

***VersaXpress*[®]-1000A/B/EB**
MDU Packet Switching Concentrator
Configuration Guide For Use With:
VersaXpress-1000 Series Family

Version 1.0

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1. SYSTEM TECHNICAL OVERVIEW

The **VersaXpress-1000A/B/EB** base system is a Packet Switching Concentrator with the Management-Lite NMS capabilities. It is ideal for Multiple Dwelling Unit (MDU) Internet services such as multi-tenant apartment, multi-tenant commercial, multi-tenant student dorm, campus, and local loop. The **VersaXpress-1000A/B/EB** supports 8xHome Phone Line Network Alliance (HomePNA), and 1x10/100 MII/Serial port. **VersaXpress-1000A/B/EB** delivers high speed switching functions at the lowest cost per port in the industry. **VersaXpress-1000A/B/EB** is designed to use existing home phone line in your house or office. It allows you to network computers and talk on the phone at the same time. It not only eliminates unnecessary network traffic, but also relieves congestion by delivering dedicated bandwidth for each of the ports. Able to begin operating after power-up, the **VersaXpress-1000A/B/EB** will learn addresses automatically, and begin forwarding packets at full wire-speed to any of the eight outputs. Versa Technology has incorporated with modularized, interchangeable and future upgradable media interface design by using the expansion port such as an optional up-link 10Base-FX, 100Base-FX, 10/100Base-T, or an additional HomePNA port. The system can provide port based VLANs and Quality of Service (QoS) that is usually associated only with high-cost fully managed switches. The **VersaXpress-1000A/B/EB** system can act as network bridge for the packet data exchange and deliver the data packets from the Ethernet port(s) to the HomePNA port(s) or vice versa. The system also supports the network concentrator mode, where each of the ports 0-7 is only to directly communicate with the Uplink port #8 (9th Port). This mode ensures that data from any of ports 0-7 cannot be directly seen by another port. This feature is used in applications to provide data privacy to users and enhances security by forcing user-generated packets to be forwarded only to the upstream port. In the downstream direction a learning bridge function prevents packets from being distributed to unintended users once the MAC address are learned. All system options are configurable via a PC compatible parallel port. The built-in intelligence of configuration allows it to recognize and offer packet prioritization utilizing Network's QoS. Packets are prioritized based upon their Layer 2 VLAN priority tag or the Layer 3 Type-Of-Service (TOS/DS) field. This priority can be defined as transmit and/or drop priority. **VersaXpress-1000A/B/EB** can operate stand-alone or can be cascaded with 8 **VersaXpress-1000A/B/EB** units by using one **VersaXpress-900TX** to reach as a 64+1 port-switch MDU (Multiple Dwelling Unit) system. The **VersaXpress-1000A/B/EB** connects any desktop PC or Macintosh equipped with a 10Base-T network interface card (with **VersaXpress-110, 120** Combo bridge) or a HomePNA LAN card by simply plugging into any RJ-11 jack. VersaXpress delivers true splitter-less data over voice and delivers an "always on" Internet connection.

1.1. GETTING STARTED

This manual describes the installation and use of the **VersaXpress-1000A/B/EB**, a Packet Switching Concentrator. It describes its features, configuration options, and functional operation.

1.2. UNPACKING THE VersaXpress^ä -1000A/B/EB

Unpack the **VersaXpress-1000A/B/EB** and make sure you have all of the items described on the packing list. Verify that none of the items is damaged. If you see that any item is damaged, please notify your product provider immediately.

You should have the following items in your package:

- ❖ One (1) **VersaXpress-1000A/B/EB** system
- ❖ One (1) Power Supply Cable

- ❖ This Manual
- ❖ Two (2) Software Setup floppy diskettes or one (1) CD

1.3. SYSTEM REQUIREMENT (WHAT ELSE YOU NEED)

- ❖ To modify the system configuration, you will also need a PC running Windows 98 with an ECP capable parallel port.

1.4. STARTING THE VersaXpress[™] -1000A/B/EB SYSTEM

The hardware installation of the **VersaXpress-1000A/B/EB** is easy, and can be performed in just a few seconds.

- ❖ To power the system, simply connect the Power Cord to the Power Supply. From this point on, leave the system running.

1.5. OPERATING SEQUENCE

1.5.1. PORT AND LED DESCRIPTION



Fig 1-1

The eight HomePNA ports (port 0 through 7) use RJ-11 to attach to the home jack, end stations, hubs, or other compatible devices that use standard adapters and wiring.

If you will be using the HomePNA port for Home network operations, please observe the following guidelines:

- The maximum Home Phone Line length is 1000 feet.
- Standard home telephone cables of any type and gauge including quad, flat, twisted type wires.



Fig 1-2

Port 8, the 10/100 auto-negotiating MII/Serial port, has a standard MII connector.

Status LEDs are arranged in the same order as the port connectors. With all ports supporting Home PNA or 10Base-T, The Status LEDs are ordered as shown in Figure 1-3.

