# Management Card

## Addendum

APC®

# APC® Management Card

## Contents

*Continued on next page*

# Contents

# APC Management Card

## Web/SNMP Management Card Wizard

## Introduction

**Overview**

The APC Web/SNMP Management Card Wizard is a Windows$^®$ application designed specifically to pre-configure, reconfigure, and upgrade single or multiple Management Cards. The Wizard works locally through the serial port of your PC or remotely over your TCP/IP network. Using the Wizard to configure the Management Card, you can:

- Automatically discover unconfigured Management Cards remotely or locally
- Preconfigure multiple Management Cards before deployment
- Reconfigure multiple Management Cards after being deployed
- Upgrade the firmware of the Management Card
- Create a configuration file for BOOTP
- Create a configuration file

**System Requirements**

The Wizard runs on Windows 95, Windows 98, Windows NT, and Windows 2000 Intel-based workstations.

**Obtaining updated versions of the Wizard**

Updated versions of the Wizard are available from the Download Software page at *http://www.apcc.com*. Access to some of the new features may require a firmware upgrade, which may involve a charge. For details on updating Management Card's firmware, see **Firmware & Configuration File Transfers on page 18**.

**Configuring Management Card settings**

Using the Wizard, all of the Management Card's settings, except the URL names and links, can be configured locally or remotely.

# Web/SNMP Management Card Wizard

## Introduction *continued*

---

**Installing the Wizard**

If autorun is enabled on your CD-ROM drive, the installation program will start automatically when the CD is inserted. Otherwise, run the setup.exe installation program found in the Wizard directory and follow the on-screen instructions. During installation, a shortcut link is created in the **Start** menu. Use this link to launch the Wizard application.

**Online Help**

The Wizard is equipped with online Help. To access this feature, click **Help** in the left hand corner of the Wizard screen.

**Quick Configuration of the required settings**

You can quickly configure only the required TCP/IP settings using the Wizard. For instructions, see **Configuring the required TCP/IP settings on page 7**.

**Pre-configuring multiple Management Cards before deployment**

Pre-configuring multiple Management Cards before they are deployed depends on your organization's deployment strategy. The following list describes the different deployment options:

- You can use the Wizard to pre-configure and deploy the Management Card's settings locally or the TCP/IP settings remotely through auto discovery of the Management Card. For instructions, see **Pre-configuring the Management Card on page 8**.
- You can deploy your Management Cards without any pre-configuration and let a BOOTP server assign the TCP/IP settings (System IP, Subnet Mask, and Default Gateway addresses) and use the Wizard to reconfigure any of the Management Card's settings remotely. For details, see **Reconfiguring deployed Management Cards on page 11**.
- You can deploy your Management Cards without any pre-configuration and let a BOOTP server assign the TCP/IP settings (System IP, Subnet Mask, and Default Gateway addresses) and specify a configuration file (*.cfg* extension). The Management Card will assume all settings specified in the configuration file. Configuration files are created using the Wizard. For instructions, see **Creating a configuration file for BOOTP on page 9**.

# Web/SNMP Management Card Wizard

## Introduction *continued*

---

**Reconfiguring multiple Management Cards after they are deployed**

Reconfiguring multiple Management Cards after they are deployed depends on your organization's preferences. The following list describes the options available:

- You can use the Wizard to reconfigure any of the Management Card's settings remotely. For instructions, see **Reconfiguring deployed Management Cards on page 11**.
- You can create a configuration file (*.cfg* extension) using the Wizard, and then transmit it to the Management Cards. For instructions, see **Creating a configuration file on page 12**.
- You can create a configuration file (*.cfg* extension) using the I2C Configuration Utility, and then use FTP or the Wizard to transmit it to the Management Cards. For instructions, see **I2C Configuration Utility on page 15**.

**Upgrading firmware using the Wizard**

You can easily upgrade the firmware of many Management Cards simultaneously using the Wizard. For instructions, see **Upgrading firmware on page 13**.

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard

**Overview**

The Wizard allows you to direct the configuration of Management Cards to fit your needs. This section provides instructions on how to pre-configure, reconfigure, and upgrade Management Cards using the Management Card Wizard. Use the procedure that would best fit your needs.

**Configuring the required TCP/IP settings**

To configure the Management Card's required TCP/IP settings, follow the steps below in the order given:

1. Use the link in the **Start** menu to launch the Wizard application. The Wizard will automatically detect any unconfigured Management Cards and will prompt you to configure the network settings.

2. Configure the Management Card's TCP/IP settings. For remote configuration, wait until the Wizard prompts you for the TCP/IP settings and then go on to **Step c** to configure the Management Card's TCP/IP settings locally:

    a. Select the **Express (Recommended)** option from the "Installation Options" screen, then click **Next >**.

    b. Select the **Locally (via Serial Port)** option from the "Express Configuration" screen, then click **Next >**.

    c. Configure your network settings. At a minimum, you must configure the TCP/IP settings (**System IP**, **Subnet Mask**, **Default Gateway** addresses). Please contact your network administrator to obtain valid TCP/IP settings. As long as the Management Card's TCP/IP settings are configured before deployment, the Management Card can be reconfigured remotely at a later time.

3. Select the **Start a Web browser when finished** option to connect over the Web to the Management Card. This launches a default Web browser. Click **Finish** and wait for a few seconds to let the Management Card reboot.

