Supermicro Server Management Utilities

Overview

The server management utilities assist data center system administrators in managing hardware issues such as server availability and firmware upgrades to reduce downtime of servers.

Supermicro® has developed a multi-function suite of tools that can perform health monitoring, power management and firmware maintenance to help deploy and maintain servers in data centers.

This paper highlights capabilities, features and benefits of four tools (SuperDoctor® 5(SD5), SPM (Supermicro® Power Manager, SUM (Supermicro® Update Manager, and SCM (Supermicro® Command Manager) included in the Supermicro® Server Management Utilities.

Managing BIOS provisioning through BMC/IPMI

SUM software remotely upgrades system BIOS and provisions BIOS settings on Supermicro® X9 and X10 platforms[1] through out-of-band (OOB) dedicated baseboard management controller (BMC). This tool can perform BIOS upgrades without dependencies of the OS environment or existing BIOS versions on target machines and users can provision BIOS settings before OS/Hypervisor is installed. The BIOS update through BMC allows recovery from corrupted BIOS. Editing BIOS system settings in a text-format allows replicating the settings across the rest of server in few minutes. Additionally, the CLI in this utility provides a scriptable interface with Data Center's existing automation infrastructure. The management features of this tool are listed in Table 1.

- Updates BIOS ROM
  - Update/Preserve SMBIOS data, ME region, NVRAM
- Gets/Sets BIOS settings
  - Current settings, default settings
- Checks HW/FW support for OOB management
- Activates product keys on server cluster

Table 1: Management Features of SUM

Note1: Only select SKUs are qualified with this feature. Please contact your local support to determine if a SKU supports this feature

Remotely managing the health of hardware and operating system services

SuperDoctor® 5 (SD5) monitors system health of hardware and operating system services from the target nodes in real-time and provides alerts to administrators on availability of systems in datacenters. SD5 provides system information like serial numbers of components, notify alerts by mail or SNMP traps, and provides user interface support through CLI and web interfaces. The benefits of this tool are to provide a single dashboard to notify health of hardware services as shown in Figure 2. Additionally, SD5 provides support for industry standard Nagios plug-ins monitoring framework. The management features of SD5 are listed in Table 2.
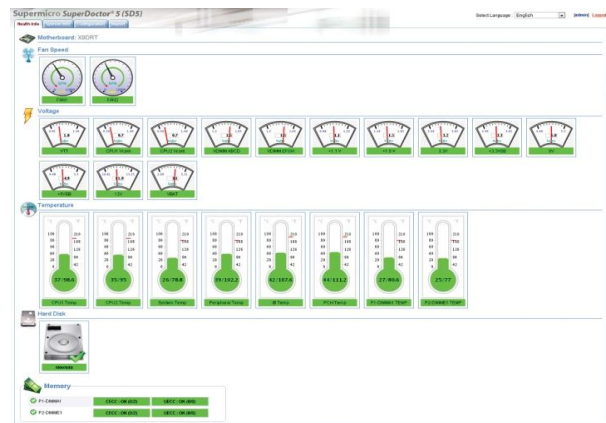

Figure 2: SD5 Web-based Console Dashboard

- Monitoring Functions
  - Hardware Monitoring (Fan speed, temperature, voltage, chassis intrusion, redundant power failure, power consumption, disk health, and memory health)
  - Software Monitoring (HTTP, FTP, and SMTP services)
- Control Functions
  - Monitored Items
  - Alert Functions
  - Password Settings
- Notification Functions
  - Notifications sent when Host or Service state changes
  - Notifications sent via email and SNMP traps
- System Information and Report Functions
  - 15 System Information Types (e.x. baseboard, services, etc)
  - 6 Report Types (e.x. SuperDoctor® 5 (SD5) Server Availability, Host Status Change, and Service Status Change)

Table 2: Management Features of SD5

Managing power consumption of nodes in cluster

SPM monitors power consumption of clusters to maintain operations of the servers within a finite power envelope and applies power related policies to clusters that will allow continuity of services. The benefits of this tool are listed as follows:

1. Provisioning more servers per rack by reading the actual power consumption by application rather than becoming limited with de-rated power ratings.
2. Providing the data center manager flexibility to manage power from individual nodes to apply policies on clusters. The management features are listed in Table 3.
3. Providing statistical information on power parameters on single dashboard as shown in Figure 3.
4. Adjusting the power based on inlet-air temperature and time of the day to achieve the best performance/watt /$.
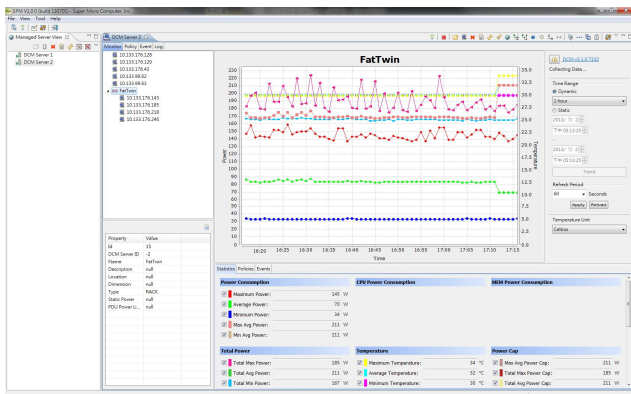

Figure 3: SPM Dashboard

- Monitor and Control functions
  - Power (System, CPU, memory, PDUs), temperature, P-States, T-States
- Configurations
  - Power capping limits
  - Temperature limits (Celsius/Fahrenheit)
  - Refresh periods
  - Custom events
- Statistics
  - Save historical data up to 1 year
  - Max, Min, Average
- Notifications
  - SNMP Traps
  - SMTP messages
- Based on Intel Data Center Management software
  - Monitor up to 5000 nodes with single DCM instance

Table 3: Management Features of SPM

Upgrading firmware in Linux Clusters through in-band utilities

SCM is a parallel execution framework under Linux, which allow system administrators to incorporate Linux commands and execute them in parallel on multiple servers as shown in Figure 4. SCM has to be installed on the management server and target nodes. Commands can be executed by nodes or groups and can assist in integration with third party utilities and customization of management infrastructure. The current version of SCM has integrated Supermicro's in-band BIOS and IPMI flash utilities.
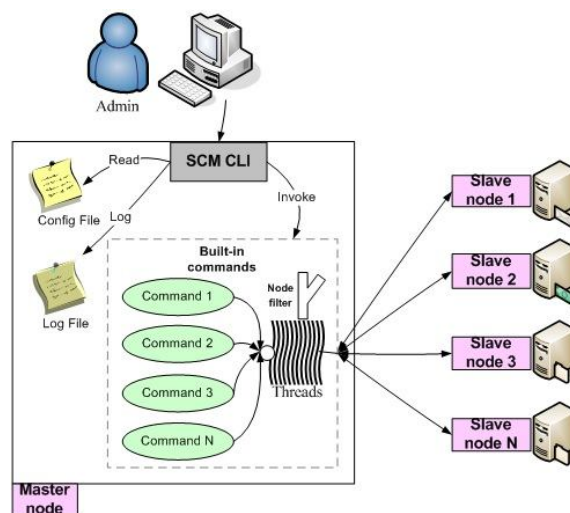

Figure 4: SCM Parallel Updates

- Discover agents in IP range and execute commands in batch mode
- CLI interface allows easy integration into existing infrastructure
- Encryption based secure location between agent and server.

Table 4: Management Features of SCM

Summary

Supermicro® provides a rich suite of management features that enable system administrators to monitor and receive timely notifications related to server health, manage availability of clusters in a given power envelope and provide multiple ways to upgrade firmware that will shorten maintenance times during server upgrades. These tools can be easily integrated with data center's infrastructure. In addition, Supermicro® has several utilities that manage BIOS and IPMI functionalities. For further information, please contact your Supermicro® sales representative.