RadiSys
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PROMENTUM™
SWITCH AND CONTROL MODULE
INSTALLATION GUIDE

ATCA-2210

This document describes how to install and to set up the Promentum™ ATCA-2210 switch and control module (SCM).

Obey ESD precautions

WARNING! Obey the electrostatic discharge (ESD) procedures described at www.radisys.com when you install the product.

Electrostatic discharge can cause permanent damage to static-sensitive components in this product. Important ESD procedures include:

- Keep the product in its ESD shielding bag until a step tells you to remove it.
- Put on a grounded wrist strap before you move near or touch the product.
- Install the product only in a grounded work area.

Prepare for installation

The installation of the SCM requires the following:

- An AdvancedTCA® (ATCA®) shelf, such as a RadiSys ATCA-6000, ATCA-6006, ATCA-6014, or ATCA-6016 shelf
- A 9-pin D-shell to RJ-45 serial port cable (shipped with the SCM)
- A standard crossover Ethernet cable
- Adequate ventilation for the shelf

Install SFPs or XFPs on the SCM

The SCM comes with sockets for small form-factor pluggable (SFP) and 10 Gigabit small form-factor pluggable (XFP) transceiver modules. If SFPs and XFPs are installed, they can provide external connections to the Ethernet interfaces. The sockets are accessed from the faceplate of the SCM.

Configuration recommendations

Standard SCM configurations come without SFP or XFP transceivers installed. To protect the internal components of the SCM, transceivers or filler plugs must be installed in all empty sockets:

- The Base Ethernet configuration supports up to four SFP transceivers and one XFP transceiver, with filler plugs installed in unused sockets.

- The Fabric Ethernet configuration supports up to four XFP transceivers, with filler plugs installed in unused sockets.
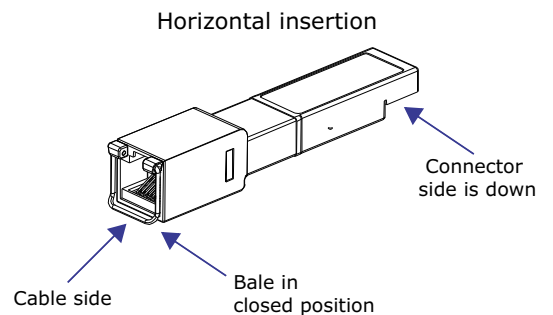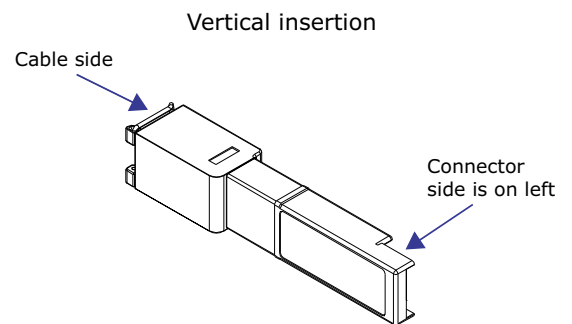
For a list of tested and qualified transceivers and filler plugs, see the Support section of the RadiSys Web site at www.radisys.com.

Transceiver installation

SFP and XFP transceivers can be installed on the SCM at any time, but RadiSys recommends performing the installation before the SCM is installed in the shelf.

The illustration shows the correct orientation for inserting an SFP transceiver. The SFP you use may vary in appearance depending on manufacturer, but should follow the same insertion guidelines. Use these same guidelines when inserting XFP transceivers as well.

1. Follow ESD precautions and make sure you are adequately grounded.

2. Remove the transceivers and the SCM from their antistatic bags.

3. On the SCM's faceplate, remove the filler plugs from the sockets in which you are installing the SFP or the XFP transceivers. For sockets not being used, keep the filler plugs in place to protect the internal components of the board.

4. Make sure the transceiver's bale (the latch on the cable side of the transceiver) is in the closed position. This ensures that the transceiver will snap into position when inserted into the socket.

