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Legacy Power Management Software Is No Longer Suitable For The High Density Environment

Most power management software solutions were designed at a time when servers only carried one operating system (OS). The proliferation of servers in the enterprise and the need for more centralized power protection makes legacy power management software no longer viable: too many cables to route in already cluttered rack enclosures, too many individual consoles to check, too many hours spent in installing and configuring UPSs, cards and shutdown software. In traditional server environments, installing power management software on each server is the most common way to assure comprehensive power monitoring, control and emergency shutdown capabilities. While these systems are typically monitored from a central console, this type of installation can become quite unwieldy in blade configurations. Manually installing and configuring software on individual systems where a single rack can contain as many as 100 servers is one solution, however it is incredibly time-consuming and unnecessarily confusing from a monitoring standpoint. In addition, blade servers are designed for growth, which means that this painful process of manually installing the shutdown software on each operating system has to be repeated each time a blade is added to the chassis.

Modern blade servers and virtual environments now rely on complex redundancy schemes that legacy power management solutions can't handle. As a result, network managers may not take full advantage of their redundancy levels as the power management software may trigger a shutdown when the batteries of the first UPS go low, or when a redundant power supply fails.

These examples prove that a new era of power management software is needed, which takes into account the specific needs of high-density computing. As a result of widespread experience in high-density, mission critical environments, Eaton is the only vendor that can provide solutions specifically designed for blade applications under its MGE Office Protection Systems brand. Using automated deployment with blade management tools, Eaton's Network Shutdown Module can be installed quickly and configured in just minutes. These installations have been tested extensively with IBM Director which is used on nearly half of all deployed blade systems and is undergoing tests on other systems.

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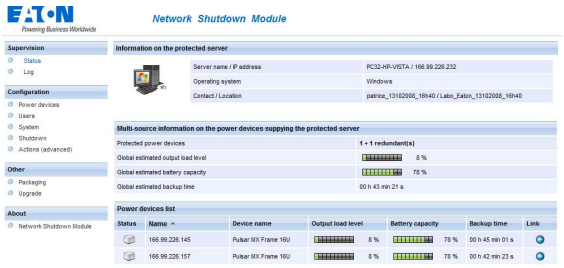
Blade Server Power Management

Blade-Grade Shutdown Software

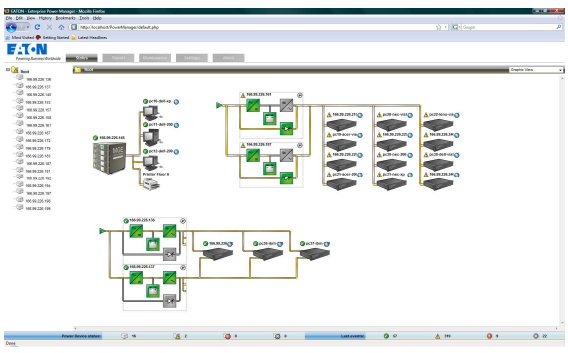


The architecture of blade servers represents a unique challenge when it comes to power management. Each blade has its own operating system, which may vary within the same chassis. Eaton provides an easy deployment solution with its Network Shutdown Module (NSM) that is available for Windows Server 2003 & 2008 most Linux distributions and other OSs typically found in high-density computing. Using Blade Management software like IBM Director, the network administrator can simply configure the deployment tool to “push” NSM v3 to each blade, where it is installed automatically. An upgrade or addition of a new blade to the chassis will be achieved very quickly using the same mechanism.

In addition, the host OS like VMware or Microsoft host OS with Virtual Server has its own shutdown needs that must be addressed to avoid corrupting data in case of a prolonged power failure. Eaton’s NSM v3 is compatible with these host operating systems (hypervisors), which means that a complete and safe system shutdown of the host OS and virtual machines can be performed in case of an extended power failure that would exceed the capacity of the UPS batteries. The sequence can be preset to close all applications running on the virtual machines, then shutdown the virtual machines and finally the host OS, with a reboot capability to restore the blade server in its original state prior to the shutdown process.

