

Service Processor based management



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Questions : just ask!



Service Processors (SPs) ?

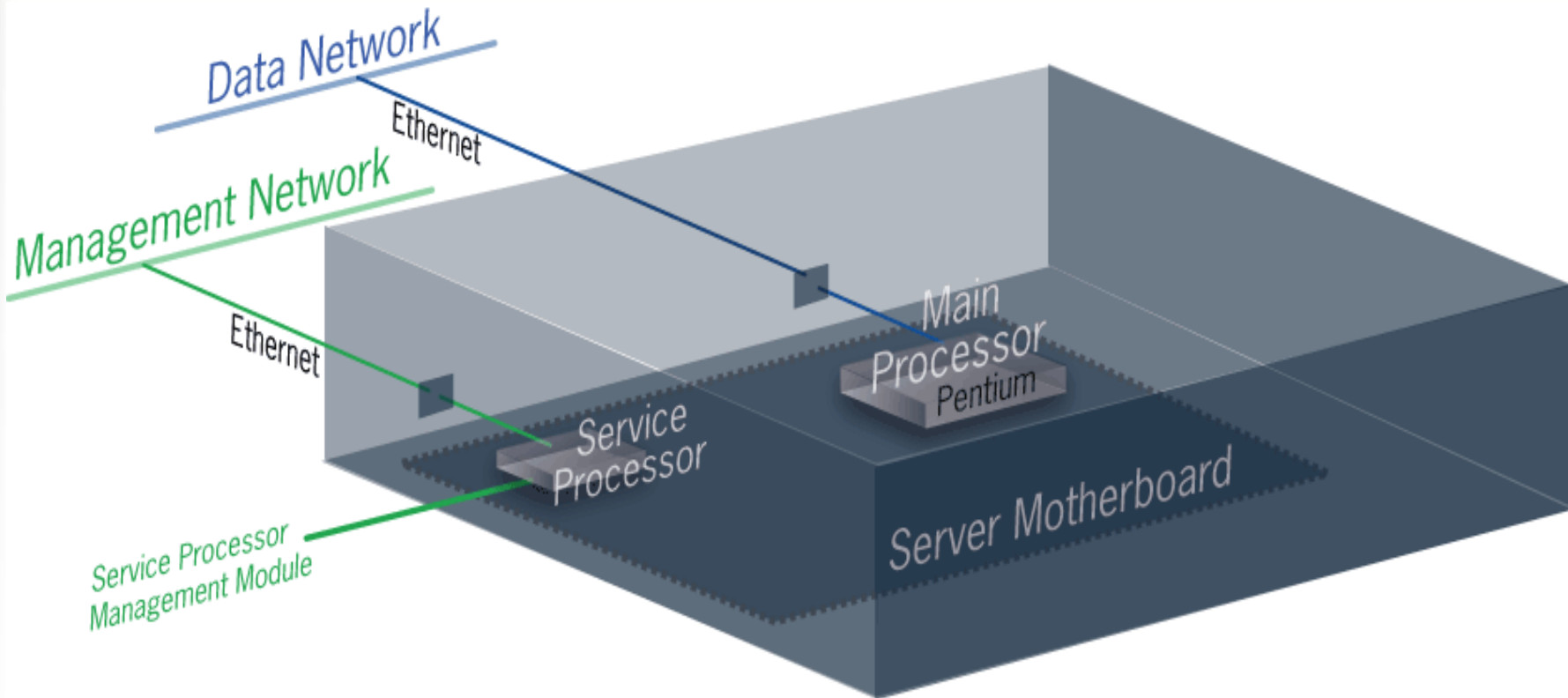
Additional HW and SW used for Out-Of-Band management of the main server. They are also known as Baseboard Management Controllers (BMCs)

The main external interface is Ethernet (TCP/IP).

