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USER'S GUIDE
network management card

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Introduction

Product Description

Functionality

The following APC Network Management Cards are web-based management products that use multiple, open standards such as Telnet, HTTP, and SNMP to provide full management of supported devices:

- AP9617 Network Management Card *EX*: The following is a list of some of this Management Card's features:
  - Generates system log (Syslog) messages
  - Allows using a Dynamic Host Configuration Protocol (DHCP) server to provide the Management Card's network (TCP/IP) values
  - Allows using the APC Remote Monitoring Service (RMS)
  - Provides Data and Event Logs
  - Provides UPS scheduling features
  - Provides support for the APC PowerChute® network shutdown utility
  - Limits SNMP traps and Email notifications based on the severity level of the UPS or system events
- AP9618 Network Management Card *EM/MDM*: Includes all AP9617 features, an Integrated Environmental Monitor that includes an output relay, and an internal analog modem.
- AP9619 Network Management Card *EM*: Includes all AP9617 features and an Integrated Environmental Monitor that includes an output relay.

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Kits are available to upgrade an AP9617 to include AP9618 (AP9618U kit) or AP9619 (AP9619U kit) features. The AP9618U kit can also upgrade an AP9619 to include the AP9618 analog modem feature.

The Management Card can be installed into the following APC devices:

- Any Smart-UPS® or Matrix-UPS® model that has an internal expansion slot, as well as any Silcon™, Symmetra®, or Symmetra 3-Phase UPS



A Silcon UPS, which does not have an expansion slot, requires using a Silcon Triple Expansion Chassis (AP9604S).

- Expansion Chassis (AP9600)
- Triple Expansion Chassis (AP9604)

Initial set-up

You must define three TCP/IP settings for the Network Management Card before it can operate on the network.

- IP address of the Management Card
- Subnet mask
- IP address of the default gateway

For instructions about how to configure the TCP/IP settings, see the Network Management Card *Installation and Quick Start Manual*, provided in printed form, and in PDF on the APC Network Management Card *utility* CD (.\doc\Insguide.pdf).

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For information about how to use a DHCP server to configure the TCP/IP settings at a Management Card, see Boot Mode.

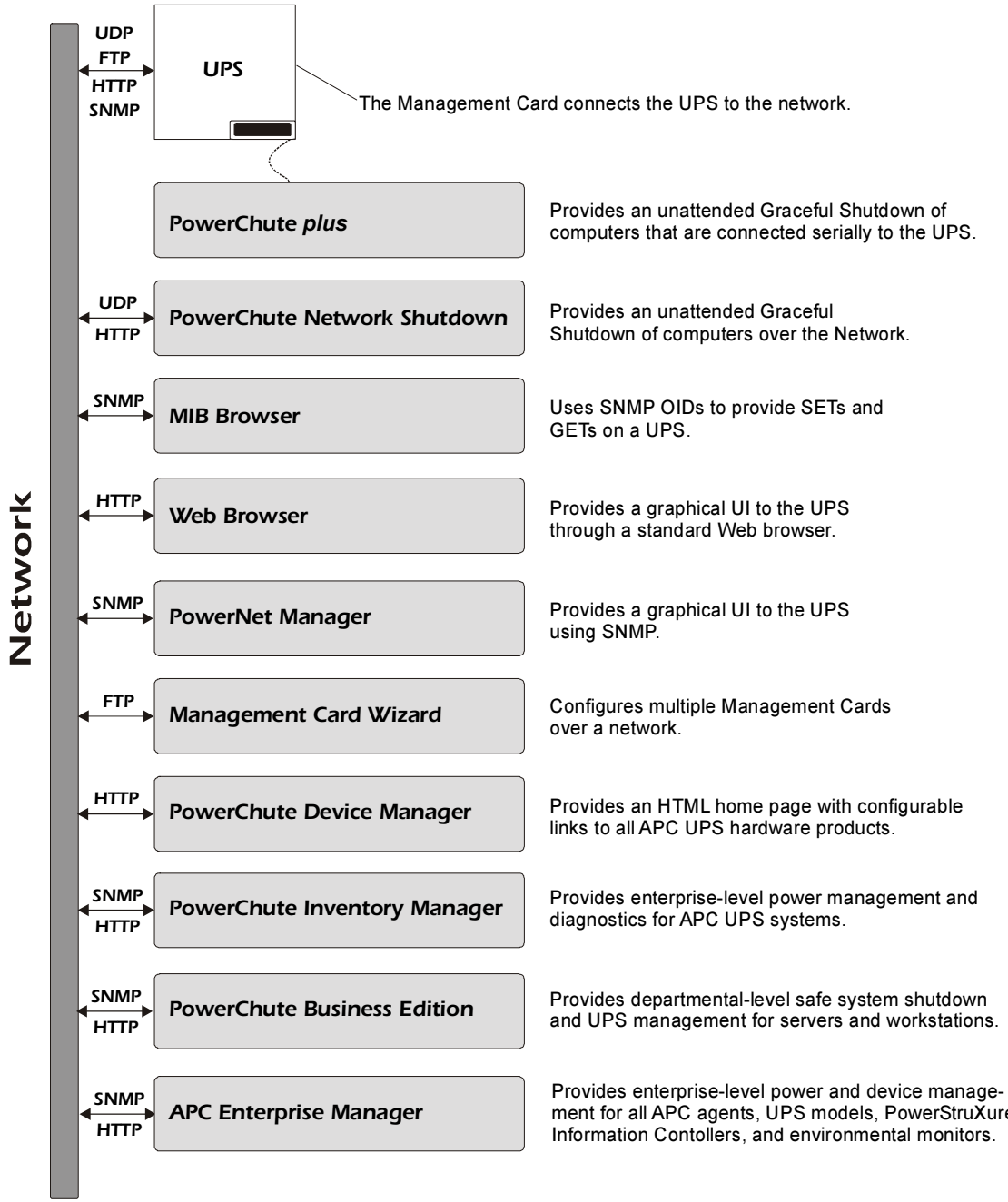
Network management features

The Management Card, along with other APC products, can perform a variety of tasks. The figure that follows identifies and briefly describes the network management applications that can work with a UPS that connects to the network through a Management Card.

Note

The APC Management Card Wizard identified in the following figure can be used for mass configuration, either serially or over the network. It cannot be used to download firmware upgrades.

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Internal Management Features

Overview

The Management Card has two internal interfaces (control console and Web interface) which provide menus with options that allow you to manage the UPS, an environmental monitor (including the Integrated Environmental Monitor at an AP9618 or AP9619 Network Management Card), and the Management Card. The Management Card's SNMP interface also allows you to use an SNMP browser with the PowerNet MIB to manage the UPS and environmental monitor.

For more information about the Management Card's internal user interfaces, see Control Console and Web Interface; for more information about how to use the PowerNet MIB with an SNMP browser, see the *PowerNet® SNMP Management Information Base (MIB) Reference Guide* which is provided on the APC Network Management Card *utility* CD (.\doc\Mibguide.pdf)

Login control

Only one user at a time can log into the Management Card to use its internal user interface features. The priority for access is as follows:

- Local access to the control console from a computer with a direct serial connection to the Management Card always has the highest priority
- Telnet access to the control console from a remote computer has the next highest priority
- Web access has the lowest priority



For information about how SNMP access to the Management Card is controlled, see SNMP.

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Types of user accounts

The Management Card has two levels of access (Administrator and Device Manager), both of which are protected by **Password** and **User Name** requirements.

- An Administrator can use all of the management menus available in the control console and the Web interface. The Administrator's default **User Name** and **Password** are both **apc**.
- A Device Manager can only access the **Log** option in the **Events** menu and use the **UPS** and **Environment** menus. The Device Manager's default **User Name** is **device**, and the default **Password** is **apc**.

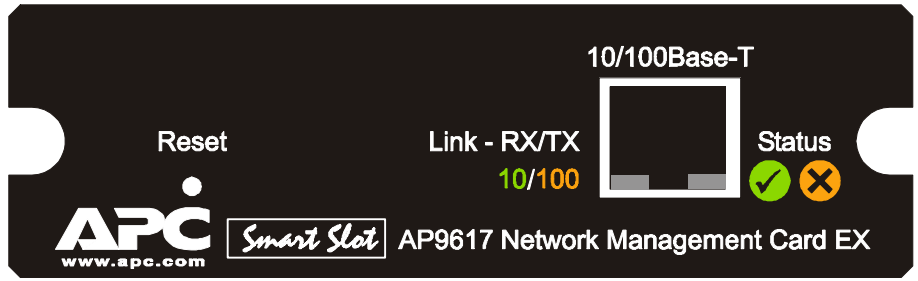
For information about how to set Administrator and Device Manager **User Name** and **Password** settings, see User Manager.

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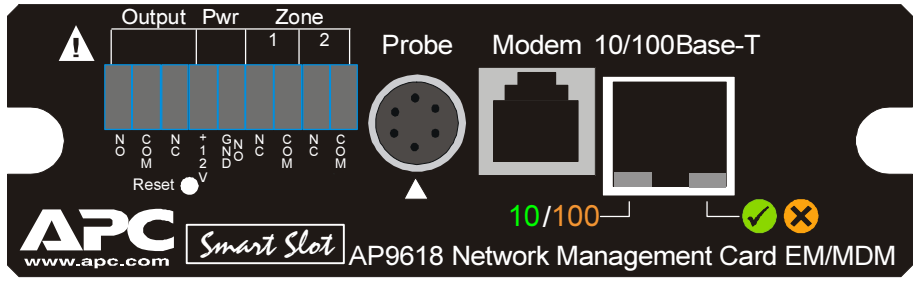
Front Panel

Introduction

The graphic below identifies the front-panel features of the three versions (AP9617, AP9618, and AP9619) of the Network Management Card.

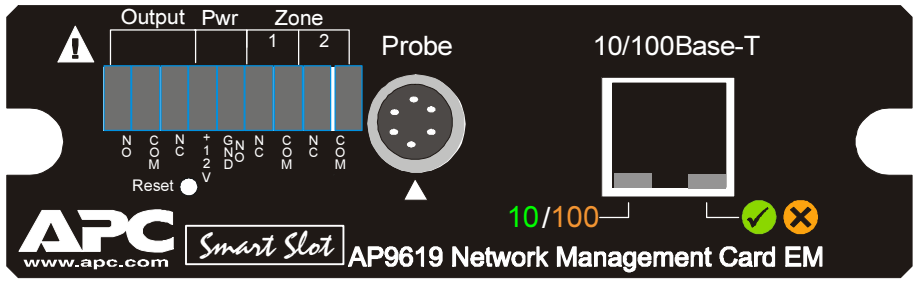


Includes Status LEDs, Reset button, and 10/100Base-T connector.



Includes the AP9617 features, an analog modem connector, and the Integrated Environmental Monitor's connections (probe, input contacts, and output relay contacts).

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Includes AP9617 features and the Integrated Environmental Monitor's connections (probe, input contacts, and output relay contacts).

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Features

AP9618 or AP9619	Description
9-pin connector[1]	• Output relay (**Output**): Normally closed (**NC**), common (**COM**), and normally open (**NO**) pins used by the Integrated Environmental Monitor's output relay at an AP9618 or AP9619 Management Card. • Power (**Pwr**): Normally-open ground (**GND NO**) and **+12VDC** pins. • Input contacts (**Zone 1** and **2**): Two sets of normally closed (**NC**) and common (**COM**) pins used by the Integrated Environmental Monitor at an AP9618 or AP9619 Management Card.
Probe connector[1]	Connects a Temperature/Humidity probe to the IEM at the AP9618 or AP9619 Management Card.
Modem connector[2] (AP9618 only)	Connects the internal analog modem at an AP9618 Management Card to an analog phone line to provide for out-of-band communications.
All Management Cards	**Description**
Reset button	Resets the Management Card while power remains on.
10/100 Base-T connector	Connects the Management Card to the Ethernet network.
Link-RX/TX (10/100) LED	See Link-RX/TX (10/100) LED.
Status LEDs	See Status LEDs.

1 For information about how to manage the Integrated Environmental Monitor, see Environment Menu.
2 For information about how to configure this feature for dial-in access to the control console at an AP9618 Network Management Card, see Modem (AP9618 control console).

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Link-RX/TX (10/100) LED

This LED indicates the network status.

Condition	Description
Off	Either the Management Card is receiving no network traffic, or the device which connects the Management Card to the network is turned off or not operating correctly.
Flashing **Green**	The Management Card is receiving data packets from the network at 10 Megabits per second (Mbps).
Flashing **Orange**	The Management Card is receiving data packets from the network at 100 Megabits per second (Mbps).

Status LEDs

These LEDs indicate the Management Card's status.

Condition	Description
Off	The Management Card has no power.
Solid **Green**	The Management Card has valid TCP/IP settings.
Flashing **Green**	The Management Card does not have valid TCP/IP settings.[1]
Solid **Orange**	A hardware failure has been detected in the Management Card. Contact APC Worldwide Customer Support.
Flashing **Orange**	The Management Card is making BOOTP[2] requests.[1]
Flashing **Orange** and **Green**	The Management Card is making DHCP[3] requests.[1]

1 If you do not use a BOOTP or DHCP server, see the Network Management Card *Installation and Quick Start Manual* provided in printed format, and in PDF on the APC Network Management Card *utility* CD (.\doc*Insguide.pdf*) for information about how to configure the Management Card's TCP/IP settings.
2 For more information about how to use a BOOTP server, see the *Management Card Addendum* on the APC Network Management Card *utility* CD (.\doc*Addendum.pdf*).
3 For more Information about how to use a DHCP server, see Boot Mode.

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Watchdog Features

Overview

The Management Card is designed to recover from unanticipated inputs. Through the use of internal, system-wide watchdog mechanisms, the Management Card can detect most internal problems. When it does, it reboots itself to recover from the internal problem. This results in a **System: Warmstart** event being recorded in the Event Log.

Network interface watchdog mechanism

The Management Card implements numerous internal watchdog mechanisms to protect itself from becoming inaccessible over the network. One of these mechanisms ensures that the Management Card can receive network traffic: if within an approximately 9.5-minute period the Management Card does not receive any network traffic (either direct, such as SNMP, or broadcast, such as an Address Resolution Protocol [ARP] request) then it will assume that there is a problem with its network interface and reboot itself.

