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PROMENTUM® MEDIA RESOURCE MODULE INSTALLATION GUIDE

ATCA-9100



This document describes how to install and to set up the Promentum® ATCA-9100 Media Resource Module (MRM).

Before you begin

To ensure all safety precautions are followed during installation and setup, review the *Promentum Safety Information* document on the ATCA-9100 MRM downloads page at www.radisys.com/downloads.

Obey ESD procedures

WARNING! Obey the electrostatic discharge (ESD) procedures described at www.radisys.com/esd 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.

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Prepare for installation

Installation of the MRM requires:

- An AdvancedTCA® (ATCA®) shelf, such as a RadiSys ATCA-6000 or ATCA-6006 shelf
- Adequate ventilation for the shelf
- Additional hardware to connect to the MRM from an external computer using one of these options:
 - Connect through a hub module in the shelf. This requires a standard crossover Ethernet cable.
 - Connect through a rear transition module (RTM). This requires a RadiSys rear debug card (order code TH-1620-00) or an RTM designed for the MRM. In addition, you need a crossover Ethernet cable or a null modem serial cable.

Install the MRM

This section assumes you are installing the module in an ATCA shelf and the shelf power is on. The ATCA shelf architecture lets you insert and remove the module from the shelf without powering down the system.

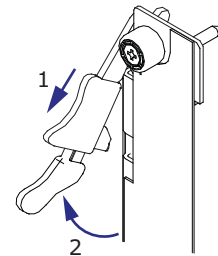
1. Obey ESD precautions and make sure you are adequately grounded before handling the module (see [page 1](#)).
2. Remove the module from its antistatic bag.
3. Open both ejector handles outward at the same time as shown in the figure.
4. Slide the module into one of the node slots on the shelf. If correctly aligned, the edges of the module will fit within the narrow guide rails of the shelf.
5. Once the module is inserted all the way into the shelf, simultaneously close both ejector handles inward. This will seat the module's connectors into the shelf's backplane.

The hot-swap (H/S) LED flashes until the module is fully powered (see [Front panel LED indicators on page 3](#)). Once powered, the H/S LED will turn off and the PWR LED will become green.

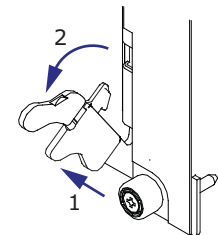
If the H/S LED remains solid blue or keeps flashing after the module is inserted, it indicates the installation may have failed. See the *ATCA-9100 Media Resource Module Reference* for information on troubleshooting LED states.

6. Secure the module in its slot by hand-tightening the thumbscrews next to the ejector handles.






Opening the ejector handles



1. Slide latch toward handle.
2. Pull handle out.



Front panel LED indicators

Label	LED	Definition	Color	States
OOS	LED 1	Out of service		Red or amber = Application-defined
PWR	LED 2	Power		Green = Power supplies were good initially, and power has not been removed Amber = Application-defined Off = The MRM is not powered on
APP	LED 3	Application		Green or amber = Application-defined
H/S	H/S	Hot swap		Long blink = Searching for Shelf Manager Solid blue = Ready for hot swap Short blink = Preparing for removal Off = Normal operation
DSP#	LED3	DSP state		Green = Application-defined Red = Application-defined or DSPs are initialized with no application loaded

Install an RTM (optional)

An RTM can be used to provide I/O access to the MRM. The RTM must be designed for compatibility with the MRM. RadiSys does not currently manufacture an RTM for use with the MRM.

An RTM can be installed at any time. If you will use the RadiSys rear debug card instead of an RTM, see [Install the rear debug card \(optional\)](#).

Preparation

Before installing an RTM:

1. Obey ESD precautions. See [page 1](#) for more information.
2. Identify the front node slot where you installed the MRM. The RTM will be installed in the rear slot directly behind it. For example, if you installed the MRM in front slot 3, the RTM goes in rear slot 3.
3. Remove the airflow management panel installed in the rear slot.
4. Refer to the RTM's documentation for installation instructions.

Install the rear debug card (optional)

In a lab environment, the RadiSys rear debug card can be used for I/O access as an alternative to an RTM. The MRM must be installed in the shelf before you install the rear debug card.

To install the RadiSys rear debug card:

1. Use the instructions listed in [Preparation on page 3](#).
2. Make sure the MRM is already installed.
3. Remove the rear debug card from its antistatic bag.
4. If you plan to use the Base Ethernet or Fabric Ethernet port, install an SFP transceiver module into the corresponding socket.

