MiLAN®
TECHNOLOGY

MIL-S3580

24 Port Managed Switch

with 2 Optional Gigabit/Fiber ports

Regulatory Approval

- FCC Class A
- UL 1950
- CSA C22.2 Number 950
- EN60950
- CE
EN55022 Class A
EN55024

Canadian EMI Notice

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

European Notice

Products with the CE marking comply with both the EMC Directive (89/336EEC) and the Low Voltage Directive (73/23EEC) issued by the commisions of the European Community. Compliance with these directives implies conformity to the following European norms:

- EN55022 (CISPR 22) - Radio Frequency Interference
- EN61000-X - Electromagnetic Immunity
- EN60950 (IEC950) - Product Safety

Five-Year Limited Warranty

MiLAN Technology warrants to the original consumer or purchaser that each of its product and component thereof, will be free from defects in material and/or workmanship for a period of five years from the original factory shipment date. Any warranty hereunder is extended to the original consumer or purchaser and is not assignable.

MiLAN Technology makes no express or implied warranties including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, except as expressly set forth in this warranty. In no event shall MiLAN Technology be liable for incidental or consequential damages, costs, or expenses arising out of or in connection with the performance of the product delivered hereunder. MiLAN Technology will in no case cover damages arising out of the product being used in a negligent fashion or manner.

Trademarks

To Contact MiLAN Technology

For prompt response when calling for service information, have the following information ready:

- Product serial number and revision
- Date of purchase
- Vendor or place of purchase

You can reach MiLAN Technology technical support at:
- E-mail: support@milan.com
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P/N 90000397_A (062102)

1. Introduction

The MIL-S3580 Managed Switch is designed to provide your network with Ethernet, Fast Ethernet, Gigabit Ethernet connectivity over twisted pair and fiber optic cabling. Two expansion slots on the front further add to the flexibility of the systems.

Figure 1-1. The MIL-S3580 Switch

Features

Â Conforms to IEEE802.3, IEEE802.3u, IEEE802.3z, IEEE802.3x, IEEE802.1p, IEEE802.3ac, IEEE802.1D, IEEE802.1Q

Â 24 Auto-sensing 10/100Mbps Ethernet RJ-45 ports

Â 2 Expansion slots for optional modules: 1-port Duplex SC Gigabit (SX/LX), 100Mbps Fiber (SC/MT-RJ/VF-45), 1 RJ-45 for UTP or STP Gigabit 1000T Module with Automatic MDI/MDIX support.

Â One console-connecting port for configuration

Â Auto-negotiation & Full-duplex/Half-duplex support

Â Store-and-Forward error free packet forwarding scheme

Â 9.6 GB Backplane Bandwidth

Â 8K-entry MAC address table

Â 6Mbits share memory

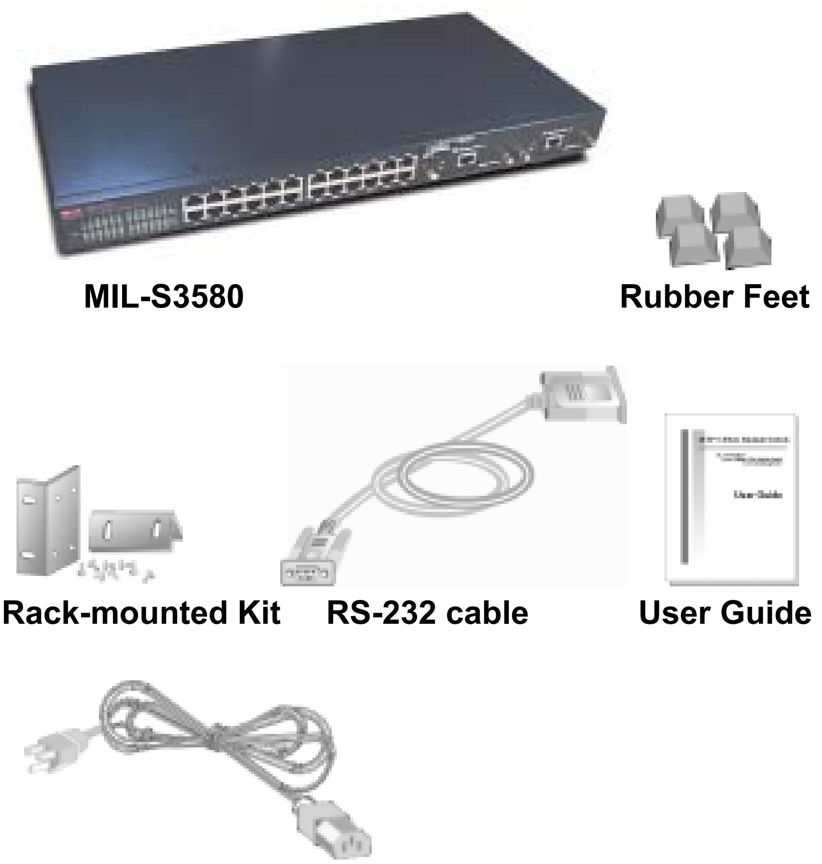
Â Full wire speed forwarding rate

Â LED status indicators

Management Features

- Console and Telnet Configuration
- Web-based management
- SNMP network management
- IEEE 802.1Q Tagging VLAN and Port-Based VLAN support
- IEEE802.3x Flow Control Mechanism for Full-duplex mode and Backpressure for Half-duplex
- IEEE 802.1D Blocking, Learning, and Forwarding states support for Spanning Tree Protocol
- IEEE 802.3ac extends the maximum Ethernet Length to 1522 to add the 4-Byte VLAN Tag
- IEEE802.1p provides four levels of priority per port. Packets are prioritized according to the source port or the 802.1p priority tag
- Security functions
- IGMP Snooping and GMRP protocol support
- Link Aggregation function support
- Port Priority - 802.1p & TOS (Type of Service) support
- TFTP support for system upgrade
- Port Mirroring

Package Contents



MIL-S3580

Rubber Feet

Rack-mounted Kit

RS-232 cable

User Guide

Power Cord

Figure 1-2. Package Contents

Compare the contents of your MIL-S3580 package with the standard checklist above. If any item is missing or damaged, please contact your local dealer for service.

Management Methods

The MIL-S3580 supports the following management methods:

Â Console and Telnet Management
Â Web-based Management
Â SNMP Network Management

Console and Telnet Management

Console Management is done through the RS-232 Console Port. Managing the MIL-S3580 in this method requires a direct connection between a PC and the MIL-S3580. Telnet management is done over the network. Once the MIL-S3580 has an IP and is on the network, you can use Telnet to log in and change or view the configuration.

SNMP Network Management

SNMP (Simple Network Management Protocol) provides a means to monitor and control network devices, and to manage configurations, statistic collection, performance, and security.
Data is passed from SNMP agents. SNMP agents are hardware & software processes reporting activity in each network device to the workstation console. The agent return information is contained in a MIB (Management Information Base), which is a data structure that defines what is obtainable from the device and what can be controlled.

2. Hardware Description

The Front Panel

The front panel of the MIL-S3580 consists of 24 auto-sensing 10/100Mbps Ethernet RJ-45 Ports, two optional expansion slots, and a console port. The LED Indicators are located on the front left panel of the Switch.

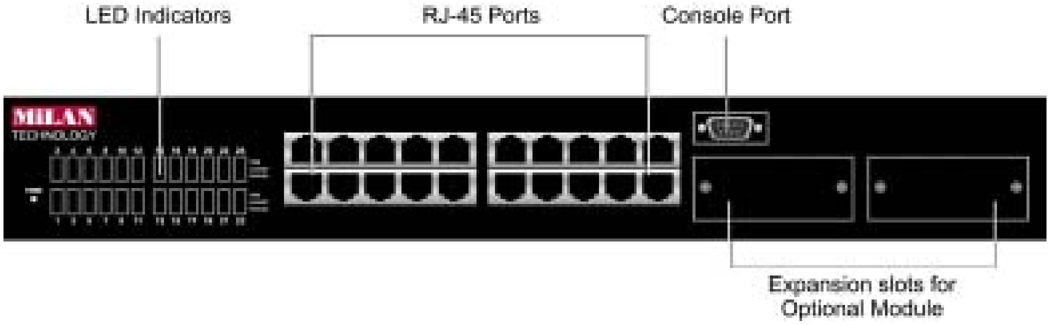


Figure 2-1. Front Panel of the MIL-S3580

24 10/100BASE-TX RJ-45 Ports (Auto MDI/MDIX):
10/100Mbps auto-sensing port for 10Base-T or 100Base-TX device connection. Auto-MDI/MDIX allows you to connect to another switch or workstation without changing straight-through or crossover cabling.

2 Expansion Slots :
For the following optional modules:
1 Port Gigabit 1000BASE-T Switch Modules,
1 Port Gigabit 1000BASE-SX/LX Fiber Modules.
1 Port 100BASE-FX Fiber Modules

Console Port :
Console Management can be done through the Console Port. It requires a direct connection between the MIL-S3580 and an end station via an RS-232 cable.

LED Indicators:

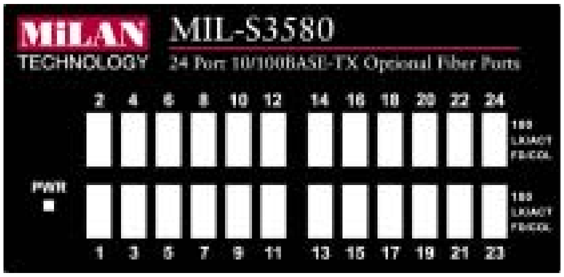


Figure 2-2. LED Indicators

All LED indicators are located on the front left panel of the MIL-S3580. They provide a real-time indication of system and operational status. The following table gives descriptions of the LED status and their meanings.

LED	Status	Description
PWR	Green	Power is on.
	Off	Power is off.
100	Green	The port is operating at the speed of 100Mbps.
	Off	No device attached or port is in 10Mbps mode.
LK/ACT	Green	The port is connecting with the device.
	Blinks	The port is receiving or transmitting data.
	Off	No device attached.
FD/COL	Yellow	The port is operating in Full-duplex mode.
	Blinks	Collision of packets occurs in the port.
	Off	No device attached or port is in half-duplex mode.

Table 2-1. Description of LED Indicators

Rear Panel

The 3-pronged power plug and ON/OFF switch are located on the rear panel of the MIL-S3580. The switch works in the range 100-240VAC, 50-60Hz.

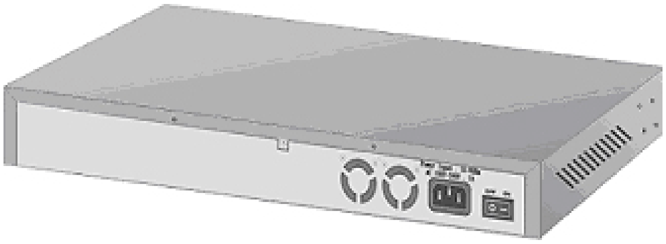


Figure 2-3. Rear Panel of the MIL-S3580

Power On

After all network cables are connected, plug the power cord into the power socket on the back panel and the other end into a power outlet. Turn on the power using the power switch on the back panel.

Check the front panel power indicator to see if power is properly supplied. The switch uses a universal power supply that requires no additional adjustment.

Diagnostic Test

After the installation is completed and AC power is applied to the switch, the system will automatically perform a diagnostic test. The PWR LED will come on. Within 5 seconds, all LEDs will flash for a split second.

When the switch passes the self-test, the LEDs come on within 15 seconds on ports that are populated and connected.

3. Connecting to the Network

This section provides the installation procedure and instructions for assigning an IP address.

Pre-Installation Requirements

Before you start hardware installation, make sure you have the items listed below.

¸ **PCs with 10/100Mbps Ethernet NICs or 100Mbps Fiber NICs:** Your PC must have a standard Ethernet interface to connect to the switch.

¸ **UTP cable with RJ-45 connectors or Fiber cable connectors:** Check if the cable and connectors work properly.

¸ **A power outlet with range 100 to 240VAC at 50 to 60 Hz:** Make sure that the power switch is accessible and cables can be connected easily.

¸ **Dedicated power supply:** Use dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.

¸ **A dry cool place:** Keep the switch away from moisture. Avoid direct sunlight, heat source, and high amount of electromagnetic interference around.

¸ **Mounting tools:** If you intend to mount the switch on a rack, make sure you have all the tools, mounting brackets, screws etc.

CAUTION:

¡ Cabling must be away from sources of electrical noise such as radio, computers, transmitters, broadband amplifiers, power lines and keep away from TVs, hair dryers, and microwave.

¡ Airflow around the switch and through its vents on the rear cannot be restricted.

Mounting the Switch

The MIL-S3580 is suitable for use in an office environment where it can be rack-mounted in standard EIA 19-inch racks or as a standalone device.

Desktop Mounting

1. Set the switch on a sufficiently large flat space with a power outlet nearby.
2. Make sure surface is clean, and dust free.
3. Remove adhesive backing from the rubber feet.
4. Apply the rubber feet to each corner on the bottom of the switch.

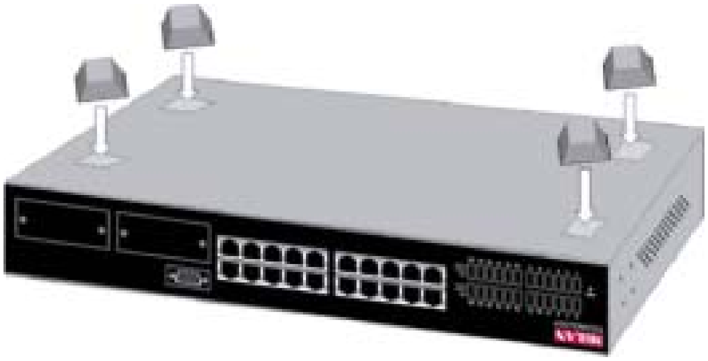


Figure 3-1. Attaching rubber feet on the bottom of the switch

CAUTION: Do not place objects on top of the switch.

Rack-mounted Installation

The MIL-S3580 comes with a rack-mount kit and can be mounted in an EIA standard sized, 19-inch rack. The switch can be placed in a wiring closet with other equipment.

Perform the following steps to rack mount the switch:

A. Position one bracket to align with the holes on one side of the switch and secure it with the smaller bracket screws. Then attach the remaining bracket to the other side of the switch.

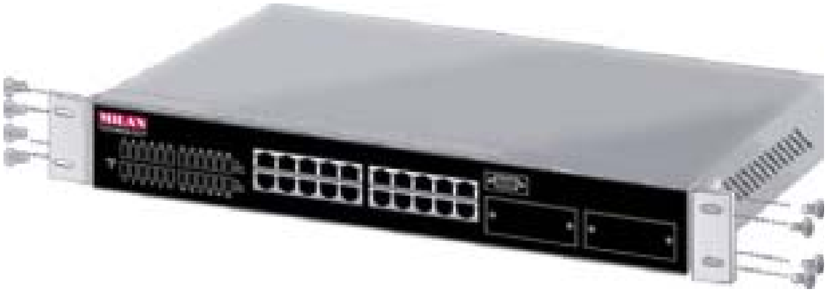


Figure 3-2. Attach mounting brackets with screws

B. After both mounting brackets are attached, position the switch in the rack by lining up the holes in the brackets with the appropriate holes on the rack. Secure the switch to the rack with a screwdriver and the rack-mounting screws.

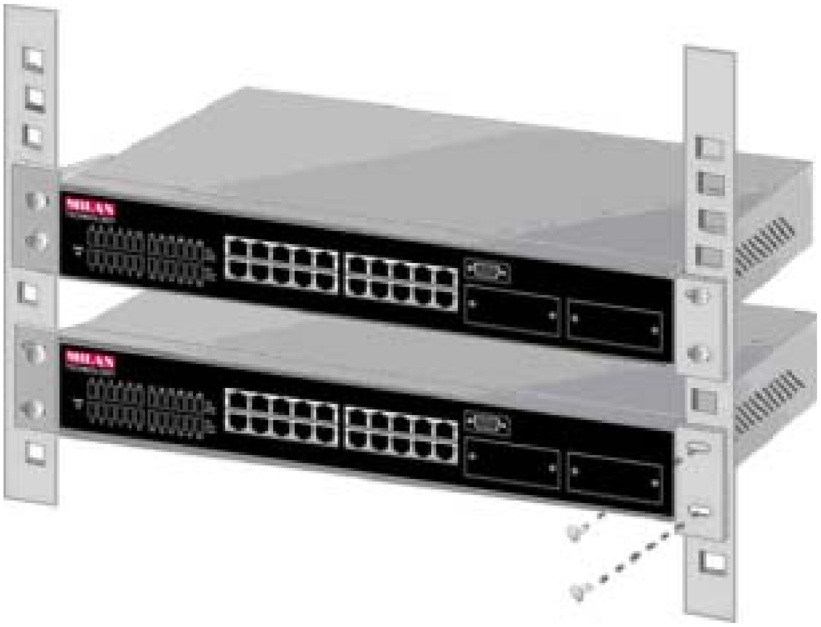


Figure 3-3. Mount the MIL-S3580 in an EIA Standard 19-inch Rack

NOTE: For proper ventilation, allow at least 4 inches (10 cm) of clearance on the front and 3.4 inches (8 cm) on the back of the switch. This is especially important for enclosed rack installation.

Connecting to the Switch

The console port is a male DB-9 connector that enables a connection to a PC or terminal for monitoring and configuring the MIL-S3580. Use the supplied RS-232 cable with a female DB-9 connector to connect a terminal or PC to the console port.

The console configuration (out-of-band management) allows you to set your switch to enable a user at a remote console terminal to communicate with the MIL-S3580 as if the console terminal were directly connected to it.

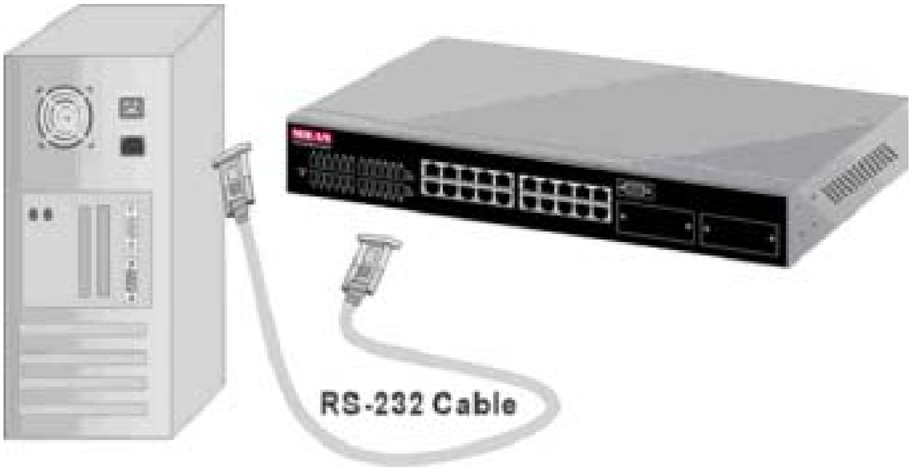
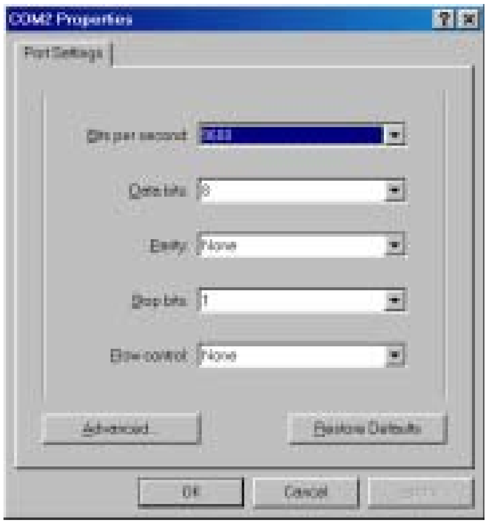


Figure 3-4. Connecting the MIL-S3580 to a Terminal via RS-232 Cable

Login in the Console Interface

When the physical connection between the switch and the PC is established, turn on the PC and run a terminal emulation program or **Hyper Terminal** and configure its **communication parameters** to match the following default characteristics of the console port:

Baud Rate: 9600 bps
Data Bits: 8
Parity: None
Stop Bit: 1
Control flow: None



Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None

Figure 3-5. Settings of Communication Parameters

Telnet

You can access the console using a Telnet connection once an IP address is assigned. The switch offers password protection for this interface. When the telnet session opens, select **Terminal>Properties**. In the Terminal Preferences dialog, verify the following settings. Under **Terminal Options** select **VT100 Arrows** and set buffer Size to 25. Under **Emulation**, select the **VT-100/ANSI** radio button.

User Interface

The switch offers a menu-driven console interface. Use <Tab> key or the <arrow> keys to move within menus and sub-screens. To select a menu, press the appropriate <arrow> key to highlight the menu, and then press <Enter>. The following list describes common key commands:

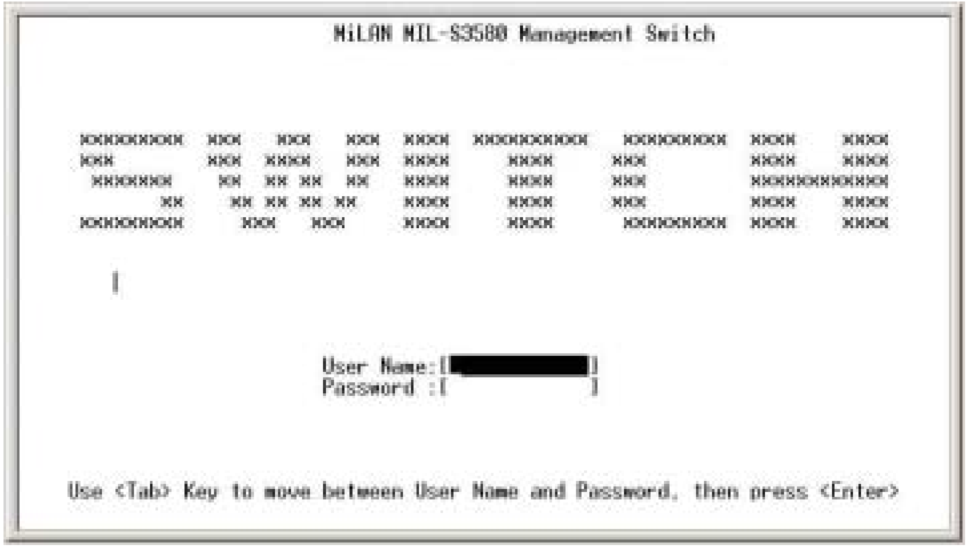
- <**Esc**> Return to previous menu or screen, or abort editing
- <**Tab**> Scroll highlight bar through the screen
- <⇑ >, <⇒>, <⇓ >, <⇔> Navigation keys to move around menu screen and editable fields
- <**Spacebar**> Toggle between possible settings for field
- <**Enter**> Select a menu item, edit a field or accept a value after editing a field

The bottom of every screen displays action commands available for that particular screen such as **Submit, Save**, **Refresh**, **Exit** and sometimes other helpful information.

Note that you can choose to leave a menu screen without applying any changes made at any time by pressing the <Esc> key and then confirming with the <Enter> key.

NOTICE: When clicking on **Submit** button, you are applying the changes to the current session only. To save the changes into NVRAM, you need to go to the System Restart submenu and reset the system by either a Cold Start or Warm Start.

First Screen

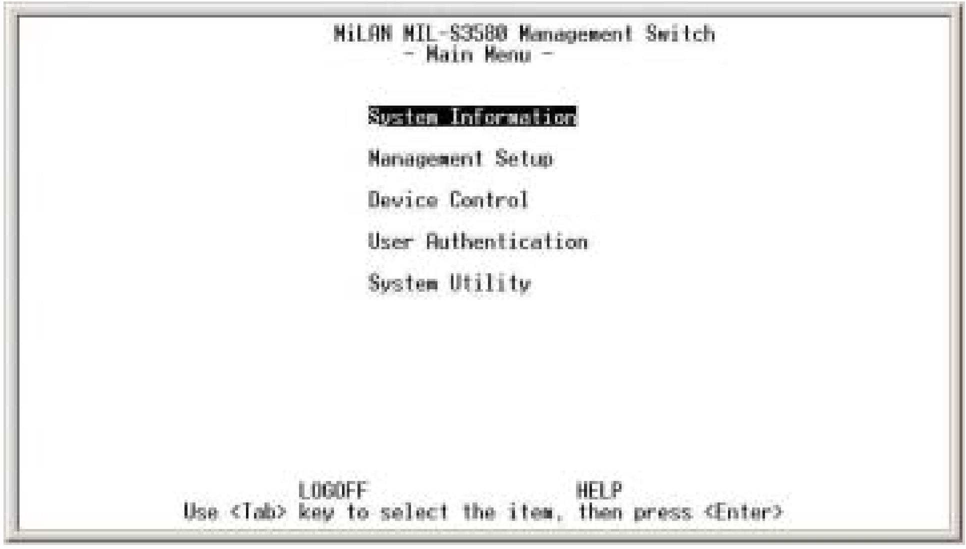


```
                MiLAN MIL-S3580 Management Switch

XXXXXXXXX  XXX   XXX   XXX  XXXX  XXXXXXXXXX   XXXXXXXXX  XXXX    XXXX
XXX        XXX  XXXX   XXX  XXXX     XXXX     XXX         XXXX    XXXX
 XXXXXXX    XX  XX XX  XX   XXXX     XXXX     XXX         XXXXXXXXXXXX
       XX    XX XX XX XX    XXXX     XXXX     XXX         XXXX    XXXX
XXXXXXXXX     XXX   XXX     XXXX     XXXX      XXXXXXXXX  XXXX    XXXX

  |

                          User Name:[          ]
                          Password :[          ]

 Use <Tab> Key to move between User Name and Password, then press <Enter>
```

Figure 3-6. First Screen Display in Console Interface

Once you have configured your system terminal and started the switch, you can login to the console interface. The default username is **admin.** There is **no password** required. You can change both the user name and password in the User Authentication Menu option, which appears on the Main Menu.

Main Menu

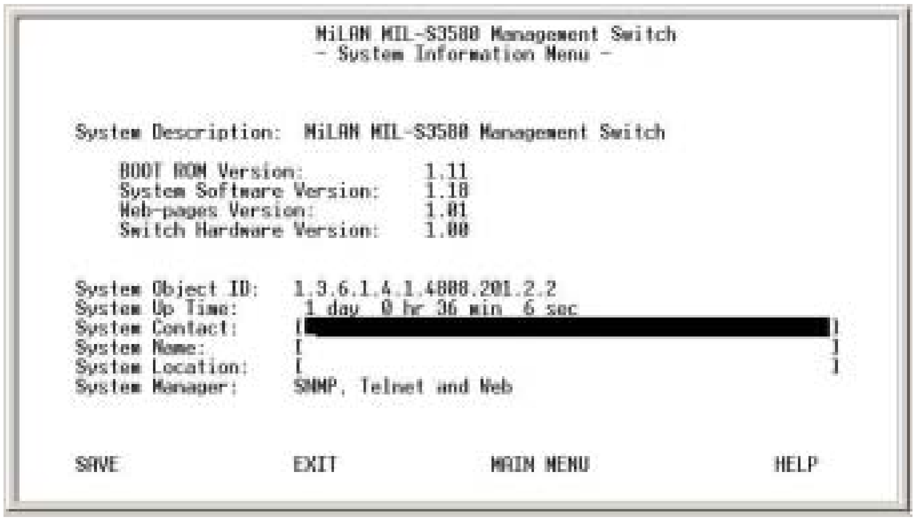


```
                MiLAN MIL-S3580 Management Switch
                          - Main Menu -

                       System Information

                       Management Setup

                       Device Control

                       User Authentication

                       System Utility




             LOGOFF                   HELP
        Use <Tab> key to select the item, then press <Enter>
```

Figure 3-7. Main Menu

After login, you will see the Main Menu screen as illustrated in the picture. The Main Menu displays all the submenus and pages that are available in the console interface.

1. System Information



```
                          MiLAN MIL-S3580 Management Switch
                           - System Information Menu -


   System Description:  MiLAN MIL-S3580 Management Switch

       BOOT ROM Version:            1.11
       System Software Version:     1.10
       Web-pages Version:           1.01
       Switch Hardware Version:     1.00


   System Object ID:   1.3.6.1.4.1.4000.201.2.2
   System Up Time:      1 day  0 hr 36 min  6 sec
   System Contact:     [                                                ]
   System Name:        [                                                ]
   System Location:    [                                                ]
   System Manager:     SNMP, Telnet and Web


   SAVE                EXIT              MAIN MENU                 HELP
```

Figure 3-8. System Information Menu

The system information screen displays information such as hardware, software versions, and system up time. You can also enter specific information about you and your organization. This information about the switch is available through any SNMP manager. In each field, 48 characters can be entered.