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The role of the Default Gateway in resetting the network timer

Most networks will have some level of broadcast traffic which will be received by the Management Card and reset the 9.5-minute timer back to zero. But it is possible (for example, late at night) that the Management Card will not see any traffic for 9.5 minutes. Since it is not desirable for the Management Card to reboot just because the network is quiet, the Management Card will attempt to contact the default gateway approximately once every 4.5 minutes. If the gateway is present, it will respond to the Management Card and the 9.5-minute timer will be reset to zero.

If your application does not require a gateway or does not have one, specify the IP address of a computer on the same subnet which is up and running on the network most of the time. This will have the same effect as configuring a gateway.

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Control Console

How To Log In

Overview

You can use either a local (serial) connection, or a remote (Telnet) connection with a computer on the Management Card's subnet to access the control console. For an AP9618 Network Management Card, you can also use its internal analog modem to access the control console (see Modem (AP9618 control console)).

Use case-sensitive **User Name** and **Password** entries to log in (by default, **apc** and **apc**, for an Administrator, or **device** and **apc**, for a Device Manager).



If you cannot remember your **User Name** or **Password**, see How to Recover from a Lost Password.

Remote access to the control console

You can use Telnet to log into the control console from any computer on the same subnet as the Management Card.

1. At a command prompt, type `telnet` and the Management Card's System IP address, and then press ENTER. For an IP address of 159.215.12.114, the command would look like this:

   ```
   telnet 159.215.12.114
   ```

2. Enter your **User Name** and **Password**.

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Local access to the control console

You can use a local computer, a computer that connects to the Management Card through the serial port at the Management Card's UPS or expansion chassis, to access the control console.

1. Select a serial port at the local computer and disable any service which uses that port.
2. Unless an APC smart-signaling cable (940-0024 or 940-1524) is already connected to the selected port, connect the smart-signaling cable that came with the Management Card to the selected port and to the serial port at the Management Card's UPS or chassis.
3. Run a terminal program (such as HyperTerminal) and configure the selected port for 2400 bps, 8 data bits, no parity, 1 stop bit, and no flow control, and save the changes.
4. Press ENTER to display the **User Name** prompt.
5. Enter your **User Name** and **Password**.

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How to Recover from a Lost Password

You can use a local computer, a computer that connects to the Management Card through the serial port at the Management Card's UPS or expansion chassis, to access the control console.

1. Select a serial port at the local computer and disable any service which uses that port.
2. Unless an APC smart-signaling cable (940-0024 or 940-1524) is already connected to the selected port, connect the smart-signaling cable that came with the Management Card to the selected port and to the serial port at the Management Card's UPS or chassis.
3. Run a terminal program (such as HyperTerminal) and configure the selected port for 2400 bps, 8 data bits, no parity, 1 stop bit, and no flow control, and save the changes.
4. Press ENTER to display the **User Name** prompt.
5. Press the Reset button on the Management Card, which causes the Management Card to restart, a process that typically takes five to ten seconds.
6. Press ENTER as many times as necessary to redisplay the **User Name** prompt, then use **apc** for the **User Name** and **Password**. (If you take longer than 30 seconds to log on after the **User Name** prompt is redisplayed, you must repeat steps 4 and 5.)
7. From the **Control Console** menu, select **System**, then **User Manager**.
8. Select **Administrator**, and change the **User Name** and **Password** settings, both of which are now defined as **apc**.
9. Press CTRL-C and log off. You must perform the entire procedure (log on, change the user name and password, and log off) within two minutes so that you are not logged off for inactivity. If you are logged off automatically, the new settings will not take effect, and you must repeat the entire procedure from the beginning.

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Reconnect any cable disconnected in step 2, and restart any service disabled in step 1.

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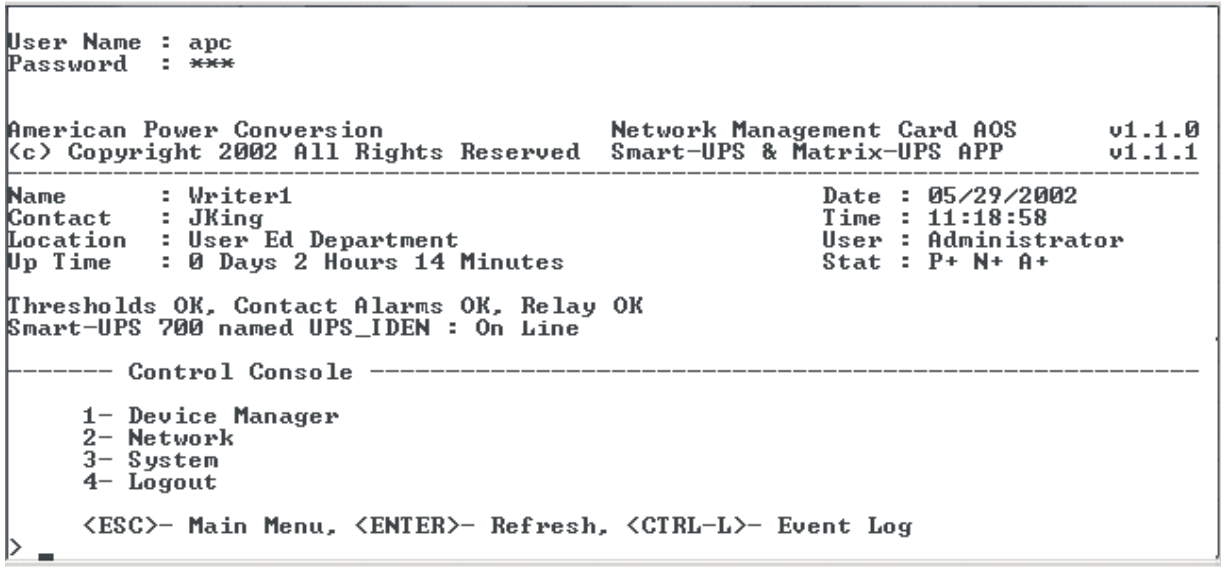
Main Screen

Example Main screen

The following is an example of the screen that appears when you log into the control console at an AP9618 or AP9619 Management Card that has the Integrated Environmental Monitor's output relay enabled (an AP9617 does not have an Integrated Environmental Monitor, so it cannot report status for an output relay).

Note

The **Relay OK** entry in the **Environment** status line indicates that the output relay is enabled and that no alarm condition exists.



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Information and status fields

Main screen information fields.

- Two fields identify the APC operating system (AOS) and application (APP) firmware versions. The application firmware uses a name that identifies the type of UPS that the Management Card connects to the network. In the example above, the Management Card uses the application firmware for a UPS in the Smart-UPS/Matrix-UPS family, in this case, a Smart-UPS 450.

```
Network Management Card AOS   v1.1.0
Smart UPS & Matrix UPS APP    v1.1.0
```

- Three fields identify the system **Name**, **Contact**, and **Location** values.

```
Name      : Writer1
Contact   : JKing
Location  : User Ed Department
```



For information about how to set the **Name**, **Contact**, and **Location** values, see System Menu.

- An **Up Time** field reports how long the Management Card has been running since it was last turned on or reset.

```
Up Time   : 1 Day 22 Hours 52 Minutes
```

- Two fields identify when you logged in, by **Date** and **Time**.

```
Date : 04/22/2002
Time : 06:44:47
```

- A **User** field identifies whether you logged in as an **Administrator** or **Device Manager**.

```
User : Administrator
```


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Main screen status fields.

- A **Stat** field reports the Management Card status.

  `Stat : P+ N+ A+`

  Where,
  `P+` indicates that the APC operating system (AOS) is Ok
  `N+` indicates that the network is Ok
  `N?` indicates that a BOOTP or DHCP request cycle is in progress
  `N-` indicates that the Management Card failed to connect to the network
  `N!` indicates that another device uses the Management Card's IP address
  `A+` indicates that the application is Ok
  `A-` indicates that the application has a bad checksum
  `A?` indicates that the application is initializing
  `A!` indicates that the application is not compatible with the AOS

  Note The AOS should always report that the status is OK (`P+`); you may not be able to access the Management Card if the AOS is not OK. If the AOS status in not OK, see APC Worldwide Customer Support for information about how to contact APC technical support.

- A **UPS model and name** field reports the status of the UPS.

  `Smart-UPS 700 RM named User Ed : On Line`

- The status of the probes (**Thresholds**) and contacts (**Contact Alarms**) at any environmental monitor, including the Integrated Environmental Monitor's output relay (**Relay**) at an AP9618 or AP9619 Management Card, is reported just above the UPS status (**UPS model and name**) field.

  `Thresholds Ok, Contact Alarms Ok, Relay OK`

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For more information about the UPS status, see UPS Status; for more information about probe, contact, and output relay status, see Environment Menu.

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Control Console Menus

Overview

The control console dynamically expands to provide options that you use to manage a Management Card, its UPS, and other supported devices. If a device is not present, the control console will not display options for that device. For example:

- The control console at a Management Card that connects with an environmental monitor, only, will not provide UPS options.
- The control console at an AP9618 or AP9619 Network Management Card displays options that you use to manage the Management Card's Integrated Environmental Monitor. These options would not be available at the control console for an AP9617.

Main menu

The main **Control Console** menu has options that provide access to the control console's management features:

```
1- Device Manager
2- Network
3- System
4- Logout
```



When you log in as Device Manager, you can only access the **Device Manager** menus.

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Menu structure

The menus in the control console list options by number and name. To use an option, type the option's number and press ENTER, then follow any on-screen instructions.

Some options access a new menu; other options allow you to change a setting. Menus that allow you to change a setting have an **Accept Changes** option which you must use before you exit a menu to save the changes you made.

While in a menu, you can also do the following:

- Type ? and press ENTER, to access brief menu option descriptions (if the menu has help available)
- Press ENTER, to refresh the menu
- Press ESC, to go back to the menu from which you accessed the current menu
- Press CTRL-C, to return to the main (**Control Console**) menu
- Press CTRL-D, to toggle between the **UPS** and **Environment** menus
- Press CTRL-L, to access the Event Log



For information about the Event Log, see Event-Related Menus.

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Device Manager option

This option accesses the **Device Manager** menu. This menu's options allow you to select the device that you want to manage:

```
1- Smart-UPS 700
2- Environment
```

The Environment option is only present when an environmental monitor is present. For an AP9618 or AP9619 Network Management Card, the Environment option accesses the menu options you use to configure the Integrated Environmental Monitor, as well as an external environmental monitor.



For information about the menu options that are available for managing a UPS, see UPS Menu; for information about the menu options that are available for managing environmental monitors, including the Integrated Environmental Monitor at an AP9618 or AP9619 Network Management Card, see Environment Menu.

Network option

To do any of the following tasks, see Network Menu:

- Configure the Management Card's TCP/IP settings, or, when the Management Card will get its TCP/IP settings from a server, configure the settings for the type of server (DHCP or BOOTP) to be used
- Use the Ping utility
- Define settings that affect the Management Card's FTP, Telnet, Web interface, SNMP, Email, DNS, and Syslog features

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System option

To do any of the following tasks, see System Menu:

- Control **Administrator** and **Device Manager** access
- Define the system **Name**, **Contact**, and **Location** values
- Set the **Date** and **Time** used by the Management Card
- Reboot the Management Card
- Reset control console settings to their default values
- Configure dial-in access to the control console at an AP9618 Network Management Card using the Management Card's internal analog modem
- Access system information about the Management Card

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Web Interface

Introduction

Overview

The Web interface provides options that you use to manage a Management Card, its UPS, and other supported devices (if a device is not present, the Web interface will not display options for that device). For example:

- The Web interface at a Management Card that connects with an environmental monitor, only, will not provide UPS options.
- The Web interface at an AP9618 or AP9619 Network Management Card displays options that you use to manage the Management Card's Integrated Environmental Monitor. These options would not be available at the Web interface for an AP9617, which has no Integrated Environmental Monitor.

Web menu options

Two **Web** menu options affect access to the Web interface.

- **Access**: Enables (by default) or disables the Web interface.
- **Port**: Defines the Web-server port (80, by default) used for the Web interface.

For more information about the Access and Port options, see FTP Server, Telnet and Web.

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Supported Web browsers

You can use Microsoft® Internet Explorer (IE) 5.0 (and higher) or Netscape® 4.0.8 (and higher) browsers to access the Management Card through its Web interface.

Some Web interface features (data verification, Event Log, Data Log, and MD5 authentication) require that you enable the following for your Web browser:

- JavaScript
- Java
- Cookies



For more information, see MD5 authentication (for the Web interface).

In addition, the Management Card cannot work with a proxy server. Therefore, before you can use a Web browser to access its Web interface, you must do one of the following:

- Configure the Web browser to disable the use of a proxy server for the Management Card
- Configure the proxy server to not proxy the specific IP address of the Management Card

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How to Log In

Overview

You can use a Management Card's DNS name or System IP address for the URL address of the Web interface. Use your case-sensitive **User Name** and **Password** settings to log in (by default, **apc** and **apc**, for an Administrator, or **device** and **apc**, for a Device Manager).

For information about the Web page that appears when you log into the Web interface, see Summary Page.

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URL address formats

Type the Management Card's DNS name or IP address in the Web browser's URL address field and press ENTER. Except as noted below, `http://` is automatically added by the browser.



If you get a "You are not authorized to view this page" error (Internet Explorer only), someone is logged into the Web interface or control console. If a "No Response" (Netscape) or "This page cannot be displayed" (Internet Explorer) error occurs, Web access may be disabled, or the Management Card may use a non-default Web-server port, and you did not include the correct port number in the address. For more information, see FTP Server, Telnet and Web.

- For a DNS name of Web1, the entry would look like this:

  `http://Web1`

- For a System IP address of 159.215.12.114, when the Management Card uses the default port (80) at the Web server, the entry would look like this:

  `http://159.215.12.114`

- For a System IP address of 159.215.12.114, when the Management Card uses a non-default port (5000, in this example) at the Web server, the entry would look like this:

  `http://159.215.12.114:5000`



For Internet Explorer, you must type in `http://` as part of the address when any port other than 80 is used or you will get a "This page cannot be displayed" error. For more information, see FTP Server, Telnet and Web.