5. How you insert the transceiver into the socket depends on the SCM's orientation:
   - If the SCM is oriented vertically, insert the transceiver so the connector side is on the left.
   - If the SCM is oriented horizontally, insert the transceiver so the connector side is down.

6. Once inserted into the socket, carefully slide the transceiver until its connector is fully seated and snaps into position.

7. Repeat the above steps for each transceiver being installed.

8. For transceivers with cable plugs installed on their cable side, keep the plugs in place until you are ready to plug cables into the transceivers. The cable plugs protect the internal components of the transceivers.

Vertical insertion

Cable side

Connector side is on left

Horizontal insertion

Connector side is down

Bale in closed position

Cable side
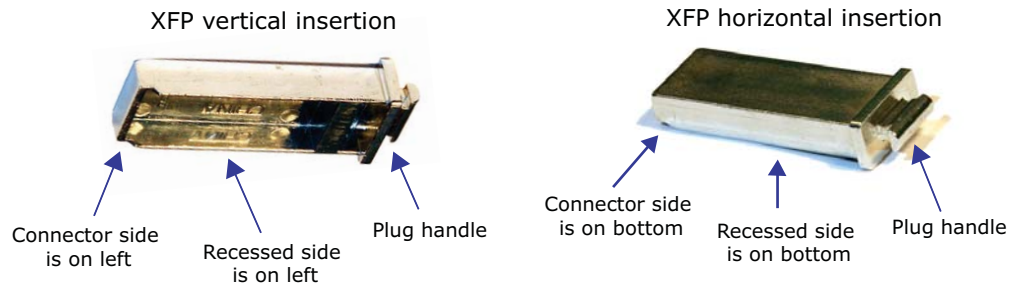
2

Filler plug installation

If XFP or SFP transceivers are removed, install either replacement transceivers or filler plugs in the sockets to protect the internal components of the SCM.

Additional filler plugs can be ordered from the applicable manufacturer; for a list of tested and qualified transceivers and filler plugs, see the Support section of the RadiSys Web site at www.radisys.com.

Install fillers plugs using the insertion guidelines described below:
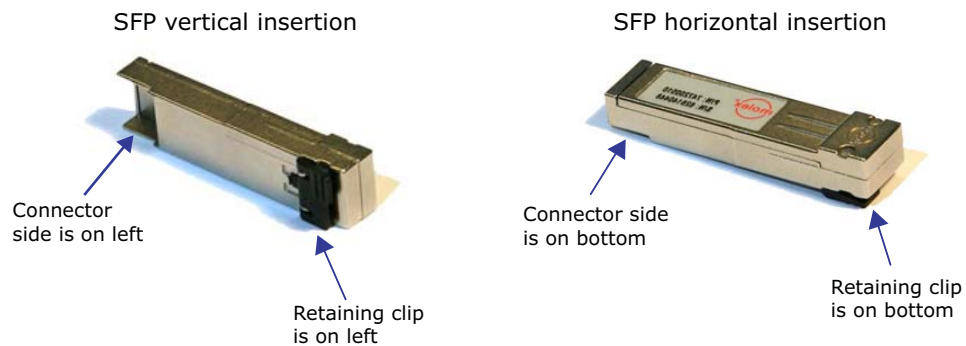
XFP filler plug installation

- If the SCM is oriented vertically, insert the filler plug so the recessed side is on the left and the flat, smooth side is on the right.

- If the SCM is oriented horizontally, insert the filler plug so the recessed side is on the bottom and the flat, smooth side is on the top.

XFP vertical insertion

XFP horizontal insertion

Connector side
is on left

Recessed side
is on left

Plug handle

Connector side
is on bottom

Recessed side
is on bottom

Plug handle

SFP filler plug installation

- If the SCM is oriented vertically, insert the filler plug so the connector side and retaining clip are on the left.

- If the SCM is oriented horizontally, insert the filler plug so the connector side and retaining clip are on the bottom.