Dynamic Power Redundancy Management

Typically, each blade frame is configured with one or two redundant power supplies. Each power supply can also be configured with one or more UPS systems depending on the levels of redundancy and backup time required. The NSM v3 server protection component can be installed on each blade automatically to minimize administration requirements and optimize power redundancy for maximum protection. Each of those components will consolidate information from the UPS systems that supply power to the frame.



The user will be able to preset its shutdown parameters (or any other automatic action) based on the minimum acceptable level of redundancy and backup time for safe operation. The Network Administrator just needs to record the IP addresses of the power sources powering the server and indicate the minimum redundancy level acceptable. NSM v3 will then dynamically process the minimum number of necessary sources, based on the current load level, compare the result to the available number and

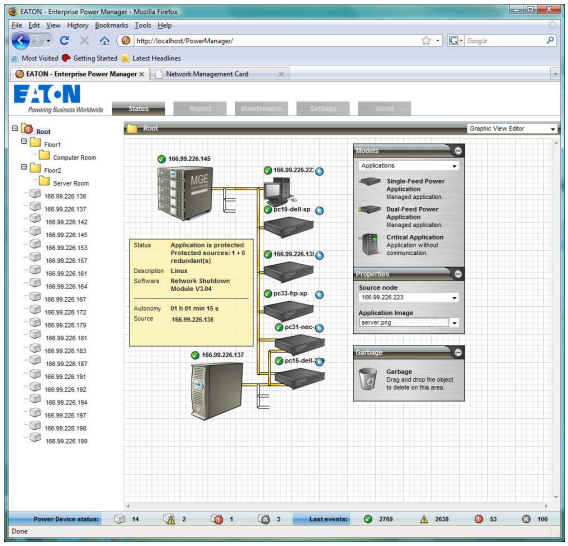
finally launch the necessary actions (shutdown, email, etc.) only if appropriate. This solution supports all major redundancy schemes (N+X, xN, etc.) and doesn't require any additional hardware.

Installing Eaton's power management software on each blade will offer a number of benefits:

- Users will maintain a performance node in their high availability architecture to avoid creation of a point of failure
- Users can configure each module adapted to each blade specification (electrical load balancing for non-critical blade, system shutdown duration, etc.)
- Deployment tools enable silent installation mode of the Network Shutdown Module
- Users can configure each module using a protected web interface (HTTPS / Password)
- Via Enterprise Power Manager, users can supervise each blade server's electrical status
- The industry's first VMware compatibility for optimized use on virtual machines

IT-Centric Power Management

Eaton's power management suite for the high-density environment is comprised of a Network Shutdown Module and a Supervisor to remotely manage all the power devices on the network. Unlike legacy software, the Eaton suite provides the network manager with an IT-centric view of its power protection solution: Power can be managed at the server level instead of the UPS level, which eliminates the guesswork of having to recall which UPS is protecting which blade server. The Enterprise Power Manager supervisor lets the user discover all power sources on the network, draw the physical infrastructure dynamically using the built-in toolbox and then define the dependencies between the protected IT equipment and the UPS (or group of redundant UPSs). Once done, it will be possible to check the power status of each IT device as all parameters will be preset dynamically by the software based on their dependency levels.



Conclusion

When implementing blade architecture and/or incorporating blades in a virtual environment, it is smart practice to consider the advantages of energy efficient blade-ready UPSs and blade-grade power management software. While blades offer many advantages, one has to consider the proper selection and sizing of components to mitigate downtime, exposure to overloads, heat and leading power factor. Maximizing reliability, availability and system efficiency while optimizing installation and operation costs, are vital for today's dense environments. Eaton's power management solutions are specifically designed to simplify and enable the use of the blade architecture to its fullest advantage.