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Summary Page

Example Web page

The following is an example of the navigation menu (see Navigation Menu) and "Summary" page that appear when you log into the Web interface at an AP9618 or AP9619 Management Card that has the Integrated Environmental Monitor's output relay enabled (an AP9617 does not have an output relay).

Note

The **Relay OK** entry in the **Environment** status line indicates that the output relay is enabled and that no alarm condition exists.

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When the Management Card connects with a UPS, you can click the battery status icon in the quick status tab that appears in the upper-right corner of any Web interface page to access the “Summary” page.

For more information about the help and status icons that can appear in the Web interface pages, see Quick status tab.



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"Summary" page fields

The "Summary" page has three sections:

- The UPS section reports the status of a connected UPS.
- The **Environment** section reports status information for any connected environmental monitor, including the Integrated Environmental Monitor's output relay at an AP9618 or AP9619 Network Management Card.
- The Management Card section reports the following information:
  - The **Name**, **Contact** and **Location** information for the Management Card
  - The login **Date** and **Time**
  - Type of **User** (**Administrator** or **Device Manager**)
  - How long (**Up Time**) the Management Card has been continuously running since it was turned on or reset
  - The **Status** of the Management Card

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Quick status tab

Three types of icons can appear in the quick status tab in the upper-right corner of every Web interface page:

- A question mark (?) provides access the online help for that page.
- When a UPS is connected, a battery icon identifies the current status of the UPS and accesses the “Summary” page from any other page:



The UPS is switched to bypass mode.

The UPS is operating normally.

The UPS is turned off.

The UPS is overloaded.

The UPS has a bad battery.

UPS is switched to battery operation.

A fault exists at the UPS.

Communication with the UPS has been lost, or the UPS is unsupported.

- When an environmental monitor is connected, including the Integrated Environmental Monitor at an AP9618 or AP9619, icons will identify any fault conditions:



A high-temperature threshold violation exists.

A low-temperature threshold violation exists.

A high-humidity threshold violation exists.

A low-humidity threshold violation exists.

States which contact device has a fault: either an input contact or the output relay at an AP9618 or AP9619 Management Card’s Integrated Environmental Monitor.

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Navigation Menu

Overview

When you log into the Web interface as an Administrator, the navigation menu (left frame) includes the following elements:

- The Management Card's IP address
- A **UPS** menu which uses the UPS model for its name (**Smart-UPS 700**, in the example on Example Web page)
- An **Environment** menu (if an environmental monitor is used)
- An **Events** menu
- A **Data** menu
- A **Network** menu
- A **System** menu



When you log in as a Device Manager, the **Network** and **System** menus do not appear in the navigation menu.

- A **Logout** option
- A **Help** menu
- A **Links** menu

UPS menu

For information about how to manage a UPS, see UPS Menu.

Environment menu

For information about how to manage environmental monitor, including the AP9618 or AP9619 Network Management Card's Integrated Environmental Monitor, see Environment Menu.

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Events menu

To do the following, see Event-Related Menus:

- Access the Event Log
- Configure the actions to be taken based on an event's severity level
- Configure SNMP Trap Receiver settings for sending event-based traps
- Define who will receive email notifications of events

Data menu

To do the following, see Data Menu:

- Access the Data Log
- Define the log interval (how often data will be sampled and recorded) for the Data Log

Network menu

To do the following, see Network Menu:

- Configure new TCP/IP settings for the Management Card
- Identify the Domain Name Service (DNS) Server and test the network connection to that server
- Define settings that affect FTP, Telnet, the Web interface, SNMP, and Email



For information about how the **Network** menu's **Telnet/Web** option can affect access to the Web interface, see Web menu options.

- Configure the Management Card's Syslog message feature

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System menu

To do the following, see System Menu.

- Control **Administrator** and **Device Manager** access
- Define the system **Name**, **Contact**, and **Location** values
- Set the **Date** and **Time** used by the Management Card
- Reboot the Management Card
- Reset control console settings to default settings
- Select **Fahrenheit** or **Celsius** for temperature displays
- Define the URL addresses used by the Web interface's user and APC logo links, as described in Links menu

Help menu

When you click **Help**, the **Contents** for the online help is automatically displayed to provide for easy navigation to a specific online help topic. However, from any of the Web interface pages, you can use the question mark (**?**) that appears in the quick status bar to link to the section of the online help that covers that page's content.

The **Help** menu also has an **About System** option you use to view information about the Management Card's **Model Number**, **Serial Number**, **Hardware Revision**, **Manufacture Date**, **MAC Address, Application Module** and APC OS (AOS) **Module**, including the date and time these modules were loaded.



In the control console, the **About System** option, which is a **System** menu option, identifies the **Flash Type** used.

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Links menu

Provides three user-definable URL link options. By default, these links access the following APC web pages:

- **APC's Web Site** accesses the APC home page
- **Testdrive Demo** accesses "APC's Web Driven Demo" site where you can try out APC web-enabled products
- **APC Monitoring** accesses the "APC Remote Monitoring Service" page where you can find more information about pay-for-monitoring services available from APC

You can use the following procedure to redefine these links so that they point to other UPS devices, or to the MasterSwitch devices and servers that are being powered by the UPS.

1. Click on **Links** in the **System** menu.
2. Define the any new names for the **User Links**.
3. Define the any new URL addresses that you want the **User Links** to access.
4. Click **Apply**.

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Network Menu

Introduction

Overview

The **Network** menu has the options that you use to do the following tasks:

- Define TCP/IP settings, including DHCP or BOOTP server settings, when one of those types of servers is used to provide the needed TCP/IP values
- Use the Ping utility
- Define settings that affect the Management Card's FTP, Telnet, Web interface, SNMP, Email, DNS, and Syslog features



Only an Administrator has access to the **Network** menu.

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Menu options

Unless noted, the following menu options are available in the control console and Web interface:

- TCP/IP
- DNS
- Send DNS Query (Web interface)
- Ping utility (control console)
- FTP Server, Telnet and Web
- SNMP
- Email
- Syslog

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Option Settings

TCP/IP

This option accesses the following settings:

- A Boot mode setting selects the method used to define the three TCP/IP values that a Management Card needs to operate on the network:
  - **System IP**: The IP address of the Management Card
  - **Subnet Mask**: The subnet mask value
  - **Default Gateway**: The IP address of the default gateway



For information about the watchdog role the default gateway plays, see The role of the Default Gateway in resetting the network timer; for information about how to configure the initial TCP/IP settings when you install the Management Card, see the Network Management Card *Installation and Quick Start Manual*, provided in printed form and on the APC Network Management Card *utility* CD (.\doc\insguide.pdf).

- Advanced settings define the Management Card's host and domain names, as well as TCP/IP port, BOOTP, and DHCP settings used by the Management Card.

Current TCP/IP settings fields. The current **System IP**, **Subnet Mask**, and **Default Gateway** values, along with the Management Card's **MAC Address**, **Host Name**, **Domain Name**, and **Ethernet Port Speed** values are displayed above the TCP/IP settings in the control console and the Web interface.

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Boot mode setting. This setting selects which method will be used to define the Management Card's TCP/IP settings whenever the Management Card turns on, resets, or reboots:

- **DHCP & BOOTP**: The Management Card will attempt to get its TCP/IP settings from a BOOTP server, first, and then, if it cannot discover a BOOTP server, from a DHCP server.
- **DHCP only**: A DHCP server provides the TCP/IP settings.
- **BOOTP only**: A BOOTP server provides the TCP/IP settings.



An **After IP Assignment** setting will, by default, switch **Boot mode** from its default **DHCP & BOOTP** setting to **BOOTP only** or **DHCP only**, depending on the type of server that supplied the TCP/IP settings to the Management Card. For information about the **After IP Assignment** setting, and other settings that affect how the Management Card uses BOOTP and DHCP, see Advanced settings; For more information about how to use DHCP, see Boot Mode; for more information about how to use BOOTP, see the *Management Card Addendum* provided on the APC Network Management Card *utility* CD (./doc/adendum.pdf).

- **Manual**: Three settings (**System IP**, **Subnet Mask**, and **Default Gateway**) which are only available when Manual are used to define the needed TCP/IP settings.

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Advanced settings. The **Boot mode** affects which settings are available:

- Two settings are available for all **Boot mode** selections to define the Management Card's **Host Name** and **Domain Name** values.
- A **Port Speed** setting is available for all **Boot mode** selections to define the TCP/IP port's communication speed (**Auto-negotiate**, by default).
- Three settings are available for all **Boot mode** selections, except **Manual**, to identify the Management Card in BOOTP or DHCP communication:
  - **Vendor Class**: Uses **APC**, by default.
  - **Client ID**: Uses the Management Card's MAC address, by default.



If the **Client ID** is changed from the Management Card's MAC address, the new value must be unique on the LAN. Otherwise, the DHCP or BOOTP server may act incorrectly.

  - **User Class**: Uses the Management Card's application module type, by default. For example, a Symmetra module sets the **User**

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Class to **SY**, while a Smart-UPS/Matrix-UPS module sets it to **SUMX**.

- Two settings are available when BOOTP only is the Boot mode selection:
  - **Retry Then Fail**: Defines how many times the Management Card will attempt to discover a BOOTP server before it stops (**4**, by default).
  - **On Retry Failure**: Defines what TCP/IP settings will be used by the Management Card when it fails to discover a BOOTP server (**Use Prior Settings**, by default).

For information about the **Advanced** settings (**DHCP Cookie Is** and **Retry Then Stop**) that directly affect how DHCP is used, see Boot Mode.

DNS

Use this option to define the IP addresses of the primary and secondary Domain Name Servers (DNS) used by the Management Card's Email feature.

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For more information about email, see Email Feature; for more information about the role of the DNS servers, see DNS servers.

Send DNS Query (Web interface)

This option is only available through the **DNS** option in the Web interface. It allows you to have the Management Card send a DNS query that tests the setup of your DNS servers.

You use the following settings to define the parameters for the test DNS request; you view the result of the test DNS request in the **Last Query Response** field (**Passed**, **Failed**, or **Not Responding**).

- Use the **Query Type** setting to select the method to use for the DNS query:
  - The URL name of the server (**Name**)
  - The IP address of the server (**IP**)
  - The Mail Exchange used by the server (**MX**)
- Use the **Query Question** text field to identify the value to be used for the selected **Query Type**:
  - For **Name**, identify the URL
  - For **IP**, identify the IP address
  - For **MX**, identify the Mail Exchange address
- Use the **DNS Server to Query** to select whether you want to query the **Primary DNS Server** or **Secondary DNS Server**.

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Ping utility (control console)

This option is only available in the control console. It allows you to use Ping, a network utility, to test the Management Card's network connection by seeing if a defined IP address responds to the Ping utility.

By default, the default gateway IP address (see TCP/IP) is used. However, you can use the IP address of any device known to be running on the network.

FTP Server, Telnet and Web

Each of these options has a setting which enables (by default) or disables **Access**, and a **Port** setting that identifies the TCP/IP port used for communications with the Management Card. The default **Port** settings are **21** (FTP), **23** (Telnet), and **80** (Web interface).

You can change a **Port** setting to any port number between **5000** and **65535** to enhance the protection provided by **User Name** and **Password** settings. When you do, you must use a colon (:) to add the **Port** number to the IP or URL address used for access. The selected port number must be unique. The following examples show what the FTP, Telnet, and Web interface commands could look like when the **Port** numbers for all three interfaces have been changed from their default settings at a Management Card with a System IP address of 159.215.12.114:

```
ftp 159.215.12.114:5000
telnet 159.215.12.114:59401
http://159.215.12.114:65002
```



For information about how to use FTP to download configuration files, see the *Management Card Addendum* on the APC Network Management Card *utility* CD (./doc/addendum.pdf); for information about how to use FTP to access a text-version of the Management Card's event or Data Log, see How to use FTP to retrieve log files.

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SNMP

An **Access** option (the **Settings** option in the control console) enables (by default) or disables SNMP. When SNMP is enabled, the **Access Control** settings allow you to control how each of the four available SNMP channels is used.



For information about how to define the up to four NMSs which will serve as trap receivers, see Trap Receivers; for more information about how to use SNMP to manage a UPS or an environmental monitor, see the *PowerNet® SNMP Management Information Base (MIB) Reference Guide* on the APC Network Management Card *utility* CD (.\doc\mibguide.pdf).

Setting	Definition
Community Name	This setting defines the password (maximum of 15 characters) which an NMS that is defined by the **NMS IP** setting below uses to access the channel.
NMS IP	Limits access to the NMS or NMSs specified by the format used for the IP address. • 159.215.12.1 allows only the NMS with that specific IP address to have access • 159.215.12.255 allows access for any NMS on the 159.215.12 segment • 159.215.255.255 allows access for any NMS on the 159.215 segment • 159.255.255.255 allows access for any NMS on the 159 segment • 0.0.0.0 or 255.255.255.255 allows access for any NMS

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Setting	Definition	
Access Type	Selects how the NMS defined by the NMS IP setting can use the channel, when that NMS uses the correct **Community Name**.	
	Read	The NMS can use GETs at any time, but it can never use SETs.
	Write	The NMS can use GETs at any time, and can use SETs when no one is logged into either the control console or Web interface.
	Write+	The NMS can use GETs and SETs at any time, even when someone is logged into the control console or Web interface.
	Disabled	The NMS cannot use GETs or SETs.

Email

You use this option to define two SMTP settings (**SMTP Server** and **From Address**) used by the Management Card's Email feature.

For more information about these settings, see SMTP settings; for more information about Email as it relates to the Management Card, see Email Feature.

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Syslog

By default, the Management Card can send messages to up to four Syslog servers whenever Management Card, environmental monitor, or UPS events occur. The Syslog servers, which must be specifically identified by their IP address, record the events in a log that provides a centralized record of events that occur at network devices.



This user's guide does not describe Syslog, or the Syslog configuration values, in detail. For more information about Syslog, see RFC3164, a copy of which is available at www.ietf.org/rfc/rfc3164.

Syslog settings. With the exception of the **Server IP** settings, the Syslog settings should remain set to their defaults unless otherwise specified by the Syslog network or system administrator.

