

UPS Network Management Card Product Center

The **NMC Product Page** can help to keep you updated with new releases and functionality.

Search for **Application Notes** on the **APC website** for useful information on specific features of your UPS Network Management Card, like Security and UPS configuration management.

- Network Management Card 2
 - Smart-UPS and 1-Phase Symmetra – firmware v7.1.2
- Network Management Card 3
 - Smart-UPS and 1-Phase Symmetra – firmware v3.1.1.1 / v3.1.1.1
 - Smart-UPS Ultra 5-20 kVA– firmware v3.0.1.4
- Network Management Card for Easy UPS
 - 1-Phase – firmware v2.5.1.7
 - 3-Phase – firmware v2.5.0.1

See the **Troubleshooting Flowcharts** for information on troubleshooting common Network Management Card issues.

Network Management Card 2

Smart-UPS and 1-Phase Symmetra Application

New to firmware v7.1.2

- The SNMPv1 and SNMPv3 port numbers are now configurable in SNMP traps (Web, CLI, and INI).

Important fixes in firmware v7.1.2

- You can paste passwords and passphrases above 20 characters in the Command Line Interface (CLI) via SSH.
- The SSH CLI user session now begins in the default directory upon login.

Downloads

To download the latest version of the firmware:

1. Navigate to the NMC product page: <https://www.apc.com/upsnmc> on the APC website.
2. Open the **Software and Firmware** tab and sort by the newest.
3. Select the NMC 2 firmware from the list, for example, "Network Management Card 2 (NMC2) v7.1.2 Firmware for Symmetra with AP9630/31 (7.1.2)".
4. Click **Files for Download** and click **Download ZIP**.

See **File Transfer** section in the NMC 2 **User Guide** for more information on upgrading firmware.

Network Management Card 3

New to firmware v3.1.1.1 (Smart-Ups) & v3.1.1.1 (1-Phase Symmetra)

- Support added for user authentication via Lightweight Directory Access Protocol (LDAP).
- Support added for baud rate 115,200 on the Console connection on Universal I/O port.
- Support added for optional Spot Fluid Sensor (NBES0301).
- Support added for configuring Universal I/O sensors via the cfiguo command on the Command Line Interface (CLI).
- Support added for remote authentication via the TACACS+ protocol. (Added for Smart-UPS application in v3.0).
- Support added for TLS 1.3.
- Support added for SNMPv3 encryption via the SHA-256 and AES-256 protocols.
- Password security has been updated to align with the requirements for IEC 62443-4-2. By default, passwords now need to be a minimum of 8 characters in length (strong password setting enabled). (Added for Smart-UPS application in v3.0)

Important fixes in firmware v3.1.1.1 (Smart-UPS) & v3.1.1.1 (1-Phase Symmetra)

- Link-RX/TX LED is now working for all embedded NMC3s.
- Dates in SNMP, such as upsAdvIdentDateOfManufacture, are now available in the correct format, mm/dd/yyyy.
- The audit log of the Web UI is displayed in all supported languages.
- The NMC3 Web UI now allows passwords with up to 64 characters, as expected. (Added for Smart-UPS application in v3.0)
- For encrypted email settings, install CA certificate to the certificate store and set "Require CA Root Certificate" correctly. (Added for Smart-UPS application in v3.0)
- Improved TLS certificate for email. (Added for Smart-UPS application in v3.0)

Downloads

To upgrade to NMC3 firmware version 3.0.0 and higher, you must have a valid Secure NMC System (SNS) subscription and use the Secure NMC System (SNS) Tool:

1. Navigate to the NMC product page, www.apc.com/secure-nmc on the APC website.
2. View the Secure NMC System subscriptions available to purchase on the **Secure NMC System Subscriptions** sub-category. To purchase a subscription, contact your preferred Partner and quote one of the following Commercial References:

Commercial Reference (CR)	Description
SWNMC3SU-1Y-DIGI	NMC3 for Smart-UPS - 1 Year Secure NMC Subscription
SWNMC3SU-3Y-DIGI	NMC3 for Smart-UPS - 3 Year Secure NMC Subscription
SWNMC3SU-5Y-DIGI	NMC3 for Smart-UPS - 5 Year Secure NMC Subscription
SWNMC3SU-6Y-DIGI	NMC3 for Smart-UPS - 6 Year Secure NMC Subscription

3. Once you have purchased your SNS subscription, you will receive an Activation ID via email that is activated in the Secure NMC System (SNS) Tool.
4. Download the Secure NMC System (SNS) Tool from the **Secure NMC System Tool** sub-category on the NMC product page, www.apc.com/secure-nmc or by searching for SFNMC3FMTSU.
5. Once downloaded, you can use the SNS Tool to add your NMC details, activate your subscription, and update your firmware.

See the Secure NMC System **User Guide** for more information on upgrading firmware with the SNS Tool.

Smart-UPS Ultra 5-20 kW Application

New to firmware v3.0.1.4

- The NMC3 platform and Smart-UPS Ultra 5-20kW application are now IEC 62443-4-2 certified.
- Support added for audit logging to ensure control actions and configuration changes are recorded in the Event Log.
- Support added for remote authentication via the TACACS+ protocol.
- Password security has been updated to align with the requirements for IEC 62443-4-2. By default, passwords now need to be a minimum of 8 characters in length (strong password setting enabled).