The following matrix identifies the corresponding LED activity:

| | On | Off |
|-----------------------|-----------|--------------|
| <input type="radio"/> | Collision | No Collision |
| <input type="radio"/> | Link Up | Link Down |
| <input type="radio"/> | Activity | No Activity |

Fig 1-3A HomePNA LED

| | On | Off |
|-----------------------|-------------|-------------|
| <input type="radio"/> | Activity | No Activity |
| <input type="radio"/> | Link Up | Link Down |
| <input type="radio"/> | Full Duplex | Half Duplex |

Fig 1-3B Uplink LED

1.5.2. DIP SWITCH

The DIP Switch (S1) is located on the back of the board. The following describes the Dip Switch options:

| DIP POSITION | SW1 | SW2 | SW3 | SW4 | SW5 | SW6~SW8 |
|---------------------|---------------------------------|----------------------------------------------------|------------------------|--------------------------|------------------------------------|-----------------|
| UP | Programming Mode Enabled | Refresh Mode Disabled | High Power Mode | Normal Speed Mode | Quick Refresh Mode Disabled | Reserved |
| DOWN | Watch Dog Enabled | Refresh Mode Enabled (refresh every 15 min) | Low Power Mode | High Speed Mode | Refresh Every 2 Min | Reserved |

Table 1-1

Note: VX1000A/B: Please use **High Power** when phone cable length is greater than 800 ft.

Low Power: when phone cable length is less than 800 ft.

VX1000E/EB: Please use **High Power** when phone cable length is greater than 1800 ft.

Low Power: when phone cable length is less than 1800 ft.

Note: If you want to take system in quick refresh mode, both DIP 2 and 5 should sit in down position. (DIP switch factory defaults are DIP2 in “Down” and DIP1, 3~8 in “Up” position)

1.5.3. FIBER CABLE CONNECTIONS (UPLINK WITH 10 OR 100 BASE-FX)

To establish an FX connection to the *VersaXpress-1000A/B/EB* unit, a valid link must be established between the *VersaXpress-1000A/B/EB* and another FX of same speed via a Duplex SC or ST connector. Installation procedure for the Duplex SC or ST fiber connector is as follow.

- Remove the rubber cap (if present) from the transceiver located on front panel.

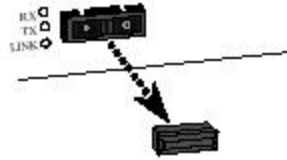


Fig. 1-4

- Remove the rubber caps from the ends of the Duplex SC connector

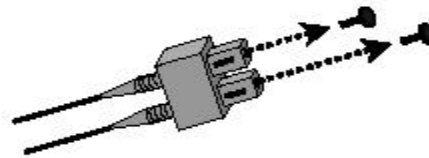


Fig. 1-5

- Align nubs on the Duplex SC connector with slots on the transceiver, and lock them together

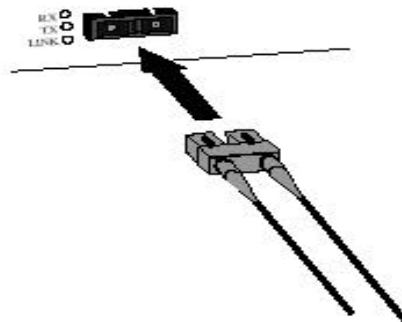


Fig. 1-6

2. HARDWARE DESCRIPTION

This Chapter describes the **VersaXpress-1000A/B/EB** hardware features for the users who use this system. The **VersaXpress-1000A/B/EB** provides the 8-port HomePNA with Windows based Management-Lite NMS capability and an Uplink port by adding a module to the MII port.

FEATURES

- Eight (8) 1or 2 (future) Mbps RJ11 Serial ports
- One (1) 10/100/200/400 Mbps auto negotiating MII/Serial port expansion that can be used as up-link to a WAN port.
- Distance up to 300m/330m (**VersaXpress-1000A/B**) and 1.2Km for enhanced version (**VersaXpress-1000EB**) over standard 24 AWG
- Ideal for MDU (Multiple Dwelling Unit) application with Home PNA Networking
- Operates stand-alone or can be cascaded with **VersaXpress-900FX** up to 8 **VersaXpress-1000A/B/EB** to reach as a 64+1 port system
- Support Mixed voice-data networks
- Full wire-speed layer 2 switch on all ports
- Up to 8 port-based VLANs can be configured in system EEPROM
- Internal 1k MAC address table, Auto address learning, Auto address aging
- Leading edge QoS capabilities provided based on 802.1p and IP TOS/DS field
 - 2 Queues per port
 - Packet scheduling based on Weighted Round-Robin (WRR) and Weighted Random Early Detection/Drop (WRED)
 - Without flow control can drop packets during congestion using WRED
 - 2 levels of packet drop provided
- Supports both Full/Half duplex ports
- Support Network bridging function between the HomePNA port(s) and Ethernet Port(s) for the packet data exchange, deliver the data packets from the Ethernet port(s) to the HomePNA port(s) or vice versa
- Support Concentrator mode that provides data privacy to subscribers, and provides port-based prioritization of packets on up to 4 ports
 - Input ports are defined to be high or low priority
 - Allows explicit identification of IP Phone ports
- Flow control capabilities
 - Provides back pressure for half-duplex
 - 802.3x flow control for full-duplex
- A parallel port for configuration updates
- Special power saving mode for inactive ports
- Transmit delay control capabilities and maximum delay guarantee (<1ms)
- DIP select for High/Low speed option (Future)
- Support System Watch dog function