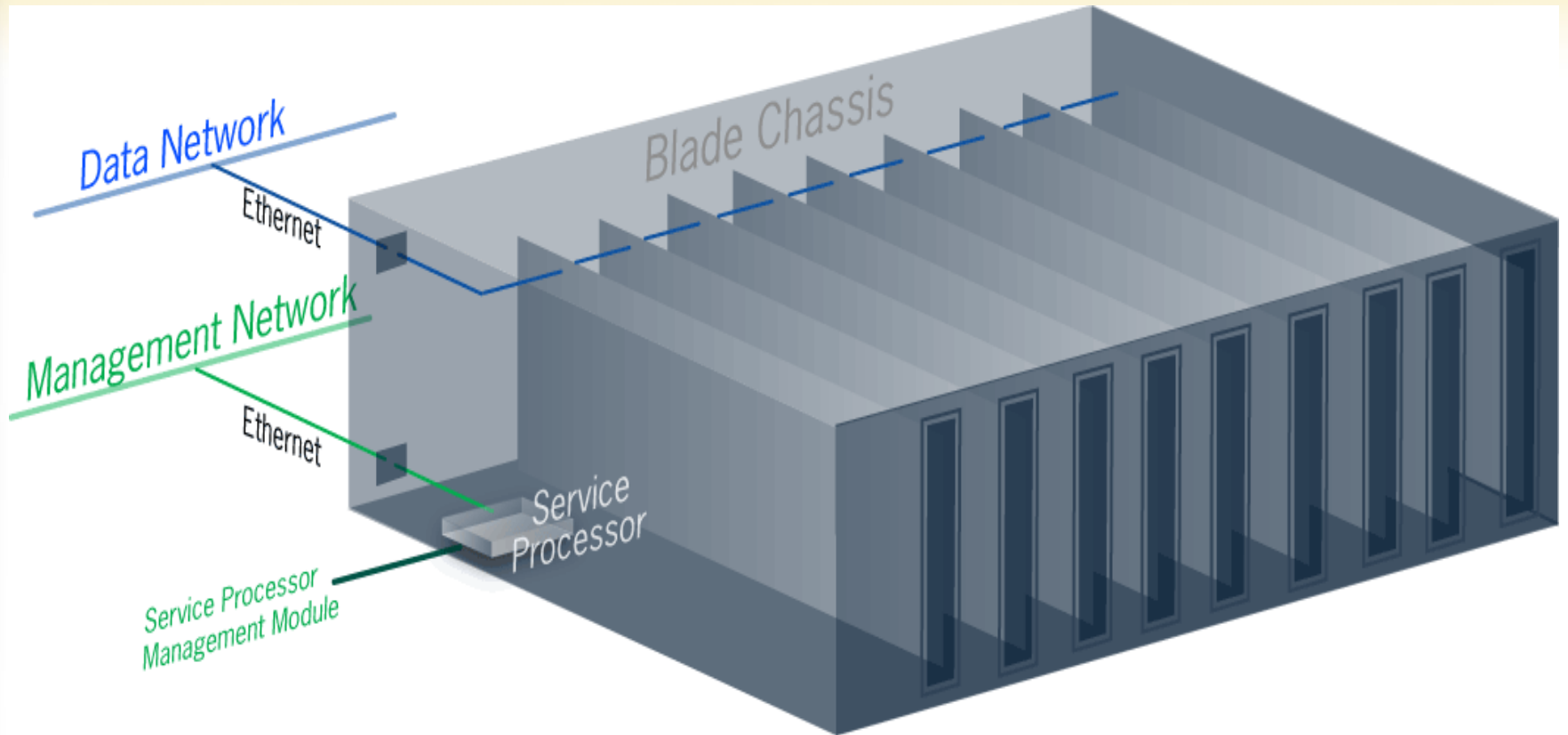
They come in different shapes, most commonly:

- embedded processor
- daughter card of the main board
- fully separate PCI card.

Service Processors (SPs) – what they look like



Blade Management Modules



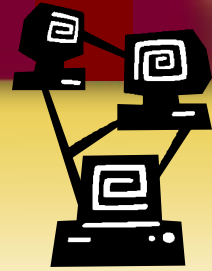
SPs – provide access to ...



