



Loop-O9400R

QUICK START MANUAL

(Installation/Operation)

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- D** Bitte führen Sie das Gerät am Ende seiner Lebensdauer den zur Verfügung stehenden Rückgabe- und Sammelsystemen zu.
- GB** At the end of the product's useful life, please dispose of it at appropriate collection points provided in your country
- F** Une fois le produit en fin de vie, veuillez le déposer dans un point de recyclage approprié.
- ES** Para preservar el medio ambiente, al final de la vida útil de su producto, deposítelo en los lugares destinados a ello de acuerdo con la legislación vigente.
- P** No final de vida útil do produto, por favor coloque no ponto de recolha apropriado.
- I** Onde tutelare l'ambiente, non buttate l'apparecchio tra i normali rifiuti al termine della sua vita utile, ma portatelo presso i punti di raccolta specifici per questi rifiuti previsti dalla normativa vigente.
- NL** Wij raden u aan het apparaat aan het einde van zijn nuttige levensduur, niet bij het gewone huisafval te deponeren, maar op de daarvoor bestemde adressen.
- DK** Når produktet er udtjent, bør det bortskaffes via de særlige indsamlingssteder i landet.
- N** Ved slutten av produktets levetid bør det avhendes på en kommunal miljøstasjon eller leveres til en elektroforhandler.
- S** Lämna vänligen in produkten på lämplig återvinningsstation när den är förbrukad.
- FIN** Hävitä tuote käyttöiän päätyessä viemällä se asianmukaiseen keräyspisteeseen.
- PL** Gdy produkt nie nadaje się już do dalszego użytku, należy zostawić go w jednym ze specjalnych punktów zajmujących się zbierką zużytych produktów w wybranych miejscach na terenie kraju.
- CZ** Po skončení jeho životnosti odložte prosím výrobek na příslušném sběrném místě zřízeném dle předpisů ve vaší zemi.
- SK** Po skončení jeho životnosti odovzdajte prosím zariadenie na príslušnom zbernom mieste podľa platných miestnych predpisov a noriem.
- SLO** Ko se izdelku izteče življenska doba, ga odnesite na ustrezno zbirno mesto oziroma ga odvrzite v skladu z veljavnimi predpisi.
- GR** Στο Τέλος της λειτουργικής Ζωής του προϊόντος παρακαλώ Πετξτε το στα ειδικά σημεία που Παρέχονται στη χώρα σας.
- PRC** 當產品使用壽命結束,請在你的國家所提供的適當地點做好回收處理



1. INTRODUCTION

1.1. Purpose of Manual

This Quick Start manual provides a novice user of the Loop-O9400R device with a step-by-step guide for initial installation and set-up. Detailed step by step instructions are given for installing the device and for setting up some specific applications.

2. INSTALLATION

2.1. Mechanical installation

Wear a grounding wrist strap while installing the Loop equipment. Familiarize yourself with the instructions in this manual before commencing any work.

2.1.1. Site Preparation

Ensure that your installation site conforms to all environmental and structural regulations. A power supply must be available that conforms to the Loop-O9400R power requirements.

2.1.2. Installation Overview

When installing Loop-O9400R equipment into racks, follow these guidelines:

- Consider the effect of additional electronic equipment and its generated heat on the Loop-O9400R system equipment.
- Make sure the equipment rack is properly secured to the ground and, if required, to the ceiling.
- Ensure that the weight of the equipment does not make the rack unstable.
- When mounting equipment between two posts or rails, ensure that the minimum clearance between the sides is 485 mm (19 in.).
- Maintain a minimum clearance of 500 mm (19.7 in.) in front of the equipment and 500mm (19.7 in.) at the rear.

Rack mounting ears (brackets) and screws are included in the Loop-IP shipping package. Six M3 screws are used to secure each ear to threaded screw-holes in the side panels of the Loop device. These should be tightened to a torque value of 10Kgf-cm with a Phillips #2 screwdriver.



Figure 2- 1 Rack Mount Ears (Brackets)

After the unit is placed into the rack cage insert flathead rack mounting screws (also included in the shipping package) through each ear to secure the Loop unit to the cage. These screws should be tightened to a torque value of 10Kgf-cm with a medium tip screwdriver.

CHAPTER 2 INSTALLATION

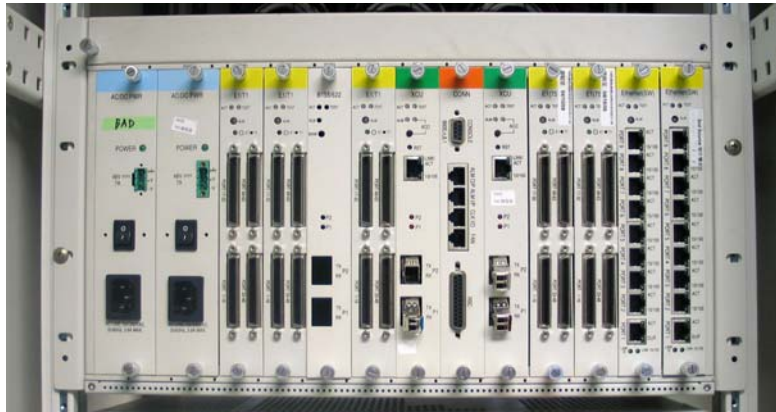


Figure 2- 2 Rack Mounting

2.2. Electrical installation

2.2.1. Chassis Grounding

The chassis is theoretically grounded when rack mounted. However, if extra grounding protection for rack mounted units is desired, a dedicated chassis ground screw and lock washer is provided. The chassis ground screw is located on the right hand side of the rear panel as shown in Figure 2-3, below.

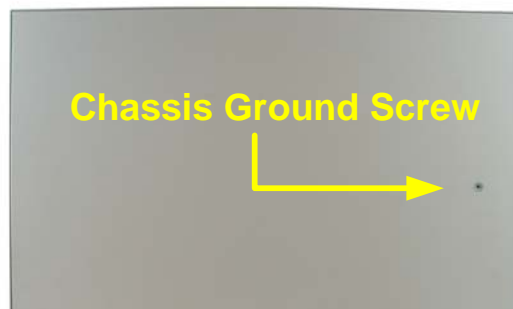


Figure 2- 3 Chassis Ground Screw Location

When attaching a ground wire to the chassis ground screw, please follow these instructions.

- Use copper grounding conductors of 18 AWG
- Conductors should not be of dissimilar metals.
- The bare conductors should be coated with anti-oxidant before crimp connections are made.
- Any unplated connection surfaces, connectors, braided strap and bus bars must be bought to a bright finish and coated with anti-oxidant before connections are made.

2.2.2. Power Connection

The power connection on your unit will be either AC 100 - 240 Vac, 50 - 60Hz (3 pronged plug) or DC -48Vdc (-36 to -72Vdc) 3 pin block. The power switch should be in the OFF position while you connect the power source.

Caution: Do not (under any circumstances) connect the Loop-O9400R unit to a power source that is inconsistent with the power rating labeled on the rear of the device.

CHAPTER 2 INSTALLATION

Do not (under any circumstances) remove the power module from the Loop-O9400R device while it is connected to a live power source. Disconnect the module from the power source before removing it from the Loop-O9400R.

The AC/DC and the 48VDC plug-in power modules are illustrated in the figure below. Once the device is powered up the LED light on the power module should be a steady (ie. non-flashing) green.



Figure 2- 4 Power Modules (-48Vdc and AC/DC)

2.2.3. Power module, -48Vdc

The -48Vdc (-36 to -72 Vdc) supply input has a 3 pin power connector with the following pin-out:

Table 2- 1 Pin-out for -48 DC Connector

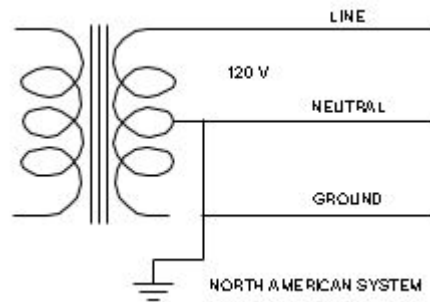
Pin-out for -48 DC	
Pin	Signal
+	+48
-	-48V
TTT	GND

CHAPTER 2 INSTALLATION

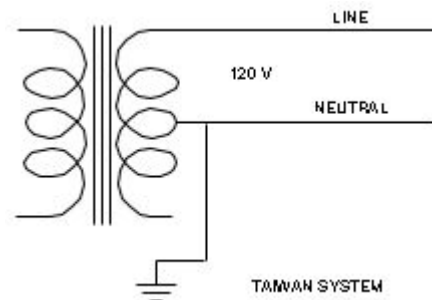
Important Note Regarding Power and Grounding:

AC Electric power supplies around the world have the following variations.

(1a) For 120 Vac systems, you have the three prong grounded type as in North America. In this system, the GROUND wire never carries any current. The NEUTRAL wire, because it carries current, is close to, but a few volts different from ground.

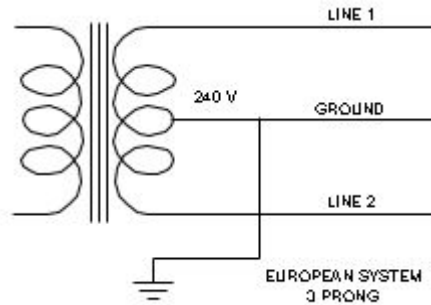


1b) For two prong 120 Vac systems, as in Taiwan, the GROUND is not available at the plug. The NEUTRAL wire, because it carries current, is close to, but a few volts different from ground.

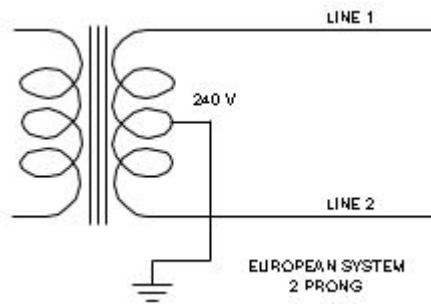


CHAPTER 2 INSTALLATION

(2a) 240 Vac systems, because the center tap of the transformer is grounded, have two lines, each 120 volts from ground. This is for safety. For three prong outlets, the GROUND is supplied. The ground wire carries no current so Ground is ground.