SYSTEM

| | |
|--------------|------------------------------------------------------|
| Power Supply | 90 / 220 VAC, 47 to 65Hz |
| Dimension | 1U Rack-Mount 17"(W) x 7.5"(D) x 1.7"(H) |
| Temperature | 0 to 50°C (Standard) 0 to 60°C (High temp.option) |
| Humidity | 5% to 95% non-condensing |
| Altitude | -200ft.to +15,000ft |
| Weight | < 40LBs |
| Reliability | MTBF 100,000 hrs minimum |

ADDITIONAL FEATURES (W/MODULE ADAPTER)

OPTION 1: One (1) Ethernet 10 or 100Mb-FX Full-duplex single/multi mode fiber optic SC/ST connector for Uplink

OPTION 2: One (1) Ethernet 10/100Base-T RJ45 (9th Port)

NOTE:

- **VersaXpress-1000A** is 1.0Mbps with distance 300m over a standard 24 AWG.
- **VersaXpress-1000B** is 1.6Mbps with distance 330m over a standard 24 AWG.

- **VersaXpress-1000EB** is 1.6Mbps with distance 1.2Km over a standard 24 AWG.

3. MODIFYING SYSTEM CONFIGURATION

To modify the **VersaXpress-1000A/B/EB** system configuration, you will need a PC running Windows 98 with an ECP capable parallel port. Before starting your installation, you will first need to make sure that your computer is in ECP mode.

3.1. SETTING UP THE PARALLEL PORT

If you are unsure which mode your computer is in, simply check this in the **System Control Panel**. (To get there, click on **Start->Settings->Control Panel** and double click on **System**).



Fig 3-1

Under the *Device Manager* Tab of the *System Properties*, expand the *Ports (COM & LPT)* item, and verify that the printer port is **an ECP Printer Port** and is set to **LPT1**.

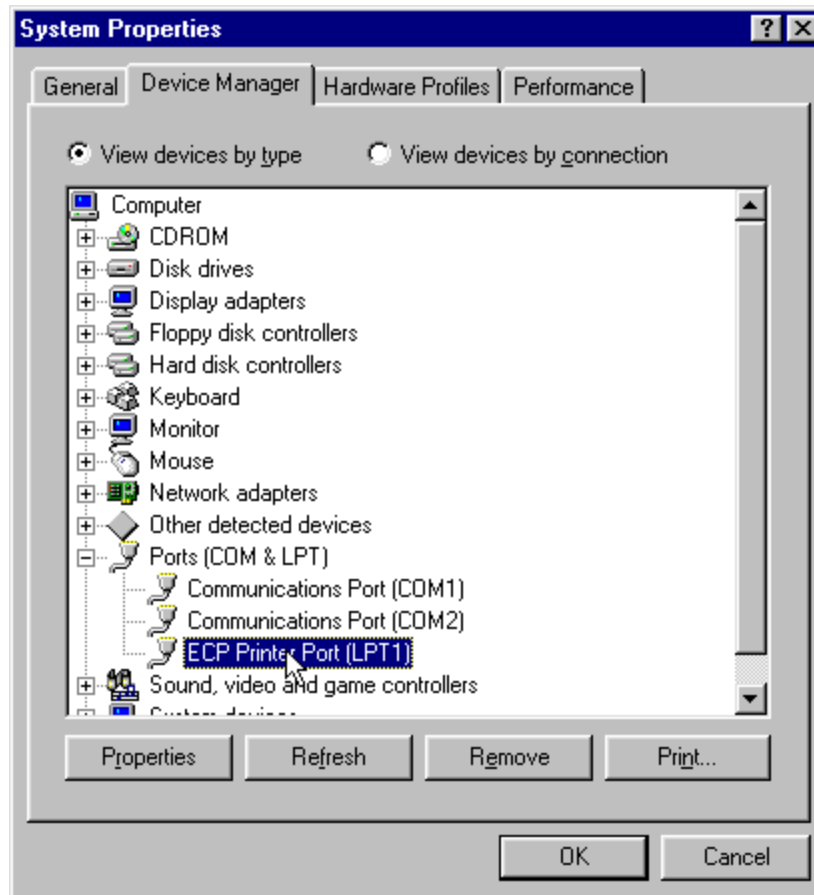


Fig 3-2

If the printer port is not set to ECP and LPT1, you will need to change it to ECP using your BIOS configuration Utility. For most computers, this means restarting and pressing “Delete” key (**DEL** or **Delete** not the Backspace key) at the memory count and BIOS version display screen, selecting the port or peripheral settings, and changing the mode to ECP and the port to LPT 1. Refer to your motherboard or computer User Manual for more details.

Once your machine’s parallel port is in ECP mode, you are ready to connect the **VersaXpress-1000A/B/EB** to the machine by simply connect one end of the PC Parallel Cable to the Parallel port on the **VersaXpress-1000A/B/EB**, a DB-25 connector, and the other end to your PC’s parallel port.