Important fixes in firmware v3.0.1.4

- The NMC3 Web UI now allows passwords with up to 64 characters, as expected.
- For encrypted email settings, install CA certificate to the certificate store and set **Require CA Root Certificate** correctly.
- Improved TLS certificate for email.
- The NMC3 Web UI now allows the Battery Install date setting and other general UPS settings.
- The correct **On Battery** status message will now appear on the Web UI Home page for Japanese.
- The NMC now supports the latest set of UPS alarms with the correct severity and improved alarm messages.
- Partially written files can now be recovered after a system reset event.
- The **Power Module Fault** now appears correctly on the SNMP interface.
- Improved Japanese translations for the display.
- Able to set the OIDs `upsAdvConfigHighBypassLLTransferVolt` and `upsAdvConfigLowBypassLLTransferVolt` from SNMP interface.
- The following security vulnerabilities have been addressed in this release: CWE-74: Improper neutralization of special elements in output used by a downstream component (Injection) and CWE-79: Improper neutralization of input during web page generation (Cross-site Scripting).

Downloads

To download the latest version of the firmware:

1. Navigate to the NMC product page: <https://www.apc.com/upsnmc> on the APC website.
2. Open the **Software and Firmware** tab and sort by the newest.
3. Select the NMC 3 firmware from the list, for example, "Network Management Card 3 (NMC3) Firmware v3.0 for Smart-UPS Ultra (3.0.1.4).
4. Click **Files for Download** and click **Download ZIP**.

See **File Transfer** section in the NMC 3 **User Guide** for more information on upgrading firmware.

Network Management Card for Easy UPS

1-Phase Application

New to firmware v2.5.1.7

- Support added on Dell VxRail for PowerChute shutdown feature.

Important fixes in firmware v2.5.1.7

- PowerChute clients turn off as expected when Sleep command is issued from the NMC.
- The NMC Web UI correctly translates “Green Power Function” into Chinese.
- Battery Discharge issues are no longer visible after the assignment of static IP to NMC AP9544.
- The NMC now supports runtime calibration.
- The NMC interfaces (Web UI, CLI, SNMP and Modbus) now correctly display a runtime remaining value of 0 for battery disconnection. The LCD also displays the correct value.
- The VAC for Bypass Upper Voltage and Bypass Lower Voltage are now correctly displayed in the config.ini.

Downloads

To download the latest version of the firmware and the help:

1. Navigate to [the NMC for Easy UPS Product Page](#) on the APC website.
2. Scroll down to **Software and Firmware** at the end of the page.
3. Select "Network Management Card 3 (NMC3) Firmware Update for Easy UPS, 1 Phase v2.5 (2.5.1.7).
4. Click **Files for Download** and click **Download ZIP**.

See **File Transfer** section in the NMC for Easy UPS [User Guide](#) for more information on upgrading firmware.

3-Phase Application

New to firmware v2.5.0.1

Introducing the AP9547 Network Management Card for Easy UPS 3-Phase (3S, 3M & 3L).

Important fixes in firmware v2.5.0.1

There are no fixed issues as this is an initial release.

Downloads

To download the latest version of the firmware and the help:

1. Go to the **NMC for Easy UPS Product Page** on the APC website.
2. Scroll down to **Software and Firmware** at the end of the page.
3. Select "Network Management Card 3 (NMC3) Firmware Update for Easy UPS, 3 Phase v2.5 (2.5.0.1).
4. Click **Files for Download** and click **All files** to download the zip files.

See **File Transfer** section in the NMC for Easy UPS **User Guide** for more information on upgrading firmware.

Knowledge Base Articles

The Knowledge Base on the **APC website** has useful product information. To search for an article, enter a text search (e.g. "Network Management Card"), or find an article listed below by typing in one of the FAQ IDs (e.g. FA235265) in the search box, and pressing Enter.

Network Management Card 2	
Fixed for v6.5.0 Updated: Data Center Expert loses SNMPv3 communication to APC devices when upgrading NMC to AOS v6.4.6	FA305661
Fixed for v6.5.0 Temperature Sensor not detected on an AP9631 that was pre-installed in a Symmetra	FA318542
AP9335T(H) / AP9810 configuration issues through SNMP	FA301499
Network Management Card 2 (NMC2) v6.X.X User Types and Permissions Definitions	FA170552
Network Management Card 2 Firmware v6.X.X FAQ/Upgrade Issues	FA176047
Things To Consider When Upgrading or Downgrading a Network Management Card 2 (NMC2) Device between v5.X.X and 6.X.X	FA167693
Network Management Card 3	
Network Management Card 3 – dbg directory not included in Smart-UPS firmware	FA386512
Network Management Card 3 does not establish communications if local CLI session is active during reboot	FA386513
Network Management Card 2 & 3	
MAC address Vendor ID of Network Management Cards, and other network devices changing	FA324455
UPS Network Management Card 2 Firmware Application Compatibility for Smart-UPS Online (SRT) Models	FA231396
Mass Configuration of Users and User Preferences on Network Management Card 2 (NMC2) v6.X.X	FA176542
How do you make a Network Management Card communicate on a network?	FA156064
How do I upgrade the firmware on an APC Network Management Card?	FA156047
How can I download Event, Data, Configuration, and Debug files from my Network Management Card?	FA156131
How can I mass configure a Network Management Card (NMC) or NMC embedded product?	FA156117
Why does my Network Management Card report warmstarts and coldstarts?	FA156063

How do I troubleshoot email failures on a Network Management Card?	FA156078
How To: Configuring an APC Network Management Card with popular email services such as Gmail, Yahoo! and Hotmail/Outlook.com	FA164769
How do I perform a mass firmware upgrade on APC network enabled products?	FA156099
Network Management Card Password Reset Procedure	FA156075
Why is my Web/SNMP (AP9606) or Network Management Card (AP9617, AP9618, AP9619, AP9630, or AP9631) not recognizing my UPS?	FA156045
AP9810 dry contact relay changes state after NMC is reseated	FA301500

