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AUGUST 2000

SM700A	SM707C	SM722C
SM701A	SM708C	SM723C
SM701C	SM709C	SM724C
SM702C	SM710C	SM730
SM705C	SM720C	SM740
SM706C	SM721C	SM750A

Pro Switching System

**FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

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Contents

1. Specifications

1.1 Cards

Connectors—SM720C: (3) DB25 female; SM721C: (3) M/34 female; SM722C: (3) DB15 female; SM723C: (3) RJ-11; SM724C: (3) RJ-45

Indicators—SM705C-SM707C: (8) LEDs for transition activity

Power—From the Rack Chassis

1.2 Entire Pro Switching System

Protocols—Transparent to all protocols and speeds

Control Options—HP OpenView Windows, SNMP, or watchdog timer

Control Communication—RS-232/V.24; 1200 to 9600 baud; 7 data bits, even parity, 1 or 2 stop bits

Management PC Requirements—486 PC running at 66 MHz with a 3½" 1.44 MB floppy disk drive, a color monitor, a mouse, sufficient serial communication ports to access all sites, and the following memory:

Extended memory:	8 MB
Hard disk space:	5 MB
	+15K per rack.

System Capacity—OpenView control: 256 sites, 256 racks per site; SNMP control: 256 sites, 256 racks per site; Watchdog timer: Unlimited sites, 256 racks per site

Status Activity LEDs—RS-232/V.24 and V.35: TD, RD, RTS, CTS, DSR, DCD, DTR, RI; RS-530: TD, RD, RTS, CTS, DCE, DTE, DCD, TM

Alarms—Triggered on MARK, SPACE, or NO DATA: RS-232/V.24: TD, RD, RTS, CTS, DSR, DCD, DTR, RI, TC, RC, EC, SQD; V.35: TD, RD, RTS, CTS, DSR, DCD, DTR, LL, TC, RC, EC, RL; RS-530: TD, RD, RTS, CTS, DCE, DTE, DCD, TM, TC, RC, EC, RL

Switching—RS-232/V.24: 3 conductors, pins 1 (shield ground) and 7 (signal ground) are not switched; V.35: 19 conductors: RTS (C), CTS (D), DSR (E), DCD (F), DTR (H), LL (J), TM (K), TP (L), RL (BB), TD (P, S), RD (R, T), RC (V, X), EC (U, W), TC (Y, AA), pins A (shield ground) and B (signal ground) are not switched; RS-530: 23 conductors, pins 1 (shield ground) and 7 (signal ground) are not switched; Other cards: All conductors are switched

Patching—RS-232/V.24: 23 conductors, pin 7 (signal ground) is common; V.35: 19 conductors: C, D, E, F, H, J, K, L, P, R, S, T, U, V, W, X, Y, AA, BB, pin B (signal ground) is common; RS-530: 23 conductors, pin 7 (signal ground) is common

Monitoring Bus—(1) analog bus, (1) digital bus: RS-232/V.24: TD, RD, RTS, CTS, DSR, DCD, SCTS, TC, SRD, RC, DTR, SQD, RI, DSRS, EC, TI, pin 7 (signal ground) is common; V.35: TD, RD, RTS, CTS, DSR, DCD, DTR, LL, RC, EC, TC, pin B (signal ground) is common; RS-530: 23 conductors, pin 7 (signal ground) is common

Relays—Switching: Latching; Monitoring bus: Nonlatching; Contact material: Gold-clad silver; Initial contact resistance: 50 milliohms; Expected life (number of operations): 10,000,000

Interface—Digital: RS-232, RS-530, V.35; Analog: RJ-11, RJ-45

Operating Temperature—32 to 104°F (0 to 40°C)

Maximum Humidity—Up to 95%, noncondensing

Power—From Power Supply Module (SM750A): 115/230 VAC, autoselectable

Size—SM700A: 8.75"H x 19"W x 13.25"D (22.2 x 48.3 x 33.6 cm)

Weight—45 lb. (20.4 kg) fully configured

2. Introduction

The Pro Switching System is an advanced system for managing data lines and data networks. It has a broad range of capabilities and can adapt to small and large applications.

   Once you set up the system, it provides "hands-free" management. The predefined switching and backup tasks are performed automatically. If a line generates an alarm, the system reroutes the data through a backup line and reports the problem. Also, it lets you monitor and test any line in the network.

   For remote management, the 2000 Windows SNMP OpenView 7.2 application software lets you control racks via SNMP over IP networks.

The Pro Switching System features:

Functions:

- Three- and four-cavity patching

- A/B switching

- Single-line, gang, and group switching

- User-defined alarms

- Alarm- and time-triggered switching

- Remote status monitoring for testing faulty lines

- Break to DTE or DCE for remote test/access

- Non-intrusive bridging for monitoring

Hardware:

- Intermixing of switching and patching cards within the same rack

- Digital and analog monitoring buses

- Switching performed via latching relays

- Redundant power units with separate power feeds

- Dimensions: 19" (48.3 cm) wide, 8.75" (22.2 cm) high, 13.25" (33.7 cm) deep.

Control/Software:

- SNMP

- PC (HP OpenView Windows)

- ASCII character strings

- Async terminal menus

- Central control of remote test equipment

- Provides database including network performance evaluation

    The rest of this chapter describes the features of the Pro Switching System in more detail. It also provides sample applications at the end of the chapter. Read this chapter for a more comprehensive understanding of the system.

2.1 System Architecture

The System architecture of the Pro Switching System has three levels: line level, rack level, and site level.

    At the Line level, data lines pass through line cards.
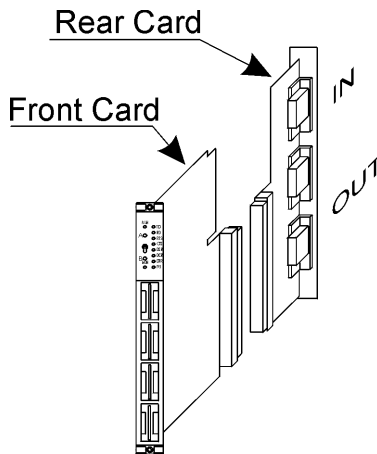
Figure 2-1. Line Level.

The line level has the following capabilities:

- A/B switching

- Two-, three-, and four-cavity patching

(Refer to Chapter 3, Functions, for descriptions.)

At the Rack level, the line cards are mounted in racks. Each rack has its own microprocessor-based control card.

The rack level has line bridging and breaking via monitoring bus.

(Refer to Chapter 3, Functions, for descriptions.)
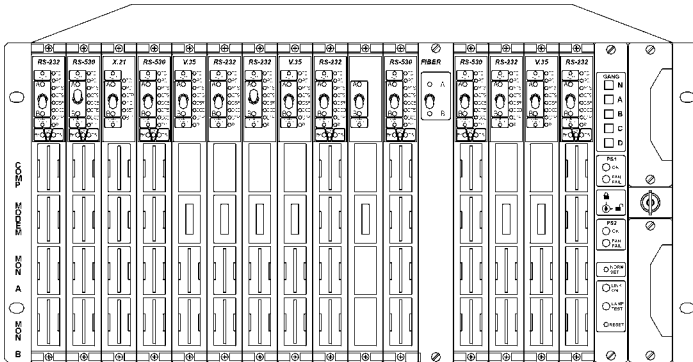
Figure 2-2. Fully Loaded Rack.

At the Site level, each rack control card communicates with a system management device (for example, a PC).

The site level has the following capabilities:

- group switching

- scheduled switching

- default switching

- alarm monitoring (reporting to system management and selectively to customer courtesy terminals)

- alarm-triggered switching, with or without fallback
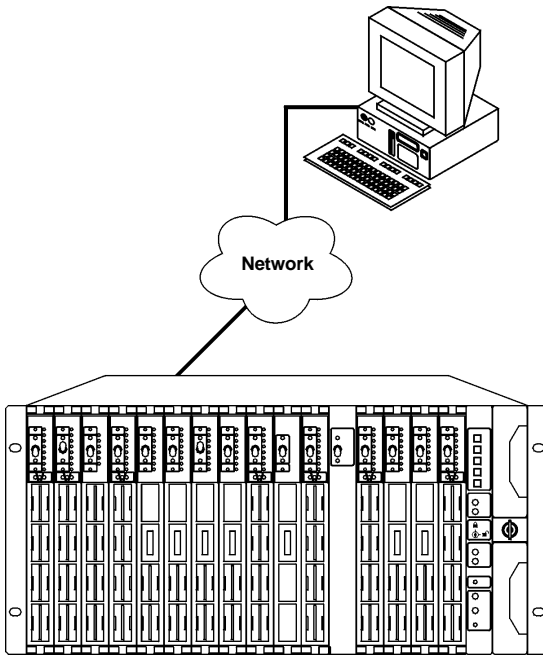
Figure 2-3. Site Level.

- system health check

- database report generation

- system security functions (software and hardware pass codes)

- multiple site management (up to 256 racks per site; up to 256 sites per system)

(Refer to Chapter 6, Operation, for descriptions.)

2.2 Hardware Features

2.2.1 TWO-PART CARD DESIGN

A unique two-part card design provides flexibility. The front card (front-inserted) plugs into the rear card (rear-inserted) (see Figure 2-4). Together, they manage one data line.

Generally, the front card contains the switching and patching circuitry, and the rear card contains the cable interface circuitry.

You can insert and remove front cards without removing rear cards or cables.
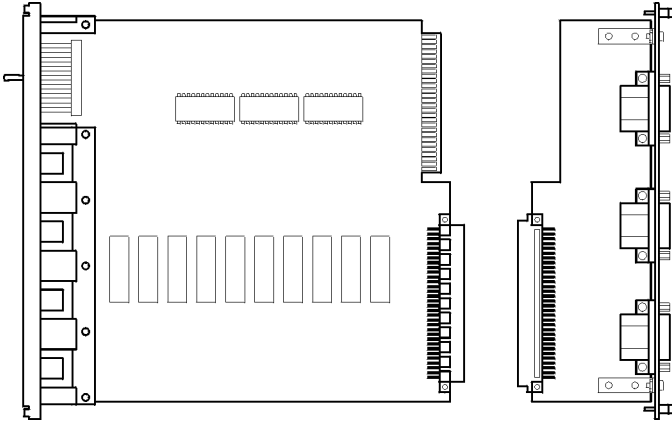
Figure 2-4. Front and Rear Cards.

2.2.2 FRONT-REAR CARD COMBINATIONS

Each front card is compatible with a specific rear card.

2.2.3 SUPPORTED INTERFACES

The system supports the following interfaces: RS-232/V.24, V.35, RS-530, DB15, RJ-11, RJ-45.

2.2.4 SUPPORTED CONNECTORS

The system supports these connectors: DB25, V.35 "M" type, DB15, RJ-11, RJ-45.

Figure 2-5 illustrates the mixing of connectors in a rack.
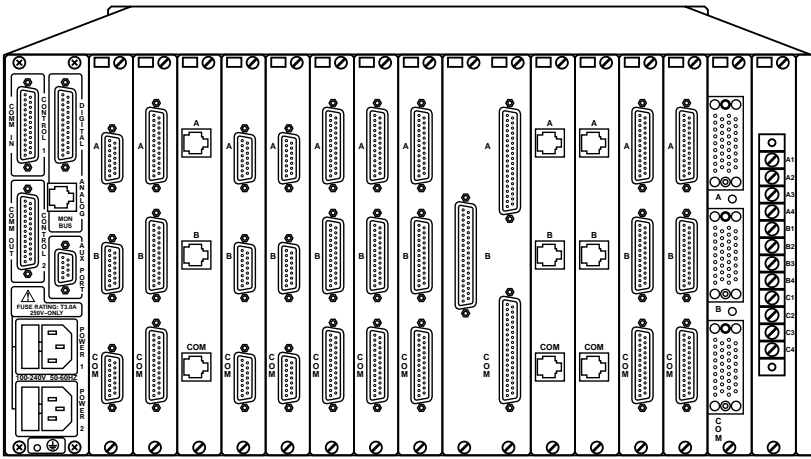
Figure 2-5. Mixing Connectors in a Rack.

2.2.5 LINE CARD SWITCHES AND INDICATORS

Each Switching card has a switch on the front panel for manual control. Each card also has LED indicators.

(Refer to Chapter 4, Components, for a full description of line card switches and LEDs.)

2.2.6 CONTROL CARD SWITCHES AND INDICATORS

The rack control card has a five-button switch panel for gang switching (see Figure 2-6). You can enable/disable this function by a key switch. When you press a button, all cards in the rack that have the indicated capability switch.

For example, if you press the B button, all A/B switching cards in the rack will switch to B.

Switching is performed by latching relays, which, if the power fails, remain in the last switched position and continue to pass data.

The control card also has a Lamp Test button to test the rack LEDs. A reset button reboots the system (warm or cold reboot, depending on a DIP-switch setting).

Control Card LEDs indicate Power Supply, Fan, and System Status.

(Refer to Chapter 4, Components, for a full description of control card switches and LEDs.)
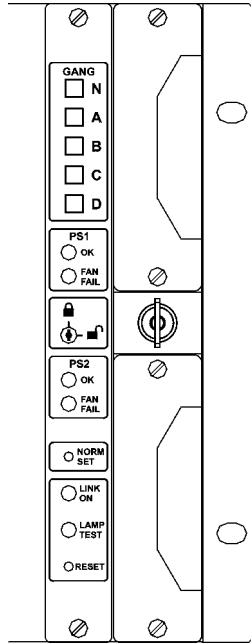
Figure 2-6. Control Card Switches and Indicators.

2.3 System Management Features

2.3.1 HP OPENVIEW WINDOWS GRAPHIC INTERFACE

Pro Switching System software running on a PC under HP OpenView for Windows mediates System Management.

OpenView is an open software product, allowing you to manage devices from different vendors. It allows you to create a map of the network using a supplied set of icons. A color code indicates the status of each device in the network.

The Pro Switching System network management can control up to 256 sites, each comprising up to 256 interconnected racks. You interact with the system via the map icons and a series of subordinate screen displays.

The displays include realistic front and rear views of the rack mount and the line cards. They show the current switched state of all lines and the status of monitored leads.

The screen displays functional switch buttons. If you click on a displayed button, the equivalent hardware operation occurs at the site. For example, if you click on gang-switch button A, a gang switch to A operation occurs at the rack (as long as the key switch is in the ENABLE [unlocked] position).

The software also displays LEDs in real time. In other words, when an LED lights at a rack, it also lights in the on-screen display.

If you click on the display of a line card, the system displays a window that describes the line and the status of the monitored signals on the leads.

2.3.2 MONITORING/TESTING

Two common monitoring buses—a digital bus and an analog bus—provide access for monitoring and testing each line with or without interrupting data flow.

Upon command, the system can connect a line on any rack to the rack's digital or analog monitoring bus.

When the monitoring buses of several racks are daisy-chained together, you can create a bus definition, specifying the racks that are connected in this way. This gives you easy access for monitoring bus operations. See Figure 2-7 for an example of a monitoring bus.
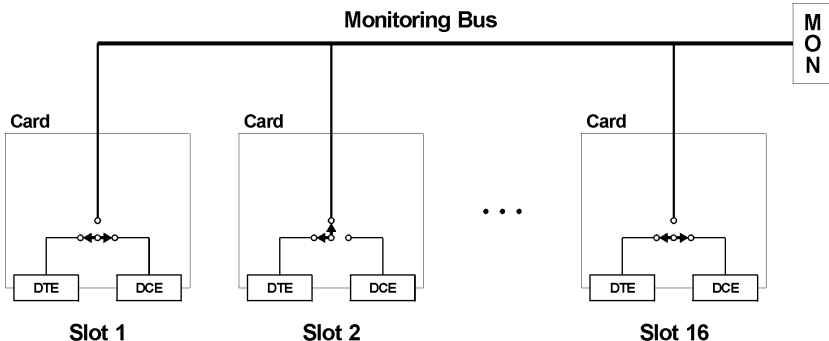
Figure 2-7. Monitoring Bus.

2.3.3 ALARMING

You can define failure criteria for each signal online, based on the sensing of SPACE, MARK, or NO DATA conditions and their duration. You can define different criteria for different times of the day.

2.3.4 ALARM BOX

A port can be dedicated to let you connect an alarm box. The alarm box responds to alarm signals received by the PC, producing a visual or auditory signal to alert you.

2.3.5 ALARM-TRIGGERED SWITCHING

You can predefine a lead alarm to trigger specified switching operations whenever it occurs. You can also program the system to switch back when the condition has been corrected. You can define different criteria for different times of the day.

2.3.6 SWITCHING OPTIONS

You can apply PC-controlled switching operations—manual, backup, alarm-triggered, scheduled, and default (single-keystroke)—selectively to one line at a time, if desired. You also can create and name groupings of sites, racks, and/or lines to switch simultaneously.

2.3.7 NETWORK SECURITY

You assign each user a password and an appropriate level of access to network operations.

2.3.8 CUSTOMER ACCOUNT IDS AND COURTESY TERMINALS

You can define customer account IDs for assignment to one or more lines and/or racks. This assignment enables selective routing of status and alarm information to one or more courtesy terminals. Customers viewing courtesy terminals can observe what is happening on their own lines but not on the lines of other customers.

2.3.9 REMOTE PC

You can connect one or more remote PCs to the dedicated communication ports. A user at a remote PC can perform switching, and can view and acknowledge alarms in the same ways as the user at the central PC.

2.3.10 OPEN COMMUNICATION PORT

The Open Communication Port function lets you select one of the system's communication ports to which a modem or terminal is connected. Then, via the PC, you can communicate directly with the connected device.

2.3.11 OPEN CHANNEL TO MODEM

At the PC, you can open a channel to any online modem and communicate directly with the modem for non-intrusive testing and diagnosis.

2.3.12 NETWORK HEALTH CHECK

To detect rack failures that preclude alarms, the PC runs a health check, attempting to communicate with each rack. If a rack fails to respond, the PC reports this failure.

Sites that are always online with the central PC are checked continuously. For off-line sites, you can define a Health Check Schedule, specifying times when these sites will be checked.

2.3.13 HISTORY FILES

All alarms are written to the Session Alarm History file, which you may display and/or clear at any time.

Alarms are also written to a separate ASCII log file on the hard disk. Another ASCII log file maintains a record of important system events and operator actions.

2.3.14 WATCHDOG TIMER

The optional Watchdog Timer application switches users between two computer systems, substituting a standby system for a failed system.

2.4 Control Communication

2.4.1 RACKS AND THE MANAGEMENT PC AT SITES

A Pro Switching System rack that is connected via its COMM IN port with the management PC comprises a Pro Switching System site. The rack connected in this way is the Primary Rack. At this site, other racks called Secondary Racks can connect to the Primary Rack via their communication ports in daisy-chain fashion.

The location of the Management PC is referred to as the Primary Management Site. The Management PC can communicate with up to 256 Pro Switching System sites. This communication can be routed through the communication ports of the

PC or through up to 64 auxiliary communication ports mounted on intelligent serial multi-port units.

The connections between the PC and the rack can be of two types:

1. Dedicated line between the PC and a site. The site is always online with the PC (hardwired).

2. Dialup modem connection between the PC and a site (see Figure 2-8). The connection is established when needed.

You can program communication ports from the PC to be either dedicated ports or dialup modem ports.
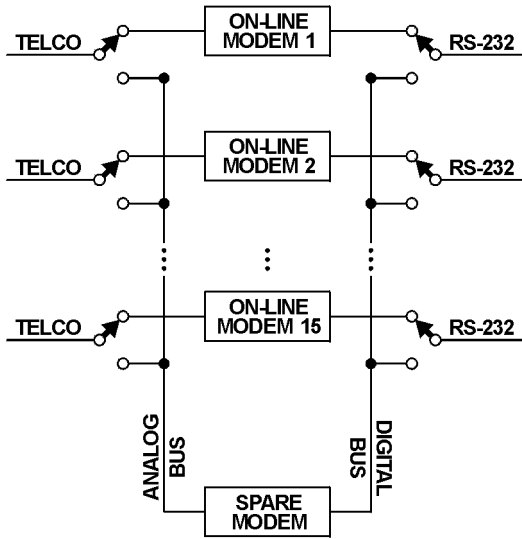
Figure 2-8. Dialup Connection.

2.4.2 DIALOG WITH DIALUP SITES

Normally, all dialup sites are off-line. You initiate the dialing of the site's telephone number when you execute a command that requires communications with a rack on a dialup site. When the connection is established, the remote site comes online and polling starts.

From the moment you make the connection, you can send commands to the racks on that site and receive status data from the racks.

If an alarm is generated or restored to normal in a rack at a dialup site, and the site is off-line, the dialup site dials the central PC.

When the connection is established, the dialup site comes online. The PC responds to the connection by polling the dialup site and obtaining information about current status and configuration. Then, the PC disconnects the dialup site.

2.4.3 POLLING PROCEDURES

Generally, racks on dedicated ports are polled individually by the PC. However, if a switching/monitoring screen for the rack is displayed, this rack is polled more frequently in order to acquire "real-time" information about it for display on the screen.

2.5 System Expansion

The Pro Switching System is flexible and modular. You can begin with a small local system—a rack and a few cards. As your needs grow, you can add more cards and racks to create a large site; then add more sites to create a global network. You can incorporate new functions and interfaces as they come into use.

3. Functions

This chapter describes the functions of the Pro Switching System, including switching and patching options and the monitoring bus. The chapter also describes the system configuration options.

3.1 Switching and Patching

The Pro Switching System offers these switching and patching options:

- A/B switching

- Three-cavity patching

- Four-cavity patching

3.1.1 A/B SWITCHING

A/B switches have three ports: A, B, and COMMON. You can connect the line at the COMM IN port to the line at the A port or the B port. Figure 3-1 shows an A/B switch in which the COMMON port is connected to the A port.
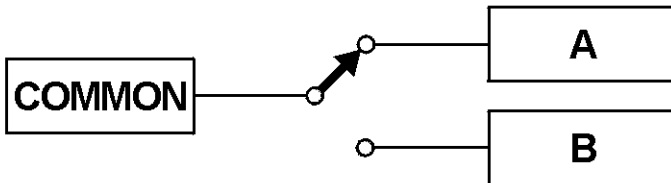
Figure 3-1. A/B Switching.

The switch uses latching relays, which remain in the last switched position if the power fails.

A/B switches are available for use with the following interfaces: RS-232/V.24, RS-530, V.35, DB15, RJ-11, and RJ-45.

3.1.2 THREE-CAVITY PATCHING

These cards have three patch cavities: COMP, MODEM, and MON. Figure 3-2 shows three-cavity patching. Normally, the DTE is connected to the DCE.
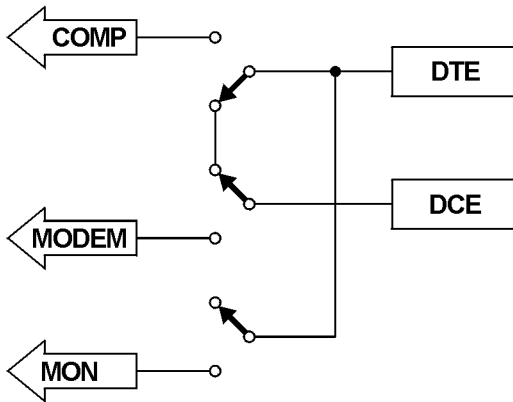
Figure 3-2. Three-Cavity Patching.

When you insert a patch cord into the MON cavity, it is connected to the circuit between the DTE and the DCE. This is a bridge connection, and the circuit is not broken. You can monitor the signals.

When you insert a patch cord into the COMP cavity, the circuit is broken and the cord is connected to the DTE. You can test the DTE.

When you insert a patch cord into the MODEM cavity, the circuit is broken and the cord is connected to the DCE. You can test the DCE.

Three-cavity patching is available for use with the following interfaces: RS-232, V.35, and RS-530.

3.1.3 FOUR-CAVITY PATCHING

These cards have A/B switching and four patch cavities: COMP, MODEM, MON A, and MON B. Figure 3-3 shows four-cavity patching when the switch is in the A position. Normally, the appropriate DTE is connected to the DCE.
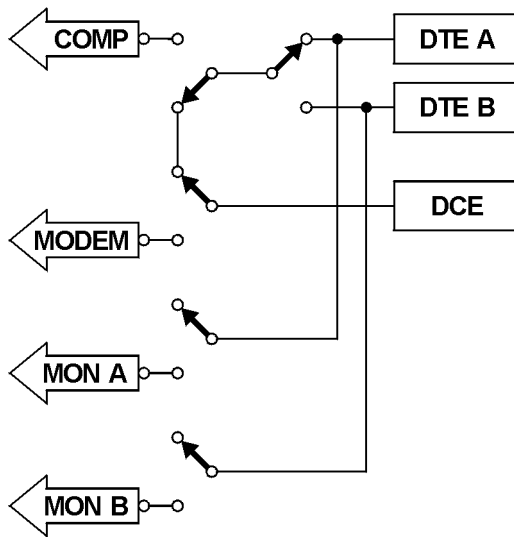
Figure 3-3. Four-Cavity Patching.

When you insert a patch cord into the MON A cavity, it connects to the circuit between DTE A and the DCE. When you insert a patch cord into the MON B cavity, it connects to the circuit between DTE B and the DCE. The circuits are not broken. You can monitor the signals.

When you insert a patch cord into the COMP cavity, the circuit is broken and the cord is connected to the appropriate DTE. You can test the connected DTE.

When you insert a patch cord into the MODEM cavity, the circuit is broken and the cord is connected to the DCE. You can test the DCE.

Four-cavity patching is available for use with the following interfaces: RS-232, V.35, and RS-530.

3.2 Monitoring Bus

The Pro Switching System has two monitoring buses: a digital monitoring bus and an analog monitoring bus. You can connect a monitoring bus to any line in the system, allowing monitoring and testing equipment to access that line. When a line is connected to the monitoring bus, the corresponding card's MONITOR LED lights. Figure 3-4 shows a monitoring bus.

Typically, the DTE is connected to the DCE.

You can connect the monitoring bus to a line in any of three configurations, which correspond to the patching functions. You can bridge, break to DTE, or break to DCE.

When you bridge a line, the equipment is connected to the circuit between the DTE and the DCE. The circuit is not broken, and you can monitor the signals.

When you break to DTE, the circuit is broken and the equipment is connected to the DTE. You can test the DTE.

When you break to DCE, the circuit is broken and the equipment is connected to the DCE. You can test the DCE.

The buses use non-latching relays, which return to their normal settings if the power fails.

The monitoring buses are available for use with the following interfaces: RS-232, RS-530, and RJ-11.
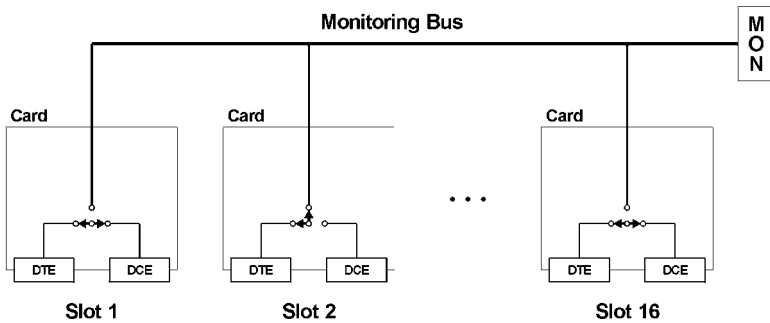
Figure 3-4. Monitoring Bus. The line card in slot 2 is configured for break to DTE.

(All other line cards are normal-through.)
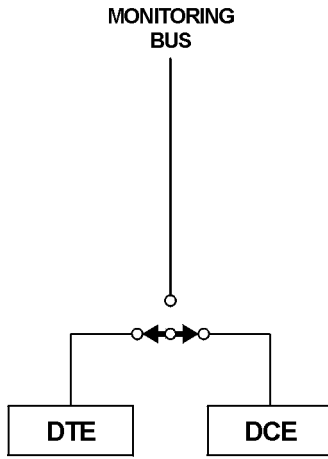
Figure 3-5. Normal-Through.
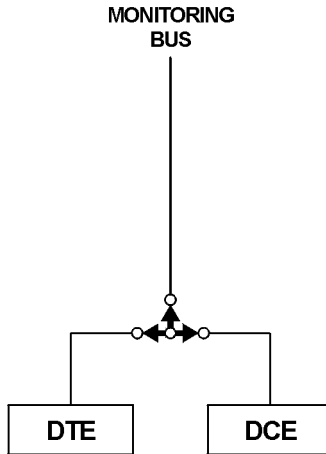
Figure 3-6. Bridge.
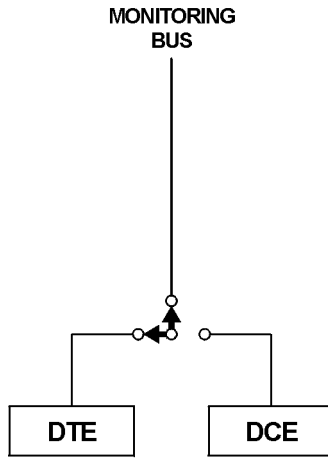
Figure 3-7. Break to DTE.
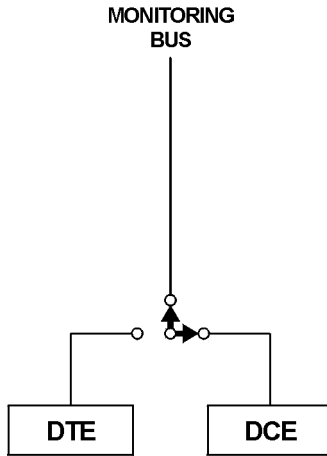
Figure 3-8. Break to DCE.

3.3 Configurations

There are two types of rack configurations:

1. One-section rack: In the one-section rack, the bus can connect to all 16 slots (see Figure 3-9). By default, the rack you receive is configured to be a one-section rack.

2. Two-section rack: You can use DIP switches to split the rack into two sections.

That is, one bus connects to eight slots, and the other bus connects to the other eight slots (see Figure 3-9).

Switch/patch cards provide AB switch with optional patch capabilities. Normally, you will place these cards in a one-section rack. Place the cards in any combination and in any order.