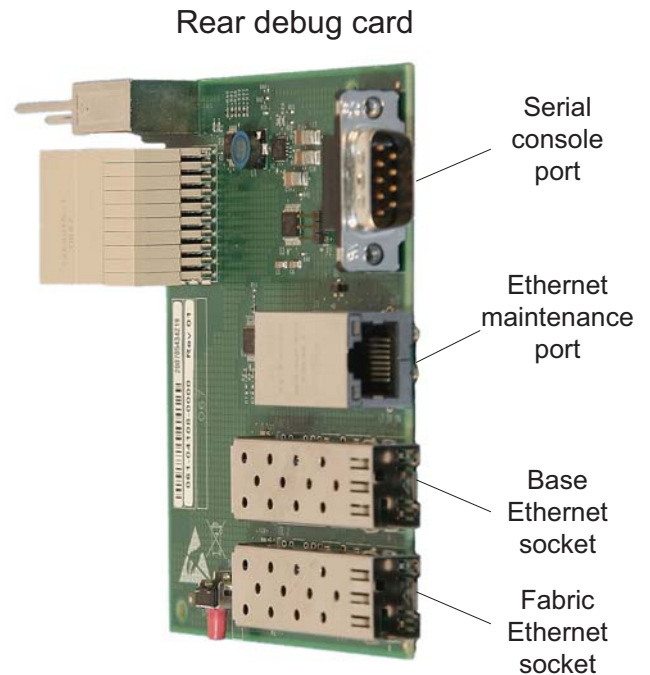
Both sockets support copper or optical gigabit Ethernet SFP transceivers. The transceivers operate at 1 Gbps with no auto-negotiation.

5. Slide the debug card into the empty rear slot in the shelf along the top guide rail.

The debug card alignment pins and connector slide into the MRM alignment holes and connector.

The rear debug card powers up immediately.

Important: The rear debug card is not designed to support the full weight of cables. When you connect cables, use appropriate cable restraints to reduce the stress on the debug card connectors that mate with the MRM.



Connect to an external computer and the network

Connect to an external computer and the network using one of these methods:

- **Method 1:** With an optional RTM designed to mate with the MRM or with the rear debug card
- **Method 2:** Through another module via the backplane Ethernet interfaces

Method 1: Connect with the RTM or rear debug card

The MRM can be accessed by an external computer through the serial port and the Ethernet maintenance port on an RTM or rear debug card. Use the serial port to perform diagnostic and verification procedures. Use the Ethernet maintenance port to connect the MRM to the network and to perform configuration procedures.

Connect to the serial port

1. Connect a null modem serial port cable by plugging one end into the serial port on the RTM or rear debug card.
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 115200 baud, 8 data bits, no parity, one stop bit, and no hardware or software flow control.

4. Press the Enter key to get the ATCA-9100 login prompt.

If the login prompt does not display, check the cabling and verify the terminal-emulator settings are correct. You can also check the LED states on the module. If necessary, press the RTM reset button and see if any text is displayed. Displayed text may provide hints about other items to check.

5. Enter `admin` at the prompt.
6. Verify that you receive a welcome message and a prompt showing ATCA-9100#. From this prompt you can perform diagnostic and verification procedures. To log off the module at any time, enter the `exit` command.

Connect to the Ethernet maintenance port

1. Connect a crossover Ethernet cable between the RJ-45 Ethernet maintenance port on the RTM and the RJ-45 Ethernet port on a Linux host computer that is connected to your network.
2. Configure the host computer to a subnet IP address of 10.0.0.<x>. For the <x> variable, select a value from the range 2-254 (for example, 10.0.0.2 to 10.0.0.254). Set the netmask to 255.255.255.0.
3. From the host computer, use a Telnet connection to access the module's default IP address 10.0.0.1 (port 23). The ATCA-9100 login prompt for the module will display.

If the ATCA-9100 login prompt does not display, verify the module's IP address is correct in the Telnet command.