Next, you will need to install the **VersaXpress-1000A/B/EB** configuration software, which come with the provided **setup** diskette or CD. Simply follow the instructions from the installation program to setup the configuration program on your PC. Please make sure the real panel DIP1 of the **VersaXpress-1000A/B/EB** unit is set in up position (Programming mode) before installing the configuration utility.

If the program complains that it is missing a required DLL, simply copy the required DLL files from the diskette or CD into the \Windows\System directory and reboot.

Software Installation Steps:

1. Insert Diskette or CD which comes with **VersaXpress-1000A/B/EB** System
2. Double click on *setup.exe* in **A:** drive or CD ROM drive from **Windows Explorer**.
3. After the Setup program is loaded. Simply follow the on-screen step-by-step instructions.
4. Configuration Software will be installed (by default) into the **Program Files** directory, and an alias will be placed in the **Start Menu**.

Once you have properly installed the Configuration software **VersaXpress-1000.exe**, and the parallel port is in ECP mode, you are now ready to use **VersaXpress-1000A/B/EB** software to configure the **VersaXpress-1000A/B/EB** system.

4. VersaXpress^ä -1000A/B/EB CONFIGURATION SOFTWARE

You are now ready to read data from the **VersaXpress-1000A/B/EB** Packet Switching Concentrator. Using Mouse to Click software **VersaXpress-1000** Icon (**Start => Programs => VersaXpress-1000** Icon) and choose **Read** from the device menu.

The program will then read the current settings from **VersaXpress-1000A/B/EB**. You can access the system ID, current port settings and priority settings from the **Settings** menu.

After you have made your changes to the settings, you can go ahead and write them out to the **VersaXpress-1000A/B/EB**. Choose **Write** from the **Device** menu. The data will then be written to the **VersaXpress-1000A/B/EB** Packet Switching Concentrator.