NOTE

Place the spare card in the rightmost slot of a section. Place the online cards in the other slots.

One-Section Rack

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

16 slots

Two-Section Rack

1 2 3 4 5 6 7 8   9 10 11 12 13 14 15 16

8 slots   **8 slots**
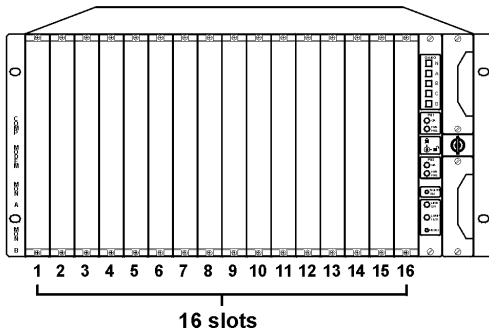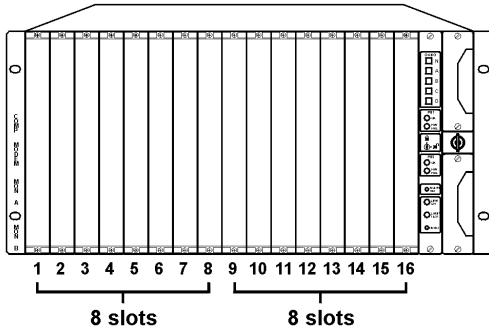
Figure 3-9. Rack Configurations.

4. Components

This chapter describes the Pro Switching System components and component functions, and provides model numbers.

4.1 Rackmount Chassis

The Rackmount Chassis (SM700A) has 16 slots for front cards, 16 slots for rear cards, one slot (the rightmost slot) for the control card, and two slots for power supplies.

The Rackmount Chassis must include a control card and at least one power supply (115/230 VAC) to operate properly. If you want power redundancy (backup), the rack must include two power supplies.
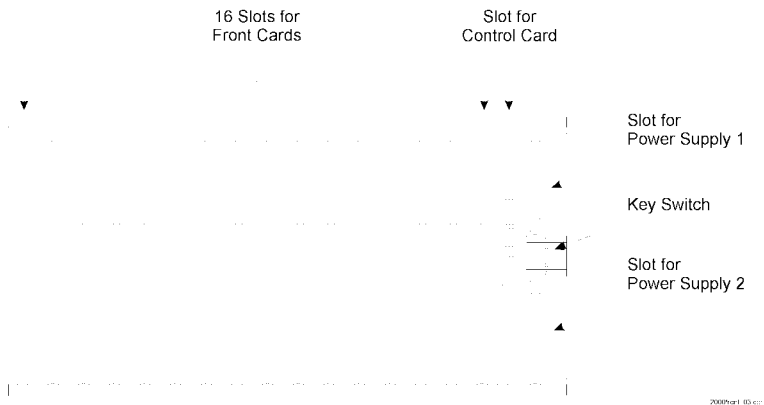
Figure 4-1. Rackmount Chassis Front Ports.

4.1.1 CONTROLS

- Key Switch: A key switch on the front of the rack enables or disables manual operation. This prevents accidental switching from the front of the rack.

  To enable manual operation, turn the key to the horizontal (unlocked) position (represented by the icon of the open padlock on the control card). See Figure 4-2.

  To disable manual operation, turn the key to the vertical (locked) position (represented by the icon of the closed padlock on the control card).

kyswtch.cdr
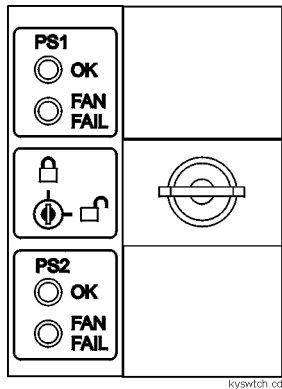
Figure 4-2. Key Switch Unlocked.

4.1.2 PORTS

- COMM[unication] ports: On the rear of the rack, there are two communication ports: COMM IN (DB25 male) and COMM OUT (DB25 female). For some system setups, use these ports to connect the rack to the managing PC. However, for SNMP setups, use the 10BASE-T connector on the control card to connect the rack to the managing PC.

- MON[itoring] ports: On the rear of the rack, there are two monitoring ports: ANALOG (RJ-45 female) and DIGITAL (DB25 female). Use these ports to connect monitoring buses together and to connect monitoring and testing equipment to the buses.

- AUX[iliary] port: On the rear of the rack, there is one auxiliary port: AUX (DB9 female). Use this port to set SNMP/Telnet configurations for the rack when you can't access the rack through the 10BASE-T connector (on the control card).

- Power connectors: The rear of the rack contains two power connectors: POWER 1 and POWER 2. Use these connectors to attach power sources to the corresponding power supplies.
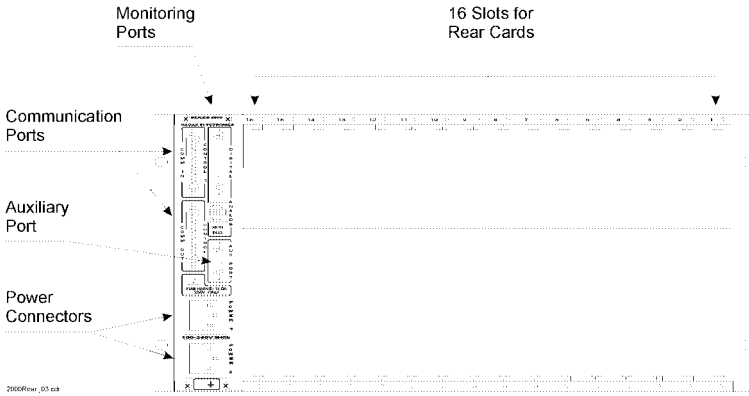
Figure 4-3. Rackmount Chassis Rear Ports.

4.2 Control Cards

Table 4-1. Control Cards

Model	Description
SM701C	SNMP 10BASE-T
SM702C	VT100™

The control card coordinates all rack functions, communicates with other racks, and communicates with the management PC. Each rack must have one control card, inserted into the rightmost slot.

4.2.1 CONTROLS

- GANG: There are five gang switches: N, A, B, C, and D. When the key switch is in the horizontal position, you can use these switches to change all lines in a rack. If you press A, B, C, or D, the control card switches all lines in the rack to that position. If you press N, the control card switches all lines in the rack to the normal position. Use the NORM SET pushbutton to define the normal position for all lines.

- NORM SET: This pushbutton sets the N gang switch. When you press this button, the Pro Switching System stores the current switch settings of each line

as the normal position. Then, when you press the N gang switch, all lines switch to the normal position.

- LAMP TEST: This pushbutton lights all LEDs in the rack. You can use it to determine if an LED is operating correctly.

- RESET: This switch performs a warm reset or a cold reset, depending on its associated DIP switch setting. A warm reset reboots the CPU without affecting the operator-programmed data that is stored in CPU RAM (for example, alarm definitions). A cold reset reboots the CPU and deletes all operator-programmed data that is stored in the CPU RAM, reinitializing the system.

4.2.2 LEDs

- OK (green): There is one OK LED for power supply 1 (PS1) and one for power supply 2 (PS2). When lit, this LED indicates that the relevant power supply is functioning.

- FAN FAIL (red): There is one FAN FAIL LED for PS1 and one for PS2. When lit, this LED indicates that the fan in the relevant power supply is not functioning.

- LINK ON (green): This LED, when lit, indicates that the control card is functioning and capable of communicating with other racks and with the central PC. When not lit, this LED indicates that the control card has failed. When the control card fails, COMM IN is physically shorted to COMM OUT, bypassing the failed control card.

GANG

N
A
B
C
D

Gang Switch Buttons
(Normal, A, B, C, D)

NORM
SET

Normal Set Button

P.S.1
OK
FAN
FAIL

Power Supply 1 Status LEDs
(OK, FAN FAIL)

P.S.2
OK
FAN
FAIL

Power Supply 2 Status LEDs
(OK, FAN FAIL)

LINK
ON

Link On LED

LAMP
TEST

Lamp Test Button

RESET

Reset Button

10bT

10baseT Connector

cntrlcrd_bw_04.cdr
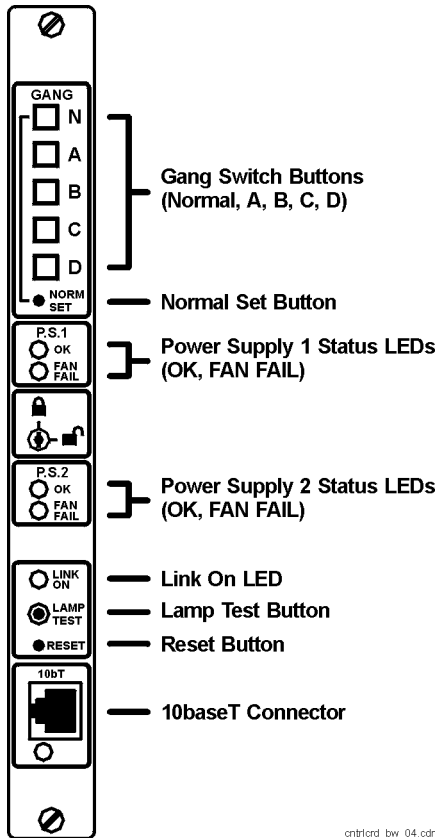
Figure 4-4. Control Card.

4.3 Front Cards

Table 4-2. Switch/Patch Front Cards

Model	Interface	Switch	Patch	Switched Cond.	# of Slots	LEDs	Alarms	Mon. Bus	Compatible Rear Cards
SM705C	RS-232/V.24	A/B	4-cavity	23	1	√	√	√	SM720C
SM706C	V.35	A/B	4-cavity	19	1	√	√		SM721C
SM707C	RS-530	A/B	4-cavity	23	1	√	√	√	SM720C
SM708C	DB15								SM722C
SM709C	RJ-11	A/B	—	4	1				SM723C
SM710C	RJ-45	A/B	—	8	1				SM724C

Front cards work with rear cards to manage lines. The front card contains the switching and patching circuitry, while the rear card contains the cable interface circuitry. The front card and the rear card mate when they are inserted into the rack.

In a rack, there are 16 slots for front cards and 16 corresponding slots for rear cards. The cards occupy one slot. The front cards are called Switch/Patch Cards.

SWITCH/PATCH CARDS

Switch/patch cards provide A/B switching with optional patching capabilities. Switch/patch cards are available for use with RS-232, V.35, RS-530, RJ-11, RJ-45, and DB15 interfaces. Each switch/patch card occupies one slot.

Controls

A/B switch cards have a toggle switch with two settings: A and B. To change the switch to the A position, move the toggle switch toward the A setting. To change the switch to the B position, move the toggle switch toward the B setting.

LEDs

Switch/patch cards have some or all of the following LEDs:

- Switch position (green): Pro Switching System cards, where appropriate, indicate switch position. For example, A/B switch cards indicate if the line is currently switched to the A or B position.

- Signals (red): Some Pro Switching System cards include LEDs that indicate the current status of signals. For example, RS-232 cards with LEDs indicate the status of TD, RD, RTS, CTS, DSR, DCD, DTR, and RI.

- ALM (red): When flashing, indicates that the line passing through this card is generating an alarm condition.

- MON (green): When lit, indicates that the line is currently connected to the monitoring bus. The connection is made for monitoring and testing operations.

- BK (red): When lit, indicates that the line is currently broken. The break is made for testing operations.

- TS (red): Not used.

- LP (red): Not used.

Patch Cavities

Switch/patch cards can have up to four patch cavities, which allow you to monitor and test the lines. Normally, data transmission is normal through. That is, the DTE is connected to the DCE. However, if you connect a patch cord to a patch cavity, you can monitor or test the line as follows:

- COMP: When you insert a patch cord into the COMP cavity, the circuit is broken and the cord is connected to the DTE. You can use this connection to test the DTE.

- MODEM: When you insert a patch cord into the MODEM cavity, the circuit is broken and the cord is connected to the DCE. You can use this connection to test the DCE.

- MON A: When you insert a patch cord into the MON A cavity, it is connected to the circuit between the DTE A port and the DCE port. The circuit is not broken. You can use this connection to monitor the signals.

- MON B: When you insert a patch cord into the MON B cavity, it is connected to the circuit between the DTE B port and the DCE port. The circuit is not broken. You can use this connection to monitor the signals.

RS-232

ALM   TD   Toggle Switch
A   RD
             RTS
             CTS
             DSR
             DCD
B   DTR
MON   RI
BK   TS

                         COMP Cavity

                         MODEM Cavity

                         MON A Cavity

                         MON B Cavity
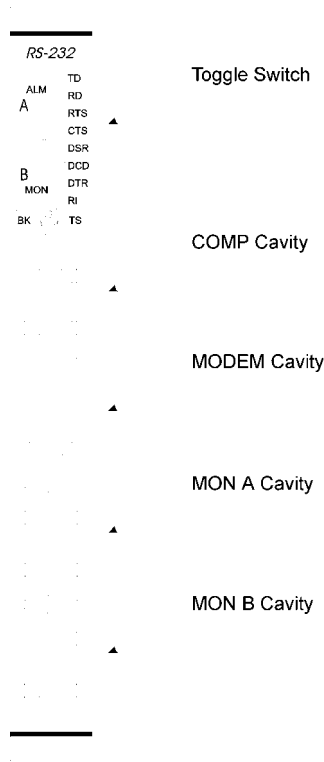
Figure 4-5. Switch/Patch Card.

4.4 Rear Cards

Rear cards work with front cards to manage lines. The front card contains the switching and patching circuitry; the rear card contains the cable interface circuitry. The front card and the rear card mate when they are inserted into a rack.

Rear cards and front cards that mate must be compatible. See the description of the front card (Section 4.3) for a list of the compatible rear cards.

In a rack, there are 16 slots for front cards, and 16 corresponding slots for rear cards. The cards occupy one slot.

Rear cards have ports that correspond with their applications. They also have a slot number window that indicates the number of the slot in which the card is installed.

Table 4-3. Rear Cards

Model	Application	# of Slots	Connectors
SM720C	A/B switch (and patch)	1	A, B, Common: DB25F
SM721C	A/B switch (and patch)	1	A, B, Common: V.35F
SM722C	A/B switch (and patch)	1	A, B, Common: DB15F
SM723C	A/B switch	1	A, B, Common: RJ-11
SM724C	A/B switch	1	A, B, Common: RJ-45

4.5 Power Supplies

Power supplies allow you to supply power to a rack. You can have one or two (for redundant power) power supplies in a rack. There is one type of power supply: the SM750A. It's a 115/230-VAC, 50- to 60-Hz auto-selectable power supply.

Table 4-4. Power Supply

Model	Description
SM750A	Power supply, 115/230 VAC, 50-60 Hz (auto-selectable)

4.6 Software

To control the Pro Switching System from a PC, you need the Pro Switching System Software (SM701A). This software works as an application under HP OpenView Windows.

Table 4-5. Software

Model	Description
SM701A	Pro Switching System Software

4.7 System Cables

System cables connect racks to the central PC via COMM ports. The first rack at a site is connected to the central site; the other racks are daisychained together. For SNMP applications, you don't need to connect system cables to the COMM ports.

4.8 Accessories

4.8.1 BLANK PANELS

Blank panels cover empty slots in the rack.

Table 4-6. Blank Panels

Model	Description
SM730	Blank Panel, Unused rear slot
SM740	Blank Panel, Unused front slot

4.8.2 PATCH CORDS

Patch cords allow you to connect equipment to patch cavities. Patch cords are available in a variety of lengths and with a variety of connectors. Call Technical Support for more information.

5. Installation

This chapter shows you how to install a Pro Switching System for SNMP management.

5.1 Preparing the Rack

"Preparing the rack off-site" sets up the rack so that a technician can quickly install the rack on-site, leave, and let the network manager perform the necessary SNMP/Telnet configurations to the rack remotely.

   To prepare the rack:

- Fill Out the Rack Description Guide (Section 5.1.1)

- Configure the Control Card (Section 5.1.2)

- Install Components (Section 5.1.3)

- Enter IP address into rack (Section 5.1.4)

5.1.1 FILL OUT THE RACK DESCRIPTION GUIDE

1. Make the appropriate number of photocopies of the Rack Description Guide sheet (shown in Appendix A) for the number of racks to be installed.

2. Complete the information on the sheets for each rack. (See the "Rack Description Guide Example" on the next page.)

3. Make two photocopies of the completed sheets.

4. Give one set of sheets to the installation technician. Give another set to the network manager. Store the original sheets in a master file.

Rack Description Guide Example

Site name:

Password (DIP switches):

Rack name:

Rack address (DIP switches):

Baud rate:

IP Address:

Application: Switch/patch

Slot:	Connection:		
1	A: Satellite,	B: Telco,	C: User001
2	A: Satellite,	B: Telco,	C: User002
3	A: Satellite,	B: Telco,	C: User003
4	A: Satellite,	B: Telco,	C: User004
5	A: Satellite,	B: Telco,	C: User005
6	A: Satellite,	B: Telco,	C: User006
7	A: Satellite,	B: Telco,	C: User007
8	A: Satellite,	B: Telco,	C: User008
9	A: Satellite,	B: Telco,	C: User009
10	A: Satellite,	B: Telco,	C: User010
11			
12			
13			
14			
15			
16			

5.1.2 CONFIGURE THE CONTROL CARD AND DIP SWITCHES

Each rack must have one control card, which is inserted into the rightmost slot of the rack. The control card coordinates all rack functions, communicates with other racks, and communicates with the management PC.

Before installing the control card, you must configure its battery jumper and DIP switches.
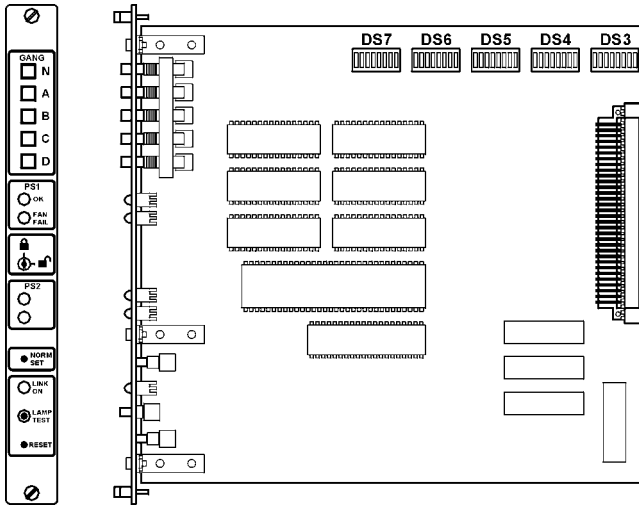
Figure 5-1. Control Card.

CAUTION

Cards are electrostatic-discharge (ESD) sensitive. To prevent ESD damage, always wear grounding wrist straps when touching, removing, or inserting cards. Store and transport cards in sealed, static-shielding bags.

NOTE

Before installing the control card, the battery must be enabled.

Configuring the Battery Jumper

1. Locate the battery jumper pins, located above the battery and labeled JP1, on the control card. (The control card normally ships with the battery disabled— its jumper rests on only one of the pins, disabling the battery during storage and transportation.)

2. To activate the battery, connect the pins for a two-pin group by placing the jumper across both pins. For a three-pin group, connect jumper cap across the two pins labeled ON.

NOTE

To disable the battery on the control card, for a two-pin jumper group disconnect the jumper cap across both pins so they rest on only one pin. For a three-pin jumper group, connect the jumper cap across two pins labeled OFF.

Setting the Configuration DIP Switches (DS5)

The configuration DIP switches set the following:

- Enable/disable rack password

- Cold/warm RESET button configuration

- Enable/disable NORM SET and N gang switch buttons

- Communication baud rate

Tables 5-1 through 5-4 illustrate the DIP-switch settings.

DIP Switch Tables

Table 5-1. DIP Switches at DS7

Switch	Position	In order to…	Notes
1	ON OFF	Enable the Ethernet port. Disable the Ethernet port.	
2	OFF	–	Always set to OFF.
3	ON OFF	Enable the AUX port. Disable the AUX port.	

Table 5-2. DIP Switches at DS6

Switch	Position	In order to…	Notes
1 to 8	OFF	–	Always set to OFF.

Table 5-3. DIP Switches at DS5

Switch	Position	In order to…	Notes
1	ON	Disable the password.	All racks at a site must use the same password.
	OFF	Enable the password.	When you enable the password, the management PC uses the password to communicate with the rack. When you disable the password, the management PC disregards the password.
2	ON	Configure the RESET button to perform a "cold" reset when pressed.	A cold reset erases all user-programmed system parameter data that are stored in the Pro Switching System RAM and reboots the CPU, reinitializing the system.
	OFF	Configure the RESET button to perform a "warm" reset when pressed.	A warm reset reboots the CPU without affecting the user-programmed system system parameter data (such as alarm definitions) that are stored in the Pro Switching System RAM.

Table 5-3 (continued). DIP Switches at DS5

Switch	Position		In order to…	Notes
3	ON		Disable the NORM SET and N gang switch buttons.	When you enable NORM SET, you can use the control card NORM SET switch and the N gang switch. When you disable NORM
	OFF		Enable the NORM SET and N gang switch buttons.	SET, you cannot use these switches.
4, 5, 6	OFF		–	Always set to OFF.
7, 8	7 ON OFF ON OFF	8 ON ON OFF OFF	Set the baud rate to 2400 bps. Set the baud rate to 4800 bps. Set the baud rate to 9600 bps. Set the baud rate to 19200 bps.	All racks at a site must use the same baud rate. The baud rate DIP switches set the baud rate for communication between the rack and the management PC.

Table 5-4. DIP-Switch Settings at DS3 and DS4

1	2	3	4	5	6	7	8	To set the password (DS3) to… To set the rack address (DS4) to…
ON	ON	ON	ON	ON	ON	ON	ON	000
off	ON	ON	ON	ON	ON	ON	ON	001
ON	off	ON	ON	ON	ON	ON	ON	002
off	off	ON	ON	ON	ON	ON	ON	003
ON	ON	off	ON	ON	ON	ON	ON	004
off	ON	off	ON	ON	ON	ON	ON	005
ON	off	off	ON	ON	ON	ON	ON	006
off	off	off	ON	ON	ON	ON	ON	007
ON	ON	ON	off	ON	ON	ON	ON	008
off	ON	ON	off	ON	ON	ON	ON	009
ON	off	ON	off	ON	ON	ON	ON	010
off	off	ON	off	ON	ON	ON	ON	011
ON	ON	off	off	ON	ON	ON	ON	012
off	ON	off	off	ON	ON	ON	ON	013
ON	off	off	off	ON	ON	ON	ON	014
off	off	off	off	ON	ON	ON	ON	015
ON	ON	ON	ON	off	ON	ON	ON	016
off	ON	ON	ON	off	ON	ON	ON	017
ON	off	ON	ON	off	ON	ON	ON	018
off	off	ON	ON	off	ON	ON	ON	019
ON	ON	off	ON	off	ON	ON	ON	020
off	ON	off	ON	off	ON	ON	ON	021
ON	off	off	ON	off	ON	ON	ON	022
off	off	off	ON	off	ON	ON	ON	023
ON	ON	ON	off	off	ON	ON	ON	024
off	ON	ON	off	off	ON	ON	ON	025
ON	off	ON	off	off	ON	ON	ON	026
off	off	ON	off	off	ON	ON	ON	027
ON	ON	off	off	off	ON	ON	ON	028
off	ON	off	off	off	ON	ON	ON	029
ON	off	off	off	off	ON	ON	ON	030
off	off	off	off	off	ON	ON	ON	031
ON	ON	ON	ON	ON	off	ON	ON	032

Table 5-4. DIP-Switch Settings at DS3 and DS4

Set Switches 1 through 8 to...								To set the password (DS3) to... To set the rack address (DS4) to...
1	2	3	4	5	6	7	8	
off	ON	ON	ON	ON	off	ON	ON	033
ON	off	ON	ON	ON	off	ON	ON	034
off	off	ON	ON	ON	off	ON	ON	035
ON	ON	off	ON	ON	off	ON	ON	036
off	ON	off	ON	ON	off	ON	ON	037
ON	off	off	ON	ON	off	ON	ON	038
off	off	off	ON	ON	off	ON	ON	039
ON	ON	ON	off	ON	off	ON	ON	040
off	ON	ON	off	ON	off	ON	ON	041
ON	off	ON	off	ON	off	ON	ON	042
off	off	ON	off	ON	off	ON	ON	043
ON	ON	off	off	ON	off	ON	ON	044
off	ON	off	off	ON	off	ON	ON	045
ON	off	off	off	ON	off	ON	ON	046
off	off	off	off	ON	off	ON	ON	047
ON	ON	ON	ON	off	off	ON	ON	048
off	ON	ON	ON	off	off	ON	ON	049
ON	off	ON	ON	off	off	ON	ON	050
off	off	ON	ON	off	off	ON	ON	051
ON	ON	off	ON	off	off	ON	ON	052
off	ON	off	ON	off	off	ON	ON	053
ON	off	off	ON	off	off	ON	ON	054
off	off	off	ON	off	off	ON	ON	055
ON	ON	ON	off	off	off	ON	ON	056
off	ON	ON	off	off	off	ON	ON	057
ON	off	ON	off	off	off	ON	ON	058
off	off	ON	off	off	off	ON	ON	059
ON	ON	off	off	off	off	ON	ON	060
off	ON	off	off	off	off	ON	ON	061
ON	off	off	off	off	off	ON	ON	062
off	off	off	off	off	off	ON	ON	063
ON	ON	ON	ON	ON	ON	off	ON	064
off	ON	ON	ON	ON	ON	off	ON	065

Table 5-4 (continued). DIP-Switch Settings at DS3 and DS4

| \
							To set the password (DS3) to… To set the rack address (DS4) to…
1	2	3	4	5	6	7	8	
ON	off	ON	ON	ON	ON	off	ON	066
off	off	ON	ON	ON	ON	off	ON	067
ON	ON	off	ON	ON	ON	off	ON	068
off	ON	off	ON	ON	ON	off	ON	069
ON	off	off	ON	ON	ON	off	ON	070
off	off	off	ON	ON	ON	off	ON	071
ON	ON	ON	off	ON	ON	off	ON	072
off	ON	ON	off	ON	ON	off	ON	073
ON	off	ON	off	ON	ON	off	ON	074
off	off	ON	off	ON	ON	off	ON	075
ON	ON	off	off	ON	ON	off	ON	076
off	ON	off	off	ON	ON	off	ON	077
ON	off	off	off	ON	ON	off	ON	078
off	off	off	off	ON	ON	off	ON	079
ON	ON	ON	ON	off	ON	off	ON	080
off	ON	ON	ON	off	ON	off	ON	081
ON	off	ON	ON	off	ON	off	ON	082
off	off	ON	ON	off	ON	off	ON	083
ON	ON	off	ON	off	ON	off	ON	084
off	ON	off	ON	off	ON	off	ON	085
ON	off	off	ON	off	ON	off	ON	086
off	off	off	ON	off	ON	off	ON	087
ON	ON	ON	off	off	ON	off	ON	088
off	ON	ON	off	off	ON	off	ON	089
ON	off	ON	off	off	ON	off	ON	090
off	off	ON	off	off	ON	off	ON	091
ON	ON	off	off	off	ON	off	ON	092
off	ON	off	off	off	ON	off	ON	093
ON	off	off	off	off	ON	off	ON	094
off	off	off	off	off	ON	off	ON	095

Table 5-4 (continued). DIP-Switch Settings at DS3 and DS4

Set Switches 1 through 8 to…								To set the password (DS3) to… To set the rack address (DS4) to…
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
ON	ON	ON	ON	ON	off	off	ON	096
off	ON	ON	ON	ON	off	off	ON	097
ON	off	ON	ON	ON	off	off	ON	098
off	off	ON	ON	ON	off	off	ON	099
ON	ON	off	ON	ON	off	off	ON	100
off	ON	off	ON	ON	off	off	ON	101
ON	off	off	ON	ON	off	off	ON	102
off	off	off	ON	ON	off	off	ON	103
ON	ON	ON	off	ON	off	off	ON	104
off	ON	ON	off	ON	off	off	ON	105
ON	off	ON	off	ON	off	off	ON	106
off	off	ON	off	ON	off	off	ON	107
ON	ON	off	off	ON	off	off	ON	108
off	ON	off	off	ON	off	off	ON	109
ON	off	off	off	ON	off	off	ON	110
off	off	off	off	ON	off	off	ON	111
ON	ON	ON	ON	off	off	off	ON	112
off	ON	ON	ON	off	off	off	ON	113
ON	off	ON	ON	off	off	off	ON	114
off	off	ON	ON	off	off	off	ON	115
ON	ON	off	ON	off	off	off	ON	116
off	ON	off	ON	off	off	off	ON	117
ON	off	off	ON	off	off	off	ON	118
off	off	off	ON	off	off	off	ON	119
ON	ON	ON	off	off	off	off	ON	120
off	ON	ON	off	off	off	off	ON	121
ON	off	ON	off	off	off	off	ON	122
off	off	ON	off	off	off	off	ON	123
ON	ON	off	off	off	off	off	ON	124
off	ON	off	off	off	off	off	ON	125
ON	off	off	off	off	off	off	ON	126
off	off	off	off	off	off	off	ON	127
ON	ON	ON	ON	ON	ON	ON	off	128

