706(config)# mac-address-table aging-time 350 mac-address-table aging-time set ok!  <i>Note: 350 is the new ageing timeout value.</i>
Add Static Unicast MAC address	JetNet 4706(config)# mac-address-table static 0012.7701.0101 vlan 1 interface fastethernet1 mac-address-table ucast static set ok!  <b>Note: rule: mac-address-table static MAC_address VLAN VID interface interface_name</b>
Add Multicast MAC address	JetNet 4706(config)# mac-address-table multicast 0100.5e01.0101 vlan 1 interface fa1-6 Adds an entry in the multicast table ok!  <b>Note: rule: mac-address-table multicast MAC_address VLAN VID interface_list interface_name/range</b>
Show MAC Address Table – All types	JetNet 4706# show mac-address-table  ***** UNICAST MAC ADDRESS ***** Destination Address    Address Type    Vlan    Destination Port ----- 000f.b079.ca3b        Dynamic        1        fa1 0012.7701.0386        Dynamic        1        fa2 0012.7710.0101        Static        1        fa6 0012.7710.0102        Static        1        fa6 0012.77ff.0100        Management    1  ***** MULTICAST MAC ADDRESS ***** Vlan    Mac Address    COS    Status    Ports --- 1    0100.5e40.0800    0    fa6 1    0100.5e7f.ffff    0    fa4,fa6
Show MAC Address	JetNet 4706# show mac-address-table dy

Table – Dynamic Learnt MAC addresses	<pre> Destination Address  Address Type  Vlan  Destination Port ----- 000f.b079.cb93      Dynamic      SVL   fa1           </pre>
Show MAC Address Table – Multicast MAC addresses	<pre> JetNet 4706# show mac-address-table multicast JetNet 4706 Mana# show mac-address-table multicast Vlan  Mac Address  COS  Status  Ports -----           </pre>
Show MAC Address Table – Static MAC addresses	<pre> JetNet 4706# show mac-address-table static Destination Address  Address Type  Vlan  Destination Port ----- 0012.7710.0101      Static        1     fa6 0012.7710.0102      Static        1     fa6           </pre>
Show Aging timeout time	<pre> JetNet 4706# show mac-address-table aging-time the mac-address-table aging-time is 304 sec.           </pre>
<b>Port Statistics</b>	
Port Statistics	<pre> JetNet 4706# show rmon statistics fa4 (select interface) RMON statistics counter mode is RxGood and TxGood mode. Interface fastethernet1 is enable connected, which has Inbound:   RxGood: 1292 Outbound:   TxGood: 1978           </pre>
Bad-Collision Mode	<pre> JetNet 4706(config)# rmon statistics counter-mode error-collisions Set RMON statistics counter mode to RxError and TxCollisions mode.           </pre>
Good Mode	<pre> JetNet 4706(config)# rmon statistics counter-mode good Set RMON statistics counter mode to RxGood and TxGood mode.           </pre>
<b>Event Log</b>	
Display	<pre> JetNet 4706# show event-log &lt;1&gt;Jan  1 02:50:47 snmpd[101]: Event: Link 4 Down. &lt;2&gt;Jan  1 02:50:50 snmpd[101]: Event: Link 5 Up. &lt;3&gt;Jan  1 02:50:51 snmpd[101]: Event: Link 5 Down. &lt;4&gt;Jan  1 02:50:53 snmpd[101]: Event: Link 4 Up.           </pre>
<b>Ping</b>	
Ping IP	<pre> JetNet 4706# ping 192.168.10.33 PING 192.168.10.33 (192.168.10.33): 56 data bytes 64 bytes from 192.168.10.33: icmp_seq=0 ttl=128 time=0.0 ms 64 bytes from 192.168.10.33: icmp_seq=1 ttl=128 time=0.0 ms 64 bytes from 192.168.10.33: icmp_seq=2 ttl=128 time=0.0 ms 64 bytes from 192.168.10.33: icmp_seq=3 ttl=128 time=0.0 ms 64 bytes from 192.168.10.33: icmp_seq=4 ttl=128 time=0.0 ms  --- 192.168.10.33 ping statistics --- 5 packets transmitted, 5 packets received, 0% packet loss round-trip min/avg/max = 0.0/0.0/0.0 ms           </pre>

## 4.13 Device Front Panel

**Device Front Panel** provides Web type LED panel which indicates status of power, PoE powering and link status of Ethernet.