SFP vertical insertion

SFP horizontal insertion

Connector
side is on left

Retaining clip
is on left

Connector side
is on bottom

Retaining clip
is on bottom

3

SCM installation checklist

The following table describes the possible installation scenarios for the SCM, the appropriate tasks to complete for the scenarios, and the order to complete the tasks:

SCM is being.....	Configuration	Tasks to complete and order to complete them	
Installed in a RadiSys shelf	*Standard configuration.*	1. *Install the SCM in the shelf* on page 5 2. *Connect to the SCM* on page 6 3. *Verify switch operation* on page 7 4. *Verify shelf management operation* on page 10	_____ _____ _____ _____
Installed in a non-RadiSys shelf	*Post-installation configuration required:* After installation of the SCM in the non-RadiSys shelf, you must disable the SCM's on-board Shelf Manager.	1. *Install the SCM in the shelf* on page 5 2. *Disable the Shelf Manager on the SCM* on page 10 3. *Verify switch operation* on page 7	_____ _____ _____
Removed from a non-RadiSys shelf and reinstalled in a RadiSys shelf	*Pre-removal configuration required:* Before you remove the SCM from the non-RadiSys shelf, you must enable the SCM's on-board Shelf Manager.	1. *Enable the Shelf Manager on the SCM* on page 12 2. Remove the SCM from the non-RadiSys shelf. For SCM removal instructions, see the *ATCA-2210 Switch and Control Reference.* 3. *Install the SCM in the shelf* on page 5 4. *Connect to the SCM* on page 6 5. *Verify switch operation* on page 7 6. *Verify shelf management operation* on page 10	_____ _____ _____ _____ _____ _____

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Install the SCM in the shelf

1. Follow ESD precautions and make sure you are adequately grounded before handling the transceivers and the SCM.

2. Remove the SCM from its antistatic bag.

3. Open both ejector latches outward.

   WARNING! Never force open an ejector latch. Press the inner latch all the way in before you pull out the handle. If the latch does not open fully, close the latch and try again, making sure the inner latch is fully depressed.

4. Slide the SCM into one of the hub slots on the shelf. The table below show the hub slots for RadiSys shelves. If installing the SCM in a non-RadiSys shelf, refer to the documentation for that shelf.

RadiSys shelf	Hub slots	
ATCA-6000, 12U 14-slot	7	8
ATCA-6006, 5U, 6-slot	1	2
ATCA-6014, 13U 14-slot	7	8
ATCA-6016, 13U 16-slot	8	9

   Note: These are the *physical* slot numbers.

   If correctly aligned, the edges of the SCM fit within the narrow guide rails of the shelf.

   WARNING! Do not force the SCM into the slot:
   - To avoid damage to connectors, make sure the rear slot is either empty or contains a module compatible with the SCM.
   - If the SCM does not slide easily, make sure you are inserting the SCM into the correct slot and that it is aligned properly.

5. Once the SCM is inserted all the way into the shelf, simultaneously close both ejector latches inward. This seats the SCM's connectors into the shelf's backplane.

   The hot-swap (H/S) LED light flashes until the SCM is fully powered. Once powered, the LED light turns off.

   If the LED remains solid blue or keeps flashing after the SCM is inserted, it indicates the installation has failed. Please see the *ATCA-2210 Switch and Control Module Reference* for more information.

6. Secure the SCM in its slot by hand tightening the two fastening screws on each end of the module's front panel.

7. Repeat these steps if you are installing a second SCM in the remaining hub slot. Installing two SCMs on the shelf allows for redundancy—a means of providing continuous system functionality even if a failure occurs on one of the SCMs.
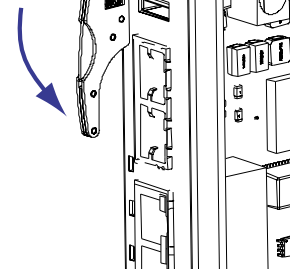
Open position

a) push inner latch in all the way
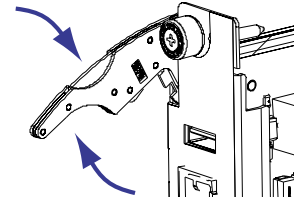
b) pull out

Closed position

push in

5

Connect to the SCM

The SCM can be accessed by an external computer through the serial and the Ethernet maintenance ports. Use the serial port to perform diagnostic and verification procedures or to enable or disable the Shelf Manager. Use the Ethernet maintenance port to connect the SCM to the network and to perform configuration procedures.