Table 5-4 (continued). DIP-Switch Settings at DS3 and DS4

1	2	3	4	5	6	7	8	To set the password (DS3) to... To set the rack address (DS4) to...
off	ON	ON	ON	ON	ON	ON	off	129
ON	off	ON	ON	ON	ON	ON	off	130
off	off	ON	ON	ON	ON	ON	off	131
ON	ON	off	ON	ON	ON	ON	off	132
off	ON	off	ON	ON	ON	ON	off	133
ON	off	off	ON	ON	ON	ON	off	134
off	off	off	ON	ON	ON	ON	off	135
ON	ON	ON	off	ON	ON	ON	off	136
off	ON	ON	off	ON	ON	ON	off	137
ON	off	ON	off	ON	ON	ON	off	138
off	off	ON	off	ON	ON	ON	off	139
ON	ON	off	off	ON	ON	ON	off	140
off	ON	off	off	ON	ON	ON	off	141
ON	off	off	off	ON	ON	ON	off	142
off	off	off	off	ON	ON	ON	off	143
ON	ON	ON	ON	off	ON	ON	off	144
off	ON	ON	ON	off	ON	ON	off	145
ON	off	ON	ON	off	ON	ON	off	146
off	off	ON	ON	off	ON	ON	off	147
ON	ON	off	ON	off	ON	ON	off	148
off	ON	off	ON	off	ON	ON	off	149
ON	off	off	ON	off	ON	ON	off	150
off	off	off	ON	off	ON	ON	off	151
ON	ON	ON	off	off	ON	ON	off	152
off	ON	ON	off	off	ON	ON	off	153
ON	off	ON	off	off	ON	ON	off	154
off	off	ON	off	off	ON	ON	off	155
ON	ON	off	off	off	ON	ON	off	156
off	ON	off	off	off	ON	ON	off	157
ON	off	off	off	off	ON	ON	off	158
off	off	off	off	off	ON	ON	off	159
ON	ON	ON	ON	ON	off	ON	off	160
off	ON	ON	ON	ON	off	ON	off	161

Table 5-4 (continued). DIP-Switch Settings at DS3 and DS4

	Set Switches 1 through 8 to...							To set the password (DS3) to... To set the rack address (DS4) to...
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
ON	off	ON	ON	ON	off	ON	off	162
off	off	ON	ON	ON	off	ON	off	163
ON	ON	off	ON	ON	off	ON	off	164
off	ON	off	ON	ON	off	ON	off	165
ON	off	off	ON	ON	off	ON	off	166
off	off	off	ON	ON	off	ON	off	167
ON	ON	ON	off	ON	off	ON	off	168
off	ON	ON	off	ON	off	ON	off	169
ON	off	ON	off	ON	off	ON	off	170
off	off	ON	off	ON	off	ON	off	171
ON	ON	off	off	ON	off	ON	off	172
off	ON	off	off	ON	off	ON	off	173
ON	off	off	off	ON	off	ON	off	174
off	off	off	off	ON	off	ON	off	175
ON	ON	ON	ON	off	off	ON	off	176
off	ON	ON	ON	off	off	ON	off	177
ON	off	ON	ON	off	off	ON	off	178
off	off	ON	ON	off	off	ON	off	179
ON	ON	off	ON	off	off	ON	off	180
off	ON	off	ON	off	off	ON	off	181
ON	off	off	ON	off	off	ON	off	182
off	off	off	ON	off	off	ON	off	183
ON	ON	ON	off	off	off	ON	off	184
off	ON	ON	off	off	off	ON	off	185
ON	off	ON	off	off	off	ON	off	186
off	off	ON	off	off	off	ON	off	187
ON	ON	off	off	off	off	ON	off	188
off	ON	off	off	off	off	ON	off	189
ON	off	off	off	off	off	ON	off	190
off	off	off	off	off	off	ON	off	191

Table 5-4 (continued). DIP-Switch Settings at DS3 and DS4

Set Switches 1 through 8 to...								To set the password (DS3) to... To set the rack address (DS4) to...
1	2	3	4	5	6	7	8	
ON	ON	ON	ON	ON	ON	off	off	192
off	ON	ON	ON	ON	ON	off	off	193
ON	off	ON	ON	ON	ON	off	off	194
off	off	ON	ON	ON	ON	off	off	195
ON	ON	off	ON	ON	ON	off	off	196
off	ON	off	ON	ON	ON	off	off	197
ON	off	off	ON	ON	ON	off	off	198
off	off	off	ON	ON	ON	off	off	199
ON	ON	ON	off	ON	ON	off	off	200
off	ON	ON	off	ON	ON	off	off	201
ON	off	ON	off	ON	ON	off	off	202
off	off	ON	off	ON	ON	off	off	203
ON	ON	off	off	ON	ON	off	off	204
off	ON	off	off	ON	ON	off	off	205
ON	off	off	off	ON	ON	off	off	206
off	off	off	off	ON	ON	off	off	207
ON	ON	ON	ON	off	ON	off	off	208
off	ON	ON	ON	off	ON	off	off	209
ON	off	ON	ON	off	ON	off	off	210
off	off	ON	ON	off	ON	off	off	211
ON	ON	off	ON	off	ON	off	off	212
off	ON	off	ON	off	ON	off	off	213
ON	off	off	ON	off	ON	off	off	214
off	off	off	ON	off	ON	off	off	215
ON	ON	ON	off	off	ON	off	off	216
off	ON	ON	off	off	ON	off	off	217
ON	off	ON	off	off	ON	off	off	218
off	off	ON	off	off	ON	off	off	219
ON	ON	off	off	off	ON	off	off	220
off	ON	off	off	off	ON	off	off	221
ON	off	off	off	off	ON	off	off	222
off	off	off	off	off	ON	off	off	223
ON	ON	ON	ON	ON	off	off	off	224

Table 5-4 (continued). DIP-Switch Settings at DS3 and DS4

Set Switches 1 through 8 to...								To set the password (DS3) to... To set the rack address (DS4) to...
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
off	ON	ON	ON	ON	off	off	off	225
ON	off	ON	ON	ON	off	off	off	226
off	off	ON	ON	ON	off	off	off	227
ON	ON	off	ON	ON	off	off	off	228
off	ON	off	ON	ON	off	off	off	229
ON	off	off	ON	ON	off	off	off	230
off	off	off	ON	ON	off	off	off	231
ON	ON	ON	off	ON	off	off	off	232
off	ON	ON	off	ON	off	off	off	233
ON	off	ON	off	ON	off	off	off	234
off	off	ON	off	ON	off	off	off	235
ON	ON	off	off	ON	off	off	off	236
off	ON	off	off	ON	off	off	off	237
ON	off	off	off	ON	off	off	off	238
off	off	off	off	ON	off	off	off	239
ON	ON	ON	ON	off	off	off	off	240
off	ON	ON	ON	off	off	off	off	241
ON	off	ON	ON	off	off	off	off	242
off	off	ON	ON	off	off	off	off	243
ON	ON	off	ON	off	off	off	off	244
off	ON	off	ON	off	off	off	off	245
ON	off	off	ON	off	off	off	off	246
off	off	off	ON	off	off	off	off	247
ON	ON	ON	off	off	off	off	off	248
off	ON	ON	off	off	off	off	off	249
ON	off	ON	off	off	off	off	off	250
off	off	ON	off	off	off	off	off	251
ON	ON	off	off	off	off	off	off	252
off	ON	off	off	off	off	off	off	253
ON	off	off	off	off	off	off	off	254
off	off	off	off	off	off	off	off	255

To Set the Configuration DIP Switches

1. Locate the DIP switch sets labeled DS7, DS6, and DS5 on the control card.

2. Use the DIP switch tables to set the DS7, DS6, and DS5 DIP switches. Tables 5-1 through 5-3 show the switch settings and provide notes that describe the DIP switch functions.

Setting the Rack Address DIP Switches (DS4)

The rack address DIP switches set the address that the management PC uses to distinguish each rack.

Rack addresses can have any value between 0 and 255. However, each rate at a site must have a unique rack address.

1. Locate the DIP switch sets labeled DS4 on the control card.

2. Use Table 5-4 to set the DS4 DIP switches. The table shows the switch settings for each rack address.

NOTE

When assigning rack addresses, make sure that each rack at a site has a unique address.

Setting the Password DIP Switches (DS3)

If you enabled the password DIP switch (switch 1 on DS5), you must set the password DIP switches (DS3) to assign a numeric password to the rack. If you disabled the password, skip this step.

The password DIP switches set the password that the management PC must use when communicating with the rack. The password can have any value between 0 and 255. However, each rack at a site must have the same password.

1. Locate the DIP switch sets labeled DS3 on the control card.

2. Use Table 5-4 to set the DS3 DIP switches. The table shows the switch settings for each password.

Installing the Control Card

1. Insert the control card into the rightmost slot of the rack.

2. Secure the card in the rack by tightening the screws.

5.1.3 INSTALLING RACK COMPONENTS

A rack has 16 slots for front cards, 16 slots for rear cards, one slot for the control card, and two slots for power supplies.

To operate, a rack must include a control card and at least one power supply. If you want power redundancy (power backup), the rack must include two power supplies.

Front and Rear Cards

In each rack, you can install front and rear cards for switching/patching.

To Install Switch/Patch Cards

1. Insert the front cards and tighten the screws. You need not fill all slots in a rack or fill slots in any particular order.

2. Insert the corresponding rear cards and tighten the screws.

To Install the Power Supplies

Insert the power supplies into the power supply slots located on the front right side of the rack. If you are only installing one power supply, you can insert it into either slot.

To Power Up and Test the LEDs

1. Connect the chassis ground stud to ground. The ground stud is located just below the power cord connectors on the rear of the rack.

2. Connect the power cords. For each power supply, connect one end of a power cord to the power connector at the rear of the rack. Connect the other end of the power cord to a power source. The rack automatically powers up as soon as you connect the power cords.

3. Test the LEDs by pressing the LAMP TEST button on the front of the control card. All LEDs in the rack should light.

5.1.4 ENTER IP ADDRESS INTO RACK

By entering an IP address into the rack, the network manager can access the rack remotely and configure it for SNMP management after the rack has been installed.

NOTE

You MUST enter an IP address into the rack in order to access it remotely.

To Enter the IP Address into the Rack

1. Connect a VT100 terminal to the AUX port (located at the rear of the unit). Use a null-modem-type cable or equivalent. Refer to Table 5-5.

Table 5-5. AUX Port Pin Assignments

Pin #	Signal
1	Chassis GND
2	TXD
3	RXD
4	RTS
5	CTS
6	NOT USED
7	Signal GND
8	NOT USED
9	NOT USED

2. Set the communication settings of the VT100 terminal. Refer to Table 5-6.

Table 5-6. VT100 Terminal Communication Settings

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1

3. Assign an IP address to the Pro Switching System by entering the following into the terminal:

```
SET RACK n IP ADDRESS a.b.c.d
```

where:

n is the rack address (set by the user via DIP-switch-group DS4), and

a.b.c.d is the IP address.

Example:

```
SET RACK 1 IP ADDRESS
```

192.19.211.10

NOTE

Once you enter the IP address into the rack, it is stored in battery-backed-up memory on the control card and will not be lost when you disconnect the power cord.

5.2 Installing the Rack

The on-site installation consists of mounting the rack into a cabinet, connecting the necessary cables, and powering up the rack. The network manager can further configure the rack from a remote management center via a Telnet session.

At each site, you can install up to 256 racks. For SNMP, the racks may be connected to a terminal server using the 10BASE-T connector located on the control card.

5.2.1 MOUNTING THE RACK INTO THE CABINET

1. Carefully insert the rack into the cabinet.

2. Secure the rack with screws at the rack sides.

5.2.2 CONNECTING LINE CARD CABLES FOR SWITCH/PATCH CARDS

Connect the cables to the rear ports, as appropriate for your application.

5.2.3 CONNECTING 10BASE-T CABLE

To control your rack via SNMP/Telnet sessions, you must connect the rack to your LAN using the 10BASE-T connector (RJ-45) located on the front of the control card.

5.2.4 POWER UP AND LED TEST

1. Connect the chassis ground stud to ground. The ground stud is located just below the power cord connectors on the rear of the rack.

2. Connect the power cords. For each power supply, connect one end of a power cord to the power connector at the rear of the rack. Connect the other end of the power cord into a power source. The rack automatically powers up as soon as you connect the power cords.

3. Test the LEDs by pressing the LAMP TEST button on the front of the control card. All LEDs in the rack should light.

5.3 Software/Management Installation

To install the software and management PC:

- Install the management PC (Section 5.3.1).

- Install the software (HP OpenView and SNMP application software). See Section 5.3.2 and 5.3.3.

5.3.1 INSTALLING THE MANAGEMENT PC

You can manage a Pro Switching System from an IBM compatible computer installed with HP OpenView and the SNMP application software (SM701A).

The Minimum PC Requirements:

Processor:	486DX2
RAM:	16 MB
Display:	VGA
Operating System:	Windows 95

To Install a Management PC

1. Follow the manufacturer's installation instructions for setting up your PC.

2. Install a remote access device (modem, Ethernet card, etc.) into your PC that will allow you to connect to the racks using TCP/IP. Follow the manufacturer's installation instructions for installing the device.

5.3.2 INSTALL HP OPENVIEW

Install the C2.14 Release

1. Insert the HP OpenView installation CD into your CD-ROM drive.

2. From your Windows 95 desktop, click on Start, Run… The Run screen appears.

3. Enter the following: E:\OV214\Disk1\Setup (if necessary, replace E:\ with the correct letter of the CD-ROM drive).

Installation begins. Follow all installation instructions that appear on your screen.

Make sure to choose "SNMP over TCP/IP Communications" when the screen offering this selection appears.

Upgrade to C2.17:

1. When the installation ends, return to your Windows 95 desktop and click on **Start, Run…** The Run screen appears.

2. Enter the following: `E:\OV217\Setup` (if necessary, replace `E:\` with the correct letter of the CD-ROM drive). Upgrading begins. Follow all installation instructions that appear on your screen.

3. When the installation is complete, restart your computer before running HP OpenView.

NOTE

After installing the software, you MUST restart your computer before running HP OpenView.

5.3.3 INSTALL SNMP APPLICATION SOFTWARE

1. Insert Disk 1 into your disk drive.

2. From your Windows 95 desktop, click on Start, Run… The Run screen appears.

3. Enter the following: `A:\Setup`. Installation begins. Follow all installation instructions that appear on your screen.

4. When the installation is complete, restart your computer before running the application software.

NOTE

After installing the software, you MUST restart your computer before running the application software.

5.4 System Configuration

Once you enter the IP address into the unit, the network manager can access and continue configuring the rack remotely through the 10BASE-T connector via Telnet sessions.

To properly operate your Pro Switching System from your system management center, you must configure your system with the correct information.

This section describes how to configure your system and describes the SNMP/Telnet ASCII configuration commands. These commands are available via the serial COMM IN or AUX ports, or via a Telnet session onto the 10BASE-T port of the unit.

You can obtain the SNMP/Telnet ASCII configuration list of commands via the HELP SET rack command. Almost all SET commands have a GET counterpart, which returns the configured value.

Commands are not case-sensitive, although some command parameters such as community names and passwords might be case-sensitive.

All settings take effect ONLY when you reset the unit.

Use the information you entered in your Rack Description Guide to properly configure your installed racks.

To Configure your System

1. For each installed rack in your system, establish a Telnet session. The Telnet session will simulate a terminal screen. Use the IP addresses shown on your Rack Description Guide sheets to locate the racks.

2. When connected to the rack, press the Enter key. The unit responds with n:OK, where n represents the assigned unit number. Communication with the rack is not possible.

3. Using the system configuration commands on the next pages, configure each rack with the proper settings.

4. To enable the configuration changes, reset the rack using the RESET command. All settings take effect when the unit is reset.

Pro Switching System 10BASE-T Configuration Commands

To Configure Rack Settings

Enter…   In order to…

```
SET RACK n FACTORY DEFAULTS
```

Clear the battery-backed-up configuration and set all
SNMP/Telnet parameters and MIB variables to their default
values:

```
DEFAULT ROUTER set to 0.0.0.0
```

IP ADDRESS set to 0.0.0.0
SNMP MANAGER are all cleared
SNMP READ COMMUNITY NAME set to "public"
SNMP SECURITY TRAPS set to 10
SNMP TRAPS set to ON
SNMP WRITE COMMUNITY NAME set to "private"
SUBNET MASK set to 0.0.0.0
TELNET IDLE TIMEOUT set to 60 minutes
TELNET PASSWORD set to NONE
TELNET SECURITY TRAPS set to 3

```
SET RACK n DEFAULT ROUTER x.x.x.x
```

Set the default router to where packets will be sent if their
destination IP address is not on the same network. If the default
router is not set, a proxy ARP server is required for these
packets to reach their destination. Default value: 0.0 0.0

```
SET RACK n DIGITAL1|ANALOG|DIGITAL2
DISCONNECT|BRIDGE|BREAKDCE|BREAKDTE LINE x
```

Perform switching operations. This is not a configuration setting.
Entering this command connects the bus of rack n to line x. You
must specify n and x. Enter only one selection from DIGITAL,
ANALOG, or DIGITAL2. Enter only one selection from
DISCONNECT, BRIDGE, BREAKDCE, or BREAKDTE.

Enter…   **In order to…**

SET RACK n ECHO ON|OFF

> Set echo on or echo off for rack n.

SET RACK n IP ADDRESS x.x.x.x

> Define the rack IP address. Default value: 0.0.0.0

SET RACK n LINE x|ALL PORT p

> Perform switching operations. This is not a configuration setting. Entering this command switches one line or all lines to a specified port.

SET RACK n PING x.x.x.x

> Start a ping to the specified destination. An ICMP ECHO request is sent every second until you press a key. Only one ping can be active at a time.

SET RACK n SNMP DEFAULTS

> Set all MIB variables to their default values.

SET RACK n SNMP MANAGER m IP ADDRESS x.x.x.x

> Define an SNMP manager to where traps will be sent. Managers #1 through #16 are supported. Manager #1 will be defined for trap transmission to be enabled. Default value: [all values are cleared]

Enter…   **In order to…**

```
SET RACK n SNMP READ COMMUNITY NAME name
```

> Define the SNMP community name to be accepted for SNMP
> GET requests and to be used for traps sent out to managers.
> Default value: public

```
SET RACK n SNMP SECURITY TRAPS x
```

> Define the number of consecutive erroneous community names
> received after which an "snmpBadCommunity" trap will be sent.
> Default value: 10

```
SET RACK n SNMP TRAPS ON|OFF
```

> Global setting enabling/disabling traps transmission. Default
> value: ON

```
SET RACK n SNMP WRITE COMMUNITY NAME name
```

> Define the SNMP community name to be accepted for SNMP
> SET requests. Default value: private

```
SET RACK n SUBNET MASK x.x.x.x
```

> Define the rack subnet mask. Default value: 0.0.0.0

```
SET RACK n TELNET IDLE TIMEOUT x
```

> Define the number of consecutive idle minutes (that is, no
> character received) after which a Telnet session will be
> disconnected. Default value: 60

Enter…   **In order to…**

```
SET RACK n TELNET PASSWORD password|NONE
```

> Define the login password for incoming Telnet sessions. You will
> not be prompted for a password if TELNET PASSWORD is set
> to NONE. Default value: NONE

```
SET RACK n TELNET SECURITY TRAPS x
```

> Define the number of consecutive erroneous login passwords
> received after which a "telnetBadPassword" trap will be sent.
> Default value: 3

```
SET RACK n TIME MM/DD/YY DDD HH:MM
```

> Set the time and date for rack n.

To Reset Rack

Enter…   **In order to…**

```
RESET RACK n
```

> Reset the specified rack n and apply any changed settings.

To Display Rack Settings

Enter…   **In order to…**

```
GET RACK n CARDS
```

> Display information about the line cards in rack n.

```
GET RACK n DEFAULT ROUTER
```

> Display the IP address of the default router for rack n.

Enter…   **In order to…**

GET RACK n DIPSW

>   Display the DIP-switch settings for rack n.

GET RACK n DIGITAL1|ANALOG|DIGITAL2

>   Display information about the bus for rack n. Enter only one of
>   the three buses: DIGITAL1, ANALOG, or DIGITAL2.

GET RACK n IP ADDRESS

>   Display the IP address of rack n.

GET RACK n MAC ADDRESS

>   Display the MAC address of rack n.

GET RACK n SNMP MANAGERS

>   Display the assigned SNMP managers for rack n.

GET RACK n SNMP READ COMMUNITY NAME

>   Display the SNMP READ COMMUNITY NAME for rack n.

GET RACK n SNMP SECURITY TRAPS

>   Display the SNMP security traps for rack n.

GET RACK n SNMP STATUS x

>   Display the SNMP status x for rack n.

Enter...   **In order to...**

GET RACK n SNMP TRAPS

>   Display the SNMP traps for rack n.

GET RACK n SNMP WRITE COMMUNITY NAME

>   Display the SNMP WRITE COMMUNITY NAME for rack n.

GET RACK n SUBNET MASK

>   Display the subnet mask for rack n.

GET RACK n TELNET IDLE TIMEOUT

>   Display the Telnet idle timeout setting for rack n.

GET RACK n TELNET SECURITY TRAPS

>   Display the Telnet security traps for rack n.

GET RACK n TELNET STATUS x

>   Display the Telnet status x for rack n.

GET RACK n TIME

>   Display the time of rack n.

GET RACK n VERSION

>   Display the firmware version of rack n.

To Display Help

Enter…   **In order to…**

HELP

                List the available configuration commands.

HELP SET

                List the available SET commands.

HELP GET

                List the available GET commands.

HELP RESET

                List the available RESET commands.

A Typical SNMP/Telnet Setup Sequence Would Look Like This:

Basic IP settings:

SET RACK 1 FACTORY DEFAULTS

1:OK

SET RACK 1 IP ADDRESS 231.98.4.204

1:OK

SET RACK 1 SUBNET MASK 255.255.255.0

1:OK

SET RACK 1 DEFAULT ROUTER 231.98.4.53

Specific SNMP settings:

SET RACK 1 SNMP WRITE COMMUNITY NAME NETMAN

1:OK

```
SET RACK 1 SNMP MANAGER 1 IP ADDRESS 231.98.4.29

1:OK

SET RACK 1 SNMP MANAGER 2 IP ADDRESS 231.98.4.47

1:OK
```

Unit reset in order for settings to take effect:

```
RESET RACK 1

1:VERSION

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1:SNMP UP!
```

Connectivity test:

```
SET RACK 1 PING 231.98.4.49

PING STARTED. PRESS ANY KEY TO STOP.

11:07:44 REPLY FROM 231.98.4.49

11:07:45 REPLY FROM 231.98.4.49

11:07:46 REPLY FROM 231.98.4.49

11:07:47 REPLY FROM 231.98.4.49

11:07:48 REPLY FROM 231.98.4.49

11:07:49 REPLY FROM 231.98.4.49

1:OK

HEALTH CHECK

GET RACK 1 SNMP STATUS 2

1:SNMP STATUS #2
```

IP ADDRESS: 231.098.004.204   SUBNET MASK:
255.255.255.000

DEFAULT ROUTER: 231.098.004.053   MAC ADDRESS:
0X00401601011E

TRAPS: ON

SECURITY TRAPS: 10

READ COMMUNITY: PUBLIC

WRITE COMMUNITY: NETMAN

ETHERNET STATISTICS

NIC INTERRUPTS: 0000008769

DMA FAILURES: 0000000000

MEMORY SHORTAGES: 00000000000

MAX. QUEUE DEPTH: 0000000020

AVAILABLE HEAP: 0000004963

OCTETS TRANSMITTED: 0000133659

OCTETS RECEIVED: 0001100528

FRAME ALIGNMENT ERRORS: 0000000000

CRC ERRORS: 0000000000

FRAMES LOST: 00000000000

COLLISIONS: 00000000000

6. Operation

This chapter shows you how to operate the Pro Switching System using the SNMP application via HP OpenView. It explains the monitor displays through which you communicate with the system, and guides you step-by-step through the various aspects of network access and control.

6.1 Overview

6.1.1 SNMP APPLICATION SOFTWARE

You can operate the Pro Switching System using the SNMP application software that runs under HP OpenView for Windows. The SNMP application uses the OpenView graphical interface, which allows you to manage networks of devices from different vendors, using application software that the vendors provide. The SNMP application software is ordered separately (part number SM701A).

6.1.2 HP OPENVIEW USER'S GUIDE

You may already be familiar with HP OpenView. If not, read the HP OpenView User's Guide.

6.1.3 NETWORK MAP AND DATABASE

When setting up and controlling your network of Pro Switching System devices, you will need to create a network map and enter information into a network database. These operations are interrelated: you enter database information at the same time as you create the map. This chapter guides you through this procedure.

6.1.4 MAP CONCEPTS AND STRUCTURE

OpenView Map basics are described in detail in the HP OpenView User's Guide. You will work with a map composed of two or more submaps.

NOTE

Map and Submap—In HP OpenView applications, a "map" is not itself a single screen display or "page." It is the name given to a group of pages or "submaps." Each submap is a separate screen display.

The map represents the network in the form of icons. The icons represent network components and the sites where they are located. Icons are color-coded to indicate status. Clicking on an icon allows you to access more detailed network information.

The Pro Switching System map has five levels — overview submap, site submap, rack status display, line status display, alarm definition display — proceeding in logical fashion from most general to most particular.

6.1.5 MAP LEVELS

- Top level: An "overview" submap that shows site icons.

NOTE

Each site in the network is represented on the "overview" submap by a site icon. No site icon appears on any other submap.

To construct the overview submap, add site icons and enter descriptive information about each site. Each site icon displays a label box for ready identification. You may separately add other informative labels outside the icon, if desired.

- Second level: Clicking on a site icon brings you down to a site submap, which shows icons representing the rack at that site.

NOTE

Rack icons appear only on a site submap. They are not intermixed with site icons on the "overview" submap.

To construct the site submap, add rack icons and enter descriptive information about each rack. Each rack icon displays a label box for ready identification. You may separately add other informative labels outside the icons, if desired.

- Third level: Clicking on a rack icon brings you into "eye contact" with the front and rear of the rack (the rack status display). You see detailed front and rear views, showing line cards, LEDs, and rear connectors.

- Fourth Level: Clicking on a line-card panel opens up a breakout box showing the status of each lead on the line (the line status display).

- Fifth level: Clicking on a command button on the line status display brings you down to an alarm definition screen. Here you can define lead status alarms for the line.

6.2 Initializing PC Control

6.2.1 BASIC INFORMATION YOU WILL NEED

Before you can set up the database and the map, you need to obtain and list some basic system information. Most of what you need is supplied by the Rack

Description Guide, which the hardware installation technician(s) have turned in. Master forms for these guides are provided in Appendix A. You must also have available the following for each:

- Name for the network (collection of all sites controlled from the PC).

- Sites to include in the network.

- Racks to include on each site.

NOTE

Default USER ID and PASSWORD: The system is shipped with the default user ID as blackbox and default password as blackbox, both of which are case sensitive. You must use these to gain entry to the OpenView program. You must also use them to open a map, until new Ids and passwords have been defined for one or more users. You can then delete the default ID and password from the map database.

CAUTION

Once you've deleted the default ID and password from a map database, the only entry to the map is via the newly defined supervisor ID(s) and password(s). If no one can remember a valid password and ID, the map is permanently locked and inaccessible.

NOTE

Under the Menu Bar item options, you can customize HP OpenView. In particular, you can define a map as a default map. When you do this, the OpenView program opens directly to the default map rather than the vestibule. However, note the caution on the previous page about deleting the password. If no one can remember a valid password and ID for the default map, then not only the map, but OpenView itself is locked an inaccessible. (To remedy this, edit the OVWIN.INI file. Delete the name of the default map that appears after the equals sign in the line: MAP=.)

6.2.2 PRELIMINARY NOTES AND CAUTIONS

Deleting a Submap

Do not attempt to delete a Submap by using the OpenView path Edit: Submap: Delete Submap. Instead, click on the submap icon, then use **Edit: Delete**.

Renaming a Site

Rename a site only if you have not yet added any components on that site.

Choose site names carefully so you won't need to change them later.

If you must use a new name for a site, delete the old site from the map and create a new site with the desired name.

Frequent Saves

Avoid losing data by saving your map frequently while creating it.

OpenView works by keeping a permanent file and a working file. At start-up, it reads from the permanent file and creates a new working file. Whatever data you enter is resident in the working file until you save it to the permanent file, using the Save function in the File menu.

Be aware that if you system crashes, any changes you have made since the last Save operation will be lost. So save early and often!

NOTE
An asterisk after the map title indicates that changes have been made in the working file since the last time the map was saved.

Backup Copies

You can make a backup copy of a map on a diskette by using the Save As command and selecting the floppy drive (A:, B:, etc.). A 1.4-MB diskette will hold a good-sized map.

You can also make a backup copy on the hard drive by using the Save As command and giving the backup copy a separate name.

Delete Unneeded Map Files

If you save maps that you subsequently abandon, the unused files remain in the C:\OV directory. To save disk space, you may want to delete the unneeded map files. To do so, use the DOS Del command, and delete all files beginning with the map name. (The map name is provided by a file ending in .OVM.)

CAUTION
Do not delete unneeded map files (using the DOS Del command) while running OpenView.

Delete Unneeded Temp Files

Periodically delete all OpenView Temp files in the Temp directory. This directory is defined by the Temp directive in the AUTOEXEC.BAT file (for example, SET TEMP=C:\TEMP).

CAUTION

Do not delete unneeded temp files while running OpenView!

Alarm and System Event ASCII Files

The system saves the alarm log in Paradox database files OVALINS.* in the OV directory. To save disk space between OpenView sessions, erase old alarm log files that will not be used.

6.3 Creating a System Map

The first step in managing your Pro Switching System is to create a system map. You can set up the system via screens and prompts. The basic concepts are described in detail in the HP OpenView User's Guide.

A systematic and convenient way to set up a database and map is to begin with basic System menu items. Then proceed to the Definition screens for this System data.

Notepads (notepad fields labeled Notes), accommodating up to 800 characters, are provided for sites, racks, lines, communication ports, and all definitions and operations. You can use these to record information about the network while you are creating the database and map.

To Create a System Map

1. Log on. From the main menu, choose System, Operator Sign-On, which lets you log onto the Pro Switching System. Enter the correct user ID and password.

2. Open a new map. From the main menu, choose File, New. A new map appears.

3. Name map. From the main menu, choose File, Save As....

4. Add Site Icons. From the main menu, choose Edit, Add.... The Add toolbox appears. Select Compound Object and Black Box from the dropdown lists to highlight the Black Box site icon. Click-and-drag the icon onto the new empty map. A Site Description page appears.