(2b) Some 240 Vac systems have only 2 prongs. The GROUND is not available. Each line is 120 Vac from ground.



It is imperative to know which system you are using and how to hook up the two or three available power wires to the power connector. If you are unsure, consult with a local electrical authority. **If GROUND is not available at the plug, you must run a properly installed 18AWG ground cable from the ground screw on the Loop device to a secure connection on a grounded, metal, rack cage.** Any unplated connection surfaces, connectors, braided strap and bus bars **must** be bought to a bright finish and coated with anti-oxidant before connections are made.

CHAPTER 2 INSTALLATION

2.3. Card Installation

Plug any cards you will be using into the Loop-09400R chassis and secure them with the thumb screws.

2.4. Fiber Optic Connections

To install fiber-optic cables, connect a fiber cable with an LC type connector to the transmit and receive ports of the transmission system.

2.5. Powering Up the Loop Device

After powering up the Loop device, pay close attention to the LEDs on the plug-in cards. The following LEDs should be displayed if all cards and cables are properly installed.

Note: Complete LED Tables for all O9400R related items can be found in the appendix at the end of this manual.

Table 2- 2 LED Indication Table

Card	LED Indication	Note
Power Card	Power LED - Steady green	
XCU Card	ACT LED - Flashing green	There are two XCU cards. The XCU card plugged in first will be the default XCU card.
Standby XCU Card	ACT LED -Flashing amber	The XCU card plugged in second will be the standby XCU card.
E1/T1 Card	ACT LED -Flashing green	When two identical cards are installed, the card registered first will be the default card and the card registered second will be the standby card.
E1/T1 Card (Standby)	ACT LED -Flashing amber	
B155/622 Card	ACT LED -Flashing green	
B155/622 Card (Standby)	ACT LED -Flashing amber	
Ethernet Card with switch	ACT LED -Flashing green	
Ethernet Card with switch (Standby)	ACT LED -Flashing amber	

3. CONFIGURATION SETUP

3.1. Setting up a VT-100 Monitor

When loaded with Loopterm (or similar commercially available VT-100 software), your PC will act as a VT-100 monitor that can be used for local control and diagnostics. Connect the DB9 console port of the CONN card to either COM Port 1 of the PC you are using as a VT-100 monitor. It doesn't matter which Com Port you connect to.

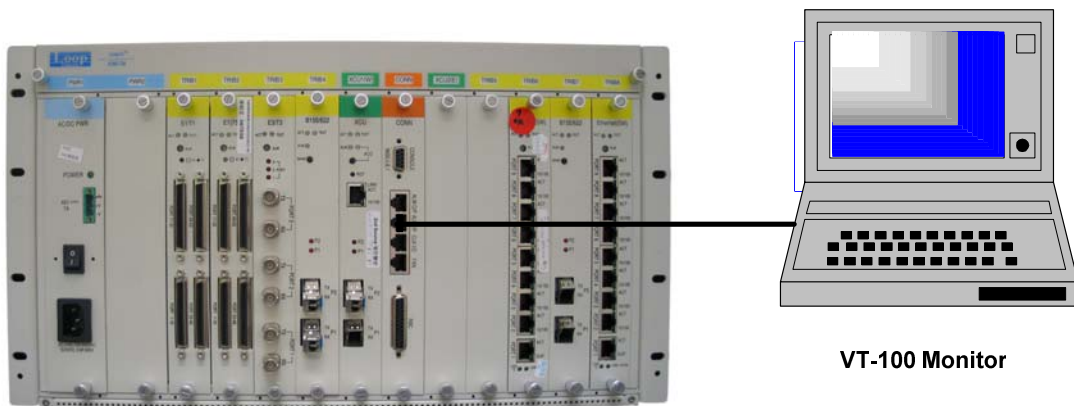


Figure 3- 1 VT-100 Monitor Setup

Note: Newer PCs use USB Ports. If your computer has a USB port rather than COM ports you will need to purchase a commercially available PC USB to DB9 conversion cable. These cables come with software which, when loaded in a PC, will allow you to send keyboard commands through the PC's USB Port to the DB9 Console Port of the Loop-O9400R CONN card.

After connecting your VT-100 monitor to the Loop device, your first setup steps should be as follows:

1. **Log on and set up your password** (User Manual, Section 6.1, Logon and Password Setup)
2. **Set your system to SDH or SONET** (User Manual, Section 6.11, System Mode Setup)
3. **Register your tributary cards** (User Manual, Section 6.35, System Mode Setup)

Each of these setup procedures are explained below.

CHAPTER 3 CONFIGURATION SETUP

3.2. Logon and Password Setup

When you initially power up the Loop-O9400R device it will go through a series of self-tests and the following self-test screen will briefly appear on your VT-100 monitor before the **Controller Menu** screen appears.

```
O.K.
Init SPI .....O.K.
Init IPC(fcc2) .....O.K.
Init IRC(scc4) .....O.K.
Init P2 hdlc(scc1) .....O.K.
Init P1 hdlc(scc3) .....O.K.
Init timer .....O.K.
Init system configuration...3...2...1...
Check and Load Configuration....load previous
Init TBS2488 .....O.K.
Init ADM622 .....O.K.
XCUI starting(13).....
```

3.2.1. Logon

The Controller Menu for the Loop-O9400R is shown below. Press **O** to log on. You will be asked for a user name and a password. The default user names are **OPERATOR** and **ADMIN**.

The default password is **LOOP**.

Note: Default user names and default password must be keyed in using upper case letters.

```
O9400R                === Controller Menu ===                11:30:22 04/25/2007

Serial Number   : 010523                Device Name     : O9400R
Hardware Version: D                    Start Time      : 11:26:28 04/25/2010
Software Version: V1.01.01 03/19/2007  Connect Port    : SUPV_PORT

[DISPLAY]                                [SETUP]

[LOG]                                        [MISC]
F -> Log Off
O -> Log On

>>SPACE bar to refresh or enter a command ===>
```

If you log in as **OPERATOR**, key in the password and then press the **Enter** key, the following half-menu screen will appear. It allows access to display screens only and does not allow the setup of configurations.

```
O9400R                === Controller Menu ===                11:30:22 04/25/2007

Serial Number   : 010523                Device Name     : O9400R
Hardware Version: D                    Start Time      : 11:26:28 04/25/2010
Software Version: V1.01.01 03/19/2007  Connect Port    : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display
D -> SDH/SONET Config Display
I -> System Information
Q -> Alarm Queue
B -> Currently-Active Alarm Summary
A -> Current Alarm Status
P -> SDH/SONET Performance
T -> System Log
E -> Diagnostics Display

[LOG]                                        [MISC]
F -> Log Off
O -> Log On
U -> Choose a Trib Unit

>>SPACE bar to refresh or enter a command ===>
```

CHAPTER 3 CONFIGURATION SETUP

If you log in as **ADMIN**, key in the password and then press the **Enter** key, the following full-menu screen will appear. It allows access to both display and setup screens.

```
O9400R                === Controller Menu ===                11:30:22 04/25/2007

Serial Number   : 010523                Device Name      : O9400R
Hardware Version: D                    Start Time       : 11:26:28 04/25/2010
Software Version: V1.01.01 03/19/2007  Connect Port     : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display          H -> SDH/SONET Config Setup
I -> System Information                M -> Alarm Setup
Q -> Alarm Queue                       L -> File Transfer
B -> Currently-Active Alarm Summary    V -> Store/Retrieve Backup Config
A -> Current Alarm Status              G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance            R -> Performance Setup/Clear
T -> System Log                       N -> Unit Registration
E -> Diagnostics Display

[LOG]                                    [MISC]
F -> Log Off                           Y -> Alarm Cut Off
O -> Log On                             Z -> Reset
U -> Choose a Trib Unit                 X -> Clear Alarm Queue
                                        W -> Return to Default

>>SPACE bar to refresh or enter a command ===>
```

3.2.2. Change a Password

The full menu path for changing a password is as follows:

O > Logon

S > System Config Setup

C > Password Setup

A screen by screen setup example is shown below.

To change a password, press **S** from the Controller Menu.

```
O9400R                === Controller Menu ===                12:15:20 08/09/2007

Serial Number   : 010525                Device Name      : O9400R
Hardware Version: D                    Start Time       : 12:09:32 08/09/2007
Software Version: V1.01.01 07/24/2007  Connect Port     : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display          H -> SDH/SONET Config Setup
I -> System Information                M -> Alarm Setup
Q -> Alarm Queue                       L -> File Transfer
B -> Currently-Active Alarm Summary    V -> Store/Retrieve Backup Config
A -> Current Alarm Status              G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance            R -> Performance Setup/Clear
T -> System Log                       N -> Unit Registration
E -> Diagnostics Display

[LOG]                                    [MISC]
F -> Log Off                           Y -> Alarm Cut Off
O -> Log On                             Z -> Reset
U -> Choose a Trib Unit                 X -> Clear Alarm Queue
                                        W -> Return to Default

>>SPACE bar to refresh or enter a command ===>
```

CHAPTER 3 CONFIGURATION SETUP

The System Configuration Setup menu will appear. Press **C**.

```
O9400R          === System Configuration Setup ===      12:17:32 08/09/2007

                A -> System Setup
                B -> SNMP Setup
                C -> Password Setup
                D -> Timing Source
                E -> Customer Information Setup
                F -> SNTP Setup
                G -> DHCP Relay Setup
                H -> Bridge and Router Setup
                I -> Hand-waving LED setup
                J -> SSH Setup

<< Press ESC key to return to Main Menu or enter a command >>
```

The Password Setup screen will appear. Use the arrow keys to move the asterisk to either Operator or Administrator. Press the **Enter** key.

```
O9400R          === Password Setup ===                  12:19:01 08/09/2007

<< ARROW LEFT/RIGHT: Select Password; Enter: Accept to change; ESC: Exit. >>
Select : Operator *Administrator
```

Key in your old password. Press the **Enter** key. If you did not have a password before, key in the default password, LOOP, in upper case letters. Key in your new password. Press the **Enter** key. Key it in again to confirm it. Press the **Enter** key.