4. After the correct, IP-formatted information is entered, the **Finish** button becomes enabled. Click **Finish** to transmit the TCP/IP settings. The Wizard automatically checks to see if the System IP address you entered is in use on the Network. If it is discovered as an IP address in use, enter a valid IP address and click **Finish**, and follow the on-screen instructions.

*Continued on next page*

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

**Pre-configuring the Management Card**

To pre-configure the Management Card, follow the steps below in the order given:

1. Use the link in the **Start** menu to launch the Wizard application.
2. When the Wizard appears, click **Next >**.
3. Select the **Custom (Advanced)** option from the "Installation Options" screen, then click **Next >**.
4. Select the **Define a New Configuration File (Typical)** option from the "Custom Installation" screen, then click **Next >**.
5. Configure your network settings. At a minimum, you must configure the TCP/IP settings (**System IP**, **Subnet Mask**, **Default Gateway** addresses). As long as the Management Card's TCP/IP settings are configured before deployment, the Management Card can be re configured remotely at a later time.

   **Note**: If you intend to use the Wizard to reconfigure Manage-ment Cards after deployment, then do not disable **FTP Server Access**.

6. Click **Next >** as many times as needed to cycle through the Management Card's settings. Any setting that you do not want to configure should be left alone.
7. Stop at the "Customize the settings that will be transmitted to the Management Card" screen. Choose to transmit the TCP/IP settings (**System IP**, **Subnet Mask**, **Default Gateway** addresses, and **BOOTP**) and any additional options you wish to configure, then click **Next >**.
8. Verify the selections you have made on the "Configuration Summary" screen. You can save or print the settings. If you save the settings, you can load them into the Wizard at a later time. Click **Next >**.
9. Select the **Locally (via serial port)** option from the "Transmit Current Settings" screen, then click **Next >**.
10. Follow the on-screen instructions. Click **Apply** to transmit the new settings to the Management Card. You will be prompted when the transmission is complete or if there was a communications failure.
11. To define the TCP/IP settings for the next Management Card that you want to configure, click **Rewind** on the "Transmit Settings Locally" screen.

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

---

**Creating a configuration file for BOOTP**

To create a BOOTP configuration file, follow the steps below in the order given:

1. Use the link in the **Start** menu to launch the Wizard application.

2. When the Wizard appears, click **Next >**.

3. Select the **Custom (Advanced)** option from the "Installation Options" screen, then click **Next >**.

4. Select the **Define a New Configuration File (Typical)** option from the "Custom Installation" screen, then click **Next >**.

   **Note**: Generally, when using a configuration file in conjunction with BOOTP, the configuration file will contain only settings that are generic across multiple Management Cards.

5. Click **Next >** as many times as needed to cycle through the Management Card's settings. Any setting that you do not want to configure should be left alone.

   **Note:** If you intend to use the Wizard to reconfigure Management Cards after they are deployed, then **FTP Server Access on the** Management Cards must remain enabled.

6. Stop at the "Customize the settings that will be transmitted to the Management Card" screen and choose the settings you want to transmit to the deployed Management Cards, then click **Next >.**

   **Note:** Deselect the TCP/IP (**System IP**, **Subnet Mask**, **Default Gateway** addresses, and **BOOTP**) and **FTP Server Access** settings to make sure that they will not overwrite these settings when you transfer the configuration file.

7. Verify the selections you have made in the "Configuration Summary" screen and print the summary text box.

8. Save your settings.

   **Note**: Saving automatically produces two files. One of the files is a text-editable configuration file (.ini extension) that can be reloaded into the Wizard, the other is a binary configuration file (*.cfg* extension). The binary configuration file contains only the settings selected in **Step 6**.

*Continued on next page*

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

---

**Creating a configuration file for BOOTP, continued**

9. Specify the Management Card's System IP, Subnet Mask, and Default Gateway addresses in the BOOTPTAB file of your BOOTP server. Specify the binary configuration file (*.cfg* extension) that was saved in **Step 8** as the Bootup Filename, which may be up to 32 characters in length and may contain path information.

10. Install or reboot the Management Card to make a BOOTP request. You can reboot the Management Card in the Control Console or Web Interface using the **System**->**Tools** menu, or in SNMP via the **mcontrolRestartAgent** OID. You can also reboot by pressing the **Reset** button on the Management Card's faceplate

**BOOTP summary of events**

When the Management Card receives the BOOTP response, it will assume the System IP, Subnet Mask, and Default Gateway addresses. The Management Card will also automatically recognize that a configuration file has been specified in the Bootup Filename and it will attempt to download that file.

The Management Card will first make a TFTP request for the Bootup Filename from the same IP address that supplied the BOOTP response. If a TFTP server is present on that computer, and the configuration file is in the appropriate directory then the Management Card will download the configuration file and assume all of the specified settings.

If the TFTP request fails then the Management Card will make an FTP request for the Bootup Filename from the same computer which supplied the BOOTP response. The FTP request will use the FTP Client User Name and Password (defaults for both are **apc**) previously configured in the Management Card to login to the FTP server. If the FTP server is present and the configuration file is in the appropriate directory then the Management Card will download the configuration file and assume all of the specified settings.

