



Overview of Sun Integrated Lights Out Manager

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Sun Microsystems, Inc.

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Introduction

If you've been working with Sun server hardware over the last few years, then chances are you have been increasingly working with a service processor. This article introduces Sun Integrated Lights Out Manager (ILOM) and gives a brief overview of its key features.

What Is ILOM?

ILOM is an advanced service processor used to manage and monitor your Sun servers. It includes dedicated hardware and firmware that is preinstalled on a variety of Sun x64-based Sun Fire™ servers, Sun Blade™ Modular Systems, and Sun Blade server modules, as well as on some SPARC® based servers. ILOM is a vital management tool in the data center and can be integrated with other enterprise data center management tools already installed on your systems.

Sun is currently transitioning many systems to support ILOM so users will have a single, consistent, and standards-based service processor (SP) across Sun's product lines. This means you will have:

- Consistent system management interfaces for operators
- Rich protocol and standards support
- Broadening third-party management support
- System management functions integrated into Sun servers at no extra cost

What Does ILOM Do?

ILOM enables you to actively manage and monitor the server independently of the operating system state, providing you with a reliable Lights Out Management (LOM) system. The ILOM SP runs its own embedded operating system and a dedicated Ethernet port, which together provide out-of-band management capability. In addition, you can access ILOM from a Sun supported operating system (the Solaris™ Operating System, Linux, or Microsoft Windows) on the server host. Using ILOM, you can remotely manage your server as if you were using a locally attached keyboard, monitor, and mouse.

In addition, ILOM lets you monitor and manage your system proactively by viewing hardware configurations, monitoring system information, managing system alerts, controlling system power usage, and more.

ILOM is automatically initialized as soon as power is applied to your server. It provides a full-featured, browser-based web interface and equivalent command-line interface, as well as an industry-standard interfaces for SNMP (Simple Network Management Protocol) and IPMI (Intelligent Platform Management Interface). You can integrate these management interfaces with other management tools and processes that you already have working with your servers, such as these third-party management tools:

- IBM Tivoli Enterprise Console
- Microsoft Operations Manager
- HP OpenView Operations for UNIX
- HP Systems Insight Manager
- CA Unicenter Network and Systems Management
- BMC PATROL Enterprise Manager

ILOM Features and Functionality

ILOM offers a full set of features, functions, and protocols, including those listed in the following table.

ILOM Feature	What You Can Do
Dedicated service processor and resources	Manage the server without consuming system resources Continue to manage the server using standby power even when the server is powered-off
Simple ILOM initial configuration	Perform manual SP configuration, including IP address, through BIOS interface, serial or Ethernet SP ports, or host OS
Downloadable firmware updates	Download firmware updates via browser-based, web interface or command-line interface (CLI)
Remote hardware monitoring	Monitor system status and event logs Monitor customer-replaceable units (CRUs) and field-replaceable units (FRUs), including power supplies, fans, disks, CPUs, memory, and motherboard Monitor environmentals (component temperatures) Monitor sensors, including voltage and power Monitor indicators (LEDs)
Hardware and FRU inventory and presence	Identify installed CRUs and FRUs and their status Identify part numbers, versions, and serial numbers Identify NIC card MAC addresses
Remote access	Redirect the system serial console via serial port and LAN Access keyboard, video, and mouse (KVM) on remote x64 systems Redirect the OS graphical console to a remote client browser Connect a remote CD/DVD/floppy to the system for remote storage
System power control and monitoring	Power the system on or off, either locally or remotely Force power-off for emergency shutdown or perform a graceful shutdown to shut down the host operating system before power-off
Auditing of ILOM users and management of user accounts	Authenticate user accounts using LDAP, RADIUS, and Microsoft Active Directory
Error and fault management	Monitor system BIOS, POST, and sensor messages Log events in a consistent method for all “service” data Monitor hardware and system-related errors, as well as ECC memory errors, reported to SP logs, syslog, and remote log-host
System alerts, including SNMP traps, IPMI PEs, remote syslog, and email alerts	Monitor components using industry-standard SNMP commands and the IPMITool utility
SNMP MIB support	SUN-PLATFORM-MIB SUN-ILOM-CONTROL-MIB SUN-HW-TRAP-MIB SUN-ILOM-PET-MIB SNMP-FRAMEWORK-MIB (RFC2271) SNMP-USER-BASED-MIB (RFC2574) SNMP-MPD-MIB (RFC2572) System and SNMP groups from SNMPv2-MIB (RFC1907) entPhysicalTable from ENTITY-MIB (RFC2737)

ILOM Interfaces

To access all the ILOM features and functions, you can choose to use a browser-based web interface, a command-line interface, or industry-standard protocols.