Note: Your password can be alphabetic, numeric or a combination of both. Alphabetic characters can be keyed in as upper case or lower case (eg. Jb2rcl3). **The password is case sensitive.** Minimum password size is one (1) character. Maximum password size is 10 characters. Make sure you write your password down somewhere in case you forget it.

A prompt will ask if you wish to save your new password. Press **Y** for Yes, then press the **Enter** key. This procedure is complete. Press the **Esc** key twice to return to the Controller Menu.

```
O9400R          === Password Setup ===                  12:46:18 08/09/2007
ARROW KEYS: CURSOR MOVE, BACKSPACE to edit, ESC to abort

<< ARROW LEFT/RIGHT: Select Password; Enter: Accept to change; ESC: Exit. >>
Select : Operator *Administrator

        Old Password : XXXX
        New Password  : XXXX
        Confirm Password: XXXX

>> Save new password (Y/N)?
```

3.3. System Mode Setup

The full menu path for System Mode Setup is as follows:

```
O > Logon
H > SDH/SONET Config Setup
A > System Mode Setup
```

A screen by screen setup example is shown below.

CHAPTER 3 CONFIGURATION SETUP

3.3.1. Setup Screen Access

To setup the System Mode, press **H** from the Controller Menu.

```
090R                               === Controller Menu ===           16:37:43 08/10/2007

Serial Number   : 010525                Device Name     : 09400R
Hardware Version: D                    Start Time      : 10:04:31 08/10/2007
Software Version: V1.01.01 07/24/2007  Connect Port    : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display          H -> SDH/SONET Config Setup
I -> System Information                 M -> Alarm Setup
Q -> Alarm Queue                       L -> File Transfer
B -> Currently-Active Alarm Summary     V -> Store/Retrieve Backup Config
A -> Current Alarm Status              G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance             R -> Performance Setup/Clear
T -> System Log                        N -> Unit Registration
E -> Diagnostics Display

[LOG]                                    [MISC]
F -> Log Off                            Y -> Alarm Cut Off
O -> Log On                              Z -> Reset
U -> Choose a Trib Unit                 X -> Clear Alarm Queue
                                         W -> Return to Default

>>SPACE bar to refresh or enter a command ==>
```

The SDH/SONET Configuration Setup menu will appear. Press **A**.

```
09400R                               === SDH/SONET Configuration Setup === 17:44:09 08/10/2007

                                         A -> System Mode Setup
                                         B -> Overhead Setup
                                         C -> Advanced Cross Connect Setup
                                         D -> Cross Connect Delete Setup
                                         E -> ALS/APSD Setup
                                         F -> DCC channel setup
                                         G -> Path Granularity
                                         H -> MSP APS Command
                                         I -> Protection Switch Group Setup
                                         J -> Map Change
                                         K -> Map Delete
                                         L -> Map Copy
                                         M -> SNCP APS Command

<< Press ESC key to return to Main Menu or enter a command >>
```

CHAPTER 3 CONFIGURATION SETUP

3.3.2. System Mode Setup

The System Mode Setup screen will appear. Use the arrow keys to move your cursor to the various fields. Use the Tab key to scroll in the settings.

Note: Some settings must be keyed in.

Table 3- 1 System Mode Settings

System Mode Settings		
Field	SDH Settings	SONET Settings
SDH/SONET	SDH	SONET
MSP 1+1 WTR Timer	1~900 (seconds)	
Aggregate Line Port Settings		
Mode	ADM-SNCP, ADM(1+1)-SNCP, TM(1+1), 2TM	
Rate	STM1, STM4	OC3, OC12
MSP 1+1 Protect	ON, OFF	
MSP 1+1 Revertive	Revertive, Non-Revertive	
MSP 1+1 Direction	Uni-Direct, Bi-Direct	
SNCP Protect	ON	
SNCP Revertive	Revertive, Non-Revertive	
SNCP Mode	SNCP/I, SNCP/N	

Note: With MSP 1+1 protection, if one fails it will automatically go to the other. The setting in seconds determines how long it will take to revert when the failure has recovered.

Note: SNCP/I = Inherently monitored SubNetwork Connection Protection. If you select SNCP/I, it will initiate protection switcing for LOP (Loss of Pointer) and AIS (Alarm Indication Signal).

SNCP/N = Non-intrusively monitored SubNetwork Connection Protection. If you select SNCP/N, it will initiate protection switcing for LOP (Loss of Pointer), AIS (Alarm Indication Signal), SD (Signal Degrade) and SF (Signal Fail).

After selecting your settings, press the **Enter** key.

```

O9400R                === System Mode Setup ===                17:50:11 08/10/2007
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
SDH/SONET Mode : SONET                MSP1+1 WTR Timer (s) : 300

===== Aggregate Line Port1 =====
Mode       : ADM-SNCP
Rate       : OC12

[MSP1+1]           [SNCP]
Protect    : ----          Protect    : ON
Revertive  : ----          Revertive  : Non-Revertive
Direction  : ----          Mode       : SNCP/I

===== Aggregate Line Port2 =====
Mode       : ADM-SNCP
Rate       : OC12

[MSP1+1]           [SNCP]
Protect    : ----          Protect    : ON
Revertive  : ----          Revertive  : Non-Revertive
Direction  : ----          Mode       : SNCP/I

<< Press ESC key to return to previous menu >>
    
```

CHAPTER 3 CONFIGURATION SETUP

A prompt will ask if you wish to change the Configuration. Press **Y** for yes. Press Enter.

```
>> Change configuration (Y/N)? (Note:to save,please use V-command)
```

You will be returned to the SDH/SONET Configuration Setup menu. Press the **Esc** key to return to the Controller Menu. You must now store the new configuration. The full menu path for storing a configuration is as follows:

V > Store/Retrieve Backup Config

3.4. Tributary Card Registration

A Tributary card (ie. E1/T1, B155/622) card must be registered before you can configure it. The full menu path for Unit Registration is as follows:

O > Logon

N > Unit Registration

A screen by screen setup example is shown below.

3.4.1. Setup Screen Access

To register a tributary card, press **N** from the Controller Menu.

```
O90R                               === Controller Menu ===                               16:37:43 08/10/2007

Serial Number   : 010525                Device Name    : O9400R
Hardware Version: D                      Start Time    : 10:04:31 08/10/2007
Software Version: V1.01.01 07/24/2007   Connect Port   : SUPV_PORT

[DISPLAY]                                     [SETUP]
C -> System Config Display                S -> System Config Setup
D -> SDH/SONET Config Display            H -> SDH/SONET Config Setup
I -> System Information                  M -> Alarm Setup
Q -> Alarm Queue                          L -> File Transfer
B -> Currently-Active Alarm Summary      V -> Store/Retrieve Backup Config
A -> Current Alarm Status                G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance              R -> Performance Setup/Clear
T -> System Log                          N -> Unit Registration
E -> Diagnostics Display

[LOG]                                         [MISC]
F -> Log Off                               Y -> Alarm Cut Off
O -> Log On                                 Z -> Reset
U -> Choose a Trib Unit                    X -> Clear Alarm Queue
                                           W -> Return to Default

>>SPACE bar to refresh or enter a command ===>
```

CHAPTER 3 CONFIGURATION SETUP

3.4.2. Unit Registration Procedure

The Unit Registration screen will appear. It lists the card types in the various tributary slots. Use the Tab key to scroll in a command. Command choices are: Card Registration, Accept Current Port Number, or Card Unregistration. Press the **Enter** key after scrolling in your selection.

```
O9400R                === Unit Registration ===                09:56:44 08/14/2007ARROW KEYS: CURSOR
MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Slot    REG. Model      Card Model      Software Version  Remark
=====  =====
Trib-1
Trib-2
Trib-3          B155/622       V1.01.01 08/06/2007
Trib-4
Trib-5
Trib-6
Trib-7          E1/T1(32Port)  V1.01.01 07/24/2007
Trib-8

Command          : Card Registration

<< Press ESC key to return to previous menu >>
```

Scroll in the unit you wish to register. Press the **Enter** key. Scroll in the registered model. Press the **Enter** key. A prompt (Registration.....) will be displayed as the registration occurs..

```
O9400R                === Unit Registration ===                10:10:17 08/14/2007
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Slot    REG. Model      Card Model      Software Version  Remark
=====  =====
Trib-1
Trib-2
Trib-3          B155/622       V1.01.01 08/06/2007
Trib-4
Trib-5
Trib-6
Trib-7          E1/T1(32Port)  V1.01.01 07/24/2007
Trib-8

Command          : Card Registration
Unit              : Trib-3
Registered Model  : OC3

Registration.....

<< Press ESC key to return to previous menu >>
```

CHAPTER 3 CONFIGURATION SETUP

There are several different card types. They are listed in the table below.

Table 3- 2 Card Model Type

Card Model	Features	Slots
B155/622	Software selectable STM-1/4 (OC-3/12)	Use any slots for STM-1/OC-3 cards. STM-4 and OC-12 cards can only be plugged into slots 7 and 8.
E1/T1 63 Port	Software selectable E1 or T1.	Use any slots.
E1/T1 32 Port		
E1/T1 16 Port		
E1 63 Port	75 Ohm E1 Cards	
E1 32 Port		
E1 16 Port		

3.5. Path Granularity Setup

The full menu path for Path Granularity Setup is as follows:

- O** > Logon
- H** > SDH/SONET Config Setup
- G** > Path Granularity

A screen by screen setup example is shown below.