Note: If you have two SCMs installed, connect to each one separately.

Connect to the serial port

1. Connect the included serial port cable by plugging one end into the RJ-45 serial port labeled "LMP SER" on the SCM.

2. Connect the cable's other end to the COM1 or the COM2 serial port of an external computer, such as a laptop.

3. Start a terminal-emulator application, such as Procomm Plus® or minicom, from the operating system on your computer or laptop. Specify 115,200 baud, 8 data bits, no parity, one stop bit, and no hardware or software flow control.

4. Press the Enter key and verify you get a `login` prompt. Enter **admin** at the prompt.

5. Verify that you receive a welcome message and a prompt showing `ATCA-2210#`.

   Important: If the SCM has been installed in a non-RadiSys shelf, you may receive a `DEBUGMODE` prompt rather than the `ATCA-2210` prompt. If this occurs, disable the SCM's on-board Shelf Manager. See *Disable the Shelf Manager on the SCM* on page 10 for more information.

Serial port
(LMP SER)

Ethernet
maintenance
port
(LMP ETH)
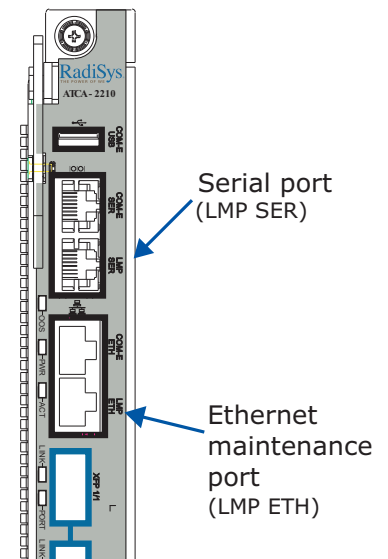
Connect to the Ethernet maintenance port

1. Connect a crossover Ethernet cable between the SCM's Ethernet maintenance port, which is labeled "LMP ETH," and a Linux host computer that is connected to your network.

2. Configure the computer to a subnet IP address (10.0.0.x) and set the netmask to 255.255.255.0.

3. On the computer, verify Telnet access to IP address 10.0.0.1 (port 23).

4. At the `login` prompt, enter **admin** and verify you receive the `ATCA-2210#` prompt. To log off the SCM at any time, enter the **exit** command.

   Note: To connect to the Linux shell on the SCM, use either a serial port or Telnet connection. After connecting, log in as **root** and enter **ifconfig** to view eth0 configuration settings.

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Verify switch operation

Use these steps to view port status and to enable ports on the Base Ethernet and the Fabric Ethernet switches.

View port status

1. Verify you are at this prompt.

   `ATCA-2210#`

   If you are not at the appropriate prompt, see *Connect to the SCM* on page 6 for instructions on how to get there.

2. Enter the applicable command for the switch you are verifying.

Switch	Command to enter	Resulting prompt
Base Ethernet	**base-ethernet**	`ATCA-2210-Base#`
Fabric Ethernet	**fabric-ethernet**	`ATCA-2210-Fabric#`

3. Enter this command to show the status of the ports.

   show port all

   View the status information of the ports to see which ports are enabled. If needed, press the space bar to view more of the list.

4. Proceed to the applicable section or step:

   - To enable all ports, see *Enable all ports* on page 8.
   - To enable only specific ports, see *Enable specific ports* on page 8.
   - To leave all ports disabled, continue with step 5.

5. Enter the **exit** command to return to the `ATCA-2210#` prompt.

   If you are asked to save changes, enter **y** for *yes* or **n** for *no*. If you choose **y** for *yes*, this configuration is saved as the startup configuration.