5. Describe Sites. On the Site Description page, enter the site name and other appropriate information. Click on Add to Network when finished. Repeat steps 4 and 5 to add more site icons.

6. Open level 2 Submap. From your site level (top level) map, double-click on the Pro Switching System site icon. This opens a submap that lets you add components to your site.

7. Add Rack Icons. From the Add toolbox, select Component and Pro Switching System from the dropdown lists to highlight the Pro Switching System unit icon. Click and drag the icon onto the submap. A Rack Description page appears.

8. Describe Racks. On the Rack Description page, enter the rack name, IP address, and other appropriate information. Click on Add to Network when finished. Repeat Steps 6 and 7 to add more rack icons to your submap.

6.4 HP OpenView Operation

The HP OpenView Operations section describes the the main menu selections—File, Edit, View, Monitor, Control, Options, Windows, and Help—that are common to most HP OpenView applications.

Two of the main menu selections—Pro Switching System and System—are not described here since they are exclusive to the Pro Switching System. They are described in a separate section.

NOTE

For more help on HP OpenView operations not described in this manual, refer to the HP OpenView user's manual, or refer to the HP OpenView program and select Help, HP OpenView Index... from the main menu.

Figure 6-1. HP OpenView Screen.

6.4.1 STARTING HP OPENVIEW

1. From your Windows 95 desktop, select Start, Programs, HPOpenView, and choose the HP OpenView icon. HP OpenView starts up and automatically runs the SNMP application.

2. If a login screen appears, enter the correct user ID and password.

   If this is your first session or you have not changed the default user ID and password settings, enter the following exactly as shown:

   User ID: blackbox
   Password: blackbox

3. Click on OK to continue. The HP OpenView main screen appears, displaying a new map named UNTITLED.

Figure 6-2. Login Screen.

6.4.2 MAIN MENU

HP OpenView provides a main menu bar that runs across the top of the screen (Figure 6-3). Almost all the main menu items—File, Edit, View, Monitor, Control, Options, Windows, and Help—are common to most HP OpenView applications. If you are already experienced with HP OpenView, these menu items should be very familiar to you.

However, the Pro Switching System menu and System menu are exclusive to the Pro Switching System. They are provided by the Pro Switching System application and are described in Section 6.5.5.

PRO SWITCHING SYSTEM

File   **Edit**   **View**   **Monitor**   **Control**   **Pro Switching System**   **System**   **Options**   **Window**   **Help**

Figure 6-3. Main Menu.

6.4.3 FILE MENU

The File menu contains the following selections:

- New

- Open

- Save

- Save As

- Check Map

- Print Submap

- Print Object List

- Print Setup

- Load Selection List

- Save Selection List As

- Exit
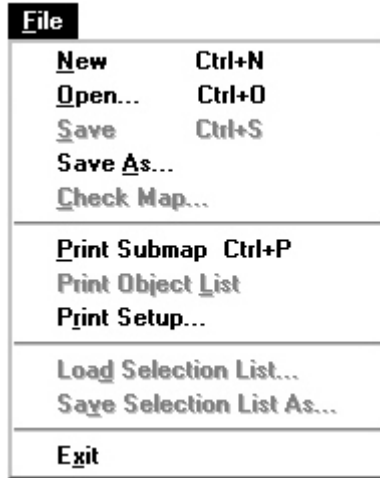
Figure 6-4. File Menu.

Opening a New Map File

Follow this procedure to create a new empty map onto which you may place icons to visually organize your system.

1. From the main menu, select File, then New. The Login screen appears (see Figure 6-5).

2. Enter the User ID (default: blackbox).

3. Enter the Password (default: blackbox).

4. Click on OK to open the new map file.

Figure 6-5. Login Screen.

Opening an Existing Map File

Follow this procedure to open a previously saved map file.

1. From the main menu, select File, Open. The Open screen appears (see Figure 6-6).

Figure 6-6. Open Screen.

2. Locate and select the appropriate file.

3. Click on OK to open the file.

New Submap

You can't use this menu option with the Pro Switching System. To edit a selected object, select Edit, then Describe or Monitor, then Describe from the main menu.

Rename Submap

You can't use this menu option with the Pro Switching System. To edit a selected object, select Edit, then Describe or Monitor, then Describe from the main menu.

Clear Submap

You can't use this menu option with the Pro Switching System. To edit a selected object, select Edit then Describe or Monitor, then Describe from the main menu.

Delete Submap

You can't use this menu option with the Pro Switching System. To edit a selected object, select Edit, Describe... or Monitor, Describe... from the main menu.

6.4.4 EDIT MENU

The Edit menu has the following selections:

- Add

- Cut

- Copy

- Paste

- Delete

- Describe

- New Submap

- Rename Submap

- Clear Submap

- Delete Submap

- Set Background Image

- Clear Background Image

- Set Home Submap

Display "Add" Toolbox

To display the Add Toolbox from where you can add icons, drawing objects, and text to your map, select Edit from the main menu, then Add. The Add Toolbox appears.

Cut/Copy/Paste/Delete

Follow these procedures to edit objects and text.

1. Select the object or text which you are editing.

2. From the main menu, select Edit, then Cut, Copy, Paste, or Delete. The selected editing is performed.

Describe

Follow this procedure to display the description screen for the selected object. On the description screen, you can edit or add information about the selected object.

You can also "describe" an object by selecting Monitor, then Describe from the main menu.

1. Click on the object to select it.

2. From the main menu, select Edit, then Describe. The Description screen for that object appears.

3. Edit or add the appropriate information about the object.

New Submap

This menu option cannot be used in conjunction with the Pro Switching System. To edit a selected object, select Edit, then Describe, or Monitor, then Describe from the main menu.

Rename Submap

This menu option cannot be used in conjunction with the Pro Switching System. To edit a selected object, select Edit, then Describe or Monitor, then Describe from the main menu.

Clear Submap

This menu option cannot be used in conjunction with the Pro Switching System. To edit a selected object, select Edit, then Describe or Monitor, then Describe from the main menu.

Delete Submap

This menu option cannot be used in conjunction with the Pro Switching System. To edit a selected object, select Edit, then Describe or Monitor, then Describe from the main menu.

Set Background Image

Follow this procedure to load a background image file for the current submap, allowing you to more visually represent your system.

For example, you may load the geographic view diagram of a country as a background image. Then, you may position your icons (representing devices) at particular points on the image to visually indicate their true geographic locations.

To Set the Background Image

1. Click on the submap to where you are placing the background image.

2. From main menu, select Edit, then Set Background Image. The Set Background Image screen appears.

3. Locate and select the desired background image.

4. Click on OK to load the image onto the submap. The image appears on your submap background.

NOTE

If you cannot see the background image or your icons, trying panning your submap using the scroll bars or by selecting View, then Pan from the main menu.

Clear Background Image

Follow this procedure to delete the background image from the submap.

1. Click on the submap where the image is located.

2. From the main menu, select Edit, then Clear Background Image. The image disappears.

Set Home Submap

Follow this procedure to define the top level "Home" submap for the current map. The home submap is the one displayed when you first display a map, and it should contain a submap symbol for each submap in the map.

1. From the main menu, select Edit, then Set Home Submap. The Set Home Submap screen appears.

2. Select the desired submap as the home submap.

3. Click on OK to set.

6.4.5 VIEW MENU

The View menu has the following selections:

- Zoom 1

- Zoom 1/2

- Zoom 1/4

- Zoom 1/8

- Pan

- Set Grid

- Show Grid

Zoom

Perform this procedure to view the map at normal, ½, ¼, or ⅛ scale.

1. Click on the submap to select it.

2. From the main menu, select View, then Zoom (choose 1, 1⁄2, 1⁄4, or 1⁄8 scale). The submap displays at the desired scale.

Pan

Perform this procedure to move the submap view.

1. Click on the submap to select it.

2. From the main menu, select View, then Pan. The pan screen appears, showing your whole submap. Your icons appear as dots.

3. Position the box and click OK to view.

Set Grid

Perform this procedure to set the grid spacing, which is used as a drawing guide.

1. Click on the submap to select it.

2. From the main menu, select View, then Set Grid. The Set Grid screen appears.

3. Set the horizontal and vertical grid spacing.

4. Click on OK to set.

Show/Hide Grid

Perform this procedure to show or hide the grid on the current submap. The grid is used as a drawing guide.

1. Click on the submap to select it.

2. From the main menu, select View, then Show/Hide Grid. The grid screen appears/disappears on the current submap.

6.4.6 MONITOR MENU

The Monitor menu has the following selections:

- Describe...

- Status Legend...

- Alarm Log...

Describe

Perform this procedure to display the description screen for the selected object. On the description screen, you can edit or add information about the selected object.

You can also "describe" an object by selecting Edit, then Describe from the main menu.

To "Describe" an Object

1. Click on the object to select it.

2. From the main menu, select Monitor, then Describe. The description screen for the object appears.

3. Edit or add the appropriate information for the object.

Status Legend

Follow this procedure to display the status legend, which shows the states of the objects using color codes. By default, they are:

- Red (Critical): indicates the device is having serious problems, such as being down.

- Dark Red (Major): indicates a problem with some degradation of operation.

- Orange (Minor): indicates a noncritical condition. There maybe some device degradation.

- Yellow (Warning): indicates a noncritical condition. No degradation has occurred.

- Mustard (Marginal): indicates that a device is approaching shutdown or malfunction.

- Magenta (Informational): indicates that an informational message about the device has been sent by an application.

- Cyan (Disabled): indicates the device is shut down.

- Wheat (Unmanaged): indicates that the device is not managed by an HP OpenView application.

- Green (Normal): indicates the device is in a normal state. The device is up and should be working properly.

- Blue (Unknown): indicates the device application does not report its status, or the map changed and the status has not been reported to HP OpenView for Windows.

To Display the Status Legend

From the main menu, select Monitor, then Status Legend. The status legend screen appears.

Alarm Log

Perform this procedure to display the alarm log screen, which displays a list of alarms and other alarm information:

- Acknowledge: Click on this to acknowledge a particular alarm (highlighted). The alarm disappears and is stored in the history file.

- Acknowledge All: Click on this to acknowledge all alarms. The alarms disappear and are stored in the history file.

- Close: Click on this to close the alarm log screen.

- Delete: In the history file, click on this to delete a particular alarm.

- Delete All: In the history file, click on this to delete all alarms.

- Filters: Click on this to customize the types of alarms displayed.

- Go To: Click on (highlight) a specific alarm notice and click on Go To show the specific device in the alarm condition.

- Help: Click on this to display on-line help.

- History: Click on this to display the alarm history file.

- More Info: Click on this to obtain information (if applicable) on a particular alarm.

- Print: Click on this to print the alarm log.

To Display the Alarm Log

From the main menu, select Monitor, then Alarm Log. The alarm log screen appears, showing various display and editing options for the alarms.

To obtain more information on the alarm log screen, click on the Help button.

6.4.7 CONTROL MENU

The Control menu has the following selections:

- Browse Web Home Page

- Browse Web Management Page

Browse Web Home Page

Follow this procedure to view the device's home page if the device supports Web-based management. This menu item is only enabled when the selected object contains a Home Page URL in its Describe information.

1. Click on the device icon to select it.

2. From the main menu, select Control, then Browse Web Home Page.

Browse Web Management Page

Perform this procedure to view the device's management page if the device supports Web-based management. This menu item is only enabled when the selected object contains a Management URL in its Describe information.

1. Click on the device icon to select it.

2. From the main menu, select Control, then Browse Web Management Page.

6.4.8 OPTIONS MENU

The Options menu has the following selections:

- Protect Map

- Log In

- Log Out

- Set Password

- Customize HP OpenView

- Customize Alarms

- Customize Device Access

Protect Map

Follow this procedure to disable editing of a map via password. It is not meant as a data security feature but prevents your map from being modified accidentally during regular operations. Only the editing functions are disabled; setting and acknowledging alarms are not affected.

To Protect Your Map

1. From the main menu, select Options, then Protect Map. The protect map screen appears.

2. Enter a password.

3. Click OK to enable. The word "Protected" is displayed in the status bar at the bottom of the OpenView window.

To Unprotect Your Map

1. From the main menu, select Options, then Unprotect Map. The unprotect map screen appears.

2. Enter the correct password.

3. Click OK to unprotect map and resume editing.

NOTE

The protect password is stored in the OVWIN.INI file under the [OpenView] section using the Key= string value. If you forget your password, simply delete the coded password entry in the OVWIN.INI file.

Log In

Follow this procedure to log into OpenView at a new security level. The security level dialog box appears at the start of OpenView if a password has been assigned.

There are three levels of security: Supervisor, Operator, and Observer. The Supervisor has full privileges to OpenView features; the Operator has limited privileges; and the Observer has minimal privileges.

The right-hand side of the description bar shows the current login status of the user.

To Log In

1. From the main menu, select Options, then Log In. The Log In screen appears.

2. Select the security level—Supervisor, Operator, or Observer.

3. Enter a password.

4. Click OK to set.

NOTE

To set new passwords, select Options, then Set Password from the main menu.

Log Out

Perform this procedure to disable HP OpenView menus and lock the map. The only basic OpenView functions available will be the Log In menu item and the Help menu.

To Log Out

From the main menu, select Options, then Log Out. HP OpenView menus are disabled and the map is locked.

   To enable the menus and unlock the map, select Options, then Log In from the main menu.

Set Password

Follow this procedure to set passwords for the various security levels—Supervisor, Operator, and Observer.

To Set Passwords

1. From the main menu, select Options, then Set Passwords. The Set Password screen appears.

2. Select a security level.

3. Enter a password.

4. Click OK to set.

NOTE

Only the Supervisor has "Set Password" privileges. Users logged in as Operator or Observer cannot set passwords.

Customize HP OpenView

Perform this procedure to customize HP OpenView Settings.

To Customize HP OpenView

1. From the main menu, select Options, then Customize HP OpenView. The Customize HP OpenView screen appears.

2. Choose the appropriate customize settings.

3. Click OK to set. The full settings will take effect on your next session.

Customize Alarms

Perform this procedure to customize your alarm settings.

1. From the main menu, select Options, then Customize Alarms. The Customize Alarm screen appears.

2. Choose the appropriate customize settings.

3. Click OK to set.

Customize Device Access

Follow this procedure to customize device access characteristics.

To Customize Device Access

1. From the main menu, select Options, then Customize Device Access. The Customize Device Access screen appears.

2. Choose the appropriate customize settings.

3. Click OK to set.

6.4.9 WINDOW MENU

The Window menu displays the following selections:

- Home Submap

- Previous Submap

- Locate Submap

- Locate Object.

Home Submap

Follow this procedure to display your home submap.

To Display Your Home Submap

From the main menu, select Window, then Home Submap. The Home Submap appears.

NOTE

To define your home submap, select Edit, then Set Home Submap from the main menu.

Previous Submap

Follow this procedure to display the previous submap you were viewing.

From the main menu, select Window, Previous Submap. The previous submap appears.

Locate Submap

Follow this procedure to locate and display a submap for editing.

1. From the main menu, select Window, then Locate Submap. The Locate Submap screen appears.

2. Choose the target submap.

3. Click OK to locate. The submap is displayed.

Locate Object

Follow this procedure to display the submap containing the device icon, which you are locating.

1. From the main menu, select Window, then Locate Object. The Locate Object screen appears.

2. Choose the target device.

3. Click OK to locate. The submap with the device icon is displayed.

6.4.10 HELP MENU

The Help menu displays the following selections:

• HP OpenView Index

• About

HP OpenView Index

Follow this procedure to obtain help information on HP OpenView.

1. From the main menu, select Help, then HP OpenView Index. The HP OpenView Index appear.

2. Use the menus and keywords to search for the desired information.

About

Follow this procedure to view the version number, release date, and copyright information for HP OpenView for Windows and application software.

From the main menu, select Help, then HP About. The About screen appears.

6.5 Switch Operation

The Operations section describes two HP OpenView main menu selections—Pro Switching System and System—that are unique to the Pro Switching System.

This section also describes how to operate your Pro Switching System using the SNMP software application via HP OpenView.

6.5.1 SITE DESCRIPTION SCREEN

The Site Description screen (Figure 6-7) allows you to view and edit information about your site. All fields in the screen, except Name, can be modified.

To Display the Site Description Screen

1. Right-click on the site icon and select Describe. The Site Description screen appears.

   or

1. Click on the site icon to select it.

2. From the main menu, select Edit, then Describe. The Site Description screen appears.

   or

1. Click on the site icon to select it.

2. From the main menu, select Monitor, then Describe. The Site Description screen appears.

NOTE

You cannot change the Name field in the Site Description screen once you enter it. If you need to rename your site, you must delete your site icon and create a new site with the desired name.

Figure 6-7. Site Description Screen.

6.5.2 RACK DESCRIPTION SCREEN

The Rack Description screen (Figure 6-8) allows you to view and edit information about your rack. You can modify all fields in the screen except Site.

To Display the Rack Description Screen

1. Right-click on the rack icon and select Describe. The Rack Description screen appears.

    or

1. Click on the rack icon to select it.

2. From the main menu, select Edit, then Describe. The Rack Description screen appears.

    or

1. Click on the rack icon to select it.

2. From the main menu, select Monitor, then Describe. The Rack Description screen appears.

Figure 6-8. Rack Description Screen.

6.5.3 LINE DESCRIPTION SCREEN

The Line Description screen allows you to view and edit information about your line card. You can modify all fields in the screen except Site, Rack, and IP Address.

To Display the Line Description Screen

1. Right-click the rack icon and select Describe. The Rack Description screen (Figure 6-8) appears.

2. From the Rack Description screen, click on one of the line buttons (1 through 16) in the lower portion of the screen. The Line Description screen (Figure 6-9) for that line card appears.
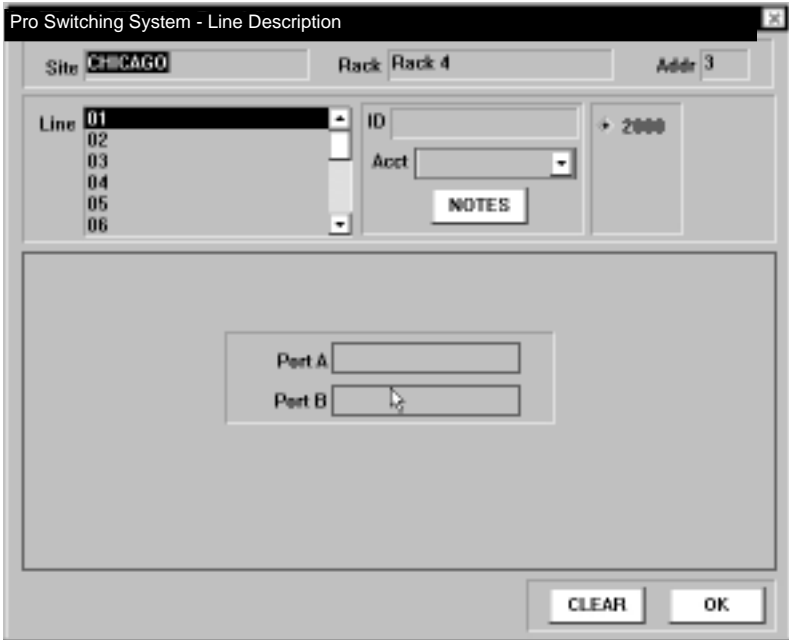
Figure 6-9. Line Description Screen.

6.5.4 SWITCH MENU
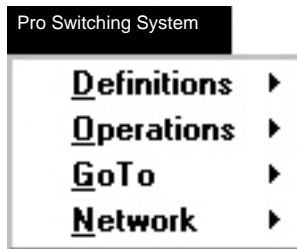
Figure 6-10. Switch Menu.

The Switch menu displays the following selections:

- Definitions
    Groups
    Default Switch
    Switch Schedules
    Standard Alarms
    Alarm Triggered Switching
    Monitor Bus

- Operations
    Switching
    Default Switching
    Scheduled Switching
    Standard Alarms
    Alarm Triggered Switching

- Go To
    Site
    Rack
    Line

- Network
    Broadcast
    Health Checks
    System (All Sites)
    Report

Definitions
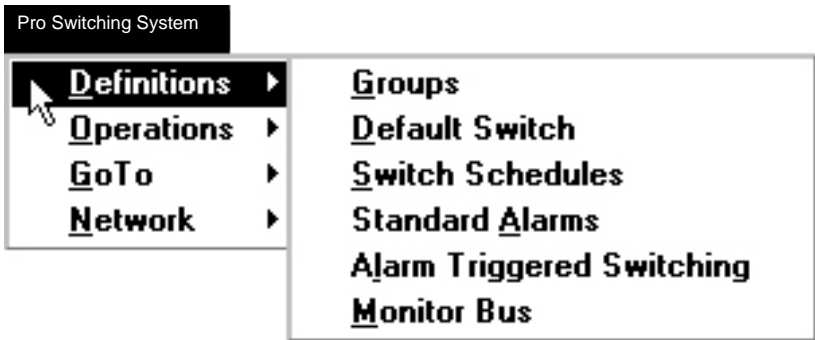
Figure 6-11. Definitions Menu.

The Definitions selection has the following sub-selections:

- Groups

- Default Switch

- Switch Schedules

- Standard Alarms

- Alarm Triggered Switching

- Monitor Bus

Groups

Perform this procedure to create or modify switch groups.

To Create or Modify Switch Groups

1. From the main menu, select Pro Switching System, then Definitions, then Groups. The Group Definitions screen appears (see Figure 6-12).

Figure 6-12 Groups Screen.

2. In the Group box, enter the name of a new group; or click on the arrow and choose a name from the display list of groups already created.

3. In the Notes box (optional), enter any information about the group.

4. In the Site box, click on a site to narrow your selection to a particular site.

   In the Rack box, click on a rack to narrow your selection to a particular rack.

   In the Line box, click on a line to narrow your selection to a particular line.

   Click on the + button to add your selection to the Currently Defined Group Member list.

5. In the Currently Defined Group Members area, to remove any unwanted member from the list, click on a member and click the – button.

6. Click on...
   SAVE to save your group.
   CLEAR to clear the display.
   DELETE to delete the group.
   EXIT to exit the screen.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

Default Switch

Follow this procedure to create or modify default switch definitions for predefined switch groups which you create.

1. From the main menu, select Pro Switching System, then Definitions, then Default Switch. The Default Switch Definitions screen appears (see Figure 6-13).

Figure 6-13. Default Switch Screen.

2. In the Definition Name box, enter the name of a new definition; or click on the arrow and choose a name from the display list of definitions already created.

3. In the Notes box (optional), enter any information that may be helpful to you.

4. In the Group box, click on the arrow and choose a group to which you will assign default switches for its members.

   If no groups are listed, you must first create a group by selecting Pro Switching System, then Definitions, then Groups from the main menu. See the "Group" section (on the previous two pages) of this chapter for step-by-step procedures.

5. In the Currently Defined Group Member box, select (highlight) one or several members by clicking on them. Click on them again to unselect.

   In the Switch To box, click on A, B, C, or D to define the switch positions of the selected members.

   Repeat this step until all members have been selected and assigned default switches.

6. Click on...
   SAVE to save your definition.
   CLEAR to clear the display.
   DELETE to delete the definition.
   EXIT to exit the screen.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

To Create or Modify Default Switch Definitions

Switch Schedules

To Create or Modify Switch Schedule Definitions

1. From the main menu, select Pro Switching System, then Definitions, then Switch Schedules. The Scheduled Switching Definition screen appears (see Figure 6-14).

Figure 6-14. Switch Schedules Screen.

2. In the Definition Name box, enter the name of a new definition; or click on the arrow and choose a name from the display list of definitions already created.

3. In the Notes box (optional), enter any information that may be helpful to you.

4. In the Hour and Minute box, choose the time of switching.

5. In the Days box, choose the day(s) of switching.

6. In the How Often box, choose the frequency of switching.

7. In the Switch To box, choose the switch position—A, B, C, or D. For dual line cards, click on (enable) the Dual box.

8. Click on...
   SAVE to save your definition.
   CLEAR to clear your selections.
   DELETE to delete the entire definition.
   EXIT to exit the screen.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

Standard Alarms

Follow this procedure to create or modify standard alarms.

To Create or Modify Standard Alarms Definitions

1. From the main menu, select Pro Switching System, then Definitions, then Standard Alarms. The Standard Alarm Definition screen appears (see Figure 6-15).

Figure 6-15. Standard Alarms.

2. In the Alarm Definition Name box, enter the name of a new definition; or click on the arrow and choose a name from the display list of definitions already created.

3. In the Notes box (optional), enter any information that may be helpful to you.

4. In the Version A and Version B boxes, choose the appropriate interface—RS-232, RS-530, or V.35. Version A allows setting alarms on the same leads of Common, A, and B. Version B reduces the number of leads available on A and B.

5. In the Standard Alarm Criteria area, for each port (COM, A, B) and each lead (TD, RD, etc.) desired, select a State (Disable, Mark, Space, No Data) and a Duration (1-999 seconds) that the lead(s) must continue in that state to trigger an alarm. (Note that a D (Disable) setting will not display when the screen is recalled.)

6. Click on...
   SAVE to save your definition.

CLEAR to clear your selections.
DELETE to delete the entire definition.
EXIT to exit the screen.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

Alarm Triggered Switching

Perform this procedure to create or modify alarm triggered switching definitions. Setting up alarm triggered switching and automatic fallback involves two definitions (Groups and Alarm Triggered Switching) and one operation (Alarm Triggered Switching).

To Create or Modify Alarm Triggered Switching Definitions

1. From the main menu, select Pro Switching System, then Definitions, then Alarm Triggered Switching. The Alarm Triggered Switching Definition screen appears (see Figure 6-16).
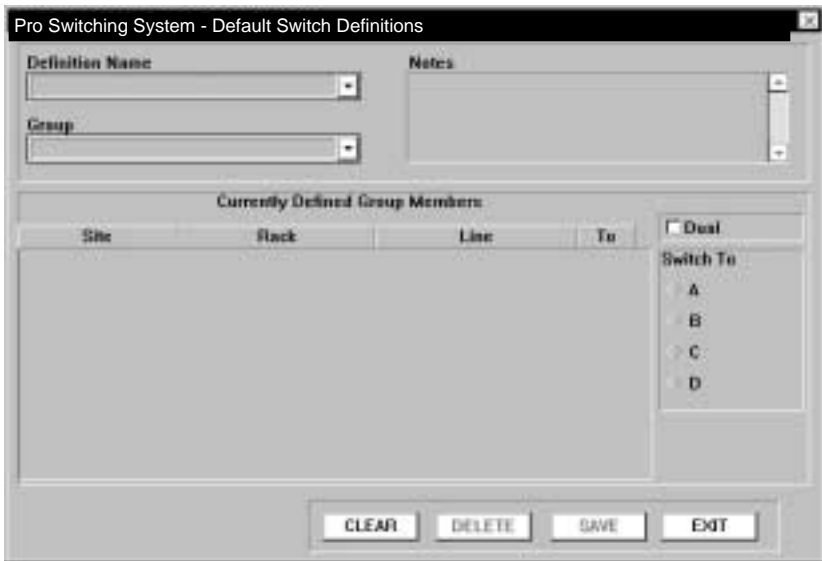
Figure 6-16. Alarm Triggered Switching Screen.

2. In the Alarm Definition Name box, enter the name of a new definition; or click on the arrow and choose a name from the display list of definitions already created.

3. In the Notes box (optional), enter any information that may be helpful to you.

4. In the Version A and Version B boxes, choose the appropriate interface—RS-232, RS-530, or V.35. Version A allows setting alarms on the same leads of Common, A, and B. Version B reduces the number of lead available on A and B.

5. In the Trigger Criteria area...

Click on A or B (or C or D, where appropriate) on the right side of the screen to identify the primary line. (The other port is automatically selected as the redundant line in the Redundant Line Criteria area.)

For each lead (TD, RD, etc.) desired, select a State (Disable, Mark, Space, No Data) and a Duration (1-999 seconds) that the lead(s) must continue in that

state to trigger an alarm and consequently switch to the redundant line. (Note that a D (Disable) setting will not display when the screen is recalled.)

In the Restore section, select a State (D, M, S, N) and a Duration (1-999 seconds) that the lead must continue in the complementary state to trigger a fallback switch from the redundant line.

6. In the Redundant Line Criteria area, for each lead (TD, RD, etc.) desired, select a State (D, M, S, N) and a Duration (1-999) that the lead must continue in that state to prevent switching to the redundant line.

7. Click on...
   SAVE to save your definition.
   CLEAR to clear your selections.
   DELETE to delete the entire definition.
   EXIT to exit the screen.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

Monitor Bus

Perform this procedure to define a Monitor Bus Group. In the Monitor Bus Definition screen, you configure the software to reflect the hardware situation. That is, when the monitor bus ports of specific racks are chained together, you list these racks here. Switching operations can then be performed simultaneously on the connected buses by using the group definition.