General Settings	
Setting	**Definition**
Access (Web) Syslog (CC)	Enables (by default) or disables the Syslog feature.
Facility	Selects the facility code assigned to the Management Card's Syslog messages (**User**, by default). **Note**: Although several daemon-specific and process-specific selections are available, along with eight generic selections, **User** is the selection that best defines the Syslog messages sent by a Management Card.

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Syslog Server Settings	
Server IP	Uses specific IP addresses to Identify which of up to four servers will receive Syslog messages sent by the Management Card. **Note**: To use the Syslog feature, at least **Server IP** address must be defined for at least one server.
Port	Identifies the user datagram protocol (UDP) port that the Management Card will use to send Syslog messages. The default is **514**, the number of the UDP port assigned to Syslog.
Local Priority (Severity Mapping)	
Map to Syslog's Priorities	Maps each of the severity levels (**Local Priority** settings) that can be assigned to UPS, environmental monitor, and Management Card events to the available Syslog priorities. The following definitions are from RFC3164: • **Emergency**: The system is unusable • **Alert**: Action must be taken immediately • **Critical**: Critical conditions • **Error**: Error conditions • **Warning**: Warning conditions • **Notice**: Normal but significant conditions • **Informational**: Informational messages • **Debug**: Debug-level messages The following the default settings for the four **Local Priority** settings: • **Severe** is mapped to **Critical** • **Warning** is mapped to **Warning** • **Informational** is mapped to **Info** • **None** (for events which have no severity level assigned) is mapped to **Info** **Note**: For information about how you can disable sending Syslog messages for **Severe**, **Warning**, or **Informational** events, see Event Actions (Web Interface only).

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Syslog test (Web interface). This option allows you to send a test message to the Syslog servers configured in the **Syslog Server** section.

1. Select the **Priority** you want to assign to the test message.
2. Define the **Test Message** using any text that meets the format described in Syslog message format below. For example, `APC: Test message`, meets the required message format.
3. Click **Apply** to have the Management Card send a Syslog message that uses the defined **Priority** and **Test Message** settings.

Syslog message format. A Syslog message has three parts:

- The priority (PRI) part identifies the Syslog priority assigned to the message's event and the facility code assigned to messages sent by the Management Card.
- The Header includes a time stamp and the IP address of the Management Card.
- The message (MSG) part has two fields:
  - A TAG field, which is followed by a colon and a space, identifies the event type (APC, System, or UPS, for example)
  - A CONTENT field provides the event text, followed by a space and the event code

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System Menu

Introduction

Overview

The **System** menu has the options that you use to do the following tasks:

- Configure system identification, date and time settings, and Administrator and Device Manager access
- Synchronize the Management Card's real-time clock with a Network Time Protocol (NTP) server
- Download configuration files
- Reset or reboot the Management Card
- Define the URL links available in the Web interface
- Access hardware and firmware information about the Management Card
- Set the units (Fahrenheit or Celsius) used for temperature displays
- Configure dial-in access to the control console at an AP9618 Network Management Card using the Management Card's internal analog modem



Only an Administrator has access to the **System** menu.

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Menu options

Unless noted, the following menu options are available in the control console and Web interface:

- User Manager
- Identification
- Date & Time
- Tools
- Modem (AP9618 control console)
- Preferences (Web interface)
- Links (Web interface)
- About System



The **About System** option is a **Help** menu option in the Web interface.

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Option Settings

User Manager

Use this option to define the access values shared by the control console and the Web interface, and the authentication used to access the Web interface.

Setting	Definition
Auto Logout	Defines how much inactivity can occur, measured in minutes (3, by default), before a user is automatically logged out.
Authentication	The **Basic** setting (default) causes the Web interface to use standard HTTP 1.1 login (base64-encoded passwords); **MD5** causes the Web interface to use an MD5-based authentication login. **NOTE**:Cookies must be enabled at a browser before it can be used with MD5 authentication.
Administrator and Device Manager User	
User Name	Defines the case-sensitive name (maximum of 10 characters) used to log on at the control console or Web interface (**apc**, by default, for **Administrator**, and **device**, by default, for **Device Manager User**).
Password	Defines the case-sensitive password (maximum of 10 characters) always used to log on at the control console, but only used to log into the Web interface when **Basic** is selected for the **Authentication** setting (**apc** is the default for both **Password** settings).
Authentication Phrase	Defines the case-sensitive, 15-to-32 character phrase used to log into the Web interface when MD5 is the **Authentication** setting (**admin user phrase**, is the default for **Administrator**; **device user phrase** is the default for **Device Manager User**).

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Identification

Use this option to define the System **Name**, **Location**, and **Contact** values used by the Management Card's SNMP agent. The option's settings provide the values used for the MIB-II **sysName**, **sysContact**, and **sysLocation** Object Identifications (OIDs).



For more information about the MIB-II OIDs, see the PowerNet® *SNMP Management Information Base (MIB) Reference Guide* provided on the APC Network Management Card *utility* CD (./doc/mibguide.pdf).

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Date & Time

Use this option to set the time and date used by the Management Card. The option displays the current settings, and allows you to change those settings manually, or through a Network Time Protocol (NTP) Server.

Set Manually. Use this option, which is called **Manual** in the control console, to set the **Date** and **Time** settings for the Management Card.

Note

An **Apply Local Computer Time to** Network Management Card option, which is available in the Web interface only, sets these values to match the date and time settings of the computer you are using to access the Web interface.

Synchronize with Network Time Protocol (NTP) Server. Use this option, which is called **Network Time Protocol (NTP)** in the control console, to have an NTP Server automatically update the **Date** and **Time** settings for the Management Card.

Note

The control console has an **NTP Client** option that enables or disables (the default) the NTP Server updates, while in the Web interface, selecting the **Set Manually** option disables the updates.

Setting	Definition
Primary NTP Server	Identifies the IP address of the primary NTP server.
Secondary NTP Server	Identifies the IP address of the secondary NTP server, when a secondary server is available.
GMT Offset (TIme Zone)	Defines the offset to be used from Greenwich Mean TIme (GMT) based on the Management Card's time zone.
Update Interval	Defines how often, in weeks, the Management Card will access the NTP Server for an update (**1** week minimum, **52** weeks maximum).

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Tools

Use this option to reboot the Management Card or to reset some or all of its configuration settings to their original, default values.

Action	Definition
Reboot Card	Restarts the Management Card.
Reset Card to Defaults	Resets all configuration settings. **Note**: For information about how this affects the **Boot mode** setting, see this table's description of **Reset Only TCP/IP to Defaults**.
Reset Card to Defaults Except TCP/IP	Resets all configuration settings except the TCP/IP settings.
Reset Only TCP/IP to Defaults	Resets the TCP/IP settings only. **Note**: WIth **Boot mode** set to **DHCP & BOOTP**, its default setting, the Management Card's TCP/IP settings must be defined by a DHCP or BOOTP server. For more information, see TCP/IP.
XMODEM (control console only)	Allows you to download firmware using a terminal-emulation program when you use a local connection to the control console only. For more information about how you connect to the control console locally, see Local access to the control console.

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Preferences (Web interface)

Use this option to define whether temperature values are displayed as **Fahrenheit** or **Celsius** in the Web interface and the control console.

Links (Web interface)

Use this option to modify the links to APC Web sites that the Web interface provides.

Setting	Definition
User Links	
Name	Defines the link names that appear in the **Links** menu (by default, **APC's Web Site**, **Testdrive Demo**, and **APC Monitoring**).
URL	Defines the URL addresses used by the links. By default, the following URL addresses are used: • **http://www.apc.com** (**APC's Web Site**) • **http://testdrive.apc.com** (**Testdrive Demo**) • **http://rms.apc.com** (**APC Monitoring**) **NOTE**:For information about these pages see Links menu.
Access Links	
APC Home Page	Defines the URL address used by the APC logo at the top of all Web interface pages (by default, **http://www.apc.com**).

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Modem (AP9618 control console)

Use this option, which is available in AP9618 Network Management Card's control console only, to configure dial-in access to the control console using the Management Card's internal analog modem.

Setting	Definition
Console Dial-In	Enables (by default) or disables dial-in access to the control console through the analog modem.
Initialization	Defines the initialization string used to ensure proper operation of the modem, and consistent communication between the modem and the Management Card. This string is sent to the Management Card's internal modem every time the Management Card reboots, or when a setting change is made and accepted.
Country Code	Identifies the country in which it is used to match the modem's operation to that country's telephone-system standards.
Terminal Interface	Allows an advanced user to send commands directly to the modem, and view the modem's response, using a serial, terminal-interface session at 38400 baud. When CTRL+A is used to end the session, the modem is reset to use the **Initialization** setting described above.

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About System

This option identifies hardware information for the Management Card, including its **Model Number**, **Serial Number**, **Manufacture Date**, **Hardware Revision**, **MAC Address**, and **Flash Type.**

The hardware information will never change. For example, if you use an AP9168U upgrade kit to expand an AP9617 Network Management Card *EX* into an AP9618 Network Management Card *EM/MDM*, the **About System** option will still report **AP9617** for that Management Card's **Model Number**.



In the Web interface, except for **Flash Type**, this hardware information is reported by the **About System** option in the **Help** menu.

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UPS Menu

Introduction

Overview

In the Web interface, the **UPS** menu appears in the navigation menu; in the control console, you access the **UPS** menu through the **Device Manager** option in the **Control Console** menu.

UPS menu options

The **UPS** menu options, and the information provided by those options, vary by UPS model. In addition, there are differences between the **UPS** menu in the control console and the **UPS** menu in the Web interface. One major difference is the **UPS** menu in the Web interface includes a PowerChute® option, which allows you to use APC's PowerChute network shutdown.

For information about the PowerChute® option, which is available only in the Web interface, see PowerChute® (UPS PowerChute network shutdown). For information about the **UPS** menu options available in both the control console and the Web interface, see the following:

- UPS Status
- UPS Diagnostics
- UPS Control
- UPS Configuration
- Module Status (Symmetra or Symmetra 3-Phase UPS)
- Scheduling (UPS Shutdown)



Note

A Silcon UPS has no **Diagnostics** or **Scheduling** options.

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UPS Status

Overview

The **Status** options provide access to the information described in the following sections:

- Detailed UPS Status
- Utility Voltage Status
- Output Power Status
- Fault Tolerance (Symmetra or Symmetra 3-Phase UPS)
- Battery



No description is provided for the self-explanatory **About UPS** status fields.

For a Silcon UPS, the "Status of UPS" page in the Web interface includes the **View the refreshing status page** hyperlink described in Configure the Multiple/Parallel UPS IP Address and Monitor Name (Silcon UPS only).

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Detailed UPS Status

In the Web interface, you use the **Status** option in the **UPS** menu to access the following UPS status information; in the control console, this status information is listed above the **UPS** menu.

- The current status of the UPS (for information about how to access a list of the UPS events that can be reported as part of the UPS status, see "Event List" page)



The **UPS** menu in the control console has a **Detailed Status** (Smart-UPS or Matrix-UPS) or **Detailed UPS Information** (Symmetra or Silcon UPS) option that accesses expanded descriptions of the UPS status. In addition, for Symmetra UPS models, a **Faults & Alarms** option accesses descriptions of any faults or alarms reported as part of the UPS status.

- The reason for the last transfer to battery power at the UPS
- The internal temperature of the UPS
- The runtime that is currently available to the UPS
- The values described in Utility Voltage Status, Output Power Status, and Battery
- The Fault tolerance parameters described in Fault Tolerance (Symmetra or Symmetra 3-Phase UPS)



A Silcon UPS can report a non-specific fault for about 50 different conditions. For information about the conditions that are mapped to these non-specific faults, see the dp3etrap.pdf document located in the .\help\dp3e\ directory on the APC Network Management Card *utility* CD.

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Utility Voltage Status

The following table uses footnotes to indicate which utility-voltage fields are shared by which UPS models (if no footnote is used, all UPS models report that value).



Note

A 3-phase UPS (Symmetra 3-Phase UPS or Silcon UPS) identifies the values for all three phases.

Status Field	Definition
Bypass Input Voltage[1]	Identifies the AC voltage (VAC) used when the UPS is in bypass mode.
Input Current[1]	Identifies the current, in Amps, supplied by the input voltage.
Input Frequency[2]	Identifies the input voltage's frequency, in Hertz (Hz). **Note**: In the control console for Smart-UPS or Matrix-UPS, the **Operating Frequency** field reports the frequency value shared by the input and output voltages.
Input Voltage	Identifies the AC voltage (VAC) being input to the UPS.
Minimum Line Voltage	Identifies the lowest AC voltage input to the UPS during the previous minute of operation.
Maximum Line Voltage	Identifies the highest AC voltage input to the UPS during the previous minute of operation.

1 Symmetra 3-Phase UPS and Silcon UPS models
2 Smart-UPS, Matrix-UPS, or Symmetra UPS models

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Output Power Status

The following table uses footnotes to indicate which output-power fields are shared by which UPS models (only the status field, **Output Voltage**, is shared by all UPS models).



Note

A 3-phase UPS (Symmetra 3-Phase UPS or Silcon UPS) identifies the values for all three phases.

Status Field	Definition
Load Current1	Identifies the current, in Amps, supplied by the output voltage.
Load Power[2]	Identifies the UPS load as a percentage of available Watts.
Output Current[3]	Identifies the current, in Amps, supplied by the output voltage.
Output Frequency[4]	Identifies the frequency, in Hz, used by the output voltage. **Note**: In the control console for Smart-UPS or Matrix-UPS, the **Operating Frequency** field reports the frequency value shared by the input and output voltages.
Output kVA[5] or Output Power[6]	Identifies the load placed on each phase by the attached equipment, in total kVA.
Output Power Percentage[6]	Identifies the load placed on each phase by the attached equipment, expressed as a percentage of the available kVA.