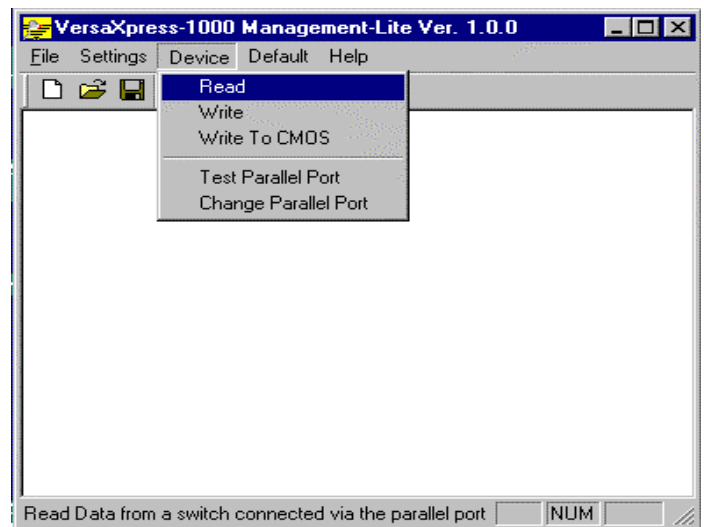


Fig 4-1

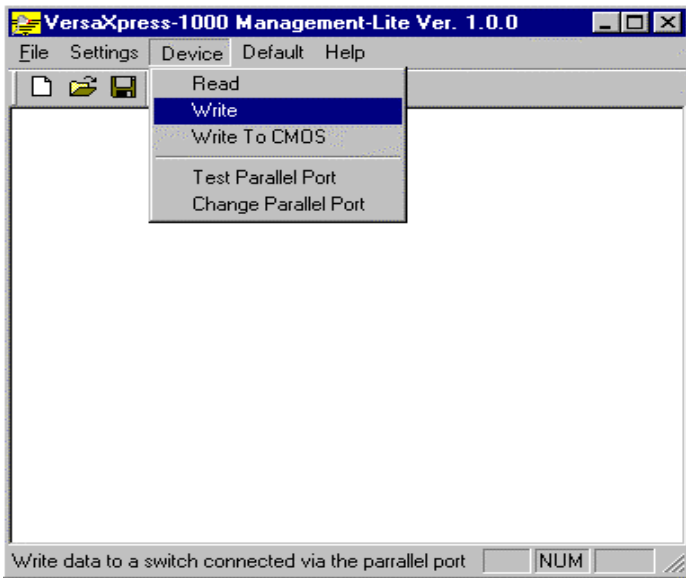


Fig 4-2

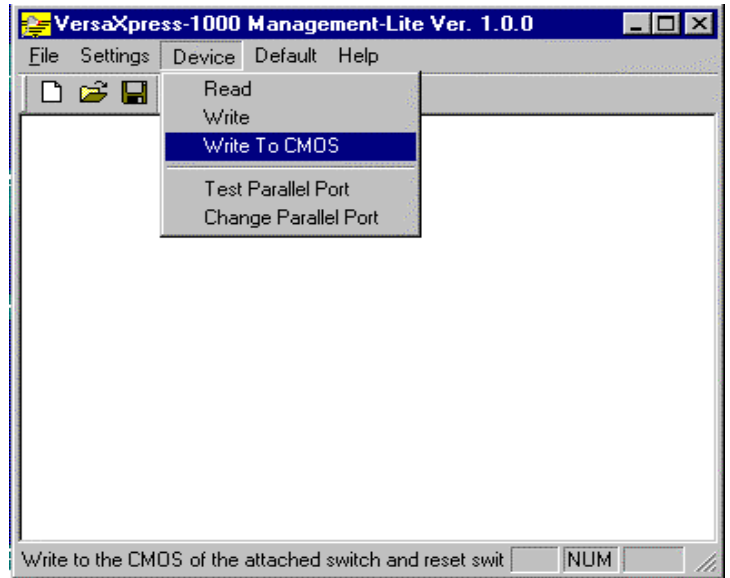


Fig 4-3

If you get an error message, it means that the program was unable to correctly program the **VersaXpress-1000A/B/EB**, simply power off and back on the system. The CMOS defaults will be restored.

If you wish to change the startup defaults, you need to write to the CMOS. This enables the Packet Switching Concentrator to startup in your custom configuration. To do this, simply choose **Write to CMOS** from the **Device** menu.

As a precaution, **VersaXpress-1000** will not write to the CMOS unless it can verify that the data was properly written. If you get an error message, simply turn the Packet Switching Concentrator off and back on, and the old CMOS defaults will be restored.

4.1. MODIFYING PORT SETTINGS AND PRIORITY SETTINGS

In order to modify the Port Settings, simply choose Port Settings from the Settings menu.

This option is only enabled after you have read data from a file or from the **VersaXpress-1000A/B/EB**. To modify the settings for a port, right click on the port you wish to modify, and change the settings in the popup menu that appears. Currently selected options appear with a checkmark to the left of them.

The first option is the configuration option, which either force the port to use the current configuration or auto advertises based on the current configuration. If the 9th port has a 10 or 100 Base-FX module installed include external MII port Ethernet FX adapter, the Auto negotiation feature must be TURNED OFF. The second setting is the duplex setting of the port. The third setting is the speed of the port.

The fourth setting is the Virtual LAN ID, which selects the VLAN to which the port should belong, and allows the Packet Switching Concentrator to be logically separated between ports