To Create or Modify Monitor Bus Definitions

1. From the main menu, select Pro Switching System, then Definitions, then Monitor Bus. The Monitor Bus Definition screen appears (see Figure 6-17).
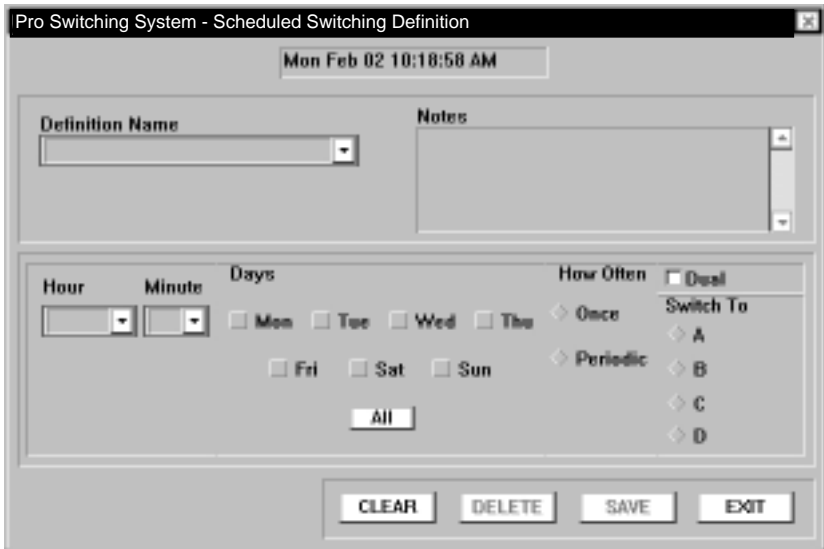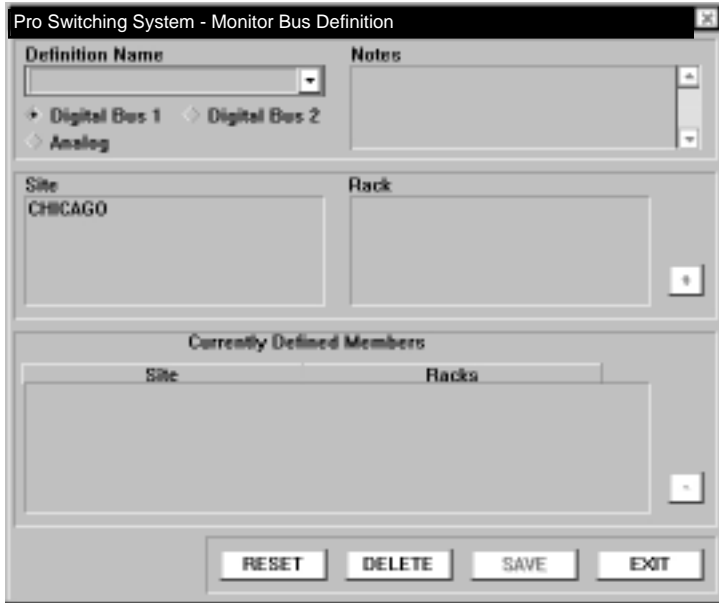
Figure 6-17. Monitor Bus Screen.

2. In the Definition Name box, enter the name of a new definition; or click on the arrow and choose a name from the display list of definitions already created.

3. In the Notes box (optional), enter any information that may be helpful to you.

4. Select the bus: Digital 1, Digital 2, or Analog.

5. In the Site box, click on a site to narrow your selection to a particular site.

6. In the Rack box, click on a rack to narrow your selection to a particular rack.

7. Click on the + button to add your selection to the Currently Defined Members list.

8. In the Currently Defined Members area, to remove any unwanted member from the list, click on a member and click the – button.

9. Click on...
SAVE to save your definition.
CLEAR to clear your selections.

DELETE to delete the entire definition.

EXIT to exit the screen.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

Operations
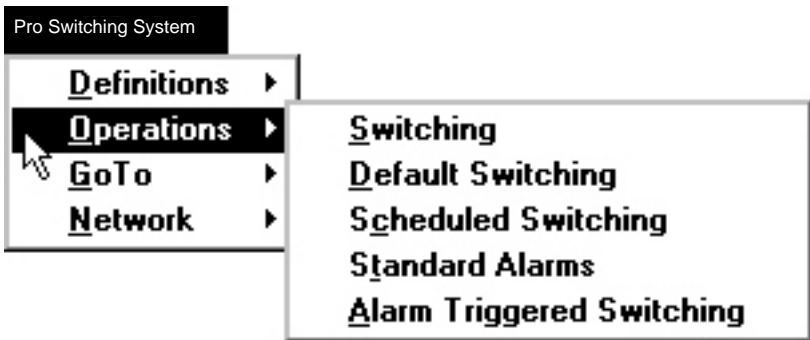
Figure 6-18. Operations Screen.

The Operations selection has the following sub-selections:

- Switching

- Default Switching

- Scheduled Switching

- Standard Alarms

- Alarm Triggered Switching

Switching

Follow this procedure to execute switching operations.

To Perform Switching Operations

1. From the main menu, select Pro Switching System, then Operations, then Switching. The Group Switching Operations screen appears.

Figure 6-19. Group Switching Screen.

2. In the Group box, select the predefined group on which to perform switching. (The group was created by selecting Pro Switching System, then Definitions, then Groups from the main menu.)

   or

   In the Site, Rack, and Line boxes, select the specific lines to add to the Lines to Be Switched list.

3. In the Lines to be Switched list, to remove unwanted lines from the list, click on them.

4. In the Switch To box, choose the switch position (A, B, C, or D) to which all the lines on the list will switch. For dual line cards, click on (enable) the Dual box.

5. Click on...
   GO to execute the switching.
   CLEAR to clear your selections.
   EXIT to exit the screen.

NOTE

You can also perform switching operations from the Rack Status screen, which shows real-time views of the rack.

Default Switching

Follow this procedure to execute default switching operations.

To Perform Default Switching Operations

1. From the main menu, select Pro Switching System, then Operations, then Default Switching. The Default Switching Operations screen appears.
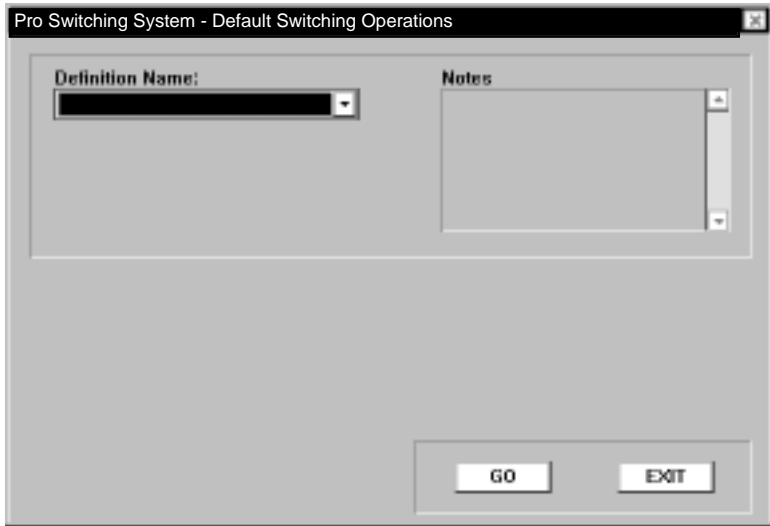
Figure 6-20. Default Switching Screen.

2. In the Definition Name box, click on the arrow and choose a name from the display list of definitions previously created.

3. In the Notes box (optional), enter any information that may be helpful to you.

4. Click on...
   GO to execute the switching.
   EXIT to exit the screen.

Scheduled Switching

Follow this procedure to enable or disable scheduled switching operations.

To Perform Scheduled Switching Operations

1. From the main menu, select Pro Switching System, then Operations, then Scheduled Switching. The Scheduled Switching Operations screen appears.
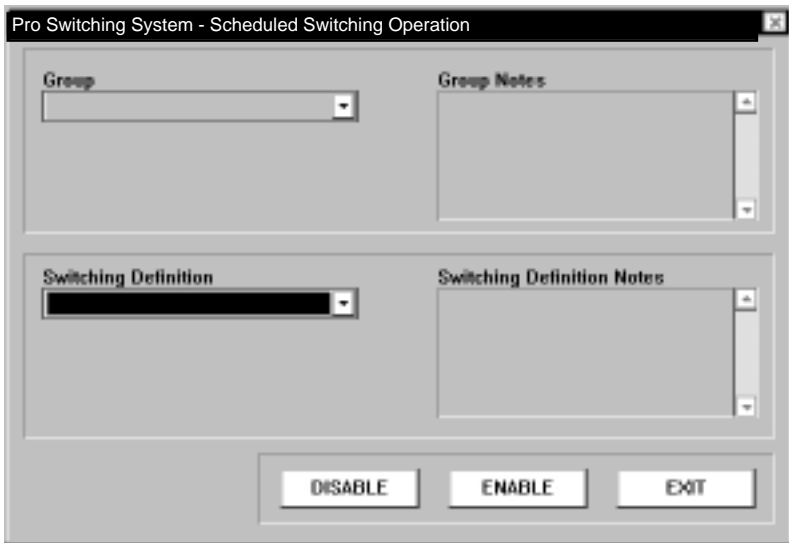
Figure 6-21. Scheduled Switching Screen.

2. In the Group box, click on the arrow and choose a name from the display list of switch groups previously created.

3. In the Switching Definition box, click on the arrow and choose a name from the display list of scheduled switching definitions previously created.

4. In the Notes boxes (optional), enter any information that may be helpful to you.

5. Click on...

ENABLE to begin scheduled switching operations—the selected scheduled switching definition will be applied to the selected switch group.

DISABLE to end scheduled switching operations.

EXIT to exit the screen.

NOTE

You can also select Scheduled Switching operations from the Line Status screen. Refer to Section 6.5.7.

Standard Alarms

Perform this procedure to enable or disable Standard Alarm operations.

To Perform Standard Alarm Operations

1. From the main menu, select Pro Switching System, then Operations, then Standard Alarms. The Standard Alarms Operations screen appears.
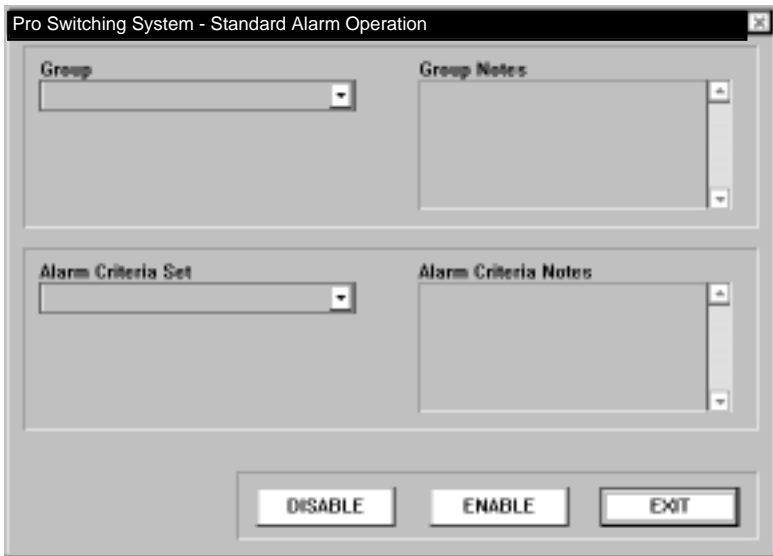
Figure 6-22. Standard Alarms Screen.

2. In the Group box, click on the arrow and choose a name from the display list of switch groups previously created.

3. In the Alarm Criteria Set box, click on the arrow and choose a name from the display list of alarm definitions previously created.

4. In the Notes boxes (optional), enter any information that may be helpful to you.

5. Click on...

   ENABLE to begin Standard Alarm operations—the selected alarm definition will be applied to the selected switch group.

   DISABLE to end Standard Alarm operations.

   EXIT to exit the screen.

NOTE

You can also select Standard Alarm operations from the Line Status screen. Refer to Section 6.5.7.

Alarm Triggered Switching

Perform this procedure to enable or disable Alarm Triggered Switching operations.

To Perform Alarm Triggered Switching Operations

1. From the main menu, select Pro Switching System, then Operations, then Alarm Triggered Switching. The Alarm Triggered Switching Operations screen appears.
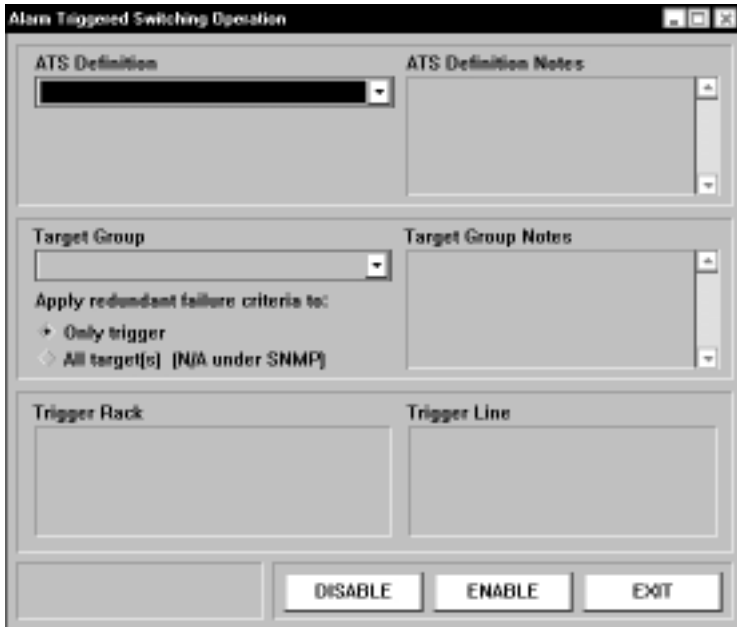
Figure 6-23. Alarm Triggered Switching Screen.

2. In the ATS (Alarm Triggered Switching) Definition box, click on the arrow and choose a name from the display list of alarm definitions previously created.

3. In the Target Group box, click on the arrow and choose a name from the display list of switch groups previously created.

4. In the Notes boxes (optional), enter any information that may be helpful to you.

5. In the Trigger Rack box, click on a rack to narrow your selection to a particular rack.

   In the Trigger Line box, click on a line to narrow your selection to a particular line.

6. Click on...

   ENABLE to begin Alarm Triggered Switching Operations—the selected alarm definition will be applied to the selected switch group.

DISABLE to end Alarm Triggered Switching operations.

EXIT to exit the screen.

NOTE

You can also select Alarm Triggered Switching operations from the Line Status screen. Refer to Section 6.5.7.

GoTo
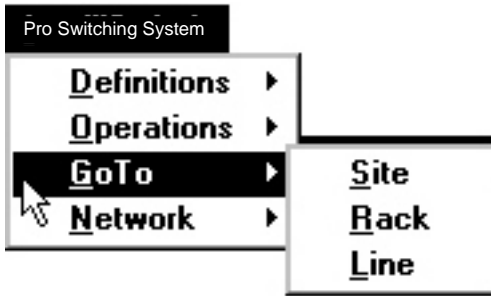
Figure 6-24. GoTo Selection Box.

The GoTo selection has the following sub-selections:

- Site

- Rack

- Line

Site

Follow this procedure to display the submap for a particular site.

To GoTo a Site

1. From the main menu, select Pro Switching System, then GoTo, then Site. The Site Selection screen appears.

Figure 6-25. Site Selection Screen.

2. Select the site that you wish to display.

3. Click on:
   GOTO to display the site submap.
   EXIT to exit the screen.

Rack

Perform this procedure to display the Rack Status screen for a particular rack.

To Go To a Rack

1. From the main menu, select Pro Switching System, then GoTo, then Rack.
   The Rack Selection screen appears.
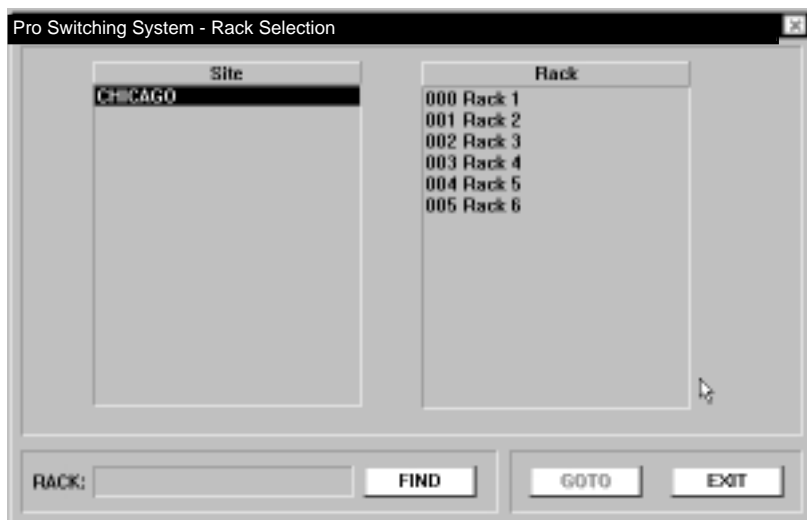
Figure 6-26. GoTo Rack Screen.

2. Using the Site and Rack boxes, select the rack that you wish to display. To find a rack among a list of names, use FIND.

3. Click on:
   GOTO to display the Rack Status screen.
   EXIT to exit the screen.

Line

Follow this procedure to display the Line Status screen for a particular line.

To Go To a Line

1. From the main menu, select Pro Switching System, then GoTo, then Line. The Line Selection screen (Figure 6-27) appears.
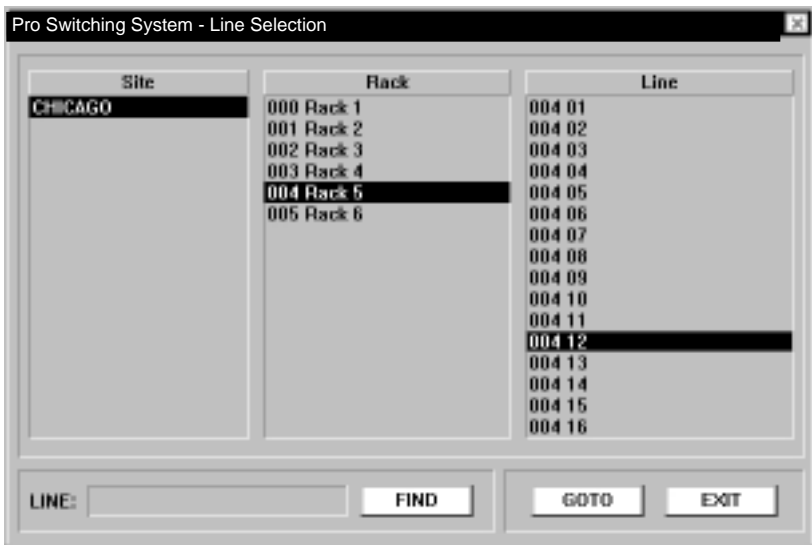
Figure 6-27. Line Selection Screen.

2. Using the Site, Rack, and Line boxes, select the line that you wish to display. To find a line among a list of names, use FIND.

3. Click on:
   GOTO to display the Line Status screen.
   EXIT to exit the screen.

Network
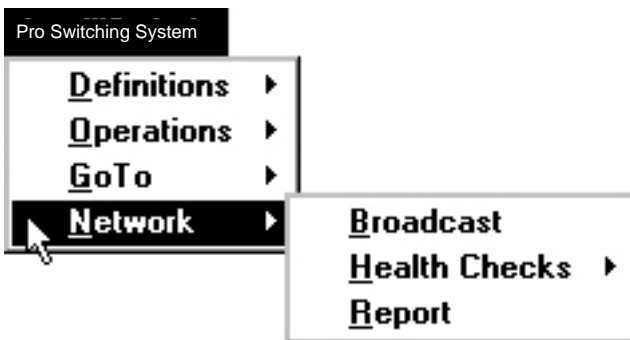
Figure 6-28. Network Menu.

The Network selection has the following sub-selections:

- Broadcast

- Health Checks

- Report

Broadcast

Perform this procedure to define network time and to broadcast it.

You should broadcast network time early in the process of creating a network map—after you have done both of the following:

- defined at least one rack on a site

- defined and enabled the PC port that communicates with the site

Once you have broadcast the network time, it is automatically downloaded to new racks when you add them to the network.

You will need to broadcast the time again only if you change the time setting.

To Define Network Time and Broadcast It

1. From the main menu, select Pro Switching System, then Network, then Broadcast. The Broadcast Control screen appears.

2. Enter the current time and date.

3. Click on UPDATE to save the network time you have defined to the PC and to broadcast it to the racks in the network.

4. To broadcast to selected sites...
   Click on the desired sites on the list
   Click on SELECTED to broadcast to the selected sites.

5. To broadcast to all sites, click on ALL.

6. Click on EXIT to exit the screen.

Health Checks, System (All Sites)

Perform this procedure to define a schedule for checking system sites.

To Define a Health Check Schedule

1. From the main menu, select Pro Switching System, then Network, then Health Checks, System (All Sites). The System Health Check Schedule screen (Figure 6-29) appears.
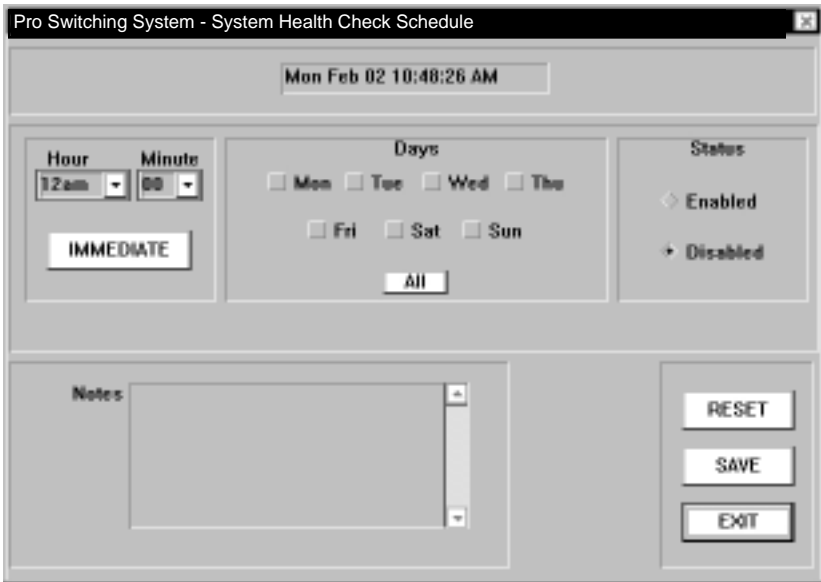
Figure 6-29. Health Check Schedule Screen.

2. Click on IMMEDIATE to initiate an immediate health check of all system sites.

   or

   Enter the desired time and day(s) to schedule periodic health checks.

3. Click on Enabled or Disabled for the scheduled health check.

4. In the Notes box, enter any information that may be helpful to you.

5. Click on...
   RESET to reset your selections to blanks.
   SAVE to save your selections.
   EXIT to exit the screen.

NOTE
Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

NOTE
Schedule a health check for a period of low system activity.

Report

Perform this procedure to define and display reports. The reports list information programmed by the operator into the system database. The reports are displayed in Notepad format and can be printed out from the Notepad program.

To Define and Display a Report

1. From the main menu, select Pro Switching System, then Network, then Report. The Report Generator screen appears.

Figure 6-30. Report Generator Screen.

2. Click on a selection from the...

Group box to limit the report to the previously defined group.

Site box to generate the report on all racks on the site.

Rack box to limit the report to a specific rack.

Line box to limit the report to a single line.

3. In the Definitions box, leave these items unchecked. The Pro Switching System currently does not use them.

4. In the Configuration, Health Checks, and Include Notepads boxes, click on the desired items of information to include on the report.

5. Click on...
CLEAR to reset your selections to blanks.
REPORT to generate the report. The report is displayed in Notepad format and can be printed out.
EXIT to exit the screen.

6.5.5 SYSTEM MENU
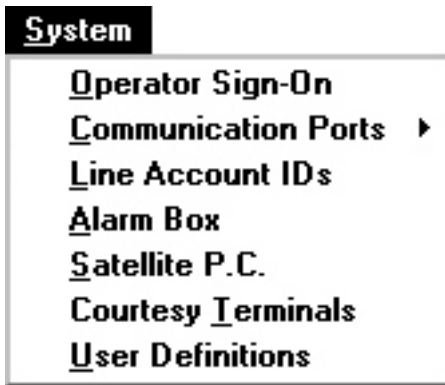
Figure 6-31. System Menu.

The System menu has the following selections:

- Operator Sign-On

- Communication Ports
  - Describe
  - Status
  - Open Port

- Line Account IDs

- Alarm Box

- Satellite P.C.

- Courtesy Terminals

- User Definitions

Operator Sign-On

Perform this procedure to allow authorized users to enter the HP OpenView program.

If the Map Name is shown as C:\OV\UNTITLED, the system will display an area from which a map can be opened or in which a map can be created.

If the Map Name is shown other than UNTITLED, the system will open to that map. The map name displayed is that of the default map, defined by the user in the Options menu.

To Sign-On

1. From the main menu, select System, then Operator Sign-On. The Login screen (Figure 6-32) appears.

Figure 6-32. Login Screen.

2. Enter the User ID (default: blackbox).

3. Enter the Password (default: blackbox).

4. Click on OK to sign on.

Communication Ports

The Communication Ports selection applies to your setup only if you are communicating to the racks via the COM ports on the PC. It does not apply to SNMP setups.

Line Account IDs

The Line Account IDs selection does not apply to SNMP setups.

Alarm Box

The Alarm Box selection does not apply to SNMP setups.

Satellite P.C.

The Satellite P.C. selection does not apply to SNMP setups.

Courtesy Terminals

The Courtesy Terminals selection does not apply to SNMP setups.

User Definitions

Perform this procedure to assign user IDs, passwords, and levels of privilege. You can delete the default user ID (blackbox) and password (blackbox) so they can no longer be used to gain access to this map.

Only a user who is assigned the Supervisor (S) level of privilege can access the User Definitions screen. When a new map is opened, there is only one user, a Supervisor, who has the default user ID (blackbox) and password (blackbox). You can delete this user. However, be sure that you create at least one other Supervisor before you do so.

To Assign User Definitions

1. From the main menu, select System, then User Definitions. The User Definitions screen appears.
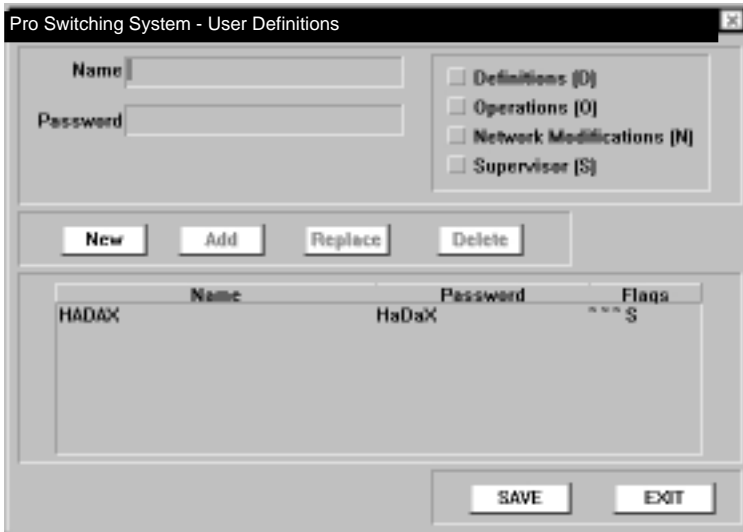
Figure 6-33. User Definitions Screen.

2. To create a new user, click on New.

   To edit a user, click on the user from the list in the lower panel and click Replace.

   To delete a user, click on the user from the list in the lower panel and click Delete.

3. In the Name box, enter user ID to be defined.

4. In the Password box, enter the password of the user to be defined.

5. Click on one of the privilege levels (Definitions, Operations, Network Modifications, or Supervisor) to assign to the user.

6. Click on Add to add a user (transfer from the upper to lower part of the screen) to the list.

7. Click on...
   SAVE to save your changes.
   EXIT to exit the screen.

NOTE

In the Name field, when you enter one or more characters, the ADD button becomes active (changes from gray to black). However, before you can ADD the user to the list below, you must also enter at least one character in the Password field, and click on at least one option box.

NOTE

Clicking on SAVE only stores your changes to the program's temporary memory.

To fully save your changes to the map file, remember to select File, then Save (As) from the main menu before exiting HP OpenView.

6.5.6 RACK STATUS SCREEN

The Rack Status screen shows real-time views of the front and rear of the rack, as if you were standing in front of it.

From the Rack Status screen, you can perform switching and other functions using point-and-click mouse operations, instead of selecting from the main menu.

The Rack Status screen does not replace all of the main menu selections, but offers some capabilities that allow you to control your racks and system from a more visual point of view.

From the Rack Status screen, you can

• Perform individual line card switching.

• Perform gang switching.

• Perform customized gang switching.

• Clear the monitor bus.

• Reset the rack.

• Display the line card status screen.

To Display the Rack Status Screen

1. Go to or display the submap containing the Pro Switching System icon(s).

2. Double-click on a specific Pro Switching System rack icon. A real-time front view of the rack appears (Figure 6-34).
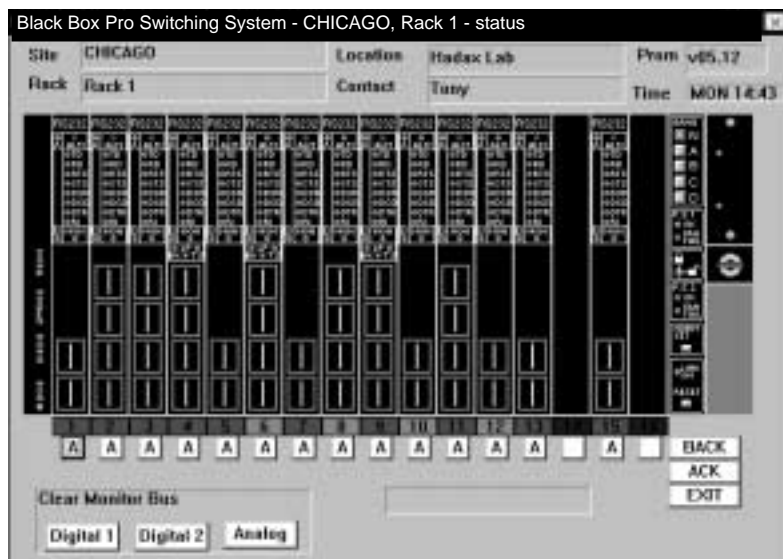
Figure 6-34. Rack Status Screen.

3. To view the rear of the unit, click on the BACK button.

To Perform Individual Line Card Switching

1. Click on the letter box, located at the bottom of the line card. The line card switches to the next available position.

2. Repeat step 1 until the desired switch position is set.

NOTE

Switching may take several seconds to occur, depending upon your polling frequency settings.

To Perform Gang Switching

Click on one of the gang switch buttons — N, A, B, C, or D — located on the upper portion of the control card. All applicable line cards switch to the gang switch position. (For the N gang switch button, see the Customized Gang Switching section, below.)

NOTE

Switching may take several seconds to occur, depending upon your polling frequency settings.