## 4.14 Save to Flash

**Save Configuration** allows you to save any configuration you just made to the Flash. Powering off the switch without clicking on **Save Configuration** will cause loss of new settings. After selecting **Save Configuration**, click on **Save to Flash** to save your new configuration.



Feature	Command Line
Save	<pre>JetNet 4706# write Building Configuration... [OK]  Switch# copy running-config startup-config Building Configuration... [OK]</pre>

## 4.15 Logout

The switch provides 2 logout methods. Your web connection will log out if you do not input a command for 30 seconds. The Logout command allows you to manually log out the web connection. Click on **Yes** to logout, and **No** to go back to the configuration page.



### Command Lines:

Feature	Command Line
Logout	JetNet 4706> exit JetNet 4706# exit

## 5 Appendix

### 5.1 Product Specifications

#### Technology

<b>Standard</b>	IEEE 802.3 10Base-T IEEE 802.3 100Base-TX IEEE 802.3 100Base-FX IEEE 802.1p Class of Service IEEE 802.3af Power Over Ethernet IEEE 802.1d Spanning Tree IEEE 802.1w Rapid Spanning Tree
-----------------	---

#### Performance

<b>Switch Technology</b>	Storing and forwarding technology with 3.2Gbps wire-speed non-blocking Switch Fabric
<b>System Throughput</b>	1.785Mpps
<b>MAC Address</b>	2000
<b>Packet Buffer</b>	Embedded 1Mbits shared buffer
<b>Transfer performance</b>	14,880pps for Ethernet and 148,800 for Fast Ethernet and transfer packet size from 64 to 1522Bytes.
<b>Management interface</b>	SNMP v1, v2c and v3, Web browser and Console Management.
<b>SNMP MIB</b>	RFC 1213 MIBII, RFC 1493 Bridge MIB, RFC 1757 RMON MIB, RFC 2674 VLAN MIB, RFC 1643 Ethernet like MIB, RFC1215 Trap MIB, RFC 3621 Power Ethernet MIB, and Korenix Private MIB.
<b>SNMP Trap</b>	The SNMP trap agent provides Cold start, Warm start, Port event, Power event, Authentication failure, PoE trap and <i>Korenix</i> private Trap for proprietary functions.
<b>System Log</b>	1000 system entries for system or remote log server.
<b>Class of Service</b>	IEEE 802.1p class of service, with 4 priority queues.
<b>Quality of Service</b>	Quality of Service determined by port, Tag and IPv4 Type of Service.
<b>DHCP</b>	Supports DHCP Client and DHCP Server function with specified IP exclusion and MAC binding functions.
<b>Timer</b>	Supports Network Time Protocol (NTP) to synchronize time from the internet.
<b>VLAN</b>	Port Based VLAN with Tagged, Un-Tagged and not modify functions
<b>IGMP</b>	Supports IGMP Snooping mode and IGMP v1/v2 Query modes.
<b>Network Redundancy</b>	Supports Rapid Super Ring function for network redundancy with 5ms network recovery time; To inter-operate with other higher-level switches, it provided Dual Homing II technology compliant with RSTP protocol. <i>JetNet 4706/4706f</i> is also compliant with the IEEE 802.1d 2004 edition of RSTP and STP.
<b>Event Alarm Relay</b>	1 Dry Relay Contact output for port link down, PoE and System power events. Supports 1A @24V current ability.