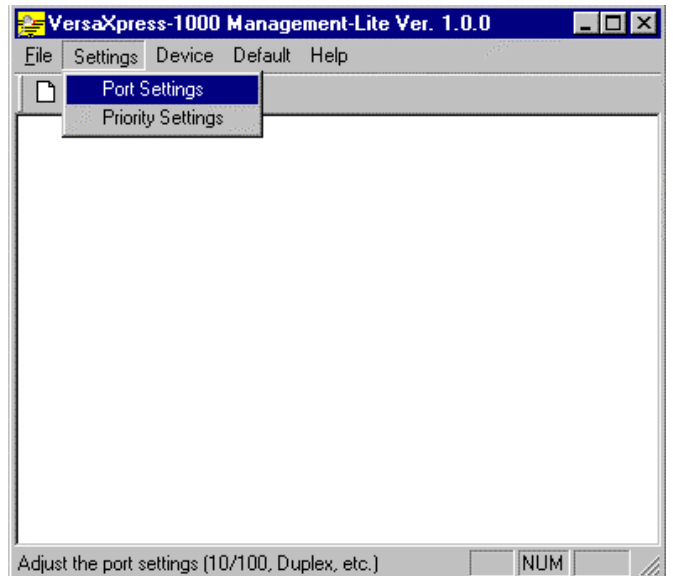


Fig 4-4

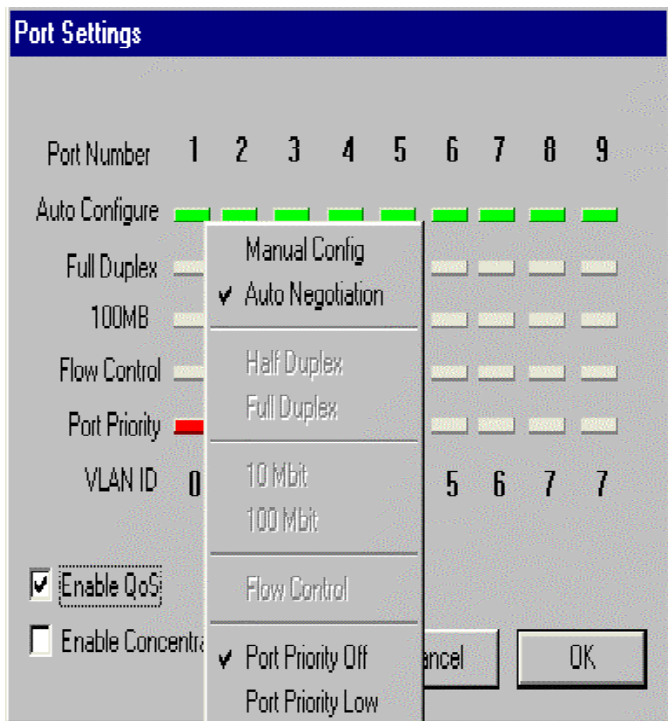


Fig 4-5

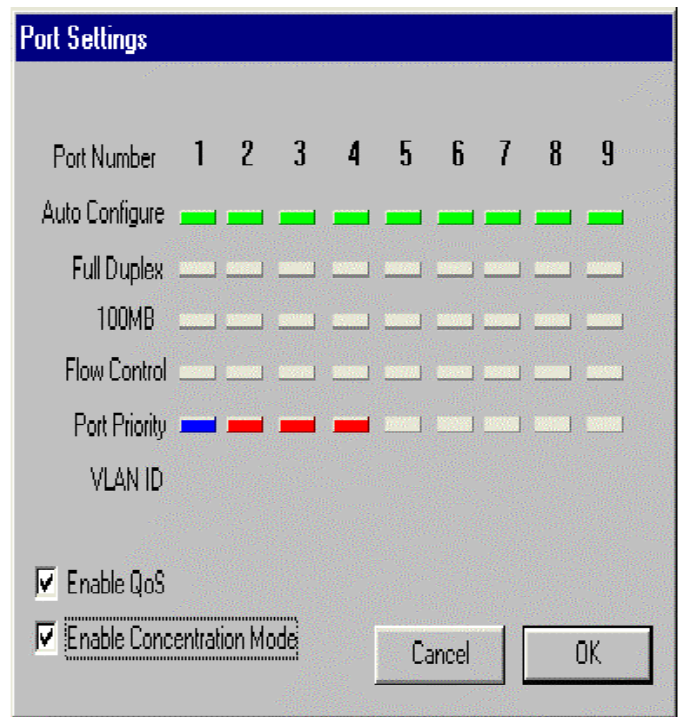


Fig 4-6

Once you have configured the settings to your specifications, your settings appear. A red LED indicates that the option is currently off, whereas a green LED indicates that the given option is currently on. The fifth setting is to set port priorities among the 8 ports. The sixth setting is to enable the Quality of Service and bring up the next icon of Priority Settings. The final setting is to enable or disable the Concentrator mode, where each of the 0-7 ports is only to directly communicate with the Uplink port 8 (9th Port). This mode ensures that data from any of ports 0-7 cannot be directly seen by another port. This feature is used in MDU (Multiple Dwelling Unit) applications to provide data privacy to subscribers.

To use your current settings, click OK.

If you wish, you can write your settings out to the *VersaXpress-1000A/B/EB*, save your configuration, or configure the priority settings of the *VersaXpress-1000A/B/EB*. To get priority settings, you have to click "Enable QoS" (Enable the QoS) and read next section for further configurations.

4.2. PRIORITY SETTINGS

In order to change the priority settings, you need make sure priority settings checkmark has been checked. Once you see the checkmark and just simply choose **Priority Settings** from the **Settings** menu.