Customized Gang Switching

To Define the 'Normal' Switch Positions

1. For each line card, click on the letter box (located at the bottom of the line card) to set the switch to the desired position.

2. When all the line card switch positions are set, click on the NORM SET button (located on the control card). This defines the current switch positions as the "Normal" positions to switch to when you press the N gang switch button.

To Perform "Normal" Gang Switching

Click on the N gang switch button, located on the upper portion of the control card. All line cards switch to their predefined normal positions.

NOTE

Switching may take several seconds to occur, depending upon your polling frequency settings.

To Clear the Monitor Bus

Click on one of Monitor Bus buttons—Digital 1, Digital 2, or Analog.

To Reset the Rack...

Click on the RESET button, located at the bottom of the control card.

To Display the Line Card Status Screen

Double-click on the desired line card. The line card status screen appears.

6.5.7 LINE CARD STATUS SCREEN

The Line Card Status screen shows the status of leads and other information for an individual line card.

From the line card status screen, you can perform some functions that are also accessible from the main menu selections.
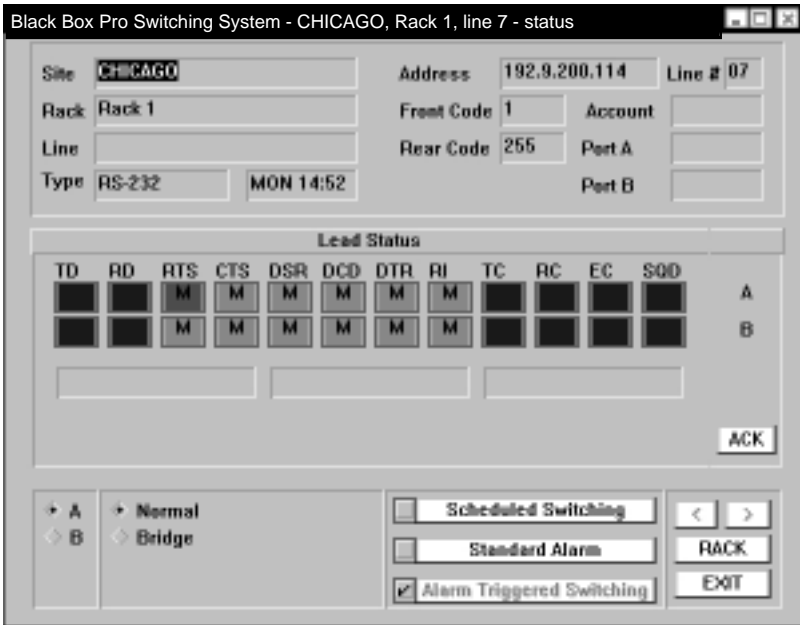
Figure 6-35. Line Status Screen.

From the line card status screen, you can

- Perform individual line card switching.

- Bridge a line card to a bus.

- Enter the Scheduled Switching screen.

- Enter the Standard Alarm screen.

- Enter the Alarm Triggered Switching screen.

To Display the Line Card Status Screen

1. From the site-level submap, double-click on the site icon containing the target line card. The rack-level submap appears.

2. From the rack-level submap, double-click on the rack icon containing the target line card. The front view of the rack appears.

3. From the front view of the rack, double-click on the target line card. The line card status screen appears.

NOTE

The line card status screen may take several seconds to display all information, depending upon your polling frequency settings.

To Perform Individual Line Card Switching

In the bottom left corner of the screen, click on desired switch position: A or B.

NOTE

Switching may take several seconds to occur, depending upon your polling frequency settings.

To Bridge the Line Card to the Monitor Bus

In the bottom left corner of the screen, click on Bridge to bridge the line card to the monitor bus, or click on Normal to remove the bridge.

NOTE

Bridging may take several seconds to occur, depending upon your polling frequency settings.

To Enter the Scheduled Switching Screen

Click on the Scheduled Switching button.

To Enter the Standard Alarm Screen

Click on the Standard Alarm button.

To Enter the Alarm Triggered Switching Screen

Click on the Alarm Triggered Switching button.

6.5.8 SWITCH SCHEDULE DEFINITION SCREEN

The Switch Schedule Definition screen allows you to set a switch schedule based on time and day. You can set the schedule by clicking on the appropriate areas, or you can choose from a list of previously defined switch schedules.

To Display the Line Level Switch Schedule Definition Screen

1. Follow the steps for displaying the line card status screen.

2. From the line card status screen, click on the SCHEDULED SWITCHING button. The line level switch schedule definition screen appears.

Figure 6-36. Line Level Switch Schedule Definition Screen.

To Set the Line Level Switch Schedule

1. In the Scheduled Switching Definitions box, click on the arrow and choose a name from the display list of definitions already created.

   or

   In the Hour and Minute box, choose the time of switching.

2. In the Days box, choose the day(s) of switching.

3. In the How Often box, choose the frequency of switching.

4. In the Switch To box, choose the switch position—A, B, C, or D. For dual line cards, click on (enable) the Dual box.

5. Click on...
   SAVE to enable the schedule.
   RESET to clear your selections.
   EXIT to exit the screen.

6.5.9 STANDARD ALARM DEFINITION SCREEN

The Standard Alarm Definition screen allows you to set up alarms for various leads (RTS, CTS, etc.). You can set the alarms by clicking on the appropriate areas, or you can choose from a list of previously defined alarms.

To Display the Line Level Standard Alarm Definitions Screen

1. Follow the steps for displaying the line card status screen.

2. From the line card status screen, click on the STANDARD ALARM button. The line level standard alarm definitions screen appears.

Figure 6-37. Line Level Standard Alarm Definitions Screen.

To Create or Modify Standard Alarms Definitions

1. In the Standard Alarm Definitions box, click on the arrow and choose a name from the display list of definitions already created.

   or

   In the Standard Alarm—Line Level area, for each port (COM, A, B) and each lead (TD, RD, etc.) desired, select a State (Disable, Mark, Space, No Data) and a Duration (1-999 seconds) that the lead(s) must continue in that state to trigger an alarm. (Note that a D (Disable) setting will not display when the screen is recalled.)

2. Click on...
   SEND to enable the alarms.
   RESET to clear your selections.
   EXIT to exit the screen.

6.5.10 ALARM TRIGGERED SWITCHING SCREEN

The Alarm Triggered Switching screen allows you to set up alarms for various leads (RTS, CTS, etc.). You can set the alarms by clicking on the appropriate areas, or you can choose from a list of previously defined alarms.

To Display the Line Level Alarm Triggered Switching Screen

1. Follow the steps for displaying the line card status screen.

2. From the line card status screen, click on the ALARM TRIGGERED SWITCHING button. The line level alarm triggered switching screen appears.

Figure 6-38. Line Level Alarm Triggered Switching Screen.

To Set the Alarm Triggered Switching...

1. In the Alarm Definition Name box, click on the arrow and choose a name from the display list of definitions already created.

   or

   In the Trigger Criteria area...

   Click on A or B on the right side of the screen to identify the primary line.

(The other port is automatically selected as the redundant line in the Redundant Line Criteria area.)

For each lead (TD, RD, etc.) desired, select a State (Disable, Mark, Space, No Data) and a Duration (1-999 seconds) that the lead(s) must continue in that state to trigger an alarm and consequently switch to the redundant line. (Note that a D (Disable) setting will not display when the screen is recalled.)

In the Restore section, select a State (D, M, S, N) and a Duration (1-999 seconds) that the lead must continue in the complementary state to trigger a fallback switch from the redundant line.

2. In the Redundant Line Criteria area, for each lead (TD, RD, etc.) desired, select a State (D, M, S, N) and a Duration (1-999) that the lead must continue in that state to prevent switching to the redundant line.

3. Click on...
   SEND to enable the switching.
   RESET to clear your selections.
   EXIT to exit the screen.

7. Maintenance

No preventive or routine maintenance is required for the Pro Switching System. Periodically test the LED lamps by pressing the Lamp Test Button. All LEDs should light.

To replace a card, unscrew the mounting screws. Slide the card out of the rack and install a replacement.

WARNING

Turn power off before disconnecting cables! You might get shocked if you don't!

NOTE

You don't need to disconnect the DTE/DCE cables from the rear of the rack while replacing a front-inserted card. Disconnect the power while changing cards. Removing power does not affect or change the switched position.

CAUTION

Electrostatic Discharge (ESD): Cards are ESD-sensitive. To prevent ESD damage, always wear grounding wrist straps when touching, removing, or inserting cards. Store and transport cards in sealed static-shielding containers.

8. Troubleshooting

8.1 Power Problems

Problem: The Pro Switching System does not power on. (The cooling fans do not rotate; or when you press the LAMP TEST button, no LEDs on the System light.)

Solution #1: Make sure the power supply module is fully inserted into the rack mount.

Solution #2: Make sure the AC power cord is properly connected to the rack mount, and that the power cord is plugged into an AC power source.

Solution #3: Make sure the line fuse is good.

8.2 Control Card Problems

Problem: The LINK ON LED does not light.

Solution #1: Make sure that the control card is fully inserted into the rack mount.

Solution #2: Make sure that the power supply modules are functioning properly.

Solution #3: Make sure that DS5, the configuration DIP switch, is set properly.

Solution #4: Make sure that all socketed integrated circuit chips (IC chips) are properly inserted into their sockets.

Problem: Power Supply OK LEDs do not illuminate.

Solution: Make sure that the power supply modules are functioning properly.

Problem: FAN FAIL LEDs illuminate.

Solution: Make sure that the power supply modules are functioning properly.

8.3 Switching Problems

Problem: Gang switching does not work.

Solution #1: Make sure that the KEY SWITCH is in the unlocked position.

Solution #2: Make sure that the interface cards are fully inserted into the rack mount.

Solution #3: Make sure the power supply modules and the control card are functioning properly.

Problem: Individual lines cannot be switched.

Solution #1: Make sure that the interface card is fully inserted into the rack mount.

Solution #2: Make sure that the power supply modules are functioning properly.

8.4 PC Control Problems

Problem: The Pro Switching System does not communicate with the controlling PC.

Solution #1: Make sure that DS5, the configuration DIP switch, is set properly. The baud rate selected with DS5 must match the baud rate defined for the communication port that the Pro Switching System is connected to.

Solution #2: Make sure that the rack address (DS4) and the password DIP switch (DS3) match your site map.

Solution #3: Make sure that the Pro Switching System is connected to the controlling PC, with a correctly configured communication cable.

Solution #4: Make sure that the communication cable is connected to the same communication port as defined in your site map.

Solution #5: Make sure that the communication port defined in your site map is enabled.

Appendix A. Rack Description Guide

This appendix provides the Rack Description Guide. For each rack that you install, make a photocopy of the Rack Description Guide and supply the missing information. Make two photocopies of the completed sheets. Give one set of sheets to the installer technician. Give another set to the network manager. Store the original sheets in a master file.

Rack Description Guide

Site name:

Password (DIP switches):

Rack name:

Rack address (DIP switches):

Baud rate:

IP Address:

Application: ❒ **Switch/Patch**

  ❒ **Substitution Switch**

  ❒ **Modem Sparing**

  ❒ **Other**

Slot: **Connection:**

1

2

3

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Appendix B. Pin Configurations

This appendix shows the pin configurations for various ports in the Pro Switching System.

Communication Cable

Table B-1 summarizes the uses for the different types of communication cable. Pin configurations for these tables of cables are provided in tables, which were presented in previous chapters. For convenient reference, these table are reprinted below.

Table B-1. Digital 1, Monitoring Bus Connector, DB25

Interface Mon. Bus Line	Pin	RS-232 Signal Name	Pin	V.35 Signal Name	Pin	RS-530 Signal Name	Pin
SHIELD	1	SHIELD	1	SHIELD	1	SHIELD	1
DMON0	2	TD	2	TD+	2	TD+	2
DMON1	3	RD	3	RD+	3	RD+	3
DMON2	4	RTS	4	RTS	4	RTS+	4
DMON3	5	CTS	5	CTS	5	CTS+	5
DMON4	6	DSR	6	DSR	6	DCE+	6
GND	7	GND	7	GND	7	GND	7
DMON5	8	DCD	8	DCD	8	DCD+	8
AMON0	9		9		9	RC-	9
AMON1	10		10		10	DCD-	10
AMON2	11		11		11	EC-	11
AMON3	12		12		12	TC-	12
DMON6	13	SCTS	13	RC-	13	CTS-	13
AMON4	14		14		14	TD-	14
DMON7	15	TC	15	TC+	15	TC+	15
DMON8	16	SRD	16	RD-	16	RD-	16
DMON9	17	RC	17	RC+	17	RC+	17
AMON5	18		18		18	LL	18
AMON6	19		19		19	RTS-	19
DMON11	20	DTR	20	DTR	20	DTE+	20
DMON12	21	SQD	21	TD-	21	RL	21
DMON13	22	RI	22	LL	22	DCE-	22
DMON10	23	DSRS	23	EC-	23	DTE-	23
DMON14	24	EC	24	EC+	24	EC+	24
DMON15	25	TM	25	TC-	25	TM	25

Pin Configuration for V.35 Line Cards Using DB25 Rear Cards in the Pro Switching System

Table B-2. Line Card Configuration

DB25	V.35 Signal
1	Frame GND
2	TD+
3	RD+
4	RTS
5	CTS
6	DSR
7	Signal GND
8	DCD
9	
10	
11	TM
12	TP
13	RC-
14	
15	TC+
16	RD-
17	RC+
18	TD-
19	
20	DTR
21	RL
22	LL
23	EC-
24	EC+
25	TC-

Table B-3. Pin Configuration, COMM IN Port (DB25 Male)

Pin	Signal	Direction
1	SHIELD GND	—
2	TD	In
3	RD	Out
4	RTS	In
5	CTS	Out
6	DSR	Out
7	SIGNAL GND	—
20	DTR	In

Table B-4. Pin Configuration, COMM OUT Port (DB25 Female)

Pin	Signal	Direction
1	SHIELD GND	—
2	TD	Out
3	RD	In
4	RTS	Out
5	CTS	In
6	DSR	In
7	SIGNAL GND	—
20	DTR	Out

Table B-5. Pin Configuration, Cable Connecting the ANALOG Port and RJ-11 Connector

Analog (RJ-45) Pin	Equipment (RJ-11) Pin
1	1
2	2
3	3
4	4

Table B-6. RS-232 Pin Assignments, DIGITAL Port (DB25 Female)

Pin	Signal
1	SHIELD GND
2	TD
3	RD
4	RTS
5	CTS
6	DSR
7	SIGNAL GND
8	DCD
13	SCTS
15	TC
16	SRD
17	RC
20	DTR
21	SQD
22	RI
23	DSRS
24	EC
25	TI

Table B-7. V.35 Pin Assignments, DIGITAL Port (DB25 Female)

Pin	Signal	V.35
1	SHIELD GND	A
2	TD-A	P
3	RD-A	R
4	RTS	C
5	CTS	D
6	DSR	E
7	SIGNAL GND	B
8	DCD	F
13	RC-B	X
15	TC-A	Y
16	RD-B	T
17	RC-A	V
20	DTR	H
21	TD-B	S
22	LL	J
23	EC-B	W
24	EC-A	U
25	TC-B	AA

Appendix C. HDX2000L Library

The HDX2000L library enables a programmer to create an application that controls remote Pro Switching System units with minimal effort. It provides basic functions and alarming such as switching to a specific port or monitoring a particular signal.

The library controls units connected to an Ethernet 10BASE-T network via SNMP messages and sits on top of the Windows WinSNMP interface provided with the library.

Library name: HDX2000L.LIB

Header file: HDX2000L.H

C.1 Functions List

All library functions (except Hdx2000Init) return 0 if successful and have at least the hSession session parameter.

HGLOBAL Hdx2000Init(HINSTANCE hInst, HWND hWnd, UINT uTrapMsg, long *plErr, long *plVersion);
Initializes the library (mandatory first call to the library). If successful, returns an hSession handler to be used for all subsequent calls to the library. Otherwise returns a NULL value and an error code into plErr.

hInst	Handler of the instance of the application
hWnd	Recipient of the uTrapMsg message
uTrapMsg	Windows message value to be sent to the application
plErr	Pointer to error code storage
plVersion	Pointer to library version storage. High word is the major version number. Low word is the minor version number.

int Hdx2000Exit(HGLOBAL hSession);
     Exits the library (mandatory last call to the library).

int Hdx2000SwitchSet(HGLOBAL hSession, char *szIpAddress, char
*szWriteCommunity, int cc, int pp);
     Initiates a switch request (will generate a SWI or GSW trap).
     hSession   Session handler
     szIpAddress   IP address of the target rack
     szWriteCommunity   Write community name of the target rack
     cc   Card slot number (from 1 to 16, 0 for gang
                                     switching)
     pp   1 for position A, 2 for position B...

int Hdx2000SwitchGet(HGLOBAL hSession, char *szIpAddress, char
*szReadCommunity, int cc);
     Initiates a switch position report (will generate a SWI trap).
     hSession   Session handler
     szIpAddress   IP address of the target rack
     szReadCommunity   Read community name of the target rack
     cc   Card slot number (from 1 to 16)

int Hdx2000LedGet(HGLOBAL hSession, char *szIpAddress, char
*szReadCommunity, int cc, int pp, int ll);
     Initiates an LED state report (will generate an LED trap).
     hSession   Session handler
     szIpAddress   IP address of the target rack
     szReadCommunity   Read community name of the target rack
     cc   Card slot number (from 1 to 16)
     pp   Port number (0 for COMMON port, 1 for A, 2 for
                                     B...)
     ll   LED number

int Hdx2000LineGet(HGLOBAL hSession, char *szIpAddress, char
*szReadCommunity, int cc);
     Initiates a line card state report (will generate a LIN trap).
     hSession   Session handler
     szIpAddress   IP address of the target rack
     szReadCommunity   Read community name of the target rack
     cc   Card slot number (from 1 to 16)

int Hdx2000LineCommentSet(HGLOBAL hSession, char *szIpAddress, char *szWriteCommunity, int cc, char *comment);

    Changes the comment for a line card (will generate a LIN trap).

hSession	Session handler
szIpAddress	IP address of the target rack
szWriteCommunity	Write community name of the target rack
cc	Card slot number (from 1 to 16)
comment	New comment for the line card

int Hdx2000LineSpecificSet(HGLOBAL hSession, char *szIpAddress, char *szWriteCommunity, int cc, int sp);

    Changes the specific parameter for a line card (will generate a LIN trap).

hSession	Session handler
szIpAddress	IP address of the target rack
szWriteCommunity	Write community name of the target rack
cc	Card slot number (from 1 to 16)
sp	Line card specific parameter

int Hdx2000RackGet(HGLOBAL hSession, char *szIpAddress, char *szReadCommunity);

    Initiates a rack status report (will generate FAN, PWR, and VER traps).

hSession	Session handler
szIpAddress	IP address of the target rack
szReadCommunity	Read community name of the target rack

void Hdx2000TrapRead(HGLOBAL hSession, char *szIpAddress, char *szTrap);

    Reads a trap description (to be called upon reception of the uTrapMsg message).

hSession	Session handler
szIpAddress	IP address of the rack originating the trap
szTrap	Trap description

Possible traps are:

COM-ss-ee	Communications status with the rack
FAN-ss-nn	Fan status
GSW-ss-pp-x.x.x.x	Gang switch status
LED-ss-cc-pp-ll-yy	LED status
LIN-ss-cc-pa-fc-rc-sp-cm	Line card status
PWR-ss-nn	Power supply status
SWI-ss-cc-pp-x.x.x.x	Switch status
RST-ss	Rack boot-up
VER-ss-mmmm-vv.vv	Rack model and version number

Example:

SWI-06-14-02-195.9.200.12   Remote switch to B on slot #14 by user
                                   195.9.200.12

C.2 Parameters List

cc	Card slot number from 01 to 16
cm	Comment string for the line card
ee	Error code (HDX2000L_ERROR_xxx or SNMPAPI_xxx)
fc	Front card code (2-digit hexadecimal value)
ll	LED/signal number (HDX2000L_LED_xxx)

	01	TXD
	02	RXD
	03	DCD
	04	CTS
	05	RTS
	06	DSR
	07	DTR
	08	RI
	09	TC
	10	RC
	11	EC
	12	SQD
	13	RL
	14	LL
	15	DCE
	16	DTE
	17	TM
	18	CTR
	19	IND
	20	SET
	21	BYT

mmmm	Rack model number (2000)
nn	Power supply number from 01 to 02 (HDX2000L_PSx)
pa	Patching status (HDX2000L_PATCH_xxx)

	00	No patching capability
	01	Patch cable out
	02	Patch cable in

pp	Port or switch position (HDX2000L_POS_xxx)
	00 for COMMON

	01 for position A	
	02 for position B	
	03 for position C	
	04 for position D	
rc	Rear card code (2-digit hexadecimal value)	
sp	Line specific parameter	
ss	Status code (HDX2000L_STATUS_xxx)	
	00	OK
	01	Absent
	02	Failure
	03	Inserted
	04	Removed
	05	Manual operation
	06	Remote operation
vv.vv	Rack firmware version number (for example, 05.12)	
x.x.x.x	IP address of the operator who requested a remote switch	
yy	LED state (HDX2000L_LEDSTATE_xxx)	
	01	mark
	02	space
	04	active

C.3 Sample Code

```c
#include <windows.h>
#include <windowsx.h>
#include "hdx2000l.h"

#define          WM_TRAP_2000                20000

/*          Global library session handler  */
HGLOBAL          ghSession;
          .
          .
          .
/*          Windows entry point  */
int WINAPI WinMain(HINSTANCE hInstance, HINSTANCE hPrevInstance,
LPSTR lpCmdLine, int nCmdShow)
{
                    HWND          hMain;
                    int          nResult;
```

```
WNDCLASS wndclass;

/*  Windows initialization      */
wndclass.lpfnWndProc        = MainWndProc;
wndclass.hInstance          = hInstance;
wndclass.lpszClassName      = szAppClass;
.
.
.
if (! RegisterClass(&wndclass))
{
    /*      Error    */
}
hMain= CreateWindow(szAppClass, szAppName,
        WS_OVERLAPPEDWINDOW,
CW_USEDEFAULT, CW_USEDEFAULT, CW_USEDEFAULT,
        CW_USEDEFAULT, NULL, NULL, hInstance,
NULL);
.
.
.
/*Initialize the Hadax 2000 remote control
library*/
ghSession= Hdx2000Init(hInstance, hMain,
WM_TRAP_2000, &nResult);
if (ghSession== NULL)
{
    /* Error, analyze the nResult error code */
}
.
.
.
}

/*                Main Windows callback procedure      */
LRESULT CALLBACK MainWndProc(HWND hWnd, UINT uMsg, WPARAM
wParam, LPARAM lParam)
{
                char        szIpAddressBuf[32];
                char        szTrapBuf[128];

                switch (uMsg)
```

```
{
case WM_TRAP_2000:
        /*        Retrieve the new trap        */
        nResult=
        Hdx2000TrapRead(ghSession,
        szIpAddressBuf, szTrapBuf);
        if (nResult== 0)
        {
                /* Process the new trap */
                TrapAnalyze(szIpAddressBuf,
                szTrapBuf);
        }
        else
        {
                /*        Error        */
        }
        return 0;

case WM_TIMER:
        /* Check rack 195.9.200.65 whose
        read community */
        /*is 'public' every 5 minutes. */
        if (Hdx2000RackGet(ghSession,
        "195.9.200.65", "public")!= 0)
        {
                /*        Error        */
        }
        return 0;

case WM_COMMAND:
switch(GET_WM_COMMAND_ID(wParam,
lParam))
        {
        case IDM_SWITCH:
                /* SWITCH Button
                pressed. */
                /* Switch line card #10 to
                position B */
                /* for rack 195.9.200.65
                whose write */
                /*community is 'private'.*/
        if (Hdx2000SwitchSet(ghSession,
        "195.9.200.65", "private", 10, 2)!= 0)
```

```
                                         {
                                                 /*      Error     */
                                                 }
                                                 return 0;
                                                 .
                                                 .
                                                 .
                         }
                         break;
                         .
                         .
                         .
                 case WM_DESTROY:
                         /* Exit the Hadax 2000 remote
                         control library */
                         Hdx2000Exit(ghSession);
                         PostQuitMessage(0);
                         return 0;
         }
         return DefWindowProc(hWnd, uMsg, wParam,
         lParam);
         }
```

C.4 Debug

To debug the application, you can generate a library log file.

To do so, create the [HDX2000L] section in the WIN.INI file and then create the Debug=n entry where n is:

0	no debug
1	logs application calls to the library as well as trap messages issued by the the library
2	logs SNMP events
3	same as 1+ 2

The log file HDX2000L.LOG is created under the Windows directory.

Appendix D. Proprietary MIB

This appendix lists the variables of the proprietary MIB for use with SNMP.

D.1 MIB Path Summary

The following flowchart shows the MIB paths of the variables in the HDX2000.MIB file. The variables are located at the end of each branched path and are not enclosed in brackets [ ]. The variables and their usage are explained in the remainder of the chapter.

[iso]		1
[org]		1.3
[dod]		1.3.6
[internet]		1.3.6.1
[private]		1.3.6.1.4
[enterprises]		1.3.6.1.4.1
[Hadax]		1.3.6.1.4.1.509

[Hadax]		1.3.6.1.4.1.509
[IntelliSwitch2000]		1.3.6.1.4.1.509.1
[rack2000Entry]		1.3.6.1.4.1.509.1.1
	rackRealTimeClock	1.3.6.1.4.1.509.1.1.1.0
	rackKeyLocked	1.3.6.1.4.1.509.1.1.2.0
	rackLineCardChanges	1.3.6.1.4.1.509.1.1.3.0
	rackSigAlarmChanges	1.3.6.1.4.1.509.1.1.4.0
	rackAlarmTrigOpChanges	1.3.6.1.4.1.509.1.1.5.0
	rackTimeTrigOpChanges	1.3.6.1.4.1.509.1.1.6.0
	rackBusTrigOpChanges	1.3.6.1.4.1.509.1.1.7.0
	rackPsChanges	1.3.6.1.4.1.509.1.1.8.0
	rackSigComChanges	1.3.6.1.4.1.509.1.1.9.0
	rackSigAlarms	1.3.6.1.4.1.509.1.1.10.0
	rackSwitchCommands	1.3.6.1.4.1.509.1.1.11.0
	rackSwitchErrs	1.3.6.1.4.1.509.1.1.12.0
	rackMonBusCommands	1.3.6.1.4.1.509.1.1.13.0
	rackIpRequester	1.3.6.1.4.1.509.1.1.14.0
[powerTable]		1.3.6.1.4.1.509.1.2
[powerEntry]		1.3.6.1.4.1.509.1.2.1
	powerStatus	1.3.6.1.4.1.509.1.2.1.2.powerIndex
	powerFanStatus	1.3.6.1.4.1.509.1.2.1.3.powerIndex
[gangSwitchTable]		1.3.6.1.4.1.509.1.3

```
          [gangSwitchEntry]          1.3.6.1.4.1.509.1.3.1
                  gangSwitchPush  1.3.6.1.4.1.509.1.3.1.2.gangSwitchIndex
[monBusTable]                        1.3.6.1.4.1.509.1.4
          [monBusEntry]              1.3.6.1.4.1.509.1.4.1
                  monBusMode         1.3.6.1.4.1.509.1.4.1.2.monBusIndex
                  monBusLineCardIndex
                                     1.3.6.1.4.1.509.1.4.1.3.monBusIndex
                  monBusLineChanIndex
                                     1.3.6.1.4.1.509.1.4.1.4.monBusIndex
[lineCardTable]                      1.3.6.1.4.1.509.1.5
          [lineCardEntry]            1.3.6.1.4.1.509.1.5.1
                  lineInterfaceType  1.3.6.1.4.1.509.1.5.1.2.lineCardIndex
                  lineSwitchType     1.3.6.1.4.1.509.1.5.1.3.lineCardIndex
                  lineSwitchedPort   1.3.6.1.4.1.509.1.5.1.4.lineCardIndex
                  lineNormalPort     1.3.6.1.4.1.509.1.5.1.5.lineCardIndex
                  lineSwitchedPort2  1.3.6.1.4.1.509.1.5.1.6.lineCardIndex
                  lineNormalPort2    1.3.6.1.4.1.509.1.5.1.7.lineCardIndex
                  linePatching       1.3.6.1.4.1.509.1.5.1.8.lineCardIndex
                  lineBridgeCapability
                                     1.3.6.1.4.1.509.1.5.1.9.lineCardIndex
                  lineBreakCapability
                                     1.3.6.1.4.1.509.1.5.1.10.lineCardIndex
                  lineFrontCardCode
                                     1.3.6.1.4.1.509.1.5.1.11.lineCardIndex
                  lineRearCardCode
                                     1.3.6.1.4.1.509.1.5.1.12.lineCardIndex
                  lineComCode        1.3.6.1.4.1.509.1.5.1.13.lineCardIndex
                  lineSpecificParameter
                                     1.3.6.1.4.1.509.1.5.1.14.lineCardIndex
                  lineComment        1.3.6.1.4.1.509.1.5.1.15.lineCardIndex
[sigTable]                           1.3.6.1.4.1.509.1.6
          [sigEntry]                 1.3.6.1.4.1.509.1.6.1
                  sigState           1.3.6.1.4.1.509.1.6.1.4.sigCardIndex
                  sigPort.sigName
[sigAlarmTable]                      1.3.6.1.4.1.509.1.7
          [sigAlarmEntry]            1.3.6.1.4.1.509.1.7.1
                  sigAlarmCardIndex
                                     1.3.6.1.4.1.509.1.7.1.2.sigAlarmIndex
                  sigAlarmPort       1.3.6.1.4.1.509.1.7.1.3.sigAlarmIndex
                  sigAlarmName       1.3.6.1.4.1.509.1.7.1.4.sigAlarmIndex
                  sigAlarmCondition
                                     1.3.6.1.4.1.509.1.7.1.5.sigAlarmIndex
```

sigAlarmSeconds

           1.3.6.1.4.1.509.1.7.1.6.sigAlarmIndex

sigAlarmTrap   1.3.6.1.4.1.509.1.7.1.7.sigAlarmIndex

sigAlarmStart   1.3.6.1.4.1.509.1.7.1.8.sigAlarmIndex

sigAlarmStop   1.3.6.1.4.1.509.1.7.1.9.sigAlarmIndex

sigAlarmState   1.3.6.1.4.1.509.1.7.1.10.sigAlarmIndex

sigAlarmComment

           1.3.6.1.4.1.509.1.7.1.11.sigAlarmIndex

sigAlarmRowStatus

           1.3.6.1.4.1.509.1.7.1.12.sigAlarmIndex

[alarmTrigOpTable]   1.3.6.1.4.1.509.1.8

    [alarmTrigOpEntry]   1.3.6.1.4.1.509.1.8.1

alarmTrigOpSigAlarmsList

        1.3.6.1.4.1.509.1.8.1.2.alarmTrigOpIndex

alarmTrigOpSwitchToPort

        1.3.6.1.4.1.509.1.8.1.3.alarmTrigOpIndex

alarmTrigOpCardsList

        1.3.6.1.4.1.509.1.8.1.4.alarmTrigOpIndex

alarmTrigOpBusCodeEmit

        1.3.6.1.4.1.509.1.8.1.5.alarmTrigOpIndex

alarmTrigOpComment

        1.3.6.1.4.1.509.1.8.1.6.alarmTrigOpIndex

alarmTrigOpRowStatus

        1.3.6.1.4.1.509.1.8.1.7.alarmTrigOpIndex

[timeTrigOpTable]   1.3.6.1.4.1.509.1.9

    [timeTrigOpEntry]

        1.3.6.1.4.1.509.1.9.1

timeTrigOpTime

        1.3.6.1.4.1.509.1.9.1.2.timeTrigOpIndex

timeTrigOpFreq

        1.3.6.1.4.1.509.1.9.1.3.timeTrigOpIndex

timeTrigOpStart

        1.3.6.1.4.1.509.1.9.1.4.timeTrigOpIndex

timeTrigOpStop

        1.3.6.1.4.1.509.1.9.1.5.timeTrigOpIndex

timeTrigOpSwitchToPort

        1.3.6.1.4.1.509.1.9.1.6.timeTrigOpIndex

timeTrigOpCardsList

        1.3.6.1.4.1.509.1.9.1.7.timeTrigOpIndex

timeTrigOpBusCodeEmit

        1.3.6.1.4.1.509.1.9.1.8.timeTrigOpIndex

timeTrigOpComment

        1.3.6.1.4.1.509.1.9.1.9.timeTrigOpIndex

                    timeTrigOpRowStatus
                              1.3.6.1.4.1.509.1.9.1.10.timeTrigOpIndex
[busTrigOpTable]   1.3.6.1.4.1.509.1.10
       [busTrigOpEntry]
                              1.3.6.1.4.1.509.1.10.1
              busTrigOpCode
                              1.3.6.1.4.1.509.1.10.1.2.busTrigOpIndex
              busTrigOpSwitchToPort
                              1.3.6.1.4.1.509.1.10.1.3.busTrigOpIndex
              busTrigOpCardsList
                              1.3.6.1.4.1.509.1.10.1.4.busTrigOpIndex
              busTrigOpComment
                              1.3.6.1.4.1.509.1.10.1.5.busTrigOpIndex
              busTrigOpRowStatus
                              1.3.6.1.4.1.509.1.10.1.6.busTrigOpIndex

D.2 Rack Global Status

The following variables allow you to set the time and get global status information of your Pro Switching System.

rackRealTimeClock

Description:	Current time for the rack. The format is: DDD HH:MM. You can SET and GET the value of this variable.
Parameters:	Day (DDD): MON, TUE, WED, THU, FRI, SAT, SUN Time (HH:MM): 00:00 to 23:59
MIB Path:	1.3.6.1.4.1.509.1.1.1 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).IntelliSwitch2000(1).rack2000Entry(1).rackRealTimeClock(1)
Variable:	1.3.6.1.4.1.509.1.1.1.0 where 0 indicates that the variable is not part of a table.
Example:	Set the current time to TUE 1:15 pm (13:15) for the rack.