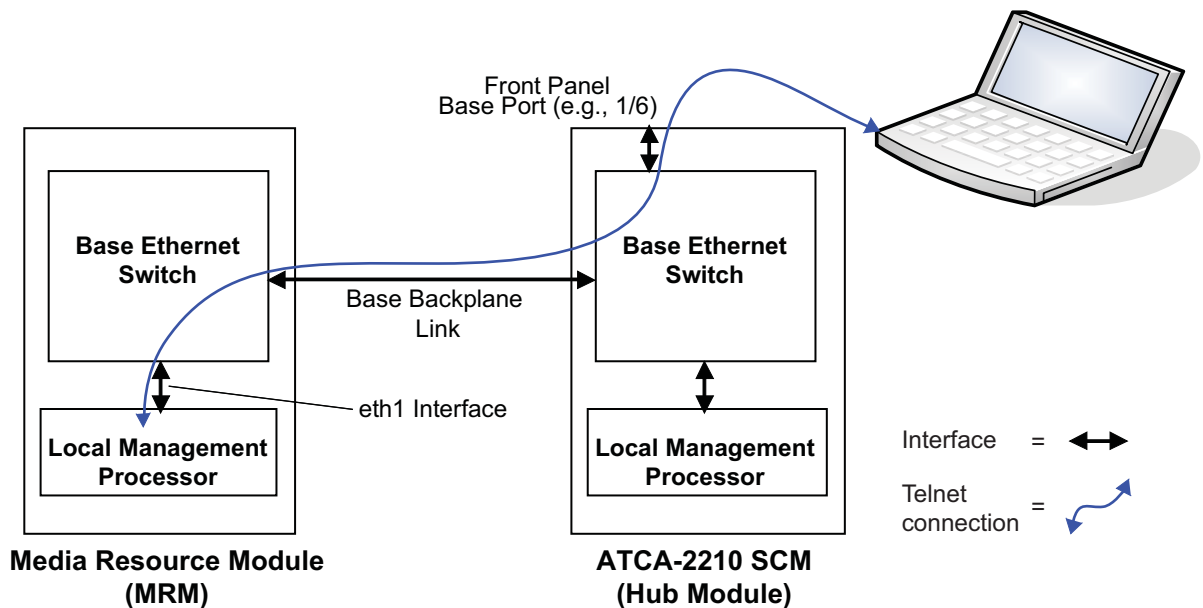
- Log in as **admin** to get the ATCA-9100# prompt. From this prompt you can perform configuration procedures. To log off the module at any time, enter the **exit** command.
Note: To connect to the Linux shell on the module, use either a serial port or a Telnet connection. After connecting, log in as **root** and enter **ifconfig** to view eth0 configuration settings.

Method 2: Connect through another module via the backplane Ethernet interfaces

If connecting with an RTM or rear debug card is not possible, you can access the MRM by connecting an external computer to another module in the shelf.

To connect to the MRM through another module:

- Find the hub module in the lower-numbered hub slot. On the hub module, find an unused Ethernet port that connects to the Base interface. The diagram below illustrates the connection to the MRM when an ATCA-2210 SCM is located in the lower-numbered hub slot.



If the hub module does not have a Base Ethernet port available but is already configured for network access, you can use Telnet over the network to connect to the hub module (in the lower-numbered hub slot). From there you can use Telnet to connect to the MRM as described in [step 4](#). In this scenario, you can skip steps [2](#) and [3](#).

Note: The MRM default settings allow Base interface access to only the lower-numbered hub slot. If a hub module is not available in the lower-numbered hub slot, move the installed hub module to that slot or purchase a rear debug card.

- Connect an Ethernet cable between the Ethernet port on the hub module and the Ethernet port on the external computer.

3. Configure the IP address of the external computer using the following: 10.2.<chassis>.<x>. The <chassis> parameter represents the shelf address (the physical location of the shelf within a central office). For the <x> variable, select a value from the range 17-254 (for example, 10.2.<chassis>.17 to 10.2.<chassis>.254). Set the subnet mask for the interface to 255.255.0.0.
4. From the external computer use a Telnet connection to access the eth1:0 interface on the MRM. The static IP address is: 10.2.<chassis>.<slot>. The <chassis> parameter represents the shelf address, and the <slot> parameter represents the MRM's location in the shelf. The ATCA-9100 login prompt will display. If the prompt does not display, verify the Telnet connection to the IP address is correct.
5. Log in as **admin** to get the ATCA-9100# prompt. From this prompt you can perform configuration procedures. To log off the MRM at any time, enter the **exit** command.
6. Disconnect the Ethernet cable from the Base Ethernet port on the hub module you connected through when you are done performing the configuration procedures.