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

---

**Reconfiguring deployed Management Cards**

To reconfigure the Management Card, follow the steps below in the order given:

1. Use the link in the **Start** menu to launch the Wizard application.

2. When the Wizard appears, click **Next >**.

3. Select the **Custom (Advanced)** option from the "Installation Options" screen, then click **Next >**.

4. Select the **Define a New Configuration File (Typical)** option from the "Custom Installation" screen, then click **Next >**.

   **Note**: Generally, when using a configuration file in conjunction with BOOTP, the configuration file will contain only settings that are generic across multiple Management Cards.

5. Click **Next >** as many times as needed to cycle through the Management Card's settings. Any setting that you do not want to configure should be left alone.

   **Note:** If you intend to use the Wizard to reconfigure Management Cards after they are deployed, then **FTP Server Access on the** Management Cards must remain enabled.

6. Stop at the "Customize the settings that will be transmitted to the Management Card" screen and choose the settings you want to transmit to the deployed Management Cards, then click **Next >.**

   **Note:** Deselect the TCP/IP (**System IP**, **Subnet Mask**, **Default Gateway** addresses, and **BOOTP**) and **FTP Server Access** settings to make sure that they will not overwrite these settings when you transfer the configuration file.

7. Verify the selections you have made on the "Configuration Summary" screen. Save and print the summary text box by clicking the appropriate buttons. If you save these settings, you can load them into the Wizard at a later time.

   **Note:** Make sure that you have selected only the settings that you want to reconfigure. You can inadvertently overwrite the deployed Management Card settings if you have not properly deselected the settings that you do not want to reconfigure. All settings that have a **YES** in the **Send** column of the "Configuration Summary" screen will be transmitted.

8. Click **Next >**.

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

---

**Reconfiguring deployed Management Cards, continued**

9. Select the **Remotely (over network via FTP Server)** option from the "Transmit Current Settings" screen, then click **Next >**.

10. Add the IP addresses of the Management Cards that you want to reconfigure on the "Remote File Transfer" screen. If the deployed Management Cards have different settings for the Administrator **User Name**, **Password**, and **FTP Server Port**, change the values reflected in the Wizard. If you have a saved list of Management Card IP addresses, you can load them by clicking **Load…**.

11. Click **Next >**.

12. Click **Apply** in the "Remote File Transfer via FTP" screen to transmit the new settings to all of the Management Cards specified in **Step 10**. After transmitting the settings to all of the Management Cards, a transmission log will be available. The log can be saved, printed, or cleared by clicking the appropriate button.

**Creating a configuration file**

To create a configuration file, follow the steps below in the order given:

1. Use the link in the **Start** menu to launch the Wizard application.

2. When the Wizard appears, click **Next >**.

3. Select the **Custom (Advanced)** option from the "Installation Options" screen, then click **Next >**.

4. Select the **Define a New Configuration File (Typical)** option from the "Custom Installation" screen, then click **Next >**.

   **Note**: Generally, when using a configuration file in conjunction with BOOTP, the configuration file will contain only settings that are generic across multiple Management Cards.

5. Click **Next >** as many times as needed to cycle through the Management Card's settings. Any setting that you do not want to configure should be left alone.

   **Note:** If you intend to use the Wizard to reconfigure Management Cards after they are deployed, then **FTP Server Access on the** Management Cards must remain enabled.

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

**Creating a configuration file, continued**

6. Stop at the "Customize the settings that will be transmitted to the Management Card" screen and choose the settings you want to transmit to the deployed Management Cards, then click **Next >.**

    **Note:** Deselect the TCP/IP (**System IP**, **Subnet Mask**, **Default Gateway** addresses, and **BOOTP**) and **FTP Server Access** settings to make sure that they will not overwrite these settings when you transfer the configuration file.

7. Verify the selections you have made on the "Configuration Summary" screen and print the summary text box.

    **Note:** Make sure that you have selected only the settings that you want to reconfigure. You can inadvertently overwrite the deployed Management Card settings if you have not properly deselected the settings that you do not want to reconfigure. All settings that have a **YES** in the **Send** column of the "Configuration Summary" screen will be transmitted.

8. Save your settings.

    **Note**: Saving automatically produces two files. One of the files is a text-editable configuration file (*.ini* extension) that can be reloaded into the Wizard, the other is a binary configuration file (*.cfg* extension). The binary configuration file contains only the settings selected in **Step 6**.

9. Transmit the binary configuration file (*.cfg* extension) to the Management Cards. For detailed explanations of the various file transfer options available, see **Firmware & Configuration File Transfers on page 18**.

**Upgrading firmware**

Make sure that the Management Cards that you want to upgrade have had their TCP/IP settings configured and that they are connected to the network.To upgrade the Management Cards' firmware, follow the steps below in the order given:

1. Use the link in the **Start** menu to launch the Wizard application.
2. When the Wizard appears, click **Next >**.
3. Select the **Custom (Advanced)** option from the "Installation Options" screen, then click **Next >**.
4. Select the **Upgrade Firmware** option from the "Custom Installation" screen, then click **Next >**.

# Web/SNMP Management Card Wizard

## Using the Management Card Wizard *continued*

---

**Upgrading firmware, continued**

5. Click **Browse** for both the APC Operating System and Application Firmware Modules, and select the appropriate file for each. If the wrong file type is selected, a warning will be displayed. For details about how to obtain new firmware modules from APC, see **Firmware & Configuration File Transfers on page 18**.