UPS Network Management Card Troubleshooting Flowcharts

- PowerChute Network Shutdown
- E-mail
- Network
- Upgrade
- Access

PowerChute Network Shutdown

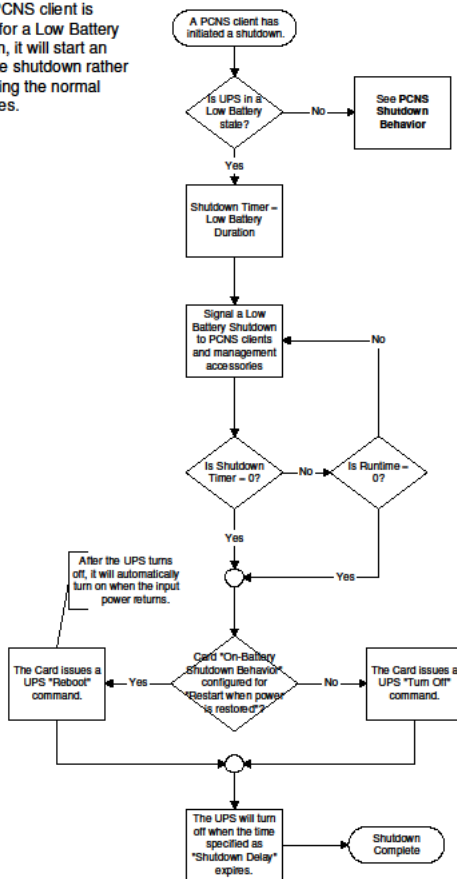
Low Battery Shutdown

Notes:

Once a PCNS client is signaled for a Low Battery Shutdown, it will start an immediate shutdown rather than waiting the normal delay times.

PowerChute Network Shutdown Low Battery Shutdown Behavior

04/25/2006 Rev 2



Shutdown

PowerChute Network Shutdown Shutdown Behavior

04/26/2006 Rev3

Notes:

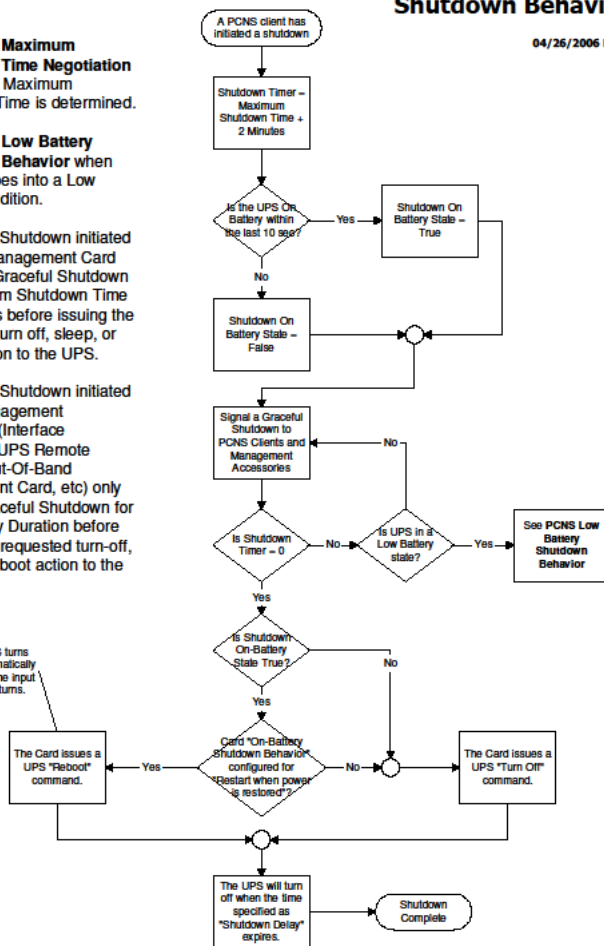
See **PCNS Maximum Shutdown Time Negotiation** for how the Maximum Shutdown Time is determined.

See **PCNS Low Battery Shutdown Behavior** when the UPS goes into a Low Battery condition.

A Graceful Shutdown initiated from the Management Card will signal Graceful Shutdown for Maximum Shutdown Time + 2 Minutes before issuing the requested turn off, sleep, or reboot action to the UPS.

A Graceful Shutdown initiated from a Management Accessory (Interface Expander, UPS Remote Display, Out-Of-Band Management Card, etc) only signals Graceful Shutdown for Low Battery Duration before issuing the requested turn-off, sleep, or reboot action to the UPS.

After the UPS turns off, it will automatically turn on when the input power returns.