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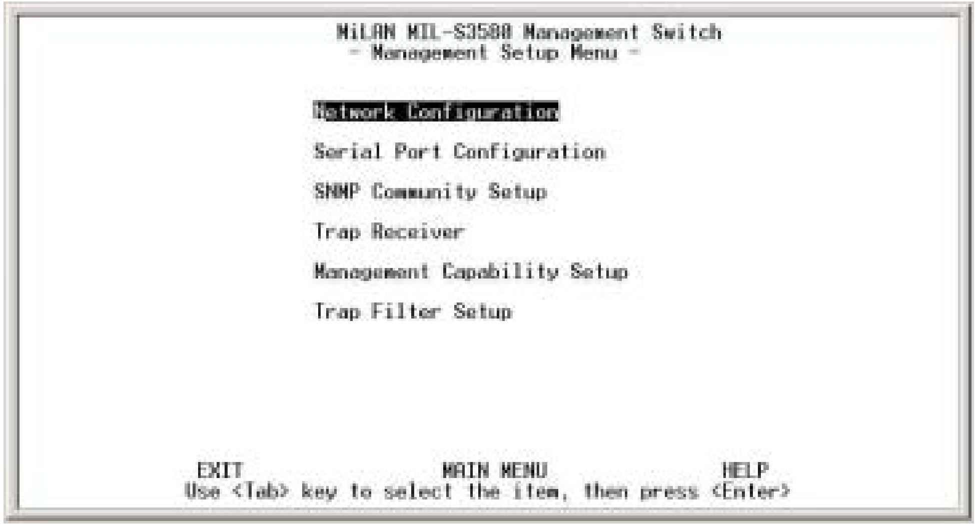
2. Management Setup

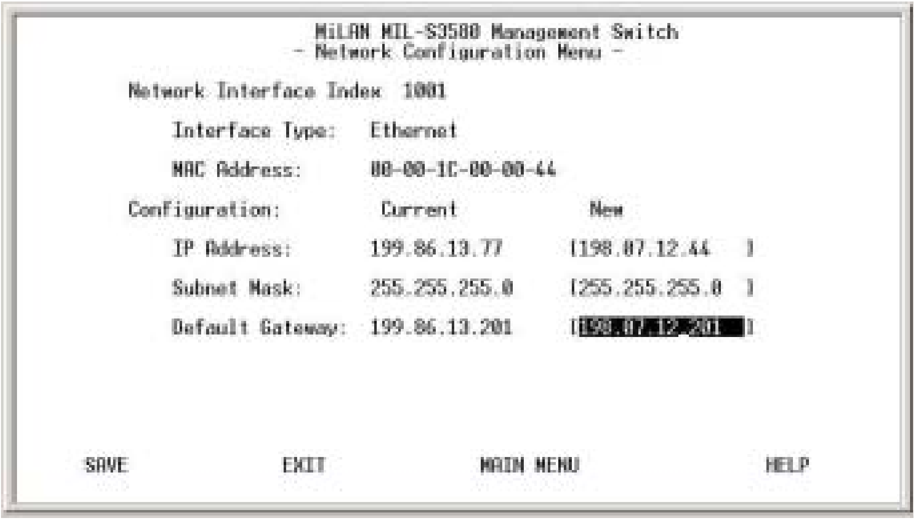


```
                          MiLAN MIL-S3580 Management Switch
                            - Management Setup Menu -

                         Network Configuration

                         Serial Port Configuration

                         SNMP Community Setup

                         Trap Receiver

                         Management Capability Setup

                         Trap Filter Setup




         EXIT                     MAIN MENU                 HELP
        Use <Tab> key to select the item, then press <Enter>
```

Figure 3-8. Management Setup Menu

The management setup menu contains 6 submenus and is discussed in the following sections.

2.1. Network Configuration

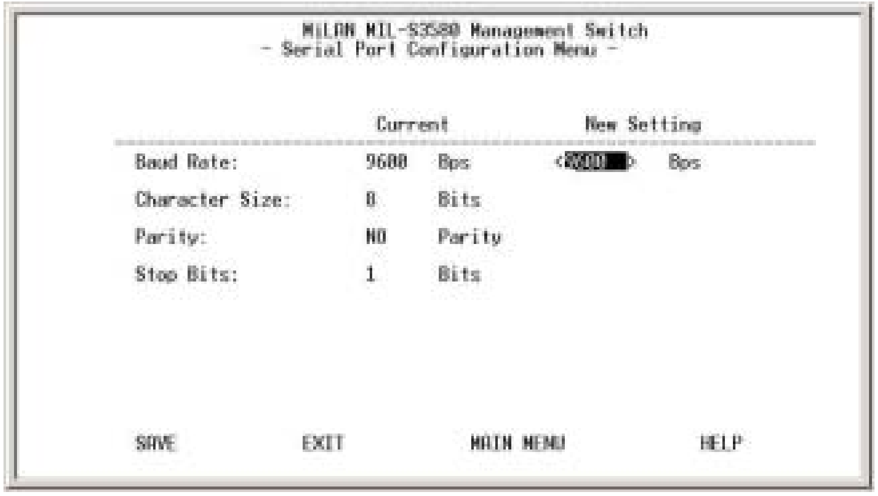


```
                    MiLAN MIL-S3580 Management Switch
                   - Network Configuration Menu -

     Network Interface Index  1001

         Interface Type:   Ethernet

         MAC Address:      00-00-1C-00-00-44

     Configuration:         Current           New

         IP Address:       199.86.13.77      [198.07.12.44   ]

         Subnet Mask:      255.255.255.0     [255.255.255.0  ]

         Default Gateway:  199.86.13.201     [198.07.12.201  ]



 SAVE             EXIT             MAIN MENU              HELP
```

Figure 3-9. Network Configuration Menu

This menu allows the setting of your IP address of the switch according to your network's unique configuration. The **factory defaults** for all three addresses are **0.0.0.0**. After changing any of the settings, you need to save the information and reset the switch in order for the changes to take effect. Also note that the value under Current column will not reflect the changes you made until the next time you login after resetting the switch.

2.2. Serial Port Configuration

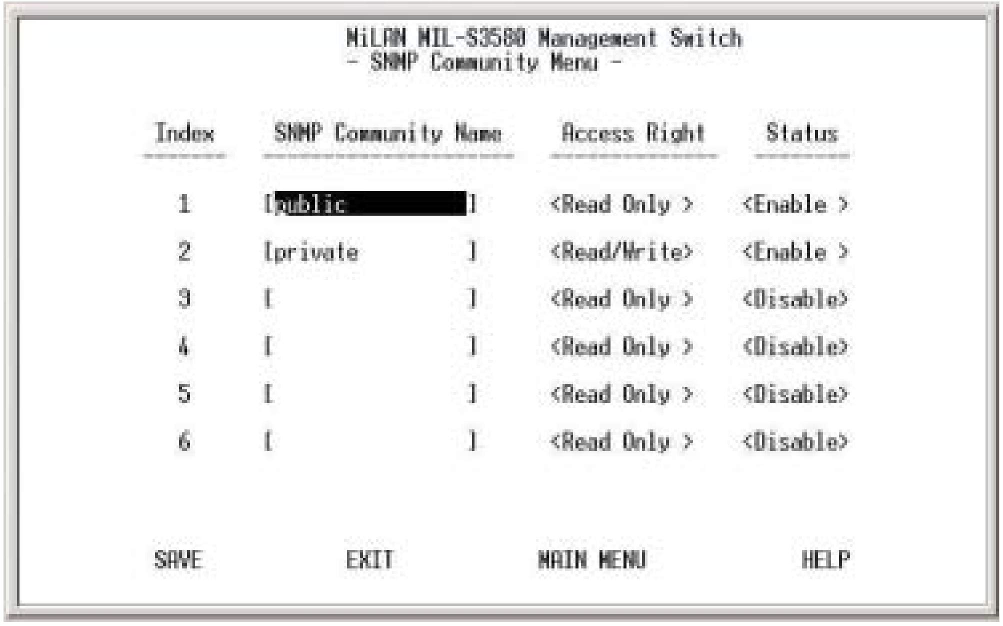


```
                    MiLAN MIL-S3580 Management Switch
                 - Serial Port Configuration Menu -


                            Current          New Setting
      -----------------------------------------------------------
      Baud Rate:            9600   Bps      <9600>    Bps
      Character Size:       8      Bits
      Parity:               NO     Parity
      Stop Bits:            1      Bits



      SAVE          EXIT          MAIN MENU          HELP
```

Figure 3-10. Serial Port Configuration Menu

You can change the serial port setting through this screen to suit you environment, however, it is recommended to keep the default setting.

2.3. SNMP Community Setup



```
                    MiLAN MIL-S3580 Management Switch
                       - SNMP Community Menu -

      Index     SNMP Community Name    Access Right     Status
      -----     -------------------    ------------     ------

        1       [public          ]     <Read Only >    <Enable >

        2       [private         ]     <Read/Write>    <Enable >

        3       [                ]     <Read Only >    <Disable>

        4       [                ]     <Read Only >    <Disable>

        5       [                ]     <Read Only >    <Disable>

        6       [                ]     <Read Only >    <Disable>


      SAVE             EXIT             MAIN MENU             HELP
```

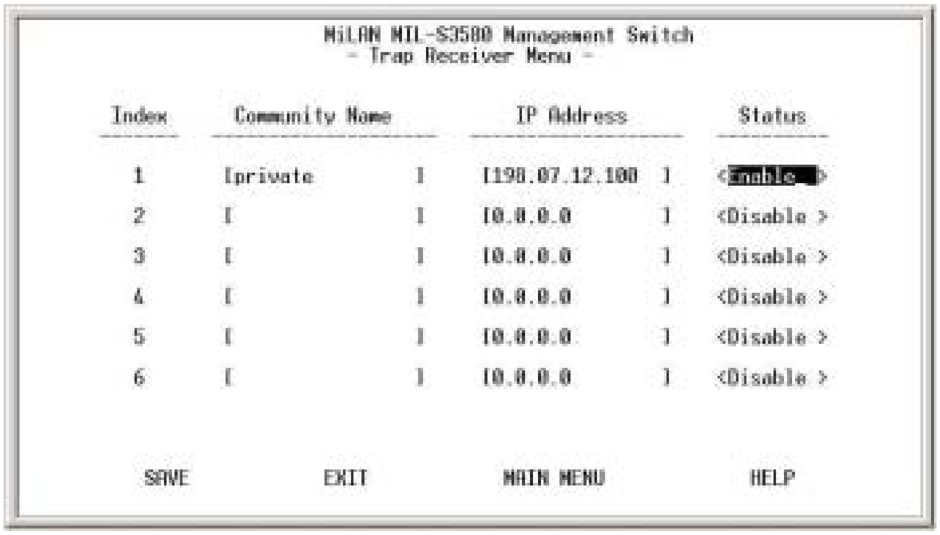
Figure 3-11. SNMP Community Menu

Use the SNMP communities to restrict access to the switch by SNMP management stations by adding editing or disabling SNMP communities. You can configure up to 6 SNMP communities, each with either a restricted read-only or unrestricted read/write access.

Public Community (Read-only access right) allows the member of community to view the information but not to make changes to the configuration.
Private Community (Read/Write access right) allows the member of the community to view and make changes to the configuration.

To set the "Public" and "Private" community names, you can type the desired text string in the corresponding edit box.

2.4. Trap Receiver

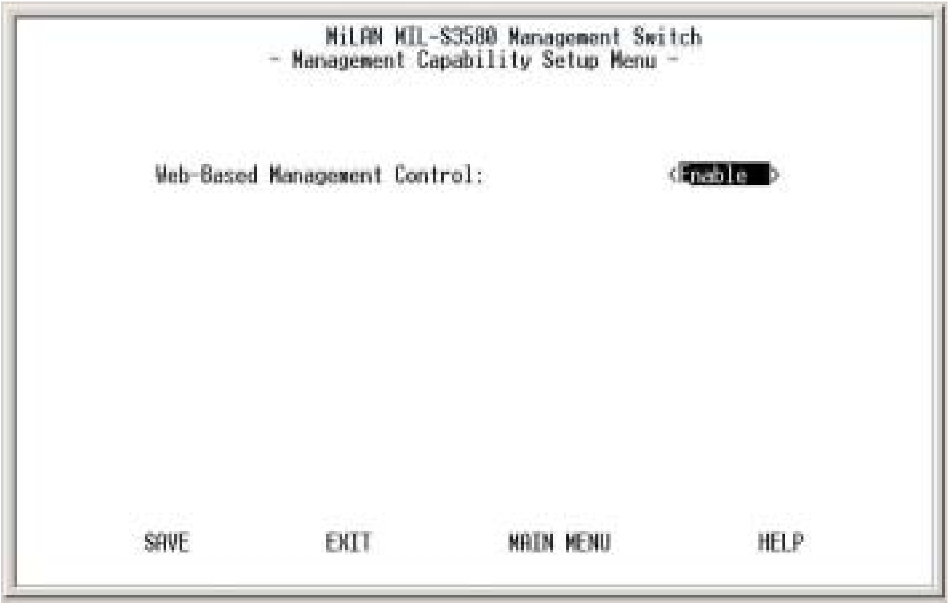


```
                 MiLAN MIL-S3580 Management Switch
                      - Trap Receiver Menu -

   Index      Community Name           IP Address          Status
  -------   -------------------   ------------------   ----------

     1       [private        ]    [198.07.12.100  ]    <Enable  >
     2       [               ]    [0.0.0.0        ]    <Disable >
     3       [               ]    [0.0.0.0        ]    <Disable >
     4       [               ]    [0.0.0.0        ]    <Disable >
     5       [               ]    [0.0.0.0        ]    <Disable >
     6       [               ]    [0.0.0.0        ]    <Disable >


     SAVE            EXIT             MAIN MENU            HELP
```

Figure 3-12. Trap Receiver Menu

A trap receiver is a management station designated by the switch to receive SNMP traps sent from the switch. Use Trap Receiver screen to designate certain community to receive trap(s) generated by the system. In the default configuration, no trap receivers are configured and the authentication trap is disabled. The trap's Host IP address is the IP address required.

2.5. Management Capability Setup

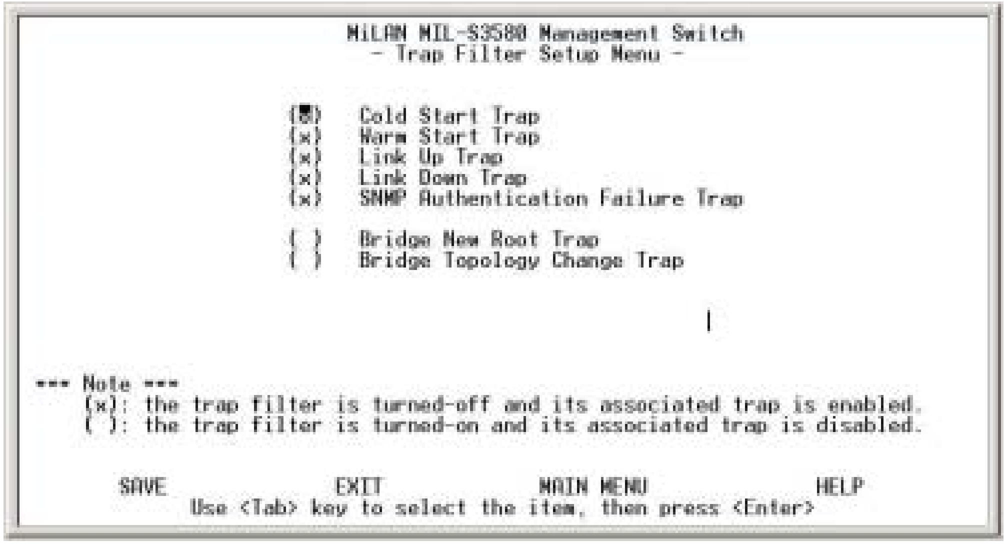


```
                 MiLAN MIL-S3580 Management Switch
                - Management Capability Setup Menu -


        Web-Based Management Control:            <Enable  >









     SAVE            EXIT             MAIN MENU            HELP
```

Figure 3-13. Management Capability Setup Menu

This menu allows you to enable/disable Web-Based management capability. If disabled, there is no access to management function through the use of a Web browser such as Microsoft Internet Explorer or Netscape.

2.6. Trap Filter Setup

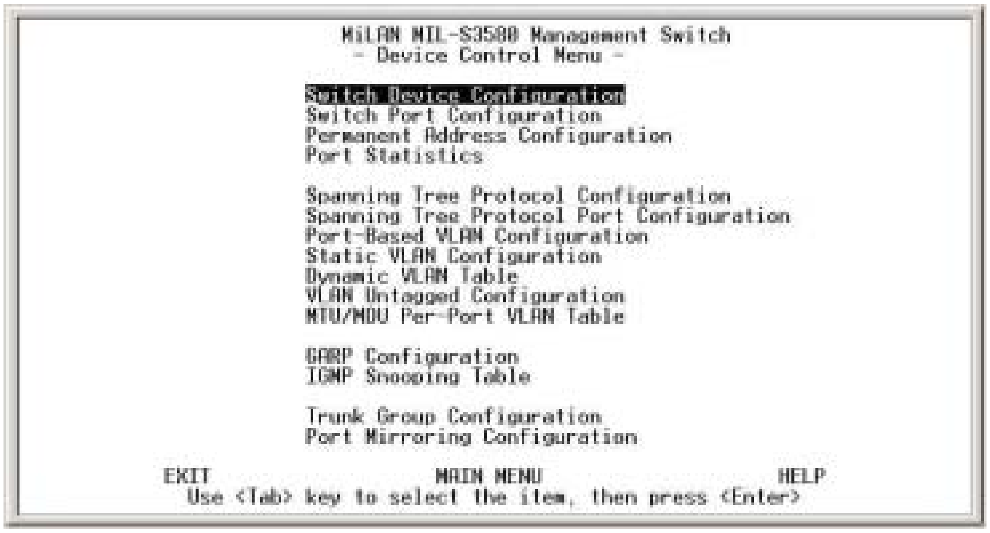


```
                         MiLAN MIL-S3580 Management Switch
                           - Trap Filter Setup Menu -

                    (■)   Cold Start Trap
                    (x)   Warm Start Trap
                    (x)   Link Up Trap
                    (x)   Link Down Trap
                    (x)   SNMP Authentication Failure Trap

                    ( )   Bridge New Root Trap
                    ( )   Bridge Topology Change Trap



*** Note ***
    (x): the trap filter is turned-off and its associated trap is enabled.
    ( ): the trap filter is turned-on and its associated trap is disabled.

       SAVE             EXIT             MAIN MENU             HELP
            Use <Tab> key to select the item, then press <Enter>
```

Figure 3-14. Trap Filter Setup Menu

The system will generate a set of SNMP traps upon the occurrence of an event. By checking a filter event, you are turning off the filter and enabling the trap associated with that event. The trap will be sent to the community name(s) configured in the Trap Receiver Menu.

3. Device Control Menu

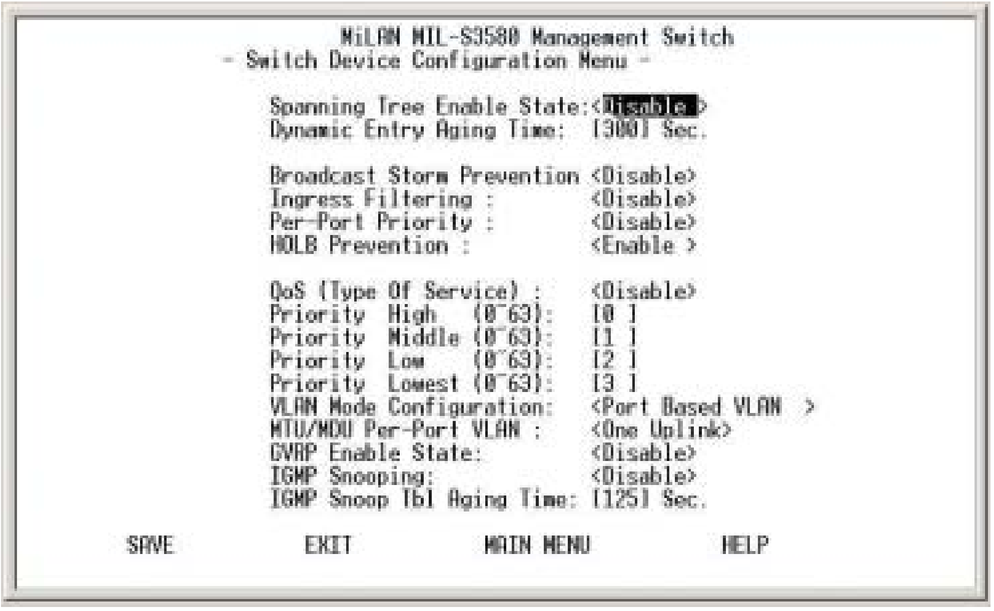


```
                         MiLAN MIL-S3580 Management Switch
                           - Device Control Menu -

                         Switch Device Configuration
                         Switch Port Configuration
                         Permanent Address Configuration
                         Port Statistics

                         Spanning Tree Protocol Configuration
                         Spanning Tree Protocol Port Configuration
                         Port-Based VLAN Configuration
                         Static VLAN Configuration
                         Dynamic VLAN Table
                         VLAN Untagged Configuration
                         MTU/MDU Per-Port VLAN Table

                         GARP Configuration
                         IGMP Snooping Table

                         Trunk Group Configuration
                         Port Mirroring Configuration

        EXIT                  MAIN MENU                    HELP
         Use <Tab> key to select the item, then press <Enter>
```

Figure 3-15. Device Control Menu

Device Control Menu contains 15 submenus where you can add and modify functions and features of the switch.

3.1. Switch Device Configuration



```
                    MiLAN MIL-S3580 Management Switch
              - Switch Device Configuration Menu -

                 Spanning Tree Enable State:<Disable >
                 Dynamic Entry Aging Time:  [300] Sec.

                 Broadcast Storm Prevention <Disable>
                 Ingress Filtering :        <Disable>
                 Per-Port Priority :        <Disable>
                 HOLB Prevention :          <Enable >

                 QoS (Type Of Service) :    <Disable>
                 Priority  High   (0~63):   [0 ]
                 Priority  Middle (0~63):   [1 ]
                 Priority  Low    (0~63):   [2 ]
                 Priority  Lowest (0~63):   [3 ]
                 VLAN Mode Configuration:   <Port Based VLAN  >
                 MTU/MDU Per-Port VLAN :    <One Uplink>
                 GVRP Enable State:         <Disable>
                 IGMP Snooping:             <Disable>
                 IGMP Snoop Tbl Aging Time: [125] Sec.

       SAVE          EXIT          MAIN MENU          HELP
```

Figure 3-16. Switch Device Configuration Menu

Use <**Space Bar**> to toggle the Enable/Disable field and type in the appropriate value in the Time and Priority fields.

- **Spanning Tree Enable State** is disabled by default on the MIL-S3580. The switch uses the IEEE802.1D Spanning Tree Protocol (STP), when enabled, to ensure that only one path at a time is active between any two nodes on the network.
- **Dynamic Entry Aging Time** - This is the time, in seconds, that the switch keeps an address of a device in the MAC address table.   300 seconds or 5 minutes is the default. The time can be set from 5 seconds to 999 seconds or 16.65 hours. A MAC address can also be entered in the static address table to prevent aging out.
- **Broadcast Storm Prevention** can be set to 6%, 20% or Disabled. The percentage indicates the allowance against the capacity. When disabled, there is no limitation on the incoming rate of broadcast/multicast traffic, otherwise limitation on broadcast traffic will be set to the configured percentage.

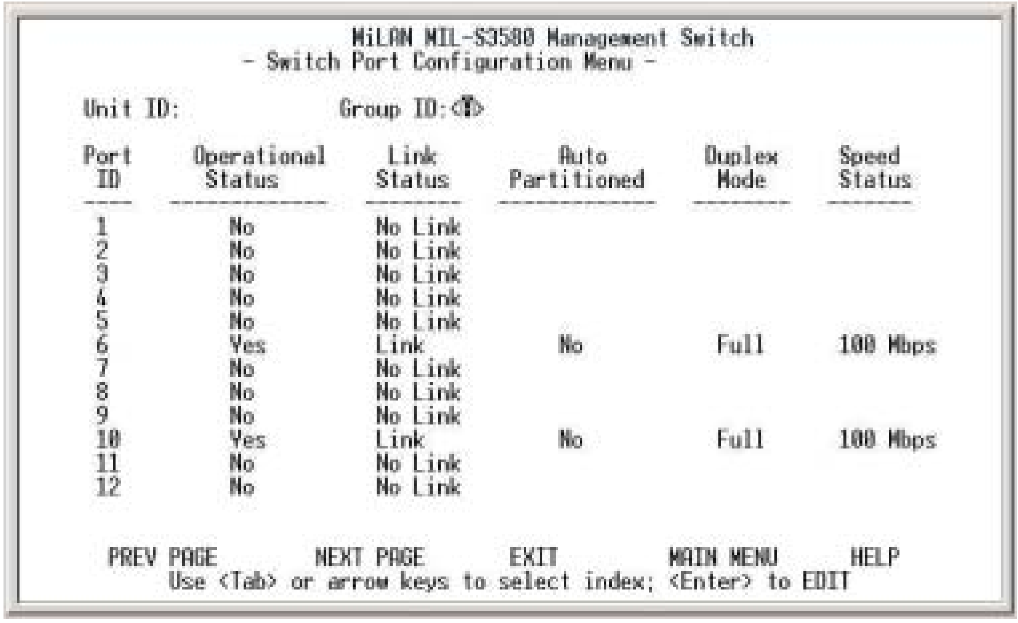
- **Ingress Filtering** examines the tagged header of each tagged frame that enters a port and determines whether the tagged frame and the port that received the frame are members of the same VLAN. If they belong to the same VLAN, the port accepts the frame. If they belong to different VLANs, the port discards the frame. If Ingress filtering is disabled, any tagged frame is accepted on any port on the switch. It does not matter whether the frame and port belong to the same or different VLANs.
- **Per-Port Priority** allows port-based priorities. You can designate the priority for the receiving port so that any frame received will be transmitted to the destination port with the programmed priority. However, if the received frame has a layer 3 priority (TOS or DiffServ), it will have precedence over port-based priority. When set, all ports by default have the lowest priority possible. If a priority different from lowest is wanted, the priority must be changed for each individual port in the Port Configuration Menu.
- **HOLB Prevention** - Head Of Line Blocking occurs when many ports send frames to the same output port. This puts the frames in contention for output port and all frames must wait behind, thus the head of the line goes first. The shared memory switching fabric architecture eliminates any possibility of head-of-line blocking when this feature is enabled.
- When **QoS** is enabled, you can map the Type of Service of your choice (according to IEEE 802.1p) to the 4 priority levels provided.
- There are 3 different modes of VLANs supported in this switch, **802.1Q**, **Port-Based VLANs** and **MTU/MDU**. The choice you make here will ultimately decide the VLAN mode and function for the entire switch. If one mode is selected, the other two VLAN modes will have no effect on the switch.
- **GVRP Enable State** is used with IEEE 802.1Q VLANs. GVRP enables the switch to dynamically create 802.1Q compliant VLAN links with other switches running GVRP. This reduces the chance for errors in VLAN configuration by automatically providing VLAN ID (VID) consistency across the network. You can use GVRP to propagate VLANs to other GVRP switches instead of manually having to set up VLANs in each switch. In order to activate GVRP without overlapping VLANs, follow these steps:
  1. Assign static VLANs.
  2. Take out ports that belong to assigned VLANs from Default VLAN.
  3. Assign those ports to Local VID in Switch Port Configuration Menu.
  4. Tag the uplink port in the Untagged Configuration Menu.
  5. Turn on STP in Switch Configuration Menu.

6. Turn on GVRP in Switch Configuration Menu.
7. Update Configuration Setting.
8. Cold Start in System Start Menu.

∉# **IGMP Snooping** relates to the protocol IGMP. IGMP enables routers to create lists of devices that are members of multicast groups. A multicast group might consist of all users that want to see the company yearly meeting on video. Video is a multicast application. IGMP Snooping enables the switch to monitor the flow of queries from the devices and the routers. IGMP Snooping improves the switch's performance by restricting the flow of multicast packets to only those switch ports, which have devices receiving the multicast (video).

∉# **IGMP Snooping Table Aging Time** is the time the switch will maintain its multicast group(s). The time controls how frequently the switch expects to see information from devices that want to stay members of multicast groups and process leaving requests.