6. Add the IP addresses of the Management Cards that you want to upgrade. If the deployed Management Cards have different settings for the Administrator **User Name**, **Password**, and **FTP Server Port**, change the values reflected in the Wizard. If you have a saved list of Management Card IP addresses, you can load them by clicking **Load…**.

7. Click **Next >**.

8. Click **Apply** to transmit the new firmware to all of the Management Cards specified in **Step 6**. After transmitting the firmware to all of the Management Cards, a transmission log will be available. The log can be saved, printed, or cleared by clicking the appropriate button.

# APC Management Card

## I2C Configuration Utility

## Introduction

**Overview**

The I2C Configuration Utility is designed to easily convert text-editable configuration (INI) files to binary-formatted configuration (CFG) files. You can then transfer the CFG file to one or more Management Cards.

- You can use the Web/SNMP Management Card Wizard to transfer the changes to one or more Management Cards, as described in **Using the Wizard to Transfer a Configuration (CFG) File on page 17**.
- You can use FTP to transfer the changes to a single Management Card over the network, as described in **Updating using an FTP Client on page 30**.

**Functionality**

The I2C utility currently, which works with Windows 95, Windows 98, Windows NT 4.0, and Windows 2000, is the only method available for mass configuration of the following settings:

- Event action settings
- Email settings
- DNS settings
- MasterSwitch device configuration settings

  **Note:** The above settings cannot be set by using the Web/SNMP Management Card Wizard alone.

# I2C Configuration Utility

## Creating the Configuration (CFG) File

**Edit the INI file**

A *default.ini* file, which contains all of the possible configuration settings, is provided with the I2C utility.

1. Make a copy of the *default.ini* file.
2. Comment out (or delete) any configuration settings you do not want to explicitly set.

   **Note:** Commenting out or deleting the settings you do not want to affect will prevent overwriting those settings when you transfer the CFG file to a Management Card.

**Convert the INI file to a CFG file**

After editing the INI file, you need to convert that file into a file with a CFG format. Open an MS-DOS command prompt window on a PC that is connected to the network. Go to the directory that contains the I2C utility and the INI file (in this example, the `C:\apc` directory contains the I2C utility and a *my.ini* file) and enter the commands shown in **bold**.

```
C:\>cd\apc
C:\apc>i2c301 my.ini -o my.cfg
```

This will convert the *my.ini* file to the CFG file name output. The command –o allows you to name the CFG file. This is optional.

You can now use this CFG file to update one or more Management Cards.

- To use the Web/SNMP Management Card Wizard to update one or more Management Cards, see **Using the Wizard to Transfer a Configuration (CFG) File** on the next page.
- To use FTP to update a single Management Card over the network, see **Updating using an FTP Client on page 30**.

# I2C Configuration Utility

## Using the Wizard to Transfer a Configuration (CFG) File

**Transfer Procedure**  To use the Web/SNMP Management Card Wizard to transfer a CFG file that you created with the I2C utility, do the following:

1. Use the link in the **Start** menu to launch the Wizard application.
2. When the Wizard appears, click **Next >**.
3. Select the **Custom (Advanced)** option from the "Installation Options" screen, then click **Next >**.
4. When the "Open Default Configuration File" screen appears, select the **Binary FIles (*.cfg)** option from the **Files of type:** drop-down menu.
5. Navigate to the directory that contains the CFG file you created (for the example given in **Convert the INI file to a CFG file** on the previous page, `C:\apc`).
6. Double-click the CFG file on the screen (for the example given in **Convert the INI file to a CFG file**, *my.cfg*).
7. When the "Remote File Transfer" screen appears, do the following:
    a. Click **Load...** if you want to use a list of IP addresses that you previously saved.
    b. If you do not have a saved list available, or you want to add to a loaded list, type the IP address of a Management Card you want to update into the text box located next to the **Add IP** button.
    c. If necessary, update the **Administrator User Name**, **Password**, and **FTP Server Port** settings to match the settings used by that Management Card, and then click **Add IP**.
    d. Repeat **Step a** and **Step b** until all of the Management Cards have been added to the list.
    e. Click **Save...**, if you want to save the list as a file you can use again.
    f. Click **Next>**.
8. Click **Apply** on the "Remote File Transfer via FTP" screen to initiate the transfers. This screen will report the status of the transfer to each Management Card. A popup message box will inform you when the transfers have been completed.
9. When done, click **Close**.

# APC® Management Card

## Firmware & Configuration File Transfers

## Introduction

**Overview**

The Management Card automatically recognizes two types of binary files: firmware and configuration. Both types of files contain a header and one or more Cyclical Redundancy Checks (CRCs) to ensure that the data contained in the files is not corrupted before or during the transfer operation.

When new firmware is transmitted to the Management Card, the program code is updated and new features become available. When a configuration file is transmitted to the Management Card, the configuration settings are updated accordingly, and the Management Card ignores any other type of files transmitted.

There are several ways to transfer firmware and configuration files to the Management Card. This chapter describes the following options available for transferring files to the Management Card: Upgrading the Management Card's firmware, and updating the Management Card's configuration settings.

# Firmware & Configuration File Transfers

## Upgrading the Firmware

**Firmware defined**    Broadly defined, firmware is highly specialized, reliable software that runs on non-PC type computers. The firmware allows the Management Card to perform useful work, like managing a UPS and its Environmental Monitoring SmartSlot Card, a MasterSwitch device, or an Environmental Monitoring Unit.