3.5.1. Setup Screen Access

To setup the Path Granularity, press **H** from the Controller Menu.

```

O90R                               === Controller Menu ===                               16:37:43 08/10/2007

Serial Number      : 010525                Device Name       : O9400R
Hardware Version:  D                       Start Time       : 10:04:31 08/10/2007
Software Version:  V1.01.01 07/24/2007    Connect Port    : SUPV_PORT

[DISPLAY]                                     [SETUP]
C -> System Config Display                  S -> System Config Setup
D -> SDH/SONET Config Display              H -> SDH/SONET Config Setup
I -> System Information                    M -> Alarm Setup
Q -> Alarm Queue                          L -> File Transfer
B -> Currently-Active Alarm Summary        V -> Store/Retrieve Backup Config
A -> Current Alarm Status                  G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance                 R -> Performance Setup/Clear
T -> System Log                            N -> Unit Registration
E -> Diagnostics Display

[LOG]                                       [MISC]
F -> Log Off                               Y -> Alarm Cut Off
O -> Log On                                 Z -> Reset
U -> Choose a Trib Unit                    X -> Clear Alarm Queue
                                           W -> Return to Default

>>SPACE bar to refresh or enter a command ===>

```

CHAPTER 3 CONFIGURATION SETUP

The SDH/SONET Configuration Setup menu will appear. Press **G**.

```

09400R          === SDH/SONET Configuration Setup ===   17:44:09 08/10/2007

                A -> System Mode Setup
                B -> Overhead Setup
                C -> Advanced Cross Connect Setup
                D -> Cross Connect Delete Setup
                E -> ALS/APSD Setup
                F -> DCC channel setup
                G -> Path Granularity
                H -> MSP APS Command
                I -> Protection Switch Group Setup
                J -> Map Change
                K -> Map Delete
                L -> Map Copy
                M -> SNCP APS Command

<< Press ESC key to return to Main Menu or enter a command >>
    
```

3.5.2. Path Granularity Setup Procedure

The Path Granularity Setup screen will appear. Use the arrow key to move the cursor. Use the Tab key to scroll in your setting. Setting choices for Port # are: Port-1 and Port-2.

After selecting your settings press the **Enter** key.

```

09400R          === Path Granularity ===                 11:50:34 08/13/2007
ARROW KEYS: CURSOR MOVE, TAB/^: ROLL UP/DOWN OPTIONS

Port#           : PORT-1

<< Press ESC key to return to previous menu >>
    
```

A full Path Granularity screen will appear for the port you selected. Setting choices are as follows:

Table 3- 3 Path Granularity Settings

Path Granularity Settings				
SDH	Field	SDH Settings		
	HO-Path granularity	AU4-TUG3	AU3-3	VC4
	LO-Path granularity	TU3, TU11, TU12	AU3, TU11, TU12	BYPASS

Path Granularity Settings			
SONET	Field	SONET Settings	
	STS3 granularity	STS3,	STS3C
	STS1 granularity	VT2, STS1, VT15	BYPASS

Note: When the displayed setting for LO-Path/STS1 is BYPASS, no other setting choices are possible.

CHAPTER 3 CONFIGURATION SETUP

```
O9400R                === Path Granularity ===                11:44:24 08/28/2007
ARROW KEYS: CURSOR MOVE, TAB/^: ROLL UP/DOWN OPTIONS

Port#                : PORT-1

===== XCU1(W) =====
AUG1#                : 1          2          3          4
HO-Path Granularity : AU4-TUG3  AU4-TUG3  AU4-TUG3  AU4-TUG3
LO-Path#1 Granularity : TU12     TU12     TU12     TU12
LO-Path#2 Granularity : TU12     TU12     TU12     TU12
LO-path#3 Granularity : TU12     TU12     TU12     TU12

===== XCU2(E) =====
AUG1#                : 1          2          3          4
HO-Path Granularity : AU4-TUG3  AU4-TUG3  AU4-TUG3  AU4-TUG3
LO-Path#1 Granularity : TU12     TU12     TU12     TU12
LO-Path#2 Granularity : TU12     TU12     TU12     TU12
LO-path#3 Granularity : TU12     TU12     TU12     TU12

<< Press ESC key to return to previous menu >>
```

A prompt will ask if you wish to change the Configuration. Press **Y** for yes.

```
>> Change configuration (Y/N)? (Note:to save,please use V-command)
```

Press the Esc key twice to SDH/SONET Configuration Setup Menu. Press the **Esc** key to return to the Controller Menu. You must now store the new configuration. The full menu path for storing a configuration is as follows:

V > Store/Retrieve Backup Config

3.6. SNMP Setup (Bridge and Router Function Setup)

The full menu path for Bridge and Router Setup is as follows:

O > Logon

S > System Config Setup

H > Bridge and Router Setup

A screen by screen setup example is shown below.

CHAPTER 3 CONFIGURATION SETUP

3.6.1. Setup Screen Access

To set up network management, press **S** from the Controller Menu.

```
09400R                === Controller Menu ===                14:03:27 08/09/2007

Serial Number   : 010525                Device Name    : 09400R
Hardware Version: D                    Start Time    : 12:41:25 08/09/2007
Software Version: V1.01.01 07/24/2007  Connect Port   : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display           H -> SDH/SONET Config Setup
I -> System Information                 M -> Alarm Setup
Q -> Alarm Queue                       L -> File Transfer
B -> Currently-Active Alarm Summary     V -> Store/Retrieve Backup Config
A -> Current Alarm Status              G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance             R -> Performance Setup/Clear
T -> System Log                        N -> Unit Registration
E -> Diagnostics Display

[LOG]                                     [MISC]
F -> Log Off                            Y -> Alarm Cut Off
O -> Log On                              Z -> Reset
U -> Choose a Trib Unit                 X -> Clear Alarm Queue
                                         W -> Return to Default

>>SPACE bar to refresh or enter a command ==>
```

The System Configuration Setup menu will appear. Press **H** to set up network management in the Controller Card.

```
09400R                === System Configuration Setup ===      14:04:07 08/09/2007

A -> System Setup
B -> SNMP Setup
C -> Password Setup
D -> Timing Source
E -> Customer Information Setup
F -> SNTP Setup
G -> DHCP Relay Setup
H -> Bridge and Router Setup
I -> Hand-waving LED setup
J -> SSH Setup

<< Press ESC key to return to Main Menu or enter a command >>
```

3.6.2. Network Management Setup Procedure

The Bridge and Router Setup screen will appear. Press the appropriate letter on your keyboard to select the menu items shown in the screen below.

```
09400R                === Bridge and Router Setup ===        17:18:03 08/21/2007

A -> Network Interface Setup I
B -> Network Interface Setup II
C -> Static Route Setup
D -> Bridge Spanning Tree Setup I
E -> Bridge Spanning Tree Setup II

<< Press ESC key to return to Main Menu or enter a command >>
```

CHAPTER 3 CONFIGURATION SETUP

3.6.2.1 Network Interface Setup I

Press **A** from the Bridge and Router Setup screen. (Total menu path is **O > S > H > A.**) The Network Interface Setup I screen will appear. Use the arrow keys to move the cursor to the network interface fields. Use the **Tab** key to scroll in your settings.

Table 3- 4 Network Interface Setup I Settings

Network Interface Setup I Settings	
Field	Settings
Mode	Bridge, Router
RIP	RIP1, RIP2, OFF Note: These settings are required for Router mode only
IP Address	Required for Router mode only
Subnet Mask	
Frame	Permanently set to Ethernet for LAN For other interfaces: PPP,HDLC

After entering your settings, press the **Enter** key.

```

O9400R                === Network Interface Setup I ===          17:33:09 08/21/2007
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

  NI          Mode  RIP  IPAddress          SubnetMask          Frame
LAN          Bridge NA   000.000.000.000    000.000.000.000    Ethernet
XCU1-DCC1    Bridge NA   000.000.000.000    000.000.000.000    HDLC
XCU1-DCC2    Bridge NA   000.000.000.000    000.000.000.000    HDLC
XCU2-DCC1    Bridge NA   000.000.000.000    000.000.000.000    HDLC
XCU2-DCC2    Bridge NA   000.000.000.000    000.000.000.000    HDLC

<< Press ESC key to return to previous menu >>

```

A prompt will ask if you want to change the configuration. Press **Y** for yes. Press **Enter**

```
>> Change configuration (Y/N)? (Note:to save,please use V-command)
```

Press the **Esc** key to return to the System Config Setup menu. Press the **Esc** key to return to the Controller Menu.

The full menu path for storing a configuration is as follows:
V > Store/Retrieve Backup Config

3.6.2.2 Network Interface Setup II

Press **B** from the Bridge and Router Setup screen. (Total menu path is **O > S > H > B.**) The Network Interface Setup II screen will appear. Use the arrow keys to move the cursor to the network interface fields. Use the **Tab** key to scroll in the settings.

Note: Some settings must be keyed in.

CHAPTER 3 CONFIGURATION SETUP

Table 3- 5 Network Interface Setup II Settings

Network Interface Setup II Settings	
Field	Settings
Mode	Bridge, Router, DISABLE
RIP	RIP1, RIP2, OFF Note: These settings are required for Router mode only
IP Address	Required for Router mode only
Subnet mask	
Frame	PPP,HDLC

After entering your settings press the **Enter** key.

```

O9400R          === Network Interface Setup II ===      17:46:43 08/21/2007
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

  NI      Mode  RIP      IPAddress      SubnetMask      Frame
Trib1-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib1-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib2-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib2-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib3-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib3-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib4-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib4-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib5-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib5-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib6-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib6-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib7-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib7-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib8-DCC1  DISABLE NA      X.X.X.X      X.X.X.X      HDLC
Trib8-DCC2  DISABLE NA      X.X.X.X      X.X.X.X      HDLC

<< Press ESC key to return to previous menu >>
    
```

A prompt will ask if you want to change the configuration. Press **Y** for yes. Press **Enter**

```
>> Change configuration (Y/N)? (Note:to save,please use V-command)
```

Press the **Esc** key to return to the System Config Setup menu. Press the **Esc** key to return to the Controller Menu.

The full menu path for storing a configuration is as follows:

V > Store/Retrieve Backup Config

3.6.2.3 Static Route Setup

Press **C** from the Bridge and Router Setup screen. (Total menu path is **O > S > H > C.**) The Static Route Setup screen will appear. Use the arrow keys to move the cursor to each setup field.

For Router mode, key in the Net Destination Address, Netmask and the Gateway Address. Press the **Enter** key.