- **Web interface** – The web interface provides an easy-to-use browser interface that enables you to log in to the SP, and then to perform system management, monitoring, and IPMI tasks.
- **Command-line interface (CLI)** – The command-line interface enables you to operate ILOM using keyboard commands and adheres to industry-standard DMTF-style CLIs and scripting protocols. ILOM supports SSH v2.0 and v3.0 for secure access to the CLI. Using the CLI, you can reuse existing scripts with Sun systems, and automate tasks using familiar interfaces.
- **Remote Console** – The ILOM Remote Console (JavaRConsole) enables you to access your x64 server’s console remotely. It redirects the keyboard, mouse, and video screen, and can redirect input and output from the local machine’s CD and diskette drives.
- **IPMI** – Using IPMI v1.5 or v2.0 and the IPMITool utility, you can manage and configure devices using a CLI to retrieve information from the system’s baseboard management controller (BMC). With IPMITool, you can monitor the status of hardware components remotely, monitor system logs, receive reports about replaceable components, and redirect the server console.
- **SNMP interface** – ILOM also provides an SNMP v3.0 interface (with limited support for SNMP v1 and SNMP v2c) for third-party applications such as HP OpenView and IBM Tivoli.

Platform Support for ILOM

The following table shows the current status of some Sun platforms and their support of ILOM. This year and next, more Sun x64-based and SPARC-based systems that support ILOM are scheduled to roll out.

The Embedded Lights Out Manager (ELOM), Advanced Lights Out Manager (ALOM), and Remote System Control (RSC) are earlier versions of Sun’s service processors.

Platform	Architecture	ILOM Supported	Other SP Supported
Sun Fire X2100, X2200, X2200 M2 servers	x64 (AMD Opteron™)	No	ELOM
Sun Fire X4100, X4100 M2, X4200, X4200 M2, X4600, X4600 M2 servers	x64 (AMD Opteron)	Yes	
Sun Fire X4500 server	x64 (AMD Opteron)	Yes	
Sun Blade X8420, X8440, X6220 server modules	x64 (AMD Opteron)	Yes	
Sun Fire X4150 and X4450 server	x64 (Intel® Xeon)	Yes	
Sun Blade X6250 server module	x64 (Intel Xeon)	No	ELOM
Sun Blade 8000, 8000 P, 6000, 6048 modular systems -- CMMs	Blade chassis	Yes	
Sun Fire T1000, T2000 servers	UltraSPARC® T1	No	ALOM
Sun Blade T6300 server module	UltraSPARC® T1	No	ALOM
Sun SPARC Enterprise T5120, T5220, T5420 servers	UltraSPARC T2	Yes	
Sun Blade T6320 server module	UltraSPARC T2	Yes	
Sun Fire V series: V125, V215, V245, V445 servers	UltraSPARC IIIi	No	ALOM

Platform	Architecture	ILOM Supported	Other SP Supported
Sun Fire V series: V490 and V890 servers	UltraSPARC IV	No	RSC
Sun Fire E2900, E4900, E6900 servers	UltraSPARC IV+	No	
Sun Fire E20K and E25K servers	UltraSPARC III, IV, IV+	No	
Sun SPARC Enterprise™ M Series 4000, 5000 servers	SPARC64 VI	No	

Getting Started With ILOM

When you power on your server, ILOM is automatically initialized. You can then log in to ILOM through a console connection to the serial management port on the server or Chassis Monitoring Module (CMM), or through an Ethernet connection to the network management port on the server or CMM.

For information about ILOM features and procedures on how to use the ILOM functions, look for these documents at <http://docs.sun.com/app/docs>:

- *Sun Integrated Lights Out Manager 2.0 User's Guide* (820-1188)
- *ILOM Supplement for Sun Blade 6220 Server Module* (820-0047)
- *ILOM Supplement for Sun Fire X4500 Server* (819-4361)
- *ILOM Supplement for Sun Fire X4100/X4100 M2 and X4200/X4200 M2 Servers* (819-5464)
- *Sun Integrated Lights Out Manager 2.0 Supplement for SPARC Enterprise T5120 and T5220 Servers* (820-2180)

You can find more information about Sun's system management tools at <http://www.sun.com/systemmanagement/index.jsp>.

Sun continues to test and develop third-party system management tools so that you can easily integrate your Sun systems within an existing system management environment. For details about these tools, go to <http://www.sun.com/systemmanagement/managementtools.jsp>.

For More Information

Here are additional resources:

- These and other training courses available at <http://www.sun.com/training/>:
 - Sun Fire X2200 M2 Server Installation, Maintenance, and Troubleshooting (WET-5818)
 - Sun Fire X4100 and X4200 Server Maintenance and Troubleshooting CD Bundle (CDLE-4923)
 - Sun Fire X4500 Server Administration (WET-5060)
 - Sun Fire X4600 Server Maintenance and Troubleshooting CD-ROM Bundle (CDLE-5377)
 - Sun Blade 6000 Modular System Administration Workshop (SEM-ES-5582)
 - Sun SPARC Enterprise T5120/T5220 Server Installation, Administration, and Troubleshooting (WET-6093)

- Support:
 - Register your Sun gear: <https://inventory.sun.com/inventory/>
 - Services: <http://www.sun.com/services>
 - SunSolve Online: <http://sunsolve.sun.com>
- Discussions, such as the Sun Hardware - Servers - General Discussion at <http://forum.java.sun.com/forum.jspa?forumID=830&start=0>
- Sun BluePrints™ document *Remote Monitoring of Sun x64 Systems Using ipmitool and ipmievd* (pdf): <http://www.sun.com/blueprints/0107/820-1011.pdf>
- Events of interest to users of Sun products:
 - Worldwide developer events: <http://developers.sun.com/events/>
 - Current events: <http://www.sun.com/events/index.jsp>