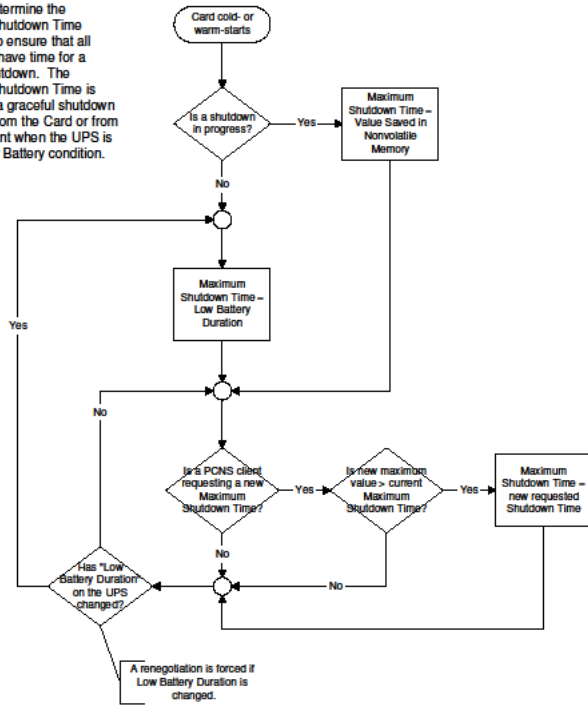
Maximum Shutdown Time

PowerChute Network Shutdown Maximum Shutdown Time Negotiation

04/25/2006 Rev2

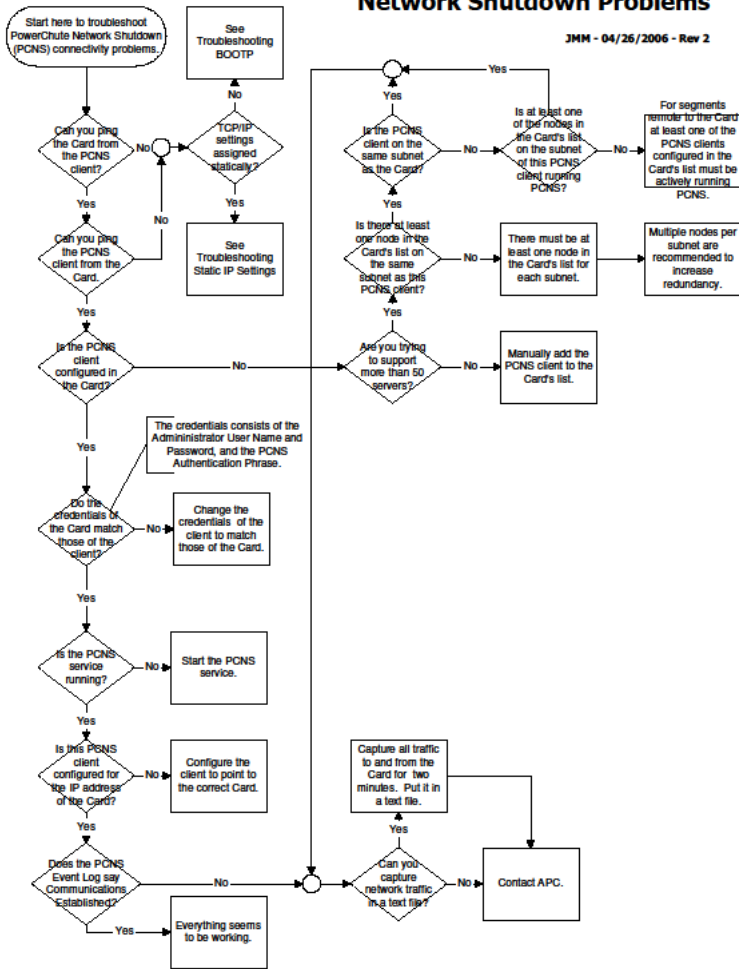
Notes:

The Card continually communicates with all PCNS clients to determine the Maximum Shutdown Time necessary to ensure that all servers will have time for a graceful shutdown. The Maximum Shutdown Time is used when a graceful shutdown is initiated from the Card or from a PCNS client when the UPS is not in a Low Battery condition.