**Benefits of upgrading firmware**    Upgrading the firmware on the Management Card has several benefits. First, new firmware will have the latest bug fixes and performance improvements. Second, any new features that have been added will become available for immediate use. Third, keeping the firmware versions consistent across your network simplifies the management task, since all Management Cards will support the same features in the same manner.

**Obtaining latest firmware version**    To get the latest firmware version, visit the Software Download page at the APC Web site (*http://www.apcc.com*) to see what, if any, firmware is available for download, or contact APC Customer Support (depending on the type of upgrade, there may be a charge). The firmware upgrade consists of the two files described in **Firmware files** on the next page: the APC Operating System (AOS) module and the application module.

**Before you begin upgrading your firmware**    Before you begin a firmware upgrade, it is important that you understand some basic terminology, as well as the steps required. Becoming familiar with the information in this section will save you time when upgrading firmware on a Management Card.

# Firmware & Configuration File Transfers

## Upgrading the Firmware *continued*

**Firmware files**

A firmware upgrade consists of two files: an APC Operating System module (AOS), and an application module.

**The AOS module.** This file contains the operating system and network stack. The AOS module file name has the following format:

```
aos*.bin
```

- aos: indicates that this is an APC Operating System module.
- *: stands for a 3-number code that indicates the version number for the AOS file. For example, a code of 300 would indicate v3.0.0.

  **Note:**  To find out what the most recent version of the AOS module is for your particular device's Management Card, visit the Software Download or Product pages at the APC Web site (*http://www.apcc.com*).

- bin: indicates that this is a binary file.

**The application module.** This file provides the Management Card with several user interfaces and the ability to communicate with a UPS and its Environmental Monitoring SmartSlot Card, a MasterSwitch unit, or a Environmental Monitoring Unit. Which application a Management Card uses depends on the device it supports.

- Symmetra® *Power Array*™ (*sy\*.bin*)
- Smart-UPS® and Matrix-UPS® (*sumx\*.bin*)
- Silcon™ DP300E series UPS (*dp3e\*.bin*)
- MasterSwitch (*ms\*.bin*)
- MasterSwitch *plus* (*msp\*.bin*)
- Environmental Monitoring Unit (*em\*.bin*)

  **Note:**  The asterisk stands for the 3-number code that indicates the version number of the application file. For example, a code of 253 would indicate v2.5.3. To find out what the most recent version of the application module is for your particular device's Management Card, visit the Software Download page at the APC Web site (*http://www.apcc.com*).

The AOS module must be transmitted to the Management Card first. Once the new AOS module has been successfully transferred, the application module must be transmitted to the Management Card. For detailed instructions on how to transfer both modules to the Management Card, see **Upgrade methods** on the next page.

# Firmware & Configuration File Transfers

## Upgrading the Firmware *continued*

**Upgrade methods**    Below are the methods, listed in order of simplicity, used to upgrade the Management Card's firmware:

- Using the Web/SNMP Management Card Wizard to locally upgrade a single Management Card, or to upgrade Management Cards over the network. For more information, see **Web/SNMP Management Card Wizard on page 4**.
- Using FTP to upgrade Management Cards over the network. For detailed instructions, see **Using FTP to Upgrade on page 22**.
- Using XMODEM to upgrade Management Cards that are not available on the network. For detailed instructions, see **Using XMODEM to Upgrade on page 24**.

# Firmware & Configuration File Transfers

## Using FTP to Upgrade

**Upgrading a single Management Card on the network**

To upgrade a single Management Card that is available on the network, use a command prompt FTP Client. To perform an upgrade using this method, the Management Card must be:

- Configured with its TCP/IP (**System IP**, **Subnet Mask**, and **Default Gateway** addresses) settings.
- Attached to the network.
- Set up so that FTP Server is enabled.

To upgrade using a command prompt FTP Client, perform the following steps in the order given:

1. Open an MS-DOS command prompt window on a PC that is connected to the network. Go to the directory that contains the firmware upgrade files (in this example the `C:\apc` directory contains the files for a Symmetra *Power Array*) and enter the commands shown in **bold**:

   ```
   C:\>cd\apc

   C:\apc>dir

     Volume in drive C has no label
     Volume Serial Number is 405F-1BD2
     Directory of C:\apc

   .              <DIR>     10-08-98 4:59p.
   ..             <DIR>     10-08-98 4:59p..
   AOS300 BIN    327,680 10-08-98 1:02paos300.bin
   SY300 BIN     458,752 10-08-98 1:02psy300.bin

           2 file(s)                  786,432 bytes
           2 dir(s)   763,691,008 bytes free

   C:\apc>
   ```

2. Open an FTP client session:

   ```
   C:\apc>ftp
   ftp>
   ```

3. Connect to the Management Card. In this example, the Management Card's IP address is 150.250.6.10:

   - If the Management Card's **FTP Server Port** setting is **21** (the default), the command would look like this:

     ```
     ftp> open 150.250.6.10
     ```

   - If the Management Card's **FTP Server Port** setting has been changed from its default of **21**, such as to **21000** in this example, the command would look like this:

     ```
     ftp> open 150.250.6.10:21000
     ```

*Continued on next page*

# Firmware & Configuration File Transfers

## Using FTP to Upgrade *continued*

**Upgrading a single Management Card on the network, continued**

4. Log in using the Administrator **User Name** and **Password**. This example uses **apc**, which is the default for both:

```
Connected to 150.250.6.10.
220- APC FTP server ready.
220
User (150.250.6.10:(none)):apc
331 User name okay, need password.
Password:apc
230 User logged in, proceed.
ftp>
```

5. Upgrade the AOS. This example uses the AOS file associated with a Management Card that is used with a Symmetra *Power Array*:

```
ftp> bin
200 Command okay.
ftp>
ftp> put aos300.bin
200 Command okay.
150 Opening data connection for aos300.bin
250 Requested file action okay, completed.
Management Card Rebooting....
327680 bytes sent in 5.99 seconds (54.70 Kbytes/sec)
ftp>
```

6. Close the FTP client session:

```
ftp>quit
C:\apc>
```

7. Wait 20 seconds.

8. Repeat **Step 3** through **Step 7** for the application module. In **Step 5**, use the application module file name (*sy300.bin* for this example) in place of the AOS module file name.

**Upgrading multiple Management Cards on the network**

To upgrade multiple Management Cards using an FTP client, write a script which automatically performs the steps in **Upgrading a single Management Card on the network** above.

# Firmware & Configuration File Transfers

## Using XMODEM to Upgrade

---

**Procedure for upgrading using XMODEM**

To upgrade the firmware using XMODEM, use the following procedure:

1. Select a serial port at a computer to be used for a terminal-emulation connection with the Management Card.

2. Disable any service that currently uses that serial port, such as PowerChute *plus* or UNIX Respond.

3. Connect the smart-signaling cable (940-0024) that came with the Management Card to the serial port on the computer and to the serial port at the Management Card's device.

   **Note:** If the Management Card is used at a UPS, and the computer uses smart-signaling PowerChute *plus* with that UPS, you do not need to perform **Step 3**: A smart-signaling cable (940-0024 or 940-1524) is already installed. For simple-signaling, temporarily replace the cable.

4. Run a terminal program, such as HyperTerminal.

5. Configure the serial port for **2400 bps**, **8 data bits**, **no parity**, **1 stop bi**t, and **no flow control**, then save the changes.

6. Press ENTER to display the **User Name** prompt (you may need to press ENTER two or three times).

7. Enter your Administrator **User Name** and **Password**.

   **Note:** The default for both is **apc**.

8. Start an XMODEM transfer:

   a. Select option 3—**System**.

   b. Select option 4—**File Transfer**.

   c. Select option 2—**XMODEM**.

   d. Type Yes at the prompt to continue with the transfer.

9. Select the appropriate baud rate. The higher the baud rate, the faster the firmware upgrades.

10. Change the terminal program's baud rate to match the one you selected in **Step 9**.

11. Press ENTER to continue.

12. From the terminal program's menu, select the binary AOS file to transfer via XMODEM-CRC.

*Continued on next page*

# Firmware & Configuration File Transfers

## Using XMODEM to Upgrade *continued*

**Procedure for upgrading using XMODEM, continued**

13. After the XMODEM transfer is complete, set the baud rate to **2400**. The Management Card will automatically reboot itself.

    **Note:** Never remove the Management Card before it completes the reboot cycle or the Management Card will be damaged. The reboot cycle is complete when the status LED turns off, then turns solid green or slowly flashes red after 20 seconds.

14. Repeat **Step 6** through **Step 13** to install the application module. In **Step 12**, substitute the application module file name (the one with the msp prefix) for the AOS module file name.

# Firmware & Configuration File Transfers

## Verifying Upgrades and Updates

Overview

You can verify that the firmware upgrade or the last configuration file transfer was successful by looking at the **Last Transfer Result** message. This message is available in the **File Transfer** option in the **System** menu, or by using an SNMP Get to the **mfiletransferStatus LastTransferResult** OID.

Transfer result codes

The following table lists the possible **Last Transfer Result** codes.

| Code | Description |
|---|---|
| Successful | The file transfer was successful. |
| Result not available | There are no recorded file transfers. |
| Failure unknown | The last file transfer failed for an unknown reason. |
| Server inaccessible | The TFTP or FTP server could not be found on the network |
| Server access denied | The TFTP or FTP server denied access. |
| File not found | The TFTP or FTP server could not locate the requested file. |
| File type unknown | The file was downloaded but the contents were not recognized. |
| File corrupt | The file was downloaded but at least one CRC was bad. |

You can also verify that the expected versions of newly upgraded APC Operating System and application modules are displayed in the **About Card** option in the **System** menu, or by using an SNMP Get to the MIB II **sysDescr** OID.

# Firmware & Configuration File Transfers

## Updating the Configuration Settings

**Configuration settings**

The Management Card stores its configuration settings internally. These include TCP/IP, TFTP, FTP, Web, Device Manager, password, and system settings.

**Editing configuration settings**

There are several ways to edit the Management Card's configuration settings. One method is to log into either the Web interface or the Control Console (either serially or through Telnet). Any setting that can be edited can be changed in these interfaces. Another method is to use SNMP to perform Sets. However, when you use SNMP, only settings which have OIDs in the MIB defined as read-write can be edited.

**Configuration files**

Configuration files provide another way to alter the settings of a Management Card. A configuration file is a binary-encoded file that includes a header, multiple CRCs, and configuration data; it is not editable in a text editor, since such changes would cause the CRCs to be incorrect.