1 Matrix-UPS
2 Smart-UPS or Matrix-UPS
3 Symmetra, Symmetra 3-Phase UPS, or Silcon UPS
4 Smart-UPS, Matrix-UPS, or Symmetra UPS
5 Symmetra 3-Phase UPS
6 Silcon UPS
7 Symmetra or Symmetra 3-Phase UPS
8 Symmetra 3-Phase UPS or Silcon UPS

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Status Field	Definition
Output VA at n+0[7]	Identifies the load placed on each phase by the attached equipment, expressed as a percentage of the VA available with no redundancy.
Output VA at n+1[7]	Identifies the load placed on each phase by the attached equipment, expressed as a percentage of the VA available with the identified redundancy.
Output Voltage	Identifies the AC voltage the UPS is providing to its load.
Output Watts at n+0[7]	Identifies the load placed on each phase by the attached equipment, expressed as a percentage of the Watts available with no redundancy.
Output Watts at n+1[7]	Identifies the load placed on each phase by the attached equipment, expressed as a percentage of the Watts available with the identified redundancy.
Peak Output Current[8]	Identifies the highest current, in Amps, output by each phase.

1 Matrix-UPS
2 Smart-UPS or Matrix-UPS
3 Symmetra, Symmetra 3-Phase UPS, or Silcon UPS
4 Smart-UPS, Matrix-UPS, or Symmetra UPS
5 Symmetra 3-Phase UPS
6 Silcon UPS
7 Symmetra or Symmetra 3-Phase UPS
8 Symmetra 3-Phase UPS or Silcon UPS

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Fault Tolerance (Symmetra or Symmetra 3-Phase UPS)

Two fault-tolerance fields are available for Symmetra and Symmetra 3-Phase UPS models.

Note

In the control console, you use the **Detailed UPS Information** option to access the fault tolerance status.

Status Field	Definition
Present KVA Capacity	Identifies the maximum load that the Symmetra can support.
Redundancy	Identifies the number of power modules which can fail or be removed without causing the Symmetra to switch to bypass.

Battery

The following table uses footnotes to indicate which output-power fields are shared by which UPS models (only the status field, **Runtime Remaining**, is shared by all UPS models).

Status Field	Definition
Battery Capacity[1]	Identifies how much of the UPS battery capacity is available to support the attached equipment.
Battery Current[2]	Identifies the current which is being output from the battery.

1 Smart-UPS, Matrix-UPS, Symmetra, or Symmetra 3-Phase UPS
2 Symmetra 3-Phase UPS or Silcon UPS
3 Smart-UPS or Matrix-UPS
4 Symmetra 3-Phase UPS
5 Symmetra, Symmetra 3-Phase UPS, or Silcon UPS
6 Symmetra or Symmetra 3-Phase UPS

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Status Field	Definition
Battery Voltage[3], Actual Battery Voltage[2], or Actual Battery Bus Voltage[4]	Identifies the available DC power.
Calibration Date[1]	Identifies when the last runtime calibration was performed.
Calibration Result[1]	Identifies the result of the last runtime calibration.
Nominal Battery Voltage[5]	Identifies the basic voltage range that the battery needs to supply when the UPS uses its battery for output power. **Note**: This field only appears in the Web interface.
Number of Bad Batteries[1]	Identifies how many of the UPS batteries need replacing. **Note**: This field only appears when the UPS has at least one external battery.
Number of Batteries[3] or Number of External Batteries[6]	Identifies how many batteries the UPS has.
Runtime Remaining	Identifies how long the UPS can use battery power to support its attached equipment.
Self-Test Result[1]	Identifies the result of the last self-test.
Self-Test Date[1]	Identifies when the last self-test was performed.

1 Smart-UPS, Matrix-UPS, Symmetra, or Symmetra 3-Phase UPS
2 Symmetra 3-Phase UPS or Silcon UPS
3 Smart-UPS or Matrix-UPS
4 Symmetra 3-Phase UPS
5 Symmetra, Symmetra 3-Phase UPS, or Silcon UPS
6 Symmetra or Symmetra 3-Phase UPS

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UPS Diagnostics

Overview

There are two types of diagnostics options you can use with all UPS models except a Silcon UPS, which has no diagnostic options:

- Options which cause a specified test to occur immediately
- A scheduling option which controls when a UPS self-test occurs

Diagnostics

In the Web interface, you use this **UPS** menu option when you want to perform diagnostic tests, or view status information that is based on the results of the last self-test or runtime calibration.



Note

In the control console, the diagnostics options are listed in the **Control** menu.

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Smart-UPS, Matrix-UPS, or Symmetra UPS. You can use diagnostics options to perform the following tests.



In the Web interface, the "Diagnostics" page reports the results of the last self-test and last runtime calibration; In the control console, you can use a Detailed Status (all Smart-UPS or Matrix-UPS models) or Detailed UPS Information (Symmetra or Silcon UPS models) option to access these results.

Test	Definition
Self-Test	Causes the UPS to perform a self-test.
Simulate Power Failure	Causes the UPS to test its ability to go on battery.
Start/Stop Runtime Calibration	Initiates (or cancels) a runtime calibration, a process which determines how much runtime the UPS has available when its battery is at 100% capacity. **Note**: Only perform a runtime calibration when the battery is at 100% capacity.
Test UPS Alarm (Smart-UPS or Matrix-UPS)	Causes a Matrix-UPS to generate an alarm tone, and a Smart-UPS to generate an alarm tone and flash its front panel lights.

Symmetra 3-Phase UPS. The "Diagnostics" page in the Web interface provides buttons you use to perform self-tests (**Tests...**) or runtime calibrations (**Calibrate...**).



In the Web interface, the "Diagnostics" page reports the results of the last self-test and last runtime calibration, as well as Intelligence Modules, Power Modules, Batteries, and Communication Bus & Subsystems status; in the control console, you can use the **Detailed UPS Information** option to access this status information.

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Scheduled UPS self-tests

A scheduling option allows you to control when a UPS self-test occurs. The available selections are **Never**, **UPS Startup**, **Every 7 Days**, or **Every 14 Days**.

In the Web interface, this option is located on the same page as the diagnostic test options. In the control console, the location of this option depends on the type of UPS:

- Symmetra and Symmetra 3-Phase UPS models have a **Scheduled Tests** option in the **UPS** menu.
- Smart-UPS or Matrix-UPS models have a **Self-Test Schedule** option which is accessed as follows:
  a. Select **Configuration** from the **UPS** menu.
  b. Select **General** from the **Configuration** menu.

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UPS Control

The options described in the following table are available to all UPS models, except the Silcon UPS.

By default, no control options are available for Silcon UPS until you enable the **Accept Remote Turn Off Commands** option (disabled by default) in the control console's **UPS Control** menu.

The **Accept Remote Turn Off Commands** option appears only in the control console's **UPS Control** menu, and then only when you use a local, serial connection to access the control console (see Local access to the control console). When **Accept Remote Turn Off Commands** is enabled:

- Two control options, **Turn UPS Off** and **Turn UPS Off Gracefully** options, become available for a Silcon UPS
- A **Disable Remote Turn Off Commands** option appears in the **UPS Control** menu at the Web interface and control console, allowing you to disable using the Management Card to turn off the Silcon UPS



For descriptions of the **Self-Test**, **Simulate Power Failure**, **Start/Stop Runtime Calibration**, and **Test UPS Alarm** options, see Diagnostics.

Action	Definition
Turn UPS On (control console)	Turns on power at the UPS.
Turn UPS Off	Turns off power, after the **Shutdown Delay**, until you turn on power again.

1 The Web interface has a **Signal servers** option. When **Yes** is selected for that option, initiating a **Turn UPS Off**, **Reboot UPS**, or **Put UPS To Sleep** action is equivalent to selecting the **Turn UPS Off Gracefully**, **Reboot UPS Gracefully**, or **Put UPS To Sleep Gracefully** options which are available in the control console.

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Action	Definition
Turn UPS Off Gracefully[1]	Turns off power after two delays: a delay (**Maximum Shutdown Time** plus two minutes) that allows time for PowerChute to safely shut down its server, and the **Shutdown Delay**.
Reboot UPS[1]	Reboots the attached equipment by doing the following: • Turns off power at the UPS after the **Shutdown Delay** • Turns on power at the UPS after the **Return Delay**
Reboot UPS Gracefully[1]	Reboots the attached equipment by doing the following: • Turns off power after two delays: a delay (**Maximum Shutdown Time** plus two minutes) that allows time for PowerChute to safely shut down its server, and the **Shutdown Delay** • Turns on power after the **Return Delay**
Put UPS To Sleep	Puts the UPS into its sleep mode (turns off power for a defined period of time), as follows: • Turns off power after the **Shutdown Delay** • Turns on power after two delays: **Sleep Time** and **Return Delay**
Put UPS To Sleep Gracefully[1]	Puts the UPS into its sleep mode (turns off power for a defined period of time), as follows: • Turns off power after two delays: a delay (**Maximum Shutdown Time** plus two minutes) that allows time for PowerChute to safely shut down its server, and the **Shutdown Delay** • Turns on power after two delays: **Sleep Time** and **Return Delay**
Put UPS In/Take UPS Off Bypass	Controls the use of the bypass, an operational mode that allows maintenance to be performed at a Matrix-UPS or Symmetra UPS without turning off power at that UPS.

1 The Web interface has a **Signal servers** option. When **Yes** is selected for that option, initiating a **Turn UPS Off**, **Reboot UPS**, or **Put UPS To Sleep** action is equivalent to selecting the **Turn UPS Off Gracefully**, **Reboot UPS Gracefully**, or **Put UPS To Sleep Gracefully** options which are available in the control console.

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UPS Configuration

Overview

The **UPS** menu's **Configuration** option provides access to the configurable parameters described in the following sections:

- Utility Line Settings
- Alarm Thresholds (Symmetra or Symmetra 3-Phase UPS)
- Shutdown Parameters
- General Settings
- Reset UPS Defaults
- Configure the Multiple/Parallel UPS IP Address and Monitor Name (Silcon UPS only)

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Utility Line Settings

This Configuration menu option is available to all UPS models except a Silcon UPS. The available settings differ based on the UPS model.

Smart-UPS or Matrix-UPS. Not all **Utility Line** settings are available for all Smart-UPS and Matrix-UPS models, and each setting's selections can differ from UPS-to-UPS.

Setting	Definition
Output Voltage	Defines the nominal AC voltage level for the UPS output.
High Transfer Voltage	Defines the upper limit of acceptable input voltage. When the input reaches this value, the UPS will go on battery (Matrix-UPS) or start using its AVR Trim feature (Smart-UPS).
Low Transfer Voltage	Defines the lower limit of acceptable input voltage. When the input reaches this value, the Smart-UPS will start using its AVR Boost feature, or go on battery, if it does not have this feature. **Note**: For a Matrix-UPS, this setting cannot be changed.
Vout Reporting (Matrix-UPS)	Defines how Matrix-UPS scales its output voltage readings.
Sensitivity	Defines how sensitive the UPS will be to distortions in the input voltage. **Note**: Matrix-UPS uses an Automatic setting.

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Symmetra or Symmetra 3-Phase UPS. The following table describes the **Utility Line** settings for a Symmetra. A Symmetra 3-Phase UPS uses the **Output Frequency Range** and **If UPS fails** settings only.

Setting	Definition
Output Voltage	Defines the nominal AC voltage level for the UPS output.
Vout Reporting	Defines how the UPS scales its output voltage readings.
Output Frequency Range	Defines the nominal value for the frequency used by the output voltage.
If UPS fails, and frequency or voltage is out of range	Defines how the UPS will respond if the stated condition occurs.

Alarm Thresholds (Symmetra or Symmetra 3-Phase UPS)

The following table describes the **Alarm Thresholds** settings for the Symmetra or Symmetra 3-Phase UPS.

Threshold	Definition
Alarm if Redundancy Under	Defines the minimum redundancy level that can be present without causing an alarm.
Alarm if Load Over	Defines the maximum load that the attached equipment can place on the UPS without causing an alarm.
Alarm If Runtime Under	Defines the minimum runtime that can be available without causing an alarm.

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Shutdown Parameters

All of the following settings are available with Smart-UPS, Matrix-UPS, Symmetra, and Symmetra 3-Phase UPS models. The **Shutdown Behavior Settings** for a Silcon UPS uses only the **Low-Battery Duration**, **Maximum Shutdown Time**, and **Shutdown Delay** settings.

Note

In the control console, you use the **Battery** option in the **Configuration** menu to access the **Return Battery Capacity** setting.

Action	Definition
Return Battery Capacity	Defines the minimum battery capacity that must be present before the UPS turns on after a shutdown that was caused by a power failure. **Note**: The UPS must also wait until the time defined by the **Return Delay** setting expires before it can turn on.
Low-Battery Duration	Defines how the UPS can continue to run on battery once a low-battery condition occurs. **Note**: This setting also defines how much time PowerChute has to safely shut down its server in response to the **Turn UPS Off Gracefully**, **Reboot Gracefully**, and **Put UPS To Sleep Gracefully Control** menu options.
Maximum Shutdown Time (Web interface only)	Reports the delay that is defined by the **Maximum Shutdown Time** setting for the PowerChute network shutdown feature. **Note**: For information about the PowerChute network shutdown feature, see PowerChute® (UPS PowerChute network shutdown); for information about how the **Maximum Shutdown Time** is determined, see Maximum-Shutdown-Time negotiation.
Shutdown Delay	Defines how long the UPS will wait before it shuts down in response to a turn-off command.

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Action	Definition
Return Delay	Defines how long a UPS must wait before it turns on after a shutdown that was caused by a power failure. **Note**: The UPS must also have the capacity specified by the **Return Battery Capacity** setting before it can turn on.
Sleep Time	Defines how long the UPS will sleep (stay turned off) when you use either one of the **Control** menu's sleep options (**Put UPS To Sleep** or **Put UPS To Sleep Gracefully**). **Note**: This setting also appears in the "Control" page.

General Settings

Four **General Settings** are available for Smart-UPS. The first two settings (**UPS Name** and **Last Battery Replacement**) are available for all other UPS models.



In the control console, you use the **Battery** option in the **Configuration** menu to access the **Last Battery Replacement** and **External Batteries** settings.

Setting	Definition
UPS Name	Defines the name used by the UPS.
Last Battery Replacement	Defines the date when the UPS battery was last replaced. **Note**: Use an mm/dd/yy format.
Audible Alarm	Defines when the Smart-UPS will generate an alarm in response to going on battery.
External Batteries	Defines how many external battery packs are connected to Smart-UPS XL. **Note**: Smart-UPS XL models cannot automatically sense and report the number of connected battery packs.

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Reset UPS Defaults

This option allows you to reset the UPS to use the default EEPROM values.