CHAPTER 3 CONFIGURATION SETUP

After entering your settings press the **Enter** key.

```

O9400R          === Bridge Spanning Tree Setup I ===  18:18:05 08/21/2007
ARROW KEYS: CURSOR MOVE, Please Input: 0~65535, BACKSPACE to edit

Designated Root MAC ADDR : 0050C601291D
Designated Root Priority : 32768
Designated Root Cost : 0
Root Max Age : 20 sec  Hello Time : 2 sec  Forward Delay : 15 sec

Bridge ID MAC ADDR : 0050C601291D
Bridge ID Priority : 32768
Bridge Max Age : 20 sec  Hello Time : 02 sec  Forward Delay : 15 sec
Aging time : 300 sec

Port          Root-P State Cost Prio Edg-P P-P
-----
FEC          No    Fwd  019  128  No   No
XCU1-DCC1   No    Dis  019  128  No   Yes
XCU1-DCC2   No    Dis  019  128  No   Yes
XCU2-DCC1   No    Dis  019  128  No   Yes
XCU2-DCC2   No    Dis  019  128  No   Yes
    
```

A prompt will ask if you want to change the configuration. Press **Y** for yes.

```

>> Change configuration (Y/N)? (Note:to save,please use V-command)
    
```

You will be returned to the System Config Setup menu. Press the **Esc** key to return to the Controller Menu.

The full menu path for storing a configuration is as follows:

V > Store/Retrieve Backup Config

3.6.2.5 Bridge Spanning Tree Setup II

Press **E** from the Bridge and Router Setup screen. (Total menu path is **O > S > H > E**.) The Bridge Spanning Tree Setup II screen will appear. Use the arrow keys to move the cursor to each setup field. Use the Tab key to scroll in the settings.

Note: Some settings must be keyed in.

Table 3- 7 Bridge Spanning Tree Setup II Settings

Bridge Spanning Tree Setup I Settings	
Field	Settings
Cost	1~999
Priority	0~255
Edg-P	No, Yes

After entering your settings press the **Enter** key.

CHAPTER 3 CONFIGURATION SETUP

```
O9400R          === Bridge Spanning Tree Setup II === 18:29:30 08/21/2007
ARROW KEYS: CURSOR MOVE, Please Input: 0~255, BACKSPACE to edit
```

Port	Root-P	State	Cost	Prio	Edg-P	P-P
Trib1-DCC1	No	Dis	019	128	No	Yes
Trib1-DCC2	No	Dis	019	128	No	Yes
Trib2-DCC1	No	Dis	019	128	No	Yes
Trib2-DCC2	No	Dis	019	128	No	Yes
Trib3-DCC1	No	Dis	019	128	No	Yes
Trib3-DCC2	No	Dis	019	128	No	Yes
Trib4-DCC1	No	Dis	019	128	No	Yes
Trib4-DCC2	No	Dis	019	128	No	Yes
Trib5-DCC1	No	Dis	019	128	No	Yes
Trib5-DCC2	No	Dis	019	128	No	Yes
Trib6-DCC1	No	Dis	019	128	No	Yes
Trib6-DCC2	No	Dis	019	128	No	Yes
Trib7-DCC1	No	Dis	019	128	No	Yes
Trib7-DCC2	No	Dis	019	128	No	Yes
Trib8-DCC1	No	Dis	019	128	No	Yes
Trib8-DCC2	No	Dis	019	128	No	Yes

```
<< Press ESC key to return to previous menu >>
```

A prompt will ask if you want to change the configuration. Press **Y** for yes.

```
>> Change configuration (Y/N)? (Note:to save,please use V-command)
```

You will be returned to the System Config Setup menu. Press the **Esc** key to return to the Controller Menu.

The full menu path for storing a configuration is as follows:

V > Store/Retrieve Backup Config

CHAPTER 3 CONFIGURATION SETUP

3.7. SSH Setup

The full menu path for SSH Setup is as follows:

O > Logon

S > System Config Setup

J > SSH Setup

A screen by screen setup example is shown below.

3.7.1. Setup Screen Access

To setup SSH, press **S** from the Controller Menu.

```
O9400R                === Controller Menu ===                14:03:27 08/09/2007

Serial Number      : 010525                Device Name       : O9400R
Hardware Version:  D                Start Time        : 12:41:25 08/09/2007
Software Version:  V1.01.01 07/24/2007    Connect Port      : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display           H -> SDH/SONET Config Setup
I -> System Information                 M -> Alarm Setup
Q -> Alarm Queue                       L -> File Transfer
B -> Currently-Active Alarm Summary     V -> Store/Retrieve Backup Config
A -> Current Alarm Status              G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance             R -> Performance Setup/Clear
T -> System Log                       N -> Unit Registration
E -> Diagnostics Display

[LOG]                                    [MISC]
F -> Log Off                            Y -> Alarm Cut Off
O -> Log On                              Z -> Reset
U -> Choose a Trib Unit                 X -> Clear Alarm Queue
W -> Return to Default

>>SPACE bar to refresh or enter a command ===>
```

The System Configuration Setup menu will appear. Press **J**.

```
O9400R                === System Configuration Setup ===        14:04:07 08/09/2007

A -> System Setup
B -> SNMP Setup
C -> Password Setup
D -> Timing Source
E -> Customer Information Setup
F -> SNTP Setup
G -> DHCP Relay Setup
H -> Bridge and Router Setup
I -> Hand-waving LED setup
J -> SSH Setup

<< Press ESC key to return to Main Menu or enter a command >>
```

CHAPTER 3 CONFIGURATION SETUP

3.7.2. SSH Setup Procedure

The SSH Setup screen will appear. Use the Tab key to scroll in a setting. Choices are **ON** or **OFF**.

Press the **Enter** key.

```
O9400R                === SSH Setup ===                14:59:35 08/22/2007
ARROW KEYS : CURSOR MOVE , ENTER KEY : ITEM SELECT

SSH Server : OFF

<< Press ESC key to return to previous menu >>
```

A prompt will ask if you want to change the configuration. Press **Y** for yes.

```
>> Change configuration (Y/N)? (Note:to save,please use V-command)
```

You will be returned to the System Config Setup menu. Press the **Esc** key to return to the Controller Menu.

The full menu path for storing a configuration is as follows:
V > Store/Retrieve Backup Config

4. COMMON APPLICATIONS SETUP

This section tells the user how to install and activate the Loop-O9400R device to run two commonly used applications on XCU (cross connect) optical ports.

Section 4.1 covers ADM Ring Topology with SNCP Protection
 Section 4.2 covers Linear Topology with MSP (1+1) Protection

4.1. ADM Ring Topology with SNCP Protection

4.1.1. Mechanical and Electrical Installation

Install the product using accepted central office installation procedures. For the application illustrated above, at least three products are needed to complete the ring structure.

Plug in power supply modules to all products in the ring to match the available power.

Connect a fiber from XCU (West) Port 1 of each product to the next product's XCU2 (East) Port 1.

Connect a connector panel to the Tributary #1 E1 card SCSI connector. In this way, access to E1 will be by conventional connectors instead of the SCSI connector on the Loop-O9400R.

Connect a VT100 terminal to the console port of one product in the ring. A VT100 terminal can be a PC running a VT100 emulator, such as LoopTerm.

Connect power to the power supplies and turn power switches to **ON**.

Note: In order to return the product settings to the factory default, press the **ACO** button during the power-on process.

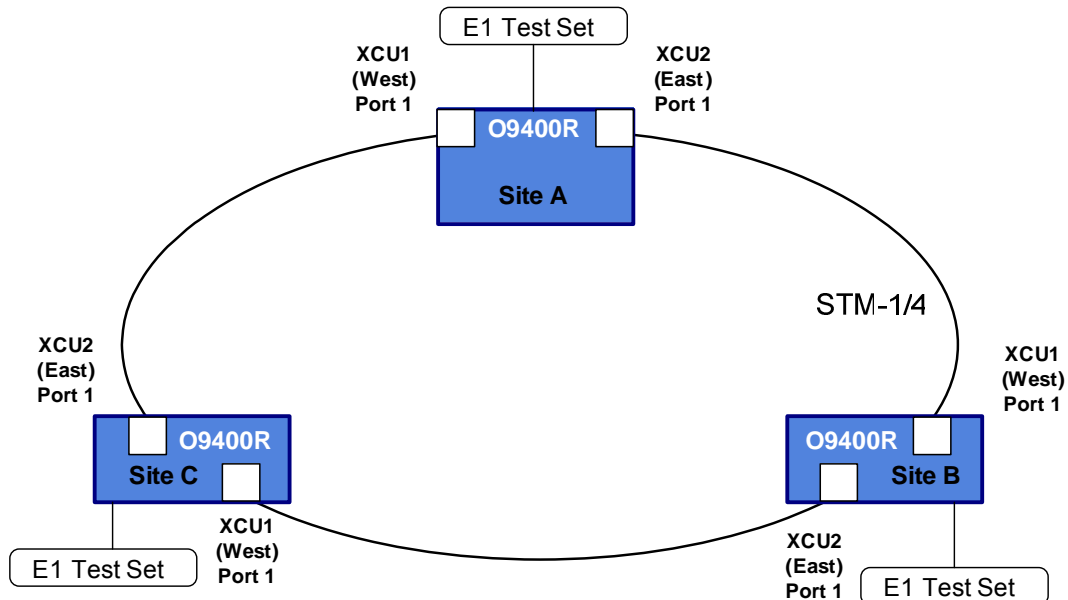


Figure 4- 1 ADM Setup Diagram

4.1.2. System Setup

Note: The setup illustrated in Figure 4-1 above utilizes three Loop-O9400R devices. The setup procedure for each device is identical and is fully outlined below.

