SGI® Management Suite

A comprehensive suite of tools for provisioning, system health management and power resource management of SGI computing systems.

Key Features

System setup at scale and speed

Proactive system health management

Comprehensive power management

Overview

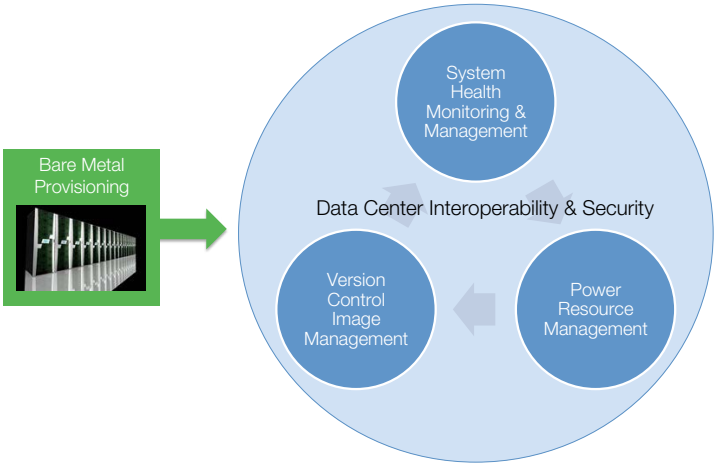
SGI Management Suite provides powerful tools to initiate management actions, monitor essential system metrics for all SGI systems, and improve overall power efficiency. It reduces the time and resources spent administering systems by improving software maintenance procedures and automating repetitive tasks — lowering total cost of ownership, increasing productivity, and providing a better return on hardware investments.

SGI Management Suite provides a comprehensive system management interface for all SGI systems and consists of:

- **SGI Management Center:**
  System management tool for SGI systems
- **SGI Foundation Software:**
  Technical support tools for SGI systems

SGI Management Suite addresses the system management tasks starting with Linux® operating system provisioning on the “bare-metal” system to the daily tasks of system health monitoring, proactive problem resolution, updating software images, resource management, datacenter interoperability and more.

SGI Management Suite Solves Problems



High Speed Provisioning

SGI Management Center combines discovery of cluster nodes and multicast provisioning to significantly shorten the bare-metal provisioning time of large scale clusters. SGI systems are factory installed with Linux operating system and middleware software. The system configuration file used for hardware discovery is included with the software installed on the system. Provisioning uses the system configuration file to locate each server in the clustered system that requires a copy of the operating system. Multicast technology provisions servers in parallel - enabling an operating system image to be installed on many servers in the same amount of time as a single server. Multicast provisioning significantly decreases the amount of downtime during system maintenance periods. Systems can be installed or updated in a matter of minutes instead of hours or days.

Benefits:

- Multicast provisioning enables all cluster nodes to be provisioned quickly together
- Single provisioning session at large scale – no need to break up cluster
- Archive multiple Linux operating system images that can be quickly provisioned on-demand

Version Controlled Image Management

Version-controlled image management is built into SGI Management Center. It tracks the changes to the Linux operating system over time. These images in RPM format are easily deployed onto servers in the system. If problems arise after an operating system upgrade, the system can easily be returned to a known working state. Updates to images and payloads are stored as changes to the originals so they significantly save on disk space but keep a full revision history. Changes to the image management archive are tracked by date and by who made the change enabling accountability for the software update activities.

Benefits:

- Run different Linux operating system versions on compute nodes to support users' application requirements
- Reduce the risk of upgrading to a new Linux operating system
- Easily revert back to the previously working software image if issues occur.

System Health Monitoring and Management

System administrators depend on regular system health updates in the datacenter. SGI Management Suite collects health status information from the hardware system, identifies changes that require action and provides proactive solutions to specific problems.

Proactive System Health Management

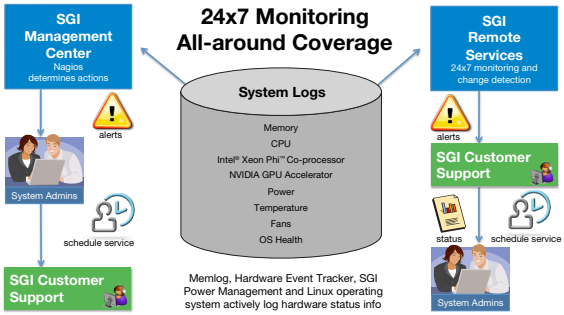


Figure 1: SGI Management Suite provides all-around coverage with 24x7 monitoring of the hardware system.