6. Enter the **exit** command to log off the SCM.

7. If you have two SCMs installed, repeat the above steps on the other SCM.

Enable all ports

1. Verify you are at the applicable switch prompt.

Switch	Prompt
Base Ethernet	`ATCA-2210-Base#`
Fabric Ethernet	`ATCA-2210-Fabric#`

If you are not at the appropriate prompt, see *View port status* for instructions on how to get there.

2. Enter this series of commands to enable all ports.
   A. **`configure`**
   B. **`no shutdown all`**
   C. **`spanning-tree port mode all`**
   D. **`spanning-tree`**
   E. **`exit`**
   F. **`telnetcon timeout 60`**
   G. **`copy system:running-config nvram:startup-config`**

   This operation may take a few minutes. Management interfaces are not available during this time. When you are asked to save changes, enter **y** for *yes* or **n** for *no*. If you choose **y** for *yes*, this configuration is saved as the startup configuration.

   Note: If the SCM includes the optional Procelerant™ CE3100 COM Express module, you may need to perform some additional port configuration procedures. See the *ATCA-2210 Switch and Control Module Reference* for more information.

3. Enter the **exit** command to return to the `ATCA-2210#` prompt.

4. Enter the **exit** command to log off the SCM.

5. If you have two SCMs installed, repeat these steps on the other SCM.

Enable specific ports

1. Verify you are at the applicable switch prompt.

Switch	Prompt
Base Ethernet	`ATCA-2210-Base#`
Fabric Ethernet	`ATCA-2210-Fabric#`

If you are not at the appropriate prompt, see *View port status* on page 7 for instructions on how to get there.

2. Follow these steps to enable specific ports:

   A. Enter this command.
   `configure`

B. Enter the specific port (interface) number to enable. The *s* variable represents the specified slot. The *p* variable represents an individual port within the group of ports for the specified slot.

```
interface <s/p>
```

Where s and p have the following values:

Base Ethernet switch interfaces

ATCA-6000 backplane slots	s=0	p=1-6, 9-14
ATCA-6006 backplane slots	s=0	p=3-6
ATCA-6014 backplane slots	s=0	p=1-6, 9-14
ATCA-6016 backplane slots	s=0	p=1-7, 10-16
Front panel optical	s=1	p=5-9
Internal ports	s=2	p=1, 3-4
RTM	s=3	p=5-8 or p=5-6 (depends on SCM configuration)

Base Ethernet switch internal ports

2/1 – The link between SCMs when two SCMs are installed. The port is enabled by factory default.

2/3 – The Base Ethernet link to the COM Express site.

2/4 – The link to standalone Shelf Manager sites on non-RadiSys shelves.

Fabric Ethernet switch interfaces

ATCA-6000 backplane slots	s=0	p=1-6, 9-14
ATCA-6006 backplane slots	s=0	p=3-6
ATCA-6014 backplane slots	s=0	p=1-6, 9-14
ATCA-6016 backplane slots	s=0	p=1-7, 10-16
Front panel optical	s=1	p=1-4
Internal ports	s=2	p=3
RTM	s=3	p=1 or p=1-3 (depends on SCM configuration)

Fabric Ethernet switch internal port

2/3 – The Fabric Ethernet link to the COM Express site.

Note: See the *ATCA-5010 Shelf Peripheral Module Reference* for details on which RTM ports are available for each SCM board configuration.

C. Enable the port. Enter **no shutdown**.

If you are disabling the interface, enter **shutdown**.

D. To enable another port, enter the **exit** command and perform the procedures described in Steps B and C.

If finished enabling ports, enter the **exit** command at each prompt until you reach the `ATCA-2210#` prompt.

Note: If you are asked to save changes, enter **y** for *yes* or **n** for *no*. If you choose **y** for *yes*, this configuration is saved as the startup configuration.

3. Enter the **exit** command again, to log off the SCM.

4. If you have two SCMs installed, repeat these steps on the other SCM.

Verify shelf management operation

These steps confirm that shelf management is operating when the SCM is installed in a RadiSys shelf. If the SCM is installed in a non-RadiSys shelf, shelf management is not available.