Before you use this option, make sure that resetting the EEPROM values will not adversely affect the load equipment or any shutdown sequence.

Configure the Multiple/Parallel UPS IP Address and Monitor Name (Silcon UPS only)

This option is only available in the Web interface. It allows you to identify up to nine different Silcon UPS models which you can then access through the **View the refreshing status page** hyperlink that appears in the "Status for UPS" page.

Setting	Definition
IP Address	Identifies the Silcon UPS to be monitored by the IP address of its Management Card.
Monitor Name	Identifies the name of the Silcon UPS to be monitored.

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Module Status (Symmetra or Symmetra 3-Phase UPS)

Menu options

Symmetra UPS models have a **Module Status** option in the Web interface that provides access to status information about the modules used at that UPS; Symmetra and Symmetra 3-Phase UPS models have a **Module Diagnostics & Information** option in the control console's **UPS** menu that provides access to module status, as well as to **Raw Status Data** fields that provide diagnostics information about those modules.



The **Raw Status Data** information provided in the control console is used by APC engineers and technical support to troubleshoot hardware problems.

Module status

With the exception of the fields which report the operational status for a module, the information reported for the following modules is self-explanatory.

- The Intelligence Module
- The Redundant Intelligence Module
- The Power Modules
- The Battery in the Main Frame
- Any External Battery Frame
- Communication Bus (Symmetra 3-Phase UPS only)

For information about how to access a list of the UPS events, including the module-related, Symmetra status events, see "Event List" page.

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PowerChute® (UPS PowerChute network shutdown)

Overview

The UPS menu in the Web interface has a PowerChute® option that allows you to use the APC PowerChute network shutdown utility to shut down up to 50 servers on your network that are using any client-version of PowerChute network shutdown.



For more information about PowerChute network shutdown, see the PowerChute® *network shutdown Installation Guide* (Install.htm) and the PowerChute® *network shutdown Release Notes* (Relnotes.htm), copies of which are provided in the.\pcns directory on the APC Network Management Card *utility* CD. Also, see the three flow diagrams provided on the CD's.\trouble\ directory: PCNS Shutdown Behavior.pdf, PCNS Low-Battery Shutdown Behavior.pdf, and PCNS Maximum Shutdown Time Negotiation.pdf.

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Parameters

The following table describes the PowerChute network shutdown parameters.

Parameter	Definition
Maximum Shutdown Time	Defines the maximum time that the UPS at a PowerChute network shutdown client will wait before it shuts down in response to a graceful turn-off command. **NOTE**: For information about this shutdown delay is determined, see Maximum-Shutdown-Time negotiation.
Shutdown Behavior	Defines how the UPS will be turned off after the PowerChute network shutdown clients finish shutting down their computer systems.
Add Client IP	Allow you to add up to 50 PowerChute network shutdown clients to the list of **Configured Client IP Addresses**. **NOTE**: A PowerChute network shutdown client is normally automatically added to the list when that client is installed on your network.
Configured Client IP Addresses	Allows you to view the list of PowerChute network shutdown clients, and, when appropriate, remove PowerChute network shutdown clients from the list. **NOTE**: A PowerChute network shutdown client is normally automatically removed from the list when that client is uninstalled.

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Maximum-Shutdown-Time negotiation

The **Maximum Shutdown Time** setting provides the delay needed to make sure that a server will have enough time to shut down safely when a graceful shutdown is initiated by the Management Card or by PowerChute network shutdown client at the server.



For information about the **Turn UPS Off Gracefully**, **Reboot UPS Gracefully**, and **Put UPS To Sleep Gracefully** options that use this delay, see UPS Control.

The time reported by the **Maximum Shutdown Time** setting represents the maximum delay needed by at least one of the servers listed in the **Configured Client IP Addresses** list. This time is determined by a negotiation process that is initiated when any of the following occurs:

- The Management Card turns on (a **System: Coldstart** event)
- The Management Card is reset (a **System: Warmstart** event)
- You select **Force negotiation** from the **Maximum Shutdown Time** setting's drop-down menu, and click **Apply**

During the negotiation process, which can take up to 10 minutes to perform, each of the servers listed in the **Configured Client IP Addresses** list is contacted to determine the shutdown delay needed by each server. At the end of this process, the delay time defined by the **Maximum Shutdown Time** setting will be changed, if necessary, to reflect the highest delay time reported by the servers.

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For example, if **3 minutes** was the **Maximum Shutdown Time** setting determined during the last negotiation process, and a new server has been added to the **Configured Client IP Addresses** list that requires a 4-minute shutdown delay, **4 minutes** will be the **Maximum Shutdown Time** setting at the end of the new negotiation process. Conversely, if none of the servers need more than a 2-minute delay, **2 minutes** will be the **Maximum Shutdown Time** setting.



To view a flowchart presentation of the negotiation process, see the PCNS Maximum Shutdown Time Negotiation.pdf file provided in the.\trouble\ directory on the APC Network Management Card *utility* CD. The.\trouble\ directory also has two other flowchart presentations that relate to PowerChute network shutdown: PCNS Shutdown Behavior.pdf and PCNS Low-Battery Shutdown Behavior.pdf.

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Scheduling (UPS Shutdown)

Overview

The following graphic provides examples of **Daily**, **Weekly**, and **One-Time** shutdowns that were scheduled using this Web interface-only option.

For more information about how to use this option, see the following sections:

- How to Schedule a Shutdown
- How to Edit, Disable, or Delete a Shutdown



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How to Schedule a Shutdown

The fields used to schedule a shutdown are essentially the same whether you click the **Daily**, **Weekly**, or **One-Time** option.

1. Use **Name of Scheduled Shutdown** to identify a name for the shutdown.
2. Use **Shutdown** to identify when the shutdown will begin.
3. Use **Turn back on** to define whether the UPS will turn on at a specific day and time, **Never** (the UPS will be turned on manually), or **Immediately** (the UPS will turn on after a six-minute delay).
4. Select whether PowerChute servers will be warned before the shutdown begins.
5. Click **Apply**.

How to Edit, Disable, or Delete a Shutdown

When you click a listed shutdown, a "Daily Shutdown Detail" page appears. You use this page to do the following:

- View a summary of the shutdown, including information about the values for settings that can affect how the UPS shuts down and turns on again:
  - For information about **Maximum Shutdown Time**, a PowerChute option setting, see the table in Maximum-Shutdown-Time negotiation
  - For information about **Shutdown Delay** and **Return Delay**, see the table in Shutdown Parameters
- Change any shutdown parameter.
- Use **Status of Scheduled Shutdown** to **Enable**, **Disable**, or **Delete** the shutdown.

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Environment Menu

Introduction

Overview

In the Web interface, you manage the external environmental monitor, as well as the Integrated Environmental Monitor at an AP9618 or AP9619 Network Management Card, through the **Environment** menu that appears in the navigation menu.

In the control console, you access the **Environment** menu option through the **Device Manager** option in the **Control Console** menu.

- When you select the **Environment** option in an AP9617 Network Management Card's control console, you access the menu options used to manage an external environmental monitoring device.
- When you select the **Environment** option in an AP9618 Network Management Card's control console, two options can appear:

```
1- Integrated Environmental Monitor Settings
2- External Environmental Monitor Settings
```

Environment menu options

Two basic types of options are available:

- Status Options
- Settings Options

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Each of the control console's **Environmental Monitor Settings** menus has an **About Environmental Monitor** option that accesses firmware information for these environmental monitors; the Web interface provides this firmware information in the "Environmental Monitor Status" page.

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Status Options

Overview

In the Web interface, basic status information about the environmental monitor thresholds and contacts, as well as the Integrated Environmental Monitor's output relay at an AP9618 or AP9619 Network Management Card, is displayed in the "Summary" page. You use the **Status** option in the **Environment** menu to access detailed status about these environmental monitor components, including graphics which illustrate how the current humidity and temperature readings relate to their high and low thresholds.



The Web interface also uses icons to identify faults that exist at an environmental monitor. For more information about these status icons, see Quick status tab.

In the control console, basic status information is displayed above the **Control Console** and **Environmental Monitor Settings** menus. You use **Threshold and Contact Details** (in the **External Environmental Monitor Settings** menu) and **Detailed Status** (in the Integrated Environmental Monitor **Settings** menu) options to access detailed status for the environmental monitor components.

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Probe status

The Web interface uses Temperature and Humidity graphs to identify whether the reported value exceeds a low (blue) or high (red) threshold for each of the identified probes: up to two probes at an AP9617 Network Management Card; up to three probes at an AP9618 or AP9619, with the Integrated Environmental Monitor probe listed last.

In the control console, the status options in the **Environmental Monitor Settings** menus access a report that identifies the high and low thresholds for the specific environmental monitor's probes, and whether any of those thresholds are currently violated.

Contact status

The Web interface identifies the current state (**Disabled**, **No Fault**, or **Fault Present**) for each identified input contact. These contacts can include up to four contacts for an external environmental monitor, and two contacts for the Integrated Environmental Monitor at an AP9618 or AP9619 Network Management Card.

In the control console, the status options in the **Environmental Monitor Settings** menus access a report that identifies the current fault condition for each of the specific environmental monitoring's contacts.

Output relay status (AP9618 or AP9619)

In the Web interface, the current state of the Integrated Environmental Monitor's output relay at an AP9618 or AP9619 Network Management Card is reported immediately below the contact settings status.

In the control console, the **Output Relay** option in the Integrated Environmental Monitor menu reports the current condition.

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Settings Options

Probe settings

In the Web interface, the **Probes** option in the **Environment** menu to access **Setting** fields that define a **Probe Name** (16-character maximum), and high and low temperature and humidity thresholds, for each probe, and **Event Generation** fields that **Enable** or **Disable** the generation of an event when a selected threshold violation occurs.

In the control console, a **Probe Settings** option in the **Environmental Monitor Settings** menus allows you to define the **Probe Name**, temperature and humidity thresholds, and event generation settings.

Contact settings

In the Web interface, the **Input Contacts** option in the **Environment** menu accesses the **Name** fields that define the name you want to use for the contact alarms (16-character maximum), and **Event Generation** fields **Enable** or **Disable** each alarm.

In the control console, these settings are accessed through the **Contact Settings** options in the **Environmental Monitor Settings** menus.

Output relay settings (AP9618 or AP9619)

In the Web interface, the following settings are accessed using the **Output Relay** option in the **Environment** menu; in the control console, you use the **Output Relay Settings** option in the Integrated Environmental Monitor menu to access these settings.

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Setting	Definition
Output Relay	Defines a description that identifies the output relay's purpose (16-character maximum). **Note**: This is the **Relay Name** setting in the control console.
Switch When	Unless **Disabled**, selects the event that will activate the output relay. **Note**: This is the **Switch Relay When** setting in the control console.
Delay	Defines how long the **Switch When** event must be present, in seconds, before the output relay will activate. **Note**: This is the **Switch to Relay Delay** setting in the control console.
Hold	Defines the minimum amount of time, in seconds, that the the output relay will remain activated once a **Switch When** event occurs. **Note**: This is the **Relay Hold Time** setting in the control console.

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Event-Related Menus

Introduction

Overview

The **Events** menu provides access to the options that you use to do the following tasks:

- Access the Event Log.
- Define the actions to be taken when an event occurs, based on the severity level of that event.
  - Event logging
  - Syslog messages
  - SNMP trap notification
  - Email notification



You can only use the Web interface to define which events will use which actions, as described in Event Log and How to Configure Individual Events.

- Define up to four SNMP trap receivers, by NMS-specific IP address, for event notifications by SNMP traps.
- Define up to four recipients for event notifications by email.

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Menu options

In the Web interface, all of the events options are accessed through the **Events** menu. In the control console, you access the available events-related options, as follows:

- You use the **Email** option in the **Network** menu to define the SMTP server and email recipients
- You use the **SNMP** option in the **Network** menu to define the SNMP trap receivers
- You use CTRL-L to access the Event Log from any menu

For information about the settings available for the **Events** menu options, and for a more detailed description of the email feature, see the following descriptions:

- Event Log
- Event Actions (Web Interface only)
- Event Recipients
- Email Feature
- How to Configure Individual Events

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Event Log

Overview

The Management Card supports an event logging capability for all UPS application firmware modules. This allows you to record and view UPS, environmental monitor, and Management Card events.

You can use any of the following to view the Event Log:

- Web interface
- Control console
- FTP

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Logged events

By default, any event which causes an SNMP trap will be logged, except for SNMP authentication failures. Additionally, the Management Card will log its abnormal internal system events. However, you can use the **Actions** option in the Web interface's **Events** menu to disable the logging of events based on their assigned severity level, as described in Event Actions (Web Interface only).

Note

Some System (Management Card) events do not have a severity level. Even if you disable the Event Log for all severity levels, these no-severity events will still be logged.

For information about how to access a list of the UPS, environmental monitor, and Management Card events, see "Event List" page.

Note

The Event Log will log a graceful shutdown of the UPS, even when that shutdown was not initiated by the Management Card: a graceful shutdown from Serial Port 1 typically indicates that PowerChute or PowerNet Manager performed the shutdown; a graceful shutdown from Serial Port 0 typically indicates that a management peripheral, such as PowerVew or the Out-of-Band Management Card, initiated the shutdown.

Web interface

The **Log** option in the **Events** menu accesses the Event Log. This log displays all of the events that have been recorded since the log was last deleted, in chronological order, with the most recent event displayed first. A **Delete Log** button allows you to clear all events from the log.

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Control console

When logged on at the control console, you can press CTRL-L to display up to 300 events from the Event Log, with the most recent events displayed first. You use the SPACE BAR, as many times as necessary, to view the recorded events. While viewing the log, you can type `d` and press ENTER to clear all events from the log.



After events are deleted, they cannot be retrieved.

How to use FTP to retrieve log files

You can use FTP to retrieve a tab-delineated Event Log (*event.txt*) or Data Log (*data.txt*) file that you can import into a spreadsheet application.

- The file reports all of the events (*event.txt*) or data (*data.txt*) recorded since the log was last deleted.
- The file includes information that does not show up in the Event Log or Data Log displays.
  - The version of the file format (first field)
  - The **Date** and **Time** the file was retrieved
  - The **Name**, **Contact**, **Location**, and IP address of the Management Card
  - The *event.txt* file includes the unique **Event Code** for each recorded event



The Management Card uses a 4-digit year for log entries. A spreadsheet may display these dates as 2-digit years. This can be fixed by selecting a different date format in the spreadsheet.