Operation:	Set	
Variable:	1.3.6.1.4.1.509.1.1.1.0	
Set Value:	TUE 13:15	

rackKeyLocked

Description: Key switch position. When the key is in the locked position, the manual switch buttons on the front of the rack are disabled. When the key is in the unlocked position, the switch buttons are enabled. You can only GET the value of this variable.

Parameters: no (0)   Indicates that the key position on the front of the rack is set to "unlocked"; the manual switch buttons on the rack are enabled. yes (1)   Indicates that the key position on the front of the rack is set to "locked"; the manual switch buttons on the rack are disabled.

MIB Path: 1.3.6.1.4.1.509.1.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackKeyLocked(2)

Variable: 1.3.6.1.4.1.509.1.1.2.0 where 0 indicates that the variable is not part of a table.

Example: Determine the key switch position on the rack.

Operation:	Get
Variable:	1.3.6.1.4.1.509.1.1.2.0

rackLineCardChanges

Description: Total number of line card removals and insertions since the rack was last re-initialized. You can only GET the value of this variable.

Parameters: Counter

MIB Path:	1.3.6.1.4.1.509.1.1.3 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).IntelliSwitch2000(1).rack2000Entry(1).rackLineCardChanges(3)
Variable:	1.3.6.1.4.1.509.1.1.3.0 where 0 indicates that the variable is not part of a table.
Example:	Display the total number of line card removals and insertions since the rack was last re-initialized.

Operation:	Get
Variable:	1.3.6.1.4.1.509.1.1.3.0

rackSigAlarmChanges

Description:	Total number of monitored alarm changes since the rack was last re-initialized. You can only GET the value of this variable.
Parameters:	Counter
MIB Path:	1.3.6.1.4.1.509.1.1.4 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).IntelliSwitch2000(1).rack2000Entry(1).rackSigAlarmChanges(4)
Variable:	1.3.6.1.4.1.509.1.1.4.0 where 0 indicates that the variable is not part of a table.
Example:	Display the total number of monitored alarm changes since the rack was last re-initialized.

Operation:	Get
Variable:	1.3.6.1.4.1.509.1.1.4.0

rackAlarmTrigOpChanges

Description:	Total number of alarm-triggered operation changes since the rack was last re-initialized. You can only GET the value of this variable.
Parameters:	Counter
MIB Path:	1.3.6.1.4.1.509.1.1.5 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackAlarmTrigOpChanges(5)
Variable:	1.3.6.1.4.1.509.1.1.5.0 where 0 indicates that the variable is not part of a table.
Example:	Display the total number of alarm-triggered operation changes since the rack was last re-initialized.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.1.5.0

rackTimeTrigOpChanges

Description:	Total number of time-triggered operation changes since the rack was last re-initialized. You can only GET the value of this variable.
Parameters:	Counter
MIB Path:	1.3.6.1.4.1.509.1.1.6 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackTimeTrigOpChanges(6)
Variable:	1.3.6.1.4.1.509.1.1.6.0 where 0 indicates that the variable is not part of a table

Example: Display the total number of time-triggered operation changes since the rack was last re-initialized.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.1.6.0

rackBusTrigOpChanges

Description: Total number of bus-triggered operation changes since the rack was last re-initialized. You can only GET the value of this variable.

Parameters: Counter

MIB Path: 1.3.6.1.4.1.509.1.1.7
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
IntelliSwitch2000(1).rack2000Entry(1).rackBusTrigOpChanges(7)

Variable: 1.3.6.1.4.1.509.1.1.7.0
where 0 indicates that the variable is not part of a table

Example: Display the total number of bus-triggered operation changes since the rack was last re-initialized.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.1.7.0

rackPsChanges

Description: Total number of power supply status changes since the rack was last re-initialized. You can only GET the value of this variable..

Parameters: Counter

MIB Path:	1.3.6.1.4.1.509.1.1.8 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackPsC hanges(8)
Variable:	1.3.6.1.4.1.509.1.1.8.0 where 0 indicates that the variable is not part of a table
Example:	Display the total number of power supply status changes since the rack was last re-initialized.

    Operation: Get
    Variable: 1.3.6.1.4.1.509.1.1.8.0

rackSigComChanges

Description:	Total number of common signal changes since the rack was last re-initialized. You can only GET the value of this variable.
Parameters:	Counter
MIB Path:	1.3.6.1.4.1.509.1.1.9 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackSig ComChanges(9)
Variable:	1.3.6.1.4.1.509.1.1.9.0 where 0 indicates that the variable is not part of a table
Example:	Display the total number of common signal changes since the rack was last re-initialized.

    Operation: Get
    Variable: 1.3.6.1.4.1.509.1.1.9.0

rackSigAlarms

Description:	Total number of monitored signal alarms since the rack was last re-initialized. You can only GET the value of this variable.

Parameters:	Counter

MIB Path: 1.3.6.1.4.1.509.1.1.10
iso(1).org(3).dod(6).internet(1).private(4).ent
erprises(1).Hadax(509).
IntelliSwitch2000(1).rack2000Entry(1).rackSig
Alarms(10)

Variable: 1.3.6.1.4.1.509.1.1.10.0
where 0 indicates that the variable is not part of
a table

Example: Display the total number of monitored signal
alarms since the rack was last re-initialized.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.1.10.0

rackSwitchCommands

Description: Total number of successful switching
commands executed since the rack was last re-
initialized. You can only GET the value of this
variable.

Parameters: Counter

MIB Path: 1.3.6.1.4.1.509.1.1.11
iso(1).org(3).dod(6).internet(1).private(4).ent
erprises(1).Hadax(509).
IntelliSwitch2000(1).rack2000Entry(1).rackSwit
chCommands(11)

Variable: 1.3.6.1.4.1.509.1.1.11.0
where 0 indicates that the variable is not part of
a table

Example: Display total number of successful switching
commands executed since the rack was last re-
initialized.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.1.11.0

rackSwitchErrs

Description:	Total number of switching errors since the rack was last re-initialized. You can only GET the value of this variable.
Parameters:	Counter
MIB Path:	1.3.6.1.4.1.509.1.1.12 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackSwitchErrs(12)
Variable:	1.3.6.1.4.1.509.1.1.12.0 where 0 indicates that the variable is not part of a table
Example:	Display the total number of switching errors since the rack was last re-initialized.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.1.12.0

rackMonBusCommands

Description:	Total number of bus monitoring commands executed since the rack was last re-initialized. You can only GET the value of this variable.
Parameters:	Counter
MIB Path:	1.3.6.1.4.1.509.1.1.13 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackMonBusCommands(13)
Variable:	1.3.6.1.4.1.509.1.1.13.0 where 0 indicates that the variable is not part of a table
Example:	Display the total number of bus monitoring commands executed since the rack was last re-initialized.

Operation:	Get
Variable:	1.3.6.1.4.1.509.1.1.13.0

rackIpRequester

Description:	The IP address of the remote entity that last requested a switch. The null value is returned if this is a local manual switch. You can only GET the value of this variable.
Parameters:	IP address
MIB Path:	1.3.6.1.4.1.509.1.1.14 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).rack2000Entry(1).rackIpRequester(14)
Variable:	1.3.6.1.4.1.509.1.1.14.0 where 0 indicates that the variable is not part of a table
Example:	Display the IP address of the remote entity that last requested a switch.

Operation:	Get
Variable:	1.3.6.1.4.1.509.1.1.14.0

D.3 Power Supplies

The following variables allow you to get the power supplies status of your unit.

powerStatus

Description:	Status of the power supply. You can only GET the value of this variable.
Parameters:	absent(0) Power supply is not installed ok(1)　　Power supply is functioning properly fail(2)　　Power supply is installed but not functioning

MIB Path:	1.3.6.1.4.1.509.1.2.1.2
	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
	IntelliSwitch2000(1).powerTable(2).powerEntry(1).powerStatus(2)

Variable:	1.3.6.1.4.1.509.1.2.1.2.[powerIndex]
	where [powerIndex] is
	1 for power supply 1
	2 for power supply 2

| Example: | Display the status of power supply 1. |

| | Operation: Get |
| | Variable: 1.3.6.1.4.1.509.1.2.1.2.1 |

powerFanStatus

| Description: | Status of the power supply fan. You can only GET the value of this variable. |

Parameters:	absent(0) Power supply fan is not installed
	ok(1) Power supply fan is functioning properly
	fail(2) Power supply fan is installed but not functioning

MIB Path:	1.3.6.1.4.1.509.1.2.1.3
	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
	IntelliSwitch2000(1).powerTable(2).powerEntry(1).powerFanStatus(3)

Variable:	1.3.6.1.4.1.509.1.2.1.3.[powerIndex]
	where [powerIndex] is
	1 for power supply 1
	2 for power supply 2

| Example: | Display the status of the fan in power supply 2. |

| | Operation: Get |
| | Variable: 1.3.6.1.4.1.509.1.2.1.3.2 |

D.4 Gang Switching

The following variables allow you to perform gang switching operations for your unit.

gangSwitchPush

Description:	Setting this variable pushes the gang switch button on the rack to perform group switching on the line cards. Pushing the A(1), B(2), C(3), or D(4) button forces all line cards to switch to the A, B, C, or D port, respectively. Pushing the N(5) button forces all line cards to switch to their normal (user-defined) port. Pushing the SET_N(6) button defines the current port of each line card as its normal port. You can only SET the value of this variable.
Parameters:	Yes(1) to push the gang switch button.
MIB Path:	1.3.6.1.4.1.509.1.3.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).gangSwitchTable(3).gangSwitchEntry(1). gangSwitchPush(2)
Variable:	1.3.6.1.4.1.509.1.3.1.2.[gangSwitchIndex] where [gangSwitchIndex] is

1	for pushbutton A (port A)
2	for pushbutton B (port B)
3	for pushbutton C (port C)
4	for pushbutton D (port D)
5	for pushbutton N (normal)
6	for pushbutton SET N (set normal)

Example:	Switch all line cards to port C.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.3.1.2.3
Set Value:	Yes(1)

D.5 Monitoring

The following variables allow you to perform monitoring operations for your unit. Note that when performing a SET on any of these variables, you MUST include both the 'monBusMode' and 'monBusLineCardIndex' variables in the same request.

monBusMode

Description:	Monitoring mode for the bus. You can SET and GET the value of this variable, but you must also include the 'monBusLineCardIndex' variable in your SET request.
Parameters:	not_connected(0) Disable monitoring bridge(1) Monitor in parallel, without breaking the lines breakDCE(2) Monitor; monitor bus breaks to the DCE breakDTE(3) Monitor; monitor bus breaks to the DTE
MIB Path:	1.3.6.1.4.1.509.1.4.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).IntelliSwitch2000(1).monBusTable(4).monBusEntry(1).monBusMode(2)
Variable:	1.3.6.1.4.1.509.1.4.1.2.[monBusIndex] where [monBusIndex] is 1 for monitor bus digital one 2 for monitor bus analog 3 for monitor bus digital two
Example:	Enable "breakDCE" mode for the digitalOne monitoring bus.

Operation: Set
Variable: 1.3.6.1.4.1.509.1.4.1.2.1
Set Value: breakDCE(2)

Note that you will also need to SET a specific line card for monitoring in your request, using the 'monBusLineCardIndex' variable.

monBusLineCardIndex

Description:	The line card selected for monitoring. You can SET and GET the value of this variable, but you must also include the 'monBusMode' variable in your SET request.
Parameters:	Line card 1 to 16
MIB Path:	1.3.6.1.4.1.509.1.4.1.3 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).monBusTable(4).monBusEntry(1). monBusLineCardIndex(3)
Variable:	1.3.6.1.4.1.509.1.4.1.3.[monBusIndex] where [monBusIndex] is 1 for monitor bus digital one 2 for monitor bus analog 3 for monitor bus digital two
Example:	Select line card 9 for monitoring on the analog bus.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.4.1.3.2
Set Value:	9

Note that you will also need to SET a monitoring mode for the line card in your request, using the 'monBusMode' variable.

monBusLineChanIndex

Description:	The line card channel selected for monitoring. By default, the value of this variable is set to 'not_connected.' You can SET and GET the value of this variable, but you must also include the 'monBusLineCardIndex' and 'monBusMode' variables in your SET request.
Parameters:	not_connected(0) [default], first_channel(1), second_channel(2)

MIB Path:	1.3.6.1.4.1.509.1.4.1.4 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).monBusTable(4).monBus Entry(1). monBusLineChanIndex(4)
Variable:	1.3.6.1.4.1.509.1.4.1.4.[monBusIndex] where [monBusIndex] is

1	for monitor bus digital one
2	for monitor bus analog
3	for monitor bus digital two

Example:	Select the first channel of the line card for monitoring on the analog bus.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.4.1.4.2
Set Value:	1

Note that you will also need to SET a specific line card for monitoring and SET a monitoring mode for the line card in your request, using the 'monBusLineCardIndex' and 'monBusMode' variables.

D.6 Line Cards

The following variables allow you to view line card status or perform line card operations for your unit.

lineInterfaceType

Description:	The interface type of the line card (for example, RS-232). You can only GET the value of this variable.
Parameters:	none(0), rs232(1), rs530(2), V35(3), x21(4), isdn(5), V24(6)

MIB Path:	1.3.6.1.4.1.509.1.5.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1). lineInterfaceType(2)
Variable:	1.3.6.1.4.1.509.1.5.1.2.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
Example:	Display the interface type of line card 8.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.5.1.2.8

lineSwitchType

Description:	The switching type of the line card (for example, A/B switching type). You can only GET the value of this variable.
Parameters:	ab (1), abcd (2), modem_sparing (3), crossover (4), substitution_21 (5), substitution_41 (6), no_switching (7), abab (8), broadcast_in (9), broadcast_out (10)
MIB Path:	1.3.6.1.4.1.509.1.5.1.3 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1).lineSwitchType(3)
Variable:	1.3.6.1.4.1.509.1.5.1.3.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
Example:	Display the switching type of line card 6.

Operation: Get
Variable: 1.3.6.1.4.1.509.1.5.1.3.6

lineSwitchedPort

Description:	The port switched to (for example, port A). You can SET and GET the value of this variable.
Parameters:	A(1), B(2), C(3), D(4), normal(5)
MIB Path:	1.3.6.1.4.1.509.1.5.1.4 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1). lineSwitchedPort(4)
Variable:	1.3.6.1.4.1.509.1.5.1.4.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
Example:	Switch line card 7 to port B.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.5.1.4.7
Set Value:	B(2)

lineNormalPort

Description:	The port defined as the normal port (for example, port D). This allows you to customize your switch settings for several line cards. For example, you can define the normal port for each line card, and then perform a gang (group) switch to their normal ports. You can SET and GET the value of this variable.
Parameters:	none(0), A(1), B(2), C(3), D(4)
MIB Path:	1.3.6.1.4.1.509.1.5.1.5 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1).lineNormalPort(5)

Variable:	1.3.6.1.4.1.509.1.5.1.5.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

Example: Define port D as the normal port for line card 6.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.5.1.5.6
Set Value:	D(4)

lineSwitchedPort2

Description: The port switched to for the second switch. You can SET and GET the value of this variable.

Parameters: none(0), A(1), B(2), normal(5)

MIB Path: 1.3.6.1.4.1.509.1.5.1.6
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1).
lineSwitchedPort2(6)

Variable: 1.3.6.1.4.1.509.1.5.1.6.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

Example: Switch line card 4 to port A for the second switch.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.5.1.6.4
Set Value:	A(1)

lineNormalPort2

Description: The port defined as the normal port for the second switch. This allows you to customize your switch settings for several line cards. For example, you can define the normal port for each line card, and then perform a gang (group) switch to their normal ports.You can SET and GET the value of this variable.

Parameters:	none(0), A(1), B(2)
MIB Path:	1.3.6.1.4.1.509.1.5.1.7 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCar dEntry(1).lineNormalPort2(7)
Variable:	1.3.6.1.4.1.509.1.5.1.7.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
Example:	Define port B as the normal port for line card 9 (second switch).

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.5.1.7.9
Set Value:	B(2)

linePatching

Description:	Indicates whether or not patching is possible and if so, whether or not a patch cable is inserted. You can only GET the value of this variable.
Parameters:	none(0) the line card does not have patch capabilities cable_out(1) the line card has patch capabilities; a patch cable is not inserted cable_in(2) the line card has patch capabilities; a patch cable is inserted
MIB Path:	1.3.6.1.4.1.509.1.5.1.8 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCar dEntry(1).linePatching(8)
Variable:	1.3.6.1.4.1.509.1.5.1.8.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

Example: Display whether or not line card 7 has patching
                            capabilities; if so, whether or not a patch cable
                            is inserted.

                            Operation: Get
                            Variable: 1.3.6.1.4.1.509.1.5.1.8.7

lineBridgeCapability

Description: Indicates whether or not the line card has
                           bridging capability. You can only GET the value
                           of this variable.

Parameters: no(0)   the line card does not have bridging
                           capability
                           yes(1)   the line card has bridging capability

MIB Path: 1.3.6.1.4.1.509.1.5.1.9
                           iso(1).org(3).dod(6).internet(1).private(4).ent
                           erprises(1).Hadax(509).
                           IntelliSwitch2000(1).lineCardTable(5).lineCar
                           dEntry(1).
                           lineBridgeCapability(9)

Variable: 1.3.6.1.4.1.509.1.5.1.9.[lineCardIndex]
                           where [lineCardIndex] is the slot number (1
                           through 16) occupied by the line card.

Example: Display whether or not line card 2 has bridging
                           capability.

                           Operation: Get
                           Variable: 1.3.6.1.4.1.509.1.5.1.9.2

lineBreakCapability

Description: Indicates whether or not the line card has
                           breaking capability. You can only GET the
                           value of this variable.

Parameters: no(0)   the line card does not have breaking
                           capability
                           yes(1)   the line card has breaking capability

MIB Path:	1.3.6.1.4.1.509.1.5.1.10
	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
	IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1).
	lineBreakCapability(10)

| Variable: | 1.3.6.1.4.1.509.1.5.1.10.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card. |

| Example: | Display whether or not line card 2 has breaking capability. |

| | Operation: | Get |
| | Variable: | 1.3.6.1.4.1.509.1.5.1.10.2 |

lineFrontCardCode

| Description: | This is the internal hardware front card code of the line card. You can only GET the value of this variable. |

| Parameters: | Integer from 0 to 255 |

MIB Path:	1.3.6.1.4.1.509.1.5.1.11
	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
	IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1).
	lineFrontCardCode(11)

| Variable: | 1.3.6.1.4.1.509.1.5.1.11.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card. |

| Example: | Display the internal hardware front card code of line card 2. |

| | Operation: | Get |
| | Variable: | 1.3.6.1.4.1.509.1.5.1.11.2 |

lineRearCardCode

Description:	This is the internal hardware rear card code of the line card. You can only GET the value of this variable.
Parameters:	Integer from 0 to 255
MIB Path:	1.3.6.1.4.1.509.1.5.1.12 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1). lineRearCardCode(12)
Variable:	1.3.6.1.4.1.509.1.5.1.12.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
Example:	Display the internal hardware rear card code of line card 2.

	Operation:	Get
	Variable:	1.3.6.1.4.1.509.1.5.1.12.2

lineComCode

Description:	This is the internal hardware common signal code of the line card. You can only GET the value of this variable.
Parameters:	Integer bitmask
MIB Path:	1.3.6.1.4.1.509.1.5.1.13 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1). lineComCode(13)
Variable:	1.3.6.1.4.1.509.1.5.1.13.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

Example: Display the internal hardware common signal
                                  code of line card 2.

                                  Operation: Get
                                  Variable: 1.3.6.1.4.1.509.1.5.1.13.2

lineSpecificParameter

Description: This is an open variable that may be used for
                                  specific line card applications as listed below.
                                  Otherwise, this variable is not used. You can
                                  SET and GET the value of this variable.

MIB Path: 1.3.6.1.4.1.509.1.5.1.14
                                  iso(1).org(3).dod(6).internet(1).private(4).ent
                                  erprises(1).Hadax(509).
                                  IntelliSwitch2000(1).lineCardTable(5).lineCar
                                  dEntry(1).
                                  lineSpecificParameter(14)

Variable: 1.3.6.1.4.1.509.1.5.1.14.[lineCardIndex]
                                  where [lineCardIndex] is the slot number (1
                                  through 16) occupied by the line card.

                                  The line card contains a pushbutton that, when
                                  pushed, performs a switch to a secondary
                                  position for a user-defined period of time, and
                                  then returns to the original position. The
                                  period of time is defined by an integer
                                  parameter.

                                  Parameters: Integer,
                                                   indicating a value of: [integer
                                                   x 0.1] seconds

                                  Example: Set the switch time to 1
                                                   second for line card 2.

                                       Operation: Set
                                       Variable: 1.3.6.1.4.1.509.1.5.1.14.2
                                       Set Value: 10

lineComment

Description:	A user comment for each line card. You can SET and GET the value of this variable.
Parameters:	Up to 31 characters
MIB Path:	1.3.6.1.4.1.509.1.5.1.15 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).lineCardTable(5).lineCardEntry(1). lineComment(15)
Variable:	1.3.6.1.4.1.509.1.5.1.15.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
Example:	Enter a user comment for line card 12.

	Operation:	Set
	Variable:	1.3.6.1.4.1.509.1.5.1.15.12
	Set Value:	"Denver backup line."

D.7 Hardware Signals

The following variable allows you to check the signals at each hardware port of your Pro Switching System unit.

sigState

Description:	Current signal state. You can only GET the value of this variable.	
Parameters:	absent(0)	no signal is present
	mark(1)	the signal is in mark
	space(2)	the signal is in space
	active(4)	the signal is toggling between mark and space (that is, data is present)

MIB Path: 1.3.6.1.4.1.509.1.6.1.4
                                   iso(1).org(3).dod(6).internet(1).private(4).ent
                                   erprises(1).Hadax(509).
                                   IntelliSwitch2000(1).sigTable(6).sigEntry(1).si
                                   gState(4)

Variable:

                                   1.3.6.1.4.1.509.1.6.1.4.[sigCardIndex].[sigPort].
                                   [sigName]
                                   where
                                   [sigCardIndex]   is the slot number (1 through
                                                    16) occupied by the line card.
                                   [sigPort}   is the port number: 1=port A;
                                                    2=port B; 3=port C; 4=port D;
                                                    5=common
                                   [sigName]   is the hardware signal name:
                                                    1=txd; 2=rxd; 3=dcd; 4=cts;
                                                    5=rts; 6=dsr; 7=dtr; 8=ri; 9=tc;
                                                    10=rc; 11=ec; 12=sqd; 13=rl;
                                                    14=ll; 15=dce; 16=dte; 17=tm;
                                                    18=ctr; 19=ind; 20=set; 21=byt

Example: Display the status of the DCD(3) signal at port
                                   B(2) in line card 6.

                                   Operation: Get
                                   Variable: 1.3.6.1.4.1.509.1.6.1.4.6.2.3

D.8 Alarm Definitions

The following variables allow you to create or edit alarm definitions (that is,
hardware signals to be monitored) for your Pro Switching System unit. In general,
all variables having a common "sigAlarmIndex" (which you select) are part of the
same alarm definition.

sigAlarmCardIndex

Description: The monitored line card of the alarm definition. You can SET and
             GET the value of this variable.

Parameters: Line cards 1 through 16

MIB Path:	1.3.6.1.4.1.509.1.7.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1). sigAlarmCardIndex(2)
Variable:	1.3.6.1.4.1.509.1.7.1.2.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the line card is assigned.
Example:	Include line card 6 as part of your alarm definition for alarm index 1:

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.2.1
Set Value:	6

sigAlarmPort

Description:	The monitored port of the alarm definition. You can SET and GET the value of this variable.
Parameters:	Ports A(1), B(2), C(3), D(4), and Common(5)
MIB Path:	1.3.6.1.4.1.509.1.7.1.3 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmPort(3)
Variable:	1.3.6.1.4.1.509.1.7.1.3.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the port is assigned.
Example:	Include port B as part of your alarm definition for alarm index 1:

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.3.1
Set Value:	B(2)

sigAlarmName

    Description: The monitored signal of the alarm. You can SET and GET the value of this variable.

    Parameters: txd(1), rxd(2), dcd(3), cts(4), rts(5), dsr(6), dtr(7), ri(8), tc(9), rc(10), ec(11), sqd(12), rl(13), ll(14), dce(15), dte(16), tm(17), ctr(18), ind(19), set(20), byt(21)

    MIB Path: 1.3.6.1.4.1.509.1.7.1.4
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmName(4)

    Variable: 1.3.6.1.4.1.509.1.7.1.4.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the signal is assigned.

    Example: Set DCD as the monitored signal for alarm index 1:

                                        Operation: Set
                                        Variable: 1.3.6.1.4.1.509.1.7.1.4.1
                                        Set Value: DCD(3)

sigAlarmCondition

    Description: The signal state that signifies an alarm condition (for example, MARK). You can SET and GET the value of this variable.

    Parameters: mark(1), space(2), active(4), inactive(8)

    MIB Path: 1.3.6.1.4.1.509.1.7.1.5
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmCondition(5)

Variable:	1.3.6.1.4.1.509.1.7.1.5.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the signal state (mark, space, etc.) is assigned.
Example:	Set MARK as the signal state alarm condition of alarm index 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.5.1
Set Value:	mark(1)

sigAlarmSeconds

Description:	The number of seconds required to establish an alarm condition. If the alarm criteria remain in the alarm state for the specified length of time, an alarm condition has been established. You can SET and GET the value of this variable.
Parameters:	1 to 30,000 seconds
MIB Path:	1.3.6.1.4.1.509.1.7.1.6 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlar mEntry(1). sigAlarmSeconds(6)
Variable:	1.3.6.1.4.1.509.1.7.1.6.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the alarm seconds entry (from 1 to 999 seconds) is assigned.
Example:	Set 5 seconds as the length of time required to set off an alarm for alarm index 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.6.1
Set Value:	5

sigAlarmTrap

Description: A "yes" or "no" selection, indicating whether or not a trap should be sent when there is an alarm condition. A trap immediately alerts the user without having to poll the unit. You can SET and GET the value of this variable.