3.1. Switch Port Configuration

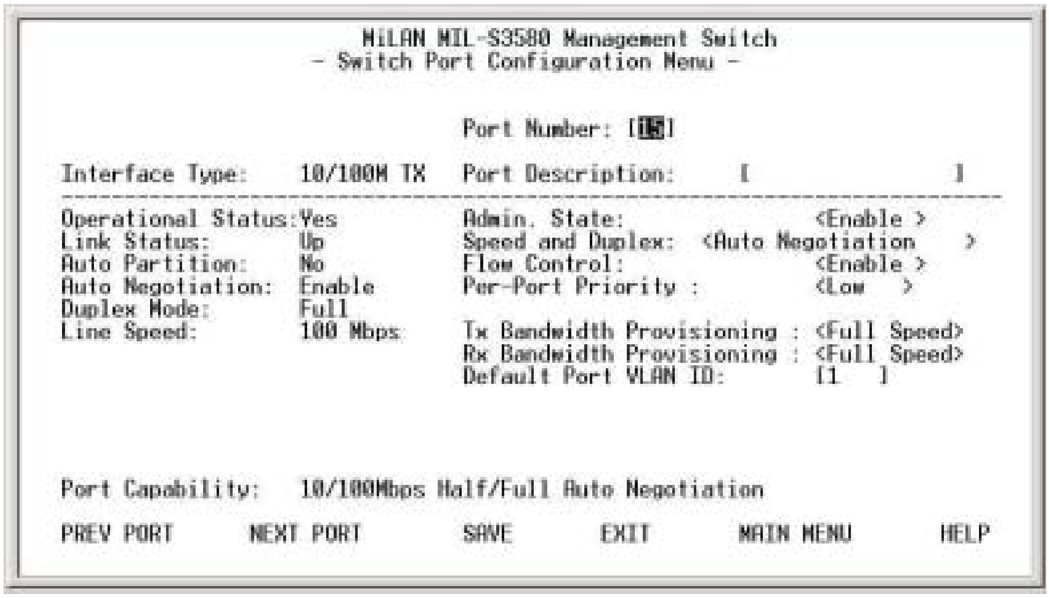


```
                        MiLAN MIL-S3580 Management Switch
                     - Switch Port Configuration Menu -

  Unit ID:             Group ID:<1>

  Port     Operational      Link          Auto        Duplex    Speed
   ID        Status        Status     Partitioned      Mode     Status
  ----   -------------   --------   -------------   --------   -------
   1          No          No Link
   2          No          No Link
   3          No          No Link
   4          No          No Link
   5          No          No Link
   6          Yes         Link            No           Full     100 Mbps
   7          No          No Link
   8          No          No Link
   9          No          No Link
   10         Yes         Link            No           Full     100 Mbps
   11         No          No Link
   12         No          No Link

    PREV PAGE       NEXT PAGE       EXIT        MAIN MENU      HELP
        Use <Tab> or arrow keys to select index; <Enter> to EDIT
```

Figure 3-17. Switch Port Configuration Menu

The ports on this menu are divided and displayed in three separate pages. Twelve ports are displayed on each of the first two menus, with the two modular uplink ports displayed on the third page. Use **PREV PAGE**, **NEXT PAGE** to list desired port range. To select a port, highlight that port using <**Tab**> or arrow keys, and press <**Enter**>

3.2. Individual Port Configuration



```
                    MiLAN MIL-S3580 Management Switch
                   - Switch Port Configuration Menu -

                                Port Number: [15]

Interface Type:    10/100M TX   Port Description:     [               ]
---------------------------------------------------------------------------
Operational Status:Yes          Admin. State:              <Enable >
Link Status:       Up           Speed and Duplex:  <Auto Negotiation    >
Auto Partition:    No           Flow Control:              <Enable >
Auto Negotiation:  Enable       Per-Port Priority :        <Low    >
Duplex Mode:       Full
Line Speed:        100 Mbps     Tx Bandwidth Provisioning : <Full Speed>
                                Rx Bandwidth Provisioning : <Full Speed>
                                Default Port VLAN ID:       [1   ]



Port Capability:   10/100Mbps Half/Full Auto Negotiation

PREV PORT     NEXT PORT     SAVE      EXIT      MAIN MENU      HELP
```

Figure 3-18. Switch Port Configuration Menu

In Switch Port Configuration Menu, you can configure basic characteristics such as speed, flow control, and VLAN ID as well as the following features supported by the switch:

- **Port Description** - Sixteen characters can be entered to identify the port.
- **Admin State** - When set to Disable, the port is inoperable and no devices can access the switch through the port. The administrator must then enable the port in order for a link to be established.
- **Speed and Duplex** - There are five different settings that can be set for each port: Half-duplex-10Mbps, Full-duplex-10Mbps, Half-duplex-100Mbps, Full-duplex-100Mbps and Auto-negotiation.
- **Flow Control** - When enabled, pause frame is utilized for full duplex operations and backpressure flow control is utilized for half duplex. By default, it is enabled.
- **Per-Port Priority** – Four levels of priority (High, Medium, Low and Lowest) can be set to each individual port. However, the priority level set through QoS or TOS will have higher precedence.
- **Bandwidth Management** - Eight levels of speed control facilitate the management of bandwidth. Configuration of receive and transmit control of each port is independent. You can set the port to transmit and/or receive at

the provisioned speed or none for full wire speed. Configuration takes effect immediately after saving, with no resetting of the switch necessary. The various levels are listed below.

10Mb	312Kb	625KB	938Kb	1.25Mb	2Mb	4Mb	6Mb	8Mb
100Mb	3.12Mb	6.25Mb	9.38Mb	12.5Mb	20Mb	40Mb	60Mb	80Mb
1000Mb	31.2Mb	62.5Mb	93.8Mb	125Mb	200Mb	400Mb	600Mb	800Mb

Table 3-1. Eight Levels of Bandwidth Provisioning

∉# **Default Port VLAN ID** - The default VLAN ID must be set for each port after configuration of new VLANs.

3.3. Permanent/Static Address Configuration

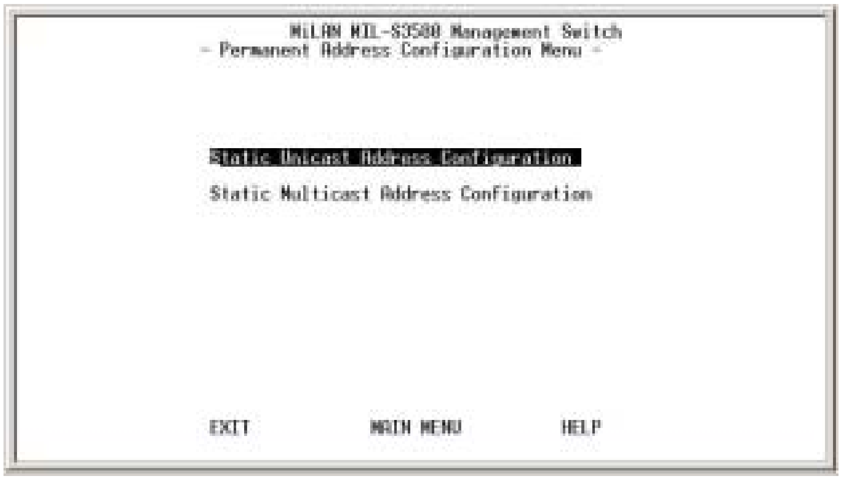
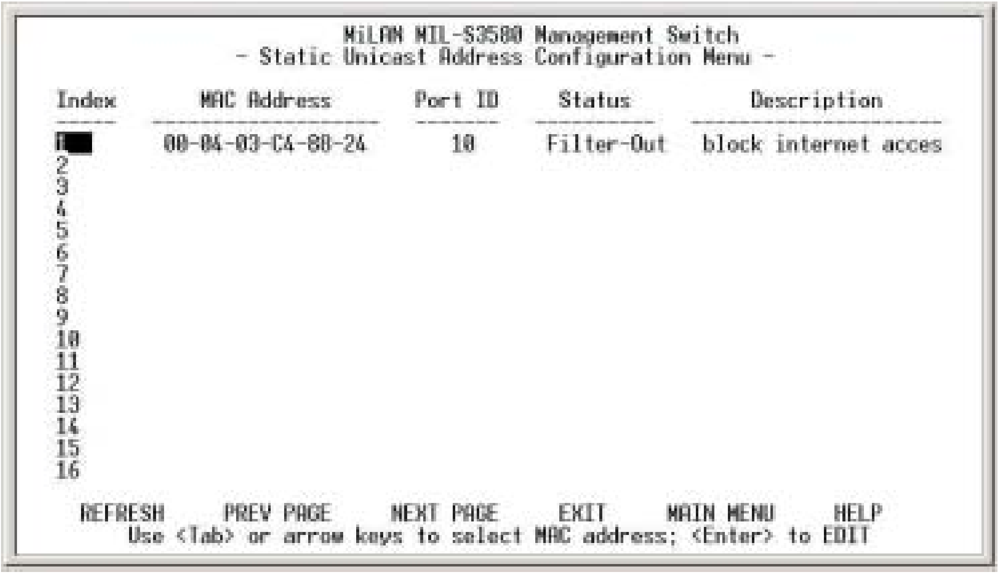

MiLAN MIL-S3500 Management Switch
- Permanent Address Configuration Menu -
Static Unicast Address Configuration
Static Multicast Address Configuration
EXIT
MAIN MENU
HELP

Figure 3-19. Permanent Address Configuration menu

There are 128 static unicast groups and 32 multicast supported by the system. Two submenus are contained in this section.

3.3.1. Static Unicast Address Configuration

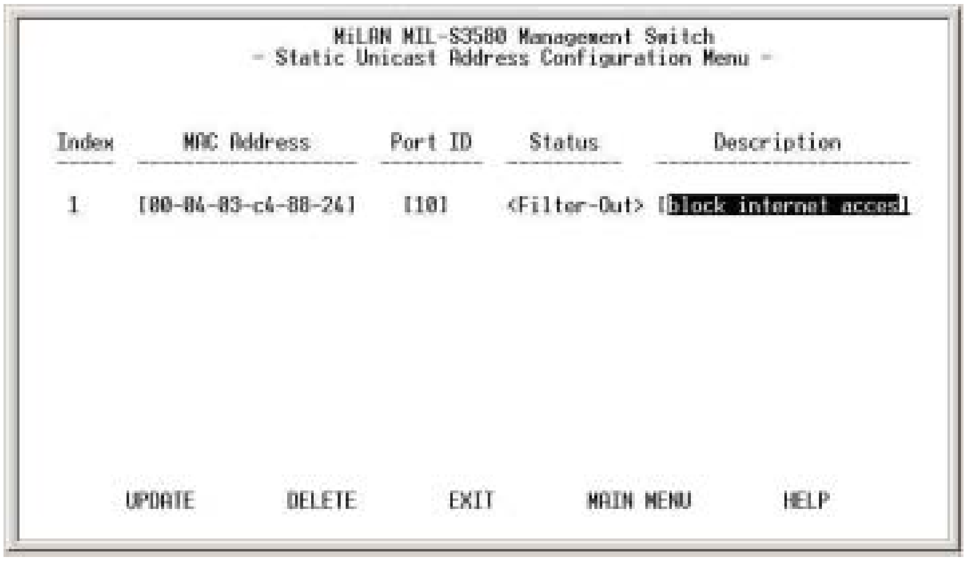
You can create, modify, or delete Static Unicast Address by selecting entries from the following screen.



```
                    MiLAN MIL-S3580 Management Switch
             - Static Unicast Address Configuration Menu -

Index       MAC Address        Port ID     Status          Description
-----   -------------------    -------   ----------   ----------------------
1         00-04-03-C4-88-24       10      Filter-Out   block internet acces
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

  REFRESH     PREV PAGE     NEXT PAGE     EXIT     MAIN MENU     HELP
      Use <Tab> or arrow keys to select MAC address; <Enter> to EDIT
```

Figure 3-20. Static Unicast Address Configuration Menu

This screen shows all the Static Unicast addresses configured and their status. There is a separate index for 128 different Static Unicast addresses. If the status of the address is to be changed or a new address to be added, <**Tab**> to the index of that address and press <**Enter**> to go to the Configuration Menu.



```
                    MiLAN MIL-S3580 Management Switch
              - Static Unicast Address Configuration Menu -

Index       MAC Address        Port ID      Status          Description
-----   -------------------   ---------   ----------   ----------------------

  1     [00-04-03-c4-88-24]     [10]     <Filter-Out> [block internet acces]




      UPDATE        DELETE        EXIT        MAIN MENU        HELP
```

Figure 3-21. Static Unicast Address Configuration Menu

Enter the MAC address you wish to set as the static unicast address and the associated port. Use <**Space Bar**> to toggle the status field between Disable, Forwarding, Filter-In, and Filter-Out.

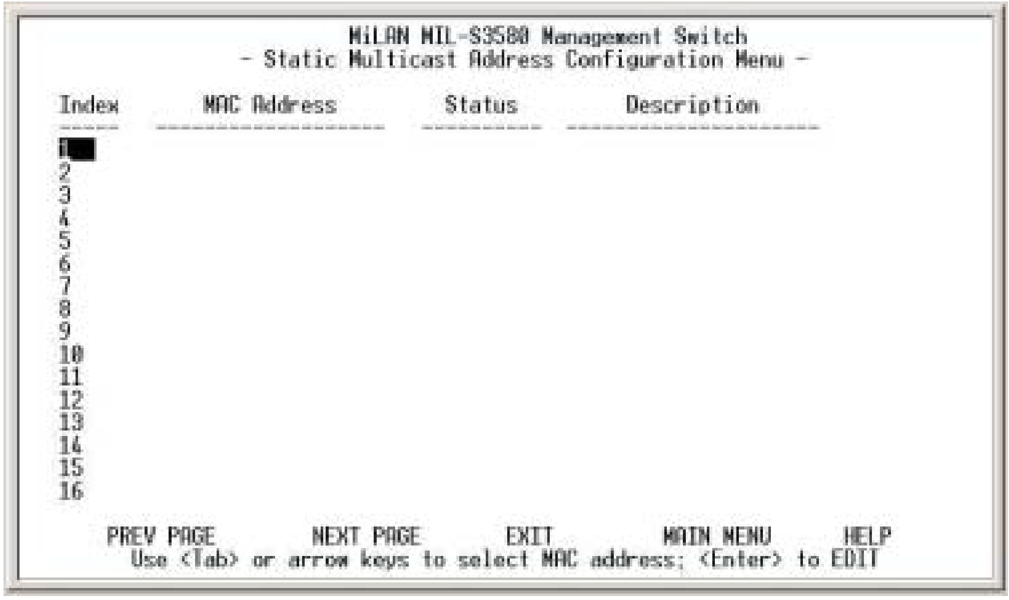
∉# **Disable** – This Unicast Address entry has no effect to the switch system.

∉# **Forwarding** – All packets designated to this MAC address will be forwarded (and only to) the designated port.

∉# **Filter-in** – Only packets originated from this MAC address will be permitted to enter this port. Packets originated from other MAC addresses will be dropped at this port automatically.

∉# **Filter-out** – All packets designated to this MAC address will be blocked.

3.3.2. Static Multicast Address Configuration

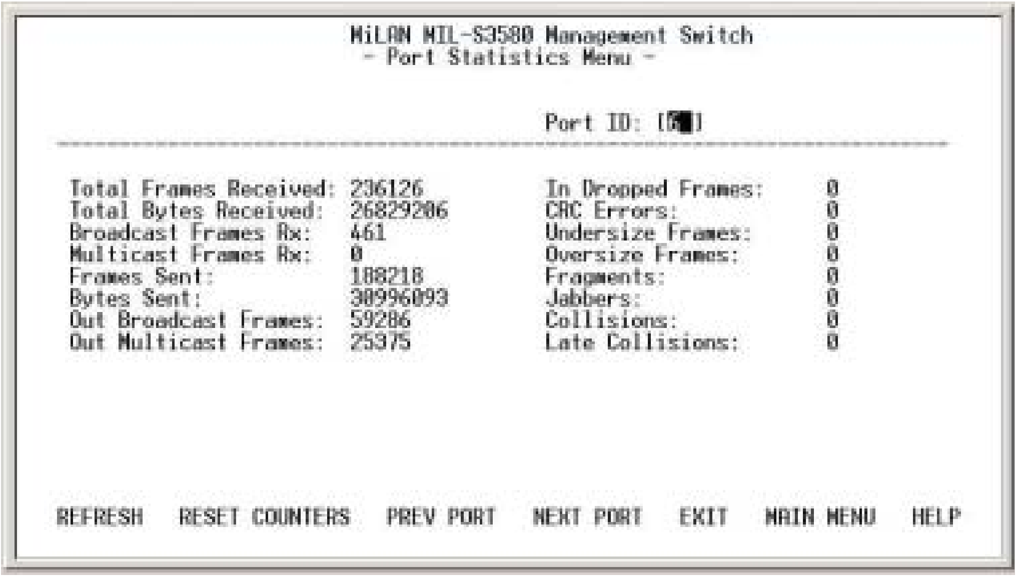


```
                        MiLAN MIL-S3580 Management Switch
                 - Static Multicast Address Configuration Menu -

 Index       MAC Address         Status        Description
 -----   -------------------   ----------   ---------------------
 1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 11
 12
 13
 14
 15
 16

     PREV PAGE       NEXT PAGE       EXIT       MAIN MENU      HELP
       Use <Tab> or arrow keys to select MAC address; <Enter> to EDIT
```

Figure 3-21. Static Multicast Address Configuration Menu

In the Static Multicast Configuration Menu screen, you can add member(s) to the group by checking the port(s) with <**Space Bar**> and key in MAC addresses and toggle Status field set to Enable.

3.4. Port Statistics

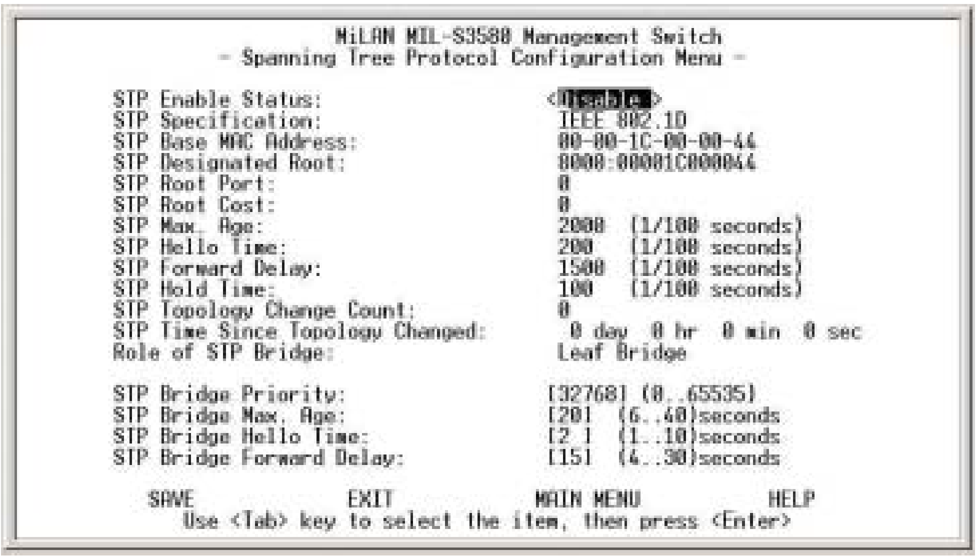


```
                   MiLAN MIL-S3580 Management Switch
                     - Port Statistics Menu -

                                      Port ID: [6 ]
-----------------------------------------------------------------------------

  Total Frames Received: 236126          In Dropped Frames:     0
  Total Bytes Received:  26829206        CRC Errors:            0
  Broadcast Frames Rx:   461             Undersize Frames:      0
  Multicast Frames Rx:   0               Oversize Frames:       0
  Frames Sent:           188218          Fragments:             0
  Bytes Sent:            30996093        Jabbers:               0
  Out Broadcast Frames:  59286           Collisions:            0
  Out Multicast Frames:  25375           Late Collisions:       0




REFRESH   RESET COUNTERS   PREV PORT   NEXT PORT   EXIT   MAIN MENU   HELP
```

Figure 3-22. Port Statistics Menu

You can view the port specific statistical information displayed in this screen by entering the port number in the Port ID field. The statistics are automatically refreshed, but you can force the screen to refresh or reset the counters to 0 by selecting the appropriate option.

3.5. Spanning Tree Protocol Configuration



```
                    MiLAN MIL-S3580 Management Switch
              - Spanning Tree Protocol Configuration Menu -

      STP Enable Status:                  <Disable>
      STP Specification:                   IEEE 802.1D
      STP Base MAC Address:                00-00-1C-00-00-44
      STP Designated Root:                 8000:00001C000044
      STP Root Port:                       0
      STP Root Cost:                       0
      STP Max. Age:                        2000  (1/100 seconds)
      STP Hello Time:                      200   (1/100 seconds)
      STP Forward Delay:                   1500  (1/100 seconds)
      STP Hold Time:                       100   (1/100 seconds)
      STP Topology Change Count:           0
      STP Time Since Topology Changed:      0 day  0 hr  0 min  0 sec
      Role of STP Bridge:                  Leaf Bridge

      STP Bridge Priority:                [32768] (0..65535)
      STP Bridge Max. Age:                [20]  (6..40)seconds
      STP Bridge Hello Time:              [2 ]  (1..10)seconds
      STP Bridge Forward Delay:           [15]  (4..30)seconds

         SAVE            EXIT            MAIN MENU          HELP
            Use <Tab> key to select the item, then press <Enter>
```

Figure 3-23. Spanning Tree Protocol (STP) Configuration Menu

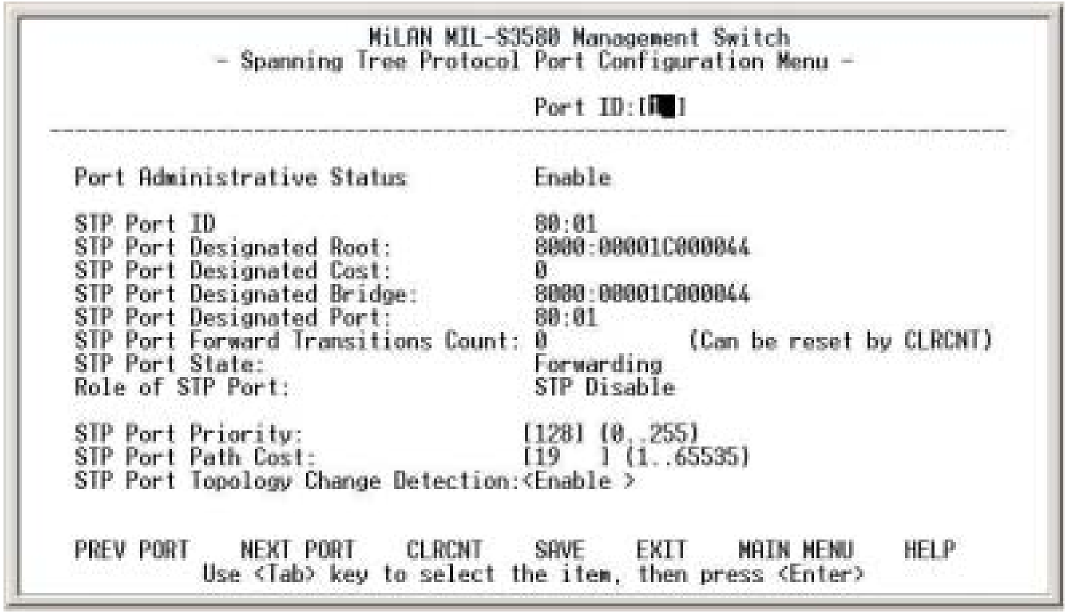
By default, Spanning Tree is disabled on the MIL-S3580. The switch uses the IEEE802.1D Spanning Tree Protocol (STP), when enabled, to ensure that only one path at a time is active between any two nodes on the network. In networks where there is more than one physical path between any two nodes, STP ensures a single active path between them by blocking all redundant paths. Having more than one path between a pair of nodes causes loops in the network, which result in duplication of messages, leading to "broadcast storms".

As recommended in the IEEE 802.1Q VLAN standard, the MIL-S3580 uses a single-instance STP, regardless of whether VLANs are configured on the switch.

The Spanning Tree status can be changed with the <Space Bar>. If you enable the spanning tree protocol, you must complete the Priority and Time fields with appropriate values. Note that you can choose to leave a menu screen without applying any changes you had made at any time by pressing <Esc> and then confirm with <Enter>.

- **STP Bridge Priority** - The range is 0 to 65535. This range specifies the priority value used along with the switch’s MAC address to determine which device in the network is root for all the spanning tree switches. The lower a priority value, the higher the priority. The default is 32768.
- **STP Bridge Max Age** - The range is 6 to 40 seconds. This range specifies the maximum received message age the switch allows for STP information before discarding the message. The default is 20 seconds.
- **STP Bridge Hello Time** - The range is 1 to 10 seconds. This is the time between messages transmitted when the switch is the root. The default is 2 seconds.
- **STP Bridge Forward Delay** - The range is 4 to 30 seconds. This is the time the switch waits before transitioning from the listening to the learning state and between the learning state to forwarding state. The default is 15 seconds.

3.6. Spanning Tree Protocol Port Configuration



```
                    MiLAN MIL-S3580 Management Switch
           - Spanning Tree Protocol Port Configuration Menu -

                                   Port ID:[0█]
-------------------------------------------------------------------------------

    Port Administrative Status         Enable

    STP Port ID                        80:01
    STP Port Designated Root:          8000:00001C000044
    STP Port Designated Cost:          0
    STP Port Designated Bridge:        8000:00001C000044
    STP Port Designated Port:          80:01
    STP Port Forward Transitions Count: 0          (Can be reset by CLRCNT)
    STP Port State:                    Forwarding
    Role of STP Port:                  STP Disable

    STP Port Priority:                [128] (0..255)
    STP Port Path Cost:               [19   ] (1..65535)
    STP Port Topology Change Detection:<Enable >

    PREV PORT    NEXT PORT    CLRCNT    SAVE    EXIT    MAIN MENU    HELP
              Use <Tab> key to select the item, then press <Enter>
```

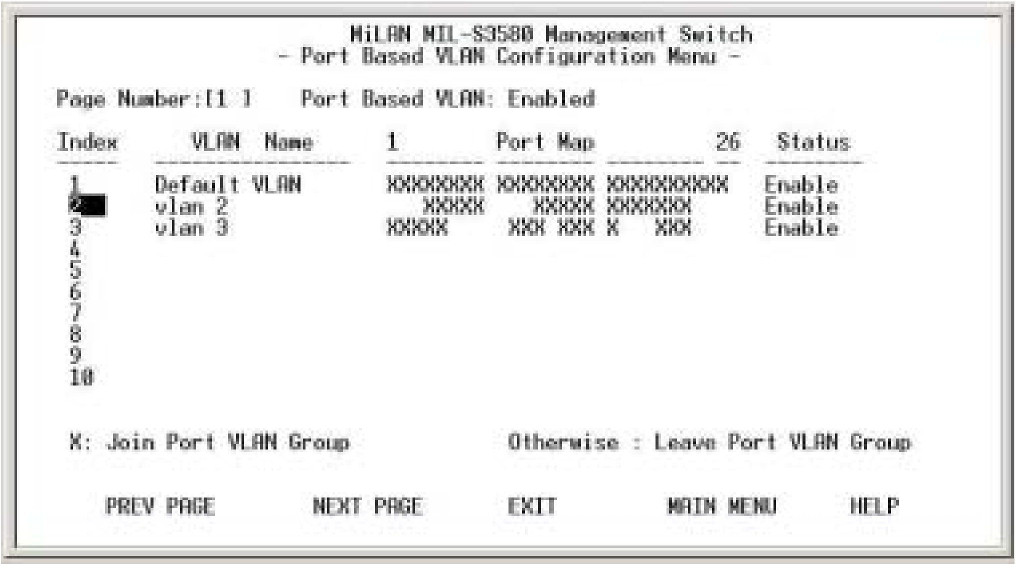
Figure 3-24. Spanning Tree Protocol Port Configuration Menu

In this menu, you can assign spanning priority and path cost to any port. A port with higher priority and lower path cost is less likely to be blocked if Spanning Tree Protocol is detecting network loop.

- **STP Port Priority** - Range is 0 to 255. This parameter is used by STP to determine the port(s) to use for forwarding. The port with the lowest number has the highest priority. The default is 128.
- **STP Port Path Cost** - The range is 1 to 65,535. This assigns an individual port cost that the switch uses to determine which ports are the forwarding ports. The default is 19.
- **STP Port Topology Change Detection** - When enabled, the switch will send a trap if the Trap Filter menu for the Bridge New Root Trap is also turned-on.

3.7. Port-Based VLAN Configuration

Assigning physical ports within workgroups is simple, and is a common method of defining a virtual workgroup – VLAN. It delivers the benefit of broadcast control and simplifies configuration for the network manager. One advantage of the Port-Based VLAN is its simplicity in configuration.

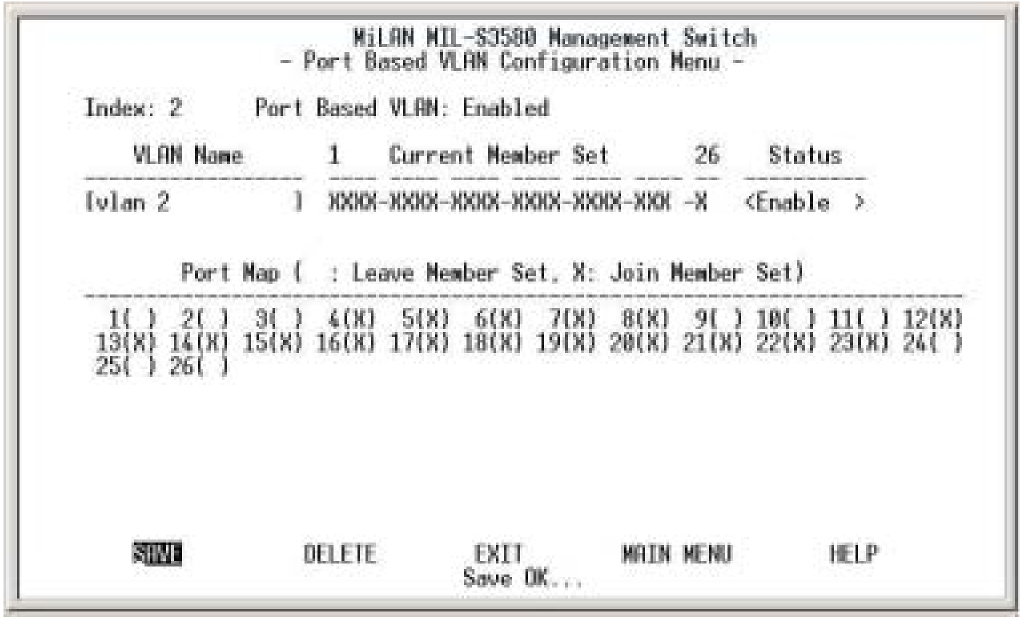


```
                        MiLAN MIL-S3580 Management Switch
                  - Port Based VLAN Configuration Menu -

Page Number:[1 ]    Port Based VLAN: Enabled

Index      VLAN  Name      1        Port Map           26   Status
-----   ----------------   -------- -------- -------- --   --------
 1      Default VLAN       XXXXXXXX XXXXXXXX XXXXXXXXXX   Enable
 2      vlan 2                XXXXX    XXXXX XXXXXXX      Enable
 3      vlan 3             XXXXX     XXX XXX X   XXX      Enable
 4
 5
 6
 7
 8
 9
 10

 X: Join Port VLAN Group              Otherwise : Leave Port VLAN Group

    PREV PAGE        NEXT PAGE        EXIT         MAIN MENU      HELP
```

Figure 3-25. Port Based VLAN Configuration Menu

Port Based VLAN needs to be set in the Switch Device Control Menu before any configuration in this menu takes effect. By default, the VLAN mode configuration for the switch is IEEE 802.1Q. Once set to Port Based VLANs, all ports are on the same VLAN by default. There can be up to 128 different port based VLANs configured. These VLANs can be overlapping which means that one port can belong to several different VLANs.