1. Verify that you are at this prompt.

   ATCA-2210#

   If you are not at the appropriate prompt, see for instructions on how to get there.

2. Enter this command to get to the platform management command line interface (CLI).

   platform-mgmt

3. Enter this command and verify that the Shelf Manager is *started*.

   shelf-mgmt show all

   If unknown appears instead of Active or Standby for the Status, the Shelf Manager is not operational. Refer to the troubleshooting section of the *Shelf Management Software Reference* for a list of possible solutions.

4. Enter this command to exit the platform management CLI.

   exit

5. If you have two SCMs installed, repeat these steps on the other SCM.

Disable the Shelf Manager on the SCM

By default, the SCM is configured to function in a RadiSys shelf. For an SCM to operate in a non-RadiSys shelf, you must disable the Shelf Manager on the SCM.

1. Connect the included serial port cable by plugging one end into the RJ-45 serial port labeled "LMP SER" on the SCM.

2. Connect the cable's other end to the COM1 or the COM2 serial port of an external computer, such as a laptop.

3. Start a terminal-emulator application, such as Procomm Plus® or minicom, from the operating system on your computer or laptop. Specify 115,200 baud, 8 data bits, no parity, one stop bit, and no hardware or software flow control.

4. Press the Enter key and verify you get a login prompt. Enter **root** at the prompt.

5. The following displays at the prompt of the connected computer:

   root@ATCA-2210@ DEBUGMODE :~#

   This DEBUGMODE prompt is a result of a conflict between the Shelf Manager on the SCM and the Shelf Manager on the non-RadiSys shelf. Disabling the Shelf Manager on the SCM resolves this conflict.

6. To determine the version of SCM's on-board Shelf Manager, enter:

   `rsys_debug -h`

7. After determining the version, enter the appropriate command.

For version	Enter this command	Result
0.96 or below	**`rsys_debug`**	Takes you directly to IPMI serial interface.
0.97 or above	**`rsys_debug -i 127.1`**	Enables LAN access.

8. Once the software tool has completed its initialization, the host address is displayed. Make a note of this address for an upcoming step. Typically the address is located at either 0x82 or 0x84.

9. At the `cmd` prompt, enter **m**.

10. At the `menu` prompt, enter **40**.

11. The following prompt displays:

    ```
    Set SCM ShMgr Mode –
       Enter address (in hex):
    ```

    Enter the host address you previously noted for step 8 in hex format. For example, if the address listed was `0x82`, enter **82**.

12. The following prompt displays:

    ```
    Enter ShMC Mode (Enable 0, Disable 1):
    ```

    Enter **1** to disable the on-board Shelf Manager. The `menu` prompt displays upon completion of the process.

13. To verify the on-board Shelf Manager is disabled, enter **41**.

14. The following text displays:

    ```
    Get SCM ShMgr Mode –
       Enter address (in hex):
    ```

    Enter the same host address you entered for step 11. If the on-board Shelf Manager is disabled, this message displays:

    ```
    SCM ShMgr Mode: Disabled
    ```

15. Enter **q** to exit the `rsys_debug` mode.

16. If a second SCM is installed, connect to it and run through the same set of procedures described in steps 1 through 15.

17. Cycle the power on the shelf to restart the non-RadiSys Shelf Manager.

18. Verify switch operation. See page 7 for more information.

11

Enable the Shelf Manager on the SCM

If you plan to remove an SCM from a non-RadiSys shelf and reinstall it in a RadiSys shelf, enable the on-board Shelf Manager before removing the SCM.

Important: If the SCM is removed from the non-RadiSys shelf without having its on-board Shelf Manager enabled, you will need to install the SCM in a shelf (RadiSys or non-RadiSys) that already has an active Shelf Manager running.