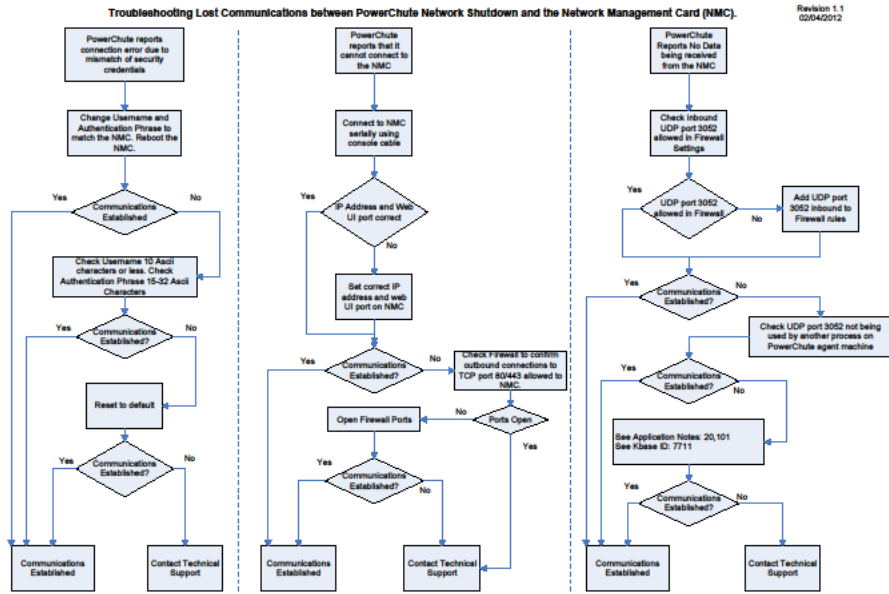


Troubleshooting PowerChute Network Shutdown Problems

JMM - 04/26/2006 - Rev 2



PowerChute Lost Communication

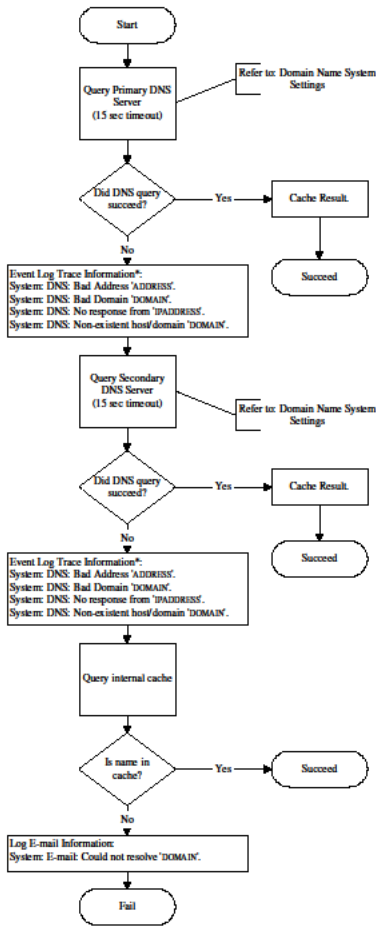


E-mail

DNS Flowchart

Detailed DNS Flow Chart

04/20/2006 - Rev 2

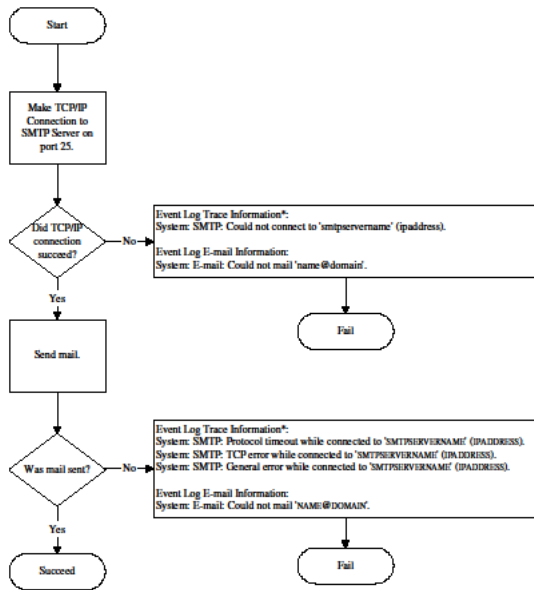


Note:
*Event Log Trace Information is not enabled by default. Refer to Event Configuration.

SMTP Flowchart

Detailed SMTP Flow Chart

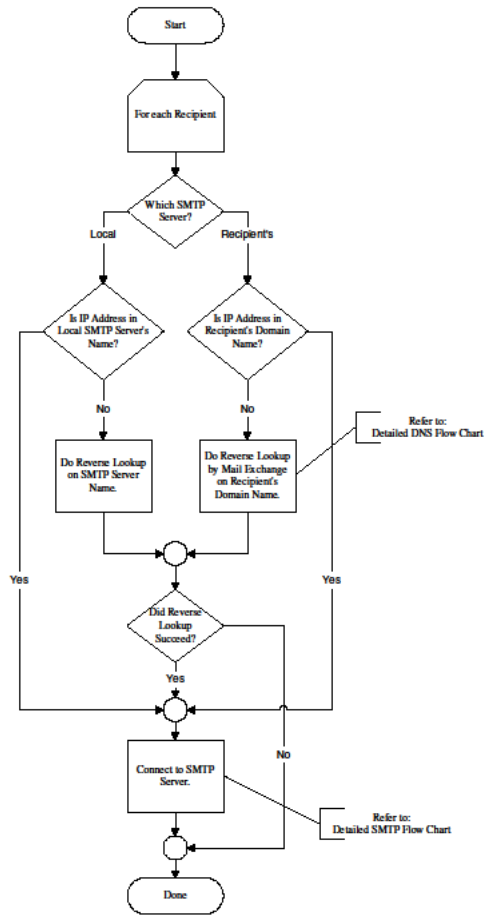
04/21/2006 - Rev 2



Note:
*Event Log Trace Information is not enabled by default. Refer to Event Configuration.