Select the VLAN entry to create, modify, or delete the VLAN group. Use <**Space Bar**> to check (**join**) port(s) to the VLAN group. When a port is joined to a VLAN, it appears on the menu screen as (**X**).   If the () is blank, the port does not belong to that VLAN.



```
                    MiLAN MIL-S3580 Management Switch
                 - Port Based VLAN Configuration Menu -

 Index: 2      Port Based VLAN: Enabled

     VLAN Name        1    Current Member Set       26    Status
 ------------------  ---- ---- ---- ---- ---- ---- --   ----------
 [vlan 2          ]  XXXX-XXXX-XXXX-XXXX-XXXX-XXX -X   <Enable  >

          Port Map (  : Leave Member Set, X: Join Member Set)
 ------------------------------------------------------------------------
   1( )  2( )  3( )  4(X)  5(X)  6(X)  7(X)  8(X)  9( ) 10( ) 11( ) 12(X)
  13(X) 14(X) 15(X) 16(X) 17(X) 18(X) 19(X) 20(X) 21(X) 22(X) 23(X) 24( )
  25( ) 26( )




      SAVE          DELETE        EXIT         MAIN MENU       HELP
                                Save OK...
```

Figure 3-25. Port Based VLAN Configuration Menu

3.8. 802.1Q VLAN Configuration

When configuring the IEEE802.1Q VLAN, there are slightly different options available when the port is configured on the console screen or the web browser. A port on a VLAN can be in one of three different states.

- **Normal** where the port is not mapped to a specific VLAN but can become a member through Dynamic VLAN registration. Dynamic VLANs are set when GVRP learns them. Unless GVRP is running, there is no registration of dynamic VLANs.
- **Fixed** registration maps a port to a specific or fixed VLAN. The network administrator can "fix" a VLAN to a specific port with this option. The port can also be set to another VLAN by dynamic VLAN registration.
- **Forbidden** ports cannot participate in the designated VLAN. They cannot be fixed members or members of dynamic VLANs. When set to forbidden, the port cannot communicate with any ports on this VLAN.

Once configured there are 3 possible states of the ports that show in the management menus.

S: shows a static registration of the port and GVRP is not running

D: the port has been registered to the specific VLAN by GVRP

C: the port has been registered to the specific VLAN by GVRP and it was also set to that VLAN by a network administrator

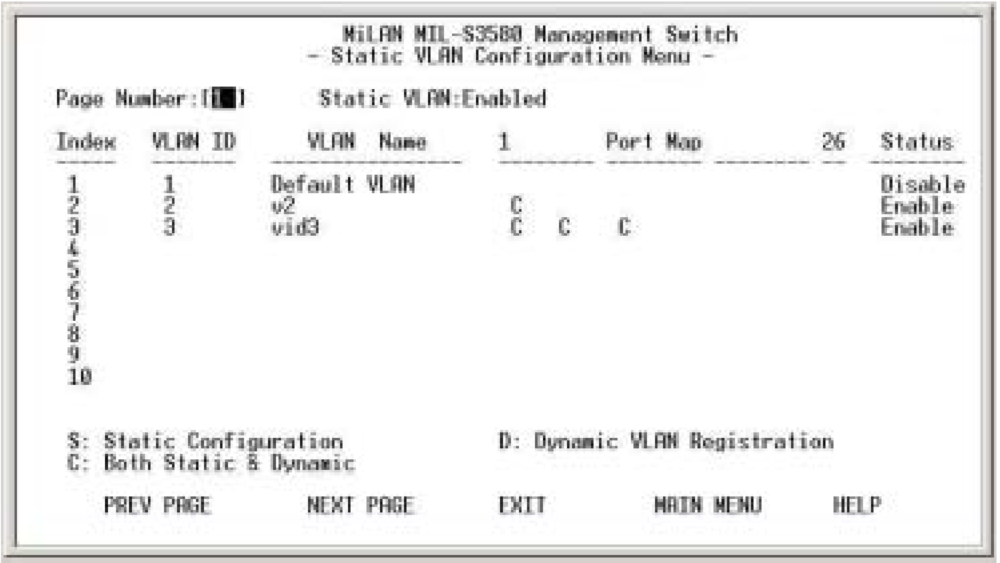
NOTE: A blank indicates that the port is not a member of the VLAN.

On the web browser the ports can be set as Normal, Fixed or Forbidden. The mapping of the 3 different configuration options on the console versus the web browser are shown below.

	Console configuration	**Web configuration**
Normal		Normal
Fixed	F	Fixed
Forbidden	B	Forbidden

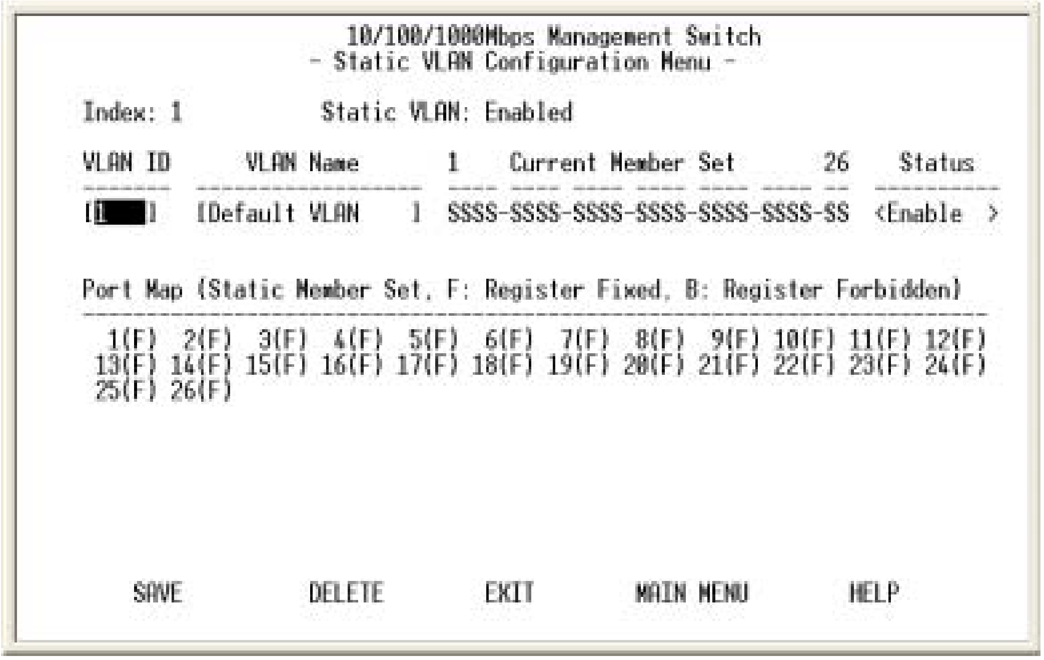
If 802.1Q VLAN mode was chosen, then the settings of the following submenus are significant and need to be configured carefully.

This screen shows the currently set VLAN sorted by index number. Select the entry to create, modify, or delete and proceed to the next screen.



```
                     MiLAN MIL-S3580 Management Switch
                   - Static VLAN Configuration Menu -

 Page Number:[1]      Static VLAN:Enabled

 Index   VLAN ID    VLAN  Name        1      Port Map          26   Status
 -----   -------  ----------------  -------  -------  -------  --  -------
  1       1       Default VLAN                                      Disable
  2       2       v2                 C                              Enable
  3       3       vid3               C   C    C                     Enable
  4
  5
  6
  7
  8
  9
  10

  S: Static Configuration            D: Dynamic VLAN Registration
  C: Both Static & Dynamic

     PREV PAGE      NEXT PAGE       EXIT       MAIN MENU      HELP
```

Figure 3-26. Static VLAN Configuration Menu



```
                 10/100/1000Mbps Management Switch
                - Static VLAN Configuration Menu -

Index: 1            Static VLAN: Enabled

VLAN ID      VLAN Name        1    Current Member Set      26    Status
-------  ------------------  ---- ---- ---- ---- ---- ---- --  ----------
[1    ]  [Default VLAN    ]  SSSS-SSSS-SSSS-SSSS-SSSS-SSSS-SS  <Enable  >

Port Map (Static Member Set, F: Register Fixed, B: Register Forbidden)
-----------------------------------------------------------------------
  1(F)  2(F)  3(F)  4(F)  5(F)  6(F)  7(F)  8(F)  9(F) 10(F) 11(F) 12(F)
 13(F) 14(F) 15(F) 16(F) 17(F) 18(F) 19(F) 20(F) 21(F) 22(F) 23(F) 24(F)
 25(F) 26(F)
```

Figure 3-27. Static VLAN Port Configuration Menu

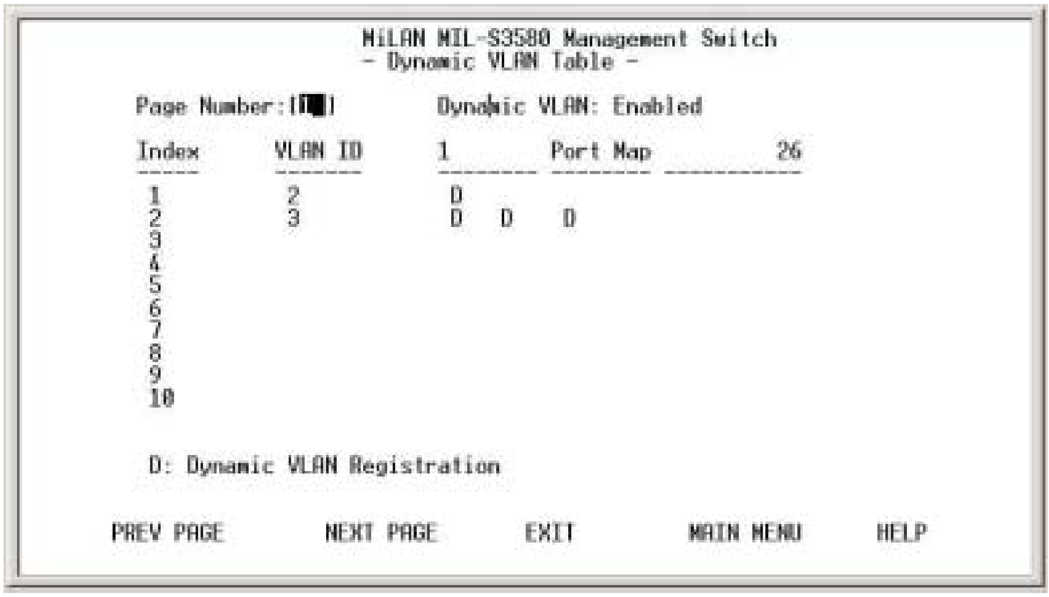
( ) – Port is **not set as static (fixed) member** of the VLAN but it can become a member through Dynamic VLAN Registration. Dynamic VLANs occur when GVRP sets them. Unless GVRP is running, no registration of dynamic VLANs can take place.

(F) – Port is set as **static (fixed) member** of the VLAN and can be registered as a dynamic VLAN member as well.

(B) – Port(s) is being **forbidden** to participate in the designated VLAN. It cannot be a static member or a dynamic member of the VLAN. When set, this port cannot communicate with other ports.

The configuration in Figure 3-27 sets all ports to the default VLAN. They may be members of a dynamic VLAN as well and to see which dynamic VLANs they belong to, you must view the Dynamic LAN menu.

3.8.1. Dynamic VLAN Table

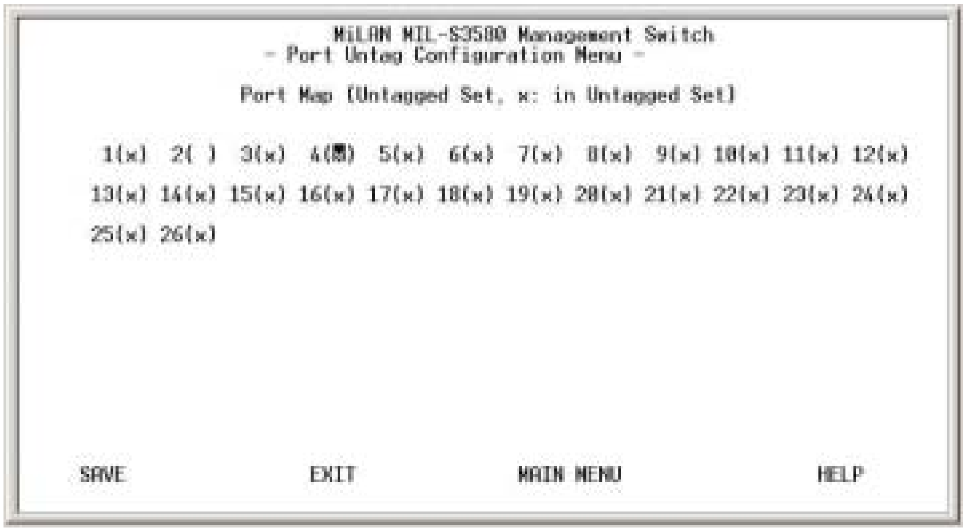


```
                    MiLAN MIL-S3580 Management Switch
                        - Dynamic VLAN Table -

     Page Number:[1]          Dynamic VLAN: Enabled

     Index      VLAN ID       1        Port Map          26
     -----      -------       -------- -------- -----------
      1          2             D
      2          3             D   D    D
      3
      4
      5
      6
      7
      8
      9
      10

      D: Dynamic VLAN Registration

   PREV PAGE        NEXT PAGE       EXIT         MAIN MENU      HELP
```

Figure 3-28. Dynamic VLAN Table

This screen displays the VLAN mapping for port(s) that join VLAN(s) through Dynamic VLAN Registration. GVRP enables the switch to dynamically create 802.1Q compliant VLANs on links with other devices running GVRP. This enables the switch to automatically create VLAN links between other GVRP aware devices. GVRP reduces the chances for errors in VLAN configuration by automatically providing VLAN ID consistently across the network.

3.8.2. VLAN Tagged Configuration

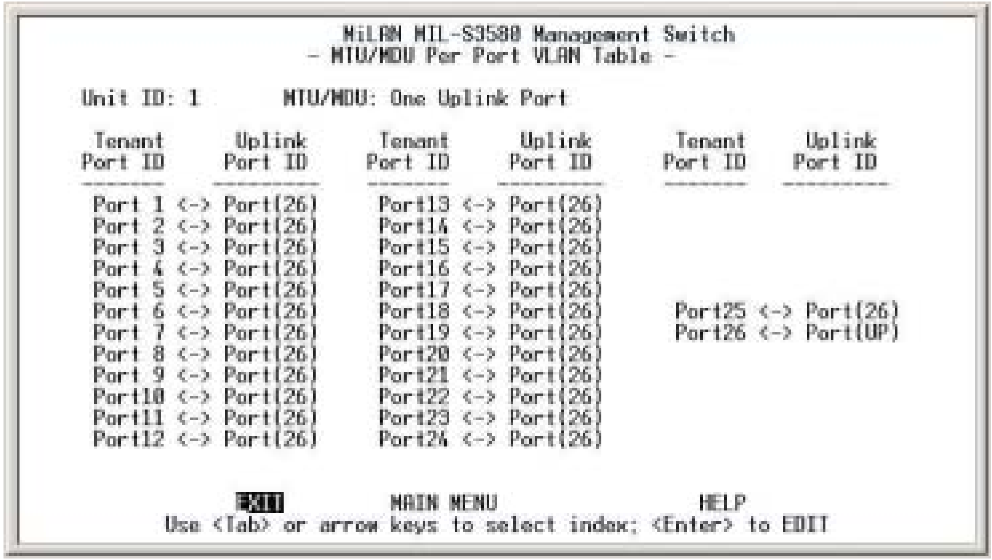


```
                      MiLAN MIL-S3580 Management Switch
                  - Port Untag Configuration Menu -

                 Port Map [Untagged Set, x: in Untagged Set]

  1(x)  2( )  3(x)  4(█)  5(x)  6(x)  7(x)  8(x)  9(x) 10(x) 11(x) 12(x)
 13(x) 14(x) 15(x) 16(x) 17(x) 18(x) 19(x) 20(x) 21(x) 22(x) 23(x) 24(x)
 25(x) 26(x)





 SAVE              EXIT              MAIN MENU                HELP
```

Figure 3-29. Port Untag Configuration Menu

All ports are set by default as untagged. To change port(s) to be **tagged**, use the <**Space Bar**> to uncheck - **(   ) the port(s)**. In the above configuration, port 2 will send out tagged packets. If VLANs need to communicate with other VLANs on the network, VLAN tagging needs to be set for those ports. Also, in order for GVRP to work, VLAN tagging of those ports needs to be set.

3.8.3. MTU/MDU Per-Port VLAN Table



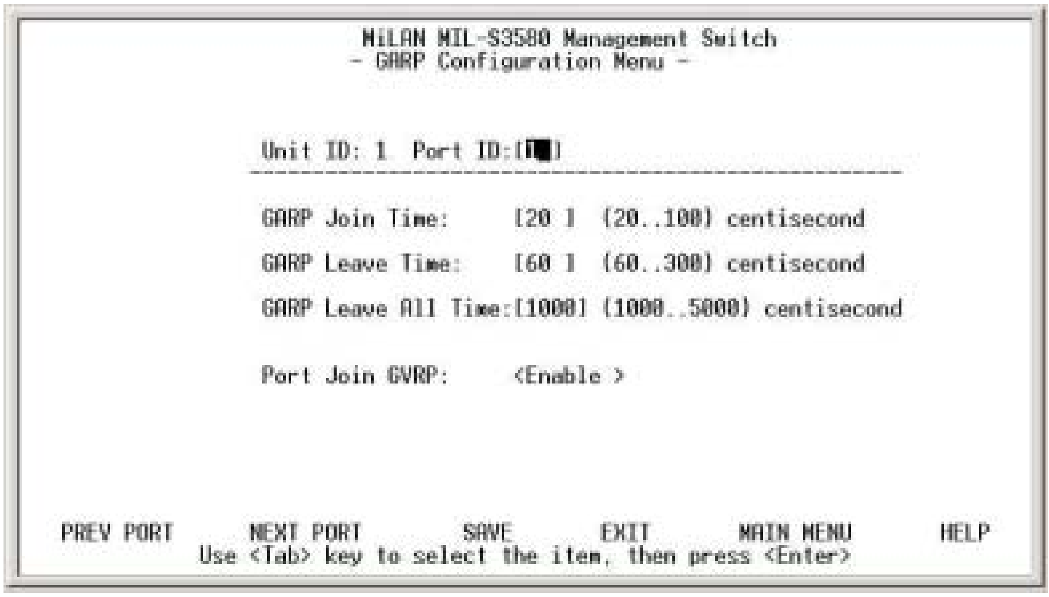
```
                      MiLAN MIL-S3580 Management Switch
                      - MTU/MDU Per Port VLAN Table -

    Unit ID: 1      MTU/MDU: One Uplink Port

     Tenant      Uplink       Tenant      Uplink        Tenant     Uplink
    Port ID      Port ID     Port ID      Port ID      Port ID     Port ID
    --------    ----------   --------    ----------    --------   ----------
     Port 1 <-> Port(26)      Port13 <-> Port(26)
     Port 2 <-> Port(26)      Port14 <-> Port(26)
     Port 3 <-> Port(26)      Port15 <-> Port(26)
     Port 4 <-> Port(26)      Port16 <-> Port(26)
     Port 5 <-> Port(26)      Port17 <-> Port(26)
     Port 6 <-> Port(26)      Port18 <-> Port(26)       Port25 <-> Port(26)
     Port 7 <-> Port(26)      Port19 <-> Port(26)       Port26 <-> Port(UP)
     Port 8 <-> Port(26)      Port20 <-> Port(26)
     Port 9 <-> Port(26)      Port21 <-> Port(26)
     Port10 <-> Port(26)      Port22 <-> Port(26)
     Port11 <-> Port(26)      Port23 <-> Port(26)
     Port12 <-> Port(26)      Port24 <-> Port(26)

                  EXIT           MAIN MENU                  HELP
           Use <Tab> or arrow keys to select index; <Enter> to EDIT
```

Figure 3-30. MTU/MDU Per-Port VLAN Table

This screen allows you to only view the settings made in Switch Device Configuration menu. It shows that the switch is set to MTU/MDU VLAN mode with one uplink. If 2 uplinks are configured, ports 1 through 12 map to port 25 and ports 13 through 24 map to port 26.

NOTE: When set to MTU/MDU Port VLAN, management over the network (non-console) can only be done through one of the uplink port. This allows for a very secure network.

3.9. GARP Configuration



```
                    MiLAN MIL-S3580 Management Switch
                    - GARP Configuration Menu -

                 Unit ID: 1  Port ID:[1]
                 ----------------------------------------------------

                 GARP Join Time:      [20 ]  [20..100] centisecond

                 GARP Leave Time:     [60 ]  [60..300] centisecond

                 GARP Leave All Time:[1000] [1000..5000] centisecond

                 Port Join GVRP:      <Enable >



  PREV PORT      NEXT PORT       SAVE       EXIT       MAIN MENU       HELP
              Use <Tab> key to select the item, then press <Enter>
```

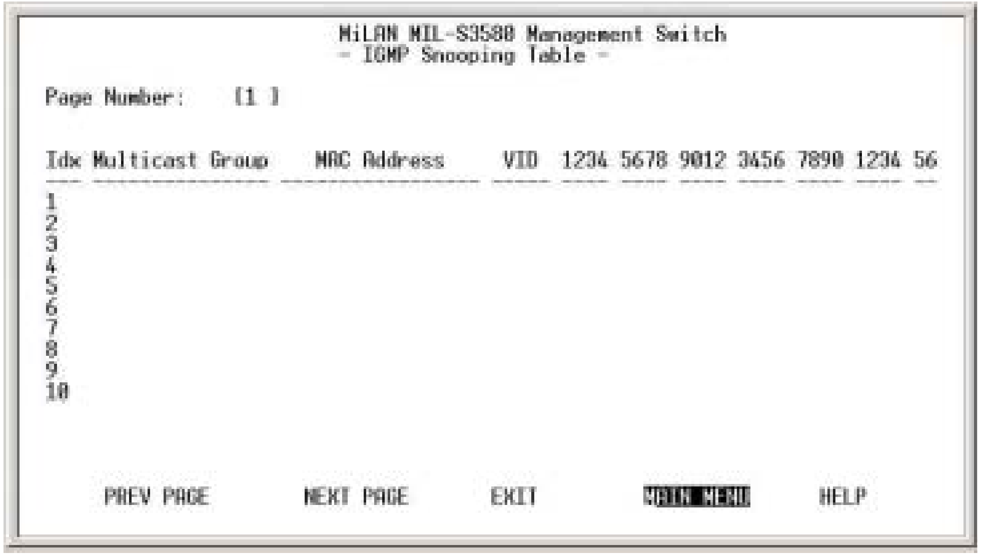
Figure 3-31. GARP Configuration Menu

GARP (Generic Attribute Registration Protocol) defines the architecture, rules of operation, state machines and variables for the registration and de-registration of attribute values. It allows dynamic filter entries for VLAN membership to be distributed among the Forwarding Databases of VLAN-aware switches. By joining GVRP (GARP VLAN Registration Protocol), it helps maintaining VLAN information. The rule of the aging scheme is:

GARP Leave All Time > GARP Leave Time > GARP Join Time

NOTE: Before GVRP can be enabled, STP must also be enabled, saved, and the switch must go through a Cold Start in order for configuration to take effect.

3.10. IGMP Snooping Table

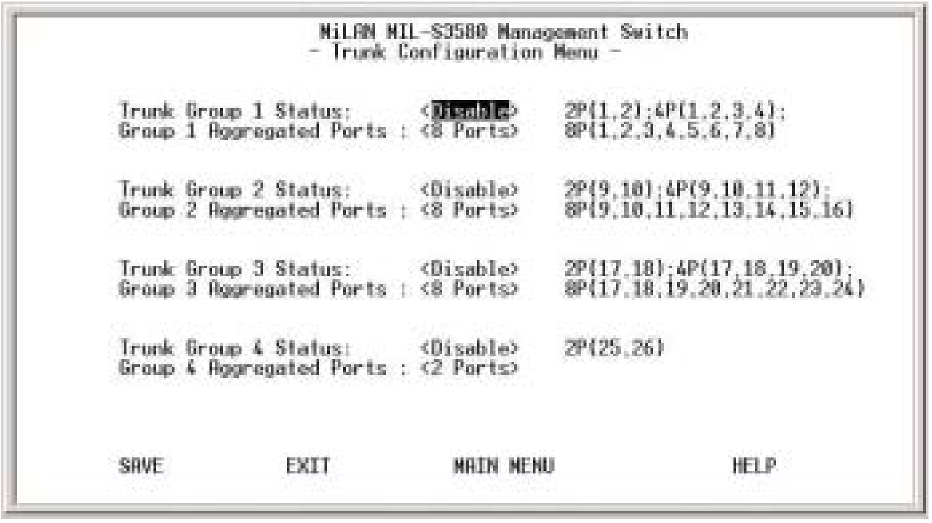


```
                         MiLAN MIL-S3580 Management Switch
                            - IGMP Snooping Table -

Page Number:    [1 ]

Idx Multicast Group    MAC Address      VID  1234 5678 9012 3456 7890 1234 56
--- --------------- ----------------- ----- ---- ---- ---- ---- ---- ---- --
1
2
3
4
5
6
7
8
9
10
```

Figure 3-32. IGMP Snooping Table

This table shows the multicast groups found by IGMP Snooping. By supporting IGMP (Internet Group Management Protocol) Snooping, the switch can forward multicast traffic intelligently. Packets are forwarded to the ports that belong to the multicast group instead of being broadcasted to all ports and possibly disrupting network performance. This lookup table reflects up to 32 multicast group(s) configuration of your system and provides an overview of the port(s) map to each multicast group.

3.11. Trunk Group Configuration



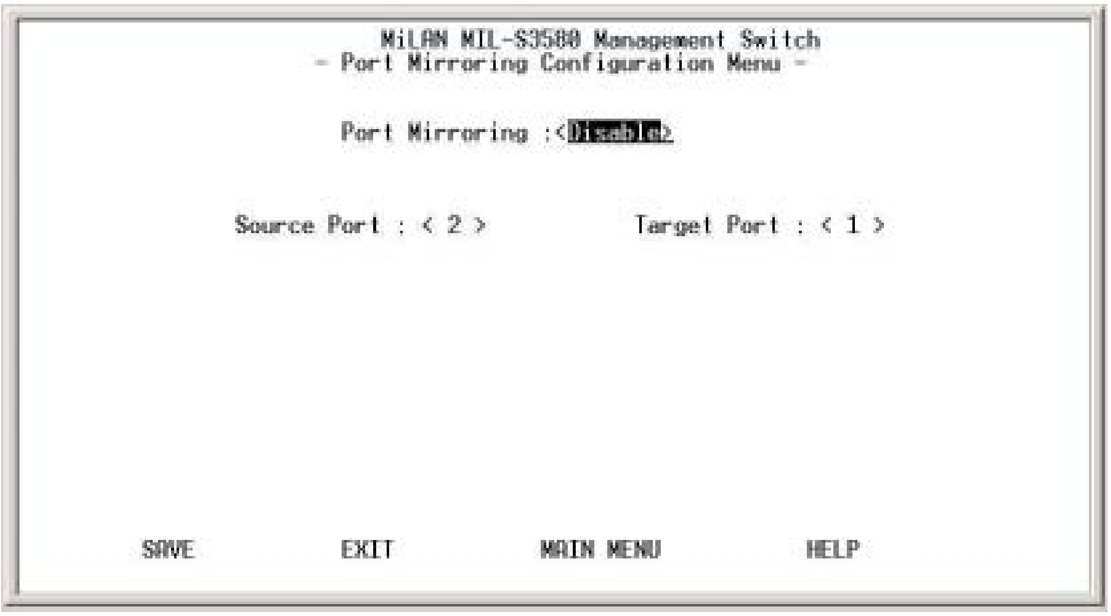
```
                    MiLAN MIL-S3580 Management Switch
                       - Trunk Configuration Menu -

Trunk Group 1 Status:        <Disable>    2P{1,2};4P{1,2,3,4};
Group 1 Aggregated Ports : <8 Ports>    8P{1,2,3,4,5,6,7,8}

Trunk Group 2 Status:        <Disable>    2P{9,10};4P{9,10,11,12};
Group 2 Aggregated Ports : <8 Ports>    8P{9,10,11,12,13,14,15,16}

Trunk Group 3 Status:        <Disable>    2P{17,18};4P{17,18,19,20};
Group 3 Aggregated Ports : <8 Ports>    8P{17,18,19,20,21,22,23,24}

Trunk Group 4 Status:        <Disable>    2P{25,26}
Group 4 Aggregated Ports : <2 Ports>
```

Figure 3-33. Trunk Configuration Menu

Multiple links between switches can be grouped (trunk) to work as one virtual, aggregate link. You can create 4 trunks at a time; each trunk can hold up to 8 ports. Only ports of the same speed can belong to a single trunk. Link aggregation is supported and trunking can be configured to another switch supporting the standards.

