



APC Integration with NetApp® FAS Series

Abstract

The importance of data and the integrity of that data in today's business world are undeniable. Organizations of all sizes continue to generate increasing amounts of data, and a means for safely and efficiently storing that data is necessary. The fabric-attached storage (FAS) systems by NetApp provide storage solutions for a wide range of environments, from large corporate data centers to remote offices. Any storage system, however, is only as reliable as the AC power it receives, which is why an Uninterruptible Power Supply (UPS) should be used with every storage system installation.



Introduction

In addition to providing clean power to the storage system, a UPS will provide battery power to the storage system when there is a power outage, allowing the system to stay up and running during brief power outages. In the case of an extended power outage, when the UPS battery will become exhausted, communication between the UPS and the storage system is essential in order to prevent a "hard" shutdown of the system, and the resulting potential data loss or corruption. For more information on this topic, refer to APC White Paper #10, "Preventing Data Corruption in the Event of an Extended Power Outage". As an APC Technology Partner, NetApp has worked closely with APC to integrate built-in UPS monitoring and unattended graceful shutdown capability into their FAS Series of storage systems.

NetApp FAS Systems

The NetApp FAS product line includes:

- FAS6000 series: scalability for the largest enterprise applications
- FAS900 series: industry-leading performance and storage scalability
- FAS3000 series: breakthrough value for mid-tier enterprise storage
- FAS200 series: affordable, highly scalable and upgradeable storage



NetApp FAS250



NetApp FAS6070

NetApp Recommends Using a UPS on the NetApp FAS Storage System

The “NetApp Filer Best Practices for Reliability - New System Installations” guide recommends the filer, disk shelves, and any terminal (console) or network equipment used to manage the filer be connected to a UPS. Most of these devices have redundant power supplies, however, that only protects against a single power supply failure. Redundant power supplies do not protect the storage systems from a complete power outage at a facility.

The Best Practices for Reliability guide also recommends the UPS be sized to provide sufficient capacity to support the filer and its components for at least 15 minutes. This will allow the filer to stay up during any brief power outages, and will also provide enough time for a clean shutdown in the event of an extended power outage. All NetApp FAS series storage systems are listed on the APC UPS Selector web page, and the UPS Selector will allow for customizations in the storage system configuration to provide the best UPS solution. The UPS Selector is available at

<http://www.apc.com/template/size/apc/index.cfm>

To take advantage of the communication between the UPS and the NetApp filer, the UPS will need an APC Network Management Card® (APC part number AP9617, AP9618 or AP9619) installed. Many of APC's larger UPSs ship with this card pre-installed in the UPS, or it can be purchased separately. **Note:** This integration was tested with the APC Smart-UPS® and Symmetra® product families only.

UPS Management

All NetApp FAS systems run the Data ONTAP operating system, which provides full-featured and unified data management for both block and file serving environments. Through Data ONTAP, the status of the UPS devices protecting the storage system can be monitored.

When a UPS is first installed, it must be added and enabled in order to be monitored by the filer's environmental monitoring software. This is accomplished through the following commands:

ups add [-c community] IP address

Use *-c community* to specify the community for the UPS device

IP address is the IP address of the UPS device

ups [disable / enable] [all / IP address]

IP address is the IP address of the specific UPS device to enable or disable

ups status

Gives the status for all known UPSs

Additionally, the APC Network Management Card must be configured to recognize the NetApp FAS as a trap receiver.

Figure 1 below displays the UPS Status information available from the Command Line Interface.

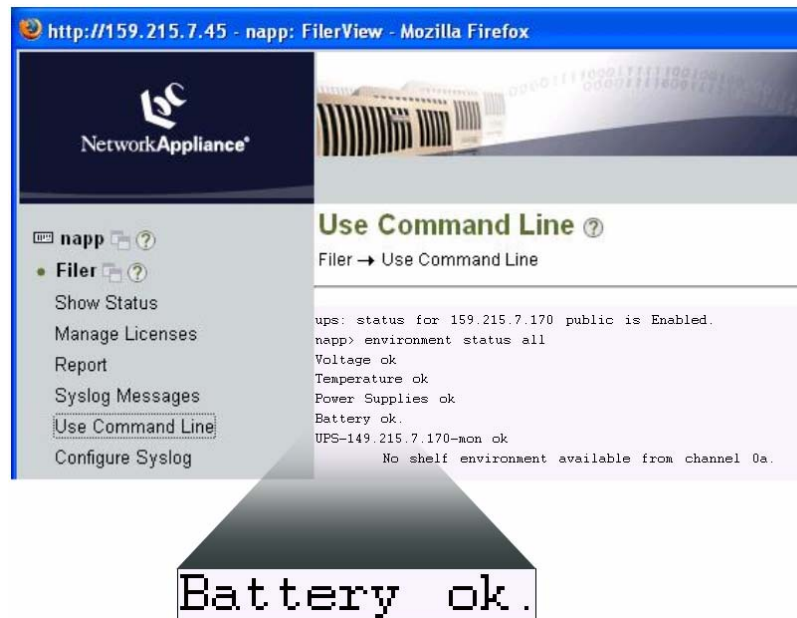


Figure 1 UPS Status displayed in Command Line Interface

Graceful System Shutdown

When a power loss occurs, the UPS supplies power to the NetApp system from its batteries. This is a finite supply of power, and if the outage is lengthy, the UPS batteries will eventually discharge. To prevent a hard shutdown of the NetApp system, and any potential data corruption or loss, the administrator will be alerted to the power loss via an SNMP trap, log message and Autosupport message (**Note:** Autosupport must be enabled).

When the UPS has 5 minutes of battery runtime remaining a second SNMP trap, Autosupport message, and log message will be generated. A final alert will be sent when the UPS has 1 minute of battery runtime remaining, and the shutdown process of the NetApp system will begin.

Conclusion

APC's industry leading UPS products, in combination with the NetApp FAS Systems line of products, represent a comprehensive approach to data protection for our mutual customers. The FAS built-in support of APC UPSs provides our mutual customers with the peace of mind that their critical data will be properly stored and protected from power problems.