Email Flow Chart

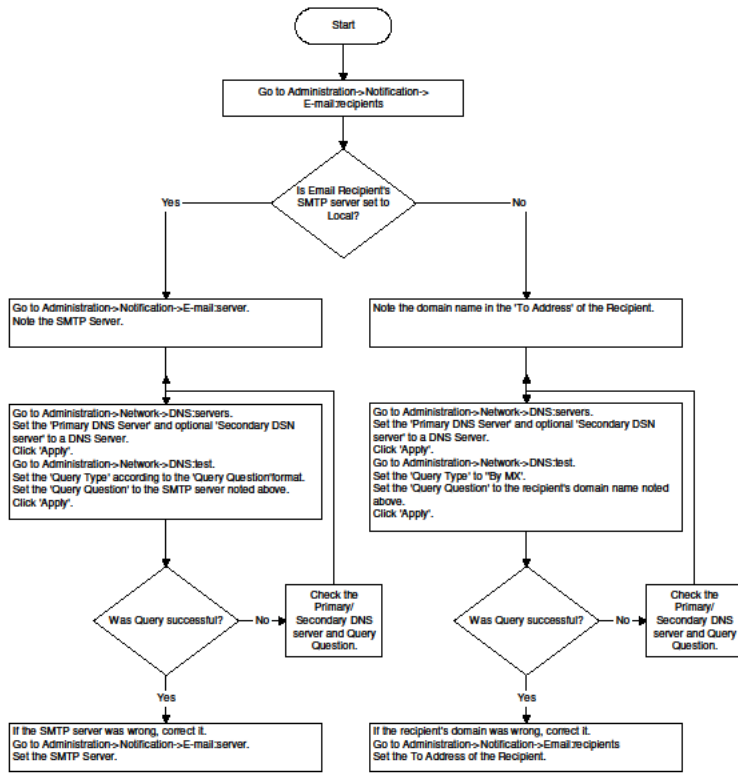
04/20/2006 - Rev 2



E-mail Troubleshooting Flowchart

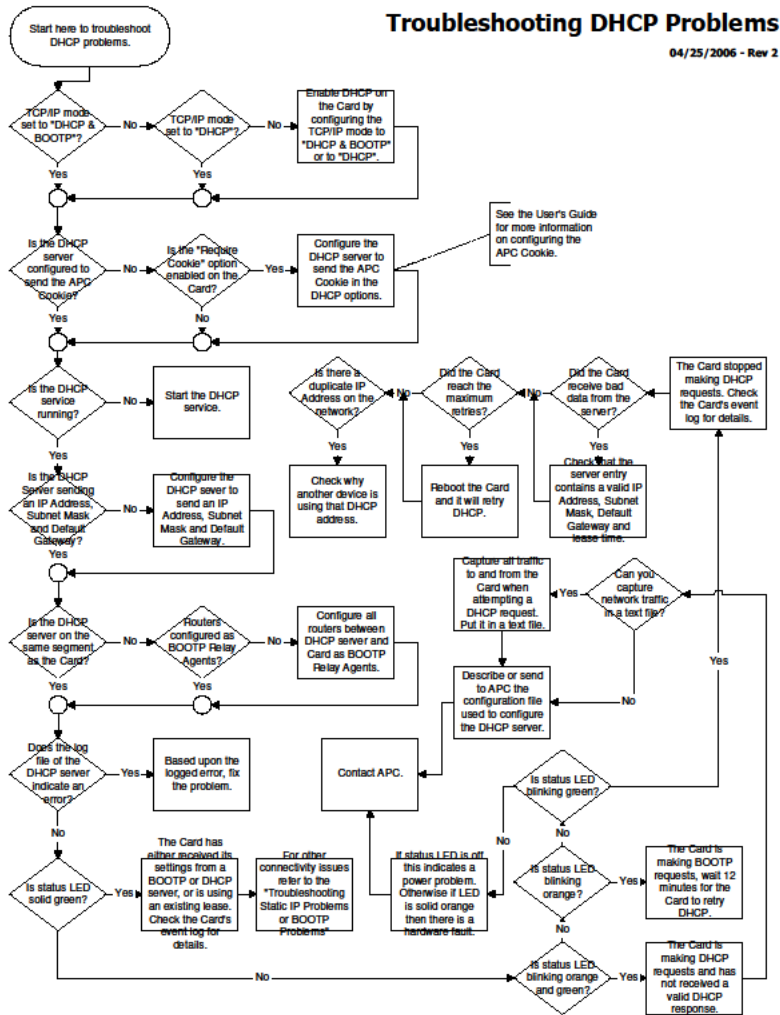
Troubleshooting E-mail Problems

04/21/2006 - Rev 2



Network

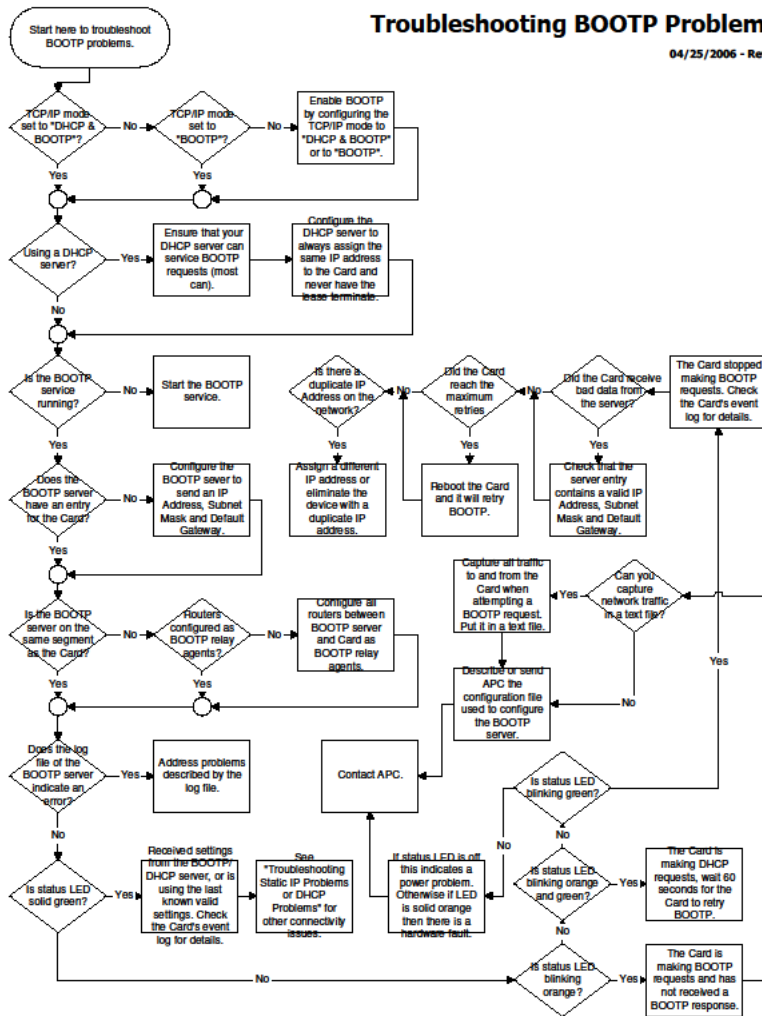
DHCP Problems



BOOTP Problems

Troubleshooting BOOTP Problems

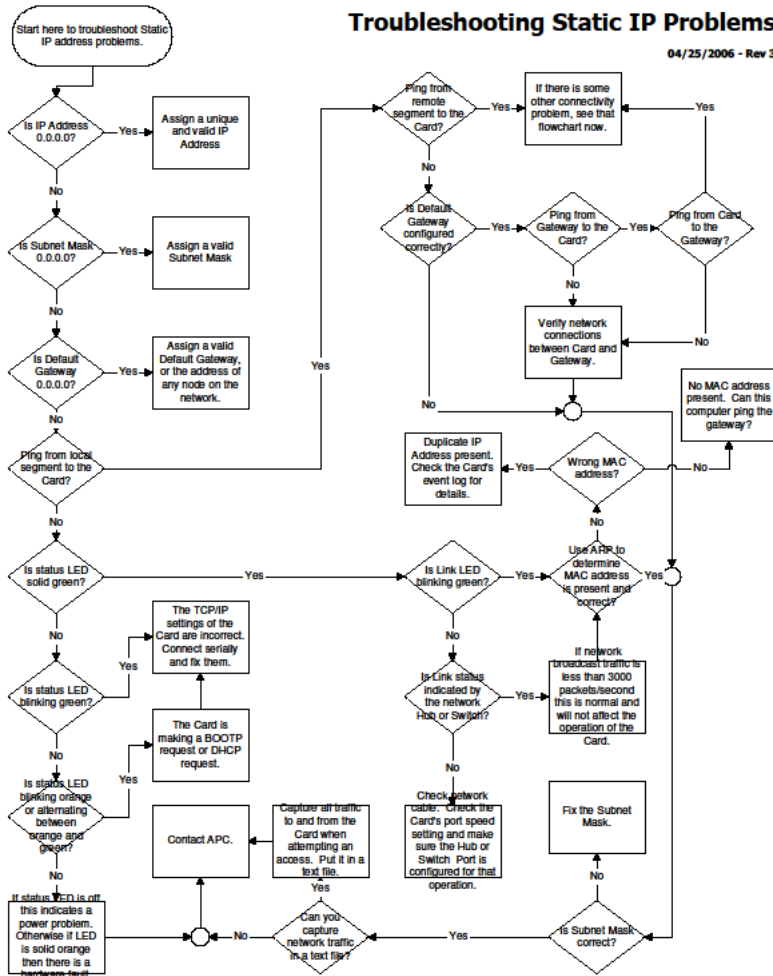
04/25/2006 - Rev 3



Static IP Problems

Troubleshooting Static IP Problems