When you initially power up the Loop-O9400R device, it will go through a series of self-tests and the following self-test screen will briefly appear on your VT-100 monitor before the Controller Menu screen appears.

```
Load FPGA .....O.K.
Init SPI .....O.K.
Init IPC(fcc2) .....O.K.
Init IRC(scc4) .....O.K.
Init P2 hdlc(scc1) .....O.K.
Init P1 hdlc(scc3) .....O.K.
Init timer .....O.K.
Init system configuration...3...2...1...
Check and Load Configuration.....load previous cfg
Init TBS2488 .....O.K.
Init ADM622 .....O.K.
XCU1 starting(11).....
```

The Controller Menu for the Loop-O9400R is shown below. Press **O** to log on. You will be asked for a user name and a password. In order to have access to setup commands key in the default user name ADMIN. Key in the default password LOOP. Both the default user name and the default password must be keyed in using upper case letters.

```
O9400R                === Controller Menu ===                13:26:23 07/25/2008

Serial Number   : 000103                Device Name      : O9400R
Hardware Version: D                    Start Time       : 13:25:01 07/25/2008
Software Version: V1.05.01 07/24/2008  Connect Port    : SUPV_PORT

[DISPLAY]                                [SETUP]

[LOG]                                       [MISC]
F -> Log Off
O -> Log On

>>SPACE bar to refresh or enter a command ==>
```

After keying in the user name and password a full controller Menu screen will appear. Press **N**.

```
O9400R                === Controller Menu ===                13:26:23 07/25/2008

Serial Number   : 000103                Device Name      : O9400R
Hardware Version: D                    Start Time       : 13:25:01 07/25/2008
Software Version: V1.05.01 07/24/2008  Connect Port    : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display           H -> SDH/SONET Config Setup
I -> System Information                  M -> Alarm Setup
Q -> Alarm Queue                          L -> File Transfer
B -> Currently-Active Alarm Summary      V -> Store/Retrieve Backup Config
A -> Current Alarm Status                G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance              R -> Performance Setup/Clear
T -> System Log                          N -> Unit Registration
E -> Diagnostics Display

[LOG]                                       [MISC]
F -> Log Off                              Y -> Alarm Cut Off
O -> Log On                                Z -> Reset
U -> Choose a Trib Unit                  X -> Clear Alarm Queue
W -> Return to Default

>>SPACE bar to refresh or enter a command ==>
```

CHAPTER 5. APPENDIX: LED TABLES

The Unit Registration screen will appear as shown below. It lists the card types in the various tributary slots. Use the Tab key to scroll in the command: Card Registration. Press the **Enter** key. Then press the **Esc** key to return to the Controller Menu.

```
O9400R                               === Unit Registration ===           13:29:02 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Slot  REG. Model/Mode  Card Model          Software Version    Remark
=====
#1    #1                E1-75ohm(63Port)   V1.01.03 03/06/2008
#2
#3
#4
#5
#6
#7
#8

                                (PRTD = Protected, NP = No Protection)

Command          : Card Registration
Unit             : Trib-1
REG. Model/Mode  : E1-PRTD
Registration.....
<< Press ESC key to return to previous menu >>
```

Press **H** from the Controller Menu. The SDH/SONET Configuration Setup screen will appear. Press **A**.

```
O9400R                               === SDH/SONET Configuration Setup === 13:29:53 07/25/2008

                                A -> System Mode Setup
                                B -> Overhead Setup
                                C -> Advanced Cross Connect Setup
                                D -> Cross Connect Delete Setup
                                E -> ALS/APSD Setup
                                F -> DCC channel setup
                                G -> Path Granularity
                                H -> MSP APS Command
                                J -> Map Change
                                K -> Map Delete
                                L -> Map Copy
                                M -> SNCP APS Command

<< Press ESC key to return to Main Menu or enter a command >>
```

CHAPTER 5. APPENDIX: LED TABLES

The following screen will appear. Use the Tab key to scroll in the exact Port 1 settings shown below. You can ignore Port 2 because you are not using it. Press the **Enter** key. When the prompt asks if you wish to save the configuration press **Y** for yes. Return to the Controller Menu and press **V** to save the configuration. (If you don't save it, your configuration will be lost when you power down the device.)

```

O9400R                               === System Mode Setup ===           13:30:36 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
SDH/SONET Mode : SDH                  MSP1+1 WTR Timer (s) : 300

===== Aggregate Line Port1 =====
Mode      : ADM-SNCP
XCUI Rate : STM4                      XCUI Rate : STM4

[MSP1+1]          [SNCP]
Protect   : ----                      Protect    : ON
Revertive : ----                      Revertive  : Non-Revertive
Direction : ----                      Mode       : SNCP/I

===== Aggregate Line Port2 =====
Mode      : ADM-SNCP
XCUI Rate : STM4                      XCUI Rate : STM4

[MSP1+1]          [SNCP]
Protect   : ----                      Protect    : ON
Revertive : ----                      Revertive  : Non-Revertive
Direction : ----                      Mode       : SNCP/I

Change Mode Success!!!
>> Change configuration (Y/N)? (Note:to save,please use V-command)Y
  
```

Return to the SDH/SONET Configuration Setup screen. Press **B**. The Trace message Setup screen will appear. Press **2**.

```

O9400R                               === Trace Message Setup ===       10:33:29 08/11/2008

                               1 -> Line Overhead Setup
                               2 -> HO-Path/STS-Path Overhead Setup

<< Press ESC key to return to Main Menu or enter a command >>
  
```

The HO-Path/STS-Path Trace Message Setup screen will appear. Scroll in the settings exactly as they are shown in the screen below. Press the **Enter** key.

```

O9400R                               === HO-Path/STS-Path Trace Message Setup =10:33:50 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
Line Side : XCUI(W) Aggregate line : Port-1
AUG1#     : 1

<< Press ESC key to return to previous menu >>
  
```

The following screen will appear. Enter the settings exactly as they are shown in the screen below. Press the **Enter** key.

```

O9400R                               === HO-Path/STS-Path Trace Message Setup =10:33:50 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
Line Side : XCUI(W) Aggregate line : Port-1
AUG1#     : 1

      J1_LEN : NULL

      HP_EPSL : 02 ( TUG )

<< Press ESC key to return to previous menu >>
  
```

CHAPTER 5. APPENDIX: LED TABLES

Return to the SDH/SONET Configuration Setup screen. Press **G**. The Path Granularity screen will appear. Enter the setting exactly as shown in the screen below. Press the **Enter** key.

```
O9400R          === Path Granularity ===          10:35:10 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Port#           : PORT-1

<< Press ESC key to return to previous menu >>
```

A prompt will ask if you wish to change the Configuration. Press **Y** for yes.

```
O9400R          === Path Granularity ===          10:36:09 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Port#           : PORT-1

===== XCU1(W) =====
AUG1#           : 1           2           3           4
HO-Path Granularity : AU4-TUG3   AU4-TUG3   AU4-TUG3   AU4-TUG3
LO-Path#1 Granularity : TU12      TU12      TU12      TU12
LO-Path#2 Granularity : TU12      TU12      TU12      TU12
LO-path#3 Granularity : TU12      TU12      TU12      TU12

===== XCU2(E) =====
AUG1#           : 1           2           3           4
HO-Path Granularity : AU4-TUG3   AU4-TUG3   AU4-TUG3   AU4-TUG3
LO-Path#1 Granularity : TU12      TU12      TU12      TU12
LO-Path#2 Granularity : TU12      TU12      TU12      TU12
LO-path#3 Granularity : TU12      TU12      TU12      TU12

>> Change configuration (Y/N)? (Note:to save, please use V-command)
```

Press the **Esc** key twice to return to the SDH/SONET Configuration Setup Menu. Press the **Esc** key again to return to the Controller Menu. Press **V** from the Controller menu to store the configuration.

4.1.3. TSA Set-Up

From the Controller Menu press **H**. From the following screen press **C**.

```
O9400R          === SDH/SONET Configuration Setup === 13:29:53 07/25/2008

A -> System Mode Setup
B -> Overhead Setup
C -> Advanced Cross Connect Setup
D -> Cross Connect Delete Setup
E -> ALS/APSD Setup
F -> DCC channel setup
G -> Path Granularity
H -> MSP APS Command
J -> Map Change
K -> Map Delete
L -> Map Copy
M -> SNCP APS Command

<< Press ESC key to return to Main Menu or enter a command >>
```

The advanced cross connect setup screen will appear. Key in TU12 as your granularity setting.

Press the **Enter** key.

```
O9400R          === Advanced Cross Connect Setup === 13:32:01 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/^: ROLL UP/DOWN OPTIONS
Granularity     : TU12

<< Press ESC key to return to previous menu >>
```

Copy the settings on the screen below. Press the **Enter** key.

```
O9400R          === Advanced Cross Connect Setup === 13:32:01 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/^: ROLL UP/DOWN OPTIONS
Granularity     : TU12
Map             : map1
----- Source -----
From Slot      : XCUL(W)          From AUG1   : 1
From Port      : 1                From TS     : 1 -VC3/TUG3 01 -VC1x
Count         : 01                KLM        : [ TUG3#1, TUG2#1, TU12#1 ]
----- Destination -----
To Slot        : Trib-1
To Port        : 01
Xcon Type      : PP-A&D

VC3/TUG3 VC1x : Source      -> XCUL(W) Port#1 AUG1#1 Timeslot Available
#1         01~21 : x o o      o o o      o o o      o o o      o o o      o o o
#2         01~21 : o o o      o o o      o o o      o o o      o o o      o o o
#3         01~21 : o o o      o o o      o o o      o o o      o o o      o o o

E1  PORT      : Destination -> Trib-1          Timeslot Available
#01~21        : x o o      o o o      o o o      o o o      o o o      o o o
#22~42        : o o o      o o o      o o o      o o o      o o o      o o o
#43~63        : o o o      o o o      o o o      o o o      o o o      o o o

<< Press ESC key to return to previous menu >>
```

4.1.4. Next Node and Test

The above completes the set-up of one node in the ring. In order to achieve a point-to-point E1 path, another node in the ring must be selected as the other end of the E1 path. This next node should be set up identical to the first node as far as the TSA assignment for the E1 is concerned. That is, the E1 should be assigned to the same TU12 channel number. Then, an end-to-end test of the E1 path can be performed to prove the set-up.