1. Connect the included serial port cable by plugging one end into the RJ-45 serial port labeled "LMP SER" on the SCM.

2. Connect the cable's other end to the COM1 or the COM2 serial port of an external computer, such as a laptop.

3. Start a terminal-emulator application, such as Procomm Plus® or minicom, from the operating system on your computer or laptop. Specify 115,200 baud, 8 data bits, no parity, one stop bit, and no hardware or software flow control.

4. Press the Enter key and verify you get a `login` prompt. Enter **root** at the prompt.

5. To determine the version of SCM's on-board Shelf Manager, enter the following at the `ATCA-2210` prompt:

        resys_debug -h

6. After determining the version number, enter the appropriate command.

For version	Enter this command	Result
0.96 or below	**rsys_debug**	Takes you directly to IPMI serial interface.
0.97 or above	**rsys_debug -i 127.1**	Enables LAN access.

7. Once the software tool has completed its initialization, the host address is displayed. Make a note of this address for an upcoming step. Typically the address is located at either 0x82 or 0x84.

8. At the `cmd` prompt, enter **m**.

9. At the `menu` prompt, enter **40**.

10. The following prompt displays:
    ```
    Set SCM ShMgr Mode –
       Enter address (in hex):
    ```

    Enter the host address you previously noted for step 7 in hex format. For example, if the address listed was `0x82`, enter **82**.

11. The following prompt displays:
    ```
        Enter ShMC Mode (Enable 0, Disable 1):
    ```

    Enter **0** to enable the on-board Shelf Manager. The `menu` prompt displays upon completion of the process.

12. To verify the on-board Shelf Manager is enabled, enter **41**.

13. The following text displays:
```
Get SCM ShMgr Mode –
    Enter address (in hex):
```

Enter the same host address you entered for step 10. If the on-board Shelf Manager is disabled, this message displays:
```
SCM ShMgr Mode: Enabled
```

14. Enter **q** to exit the `rsys_debug` mode.

15. Remove the SCM and reinstall it in a RadiSys shelf. For removal instructions, see the *Switch and Control Module Reference*. For installation instructions, see *Install the SCM in the shelf* on page 5 of this manual.

16. If you are planning to remove a second SCM from the non-RadiSys shelf, connect to it and run through the same set of procedures described in steps 1 through 15.

Rear I/O connectivity

The ATCA-5010 shelf peripheral module (SPM) provides rear I/O connectivity on the SCM. The configuration of the SCM determines the functionality of the Fabric ports, the Base ports, and the Telco alarm connection on the SPM. For more information, see the *ATCA-5010 Shelf Peripheral Module Installation Guide* and the *ATCA-5010 Shelf Peripheral Module Reference*.

COM Express module setup

SCMs with the optional Procelerant™ CE3100 COM Express module and SAS/SATA drive ship with a factory-installed basic software package. Once the SCM is installed, and depending on your organization's needs, you may choose to change the BIOS setting or install an operating system and drivers. See the *ATCA-2210 Switch and Control Module Reference* for instructions on performing such procedures.

Where to go from here

See the *ATCA-2210 Switch and Control Module Reference* for detailed information on the SCM's electrical, mechanical, and environmental aspects. Software information is covered in the following manuals: the *Shelf Management Software Reference*, the *Software Guide for Management Processors and General Purpose Computing Processors*, and the *Command Line Interface Reference.* For information on integrating the SCM into the platform, refer to the appropriate *Platform Hardware Reference* for SYS-6000/6010, SYS-6006, or SYS-6014/6016.

After your system has been assembled, verify a link has been established between the components and that traffic is being passed. The Base Ethernet and Fabric Ethernet switches can be checked by pinging from component to component.

You should also set passwords for the `root` and the `admin` users, and create user accounts for those who do not require administrative privileges. See the *Software Guide for Management Processors and General Purpose Computing Processors* for more information.

Where to get more product information

Please visit the RadiSys Web site at www.radisys.com for product information and other resources. Downloads (manuals, release notes, software, etc.) are available via the Technical Support Library product links at www.radisys.com/support or the product pages at www.radisys.com/products.

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