- **Trunk Group 1:**
  - 2 Ports: 1, 2
  - 4 Ports: 1, 2, 3, 4
  - 8 Ports: 1, 2, 3, 4, 5, 6, 7, 8
- **Trunk Group 2:**
  - 2 Ports: 9, 10
  - 4 Ports: 9, 10, 11, 12
  - 8 Ports: 9, 10, 11, 12, 13, 14, 15, 16
- **Trunk Group 3:**
  - 2 Ports: 17, 18
  - 4 Ports: 17, 18, 19, 20
  - 6 Ports: 17, 18, 19, 20, 21, 22, 23, 24
- **Trunk Group 4:**
  - 2 Ports: 25, 26

3.12. Port Mirroring Configuration

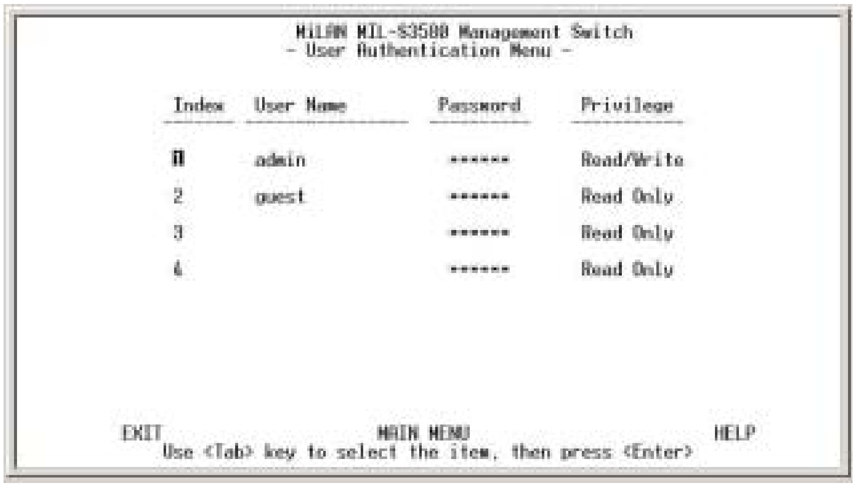


```
                    MiLAN MIL-S3580 Management Switch
                  - Port Mirroring Configuration Menu -

                    Port Mirroring :<Disable>

        Source Port : < 2 >            Target Port : < 1 >




     SAVE           EXIT            MAIN MENU            HELP
```

Figure 3-34. Port Mirroring Configuration Menu

By enabling port mirroring, traffic to and from the source port will be forwarded to the target port. You can select any of the 26 ports as either the Source port or the Target port by using <Space Bar> to select the desired port number.

4. User Authentication

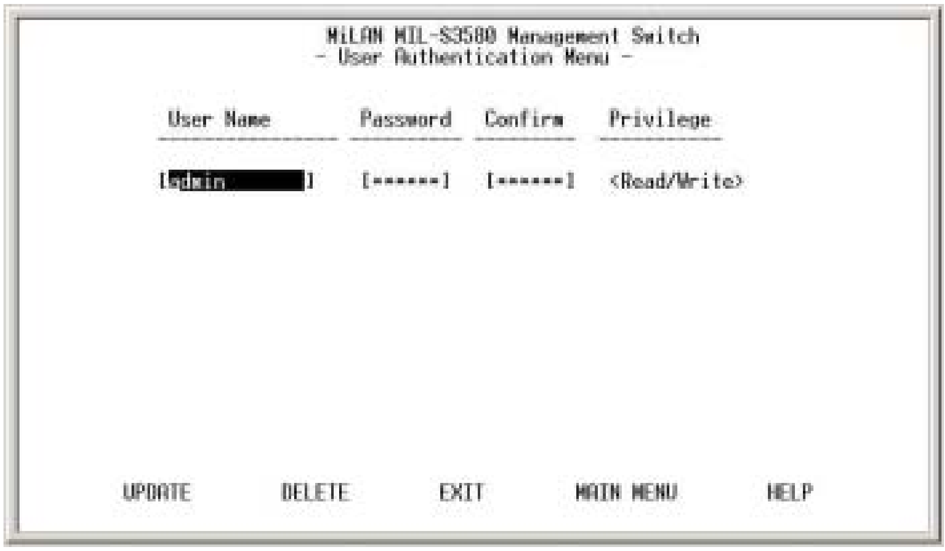


```
                     MiLAN MIL-S3500 Management Switch
                      - User Authentication Menu -

          Index   User Name           Password      Privilege
          -----   -----------------   ----------    -----------

          1       admin                ******       Read/Write
          2       guest                ******       Read Only
          3                            ******       Read Only
          4                            ******       Read Only




    EXIT                      MAIN MENU                         HELP
      Use <Tab> key to select the item, then press <Enter>
```

Figure 3-35. User Authentication Menu

You can change the password setting in the User Authentication Menu. You can also create alternate users and assign either read or read/write privileges to each user configured. By default, the switch has two user names configured: **guest**, with no password, which only has read privileges, and **admin,** which has read/write privileges and no password. For security reasons, it is suggested that a password is configured before the switch is installed on the network.

NOTE: The maximum number of characters allowed for user name and password is 6.



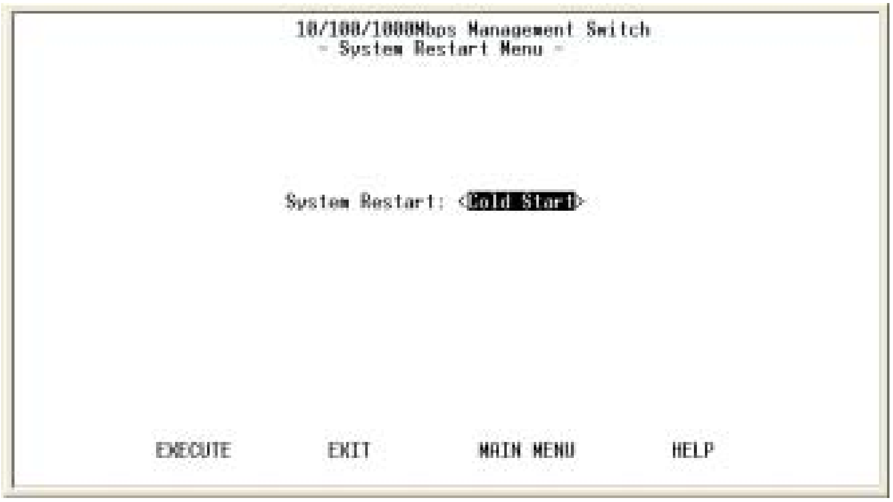
```
              MiLAN MIL-S3580 Management Switch
               - User Authentication Menu -

  User Name          Password   Confirm   Privilege
  ----------------   --------   -------   ---------

  [admin          ]  [******]   [******]  <Read/Write>
```

Figure 3-36. User Authentication Detailed Menu

After selecting an entry to add or modify, type in user name and password, toggle the user privilege with <**Space Bar**> and then update the changes.

5. System Utility

5.1 System Restart

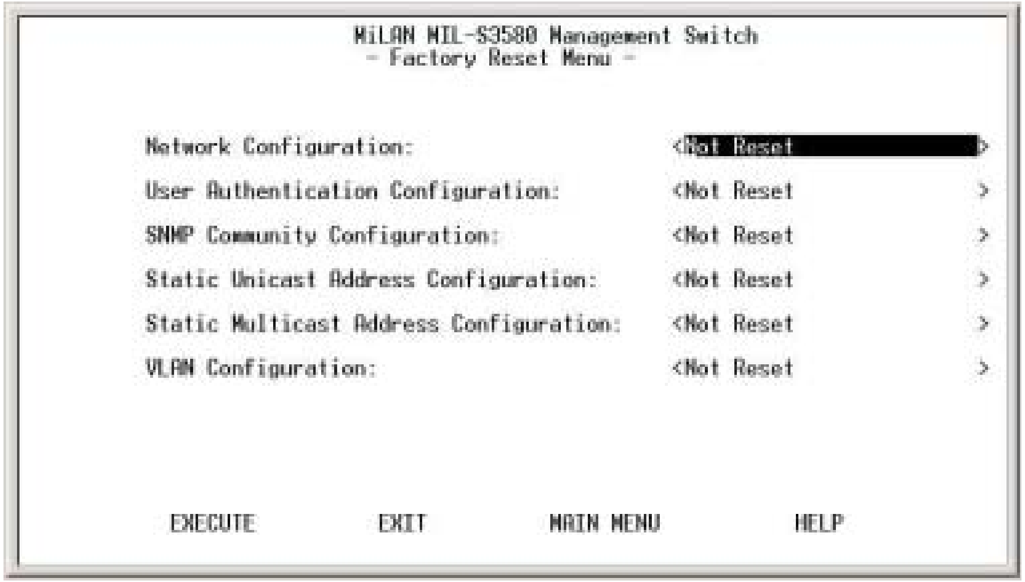


```
            10/100/1000Mbps Management Switch
               - System Restart Menu -

            System Restart: <Cold Start>
```

Figure 3-37. System Restart Menu

You need to perform either a Cold Start or Warm Start to have the changes saved in the switch's memory. These changes stay in effect until another configuration change is made. A warm start will save all configuration changes, but the switch does not go through a POST (Power On Self Test). A cold start will save all the configuration changes and completely restart the switch's hardware including the power, just as if you had powered the switch off and on. A warm boot is a software restart; no hardware is affected. Both types of restarts, save the configuration changes to the switch.

5.2 Factory Reset

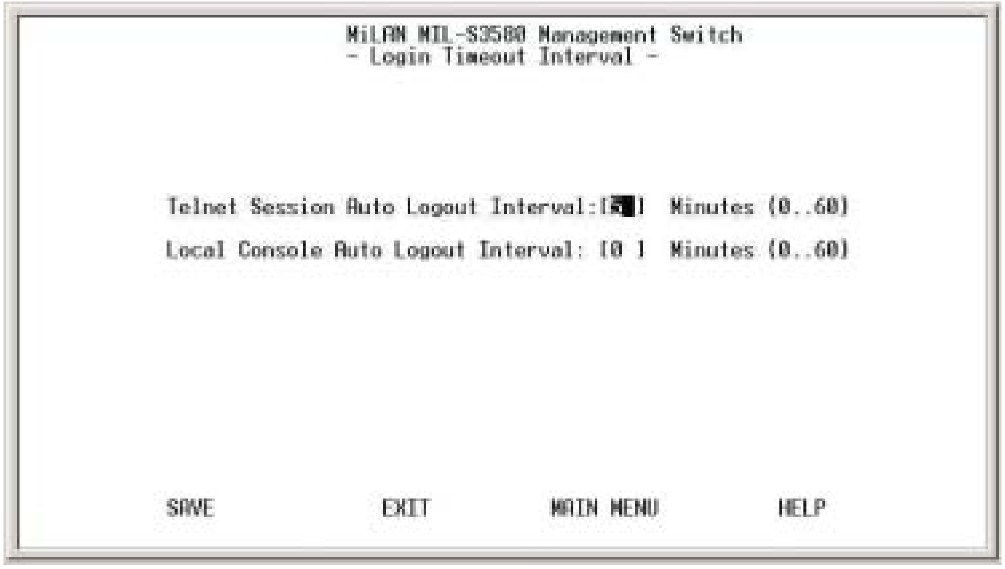


```
                    MiLAN MIL-S3580 Management Switch
                         - Factory Reset Menu -

      Network Configuration:                          <Not Reset        >
      User Authentication Configuration:              <Not Reset        >
      SNMP Community Configuration:                   <Not Reset        >
      Static Unicast Address Configuration:           <Not Reset        >
      Static Multicast Address Configuration:         <Not Reset        >
      VLAN Configuration:                             <Not Reset        >



        EXECUTE          EXIT          MAIN MENU          HELP
```

Figure 3-38. Factory Reset Menu

This menu lets you to reset a certain portion of the current configuration back to factory default or all configuration to factory default. If VLAN configuration is reset, all parameters of the all VLAN configuration is reset and only the one default VLAN is in effect as it was set from the factory.   No other switch configuration is changed. In order to do a complete system reset, every one of the 6 items in the menu need to be reset.

5.3 Login Timeout Interval

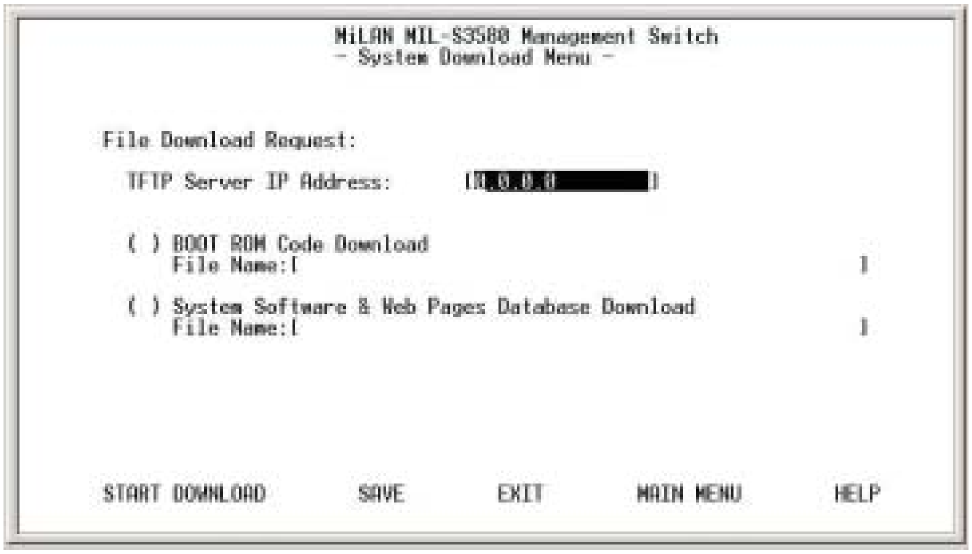


```
                    MiLAN MIL-S3580 Management Switch
                    - Login Timeout Interval -



  Telnet Session Auto Logout Interval:[5 ]  Minutes (0..60)

  Local Console Auto Logout Interval: [0 ]  Minutes (0..60)




  SAVE              EXIT           MAIN MENU         HELP
```

Figure 3-39. Login Timeout Interval

You can set up the time you need for the automatic log-out to take effect. The default is that the local console connection and Telnet session will stay connected and not time-out.

5.4 System Download



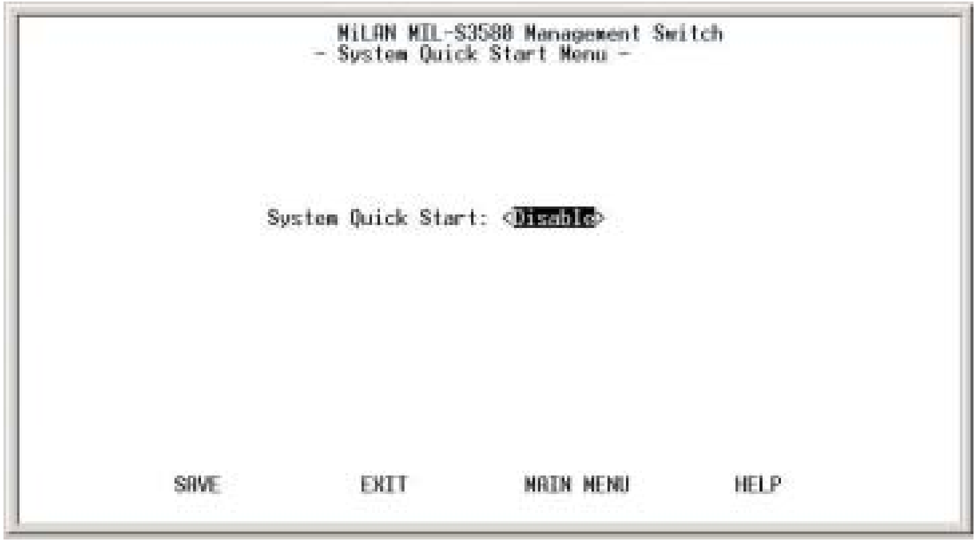
```
                    MiLAN MIL-S3580 Management Switch
                    - System Download Menu -

  File Download Request:
    TFTP Server IP Address:       [0.0.0.0          ]

    ( ) BOOT ROM Code Download
        File Name:[                                        ]

    ( ) System Software & Web Pages Database Download
        File Name:[                                        ]



  START DOWNLOAD       SAVE       EXIT       MAIN MENU       HELP
```

Figure 3-40. System Download Menu

TFTP downloads the code for the switch to perform a software upgrade. The switch supports two different upgrade modules: BOOT ROM and System Software. These two upgrades can be done concurrently or one after the other.

After flash upgrading the switch's system software, in Windows Internet Explorer, go to Tools, Internet Options, click on Delete Files button in General tab to clear all temporary internet files, and click OK. Then refresh window to view the new updated version of the MIL-S3580.

5.5   Quick Start

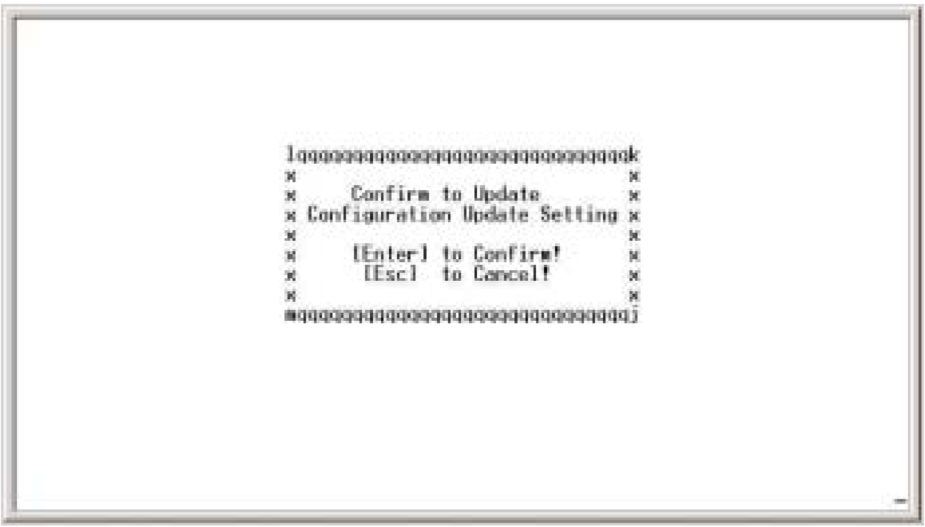


```
                    MiLAN MIL-S3580 Management Switch
                     - System Quick Start Menu -


              System Quick Start: <Disable>


     SAVE            EXIT            MAIN MENU          HELP
```

Figure 3-41. System Quick Start Menu

When enabled, the switch will not go through a POST when Cold Start or Warm Start is selected in the System Restart Menu.

5.6 Configuration Update Setting



```
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqk
x                              x
x      Confirm to Update       x
x Configuration Update Setting x
x                              x
x     [Enter] to Confirm!      x
x      [Esc]  to Cancel!       x
x                              x
mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqj
```

Figure 3-42. Configuration Update Setting

When selected, switch updates all settings and restarts.

4. Web-Based Management

This section introduces the configuration and functions of the Web-Based management.

About Web-based Management

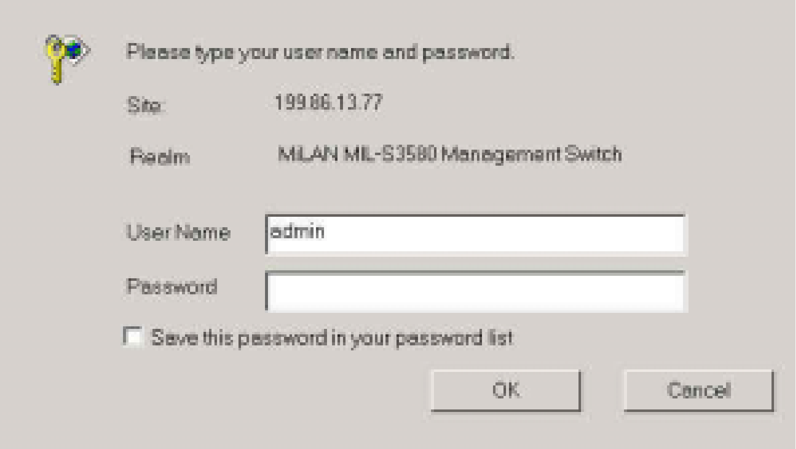
An embedded HTML web server resides in flash memory inside the switch. It allows users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer or Netscape.

The Web-Based Management is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

NOTE: By default, Internet Explorer 5.0 or later version does not allow Java Applets to open sockets. The user has to explicitly modify the browser setting to enable Java Applets to use network ports.

System Login

1. Start Internet Explorer or Netscape.
2. Type http:// and the IP address of the switch (for example, http://199.86.13.77).



Please type your user name and password.

Site: 199.86.13.77

Realm: MILAN MIL-S3580 Management Switch

User Name: admin

Password:

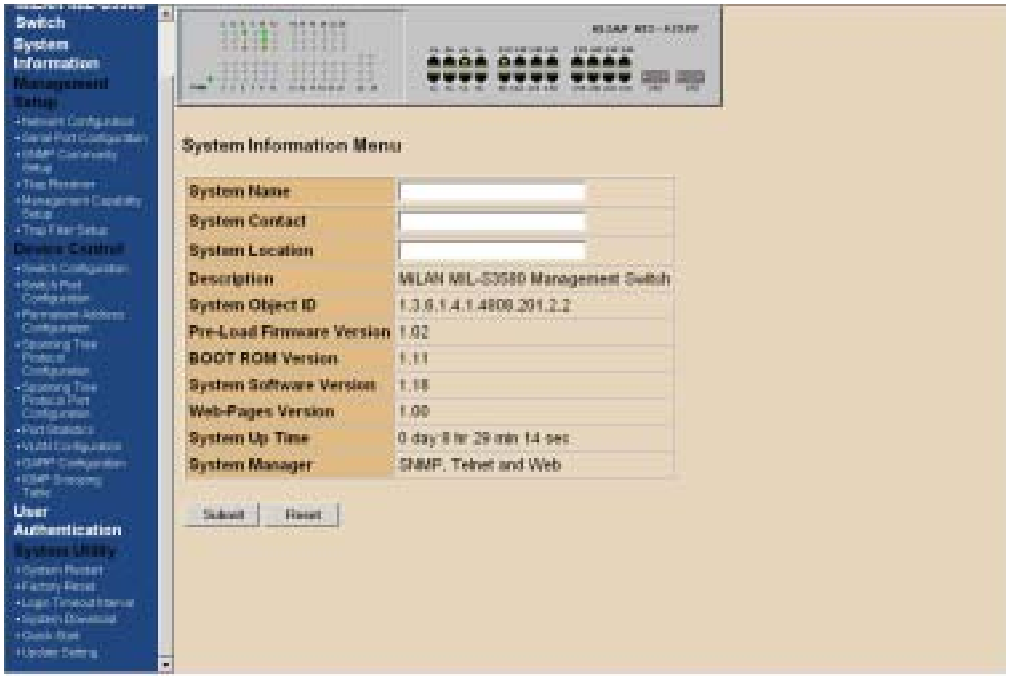
□ Save this password in your password list

Figure 4-1. Password Window

3. The Password screen appears.

4. Type user name and password. The default is **“admin”** and **no password**.
5. Press “Enter” or click ”OK”, then the Home Screen of the Web-based management appears.

System Information



System Information Menu

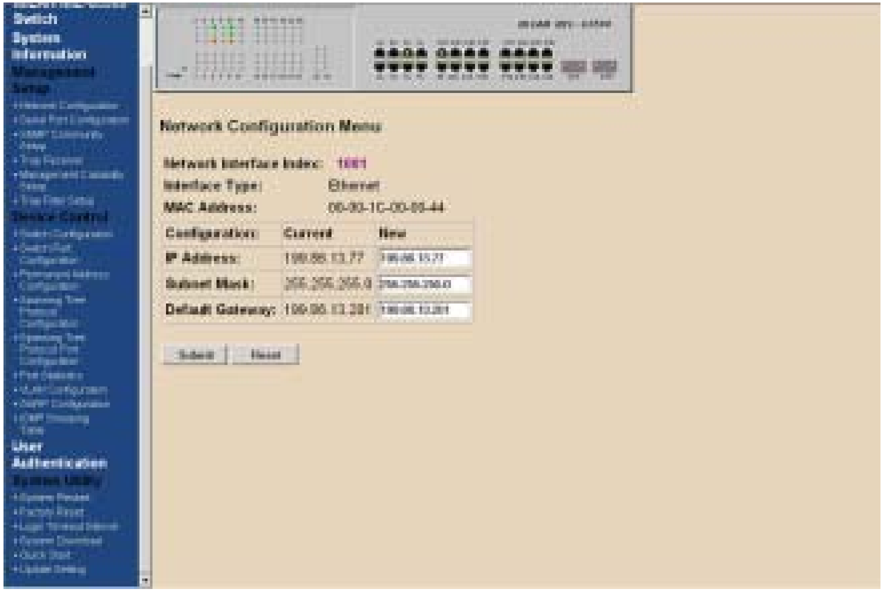
System Name	
System Contact	
System Location	
Description	MILAN MIL-S3580 Management Switch
System Object ID	1.3.6.1.4.1.4808.201.2.2
Pre-Load Firmware Version	1.02
BOOT ROM Version	1.11
System Software Version	1.18
Web-Pages Version	1.00
System Up Time	0 day 8 hr 29 min 14 sec
System Manager	SNMP, Telnet and Web

Figure 4-2 System Information Menu

You can manage the switch using third party’s SNMP (Simple Network Management Protocol) agent. Access rights to the SNMP agent are controlled by community strings. To set System Name, System Location and System Contact, you can type the desired text string in the corresponding edit box.

Management Setup

Network Configuration



Network Configuration Menu

Network Interface Index: 1001

Interface Type: Ethernet

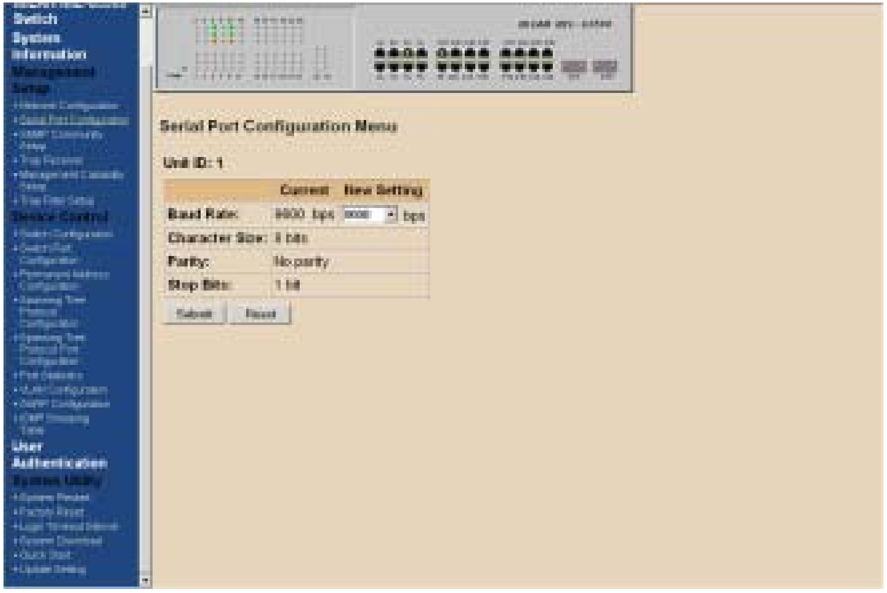
MAC Address: 00-00-1C-00-00-44

Configuration:	Current	New
IP Address:	199.88.13.77	199.88.13.77
Subnet Mask:	255.255.255.0	255.255.255.0
Default Gateway:	199.88.13.201	199.88.13.201

Figure 4-3. Network Configuration Menu

The IP address, subnet mask and default gateway of the managed node can be changed or modified on this menu. Enter a new IP address, subnet mask and default gateway in the corresponding edit box. The **default IP address, subnet mask** and **gateway** are all **0.0.0.0**. The IP address and the subnet mask must be set by the local management port before the switch can be managed from the Web browser.

Serial Port Configuration



Serial Port Configuration Menu

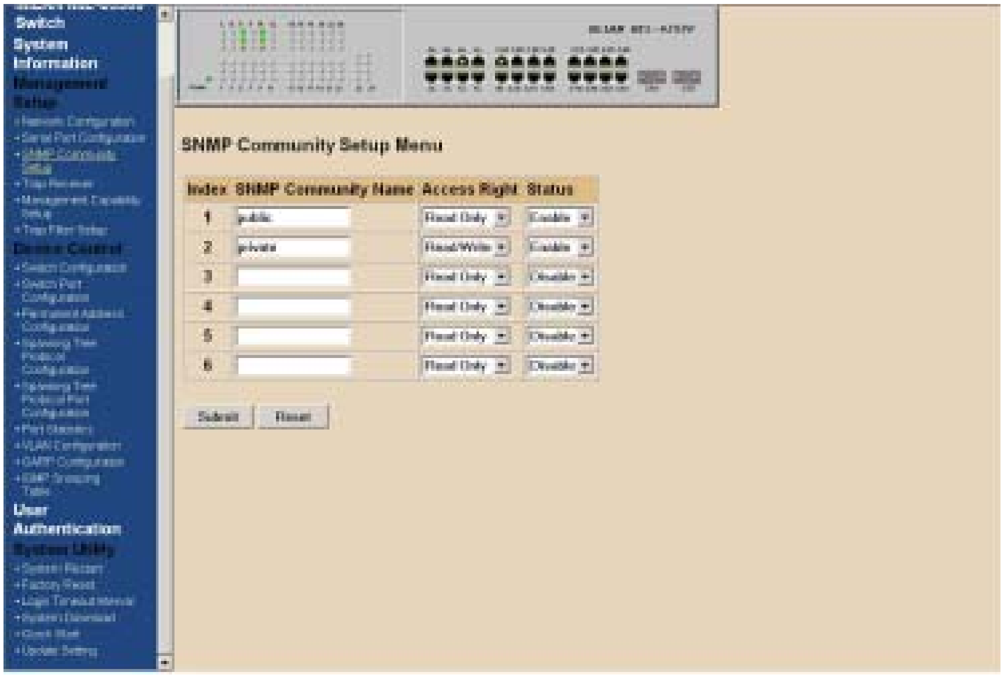
Unit ID: 1

	Current	New Setting
Baud Rate:	9600 bps	9600 bps
Character Size:	8 bits	
Parity:	No parity	
Stop Bits:	1 bit	

Figure 4-4. Serial Port Configuration Menu

You can change the serial port baud rate setting through this screen to suit your environment, however, using the default setting is recommended.