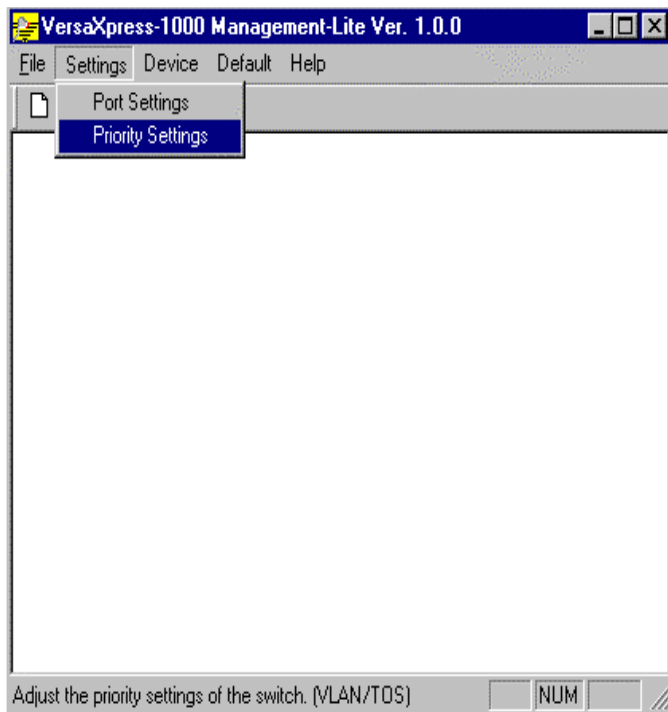


Fig 4-7

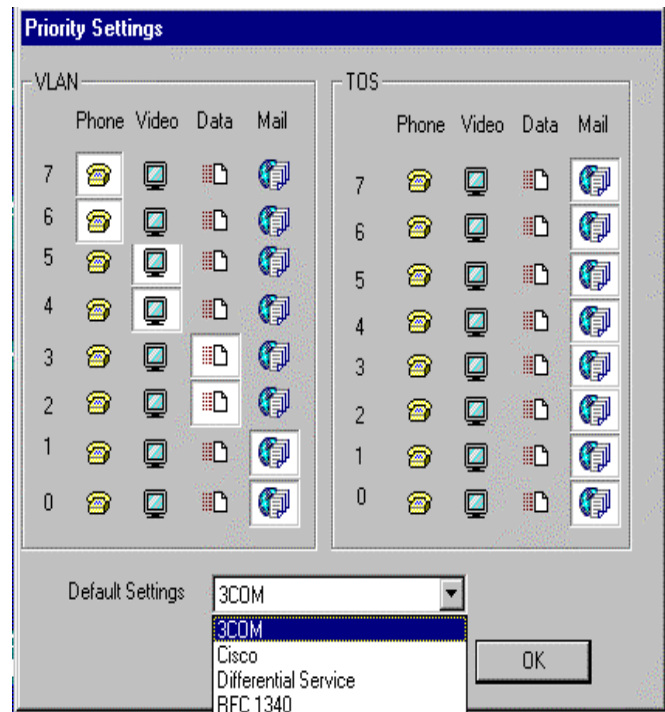


Fig 4-8

(Note: This option is only enabled after you have enabled QoS option from Port Settings menu.) A dialog box appears, indicating the current priority settings. At the bottom of the priority settings dialog box, you can select from four industry standard priority settings, 3COM, Cisco, Differential Service, and RFC 1340.

These priority settings determine which packet fields the *VersaXpress-1000A/B/EB* uses to determine the priority and how to interpret that priority. The telephone, TV, file, and web, indicate the four priority levels of the *VersaXpress-1000A/B/EB*. Voice (IP telephone) has the highest priority, with low drop and fast transmit. Multimedia (Video) has the next highest priority, with fast transmit and high drop. FTP (file) has the next highest priority, with slower transmit and low drop. HTTP (web) or SMTP (E-mail) has the lowest priority with slower transmit and high drop.

Clicking the icons and assigning a priority level to the priority ID of the packet can customize the default settings.

If you wish to use TOS to determine priority, you must first set the default settings to Cisco, Differential Service, or RFC 1340. Once you have done this, you can change the settings to your specifications.

If you wish to use VLAN to determine priority, you must first set the default settings to 3COM, and then you can change the settings to your specifications.

Now that you have set the priority settings, you can change the port setting and write your settings to the **VersaXpress-1000A/B/EB**, or save them to a configuration file.

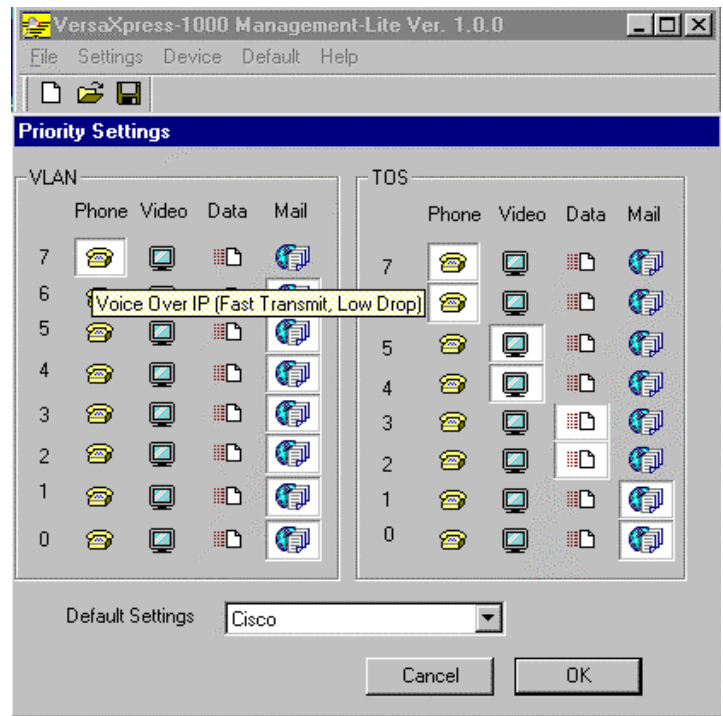


Fig. 4-9

4.3. OPENING AND SAVING FILES

To open a previously saved configuration file, simply choose open from the file menu.