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To use FTP to retrieve the *event.txt* or *data.txt* file, do the following:

1. At a command prompt, type `ftp` and the Management Card's IP address, and press ENTER. If the **Port** setting for **FTP Server** in the **Network** menu has changed from its default value (**21**), you must use the non-default value in the FTP command. For some FTP clients, you would use a colon to add the port number to the end of the IP address. For Windows FTP clients, you would use the following command (including spaces):

   `ftp>open ip_address port_number`

   For information about using non-default port values to enhance security, see Port assignments.

2. Use the case-sensitive **User Name** and **Password** settings for either an Administrator (**apc** is the default for both) or a Device Manager User (**device** is the default for the **User Name**, and **apc** is the default for the **Password**) to log in.
3. Use the get command to transmit the text-version of the Event or Data Log to your local drive.

   `ftp>get event.txt` or `ftp>get data.txt`
4. You can use the delete command to clear the contents of the Event or Data Log. You will not be asked to confirm the deletion. If you clear the Data Log, a Deleted Log event will be recorded in the Event Log; if you clear the Event Log, a new *event.txt* file will be created to record the Deleted Log event.

   `ftp>del event.txt` or `ftp>del data.txt`
   `250 Requested file action okay, completed.`
5. Type `quit` at the `ftp>` prompt to exit from FTP.

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Event Actions (Web Interface only)

Overview

The **Actions** option is available only in the Web interface's **Events** menu. This option allows you to do the following:

- You can select which actions will occur for events that have a specified severity level:
  - **Event Log** selects which severity levels will cause an event to be recorded in the Event Log. For more information about this action, see Event Log action.
  - **Syslog** selects which severity levels will cause messages to be sent to Syslog servers to log events. For more information about this action, see Syslog action.
  - **SNMP Traps** selects which severity levels will cause SNMP traps to be generated. For more information about this action, see SNMP Traps action.
  - **Email** selects which severity levels will cause email notifications to be sent. For more information about this action, see Email action.
- You can click **Details** to do access a complete list of the Management Card (System), UPS, and environmental monitor (Environment) events that can occur, and then edit the actions that will occur for an individual event, as described in How to Configure Individual Events.

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Severity levels

With the exception of some Management Card (System) events that do not have a severity level assigned, events are assigned a default severity level based on the seriousness of the event.

- **Informational**: Indicates an event that requires no action, such as a notification of a return from an abnormal condition.
- **Warning**: Indicates an event that may need to be addressed should the condition continue, but which does not require immediate attention.
- **Severe**: Indicates an event that requires immediate attention. Unless resolved, UPS and Management Card severe events can cause incorrect operation of the UPS or its supported equipment, or can result in the loss of UPS protection during a power failure. Environmental monitoring device severe events warn of abnormal environmental conditions or possible security violations.

Event Log action

You can disable the recording of events in the Event Log. By default, all events are recorded, even events that have no severity level assigned.



Even if you disable the Event Log action for all severity levels, system (Management Card) events which have no severity level assigned will still be logged.

For more information about this log, see Event Log.

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Syslog action

By default, the **Syslog** action is enabled for all events that have a severity level assigned. However, before you can use send Syslog messages when events occur, you must configure this feature.

For information about how to configure the Syslog feature, see Syslog.

SNMP Traps action

By default, the **SNMP Traps** action is enabled for all events that have a severity level assigned. However, before you can use SNMP traps for event notifications, you must identify each NMS (up to four), by its specific IP address, that you want to send those traps to.

For information about how to define the trap receivers, see Event Recipients.

Email action

By default, the **Email** action is enabled for all events that have a severity level assigned. However, before you can use email for event notifications, you must define the email recipients.

For information about how to define the email recipients, see Email Feature.

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Event Recipients

Overview

The Web interface and control console both have options that allow you to define the trap receivers and up to four email addresses to be used when an event occurs that has the SNMP traps or email enabled, as described in Event Actions (Web Interface only).



For information about how to identify the servers that will receive Syslog messages, see Syslog.

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Trap Receivers

The **Trap Receiver** settings allow you to define which of up to four specific NMSs will be sent traps.

Note

In the control console, these settings are accessed through the **SNMP** option in the **Network** menu.

Item	Definition
Community Name	This setting defines the password (maximum of 15 characters) used when traps are sent to the NMS identified by the **Receiver NMS IP** setting.
Receiver NMS IP	Identifies the NMS that will be sent traps by its IP address. If this setting is **0.0.0.0** (the default value), traps will not be sent to any NMS.
Trap Generation	Enables (by default) or disables the sending of any traps to the NMS identified the **Receiver NMS IP** setting.
Authentication Traps	Enables or Disables the sending of authentication traps to the NMS identified the **Receiver NMS IP** setting.

Email options

See Email Feature.

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Email Feature

Overview

You can use the Simple Mail Transfer Protocol (SMTP) to send email to up to four recipients when an event occurs.

To use the Email feature, you must define the following settings:

- The IP addresses of the primary and secondary Domain Name Service (DNS) servers, as described in DNS servers
- The DNS name of the **SMTP Server** and the **From Address** settings for SMTP, as described in SMTP settings
- The email addresses for up to a maximum of four recipients, as described in Email Recipients



You can use the **To Address** setting of the **Email Recipients** option to send email to a text-based pager.

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DNS servers

The Management Card cannot send any email messages unless at least the IP address of the primary DNS server is defined (see DNS).

The Management Card will wait a maximum of 15 seconds for a response from both the primary and secondary DNS servers. If the Management Card does not get a response within that time, email cannot be sent. Therefore, use DNS servers that are on the same segment as the Management Card, or on a nearby segment (but not across a WAN).

Once you define the IP addresses of the DNS servers, verify that DNS is working correctly by entering the DNS name of a computer on your network to see if you can look up the IP address for that DNS name.

SMTP settings

The **Email** option in the **Network** menu accesses the following settings:

Setting	Description
SMTP Server	Defines the SMTP server by its DNS name. **NOTE**: This definition is only required when the **Use SMTP Server** option (see Email Recipients) is set to **Local SMTP Server**.
From Address	Defines the contents of the **From** field in the email messages sent by the Management Card. **NOTE**: The SMTP server's configuration may require that you use a valid user account on the server for this setting. See the server's documentation for more information.

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Email Recipients

In the Web interface, the **Recipients** option in the Web interface's **Events** menu, or the **Configure the Email recipients** link in the "Email Configuration" page, accesses the settings you use to identify up to four email recipients.



In the Web interface, use the **Email Test** option, which is located directly below the **Email Recipients** settings, to send a test message to any defined (and enabled) email recipient.

In the control console, the **Email** option in the **Network** Menu, accesses the email-recipient settings.

Setting	Description
To Address[1]	Defines the user and domain names of the recipient. To use email for paging, use the email address for that recipient's pager gateway account (for example, `myacct100@skytel.com`). The pager gateway will generate the page. **NOTE**: Email can only send text messages. Therefore, the recipient's pager must be able to use text-based messaging.
Use SMTP Server	Selects whether email will be routed through the Management Card's SMTP server (**Local SMTP Server** option) or sent directly to the recipient's SMTP server (**Recipient's SMTP Server** option). When the recipient uses the same SMTP server as the Management Card, this setting has no affect. **NOTE**: The recommended selection is **Local SMTP Server**. For information about why this is the recommendation, and for issues to keep in mind when selecting the **Use SMTP Server** setting, see Optimal Email Configuration Issues.
Generation	Enables (by default) or disables sending email to the recipient.

1 You can bypass the DNS lookup of the mail server's IP address by using the IP address in brackets instead of the email domain name. For example, use jsmith@[xxx,xxx.x.xxx] instead of jsmith@company.com. This is useful when DNS lookups are not working correctly.

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Setting	Description
Format	Selects the format used for email messages: **Short**: Identifies only the event that occurred. For example: UPS: Communications Established **Long**: Includes information about the Management Card and the UPS, as well as the event. For example: Name : Writer1 Location : JKing Contact : User Ed Department http://xxx.xxx.xx.xxx Serial # : Wa12 UPS Ser # : XS9849007541 Date: 08/12/2001 Time: 16:09:48 Code: 0x0002 Severe - UPS: Communications Established

1 You can bypass the DNS lookup of the mail server's IP address by using the IP address in brackets instead of the email domain name. For example, use jsmith@[xxx,xxx.x.xxx] instead of jsmith@company.com. This is useful when DNS lookups are not working correctly.

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Optimal Email Configuration Issues. It is recommended that you select the **Local SMTP Server** option for the **Use SMTP Server** setting for the following reasons:

- The Management Card will attempt to make a connection with the selected server for up to 60 seconds. If the SMTP server does not respond within that 60 seconds, the email will not be sent. Therefore, there is a higher probability that the Management Card will be able to connect to a local SMTP server than one across the Internet. This is especially true when the remote SMTP server is handling large amounts of traffic, like AOL or MSN.



The Management Card has limited resources to queue and transmit email. Therefore, the Management Card has relatively low time-out values, particularly when compared to a workstation or server which has hundreds of times more processing bandwidth and storage.

- The local SMTP server will queue the email and attempt to send it several times to the remote SMTP server. When you select the **Recipient's SNMP Server** option, the Management Card will only try to send the email once.

When you select the **Local SNMP Server** option, as recommended, you will need to enable forwarding at that server so that the server can route email to external SMTP servers. Typically, SMTP servers are not configured to forward email in order to prevent someone from using the server to send SPAM.

Consult with your SMTP-server administrator before changing the configuration of your SMTP server to allow forwarding. Besides direct forwarding, you can set up a special email account for the Management Card. This account would then forward the email to an external email account.

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How to Configure Individual Events

"Event List" page

The **Actions** option in the **Events** menu opens the "Event Actions Configuration" page. You use the **Details** button in this page to access a complete list of the Management Card (System), UPS, and environmental monitor (Environment) events that can be reported by your Management Card.

Each event is identified by its unique code, its description, and its assigned severity level, as shown in the following examples.



For information about severity levels and how they define the actions associated with events, see Event Actions (Web Interface only).

Code	Description	Severity
0x0008	System: Password changed.	Informational
0x0109	UPS: Switched to battery backup power.	Warning
0x030F	Environment: High humidity threshold violation on probe 1.	Severe

"Detailed Event Action Configuration" page

The event codes provide a link to a page that allows you to do the following:

- Change the selected event's severity level
- Enable or disable whether the event uses the Event Log, Syslog messages, SNMP traps, or email notifications

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Data Menu

Log Option

Use this option to access a log that stores information about the UPS, the power input to that UPS, and information about the ambient temperature and relative humidity measured by an environmental monitor's probes.

The information in the Data Log is sampled and stored based on the log interval defined by the **Data** menu's Configuration Option. Each entry is listed by the date and time the data was recorded, and provides the data in a column format.

The data recorded depends on the UPS model. For example, a 3-phase Symmetra records the bypass voltage for each phase under columns labeled **Vbp1** to **Vbp3**; a Smart-UPS 700 does not have multiple phases, nor does it use bypass voltages.



For descriptions of the recorded data that is specific to your UPS, see the online help in your Management Card's Web interface; for information about how you can retrieve the Data Log as a text file, see How to use FTP to retrieve log files.

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Configuration Option

Use this option to access the “Data Log Configuration” page. This page reports how much data can be stored in the Data Log based on the **Log Interval** setting which defines how often data will be sampled and recorded in the Data Log. If you change the **Log Interval**, the report updates to reflect the effect of the new setting.

The minimum interval is **60** seconds; the maximum interval is **65,535** seconds.

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Boot Mode

Introduction

Overview

In addition to using a BOOTP server or manual settings, the Network Management Card can use a dynamic host configuration protocol (DHCP) server to provide the settings the Management Card needs to operate on a TCP/IP network.

The method used to provide the Management Card's network settings depends on **Boot mode**, a **TCP/IP** option in the **Network** menu. To use a DHCP server to provide the Management Card's network assignment, **Boot mode** must be set to either **DHCP & BOOTP**, its default setting, or **DHCP only**.



See also

For more details on DHCP and DHCP options, see RFC2131 and RFC2132.

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DHCP & BOOTP boot process

When **Boot mode** is set to its default, **DHCP & BOOTP** setting, the following occurs when the Management Card is turned on or reset:

1. The Management Card makes up to five requests for its network assignment from any BOOTP server. If a valid BOOTP response is received to one of those requests, the Management Card starts the network services and sets **Boot mode** to **BOOTP Only**.
2. If the Management Card fails to receive a valid BOOTP response after five BOOTP requests, the Management Card makes up to five requests for its network assignment from any DHCP server. If a valid DHCP response is received to one of those requests, the Management Card starts the network services and sets **Boot mode** to **DHCP Only**.



You can configure the Management Card to always use the **DHCP & BOOTP** setting for **Boot mode** enabling the **Remain in DHCP & BOOTP mode after accepting TCP/IP settings** option, which is disabled by default, as described in Management Card settings.

3. If the Management Card fails to receive a valid DHCP response after five DHCP requests, it repeats sending BOOTP and DHCP requests until it receives a valid network assignment: first it sends a BOOTP request every 32 seconds for 12 minutes, then it sends one DHCP request with a time-out of 64 seconds), and so forth.

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If a DHCP server responds with an invalid offer (for example, the offer does not contain the APC Cookie), then the Management Card will accept the lease from that server on the last request of the sequence and then immediately release that lease. This prevents the DHCP server from reserving the IP Address associated with its invalid offer for the Management Card. For more information on what a valid response requires, see DHCP response options.

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DHCP Configuration Settings

Management Card settings

The **TCP/IP** option in the Network menu, in both the Web interface and the control console, accesses the Management Card settings that affect how the Management Card's network settings are assigned.

As described in Advanced settings, three settings are available regardless of the **TCP/IP** option's **Boot mode** selection (**Port Speed**, **Host Name**, and **Domain Name**), and three settings are available for any **Boot mode** selection except **Manual** (**Vendor Class**, **Client ID**, and **User Class**).