Verify Ethernet switch operation

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

View port status

1. Verify you are at this prompt.
ATCA-9100#
If you are not at the appropriate prompt, see [Connect to an external computer and the network on page 5](#) 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-9100-Base#
Fabric Ethernet	fabric-ethernet	ATCA-9100-Fabric#

3. Enter this command to show the status of the ports.
show port all
View the port status information to see which ports are enabled (EKey Mode and Admin Mode) and connected to a peer (Link Status). If needed, press the space bar to view more of the list.
4. Proceed to the applicable section or step:
 - To enable or disable specific ports, see [Enable or disable specific ports on page 8](#).
 - To keep the default settings, continue with [step 5](#).

5. Enter the `exit` command to return to the ATCA-9100# prompt.
If you are asked to save changes, enter `y` for *yes* or `n` for *no*. If you choose `y` for *yes*, this configuration will be saved as the startup configuration.
6. Enter the `exit` command to log off the module.

Enable or disable specific ports

Note: RadiSys recommends having only one backplane port enabled on the MRM Base interface if the shelf has two hub modules with interconnected Base switching domains. By default, RadiSys hub modules connect their Base switching domains. If the Fabric switching domains are also interconnected (which they are not by default on RadiSys hub modules), only one backplane port on the MRM Fabric interface should be enabled.

1. Verify you are at the applicable switch prompt.

Switch	Prompt
Base Ethernet	ATCA-9100-Base#
Fabric Ethernet	ATCA-9100-Fabric#

If you are not at the appropriate prompt, see [View port status on page 7](#) for instructions on how to get there.

2. Use these steps to enable or disable specific ports:
 - a. Enter this command.

```
configure
```

- b. Enter the specific port (interface) number to enable.

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

Where `<s>` and `<p>` have the following values.

Backplane slots	s=0	p=1-2
DSPs 1-10	s=2	p=1-10
DSPs 11-20	s=1	p=1-10
Local management processor (LMP)	s=3	p=1
RTM	s=4	p=1

- c. Enter this command to enable a port:

```
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*.

When finished enabling ports, enter this series of commands to return to the ATCA-9100# prompt.

```
exit
exit
exit
```

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

3. Enter the `exit` command again, to log off the module.

Power up and load software to the DSP devices

By default the DSP farms are powered off and no software is loaded on the DSP devices. The procedure initializes the serial RapidIO (sRIO) switch in order to access the DSP devices. The procedure loads the supplied diagnostics software to verify the DSP devices can load a known software image.

To power up the DSP farms and devices and load software to them:

1. Verify you are at this prompt.

```
ATCA-9100#
```

If you are not at this prompt, see [Connect to an external computer and the network on page 5](#) for instructions on how to get there.

2. Access the Linux shell:

```
linux-shell
```

3. Identify the kernel version in the directory path:

```
ls -d /lib/modules/*mrm1
```

The output should look similar to this and will be used for `<base_path>` in the next step:

```
/lib/modules/2.6.14.7-105mrm1
```

4. Load the library for the sRIO switch, using the base path from the previous step:

```
insmod <base_path>/kernel/drivers/rapidio/riodev.ko
```

For example:

```
insmod /lib/modules/2.6.14.7-105mrm1/kernel/drivers/rapidio/riodev.ko
```

5. Initialize the sRIO switch:

```
sriotool init
```

6. Power up the DSP farms:

```
sriotool fpon 0
sriotool fpon 1
```

The DSP LEDs become red.

7. Configure the sRIO interfaces on the DSP devices:

```
sriotool idin 20
```

The value 20 represents all DSP devices.

8. Configure the DDR memory for the DSP devices:

```
sriotool idcm 20
```

9. Load the image for running diagnostic tests to the DSP devices:

For F-DSP farms:

```
sriotool idp1 20 /usr/share/fdspdiags.srec
```

For T-DSP farms:

```
sriotool idp1 20 /usr/share/tidspdiags.srec
```

When the diagnostics image is loaded, the DSP LEDs become green and this message displays:

```
DSP Program Load/Execute Success
```

10. Exit the Linux shell and log off the MRM:

```
exit  
exit
```

Where to go from here

See the *ATCA-9100 Media Resource Module Reference* for detailed information on the module's electrical and mechanical characteristics as well as the software specifically for controlling the DSPs. To configure other aspects of the MRM, see the *Software Guide for Management Processors and General Purpose Computing Processors* (also called the *Software Guide*) and the *CLI Reference*.

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 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 at www.radisys.com/downloads.



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