4.2. Linear Topology with MSP (1+1) in TM (1+1) Mode

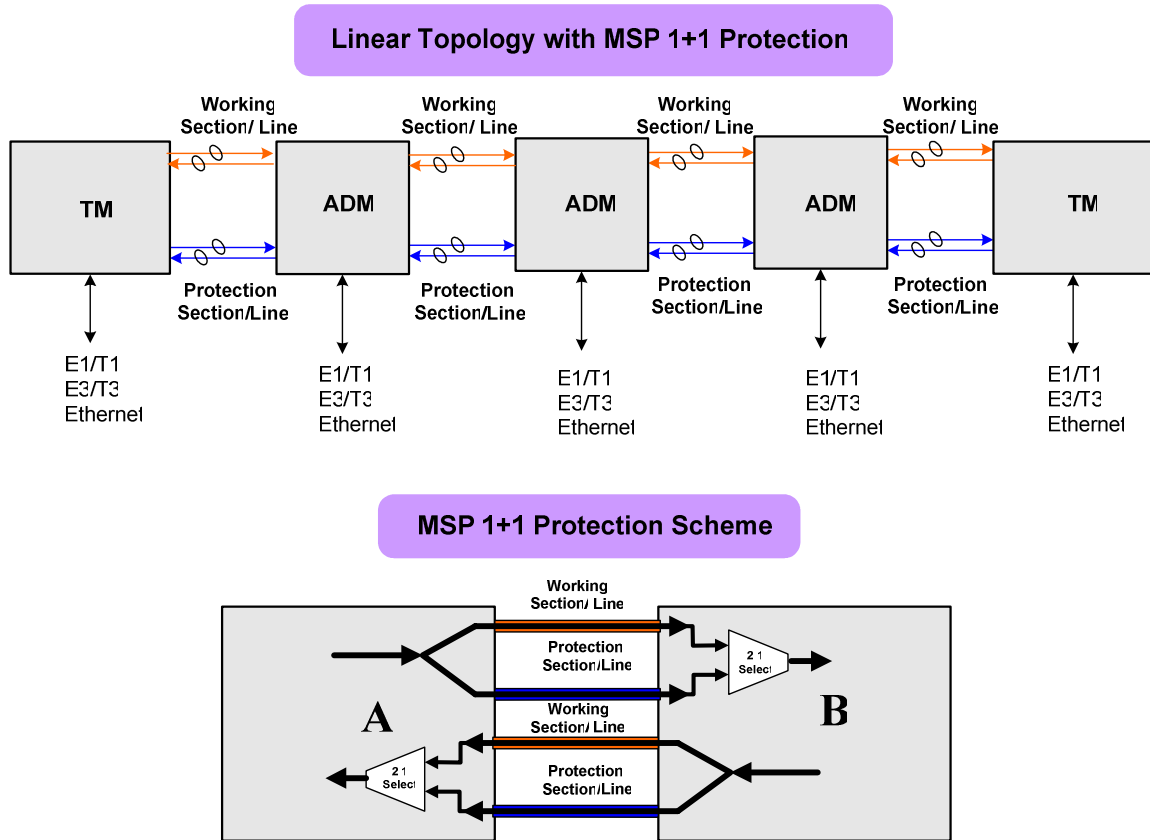


Figure 4- 2 Linear Topology with MSP (1+1) Protection

In the A→B direction, the whole outgoing payload is dual-fed into both the working section/line and the protection section/line at node A. The payloads from both sections are received at node B. Based on the integrity and algorithm provided by the Multiplex Section embedded inside the transport frame, only one of the payloads will be selected and used at node B. This is how MSP 1+1 works. Note that the paths or sub-channels within the Multiplexing Section are treated as a whole pipe, in terms of the MSP 1+1 protection. The whole payload selected is either from the working section/line or from the protection section/line.

4.2.1. Mechanical and Electrical Installation

Install the product using accepted central office installation procedures.

Plug in power supply modules to all products in the application.

Connect a fiber from one product's XCU1 Port 1 to the next product's XCU1 Port 1.

Connect a connector panel to the Tributary #1 E1 card. In this way, access to E1 will be by conventional connectors instead of the SCSI connector on the Loop-O9400R.

Connect a VT100 terminal to the console port of one product. A VT100 terminal can be a PC running a VT100 emulator, such as LoopTerm.

Connect power to the power supplies and turn power switches to ON.

Note: In order to return the product settings to the factory default, press the ACO button during the power-on process.

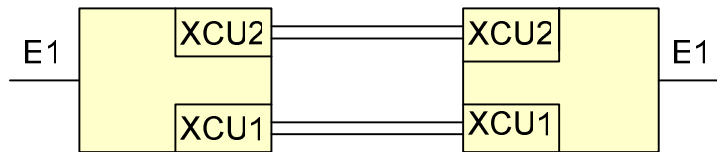


Figure 4- 3 MSP (1+1) in TM (1+1) Mode Setup Diagram

4.2.2. System Setup

When you initially power up the Loop-O9400R device it will go through a series of self-tests and the following self-test screen will briefly appear on your VT-100 monitor before the Controller Menu screen appears.

```

Load FPGA .....O.K.
Init SPI .....O.K.
Init IPC(fcc2) .....O.K.
Init IRC(scc4) .....O.K.
Init P2 hdlc(scc1) .....O.K.
Init P1 hdlc(scc3) .....O.K.
Init timer .....O.K.
Init system configuration...3...2...1...
Check and Load Configuration.....load previous cfg
Init TBS2488 .....O.K.
Init ADM622 .....O.K.
XCU1 starting(11).....
    
```

The Controller Menu for the Loop-O9400R is shown below. Press **O** to log on. You will be asked for a user name and a password. In order to have access to setup commands, key in the default user name, **ADMIN**. Key in the default password **LOOP**. Both the default user name and the default password must be keyed in using upper case letters.

```

O9400R                === Controller Menu ===                13:26:23 07/25/2008

Serial Number   : 000103                Device Name      : O9400R
Hardware Version: D                    Start Time       : 13:25:01 07/25/2008
Software Version: V1.05.01 07/24/2008  Connect Port    : SUPV_PORT

[DISPLAY]                                [SETUP]

[LOG]                                       [MISC]
F -> Log Off
O -> Log On

>>SPACE bar to refresh or enter a command ===>
    
```

CHAPTER 5. APPENDIX: LED TABLES

After keying in the user name and password a full controller Menu screen will appear. Press **N**.

```

O9400R                === Controller Menu ===                13:26:23 07/25/2008

Serial Number   : 000103                Device Name      : O9400R
Hardware Version: D                    Start Time       : 13:25:01 07/25/2008
Software Version: V1.05.01 07/24/2008  Connect Port     : SUPV_PORT

[DISPLAY]                                [SETUP]
C -> System Config Display              S -> System Config Setup
D -> SDH/SONET Config Display           H -> SDH/SONET Config Setup
I -> System Information                  M -> Alarm Setup
Q -> Alarm Queue                         L -> File Transfer
B -> Currently-Active Alarm Summary     V -> Store/Retrieve Backup Config
A -> Current Alarm Status               G -> Loopback/Diagnostics Setup
P -> SDH/SONET Performance              R -> Performance Setup/Clear
T -> System Log                          N -> Unit Registration
E -> Diagnostics Display

[LOG]                                       [MISC]
F -> Log Off                               Y -> Alarm Cut Off
O -> Log On                                 Z -> Reset
U -> Choose a Trib Unit                    X -> Clear Alarm Queue
                                           W -> Return to Default

>>SPACE bar to refresh or enter a command ===>

```

The Unit Registration screen will appear. It lists the card types in the various tributary slots. Use the Tab key to scroll in the command: Card Registration. Press the **Enter** key. Then press the **Esc** key to return to the Controller Menu.

```

O9400R                === Unit Registration ===                13:29:02 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Slot  REG. Model/Mode  Card Model          Software Version    Remark
====  =====
#1    #1                  E1-75ohm(63Port)  V1.01.03 03/06/2008
#2
#3
#4
#5
#6
#7
#8

(PRTD = Protected, NP = No Protection)

Command      : Card Registration
Unit         : Trib-1
REG. Model/Mode : E1-PRTD
Registration.....

<< Press ESC key to return to previous menu >>

```

CHAPTER 5. APPENDIX: LED TABLES

Press **H** from the Controller Menu. The following screen will appear. Press **A**.

```

09400R          === SDH/SONET Configuration Setup ===   13:29:53 07/25/2008

                A -> System Mode Setup
                B -> Overhead Setup
                C -> Advanced Cross Connect Setup
                D -> Cross Connect Delete Setup
                E -> ALS/APSD Setup
                F -> DCC channel setup
                G -> Path Granularity
                H -> MSP APS Command
                J -> Map Change
                K -> Map Delete
                L -> Map Copy
                M -> SNCP APS Command

<< Press ESC key to return to Main Menu or enter a command >>

```

The following screen will appear. Use the exact settings shown below to set up Port 1. You can ignore Port 2 because you are not using it. Press the **Enter** key. When the prompt asks if you wish to save the configuration press **Y** for yes. Return to the Controller Menu and press **V** to save the configuration. (If you don't save it, your configuration will be lost when you power down the device.)

```

09400R          === System Mode Setup ===               13:34:33 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
SDH/SONET Mode : SDH          MSP1+1 WTR Timer (s) : 300

===== Aggregate Line Port1 =====
Mode          : TM(1+1)
Rate          : STM4

[MSP1+1]          [SNCP]
Protect        : ON          Protect      : ----
Revertive      : Non-Revertive  Revertive  : ----
Direction     : Bi-Direct     Mode        : ----

===== Aggregate Line Port2 =====
Mode          : TM(1+1)
Rate          : STM4

[MSP1+1]          [SNCP]
Protect        : ON          Protect      : ----
Revertive      : Non-Revertive  Revertive  : ----
Direction     : Bi-Direct     Mode        : ----

Change Mode Success!!!
>> Change configuration (Y/N)? (Note:to save,please use V-command)Y

```

Return to the SDH/SONET Configuration Setup screen. Press **B**. The Trace message Setup screen will appear. Press **2**.

```

09400R          === Trace Message Setup ===             10:33:29 08/11/2008

                1 -> Line Overhead Setup
                2 -> HO-Path/STS-Path Overhead Setup

<< Press ESC key to return to Main Menu or enter a command >>

```

CHAPTER 5. APPENDIX: LED TABLES

The HO-Path/STS-Path Trace Message Setup screen will appear. Enter the settings exactly as they are shown in the screen below. Press the **Enter** key.

```
O9400R          === HO-Path/STS-Path Trace Message Setup =10:33:50 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
Line Side : XCU1(W) Aggregate line : Port-1
AUG1#      : 1

<< Press ESC key to return to previous menu >>
```