<b>Firmware upgrade</b>	TFTP and HTTP firmware upgrade.
<b>PoE Port Control</b>	Supports user configuration of PoE enable/disable.
<b>Power Limit Control</b>	The control mode supports IEEE 802.3af standards, Manual and Ultra mode for 30W Hi-power. The maximum deliver power on each PoE port is 12.915W@DC 24V input ~30W @ DC55V input.
<b>PoE Scheduling Control</b>	Each PoE port can activate and power on with different schedules, it supports weekly and hourly scheduling.
<b>LPLD function</b>	The Link Partner Line Detect function (LPLD) is available on the PoE port only and provides a period of automatic detect function for PD status. If the PD is fails or is not responsive to the PoE Switch, the <i>JetNet 4706/4706f</i> PoE Switch will turn off and turn on the PoE power to emulate the PD reset function. The LPLD function saves time and makes the PoE PD more reliable
<b>Interface</b>	
<b>Number of Ports</b>	4 x 10/100Base-TX with PoE Injector 2 x 10/100Base-TX port for <i>JetNet 4706</i> 2 x 100Base-FX port for <i>JetNet 4706f</i> 1 x RS-232 Console
<b>Connectors</b>	10/100Base-TX: RJ-45 100Base-FX: SC Console: RJ-45 6-pin Terminal Block: Power & Relay Alarm
<b>PoE Technology</b>	End-Span wiring architecture PD classification detection, class ID 0~3 for IEEE 802.3af standard, and 30W High power deliver procedures for class ID 4. Pin assignment: V+ (RJ-45 Pin 4,5), V- (RJ-45 Pin 7,8), TX (RJ-45 Pin 1,2), RX (RJ-45 Pin 3,6) Protection: Provides Over-current protection by PD class.
<b>Cable</b>	10Base-T: 4-pair UTP/STP Cat. 3, 5e, 6 cable, EIA/TIA-568-B.2 100-ohm (up to 100m) 100Base-TX: 4-pair UTP/STP Cat.5e, 6 cable, EIA/TIA-568-B.2 100-ohm (up to 100m)
<b>Rest Button</b>	For system reboot and factory default setting.
<b>Diagnostic LED</b>	Power LED: Power 1/Power 2 (Green) Fast Ethernet Port 1~4: Link(Green) /Activity (Green blinking), PoE Powering (Yellow on), PoE Detect (Yellow blinking), PoE Disable (Yellow off), PoE Powering fail (Yellow fast blinking) Fast Ethernet Port 5,6: Link(Green) /Activity (Green blinking) Alarm (Red): Port link down or power failure occurred.
<b>Power Requirements</b>	
<b>System Power</b>	Supports positive or negative power system with DC 24~55V power input range and polarity reverse protection.
<b>Power Consumption</b>	8 Watts @ 48V (Maximum) without PD loading
<b>Mechanical</b>	
<b>Installation</b>	DIN-Rail mount or desktop
<b>Case</b>	IP-31 grade aluminum metal case
<b>Dimension</b>	45.5 mm (H) x 185.3 mm (W) x 136 mm (D) without DIN 0.72 kg with package
<b>Weight</b>	0.65 kg without package

## Environmental

<b>Operating Temperature</b>	<i>JetNet 4706</i> : -20°C ~60°C
<b>Operating Humidity</b>	<i>JetNet 4706f</i> : -10°C ~60°C
<b>Storage Temperature</b>	5% ~ 90% non-condensing
<b>Storage Humidity</b>	-40 ~ 80°C
	5%~ 90% non-condensing

## Regulatory Approvals

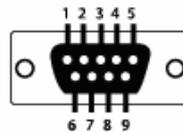
<b>Safety</b>	CE/EN60950
<b>EMI</b>	FCC Class B; CE/EN55022:2003,class B; CE/EN61000-3-2:2001 Harmonic Test CE/EN61000-3-3:1995 Flicker test
<b>EMS</b>	EN61000-4-2, ESD EN61000-4-3, RS EN61000-4-4, EFT EN61000-4-5, Surge EN61000-4-6, CS
<b>Shock</b>	IEC60068-2-27
<b>Vibration</b>	IEC60068-2-6
<b>Free Fall</b>	IEC60068-2-32
<b>Warranty</b>	5 Years

## 5.2 Pin Assignment for RS-232 Console Cable

The total length of the cable is 150cm (58.5"), excluding RJ45 and DB9.

DB9 is 'Female'.