SNMP Community Setup



SNMP Community Setup Menu

Index	SNMP Community Name	Access Right	Status
1	public	Read Only	Enable
2	private	Read/Write	Enable
3		Read Only	Disable
4		Read Only	Disable
5		Read Only	Disable
6		Read Only	Disable

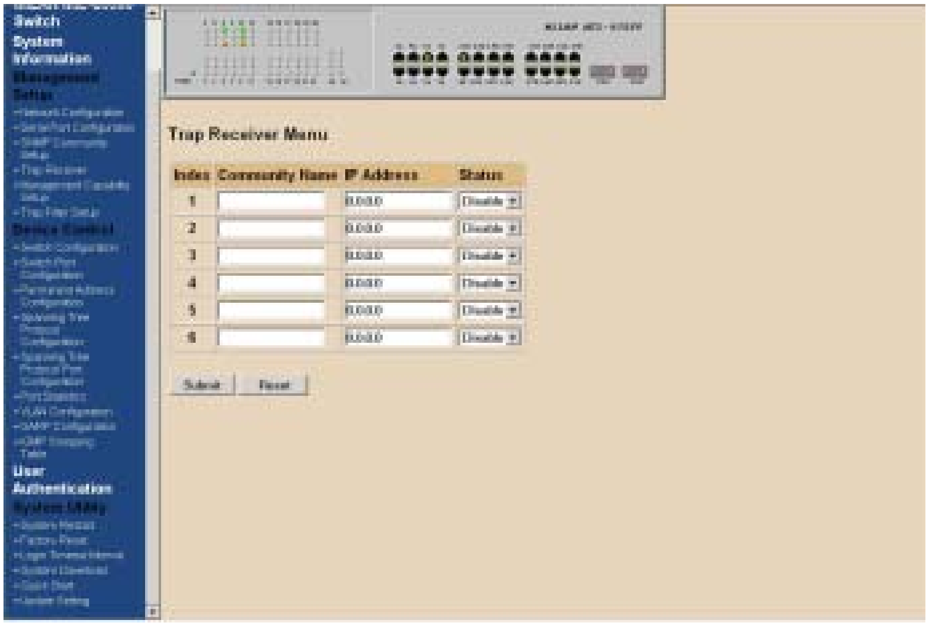
Figure 4-5. SNMP Community Setup Menu

Public Community (Read-only access right) means that member of community can view the information but cannot make changes to the configuration.

Private Community (Read/Write access right) allow the member of the community to view and make change to the configuration.

To set the "Public" and "Private" community name, you can type the desired text string in the corresponding edit box.

Trap Receiver



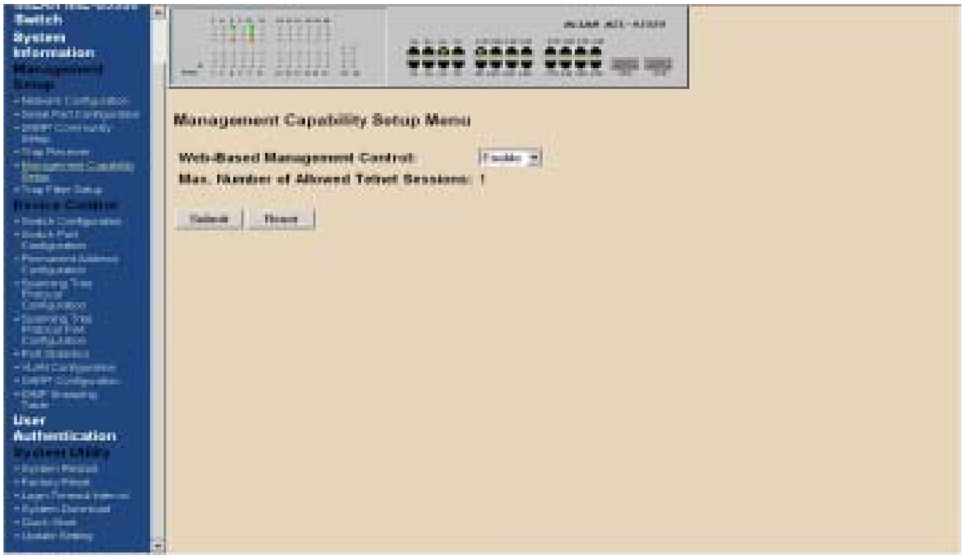
Trap Receiver Menu

Index	Community Name	IP Address	Status
1		0.0.0.0	Disable
2		0.0.0.0	Disable
3		0.0.0.0	Disable
4		0.0.0.0	Disable
5		0.0.0.0	Disable
6		0.0.0.0	Disable

Figure 4-6. Trap Receiver Menu

A trap receiver is a management station designated by the switch to receive SNMP traps sent from the switch. Use Trap Receiver screen to designate certain community to receive trap(s) generated by the system. In the default configuration, no trap receivers are configured and the authentication trap is disabled. The trap's Host IP address is the IP address required.

Management Capability Setup



Management Capability Setup Menu

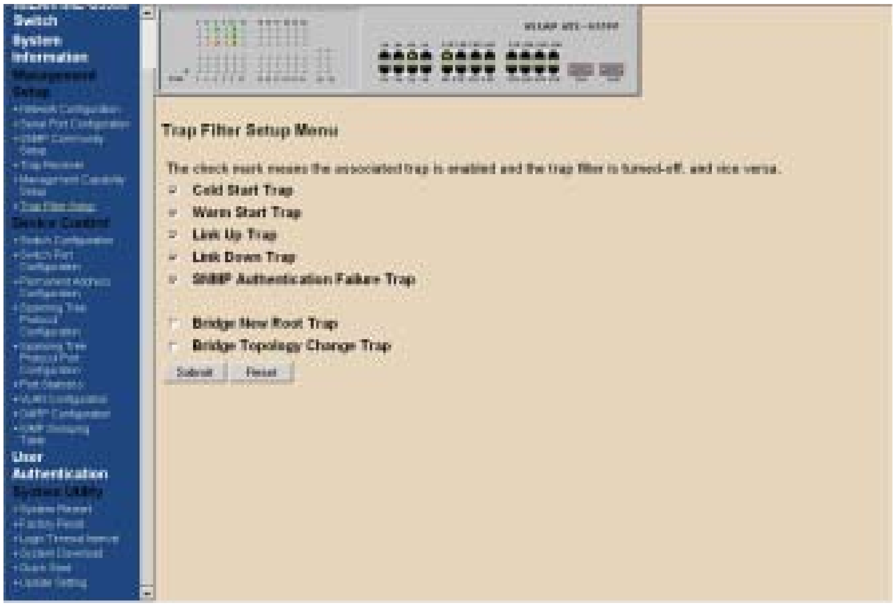
Web-Based Management Control: Enable

Max. Number of Allowed Telnet Sessions: 1

Figure 4-7. Management Capability Setup Menu

This is where you can enable/disable Web-Based management capability which in turn allow or disallow the access to management function through the use of a Web browser. If Web Based management is disabled, the only way to manage the switch is connecting locally through the console port or via the network by Telnet.

Trap Filter Setup



Trap Filter Setup Menu

The check mark means the associated trap is enabled and the trap filter is turned-off, and vice versa.

☑ Cold Start Trap
☑ Warm Start Trap
☑ Link Up Trap
☑ Link Down Trap
☑ SNMP Authentication Failure Trap

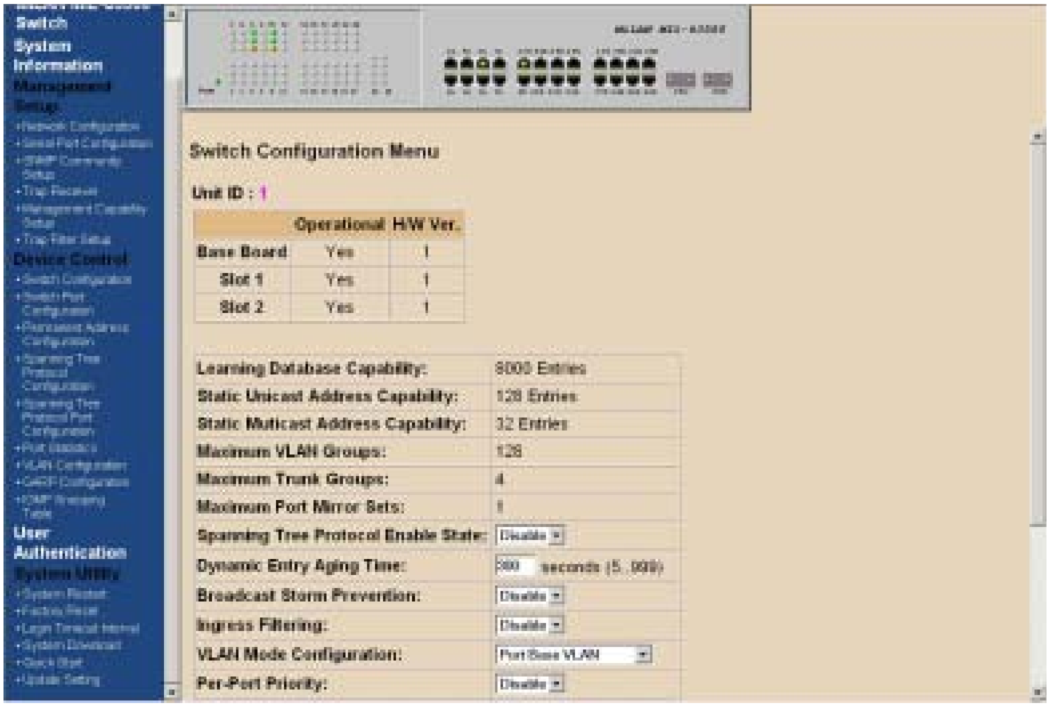
□ Bridge New Root Trap
□ Bridge Topology Change Trap

Figure 4-8. Trap Filter Setup Menu

The system can generate a set of SNMP traps upon the occurrence of those events. By checking a filter event, you are turning off the filter and enabling the trap associated with that event.

Device Control

Switch Configuration



Switch Configuration Menu

Unit ID : 1

	Operational	H/W Ver.
Base Board	Yes	1
Slot 1	Yes	1
Slot 2	Yes	1

Learning Database Capability:	8000 Entries
Static Unicast Address Capability:	128 Entries
Static Muticast Address Capability:	32 Entries
Maximum VLAN Groups:	128
Maximum Trunk Groups:	4
Maximum Port Mirror Sets:	1
Spanning Tree Protocol Enable State:	Disable
Dynamic Entry Aging Time:	300 seconds (5..999)
Broadcast Storm Prevention:	Disable
Ingress Filtering:	Disable
VLAN Mode Configuration:	Port Base VLAN
Per-Port Priority:	Disable

Figure 4-9. Switch Configuration Menu

- **Spanning Tree Enable State** - By default, Spanning Tree is **disabled** on the MIL-S3580. The switch uses the IEEE802.1D Spanning Tree Protocol (STP), when enabled, to ensure that only one path at a time is active between any two nodes on the network.
- **Dynamic Entry Aging Time** - This is the time, in seconds, that the switch keeps an address of a device in the MAC address table. 300 seconds or 5 minutes is the default. The time can be from 5 seconds to 999 seconds or 16.65 hours. A MAC address can also be entered in the static address table and the MAC address will not age out.
- **Broadcast Storm Prevention** can be set to 6%, 20%, or Disable. The percentage indicates the allowance against the capacity. When disabled, there is no limitation on the incoming rate of broadcast/multicast traffic, otherwise limitation on broadcast traffic will be set to the configured percentage.
- **Ingress Filtering** examines the tagged header of each tagged frame that enters a port and determines whether the tagged frame and the port that received the frame are members of the same VLAN. If they belong to the same VLAN, the port accepts the frame. If they belong to different VLANs, the port

discards the frame. If Ingress Filtering is disabled, any tagged frame is accepted on any port on the switch. It does not matter whether the frame and port belong to the same or different VLANs.

- **Per-Port Priority** allows port based priorities. You can designate the priority for the receiving port so that any frame received will be transmitted to the destination port with the programmed priority. However, if the received frame has a layer 3 priority (TOS or DiffServ) will have precedence over port based priority. When set, all ports by default have the lowest priority possible. If a priority different from lowest is wanted, the priority must be changed for each individual port in the port configuration menu.
- **HOLB Prevention** - Head Of Line Blocking occurs when many ports send frames to the same output port. This puts the frames in contention for output port and all frames must wait behind, thus the head of the line goes first. The shared memory switching fabric architecture eliminates any possibility of head-of-line blocking when this feature is enabled.
- When **QoS** is enabled, you can map the Type of Service of your choice (according to IEEE 802.1p) to the four priority levels provided.
- There are 3 different modes of VLANs supported in this switch, **802.1Q**, **Port-Based VLANs** and **MTU/MDU**. The choice you make here will ultimately decide the VLAN mode and function for the entire switch. If one mode is selected, the other two VLAN modes will have no effect on the switch.
  - **GVRP Enable State** is used with IEEE 802.1Q VLANs. GVRP enables the switch to dynamically create 802.1Q compliant VLAN links with other switches running GVRP. This reduces the chance for errors in VLAN configuration by automatically providing VLAN ID (VID) consistency across the network. You can use GVRP to propagate VLANs to other GVRP switches instead of setting up VLANs in each switch. STP must be enabled before GVRP is enabled. In order to activate GVRP without overlapping VLANs, follow these steps:

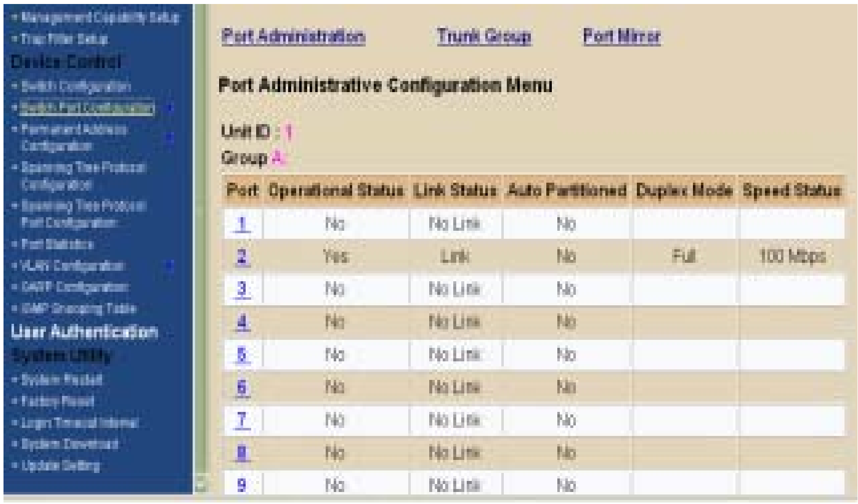
    1. Assign static VLANs.
    2. Take out ports that belong to assigned VLANs from Default VLAN.
    3. Assign those ports to Local VID in Switch Port Configuration Menu.
    4. Tag the uplink port in the Untagged Configuration Menu.
    5. Turn on STP in Switch Configuration Menu.
    6. Turn on GVRP in Switch Configuration Menu.
    7. Update Configuration Setting.
    8. Cold Start in System Start Menu.

    NOTE: Make sure the port you are connected to is not locked out after

VLANs are assigned.

- **IGMP Snooping** relates to the protocol IGMP. IGMP enables routers to create lists of devices that are members of multicast groups. A multicast group might consist of all users that want to see the company yearly meeting on video. Video is a multicast application. IGMP snooping enables the switch to monitor the flow of queries from the devices and the routers. IGMP snooping improves the switches' performance by restricting the flow of multicast packets to only those switch ports, which have devices receiving the multicast (video).
- **IGMP Snooping Table Aging Time** is the time the switch will maintain its multicast group(s). It controls how frequently the switch expects to see information from devices that stay members of multicast groups and process leaving requests.

Switch Port Configuration



Port Administrative Configuration Menu

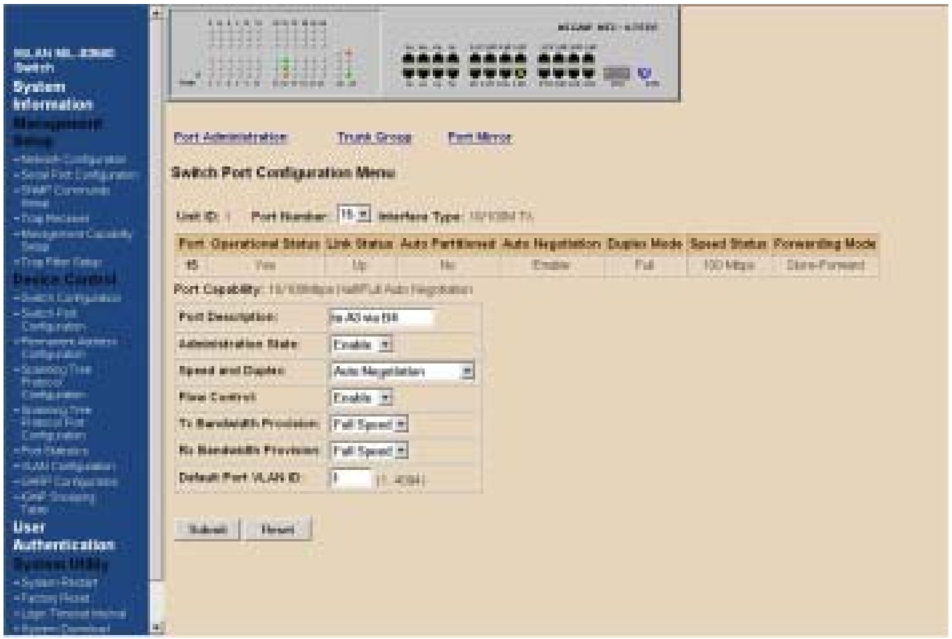
Unit ID : 1

Group A

Port	Operational Status	Link Status	Auto Partitioned	Duplex Mode	Speed Status
1	No	No Link	No		
2	Yes	Link	No	Full	100 Mbps
3	No	No Link	No		
4	No	No Link	No		
5	No	No Link	No		
6	No	No Link	No		
7	No	No Link	No		
8	No	No Link	No		
9	No	No Link	No		

Figure 4-11. Port Administration in Switch Port Configuration Menu

The ports are divided and displayed in three separate pages. In the Port Administrative Configuration menu, select the port to configure the characteristics such as speed, flow control, and VLAN ID as well as the following features provided with the system:



Switch Port Configuration Menu

Unit ID: 1 Port Number: 15 Interface Type: 10/100M TX

Port	Operational Status	Link Status	Auto Partitioned	Auto Negotiation	Duplex Mode	Speed Status	Forwarding Mode
15	Yes	Up	No	Enable	Full	100 Mbps	Store-Forward

Port Capability: 10/100Mbps Half/Full Auto Negotiation

Port Description:	to A0 via B8
Administration State:	Enable
Speed and Duplex:	Auto Negotiation
Flow Control:	Enable
Tx Bandwidth Provision:	Full Speed
Rx Bandwidth Provision:	Full Speed
Default Port VLAN ID:	1 (1 - 4094)

Figure 4-12. Switch Port Configuration Menu

- **Port Description** - Sixteen characters can be entered to identify the port.
- **Administration State** - When set to Disable, the port is inoperable and no devices can access the switch through the port. The administrator must then enable the port in order for a link to be established.
- **Speed and Duplex** - There are five different settings that can be set for each port: Half-duplex-10Mbps, Full-duplex-10Mbps, Half-duplex-100Mbps, Full-duplex-100Mbps and Auto-negotiation.
- **Flow Control** - When enabled, pause frame is utilized for full duplex operations and backpressure flow control is utilized for half duplex. By default, this is enabled.
- **Per-Port Priority** – Four levels of priority (High, Medium, Low and Lowest) can be set to each individual port. However, the priority level set through QoS/Type of Service configuration in the Device Configuration Menu will have higher precedence.

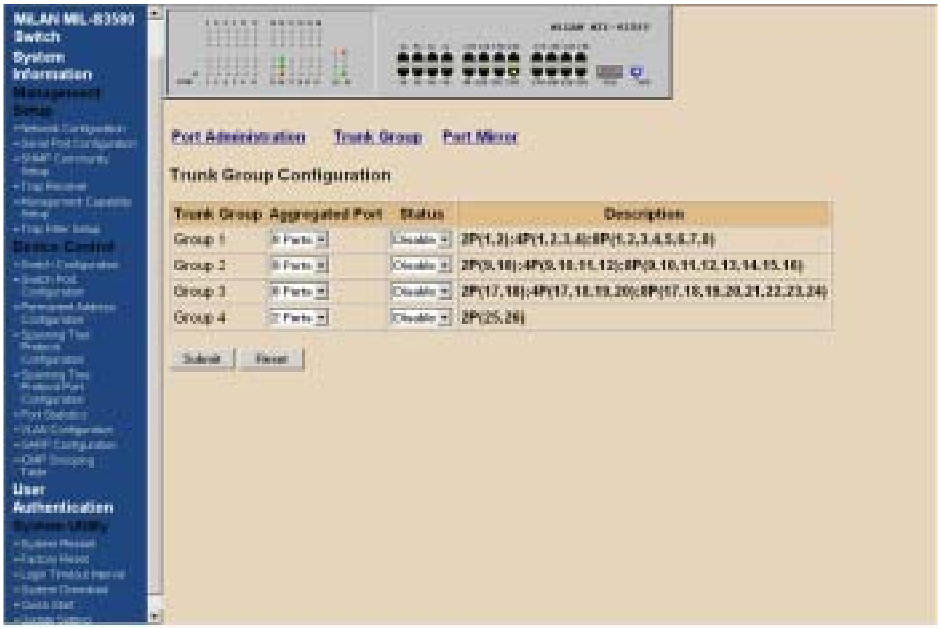
- **Bandwidth Management** - Eight levels of speed control facilitate the management of bandwidth. Configuration of receive and transmit control of each port is independent. You can set the port to transmit and/or receive at the provisioned speed or none for full wire speed. Configuration takes effect immediately after saving, with no resetting of the switch necessary. The various levels are listed below.

10Mb	312Kb	625KB	938Kb	1.25Mb	2Mb	4Mb	6Mb	8Mb
100Mb	3.12Mb	6.25Mb	9.38Mb	12.5Mb	20Mb	40Mb	60Mb	80Mb
1000Mb	31.2Mb	62.5Mb	93.8Mb	125Mb	200Mb	400Mb	600Mb	800Mb

Table 4-1. Eight Levels of Bandwidth Provisioning

- **Default Port VLAN ID** - The default VLAN ID must be set for each port after configuration of new VLANs.

Trunk Group Configuration



Trunk Group Configuration

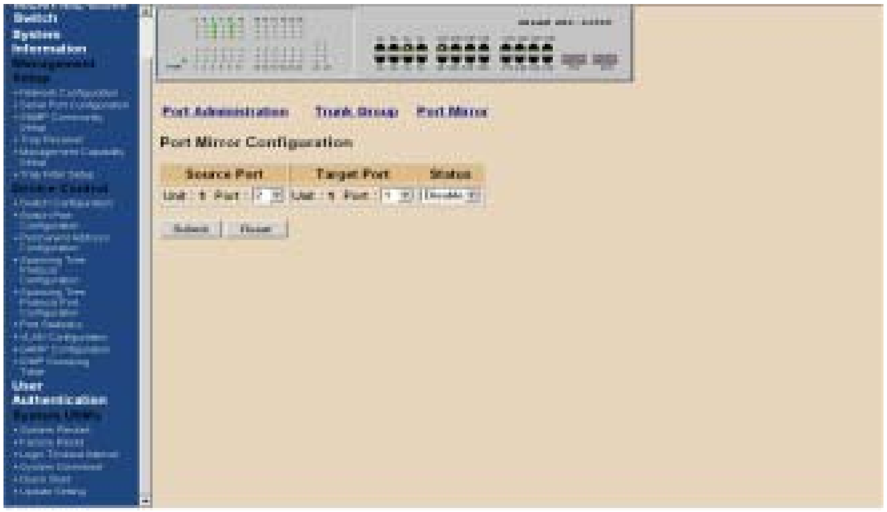
Trunk Group	Aggregated Port	Status	Description
Group 1	8 Ports	Disable	2P(1,2):4P(1,2,3,4):8P(1,2,3,4,5,6,7,8)
Group 2	8 Ports	Disable	2P(9,10):4P(9,10,11,12):8P(9,10,11,12,13,14,15,16)
Group 3	8 Ports	Disable	2P(17,18):4P(17,18,19,20):8P(17,18,19,20,21,22,23,24)
Group 4	2 Ports	Disable	2P(25,26)

Figure 4-13. Trunk Group in Switch Port Configuration Menu

Port trunking is the ability to group several ports to increase the bandwidth between this switch and another compatible switch. This is an inexpensive way to increase bandwidth.

- **Trunk Group 1:**
    - 2 Ports: 1, 2
    - 4 Ports: 1, 2, 3, 4
    - 8 Ports: 1, 2, 3, 4, 5, 6, 7, 8
- **Trunk Group 2:**
    - 2 Ports: 9, 10
    - 4 Ports: 9, 10, 11, 12
    - 8 Ports: 9, 10, 11, 12, 13, 14, 15, 16
- **Trunk Group 3:**
    - 2 Ports: 17, 18
    - 4 Ports: 17, 18, 19, 20
    - 6 Ports: 17, 18, 19, 20, 21, 22, 23, 24
- **Trunk Group 4:**
    - 2 Ports: 25, 26

Port Mirror Configuration



Port Mirror Configuration

Source Port	Target Port	Status
Unit : 1 Port : [illegible]	Unit : 1 Port : [illegible]	[illegible]

Submit | Reset

Figure 4-14. Port Mirror in Switch Port Configuration Menu

Port Mirroring copies all traffic (all frames) from a specific source port to a target port. This helps to track down network errors or erroneous packet transfers without interrupting the flow of data across the network.

To monitor all receive and transmit packets of one port. **Choose** the monitored port in "**Source Port**".

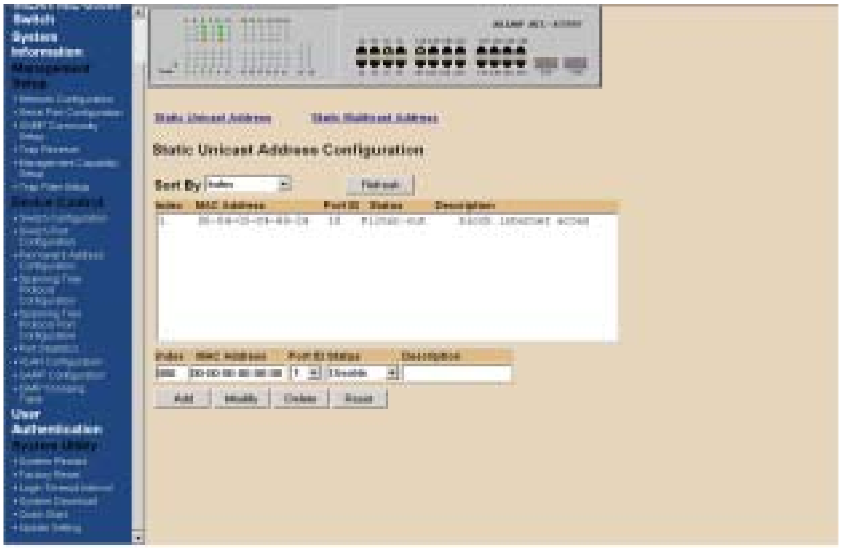
- **Choose** the corresponding target port in “**Target Port**".

- Change the Disable Status to **Enable**.

- Choose "**Submit**" button.

Permanent Address Configuration

You can Add, Modify, or Delete Static Unicast Address by selecting entries from the following screen.



Static Unicast Address Configuration

Sort By Index

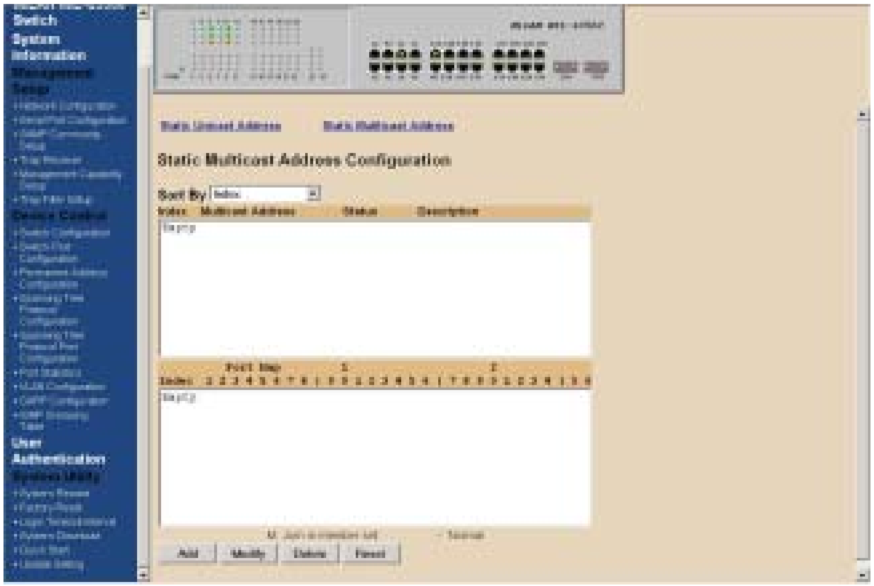
Index	MAC Address	Port ID	Status	Description
1	[illegible]	18	Filter-out	[illegible]

Index	MAC Address	Port ID	Status	Description
[illegible]	00-00-00-00-00-00	1	Disable	

Figure 4-15. Static Unicast Address in Permanent Address Configuration Menu

Enter the MAC address of a system you wish to set as static unicast address the port associated with the system. Select the status field between Disable, Forwarding, Filter-In, and Filter-Out.