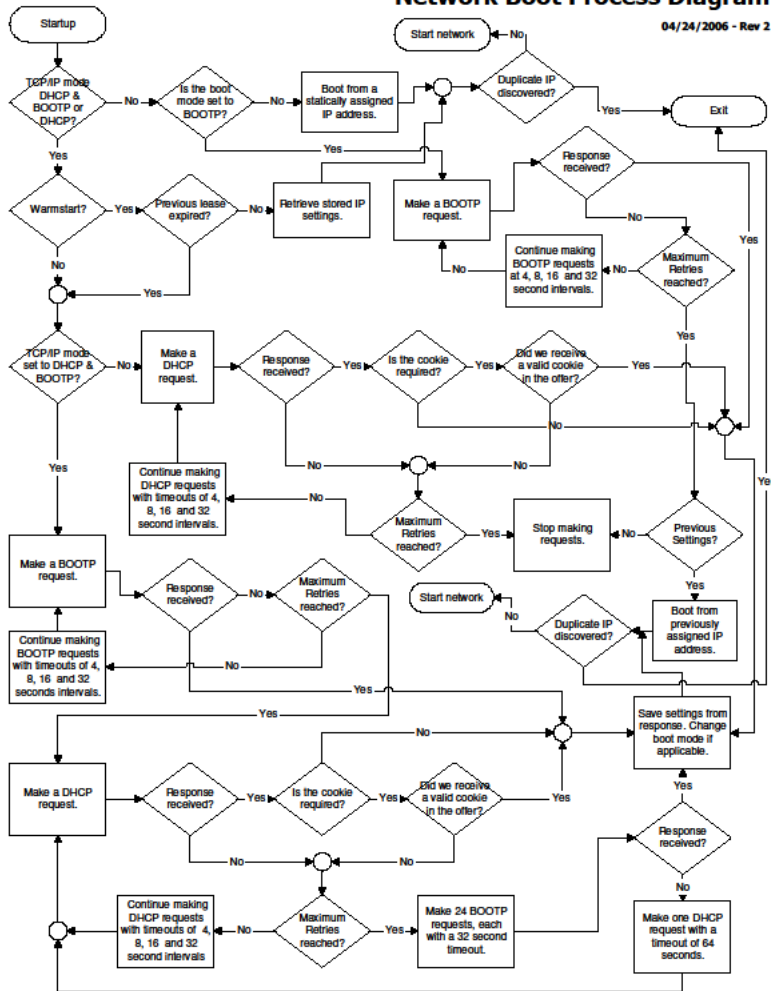
04/25/2006 - Rev 3



Network Boot Problems

Network Boot Process Diagram

04/24/2006 - Rev 2



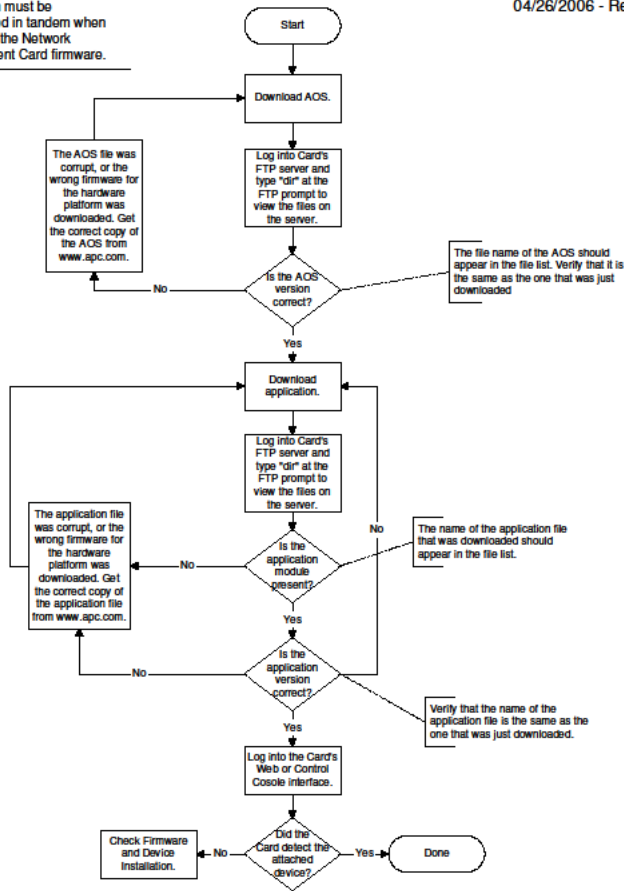
Upgrade

NMC Firmware Upgrade

Troubleshooting Network Management Card Firmware Upgrades

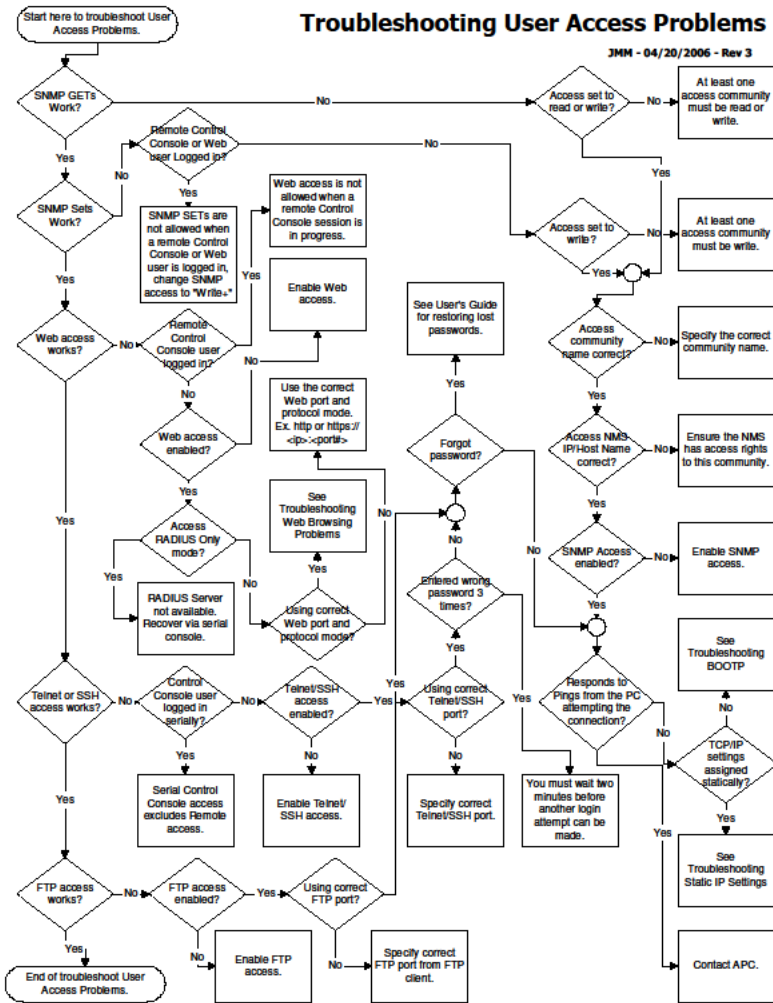
04/26/2006 - Rev 2

NOTE: Both the AOS and application must be downloaded in tandem when upgrading the Network Management Card firmware.

