

# PowerChute Network Shutdown with a Parallel Silcon UPS System

You can expand the APC Silcon Series UPS to provide more power protection or redundancy by connecting as many as 9 units in parallel. In this configuration, each UPS in the system has its own Network Management Card (AP9606, AP9617, 18, or 19) with PowerChute Network Shutdown recognizing the entire system as a single UPS. In this document, "Parallel Silcon UPS" refers to the entire parallel Silcon UPS system, and "UPS module" refers to a UPS that is a component of that system.

## Requirements

To support a Parallel Silcon UPS, you must have PowerChute Network Shutdown version 2.1 or greater.

*Note: At this time, version 2.2 is available for Windows NT, Windows XP, Windows 2000, Windows 2003, Solaris 8 and 9, and RedHat Linux 8.0.*

**Before** you install PowerChute Network Shutdown, make sure the Management Card, in each UPS Module, of your Parallel Silcon UPS is configured as follows:

- Each Management Card must have the same Administrator User Name and Authentication Phrase.
- Each Management Card must use the same http port. By default, a Management Card uses port 80, but the port setting may have been reconfigured to use another port.

## Installation

If you have more than 50 servers connected to your Parallel Silcon UPS, see the document "PowerChute Network Shutdown with a UPS powering more than 50 computers" before you begin the installation. To obtain this document, go to APC's Web site (<http://www.apc.com>) select the Software Downloads link, and select the link for your PCNS operating system. As you perform the installation, be sure to do the following:

- When the installation program asks if you are using a Typical or Custom Install, choose Custom Install. **Do not accept** the default setting. Change the setting to "Install for a Parallel APC Silcon UPS System," which will enable you to enter multiple Management Card IP addresses.
- When prompted to enter the IP addresses of each of the Management Cards, enter up to nine IP addresses in any order. (Nine is the maximum number of Silcon UPSs that you can connect in parallel.) The IP addresses **must** be for Management Cards in UPS Modules that are part of the same Parallel Silcon UPS.

## ***Upgrading from a Previous Version***

The ability to upgrade from a previous version of PCNS is not available. You must remove a previous version and then install PCNS version 2.1 or greater. PCNS events must then be re-configured.

## ***Operation***

With a Parallel Silcon UPS, PowerChute Network Shutdown always recognizes and reports these events:

- Communication established or lost between the Management Card and the UPS.
- Network communication established or lost between PCNS and any of the Management Cards.
- Any event generated by an Environmental Monitoring Card.
- PCNS monitoring started.
- Overload and overload cleared.
- Bypass disabled and bypass enabled.
- Power failed and power restored.

These events are only reported once, should they be persistent. PowerChute Network Shutdown recognizes and reports other events only if they affect the servers configured in the Parallel Silcon system. These events consist of:

- Battery Discharged
- Battery Charge in Range

### **Lost Network Communication (Always Reported)**

If PowerChute Network Shutdown does not receive messages from one or more of the Network Management Cards, it records the following in the Event Log:

- One line of text indicating that the event “**Communication: PowerChute cannot communicate with the Management Card**” has occurred.

When communication has been established with all of the Management Cards, the “**Communication: Established**” event occurs.

### **Lost UPS Communication (Always Reported)**

If a Management Card reports “lost communication with a UPS”, PCNS records the following in the Event Log:

- One line of text indicating that the event “**Communication: Management Card cannot communicate with the UPS**” has occurred.

A “network” communication lost event supersedes a “UPS” communication lost event. When communication has been re-established between a UPS and a Management Card, the “**Communication: Established**” event occurs.

### **Environmental Monitoring Card events (Always Reported)**

You can only configure a single APC Environmental Monitoring Card, regardless of the number of UPS modules in your Parallel Silcon configuration. PowerChute Network Shutdown recognizes and reports all Environmental Monitoring Card events.

### **Overload and Overload Solved (Always Reported)**

If PowerChute Network Shutdown receives an Overload condition from at least one UPS, the following message is recorded in the Event Log:

One line of text indicating that the event “**UPS: Overloaded**” has occurred.

When the overload condition has been solved, the “**UPS Overload: Corrected**” event occurs.

### **Bypass Enabled and Bypass Disabled (Always Reported)**

If PowerChute Network Shutdown receives a Bypass Enabled condition from at least one UPS, the following message is recorded in the Event Log:

One line of text indicating that the event “**Bypass: For Maintenance**” has occurred.

When the Bypass Disabled condition occurs, the “**Bypass: Ended**” event occurs.

### **Power Failed and Power Restored (Always Reported)**

If PowerChute Network Shutdown receives a Power Failed condition from at least one UPS, the following message is recorded in the Event Log:

One line of text indicating that the event “**UPS: On Battery**” has occurred.

When the Power Restored condition occurs, the “**Input Power: Restored**” event occurs.

## ***Events Recorded only if they affect the Servers***

Except for communication or environmental monitoring events, PowerChute Network Shutdown recognizes and reports a UPS event only if it affects system redundancy. These events consist of battery discharged and battery charge in range.

- If one of the above events occurs on one UPS module and the remaining UPS modules can support the load, PowerChute Network Shutdown does not recognize or report the event.
- If a problem occurs on one UPS module and the remaining modules cannot support the load, PCNS recognizes and reports the event.
- If a problem affects all of the UPS modules, PCNS recognizes and reports the event.

As an example, consider a Parallel Silicon system composed of three UPS modules loaded to 40% of capacity.

- The “**Battery: Discharged**” event occurs on a UPS module. Because the remaining two modules can support the load, PowerChute Network Shutdown does not report the event.
- While one UPS Module reports “discharged”, the “**Battery Discharged**” event occurs on one of the other UPS modules. Because the one remaining UPS module cannot support the load, PowerChute Network Shutdown reports the “**Battery: Discharged**” event and initiates actions configured for that event.

A further check is performed on the state of UPS modules.