- **Disable** – This Unicast Address entry has no effect to the switch system.
- **Forwarding** – All packets designated to this MAC address will be forwarded (and only to) the designated port.
- **Filter-in** – Only packets originated to from this MAC address will be permitted to enter this port. In other words, packets originated from other MAC addresses will be dropped at this port automatically.
- **Filter-out** – All packets designated to this MAC address will be blocked.



Static Multicast Address Configuration

Sort By: Index

Index	Multicast Address	Status	Description
Empty			

Port Map

Index

Empty

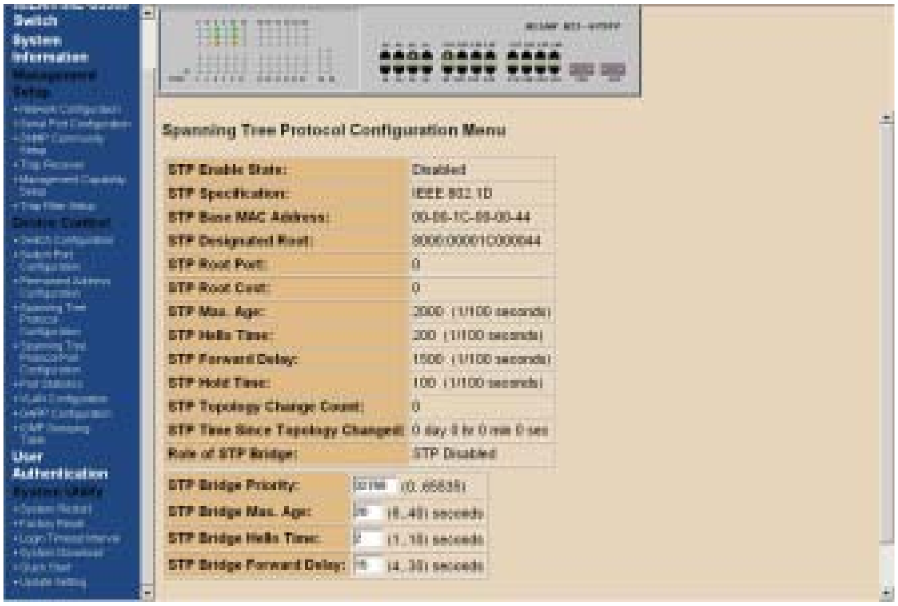
Figure 4-16. Static Multicast Address Configuration in Permanent Address Configuration Menu

In the Static Multicast Configuration Menu screen, you can add member(s) to the group by checking the port(s).

Spanning Tree Protocol Configuration

Spanning Tree is a link management protocol that provides path redundancy while preventing undesirable loops in the network. For Layer 2 Ethernet network to function properly, only one active path must exist between two stations.

The Spanning-Tree Algorithm calculates the best loop-free path throughout a switched network. STP forces redundant data paths into a standby (blocked) state. If a network segment in the spanning tree fails and a redundant path exists, the Spanning-Tree Algorithm recalculates the Spanning Tree topology and activates the standby path.



Spanning Tree Protocol Configuration Menu

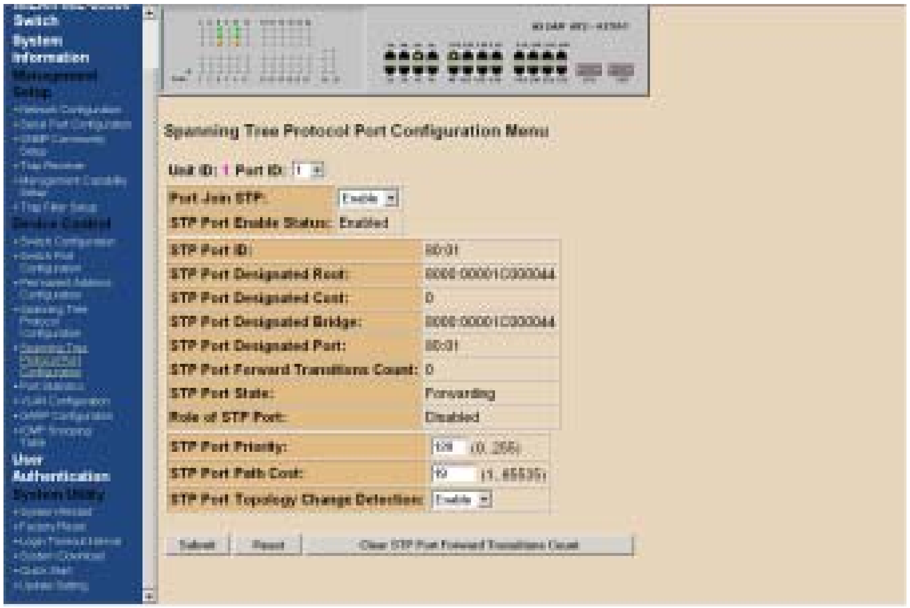
STP Enable State:	Disabled
STP Specification:	IEEE 802.1D
STP Base MAC Address:	00-06-1C-00-00-44
STP Designated Root:	8000:00001C000044
STP Root Port:	0
STP Root Cost:	0
STP Max. Age:	2000 (1/100 seconds)
STP Hello Time:	200 (1/100 seconds)
STP Forward Delay:	1500 (1/100 seconds)
STP Hold Time:	100 (1/100 seconds)
STP Topology Change Count:	0
STP Time Since Topology Changed:	0 day 0 hr 0 min 0 sec
Role of STP Bridge:	STP Disabled

STP Bridge Priority:	32768 (0..65535)
STP Bridge Max. Age:	20 (6..40) seconds
STP Bridge Hello Time:	2 (1..10) seconds
STP Bridge Forward Delay:	15 (4..30) seconds

Figure 4-17. Spanning Tree Protocol Configuration Menu

If you enable the Spanning Tree Protocol, you must complete the Priority and Time fields with appropriate values or use defaults. In this screen, you can assign spanning priority and path cost to any port. A port with higher priority and lower path cost is less likely to be blocked if Spanning Tree Protocol is detecting network loop.

Spanning Tree Protocol Port Configuration



Spanning Tree Protocol Port Configuration Menu

Unit ID: 1 Port ID: 1

Port Join STP:	Enable
STP Port Enable Status:	Enabled

STP Port ID:	80:01
STP Port Designated Root:	8000:00001C000044
STP Port Designated Cost:	0
STP Port Designated Bridge:	8000:00001C000044
STP Port Designated Port:	80:01
STP Port Forward Transitions Count:	0
STP Port State:	Forwarding
Role of STP Port:	Disabled

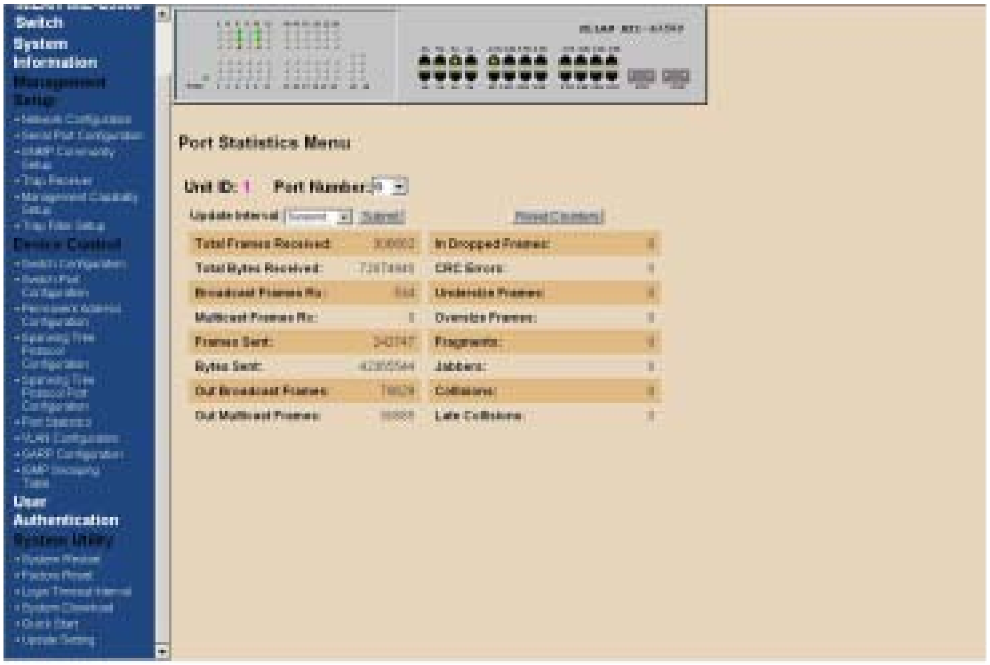
STP Port Priority:	128 (0..255)
STP Port Path Cost:	19 (1..65535)
STP Port Topology Change Detection:	Enable

Figure 4-18. Spanning Tree Protocol Port Configuration Menu

In this screen you can assign spanning Priority and Path Cost to any port. A port with higher priority and lower path cost is less likely to be blocked if Spanning Tree Protocol is detecting network loop.

- **STP Port Priority** - Range is 0 to 255. This parameter is used by STP to determine the port(s) to use for forwarding. The port with the lowest number has the highest priority. The default is 128.
- **STP Port Path Cost** - The range is 1 to 65,535. This assigns an individual port cost that the switch uses to determine which ports are the forwarding ports. The default is 19.
- **STP Port Topology Change Detection** - When enabled, the switch will send a trap if the Trap Filter menu for the Bridge is also turned-on.

Port Statistics



Port Statistics Menu

Unit ID: 1 Port Number:

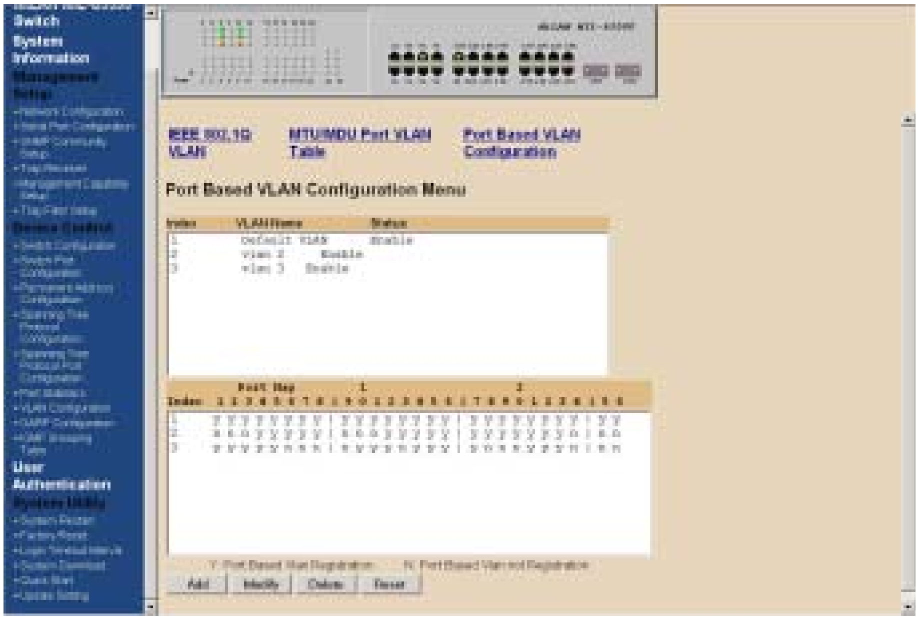
Update Interval

Total Frames Received:	308802	In Dropped Frames:	0
Total Bytes Received:	72874849	CRC Errors:	0
Broadcast Frames Rx:	614	Undersize Frames:	0
Multicast Frames Rx:	0	Oversize Frames:	0
Frames Sent:	240747	Fragments:	0
Bytes Sent:	42855544	Jabbers:	0
Out Broadcast Frames:	78829	Collisions:	0
Out Multicast Frames:	16885	Late Collisions:	0

Figure 4-19. Port Statistics Menu

You can view the statistics information display in this screen regarding a certain port by entering the port number in the Port ID field. You can also refresh or reset the counter as you wish.

VLAN Configuration



Port Based VLAN Configuration Menu

Index	VLAN Name	Status
1	Default VLAN	Enable
2	vlan 2	Enable
3	vlan 3	Enable

Index	Port Map
1	[illegible]
2	[illegible]
3	[illegible]

Y: Port Based Vlan Registration   N: Port Based Vlan not Registration

Figure 4-20. Port Based VLAN Configuration Menu

(**S**) – Port(s) is set as **static (fixed) member** of the VLAN.
(**D**) – Port(s) is set as static (fixed) member of the VLAN and can be registered as a **dynamic VLAN member** as well.
(**C**) – Port(s) is being both a **static member and a dynamic member** of the VLAN.

Port Based VLAN needs to be set in the Switch Device Control Menu before configuring this menu will take effect. By default, the VLAN mode configuration for the switch is IEEE 802.1Q. Once set to Port Based VLANs, all ports are on the same VLAN by default. There can be up to 128 different port based VLANs configured. These VLANs can be overlapping which means that one port can belong to several different VLANs.

Static VLAN Configuration

When configuring the IEEE802.1Q VLAN, there are slightly different options available when the port is configured on the console screen or the web browser. A port on a VLAN can be in one of three different states.

∉# **Normal** where the port is not mapped to a specific VLAN but can become a member through Dynamic VLAN registration. Dynamic VLANs are set when GVRP sets them. Unless GVRP is running, there is no registration of dynamic VLANs.

∉# **Fixed** registration maps a port to a specific or fixed VLAN. The network administrator can "fix" a VLAN to a specific port with this option. The port can also be set to another VLAN by dynamic VLAN registration.

∉# **Forbidden** ports cannot participate in the designated VLAN. They cannot be fixed members or members of dynamic VLANs. When set to forbidden, the port cannot communicate with any ports on this VLAN.

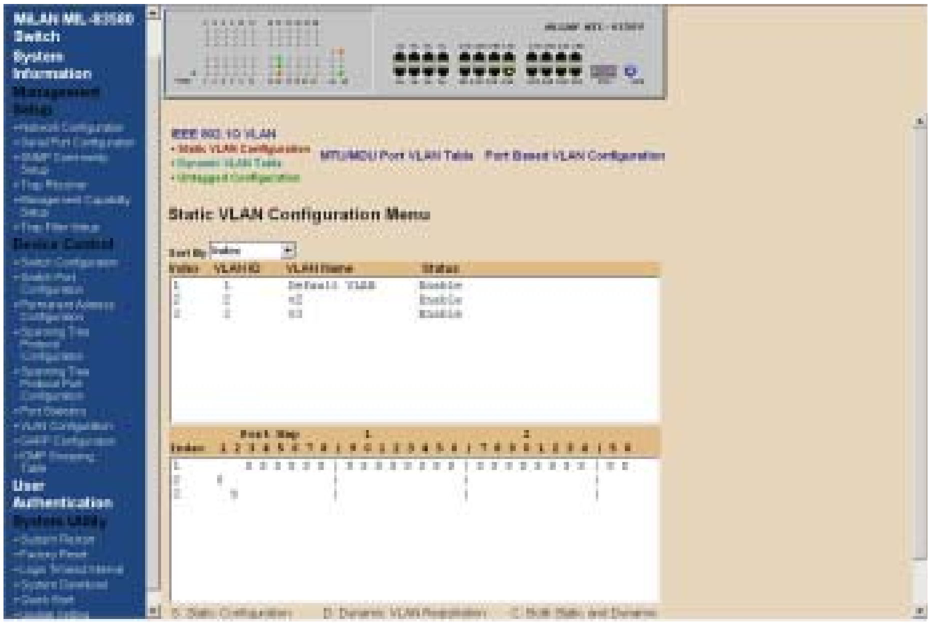
Once configured there are 3 possible states of the ports that show in the management menus.

S: shows a static registration of the port and GVRP is not running
D: the port has been registered to the specific VLAN by GVRP
C: the port has been registered to the specific VLAN by GVRP and it was also set to that VLAN by a network administrator

Note: A blank indicates that the port is not a member of the VLAN.

On the web browser the ports can be set as Normal, Fixed or Forbidden. The mapping of the 3 different configuration options on the console versus the web browser are shown below.

	Console configuration	**Web configuration**
Normal		Normal
Fixed	F	Fixed
Forbidden	B	Forbidden



Static VLAN Configuration Menu

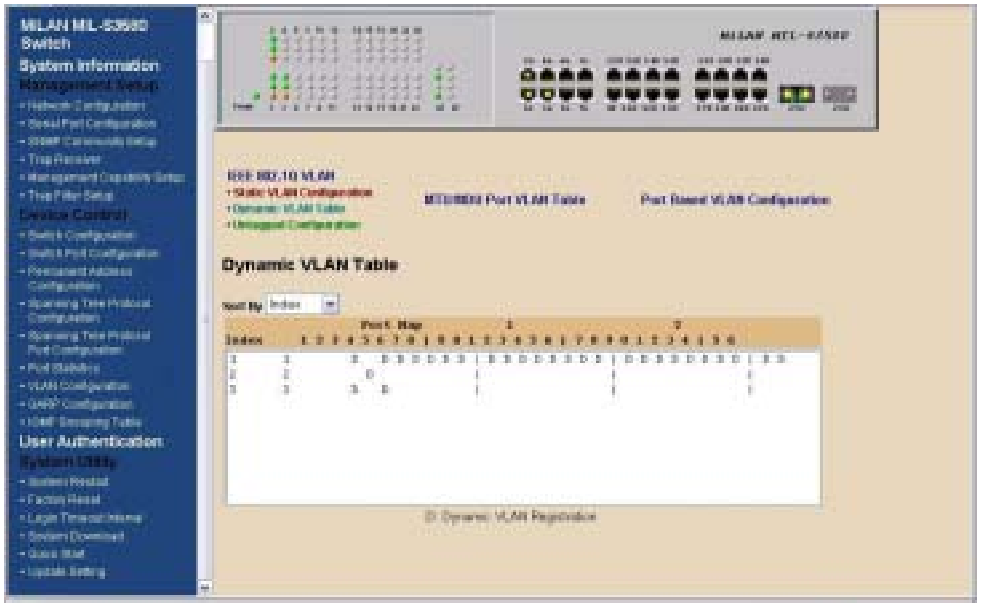
Sort By: Index

Index	VLAN ID	VLAN Name	Status
1	1	Default VLAN	Enable
2	2	v2	Enable
3	3	v3	Enable

S: Static Configuration   D: Dynamic VLAN Registration   C: Both Static and Dynamic

Figure 4-21. Static VLAN Configuration Menu

Dynamic VLAN Table Menu



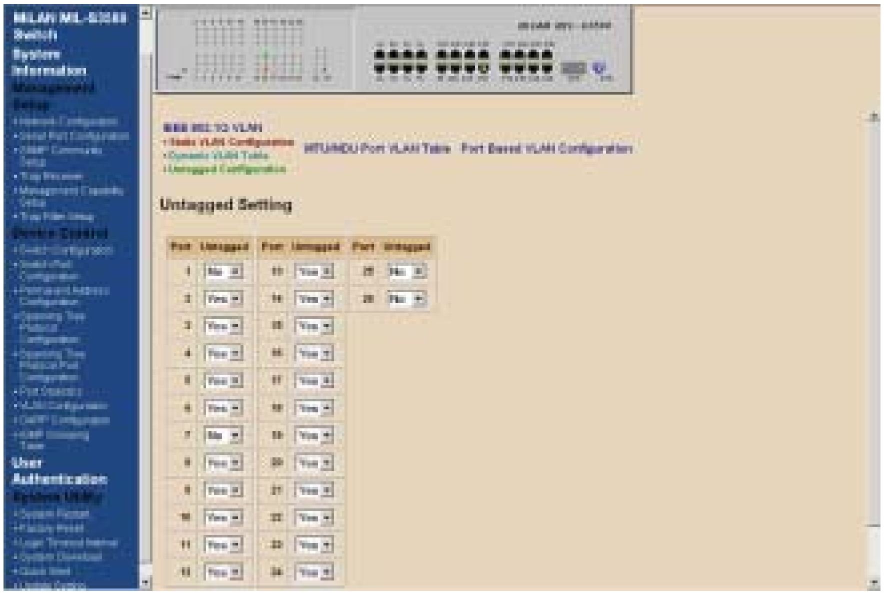
Dynamic VLAN Table

Sort By: Index

D: Dynamic VLAN Registration

Figure 4-22. Dynamic VLAN Table

This screen displays the VLAN mapping for port(s) that join the VLAN(s) through Dynamic VLAN Registration.

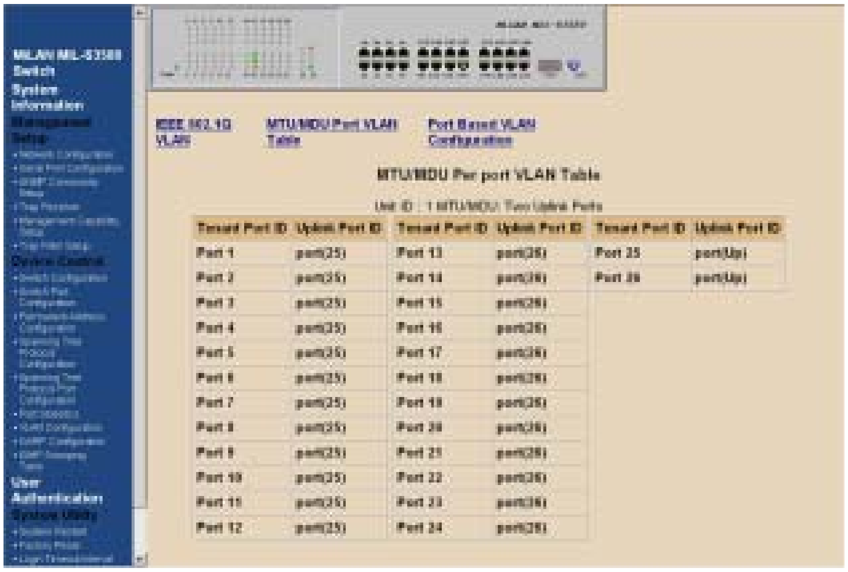


Untagged Setting

Port	Untagged	Port	Untagged	Port	Untagged
1	No	13	Yes	25	No
2	Yes	14	Yes	26	No
3	Yes	15	Yes		
4	Yes	16	Yes		
5	Yes	17	Yes		
6	Yes	18	Yes		
7	No	19	Yes		
8	Yes	20	Yes		
9	Yes	21	Yes		
10	Yes	22	Yes		
11	Yes	23	Yes		
12	Yes	24	Yes		

Figure 4-23. Untagged Configuration Menu

All ports are set by default as Untagged in this switch, to change port(s) to **Tagged** just pick the port number you desire and select "**No**" from the Port Map.



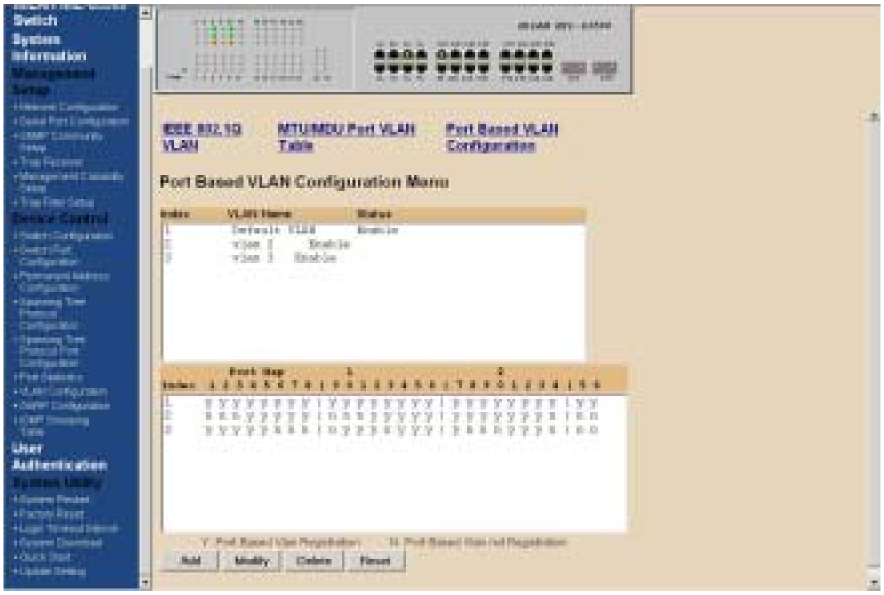
MTU/MDU Per port VLAN Table

Unit ID : 1 MTU/MDU: Two Uplink Ports

Tenant Port ID	Uplink Port ID	Tenant Port ID	Uplink Port ID	Tenant Port ID	Uplink Port ID
Port 1	port(25)	Port 13	port(26)	Port 25	port(Up)
Port 2	port(25)	Port 14	port(26)	Port 26	port(Up)
Port 3	port(25)	Port 15	port(26)		
Port 4	port(25)	Port 16	port(26)		
Port 5	port(25)	Port 17	port(26)		
Port 6	port(25)	Port 18	port(26)		
Port 7	port(25)	Port 19	port(26)		
Port 8	port(25)	Port 20	port(26)		
Port 9	port(25)	Port 21	port(26)		
Port 10	port(25)	Port 22	port(26)		
Port 11	port(25)	Port 23	port(26)		
Port 12	port(25)	Port 24	port(26)		

Figure 4-24. MTU/MDU Per Port VLAN Table in The VLAN Configuration Menu

This screen as above only reflects the setting you made in Switch Device Configuration menu. Changes cannot be made here. Should you set the VLAN Mode to <MTU/MDU> mode and <**One Uplink**> port then ports 1 - 25 will be mapped to **port 26 as the uplink port**. If <**Two Uplinks**> is selected, then ports 1 – 12 will be mapped to **port 25 as the uplink port** and ports 13 - 24 will be mapped to **port 26 as the uplink port**.



IEEE 802.1Q VLAN | MTU/MDU Port VLAN Table | Port Based VLAN Configuration

Port Based VLAN Configuration Menu

Index	VLAN Name	Status
1	Default VLAN	Enable
2	vlan 2	Enable
3	vlan 3	Enable

Index	Port Map
1	[illegible]
2	[illegible]
3	[illegible]

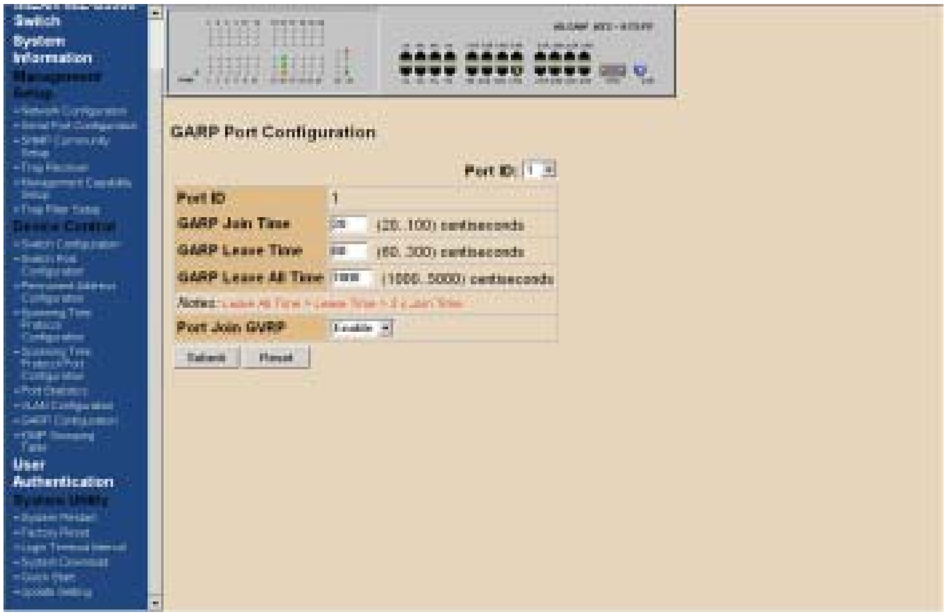
Y: Port Based Vlan Registration   N: Port Based Vlan not Registration

Add | Modify | Delete | Reset

Figure 4-25. Port Based VLAN Configuration in the VLAN Configuration Menu

Select the VLAN entry to create, modify, or delete the VLAN group. Then mark as (**Y**)es to belong to certain VLAN group(s) or (**N**)o to not belong to that VLAN..