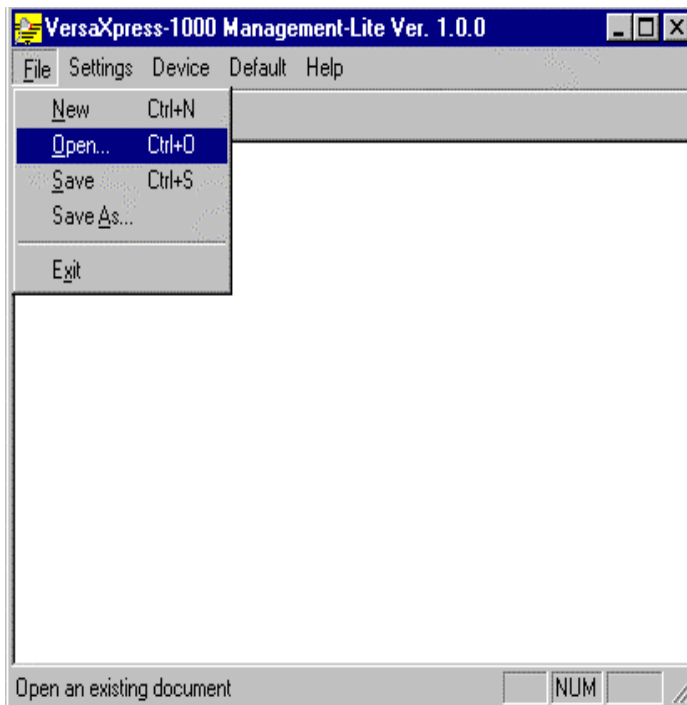


Fig. 4-10

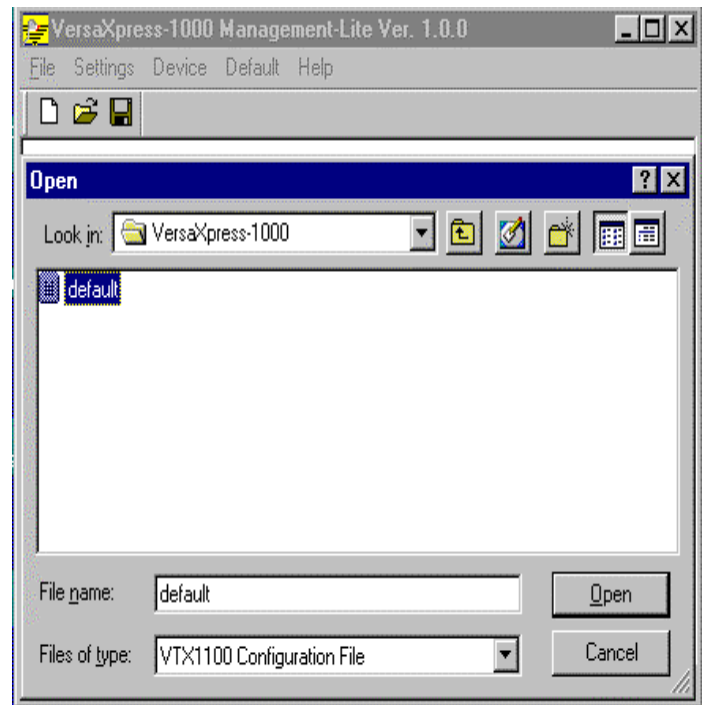


Fig. 4-11

A dialog box appears, and you can select the file you wish to open. **VersaXpress-1000A/B/EB** configuration files have the extension **.cfg**. The software will only open files with the extension **.cfg**.

To save a configuration file, simply choose save from the file menu, and set the location and type in the name of the file you wish to save. You do not need to type in the **.cfg**. **VersaXpress-1000** will take care of this for you.

Now that you have opened or saved your configuration, you can go ahead and write them to the **VersaXpress-1000A/B/EB**.

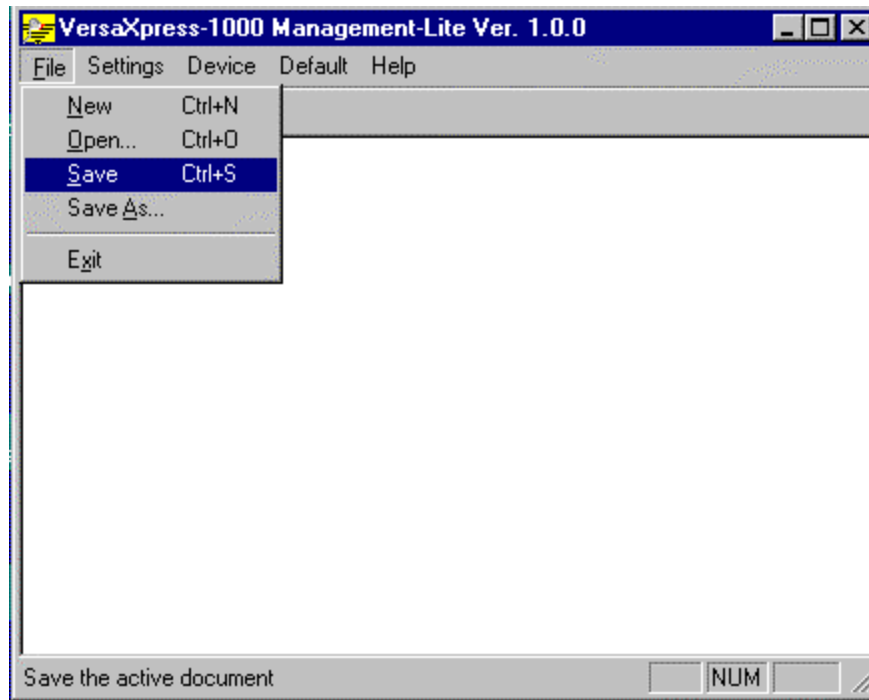


Fig 4-12

4.4. TROUBLESHOOTING

An error message you may get is **"The parallel port is unreliable"**.

If this occurs, and you are certain that the parallel port is setup properly, and you are sure the system DIP switch 1 is set in "UP" position (Programming Mode), you may need to switch to a different computer. The parallel ports on some computers do not function correctly, and they are incompatible with the current **VersaXpress-1000A/B/EB** MDU Packet Switching Concentrator Unit.