When **Boot mode** is set to **DHCP & BOOTP**, two options are available:

- **After IP Assignment** (**Remain in DHCP & BOOTP mode after accepting TCP/IP settings** in the Web interface): By default, this option switches **Boot mode** to the selection that reflects the server that provided the TCP/IP settings (**DHCP Only** or **BOOTP Only**).
- **DHCP Cookie Is** (**Require vendor specific cookie to accept DHCP Address** in the Web interface): By default, requires that the APC cookie be included in DHCP responses in order for the responses to be valid.

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For more information about the APC cookie, see DHCP response options.

The **DHCP Cookie Is** setting is also available when **Boot mode** is set to **DHCP Only**, along with a **Retry Then Stop** setting (**Maximum # of Retries** in the Web interface), which, by default (**0** in the Web interface, **None** in the control console), requires that the Management Card continuously send out DHCP requests until a valid DHCP response is received.

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DHCP response options

Each valid DHCP response contains options which provide the TCP/IP settings that a Management Card needs to operate on a network, as well as other information that affect the Management Card's operation.

A Management Card uses the Vendor Specific Information option (option 43) in a DHCP response to determine whether the DHCP response is valid.

Vendor Specific Information (option 43). The Vendor Specific Information option contains up to two APC specific options encapsulated in a TAG/LEN/DATA format: the APC Cookie and the Boot Mode Transition.

APC Cookie. Tag 1, Len 4, Data "1APC"

Option 43 tells the Management Card that a DHCP server has been configured to service APC devices. By default, the APC Cookie must be present in this DHCP response option before a Management Card can accept the lease.



You can use the **DHCP Cookie Is** setting described in Management Card settings to disable the APC cookie requirement.

The format of a Vendor Specific Information option that contains the APC cookie would look as follows (shown in hexadecimal format):

```
Option 43 = 0x01 0x04 0x31 0x41 0x50 0x43
```


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Boot Mode Transition. Tag 2, Len 1, Data 1/2

This option 43 setting enables or disables the **After IP Assignment** option which, by default, causes the **Boot mode** option to use the setting that reflects the server that provided the network assignment values (**DHCP Only** or **BOOTP Only**):

- For a data value of 1, the **After IP Assignment** option is disabled, and the **Boot mode** option remains in its DHCP & BOOTP setting after successful Network Assignment. Whenever the Management Card reboots, it will request its network assignment first from a BOOTP server, and then, if necessary, from a DHCP server, as described in DHCP & BOOTP boot process.
- For a data value of 2, the **After IP Assignment** option is enabled, and the **Boot mode** option switches to **DHCP Only** when the Management Card accepts the DHCH response. Whenever the Management Card reboots, it will request its network assignment from a DHCP server, only.



For more information about the **After IP Assignment**, see Management Card settings.

The format of the Vendor Specific Information Option containing the APC Cookie and the disable Boot Mode Transition setting, would look as follows (shown in hexadecimal format):

```
Option 43 = 0x01 0x04 0x31 0x41 0x50 0x43 0x02 0x01 0x01
```


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TCP/IP options. A Management Card uses the following options within a valid DHCP response to define its TCP/IP settings:

- **IP Address** (from the **yiaddr** field of the DHCP response): Provides the IP address that the DHCP server is leasing to the Management Card**.**
- **Subnet Mask** (option 1): Provides the Subnet Mask value needed by the Management Card to operate on the network.
- **Default Gateway** (option 3): Provides the default gateway address needed by the Management Card to operate on the network.
- **Address Lease Time** (option 51): Identifies the length of time for the lease associated with the identified **IP Address.**
- **Renewal Time, T1** (option 58): Identifies how long the Management Card must wait after an IP address lease is assigned before it can request a renewal of that lease.
- **Rebinding Time, T2** (option 59): Identifies how long the Management Card must wait after an IP address lease is assigned before it can seek to rebind that lease.

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Miscellaneous options. A Management Card uses the following options within a valid DHCP response to define NTP, DNS, hostname and domain name settings:

- **NTP Server, Primary and Secondary** (option 42): Identifies up to two NTP servers that can be used by the Management Card.
- **NTP Time Offset** (option 2): Specifies the offset of the Management Card's subnet, in seconds, from Coordinated Universal Time (UTC).
- **DNS Server, Primary and Secondary** (option 6): Identifies up to two DNS servers that can be used by the Management Card.
- **Host Name** (option 12): Identifies the up to 32-character hostname to be used by the Management Card.
- **Domain Name** (option 15): Identifies the up to 64-character domain name to be used by the Management Card.

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Security

Security Features

Planning and implementing security features

As a network device that passes information across the network, the Network Management Card is subject to the same exposure as other devices on the network.

Use the information in this section to plan and implement the security features appropriate for your environment.

Port assignments

If a Telnet, FTP, or Web server uses a non-standard port, a user must specify the port when using the client interface, such as a Web browser. The non-standard port address becomes an extra "password," hiding the server to provide an additional level of security. The TCP ports for which the Telnet, FTP, and Web servers listen are initially set at the standard "well known ports" for the protocols. To hide the interfaces, use any port numbers from 5000 to 65535.

User names, passwords, community names

All user names, passwords, and community names for SNMP are transferred over the network as plain text. A user who is capable of monitoring the network traffic can determine the user names and passwords required to log in to the accounts of the Control Console or Web interface of the Network Management Card. This security limitation of the protocols affects any device using Telnet, a Web server, or an SNMP version 1 agent.

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Summary of access methods

Interface	Security Access	Notes
Serial Control Console	Access is by user name and password.	Always enabled.
Telnet Control Console	These methods are available: • User name and password • Selectable server port • Server Enable/Disable	The user name and password are transmitted as plain text.
SNMP	These methods are available: • Community Name • NMS IP filters • Agent Enable/Disable • Four access communities with read/write/disable capability	The NMS IP filters allow access from designated IP addresses. • 159.215.12.1 allows only the NMS with that IP address to have access. • 159.215.12.255 allows access for any NMS on the 159.215.12 segment. • 159.215.255.255 allows access for any NMS on the 159.215 segment. • 159.255.255.255 allows access for any NMS on the 159 segment. • 0.0.0.0 or 255.255.255.255 allows access for any NMS.
FTP Server	These methods are available: • User name and password • Selectable server port • Server Enable/Disable	Only the Administrator account has access.
Web Server	These methods are available: • User name and password • Selectable server port • Server Enable/Disable • MD5 Authentication option	In basic HTTP authentication mode, the user name and password are transmitted base-64 encoded (with no encryption). MD5 authentication mode uses a user name and password phrase.

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Authentication

Authentication versus encryption

The Network Management Card controls access by providing basic authentication through user names, passwords, and IP addresses, but provides no type of encryption. These basic security features are sufficient for most environments, in which sensitive data is not being transferred.

To ensure that data and communication between the Network Management Card and the client interfaces, such as Telnet and the Web browser, cannot be captured, you can provide a greater level of security by enabling MD5 authentication (for the Web interface).

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MD5 authentication (for the Web interface)

The Web interface option for MD5 authentication enables a higher level of access security than the basic HTTP authentication scheme. The MD5 scheme is similar to CHAP and PAP remote access protocols. Enabling MD5 implements the following security features:

- The Web server requests a user name and a password phrase (distinct from the password). The user name and password phrase are not transmitted over the network, as they are in basic authentication. Instead, a Java login applet combines the user name, password phrase, and a unique session challenge number to calculate an MD5 hash number. Only the hash number is returned to the server to verify that the user has the correct login information; MD5 authentication does not reveal the login information.
- In addition to the login authentication, each form post for configuration or control operations is authenticated with a unique challenge and hash response.
- After the authentication login, subsequent page access is restricted by IP addresses and a hidden session cookie. (You must have cookies enabled in your browser.) Pages are transmitted in their plain-text form, with no encryption.

If you use MD5 authentication, which is available only for the Web interface, disable the less secure interfaces, including Telnet, FTP, and SNMP. For SNMP, you can disable write-only access so that read access and trap facilities are still available.

For additional information on MD5 authentication, see RFC document #1321 at the Web site of the Internet Engineering Task Force, **http://www.ietf.org**. For CHAP, see RFC document #1994.

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Firewalls

Although some methods of authentication provide a higher level of security than others, complete protection from security breaches is almost impossible to achieve. Well-configured firewalls are an essential element in an overall security scheme.

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Troubleshooting

Management Card

Management Card access problems

The following table describes problems that are related to network or other access to the Management Card. If you are experiencing a problem that is not described in this table, or in the table in SNMP issues, review the troubleshooting flowcharts on the APC Network Management Card *utility* CD (*.\trouble*). If you still cannot resolve the problem, see Warranty and Service.

Problem	Solution
Unable to ping the Management Card	Is the Management Card's Status LED green, indicating it is up and running its SNMP agent on the network? If yes, try to ping another node on the same network segment as the Management Card. If that fails, it is not a Management Card problem. If the Status LED is not green, or if the ping test succeeds, perform the following checks: • Verify that the Management Card is properly seated in the UPS or expansion chassis • Verify all network connections • Verify IP addresses of the Management Card and the NMS, and make sure both are on the same network or subnetwork • Verify the default gateway (or router) IP address if the NMS is on a different physical network (or subnetwork) from the Management Card • Verify the number of subnet bits for the Management Card's subnet mask

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Problem	Solution
PowerChute reports a constantly or frequently reports “Unable to Communicate with UPS”	See How to Correct Communication Lost Problems.
The terminal program reports that it cannot allocate the comm port when you try to configure the Management Card	You must shut down PowerChute before you can use a terminal to configure the Management Card.
Cannot access the Web interface	• Verify that HTTP access is enabled • Verify that you can ping the adapter • Verify that you are using either Internet Explorer 5.0 or Netscape 4.0.8 (or higher)

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SNMP issues

The following table describes known SNMP problems.

Problem	Solution
Unable to perform a GET	• Verify the read (GET) community name. • Use the control console or Web interface to ensure that the NMS has access. See SNMP.
Unable to perform a SET	• Verify the read/write (SET) community name. • Use the control console or Web interface to ensure that the NMS has write (SET) access. See SNMP.
Unable to receive traps at the NMS	Query the **mconfigTrapReceiverTable** PowerNet MIB OID to see if the NMS IP address is listed correctly, and the community name defined for the NMS matches the community name in the table. If not, use SETs to the **mconfigTrapReceiverTable** OIDs, or use the control console or Web interface to correct the trap receiver definition problem. See SNMP.
Traps received at an NMS are not identified	See your NMS documentation to verify that the traps are properly integrated in the alarm/trap database.

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How to Correct Communication Lost Problems

Overview

PowerChute may constantly or frequently report an Unable to Communicate with UPS condition when PowerChute and the Management Card have been installed together on a UPS.

Constant Unable to Communicate Problem

1. Ensure that the cable between the computer and the UPS (or the expansion chassis) is securely connected at both ends.
2. Ensure that the UPS (or the expansion chassis) serial port is connected to the same computer port used to connect the computer to the UPS when PowerChute was installed.
3. If step 1 or step 2 did not find the problem, reset the Management Card.
4. If the problem persists, disconnect (or remove) the Management Card and restart PowerChute. If the problem persists, go to step 5, and if the problem clears, go to step 6.
5. If the problem persisted, see your PowerChute documentation to remove and then reinstall PowerChute. If the problem continues, see APC Worldwide Customer Support for information about how to contact APC for technical support.
6. If problem cleared, reinstall the Management Card. If the problem returns, see APC Worldwide Customer Support for information about how to contact APC for technical support.

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Intermittent Unable to Communicate Problem

1. To eliminate an interrupt request (IRQ) conflict, the most likely cause of the problem, disconnect (or remove) the Management Card from the UPS and restart PowerChute. If the problem persists, go to step 2, and if the problem clears, go to step 3.
2. If the problem persisted, see your PowerChute documentation to remove, and then reinstall, PowerChute. If the problem continues, see APC Worldwide Customer Support for information about how to contact APC for technical support.
3. If the problem cleared, stop PowerChute.
4. Use an ASCII text editor to edit the `[ups]` section of the PowerChute initialization file *(pwrchute.ini* or *powerchute.ini*, depending on the PowerChute operating system):
   a. Add a `TimeoutFactor=40` parameter to the file.
   b. Change the `UpsPollInterval` value to `=6` (default value is `4`).
5. Reconnect (or reinstall) the Management Card and restart PowerChute. If the problem continues, see APC Worldwide Customer Support for information about how to contact APC for technical support.

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Product Information

Warranty and Service

Limited warranty

APC warrants the Network Management Card to be free from defects in materials and workmanship for a period of two years from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. This warranty does not apply to equipment that has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser.

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Warranty limitations

Except as provided herein, APC makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

Except as provided above, in no event will APC be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of this product, even if advised of the possibility of such damage.

Specifically, APC is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise. This warranty gives you specific legal rights and you may also have other rights, which vary according to jurisdiction.

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Obtaining service

To obtain support for problems with your Network Management Card:

1. Note the serial number and date of purchase.
2. Contact Customer Support at a phone number on the back cover of this document. A technician will try to help you solve the problem by phone.
3. If you must return the product, the technician will give you a return material authorization (RMA) number. If the warranty expired, you will be charged for repair or replacement.
4. Pack the unit carefully. The warranty does not cover damage sustained in transit. Enclose a letter with your name, address, RMA number and daytime phone number; a copy of the sales receipt; and a check as payment, if applicable.
5. Mark the RMA number clearly on the outside of the shipping carton.
6. Ship by insured, prepaid carrier to the address provided by the Customer Support technician.



The Network Management Card is sensitive to static electricity. When handling the Management Card, touch only the end plate while using one or more of these electrostatic-discharge devices (ESDs): wrist straps, heel straps, toe straps, or conductive shoes.

Recycling the Battery

The Network Management Card contains a removable, lithium coin-cell battery. When discarding this battery, you must follow local rules for recycling.

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Specifications

Electrical

The following table identifies the electrical specifications.

Item	Specification
Acceptable input voltage	19-30 VDC
Maximum total current draw	110 mA

Physical

The following table identifies the physical specifications.

Item	Specification
Size (H × W × D)	1.46 x 4.75 x 4.3 in (3.7 x 12.1 x 10.9 cm)
Weight	.25 lb (.11 kg)
Shipping weight	.8 lb (.36 kg)

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