RJ45 Pin	DB9 Pin
1	7
2	9
3	4
4	5
5	1
6	3
7	2
8	8

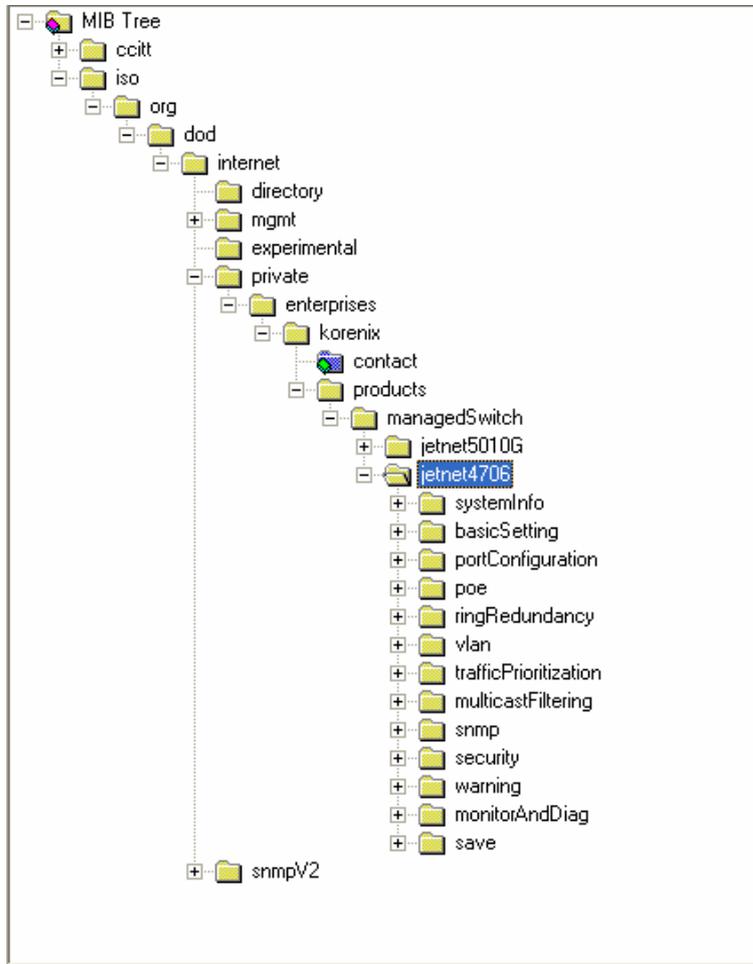


## 5.3 Korenix Private MIB

*Korenix* provides many standard MIBs for users to configure or monitor the switch's configuration through SNMP. But, since some commands can not be found in standard MIB, *Korenix* provides Private MIB to meet the needs. Compile the private MIB file with your SNMP tool. You will then be able to use it. Private MIB can be found in the product CD or downloaded from the *Korenix* Web site ([www.korenix.com](http://www.korenix.com)).

The private MIB tree is the same as the web tree. This is easier to understand and use. If you are not familiar with the standard MIB, directly use the private MIB to manage /monitor the switch, there is no need to learn where the OIDs of the commands are.

The path of *JetNet 4706/4706f* is 1.3.6.1.4.1.24062.2.1.4. Below is the Private MIB tree for your reference.



## 5.4 Revision History

<b>Edition</b>	<b>Date</b>	<b>Modifications</b>
V0.1	23-Jun-2007	First version.
V0.2	10-Sep-2007	Second version.



## 5.5 About Korenix

### Save Time and Money On Applications

The *Korenix* business plan is to let you spend less time at work and a smaller budget on your applications. Many people find themselves going through a lot of trouble to end up with low quality products and bad service. This is why *Korenix* is here. *Korenix* offers a complete selection of products that fulfill all your application needs. We provide easier, faster, customized services, and more reliable solutions. At *Korenix*, there is no need to compromise. *Korenix* takes care of everything for you.

### Fusion of Positive Outcomes

You can end your search here. *Korenix* is your one-stop supply center for industrial communications and networking products. *Korenix* was established by a group of professionals with over 10 years of experience in the arenas of industrial control, data communications and industrial networking applications. *Korenix* is geared towards fulfill your demands and expectations by providing a variety of products and services customized to your needs. *Korenix's* industrial-grade products also come with quality services—and support. *Korenix* stands by you all the way.

### Core Strength---Competitive Price and Quality

With our work experience and in-depth knowledge of industrial communications and networking, *Korenix* is able to combine Asia's research and development capabilities with competitive production cost and quality support.

### Global Sales Strategy

*Korenix's* global sales strategy focuses on establishing and developing trustworthy relationships with distributors and channel partners, and assisting OEM distributors in the promotion of their own brands. *Korenix* supplies products that exceed local market standards of design, quality, sales, marketing and customer services, allowing *Korenix* and its distributors to design, create and profit together.

### Quality Services

*KoreCARE* is *Korenix's* global service center where our professional staff is ready to solve your problems at any time. All of *Korenix's* products have passed ISO-9000/EMI/CE/FCC/UL certifications. E-mail *KoreCARE* at [koreCARE@korenix.com](mailto:koreCARE@korenix.com)

### 5-Year Warranty

Each of *Korenix's* products are designed, produced, and tested to high industrial standards. *Korenix* warrants that the product(s) shall be free of defects in materials and workmanship for a period of five (5) years from the date of delivery provided that the product was properly installed and used. This warranty is void if defects, malfunctions or failures of the warranted product are caused by damage resulting from forced measures (such as floods, fire, etc.), environmental and atmospheric disturbances, other external forces such as power line disturbances, host computer malfunction, plugging the board in under power, or incorrect cabling; or if the warranted product is misused, abused, or operated, altered and repaired in an unauthorized or improper way.

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