The following screen will appear. Enter the settings exactly as they are shown in the screen below. Press the **Enter** key.

```
O9400R          === HO-Path/STS-Path Trace Message Setup =10:33:50 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS
Line Side : XCU1(W) Aggregate line : Port-1
AUG1#      : 1

      J1_LEN : NULL

      HP_EPSL : 02   ( TUG )

<< Press ESC key to return to previous menu >>
```

Return to the SDH/SONET Configuration Setup screen. Press **G**. The Path Granularity screen will appear. Enter the setting exactly as shown in the screen below. Press the **Enter** key.

```
O9400R          === Path Granularity ===          10:35:10 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Port#        : PORT-1

<< Press ESC key to return to previous menu >>
```

A prompt will ask if you wish to change the Configuration. Press **Y** for yes.

```
O9400R          === Path Granularity ===          10:36:09 08/11/2008
ARROW KEYS: CURSOR MOVE, TAB/`: ROLL UP/DOWN OPTIONS

Port#        : PORT-1

===== XCU1(W) =====
AUG1#        : 1          2          3          4
HO-Path Granularity : AU4-TUG3  AU4-TUG3  AU4-TUG3  AU4-TUG3
LO-Path#1 Granularity : TU12      TU12      TU12      TU12
LO-Path#2 Granularity : TU12      TU12      TU12      TU12
LO-path#3 Granularity : TU12      TU12      TU12      TU12

===== XCU2(E) =====
AUG1#        : 1          2          3          4
HO-Path Granularity : AU4-TUG3  AU4-TUG3  AU4-TUG3  AU4-TUG3
LO-Path#1 Granularity : TU12      TU12      TU12      TU12
LO-Path#2 Granularity : TU12      TU12      TU12      TU12
LO-path#3 Granularity : TU12      TU12      TU12      TU12

>> Change configuration (Y/N)? (Note:to save, please use V-command)
```

CHAPTER 5. APPENDIX: LED TABLES

Press the **Esc** key twice to return to the SDH/SONET Configuration Setup Menu. Press the **Esc** key again to return to the Controller Menu. Press **V** from the Controller menu to store the configuration.

4.2.3. TSA Set-Up

From the Controller Menu press **H**. From the following screen press **C**.

```

09400R          === SDH/SONET Configuration Setup === 13:29:53 07/25/2008

                A -> System Mode Setup
                B -> Overhead Setup
                C -> Advanced Cross Connect Setup
                D -> Cross Connect Delete Setup
                E -> ALS/APSD Setup
                F -> DCC channel setup
                G -> Path Granularity
                H -> MSP APS Command
                J -> Map Change
                K -> Map Delete
                L -> Map Copy
                M -> SNCP APS Command

<< Press ESC key to return to Main Menu or enter a command >>
    
```

The advanced cross connect setup screen will appear. Key in TU12 as your granularity setting.

Press the **Enter** key.

```

09400R          === Advanced Cross Connect Setup === 13:32:01 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/^: ROLL UP/DOWN OPTIONS
Granularity    : TU12

<< Press ESC key to return to previous menu >>
    
```

Copy the settings on the screen below. Press the **Enter** key.

```

09400R          === Advanced Cross Connect Setup === 13:35:28 07/25/2008
ARROW KEYS: CURSOR MOVE, TAB/^: ROLL UP/DOWN OPTIONS
Granularity    : TU12
Map            : map1
----- Source -----
From Slot      : XCU1(W)      From AUG1   : 1
From Port      : 1           From TS     : 1 -VC3/TUG3 01 -VC1x
Count          : 01          KLM          : [ TUG3#1, TUG2#1, TU12#1 ]
----- Destination -----
To Slot        : Trib-1
To Port        : 01
Xcon Type      : Bi-Xc

VC3/TUG3 VC1x : Source      -> XCU1(W) Port#1 AUG1#1 Timeslot Available
#1         01~21 : x o o      o o o      o o o      o o o      o o o      o o o
#2         01~21 : o o o      o o o      o o o      o o o      o o o      o o o
#3         01~21 : o o o      o o o      o o o      o o o      o o o      o o o

E1 PORT      : Destination -> Trib-1          Timeslot Available
#01~21       : x o o      o o o      o o o      o o o      o o o      o o o
#22~42       : o o o      o o o      o o o      o o o      o o o      o o o
#43~63       : o o o      o o o      o o o      o o o      o o o      o o o

<< Press ESC key to return to previous menu >>
    
```

4.2.4. Next Node and Test

The above completes the set-up of one node. In order to achieve a point-to-point E1 path, another node must be selected as the other end of the E1 path. This next node should be set up identical to the first node as far as the TSA assignment for the E1 is concerned. That is, the E1 should be assigned to the same TU12 channel number.

After that is accomplished, then an end-to-end test of the E1 path can be performed to prove the set-up.

5. APPENDIX: LED TABLES

5.1. XCU Card LEDs

The XCU card has multi-color LEDs for operation and error indications. The indication is either off, steady on, or flickering (flashing). The following table lists each LED and its color and the meaning it represents.

Table 5- 1 LED Indication for XCU Card

LED Indication for XCU Card		
ACTIVE	Off	CPU fails
	Flashing Green	Working XCU card
	Flashing Amber	Standby XCU card
ALM	This LED is used to indicate alarm status: LOS, LOF, MS-AIS, MS-RDI, AU-LOP, AU-AIS, LOP, AIS, SD, SF, RDI, PLM, TIM, UAS..., all paired alarms about SDH/SONET.	
	Off	Overall Alarm is disabled
	Red	Critical alarm message or Major alarm message occurs
	Amber	Minor alarm message occurs
	Green	Informative alarm message or no alarm message occurs
TEST	Off	Neither loopback nor diagnostics exist.
	Flashing Amber	Loopback or diagnostics exist.
ACO	Off	Normal
	Red	Any alarm occurs (For any alarm type)
P1	Off	Normal
	Red	LOS occurs in Port 1
P2	Off	Normal
	Red	LOS occurs in Port 2

5.2. B155/622 Card LEDs

LED indications are listed below for the B155/622 Card

Table 5- 2 LED Indication for B155/622 Card

LED Indication for B155/622 Card		
LED	Color	Indication
ACTIVE	Off	CPU failed
	Flashing Green	Working B155/622 card
	Flashing Amber	Standby B155/622 card
	Flashing Red	Card is unregistered
TEST	Off	Neither loopback nor diagnostics exist.
	Flashing Amber	Loopback or diagnostics exist.
ALM	This LED is used to indicate alarm status: PI-LOS, RS-LOF, RS-TIM, MS-SD, MS-SF, MS-AIS, MS-RDI, MS-REI, BI-BIP(UAS), B2-BIP(UAS), AU-LOP, AU-AIS, HP-SD, HP-SF, HP-UNEQ, HP-PLM, HP-TIM, HP-RDI-P, HP-RDI-S, HP-RDI-C, HP-LOM, HP-REI, HP-B3-BIP(UAS)..., all paired alarms about SDH/SONET.	
	Red	Critical alarm message or Major alarm message occurs
	Amber	Minor alarm message occurs
	Green	Informative alarm message or no alarm message occurs
P1	Off	Normal
	Red	LOS occurs in Port 1
P2	Off	Normal
	Red	LOS occurs in Port 2

5.3. E1/T1 Card LEDs

LED indications are listed below for the E1/T1 Card

Table 5- 3 LED Indication for E1/T1 Card

LED Indication for E1/T1 Card		
LED	Color	Indication
ACTIVE	Off	Off
	Flashing Green	Working E1/T1 card
	Flashing Amber	Standby E1/T1 card
	Red	Card is unregistered
TEST	Off	Neither loopback nor diagnostics exist
	Flashing Amber	Card self-test, Loopback or diagnostics exist
	Flashing Red	Chip initialization failed
ALM	This LED is used to indicate alarm status:TU-LOP, TU-AIS, LP-UNEQ, LP-PLM, LP-TIM, LP-RDI-P, LP-RDI-S, LP-RDI-C, LP-V5-REI, LP-V5-BIP, LOS, AIS, UAS, RAI/YEL ... all paired alarms about SDH/SONET.	
	Red	Critical alarm message or Major alarm message occurs
	Amber	Minor alarm message occurs
	Green	Informative alarm message or no alarm message occurs
E1 Indicator	Off	T1
	Green	E1

5.4. E3/T3 Card LEDs

LED indications are listed below for the E3/T3 Card

Table 5- 4 LED Indication for E3/T3 Card

LED Indication for E3/T3 Card		
LED	Color	Indication
ACTIVE	Off	Off
	Flashing Green	Working E3/T3 card
	Flashing Amber	Standby E3/T3 card
	Red	Card is unregistered
TEST	Off	Neither loopback nor diagnostics exist
	Flashing Amber	Card self-test, Loopback or diagnostics exist
	Flashing Red	Chip initialization failed
ALM	This LED is used to indicate alarm status:TU-LOP, TU-AIS, LP-UNEQ, LP-PLM, LP-TIM, LP-RDI-P, LP-RDI-S, LP-RDI-C, LP-V5-REI, LP-V5-BIP, LOS, AIS, UAS, RAI/YEL.	
	Red	Critical alarm message or Major alarm message occurs
	Amber	Minor alarm message occurs
	Green	Informative alarm message or no alarm message occurs

5.5. Ethernet Card LEDs

The Ethernet card has multi-color LEDs for operation and error indications. The indication is either off, steady on, or flickering (flashing). The following table lists each LED and its color and the meaning it represents.

Table 5- 5 LED Indication for Ethernet Cards

LED Indication for Ethernet Card		
LED	Color	Indication
ACTIV E	Off	Card failure
	Flashing Green	Working card
	Flashing Amber	Standby card
	Flashing Red	Card is unregistered
TEST	Off	Card self-test is okay
	Flashing Red	Card self-test failed.
ALM	This LED is used to indicate alarm status AU-LOP, AU-AIS, TU-LOP, TU-AIS, UNEQ, RDI, REI, BIP..., all paired alarms about SDH/SONET. It is also used to indicate the port link status.	
	Red	Critical alarm message or Major alarm message occurs
	Amber	Minor alarm message occurs
	Green	Informative alarm message or no alarm message occurs