Parameters: "Yes" to send a trap; "No" to not send a trap

MIB Path: 1.3.6.1.4.1.509.1.7.1.7
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmTrap(7)

Variable: 1.3.6.1.4.1.509.1.7.1.7.[sigAlarmIndex]
where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the trap entry is assigned.

Example: Send a trap when there is an alarm condition for alarm index 3.

Operation: Set
Variable: 1.3.6.1.4.1.509.1.7.1.7.3
Set Value: yes(1)

sigAlarmStart

Description: The start time when the alarm definition is active (for example, MON 08:00). The alarm is always active if this entry is empty. You can SET and GET the value of this variable.

Parameters: Day: MON, TUE, WED, THU, FRI, SAT, SUN
Time: 00:00 to 23:59

MIB Path: 1.3.6.1.4.1.509.1.7.1.8
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmStart(8)

Variable: 1.3.6.1.4.1.509.1.7.1.8.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the start time entry is assigned.

Example: Set the alarm definition to become active on Monday at 13:30 (1:30 pm) for alarm index 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.8.1
Set Value:	MON 13:30

sigAlarmStop

Description: The stop time when the alarm definition is not active (for example, FRI 17:45). You can SET and GET the value of this variable.

Parameters: Day: MON, TUE, WED, THU, FRI, SAT, SUN

Time: 00:00 to 23:59

MIB Path: 1.3.6.1.4.1.509.1.7.1.9 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmStop(9)

Variable: 1.3.6.1.4.1.509.1.7.1.9.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the stop time entry is assigned.

Example: Set the alarm definition to become inactive on Friday at 17:45 (5:45 pm) for alarm index 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.9.1
Set Value:	FRI 17:45

sigAlarmState

Description: The current status of the alarm. You can only GET the value of this variable.

Parameters:	no_signal(0)	the line card, port, or lead state is not present.
	sleep(1)	the alarm definition is inactive (specified by sigAlarmStart and sigAlarmStop)
	green(2)	the alarm definition is active but not in an alarm condition
	orange(3)	the alarm definition is approaching an alarm condition
	red(4)	the alarm definition is in an alarm condition

| MIB Path: | 1.3.6.1.4.1.509.1.7.1.10 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1).sigAlarmState(10) |

| Variable: | 1.3.6.1.4.1.509.1.7.1.10.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the alarm status is assigned. |

Example:	Display the status of alarm index 1.
	Operation:	Get
	Variable:	1.3.6.1.4.1.509.1.7.1.10.1

sigAlarmComment

| Description: | A user comment that describes the alarm definition. You can SET and GET the value of this variable. |

| Parameters: | Up to 31 characters |

| MIB Path: | 1.3.6.1.4.1.509.1.7.1.11 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1). sigAlarmComment(11) |

Variable:	1.3.6.1.4.1.509.1.7.1.11.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the user comment is assigned.
Example:	Enter a comment for alarm index 2.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.11.2
Set Value:	"Alarm for DCD to mark."

sigAlarmRowStatus

Description:	Selections for managing rows in the alarms definition. A row is an entry or group of variables. Each row is identified by its index— sigAlarmIndex— and contains entries for determining alarm conditions. You can activate or inactivate your alarm definitions using this variable. You can SET and GET the value of this variable.

Parameters:	active(1)	activate the row
	notInService(2)	inactivate the row
	notReady(3)	inactivate the row
	createAndGo(4)	process the row, and activate
	createAndWait(5)	process the row, but remain inactive
	destroy(6)	delete the row

MIB Path:	1.3.6.1.4.1.509.1.7.1.12 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).sigAlarmTable(7).sigAlarmEntry(1). sigAlarmRowStatus(12)
Variable:	1.3.6.1.4.1.509.1.7.1.12.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the row is assigned.

Example:	Process all variables for sigAlarmIndex 1 and make this row active. That is, process and activate the alarm definition, sigAlarmIndex 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.7.1.12.1
Set Value:	createAndGo(4)

D.9 Alarm-Triggered Operations

The following variables allow you to define and perform alarm-triggered switching operations for your unit. In general, all variables having a common 'alarmTrigOpIndex' (which you select) are part of the same alarm-triggered operation.

alarmTrigOpSigAlarmsList

Description:	A list of alarms (alarm definitions) triggering a switching operation. This is a list of 'sigAlarmIndex' numbers separated by white spaces. For example, to create a list of alarms containing alarm definitions 2, 10, and 12, alarmTrigOpSigAlarmsList would be: 2 10 12.
	You can specify up to 4 alarms in each list. All alarms in the list must be in alarm condition red for the switching operation to occur. You can SET and GET the value of this variable.
Parameters:	Up to 4 alarms chosen from alarm definitions. The format of the alarm list is 'sigAlarmIndex' numbers (up to 4), each separated by a space.
MIB Path:	1.3.6.1.4.1.509.1.8.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).alarmTrigOpTable(8).alarmTrigOpEntry(1). alarmTrigOpSigAlarmsList(2)
Variable:	1.3.6.1.4.1.509.1.8.1.2.[alarmTrigOpIndex] where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm-triggered operation to which the list is assigned.

Example: Define a list of alarms—sigAlarmIndex 1, 3, 12, and 28—to trigger a switching operation. Assign this list to alarm-triggered switching operation 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.8.1.2.1
Set Value:	1 3 12 28

alarmTrigOpSwitchToPort

Description: Port switched to when an alarm(s) occur(s). You can SET and GET the value of this variable.

Parameters: none(0), A(1), B(2), C(3), D(4), normal(5)

MIB Path: 1.3.6.1.4.1.509.1.8.1.3
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
IntelliSwitch2000(1).alarmTrigOpTable(8).alarmTrigOpEntry(1).
alarmTrigOpSwitchToPort(3)

Variable: 1.3.6.1.4.1.509.1.8.1.3.[alarmTrigOpIndex] where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm-triggered operation to which the port entry (none, A, B, C, D, normal) is assigned.

Example: Switch to port C when the alarms occur for alarm-triggered switching operation 2.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.8.1.3.2
Set Value:	C(3)

alarmTrigOpCardsList

Description: List of line cards to switch. This is a list of line cards separated by white spaces. For example, to switch the first, third, and tenth line cards, alarmTrigOpCardsList would be: 1 3 10. You can SET and GET the value of this variable.

Parameters:	Line cards 1 to 16

MIB Path:	1.3.6.1.4.1.509.1.8.1.4
	iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).alarmTrigOpTable(8).alar mTrigOpEntry(1). alarmTrigOpCardsList(4)

Variable:	1.3.6.1.4.1.509.1.8.1.4.[alarmTrigOpIndex] where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm-triggered switching operation to which the list is assigned.

Example:	Create a list from line cards 1, 4, 8, 13, 15, and 16 that will switch. Assign the list to alarm-triggered switching operation 3.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.8.1.4.3
Set Value:	1 4 8 13 15 16

alarmTrigOpBusCodeEmit

Description:	Code emitted over the inter-rack bus when the alarm(s) occur(s). You can SET and GET the value of this variable.

Parameters:	0 (no code emitted) or 1 to 127

MIB Path:	1.3.6.1.4.1.509.1.8.1.5
	iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).alarmTrigOpTable(8).alar mTrigOpEntry(1). alarmTrigOpBusCodeEmit(5)

Variable:	1.3.6.1.4.1.509.1.8.1.5.[alarmTrigOpIndex] where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm-triggered operation to which the bus-code-emit entry is assigned.

Example:

Set code 50 to be emitted over the inter-rack bus when the alarm(s) occur. Assign the code to alarm-triggered switching operation 4. You can SET and GET the value of this variable.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.8.1.5.4
Set Value:	50

alarmTrigOpComment

Description:

User comment for each alarm-triggered switching operation. You can SET and GET the value of this variable.

Parameters:

Up to 31 characters

MIB Path:

1.3.6.1.4.1.509.1.8.1.6
iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).alarmTrigOpTable(8).alar mTrigOpEntry(1). alarmTrigOpComment(6)

Variable:

1.3.6.1.4.1.509.1.8.1.6.[alarmTrigOpIndex] where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm-triggered operation to which the user comment is assigned.

Example:

Enter a user comment for alarm-triggered switching operation 3.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.8.1.6.3
Set Value:	"Back up Toronto if CSU fails"

alarmTrigOpRowStatus

Description:

Selections for managing rows in the alarm-triggered operations table. A row is an entry or group of variables. Each row is identified by its index— alarmTrigOpIndex—and contains entries for determining switching operations.

You can activate or inactivate your alarm-triggered switching operations using this variable. You can SET and GET the value of this variable.

Parameters:	active(1)	activate the row
	notInService(2)	inactivate the row
	notReady(3)	inactivate the row
	createAndGo(4)	process the row, and activate
	createAndWait(5)	process the row, but remain inactive
	destroy(6)	delete the row

Parameters:

MIB Path: 1.3.6.1.4.1.509.1.8.1.7
iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509).
IntelliSwitch2000(1).alarmTrigOpTable(8).alarmTrigOpEntry(1).
alarmTrigOpRowStatus(7)

Variable: 1.3.6.1.4.1.509.1.8.1.7.[alarmTrigOpIndex]
where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm-triggered operation to which the row status is assigned.

Example: Process all variables for alarm-triggered operation 1 and make this row active.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.8.1.7.1
Set Value:	createAndGo(4)

D.10 Time-Triggered Operations

The following variables allow you to perform time-triggered switching operations for your unit. In general, all variables having a common 'timeTrigOpIndex' (which you select) are part of the same time-triggered operation.

timeTrigOpTime

Description:	Time of the switching operation. You can SET and GET the value of this variable.

Parameters:	Day: MON, TUE, WED, THU, FRI, SAT, SUN Time: 00:00 to 23:59
MIB Path:	1.3.6.1.4.1.509.1.9.1.2 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).time TrigOpEntry(1). timeTrigOpTime(2)
Variable:	1.3.6.1.4.1.509.1.9.1.2.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the time entry is assigned.
Example:	Set the switching time of time-triggered operation 4 to Tuesday at 5 pm (17:00).

	Operation:	Set
	Variable:	1.3.6.1.4.1.509.1.9.1.2.4
	Set Value:	TUE 17:00

timeTrigOpFreq

Description:	Indicates how often the switching operation shall be performed. Note that operations set to 'once(1)'—one-time switching—are automatically destroyed when they have been executed. You can SET and GET the value of this variable.
Parameters:	never(0), once(1), every_week(2), every_day(3)
MIB Path:	1.3.6.1.4.1.509.1.9.1.3 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).time TrigOpEntry(1). timeTrigOpFreq(3)

Variable:	1.3.6.1.4.1.509.1.9.1.3.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the switching frequency is assigned.

Example:	Set the switching frequency to daily for time-triggered switching operation 5.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.3.5
Set Value:	every_day(3)

timeTrigOpStart

Description:	Time when an 'every_day' operation is activated. The 'every_day' is set in the 'timeTrigOpFreq' variable. You can SET and GET the value of this variable.

Parameters:	Day:	MON, TUE, WED, THU, FRI, SAT, SUN (ignored)
	Time:	00:00 to 23:59

MIB Path:	1.3.6.1.4.1.509.1.9.1.4 iso(1).org(3).dod(6).internet(1).private(4). enterprises(1).Hadax(509). IntelliSwitch2000(1). timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpStart(4)

Variable:	1.3.6.1.4.1.509.1.9.1.4.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the start time is assigned.

Example:	Set the start time of the 'every_day' operation to 8 am for time-triggered switching operation 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.4.1
Set Value:	MON 08:00

timeTrigOpStop

Description:	Time when an 'every_day' operation is deactivated. The 'every_day' is set in the 'timeTrigOpFreq' variable. You can SET and GET the value of this variable.

Parameters: Day: MON, TUE, WED, THU, FRI, SAT, SUN (ignored)
                     Time: 00:00 to 23:59

MIB Path:	1.3.6.1.4.1.509.1.9.1.5 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpStop(5)

Variable:	1.3.6.1.4.1.509.1.9.1.5.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the stop time is assigned.

Example:	Set the stop time of the 'every_day' operation to 6 pm (18:00) for time-triggered switching operation 1.

Operation: Set
Variable: 1.3.6.1.4.1.509.1.9.1.5.1
Set Value: MON 18:00

timeTrigOpSwitchToPort

Description:	Port switched to at the time of the switching operation. You can SET and GET the value of this variable.

Parameters:	none(0), A(1), B(2), C(3), D(4), normal(5)

MIB Path:	1.3.6.1.4.1.509.1.9.1.6 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpSwitchToPort(6)

Variable:	1.3.6.1.4.1.509.1.9.1.6.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the port entry (none, A, B, C, D, normal) is assigned.

Example:	Set port D as the port switched for time-triggered switching operation 3.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.6.3
Set Value:	D(4)

timeTrigOpCardsList

Description:	List of line cards to switch. This is a list of line cards separated by white spaces. For example, to switch the first, third, and tenth line cards, timeTrigOpCardsList would be: 1 3 10. You can SET and GET the value of this variable.

Parameters:	Line cards 1 to 16

MIB Path:	1.3.6.1.4.1.509.1.9.1.7 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpCardsList(7)

Variable:	1.3.6.1.4.1.509.1.9.1.7.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the list is assigned.

Example:	Create a list from line cards 1, 4, 8, 13, 15, and 16 that will switch for time-triggered operation 3.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.7.3
Set Value:	1 4 8 13 15 16

timeTrigOpBusCodeEmit

Description:	Code emitted over the inter-rack bus at the time of the switching operation, set by the 'timeTrigOpTime' variable. You can SET and GET the value of this variable.
Parameters:	0 (no code emitted) or 1 to 127
MIB Path:	1.3.6.1.4.1.509.1.9.1.8 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpBusCodeEmit(8)
Variable:	1.3.6.1.4.1.509.1.9.1.8.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the code is assigned.
Example:	Set code 50 to be emitted over the inter-rack bus when the alarm(s) occur for time-triggered switching operation 4.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.8.4
Set Value:	50

timeTrigOpComment

Description:	User comment for each time-triggered switching operation. You can SET and GET the value of this variable
Parameters:	Up to 31 characters
MIB Path:	1.3.6.1.4.1.509.1.9.1.9 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpComment(9)

Variable:	1.3.6.1.4.1.509.1.9.1.9.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the user comment is assigned.

Example: Enter a user comment for time-triggered switching operation 3.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.9.3
Set Value:	"Back up Detroit if CSU fails"

timeTrigOpRowStatus

Description:	Selections for managing rows in the time-triggered operations table. A row is an entry or group of variables. Each row is identified by its index—timeTrigOpIndex— and contains entries for determining switching operations. You can activate or inactivate your time-triggered switching operations using this variable. You can SET and GET the value of this variable.

Parameters:	active(1)	activate the row
	notInService(2)	inactivate the row
	notReady(3)	inactivate the row
	createAndGo(4)	process the row, and activate
	createAndWait(5)	process the row, but remain inactive
	destroy(6)	delete the row

MIB Path:	1.3.6.1.4.1.509.1.9.1.10 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).timeTrigOpTable(9).timeTrigOpEntry(1). timeTrigOpRowStatus(10)

Variable:	1.3.6.1.4.1.509.1.9.1.10.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the row status is assigned.

Example:	Process all variables for time-triggered operation 1 and make this row active. You can SET and GET the value of this variable.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.9.1.10.1
Set Value:	createAndGo(4)

D.11 Bus-Triggered Operations

The following variables allow you to perform bus-triggered switching operations for your Pro Switching System unit. In general, all variables having a common "busTrigOpIndex" (which you select) are part of the same bus-triggered operation.

Bus-triggered operations allow switching operations across several racks. The racks connect to the inter-rack bus and broadcast a bus code when an alarm condition occurs. Racks that have user-defined bus triggered operations programmed for that code will perform the switching operation.

The inter-rack bus connects racks to each other through their COMM ports; the COMM OUT port on one rack connects to the COMM IN port on another rack. Use DB25F to DB25M cable, pin-to-pin (type 2 cable).

busTrigOpCode

Description:	Bus code received over the inter-rack bus, triggering the switching operation. You can SET and GET the value of this variable.
Parameters:	1 to 127
MIB Path:	1.3.6.1.4.1.509.1.10.1.2 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).busTrigOpTable(10).busTrigOpEntry(1). busTrigOpCode(2)
Variable:	1.3.6.1.4.1.509.1.10.1.2.[busTrigOpIndex] where [busTrigOpIndex] is a number (from 1 to 32) of a bus-triggered switching operation to which the bus code entry is assigned.

Example:	Set the bus code to 30 for bus-triggered switching operation 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.10.1.2.1
Set Value:	30

busTrigOpSwitchToPort

Description:	Port switched to when the code (set in the 'busTrigOpCode' variable) is detected on the bus. You can SET and GET the value of this variable.

Parameters:	A(1), B(2), C(3), D(4), normal(5)

MIB Path:	1.3.6.1.4.1.509.1.10.1.3 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).busTrigOpTable(10).busTrigOpEntry(1). busTrigOpSwitchToPort(3)

Variable:	1.3.6.1.4.1.509.1.10.1.3.[busTrigOpIndex] where [busTrigOpIndex] is a number (from 1 to 32) of a bus-triggered switching operation to which the port (A, B, C, D, normal) is assigned.

Example:	Switch to port B when the specified code is detected on the bus for bus-triggered switching operation 4.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.10.1.3.4
Set Value:	B(2)

busTrigOpCardsList

Description:	List of line cards to switch. This is a list of line cards separated by white spaces. For example, to switch the first, third, and tenth line cards, busTrigOpCardsList would be: 1 3 10. You can SET and GET the value of this variable.

Parameters:	Line cards 1 to 16

MIB Path:	1.3.6.1.4.1.509.1.10.1.4 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).busTrigOpTable(10).busT rigOpEntry(1). busTrigOpCardsList(4)
Variable:	1.3.6.1.4.1.509.1.10.1.4.[busTrigOpIndex] where [busTrigOpIndex] is a number (from 1 to 32) of a bus-triggered switching operation to which the list is assigned.
Example:	Create a list from line cards 2, 5, 10, 12, 15, and 16 to switch for bus-triggered switching operation 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.10.1.4.1
Set Value:	2 5 10 12 15 16

busTrigOpComment

Description:	User comment for each bus-triggered switching operation. You can SET and GET the value of this variable.
Parameters:	Up to 31 characters
MIB Path:	1.3.6.1.4.1.509.1.10.1.5 iso(1).org(3).dod(6).internet(1).private(4).ent erprises(1).Hadax(509). IntelliSwitch2000(1).busTrigOpTable(10).busT rigOpEntry(1). busTrigOpComment(5)
Variable:	1.3.6.1.4.1.509.1.10.1.5.[busTrigOpIndex] where [busTrigOpIndex] is a number (from 1 to 32) of a bus-triggered switching operation to which the user comment is assigned.
Example:	Enter a user comment for bus-triggered switching operation 1.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.10.1.5.1
Set Value:	"Group switching #30"

busTrigOpRowStatus

Description:	Selections for managing rows in the operations table. A row is an entry or group of variables. Each row is identified by its index—busTrigOpIndex— and contains entries for determining switching operations. You can activate or inactivate your bus-triggered switching operations using this variable. You can SET and GET the value of this variable.
Parameters:	active(1) activate the row notInService(2) inactivate the row notReady(3) inactivate the row createAndGo(4) process the row, and activate createAndWait(5) process the row, but remain inactive destroy(6) delete the row
MIB Path:	1.3.6.1.4.1.509.1.10.1.6 iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).Hadax(509). IntelliSwitch2000(1).busTrigOpTable(10).busTrigOpEntry(1). busTrigOpRowStatus(6)
Variable:	1.3.6.1.4.1.509.1.10.1.6.[busTrigOpIndex] where [busTrigOpIndex] is a number reference (from 1 to 32) of a bus-triggered switching operation to which the row status is assigned.
Example:	Process all variables for bus-triggered operation 1 and make this row active.

Operation:	Set
Variable:	1.3.6.1.4.1.509.1.10.1.6.1
Set Value:	createAndGo(4)

D.12 Traps

The following traps (messages) are generated by the rack when certain conditions occur, as listed in each description below. All traps carry the 'mibSystem.sysObjectId' whose value is 1.3.6.1.4.1.509.1.

The generic traps are predefined standard traps that are applicable to most devices. The specific traps are only particular to the Pro Switching System rack.

Note that you must configure the rack with an IP address to where the traps will be sent, using the command SET RACK SNMP MANAGER. Refer to the Chapter 5 for more information on configuring the rack.

D.12.1 GENERIC TRAPS

coldStart   0   The "Generic trap = 0" statement is a standard trap that is sent when the rack reinitializes. It carries the 'mibSystem.sysDescr' whose MIB path is 1.3.6.1.2.1.1.1.

D.12.2 SPECIFIC TRAPS

powerStatusChange   1   This trap is generated when the value of the 'powerStatus' variable changes. The trap returns information on the 'powerStatus' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

powerStatus—

Description:	Status of the power supply.
Parameters:	absent(0) Power supply is not installed
	ok(1) Power supply is functioning properly
	fail(2) Power supply is installed but not functioning
Variable:	1.3.6.1.4.1.509.1.2.1.2.[powerIndex]
	where [powerIndex] is
	1 for power supply 1
	2 for power supply 2

powerFanStatusChange 2

This trap is generated when the value of the 'powerFanStatus' variable changes. The trap returns information on the 'powerFanStatus' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

powerFanStatus—

Description:	Status of the power supply fan.
Parameters:	absent(0) Power supply fan is not installed
	ok(1) Power supply fan is functioning properly
	fail(2) Power supply fan is installed but not functioning
Variable:	1.3.6.1.4.1.509.1.2.1.3.[powerIndex] where [powerIndex] is
	1 for power supply 1
	2 for power supply 2

sigAlarmChange

3   This trap is generated when the value of the 'sigAlarmState' variable changes. The trap returns information on the 'sigAlarmState' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

sigAlarmState—

Description:	The current status of the alarm.
Parameters:	no_signal(0) the line card, port, or lead state is not present.
	sleep(1) the alarm definition is inactive (specified by sigAlarmStart and sigAlarmStop)
	green(2) the alarm definition is active but not in an alarm condition

	orange(3) the alarm definition is approaching an alarm condition
	red(4) the alarm definition is in an alarm condition

Variable:

1.3.6.1.4.1.509.1.7.1.10.[sigAlarmIndex] where [sigAlarmIndex] is a number (from 1 to 32) of an alarm definition to which the alarm status is assigned.

rackKeyLockedChange   4   This trap is generated when the key switch position is changed. The trap returns information on the 'rackKeyLocked' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

rackKeyLocked—

Description:

Key switch position. When the key is in the locked position, the manual switch buttons on the front of the rack are disabled. When the key is in the unlocked position, the switch buttons are enabled.

Parameters:

no (0)   Indicates that the key position on the front of the rack is set to 'unlocked'; the manual switch buttons on the rack are enabled. yes (1)   Indicates that the key position on the front of the rack is set to 'locked'; the manual switch buttons on the rack are disabled.

Variable:

1.3.6.1.4.1.509.1.1.2.0 where 0 indicates that the variable is not part of a table.

gangSwitchPushChange   5   This trap is generated when a gang switch is executed. The trap returns information on the 'gangSwitchPush' and 'rackIpRequester' variables as listed below. For more information on the variables, see their listings presented earlier in the chapter.

gangSwitchPush—

Description:	Setting this variable pushes the gang switch button on the rack to perform group switching on the line cards. Pushing the A(1), B(2), C(3), or D(4) button forces all line cards to switch to the A, B, C, or D port, respectively. Pushing the N(5) button forces all line cards to switch to their normal (user-defined) port. Pushing the SET_N(6) button defines the current port of each line card as its normal port.
Parameters:	Yes(1) to push the gang switch button.
Variable:	1.3.6.1.4.1.509.1.3.1.2.[gangSwitchIndex] where [gangSwitchIndex] is

1	for pushbutton A (port A)
2	for pushbutton B (port B)
3	for pushbutton C (port C)
4	for pushbutton D (port D)
5	for pushbutton N (normal)
6	for pushbutton SET N (set normal)

rackIpRequester—

Description:	The IP address of the remote entity that last requested a switch. The null value is returned if this is a local manual switch.
Parameters:	IP address
Variable:	1.3.6.1.4.1.509.1.1.14.0 where 0 indicates that the variable is not part of a table

lineCardChange	6 This trap is generated when a line card is inserted or removed. The trap returns information on the 'lineInterfaceType' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

lineInterfaceType—

Description:	The interface type of the line card (for example, RS-232).
Parameters:	none(0), rs232(1), rs530(2), V35(3), x21(4), isdn(5), V24(6)
Variable:	1.3.6.1.4.1.509.1.5.1.2.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

lineSwitchedPortChange 7 This trap is generated when the switch position for a line card is changed. The trap returns information on the 'lineSwitchedPort' and 'rackIpRequester' variables as listed below. For more information on the variables, see their listings presented earlier in the chapter.

lineSwitchedPort—

Description:	The port switched to (for example, port A).
Parameters:	A(1), B(2), C(3), D(4), normal(5)
Variable:	1.3.6.1.4.1.509.1.5.1.4.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

rackIpRequester—

Description:	The IP address of the remote entity that last requested a switch. The null value is returned if this is a local manual switch.
Parameters:	IP address
Variable:	1.3.6.1.4.1.509.1.1.14.0 where 0 indicates that the variable is not part of a table

linePatchingChange   8   This trap is generated when a patch cable is plugged or unplugged. The trap returns information on the 'linePatching' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

linePatching—

Description: Indicates whether or not patching is possible and if so, whether or not a   patch cable is inserted.

Parameters: none(0)   the line card does not have patch capabilities
          cable_out(1)   the line card has patch capabilities; a patch cable is not inserted
          cable_in(2)   the line card has patch capabilities; a patch cable is inserted

Variable: 1.3.6.1.4.1.509.1.5.1.8.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

alarmTrigOpSwitch   9   This trap is generated when an alarm-triggered switch is executed. The trap returns information on the 'lineSwitchedPort' and 'alarmTrigOpComment' variables as listed below. For more information on the variables, see their listings presented earlier in the chapter.

lineSwitchedPort—

Description: The port switched to (for example, port A).

Parameters: A(1), B(2), C(3), D(4), normal(5)

Variable: 1.3.6.1.4.1.509.1.5.1.4.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

alarmTrigOpComment—

Description:	User comment for each alarm-triggered switching operation.
Parameters:	Up to 31 characters
Variable:	1.3.6.1.4.1.509.1.8.1.6.[alarmTrigOpIndex] where [alarmTrigOpIndex] is a number (from 1 to 32) of an alarm- triggered operation to which the user comment is assigned.

timeTrigOpSwitch	10 This trap is generated when a time-triggered switch is executed. The trap returns information on the 'lineSwitchedPort' and 'timeTrigOpComment' variables as listed below. For more information on the variables, see their listings presented earlier in the chapter.

lineSwitchedPort—

Description:	The port switched to (for example, port A).
Parameters:	A(1), B(2), C(3), D(4), normal(5)
Variable:	1.3.6.1.4.1.509.1.5.1.4.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

timeTrigOpComment—

Description:	User comment for each time-triggered switching operation.
Parameters:	Up to 31 characters
Variable:	1.3.6.1.4.1.509.1.9.1.9.[timeTrigOpIndex] where [timeTrigOpIndex] is a number (from 1 to 32) of a time-triggered switching operation to which the user comment is assigned.

busTrigOpSwitch	11 This trap is generated when a bus-triggered switch is executed. The trap returns information on the 'lineSwitchedPort' and 'busTrigOpComment' variables as listed below. For more information on the variables, see their listings presented earlier in the chapter.

lineSwitchedPort—

Description:	The port switched to (for example, port A).
Parameters:	A(1), B(2), C(3), D(4), normal(5)
Variable:	1.3.6.1.4.1.509.1.5.1.4.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.

busTrigOpComment—

Description:	User comment for each bus-triggered switching operation.
Parameters:	Up to 31 characters
Variable:	1.3.6.1.4.1.509.1.10.1.5.[busTrigOpIndex] where [busTrigOpIndex] is a number (from 1 to 32) of a bus-triggered switching operation to which the user comment is assigned.

lineSwitchError	12 This trap is generated when a card was unable to switch to the port value in the 'lineSwitchedPort' variable. The trap returns information on the 'lineSwitchedPort' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

lineSwitchedPort—

Description:	The port switched to (for example, port A).
Parameters:	A(1), B(2), C(3), D(4), normal(5)

Variable:	1.3.6.1.4.1.509.1.5.1.4.[lineCardIndex] where [lineCardIndex] is the slot number (1 through 16) occupied by the line card.
snmpBadCommunity	13 This trap is generated when an excessive number of incorrectSNMP community names are received from the 'rackIpRequester' variable. The trap returns information on the 'rackIpRequester' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.
rackIpRequester—	
Description:	The IP address of the remote entity that last requested a switch. The null value is returned if this is a local manual switch.
Parameters:	IP address
Variable:	1.3.6.1.4.1.509.1.1.14.0 where 0 indicates that the variable is not part of a table
telnetLogin	14 This trap is generated when a Telnet session is successfully opened by the 'rackIpRequester' variable. The trap returns information on the 'rackIpRequester' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.
rackIpRequester—	
Description:	The IP address of the remote entity that last requested a switch. The null value is returned if this is a local manual switch.
Parameters:	IP address
Variable:	1.3.6.1.4.1.509.1.1.14.0 where 0 indicates that the variable is not part of a table

telnetBadPassword   15   This trap is generated when an excessive number of incorrect Telnet passwords are received from the 'rackIpRequester' variable. The trap returns information on the 'rackIpRequester' variable as listed below. For more information on the variable, see its listing presented earlier in the chapter.

rackIpRequester—

Description: The IP address of the remote entity that last requested a switch. The null value is returned if this is a local manual switch.

Parameters: IP address

Variable: 1.3.6.1.4.1.509.1.1.14.0
                                where 0 indicates that the variable is not part of a table