System Health Monitoring

SGI Management Suite offers two methods of system monitoring which can be enabled together or independently. SGI Management Center monitors the system and gathers health information from the system logs alerting the system administrator of issues that need attention. SGI Remote Services also monitors the system logs for alerts that are immediately sent to SGI Technical Support for analysis, action, and communication with the customer's system administrator.

SGI Remote Services is a new service tool from SGI that enhances the SGI support experience by providing 24x7 remote monitoring and data gathering on the customer's system. SGI Remote Services provides a secure connection to SGI Technical Support which includes secure file transfer and (optional) secure remote access to the customer's system. SGI Remote Services enables SGI to be proactive about resolving customer's problems quickly and efficiently while providing the customer with improved uptime and system availability.

Collect Health Status Information

The system logs contain system health status data that is collected by Hardware Event Tracker, Memlog, SGI Power Management and the Linux operating system.

Hardware Event Tracker	Hardware Event Tracker receives SNMP events from the IPMI management controller on the hardware system. The events are logged and critical events are sent by email to the system administrator. Critical events include: • Ambient air temperature is too high • Power supply or redundant power supply failures • Loss of fan speed • Memory uncorrectable errors
Memlog	Memlog collects memory corrected error information from all memory resident in the hardware system, server or cluster. System performance can be affected by memory errors and memlog will detect and log the errors.
SGI Power Management	SGI Power Management collects power measurements in watts on individual servers including cluster nodes
Linux operating system	The Linux operating system error messages and system health status are logged in the system logs.

Alerts

SGI Management Center uses the Open Source Nagios® architecture to analyze the changes in the system logs to determine whether action is required by the system administrator. The alert is sent by e-mail to the system administrator for further action such as scheduling service with SGI or adding it to the task list for the next scheduled maintenance. The Nagios architecture enables SGI Management Center to be extensible so that it is easy to add new plug-ins to support additional items to analyze or reporting mechanisms.

SGI Remote Services alerts SGI Customer Support of any changes that require attention. SGI Customer Support will generate an SGI support case on behalf of the customer. The advantage of SGI Remote Services is that not all alerts need to be addressed by the system administrator. SGI Customer Support will order new hardware parts, schedule a service visit, or remote login to resolve problems without the system administrator's intervention.

Predictive Failure Analysis and Proactive Action for Memory

Memory errors can occur with little warning and failures can cause unplanned downtime and lost productivity for production systems. To avoid system downtime, SGI developed predictive failure analysis for memory. Predictive failure analysis analyzes the logged memory status data collected by memlog and requests retirement of the 4K memory page containing the failure. The page retirement system moves any user programs or data from the failing page to a new memory page. All of this is done without any interruption or shutdown to the production system. The system administrator is notified of the bad memory so that at the next scheduled service, the bad memory can be replaced.

Power Resource Management

SGI Power Management was developed with the customer's use cases in mind. Datacenters worldwide struggle with problems ranging from power interruptions from man-made and natural catastrophes to power limitations related to available shared power resources or power budget.

SGI Power Management collects power measurements on individual servers including cluster nodes. SGI Power Management provides flexible reporting of the power measurements in watts by node, rack, and total for the system.

Limiting power or "power capping" is a key feature of SGI Power Management. Power can be limited on a per-node basis for all nodes or for a specific set of nodes in a system. This enables finer-grained control over the power usage across the system.

Benefits:

- Accurately measure and predict power usage for better capacity planning
- Cap power before datacenter limits are exceeded
- Prevent servers from overheating in unexpected circumstances

SGI Management Suite Feature Summary

SGI Management Center 3	• Bare-metal multicast provisioning • Version Control • Image Management • Monitor system log and broadcast alerts • SGI Power Management
SGI Foundation Software 2	• SGI Remote Services • Memlog memory error logging • Predictive Failure Analysis for memory • Page Retirement for memory • Hardware Event Tracker

SGI Management Center and SGI Foundation Software are supported on SUSE® Linux Enterprise Server 11, Red Hat® Enterprise Linux 6 and CentOS 6.

For More Information

For more information about how SGI Management Suite can benefit your organization, visit www.sgi.com or call 1-800-800-7441.

About SGI

SGI is a global leader in high performance solutions for compute, data analytics and data management that enable customers to accelerate time to discovery, innovation, and profitability. Visit sgi.com for more information.

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