After transferring a configuration file to the Management Card, the Management Card will assume all of the new settings specified in the configuration file. A configuration file will have a *.cfg* extension.

**Creating configuration files**

Configuration files can be created using the Web/SNMP Management Card Wizard or the I2C Configuration Utility, both of which operate under Windows 95, Windows 98, Windows NT 4.0, and Windows 2000. For information about how to use the Wizard, see **Web/SNMP Management Card Wizard on page 4**; for information about how to use the I2C utility, see **I2C Configuration Utility on page 15**.

**Transferring configuration files to a Management Card**

There are several ways to transfer a configuration file to a Management Card. You can:

- Specify the configuration file as the BOOTP filename in a BOOTP response.
- Use the Web/SNMP Management Card Wizard (included on the CD) to transfer the configuration file to one or more Management Cards.
- Upload the configuration file to the Management Card using FTP.
- Initiate a TFTP or FTP download of a configuration file using the Web interface, Control Console, or SNMP.

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating using a BOOTP bootup filename**

To update the configuration settings using a BOOTP bootup filename, follow the steps below in the order given:

1. Create a configuration file by using the Wizard (as described in **Creating a configuration file on page 12**) or the I2C utility (as described in **I2C Configuration Utility on page 15**).

2. In the BOOTPTAB file of your BOOTP server, specify the Management Card's TCP/IP settings (**System IP**, **Subnet Mask**, and **Default Gateway** addresses). Specify the configuration file as the **Bootup Filename**.

   **Note:**  The **Bootup Filename** must be less than 33 characters, and may contain path information.

3. Install or reboot the Management Card, to initiate a BOOTP request. You can reboot the Management Card from the **Tools** option in the **System** menu, or by using an SNMP Get to the **mcontrolRestartAgent** OID. You can also reboot the Management Card by pressing the Reset button on the faceplate.

When the Management Card receives the BOOTP response it will assume the System IP, Subnet Mask, and Default Gateway addresses supplied by BOOTP. The Management Card will also automatically recognize that a configuration file has been specified in the Bootup Filename and will attempt to download that file.

The Management Card will make a TFTP request for the **Bootup Filename** from the same IP address that supplied the BOOTP response. If a TFTP server is present on that computer and the configuration file is in the appropriate directory, then the Management Card will download the configuration file and assume all of the specified settings.

If the TFTP request fails, the Management Card will make an FTP request for the **Bootup Filename** from the computer that supplied the BOOTP response. The FTP request will use the FTP Client **User Name** and **Password**, previously configured in the Management Card, to log in to the FTP server. If the FTP server is present and the configuration file is in the appropriate directory, the Management Card will download the configuration file and assume all of that file's specified settings.

**Verifying the update**

You can see whether the file transfer was successful by looking at the **Last Transfer Result** message under the **File Transfer** option in the **System** menu, or by using an SNMP Get to the **mfiletransferStatusLast TransferResult** OID, as described in **Verifying Upgrades and Updates on page 26**.

*Continued on next page*

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating using the Web/SNMP Management Card Wizard**

To update the configuration settings using the Web/SNMP Management Card Wizard, follow the steps below in the order given:

**Note:** For a detailed description of how to update the configuration settings of one or more Management Cards, see **Web/SNMP Management Card Wizard on page 4**. The following steps describe only the general process of updating the configuration settings and do not address many of the available options.

1. Install (if necessary) and run the Web/SNMP Management Card Wizard (included on the CD). For details on installing the Wizard, **Installing the Wizard on page 5**.

2. If you have a saved INI file, load it and change any settings as needed. You can also create and save new settings.

3. Click **Finish**.

4. Select the settings you want to transmit to the Management Card.

5. Click **Next>**.

6. You can view, print, and save your new settings. When finished click **Next>**.

7. Choose the **Network (via FTP)** option and click **Next>**.

8. If you have saved a list of Management Card IP addresses, load that list now. If you do not have a saved list, enter the IP addresses of the Management Cards that you want to send the configuration settings. Enter the **FTP Server Port** and Administrator **User Name** and **Password** of the Management Cards that you are transmitting the settings to.

9. Save the new IP address list and click **Next>**.

10. Click **Apply** to transmit the configuration settings to all of the specified Management Cards. You can save, print, or clear the window containing the download results.

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating using an FTP Client**

To update the configuration settings using an FTP Client, follow the steps below in the order given:

1. Create a configuration file by using the Wizard (as described in **Creating a configuration file on page 12**) or the I2C utility (as described in **I2C Configuration Utility on page 15**).

2. Open an MS-DOS command prompt window on a machine that is connected to the network.

3. Go to the directory containing the configuration file (`C:\apc` for this example) and enter the commands shown in **bold**:

   ```
   C:\>cd\apc

   C:\apc>dir

     Volume in drive C has no label
     Volume Serial Number is 405F-1BD2
     Directory of C:\apc

   .             <DIR>    10-08-98 4:59p.
   ..            <DIR>    10-08-98 4:59p..
   MYCONFIG CFG     146   10-08-98 1:02pmyconfig.cfg

           1 file(s)                  146 bytes
           2 dir(s)  763,691,008 bytes free

   C:\apc>
   ```

4. Open an FTP client session:

   ```
   C:\apc> ftp
   ftp>
   ```

5. Connect to the Management Card. In this example, the Management Card's IP address is 150.250.6.10:

   – If the Management Card's **FTP Server Port** is **21** (the default), the command would look like this:

   ```
   ftp> open 150.250.6.10
   ```

   – If the Management Card's **FTP Server Port** has been changed from its default setting of **21**, such as to **21000** in this example, the command would look like this:

   ```
   ftp> open 150.250.6.10:21000
   ```

*Continued on next page*

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating using an FTP Client, continued**

6. Log in using the Administrator **User Name** and **Password**. This example uses **apc**, which is the default for both:

```
Connected to 150.250.6.10.
220- APC FTP server ready.
220
User (150.250.6.10:(none)):apc
331 User name okay, need password.
Password:apc
230 User logged in, proceed.
ftp>
```

7. Upload the configuration file, This example uses *myconfig.cfg*:

```
ftp> bin
200 Command okay.
ftp>ftp> put myconfig.cfg
200 Command okay.
150 Opening data connection for myconfig.cfg
250 Requested file action okay, completed.
System Restarting....
146 bytes sent in 0.00 seconds (146000.00 Kbytes/sec)
ftp>
```

8. Close the FTP client session:

```
ftp>quit

C:\apc>
```

9. Verify that the file transfer was successful as described in **Verifying Upgrades and Updates on page 26**.

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating by initiating a TFTP download**

To update the configuration settings, using a TFTP download, follow the steps below in the order given:

1. Create a configuration file by using the Wizard (as described in **Creating a configuration file on page 12**) or the I2C utility (as described in **I2C Configuration Utility on page 15**).

2. Configure the **TFTP Remote Server IP** to the address of the TFTP server by using one of the following procedures:
   – Web Interface: Log in as the administrator, then access the **TFTP/FTP** option in the **Network** menu. Configure the **TFTP Client Remote Server IP** setting to the address of the TFTP server.
   – Control Console: Log in as the Administrator, then access the **TFTP Client** option in the **Network** menu. Configure the **Remote Server IP** setting to the address of the TFTP server.
   – SNMP: Set the **mfiletransferConfigTFTPServerAddress** OID to the address of the TFTP server.

3. Set the name of the configuration file by using one of the following methods:
   – Web Interface: Access the **File Transfer** option in the **System** menu. Set the **Filename** setting to the name of the configuration file you want to download. **Filename** can include path information.
   – Control Console: Access **Settings** in the **File Transfer** option under the **System** menu. Set the **Filename** setting to the name of the configuration file you want to download. **Filename** can include path information.
   – SNMP: Set the **mfiletransferConfigSettingsFilename** OID to the name of the configuration file you want to download. The OID value can include path information.

4. Initiate the TFTP download using one of the following methods:
   – Web Interface: Access the **File Transfer** option in the **System** menu. Select **TFTP** from the **Initiate File Transfer Via** drop-down menu, then click **Apply** to initiate the download.
   – Control Console: Access **TFTP Client** in the **File Transfer** option under the **System** menu, then type `Yes` to initiate the download.
   – SNMP: Set the **mfiletransferControlInitiateFileTransfer** OID to **initiatefFileTransferDownloadViaTFTP**.

5. Verify that the file transfer was successful as described in **Verifying Upgrades and Updates on page 26**.

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating by initiating a FTP download**

To update the configuration settings using a FTP download, follow the steps below in the order given:

1. Create a configuration file by using the Wizard (as described in **Creating a configuration file on page 12**) or the I2C utility (as described in **I2C Configuration Utility on page 15**).

2. Configure the **FTP Remote Server IP**, **User Name**, and **Password** settings through one of the following methods:
   – Web Interface: Log in as the Administrator, then access the **TFTP/FTP** option in the **Network** menu. Configure the settings identified above to the address, user name and password of the FTP server.
   – Control Console: Log in as the Administrator, then access **FTP Client** option in the **Network** menu. Configure the settings identified above to the address, user name and password of the FTP server.
   – SNMP: Set the **mfiletransferConfigFTPServerAddress**, **mfiletransferConfigFTPServerUser**, and **mfiletransferConfig FTP-ServerPassword** OIDs to the address, user name and password of the FTP server.

3. Set the name of the configuration file through one of the following methods:
   – Web Interface: Access the **File Transfer** option in the **System** menu. Set the **Filename** setting to the name of the configuration file you want to download. **Filename** can include path information.
   – Control Console: Access **Settings** in the **File Transfer** option under the **System** menu. Set the **Filename** setting to the name of the configuration file you want to download. **Filename** can include path information.
   – SNMP: Set the **mfiletransferConfigSettingsFilename** OID to the name of the configuration file you want to download. The OID value can include path information.

# Firmware & Configuration File Transfers

## Updating the Configuration Settings *continued*

**Updating by initiating a FTP download, continued**

4. Initiate the FTP download through one of the following methods:
   – Web Interface: Access the **File Transfer** option in the **System** menu. Select **FTP** from the **Initiate File Transfer Via** drop-down menu, then click **Apply** to initiate the download.
   – Control Console: Access **FTP Client** in the **File Transfer** option under the **System** menu, then type Yes to initiate the download.
   – SNMP: Set the **mfiletransferControlInitiateFileTransfer** OID to **initiatefFileTransferDownloadViaFTP**

5. Verify that the file transfer was successful as described in **Verifying Upgrades and Updates on page 26**.

# APC®

## www.apcc.com