GARP Configuration



GARP Port Configuration

Port ID: 1

Port ID	1
GARP Join Time	20 (20..100) centiseconds
GARP Leave Time	60 (60..300) centiseconds
GARP Leave All Time	1000 (1000..5000) centiseconds
Notes: Leave All Time > Leave Time > 2 x Join Time	
Port Join GVRP	Enable

Submit | Reset

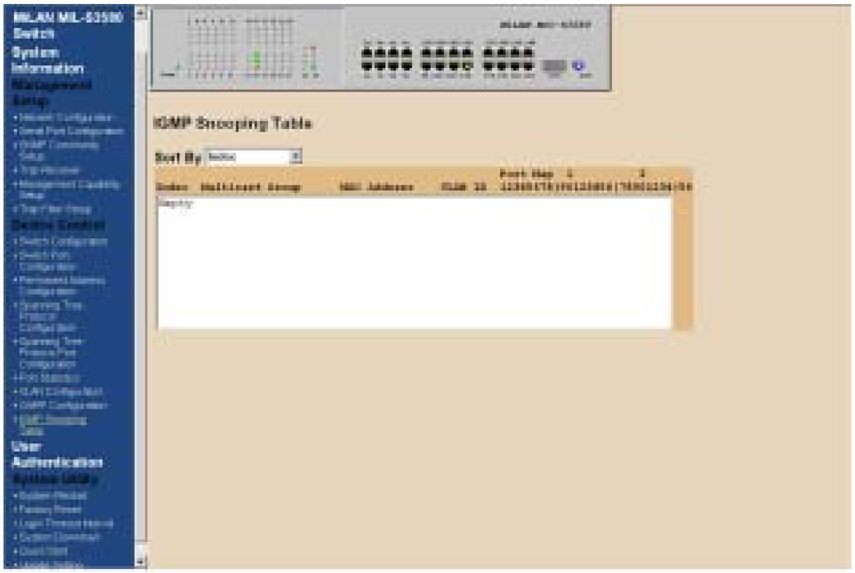
Figure 4-26. GARP Configuration Menu

GARP (Generic Attribute Registration Protocol) defines the architecture, rules of operation, state machines and variables for the registration and de-registration of attribute values. It allows dynamic filter entries for VLAN membership to be distributed among the Forwarding Databases of VLAN-aware switches. By joining GVRP (GARP VLAN Registration Protocol), it helps maintaining VLAN information. The rule of the aging scheme is:

GARP Leave All Time > GARP Leave Time > GARP Join Time

NOTE: Before GVRP can be enabled, STP must be enabled, saved, and switch must go through a Cold Start in order for configuration to take effect.

IGMP Configuration



IGMP Snooping Table

Sort By Index

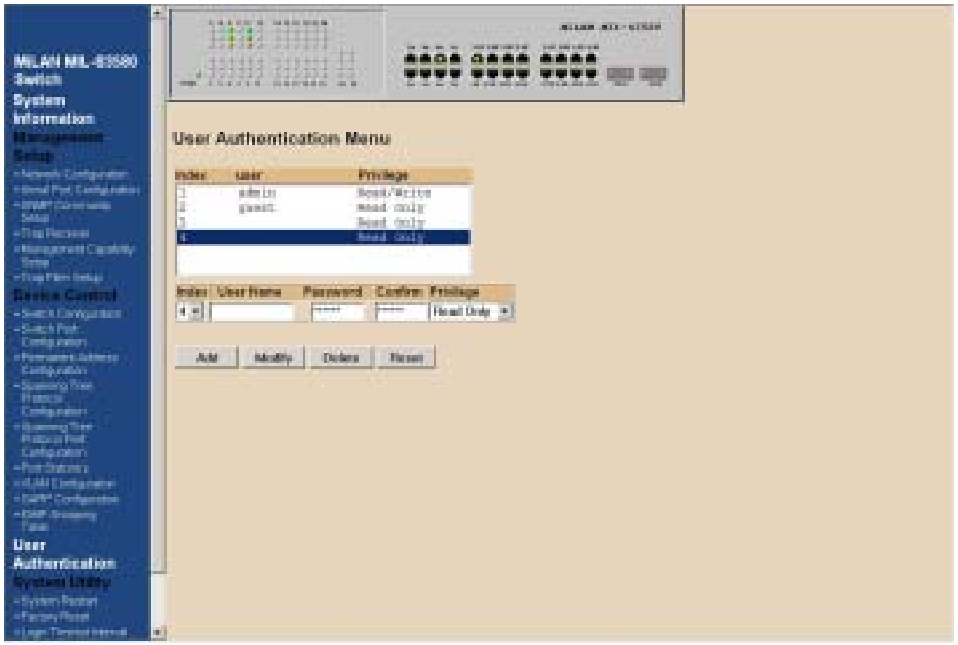
```
                                                   Port Map  1          2
Index  Multicast Group      MAC Address     VLAN ID  1234567890123456789012345
Empty
```

Figure 4-27. IGMP Configuration Menu

Multicasting is used to support real-time applications such as video conferencing or streaming audio. IGMP (Internet Group Multicast Protocol) allows you to query for any attached hosts who want to receive a specific multicast service. The switch looks up the IP Multicast Group used for this service and adds any port, which received a similar request to that group. It then propagates the service request on to any neighboring multicast switch to ensure that it will continue to receive the multicast service.

By supporting IGMP (Internet Group Management Protocol) Snooping, the switch can forward multicast traffic intelligently. Packets are forwarded to the ports that belong to the multicast group instead of being broadcasted to all ports and possibly disrupting network performance. This lookup table reflects the multicast group(s) (up to 32) configuration of your system and provides an overview of the port(s) map to each multicast group.

User Authentication



User Authentication Menu

Index	user	Privilege
1	admin	Read/Write
2	guest	Read only
3		Read only
4		Read only

Index	User Name	Password	Confirm	Privilege
4		******	******	Read Only

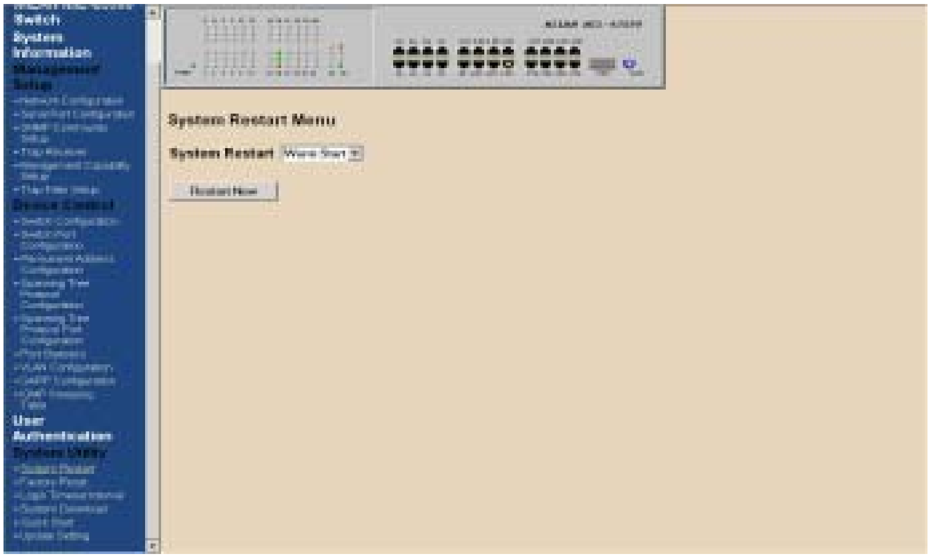
Add | Modify | Delete | Reset

Figure 4-28. User Authentication Menu

You can change the password setting in the User Authentication Menu. You can also create user and assign different privileges to suit your needs. After selecting an entry to add or modify, type in user name and password, toggle the user privilege and then update the changes.

NOTE: User name and passwords are at 6 characters maximum.

System Utility System Restart



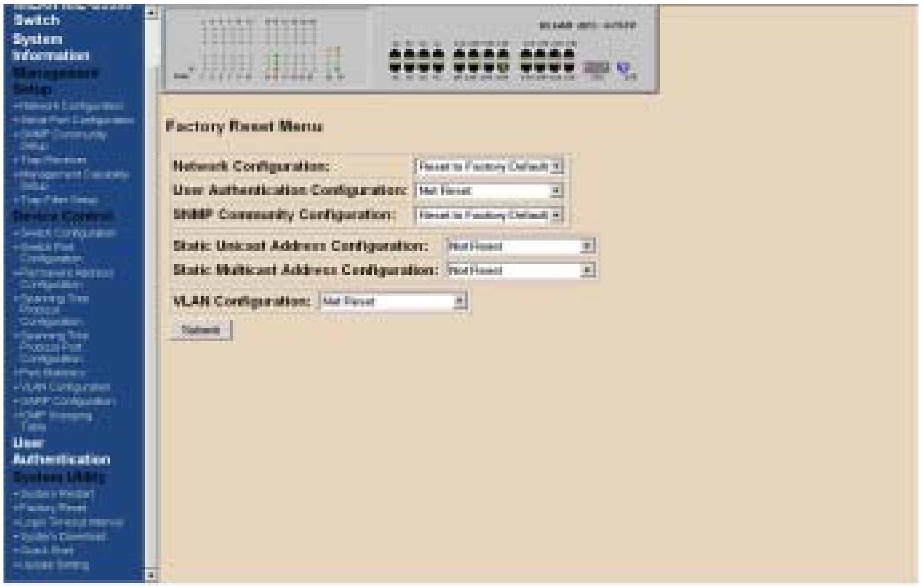
System Restart Menu

System Restart: Warm Start

Figure 4-29. System Restart Menu

Either a Cold Start or Warm Start needs to be executed to have the changes saved and keep in effect until you make another change.

Factory Reset



Factory Reset Menu

Network Configuration: Reset to Factory Default

User Authentication Configuration: Not Reset

SNMP Community Configuration: Reset to Factory Default

Static Unicast Address Configuration: Not Reset

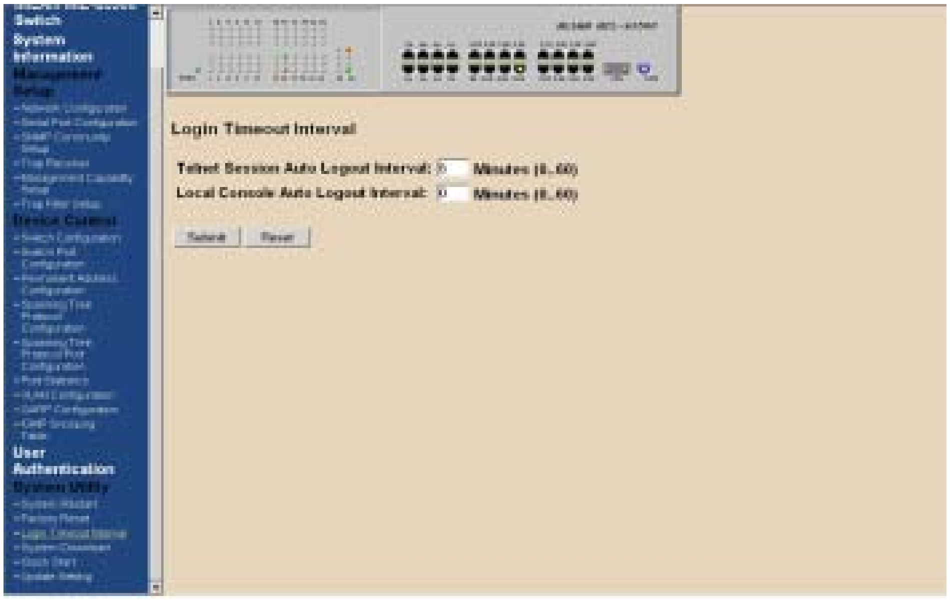
Static Multicast Address Configuration: Not Reset

VLAN Configuration: Not Reset

Figure 4-30. Factory Reset Menu

This menu lets you to reset a certain portion of the current configuration back to factory default or all configuration to factory default. If VLAN configuration is reset, all parameters of the all VLAN configuration is reset and only the one default VLAN is in effect as it was configured from the factory.   No other switch configuration is changed. In order to do a complete system reset, every one of the 6 items in the menu need to be reset.

Login Timeout Interval



Login Timeout Interval

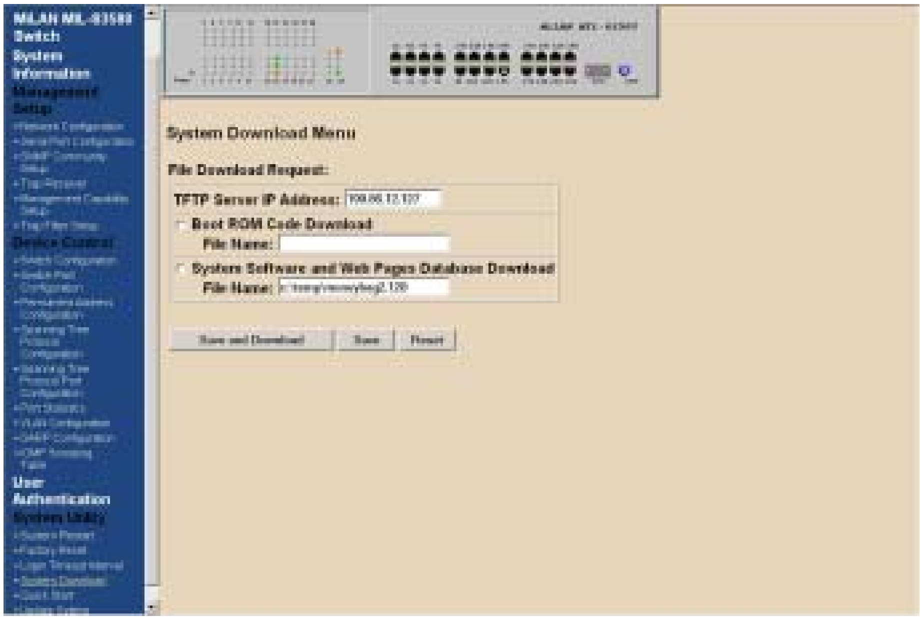
Telnet Session Auto Logout Interval: 5 Minutes (0..60)

Local Console Auto Logout Interval: 0 Minutes (0..60)

Figure 4-31. Login Timeout Interval Menu

You can set up the time you need for automatic log-out for 0 or up to 60 seconds.

System Download



System Download Menu

File Download Request:

TFTP Server IP Address: 199.88.12.127

○ Boot ROM Code Download

File Name:

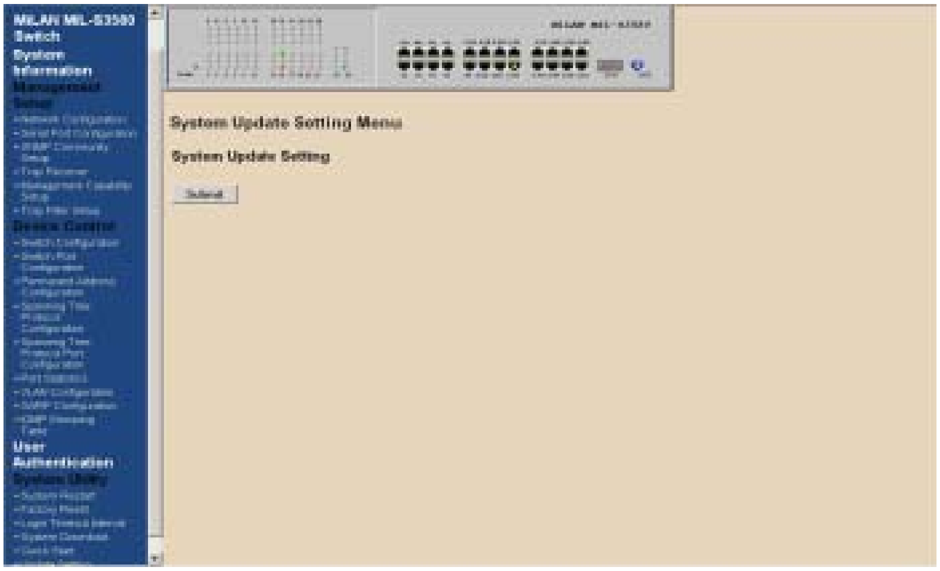
○ System Software and Web Pages Database Download

File Name: c:\temp\[illegible]2.120

Figure 4-31. System Download Menu

TFTP downloads the code for the switch to perform a software upgrade. The switch supports two different upgrade modules: BOOT ROM and System Software. These two upgrades can be done concurrently or one after the other. After flash upgrading the switch's system software, in Windows Internet Explorer, go to Tools, Internet Options, click on Delete Files button in General tab to clear all temporary internet files, and click OK. Then refresh window to view the new updated version of the MIL-S3580

Update Setting



System Update Setting Menu

System Update Setting

Figure 4-32. System Update Setting Menu

You can save current settings by click the "Submit" checkbox .You should reboot the system so that your current settings will take effect.

5. Network Configuration

This section provides you a few samples of network topology in which the MIL-S3580 is used.

The Switch provides versatile configuration options for the network. It is ideally suited as a workgroup or segment Switch in a network; it has the flexibility to provide switched 10Mbps to the desktop or shared hubs, aggregate traffic from workgroup switches, or provide dedicated 100Mbps or 1000Mbps (Gigabit) to servers with bandwidth-intensive applications. And because all Fast Ethernet ports auto-negotiate for operation at 100 Mbps, the switch is perfectly suited for an evolving network environment where demand for network speed is increasing.

Collapsed Backbone Application

For small network where rapid growth can be expected in the near future, this switch is an ideal solution supporting backbone connectivity.

The switch can be used as a standalone switch for a group of heavy traffic users. Switching is brought to the desktop either through a single end-station per switch port or through a multi-port switch.

A 1000Mbps server is connected to the switch, providing end stations high-speed accessibility to its applications. This configuration provides dedicated 100Mbps connections to the network center, to the server, and up to 40 users (while 2 optional 8-port modules are installed).

When the network needs expansion, you can simply connect the switch to any IEEE 802.3 (Ethernet), IEEE 802.3u (Fast Ethernet) and 802.3ab (Gigabit Ethernet) compliant switch utilizing the Auto MDI/MDIX function. This switch can also cooperate with a wide range of networking devices (e.g., firewall routers and printer servers) added to the network.

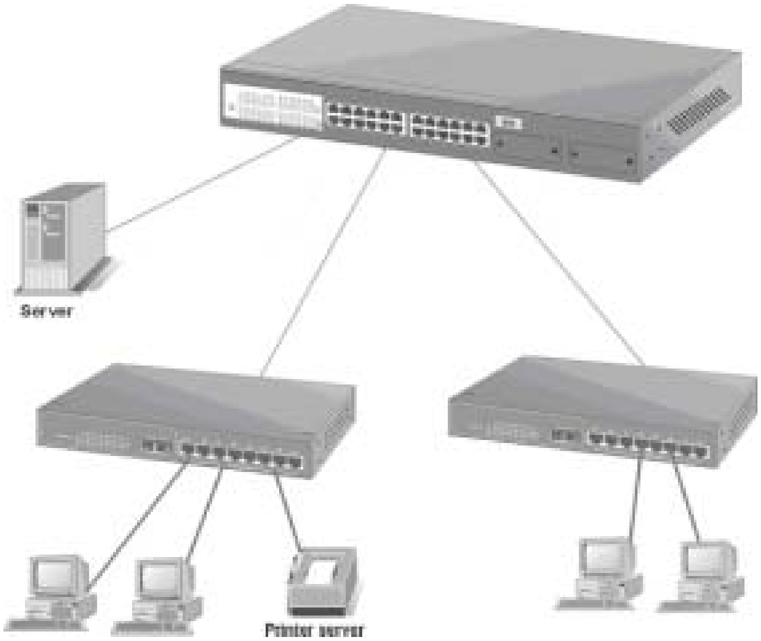


Figure 5-1. Collapsed Backbone Application

Departmental Bridge

For enterprise networks where large data broadcasts are constantly processed, this switch is an ideal solution for department users to connect to the corporate backbone. The MIL-S3580 used as a segment switch can alleviate user contention for bandwidth and eliminate server and network bottlenecks. All ports can connect to high-speed department servers that need high bandwidth. This switch provides parallel communications within its Gigabit port, which can run up to 2000Mbps at Full-duplex.

The switch makes key servers available to more users by allowing multiple conversations to occur concurrently, thereby significantly expanding overall network throughput. Moreover, this switch eases supervision and maintenance by allowing network manager to centralize multiple servers in a single location.

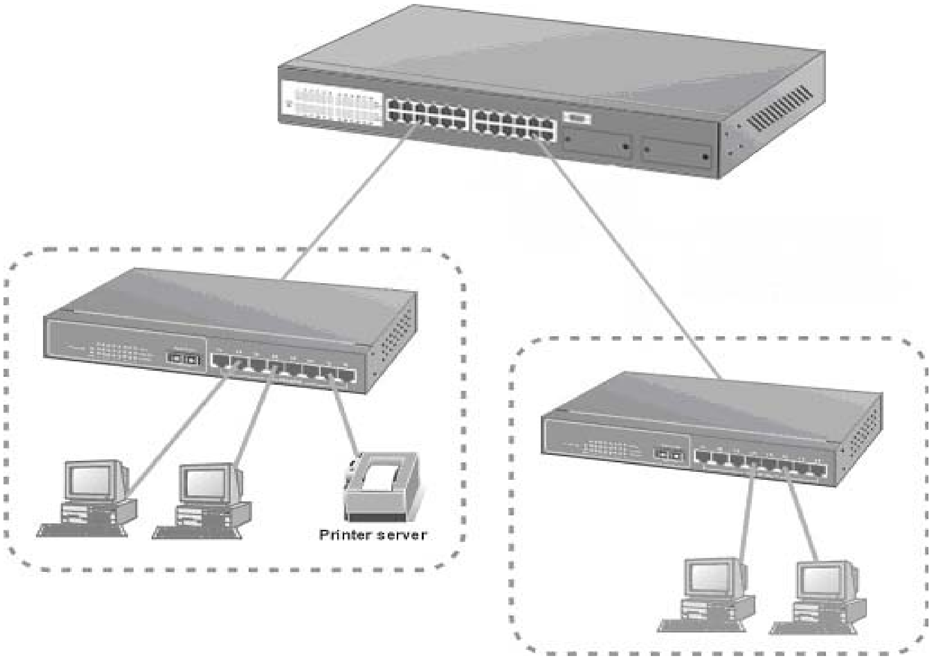


Figure 5-2: Departmental Bridge Application

NOTE: Full-duplex operation only applies to point-to-point access (for example, when attaching the switch to a workstation, server, or another switch). When connecting to hubs, use a standard cascaded connection set for half-duplex operation.

High Performance Switched Workgroup

This switch is also a good solution for connecting two workgroups, supporting the throughput, for example, of 800Mbps. This application is useful for power groups that need high bandwidth.

The most common LAN implementations use a combination of standard switches, bridges and routers. The bridges and routers quickly become bottlenecks, reducing overall network throughput. Switching to higher-speed LANs such as FDDI or ATM is not a good choice for most people.

However, such broadband equipment is still extremely expensive and hard to maintain. Besides, you have to replace all existing Ethernet cables and adapter cards, restructure your network, and implement more expensive administration procedures.

The switch can provide the same bandwidth of FDDI and ATM at much lower costs. In addition, all current adapters and network devices can still be used. The switching cross-domain connection is better than bridge and router because users can retain LAN structure in which any node can freely communicate with any other node.

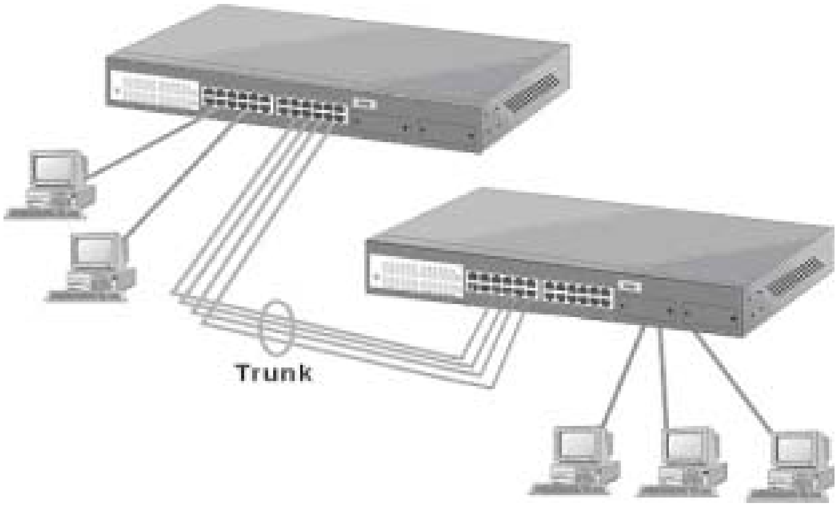


Figure 5-3: High Performance Switched Workgroup Application

IEEE 802.1Q VLAN Application

The switch supports up to 4096 Group ID, IEEE 802.1Q-compatible virtual LAN (VLANs).

Port-based VLAN Workgroup12s

You can group the switch ports into broadcast domains by assigning them to the same VLAN to increase network capacity and performance. With network segmentation, each switch port connects to a segment that is a single broadcast domain. Packets received in one VLAN can only be forwarded within that VLAN.

VLAN allows the grouping of end stations logically, based not on physical location but on business policies such as job function or department. Members of a group can be dispersed throughout a facility - they do not have to be connected in close physical locations.

Hence, group members can coordinate their data communication requirements regardless of the actual working locations; and the logical network can extend to any point you want it to. Moreover, VLAN groups can be modified at any time to add, move or change users without any re-cabling.

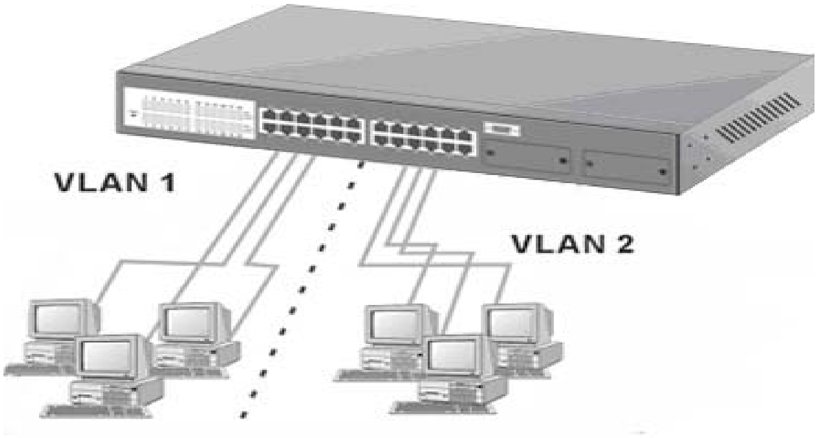


Figure 5-4: VLAN Workgroup Application

Shared Server

The MIL-S3580's compliance to the IEEE802.1Q tagging VLAN standard allows ports to exist in multiple VLANs for shared resources, such as servers, printers, and switch-to-switch connections. It is also possible to have resources exist in multiple VLANs on one switch as shown in the following figure.

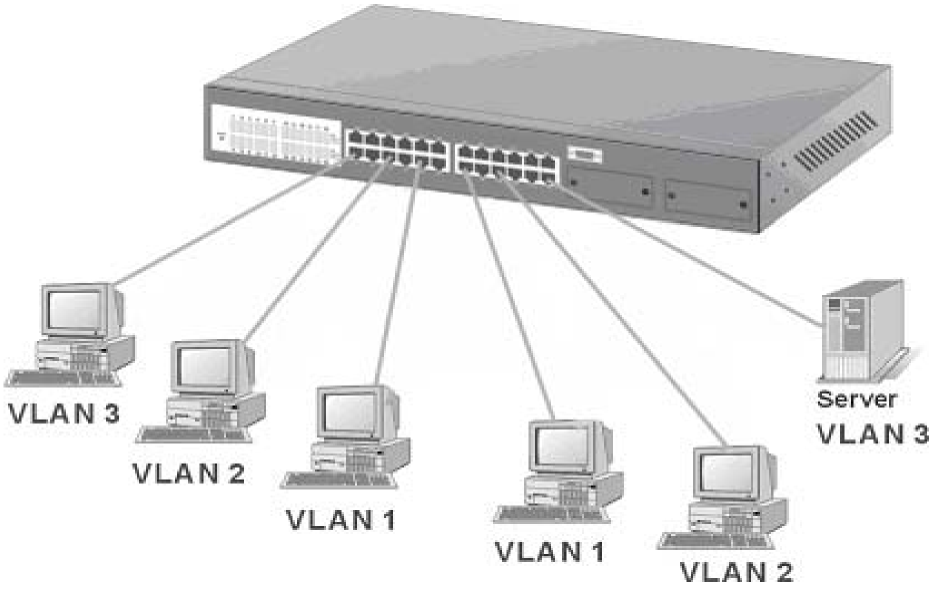


Figure 5-5: Shared Server

In this example, stations on different VLANs share resources. As a result, VLAN 1 and VLAN 2 can access VLAN 3 for printing. The broadcasts from ports configured in VLAN3 can be seen by all VLAN port members of VLAN3.

6. Product Specifications

This section provides the specifications of MIL-S3580 switch, and the following table lists them.

Standards Compliance	IEEE802.3 10BASE-T IEEE802.3u 100BASE-TX and 100BASE-FX IEEE802.3ab 1000BASE-T IEEE802.3z 1000BASE-SX IEEE802.3x Flow Control IEEE802.1p Priority Support IEEE802.3ac Frame Extension for VLAN Tagging IEEE802.1D spanning tree IEEE802.1Q VLAN tagging
Protocol	CSMA/CD
Media connector	100M FX, SC, MTRJ, VF45 Basic unit: 24 RJ-45 for STP or UTP, Auto MDI/MDI-X Support Gigabit SX/LX Module: 1 Duplex SC Gigabit 1000T Module: 1 RJ-45 for UTP or STP, Auto MDI/MDI-X Support GBIC: Mini GBIC LC type, Standard GBIC SC type
Transfer Rate	14880 packets per second for 10Mbps 148800 packets per second for 100Mbps 1488000 packets per second for 1000Mbps
Backplane Bandwidth	9.6Gb
Switch Technology	Store-and-Forward Error Free Packet Forwarding Scheme Supports Hardware Level Broadcast Storm Prevention without Consuming System CPU Utilization
MAC Address	8K MAC address with auto learning function
Data Buffer	6Mbits share memory
LED	System Power, per port Link/active, FD/COL,10/100Mbps Gigabit Module Link/active, FDX/COL
Dimension	440mm(W)*225mm(D)*44.5mm(H)
Weight	
Power	100~240 VAC 50/60HZ
EMI & Safety	FCC Class A, CE, UL

P/N 90000397_A (062102)