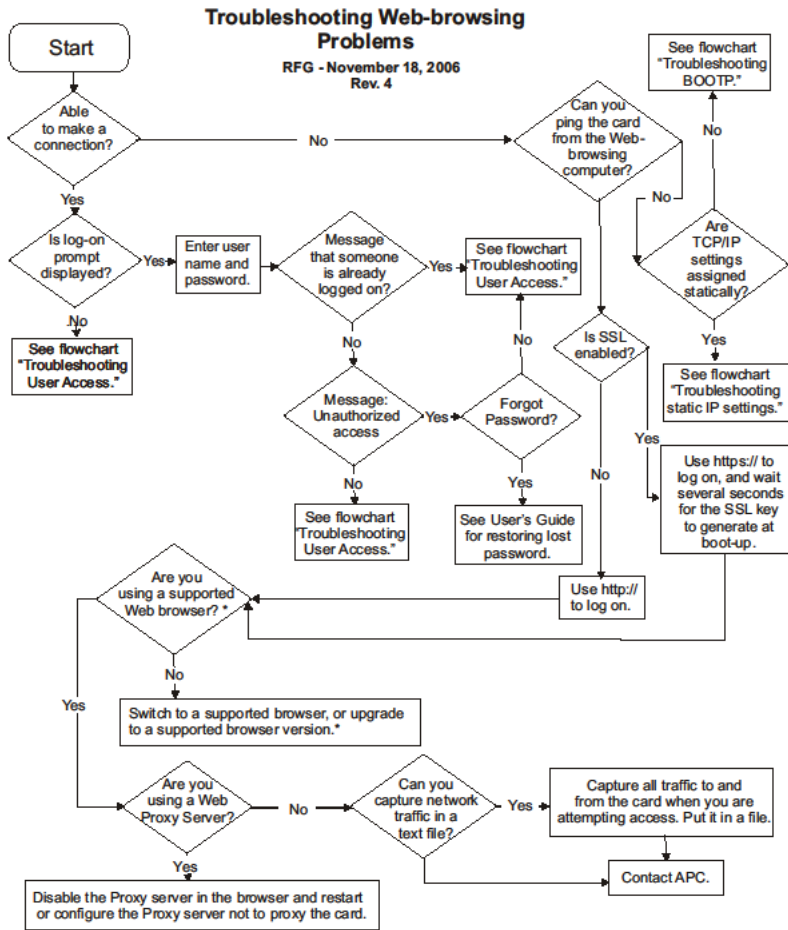


Access

User Access Problems



Web Browsing Problems



* Note: To access the Web interface of the Network Management Card, use Microsoft® Internet Explorer (IE) 5.5 and higher (on Windows® operating systems only), Firefox®, version 1.x, by Mozilla® Corporation (on all operating systems), or Netscape® 7.x and higher (on all operating systems)

Last updated: May 2024

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