- the processor running on the main server – usually redirected serial console or GUI interface (KVM over IP)
- power control (for power off/on/cycle) and SW reset
- sensor information (temperature, fans, current, etc) and alarms
- system event log
- BIOS configuration, POST and boot messages
- virtual media
- SNMP (agents and traps in the SP itself or pass through to the main server)

Service Processors – different models

- HP iLO (integrated Lights-Out – updated and embedded version of HP RiLOe - Remote Insight Lights-Out Edition)
- IBM RSA-II and RSA-I (Remote Supervisor Adapter)
- IPMI (Intelligent Platform Management Interface – supported by HP, IBM, Dell, Sun, etc – more than 150 companies)
(Intel AMT (Active Management Technology) for servers and desktops)
- Sun ALOM (Advanced Lights Out Manager - an updated version of RSC – Remote System Controller)
- Dell DRAC (Dell Remote Access Controller) I, II, III and IV
- Blade Management Modules
- Devices that have an additional Ethernet interface designed for management



Service Processors - how to communicate with them

- Physical level: Ethernet. Some Service Processors also support RS232 serial/modem connections (as fail over or for historical reasons)
- Protocol: TCP/IP..
- Command line interface:
 - telnet
 - SSH
 - Client / Server and networking SW that implements IPMI protocol (many proprietary implementations plus Open Source - OpenIPMI, freeIPMI, impitool, ipmiutil, etc)
 - SMASH / CLP (DMTF's Systems Management Architecture for Server Hardware / Command Line Protocol)
- Web browser (HTTP / HTTPS)
- Proprietary SW
 - HP insight Manager
 - IBM Director
 - Dell OpenManage
- Java applets (KVM access to the main server CPU)
- SNMP related tools

Summary of Service Processor Features

	IPMI	HP iLO	IBM RSA-II	Sun ALOM	Dell DRAC
User Interface	CLI	CLI, Web, KVM	CLI, Web, KVM	CLI	CLI, Web, KVM
Security	Local	Local, LDAP	Local, LDAP, SSL	Local	Local, LDAP
Hardware	Motherboard	Motherboard	PCI card	Motherboard	PCI on II & III Motherboard IV
Mgmt Software	Multiple vendors	HP Insight Manager (IM)	IBM Director	Sun Management Center (MC)	OpenManage
Networking	UDP/IP	TCP/IP	TCP/IP and UDP	TCP/IP	TCP/IP
Logging	None	Remote	Local	Local or Remote	Local

The competing options

- Console Servers (server management through RS232 serial port)
- KVM over IP switches
- intelligent power strips
- KVM over IP server card

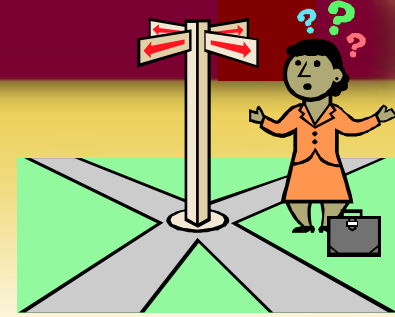


Deploying Service Processor based Management – problems and challenges

- Difficult to scale
- Separation / duplication of Out-Of-Band (management) and Production networks
(extra Ethernet connection per server, management extra IP addresses)
- Low security (in some cases) and little authentication options (in most cases)
- Multiple non-standard protocols and different ways of interfacing
- Lack of centralized Logging and Auditing



Road Map



From Vendors:

- Web interface, KVM to the main server are becoming standard features
- Adding value with proprietary applications

Efforts in standardization:

- HW/SW of the Service Processor:
 - Intel IPMI
 - AMD OPMA (Open Platform Management Architecture)
- Communication:
 - Command line interface (DMTF CIM SMASH CLP)
 - GUI / multiple format interface (DMTF CIM XML / Web Services)

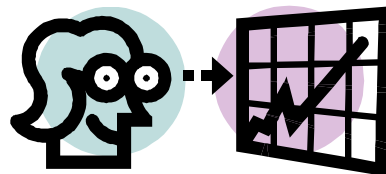


Deploying Service Processor based Management - wish list

- Improvements on the scalability
- Consolidation of simple tasks (e.g. power cycle) in a uniform manner across SP from different vendors => easier scripting
- Access to the rich functionality, if available
- Avoid doubling the infrastructure (double number of Ethernet ports and IP address management)
- Increased security
 - SSH
 - HTTPS
 - flexible authentication that integrates easily with what is already in place (RADIUS, LDAP, etc)
- Conformance to open standards (DMTF CIM and SMASH / CLP)
- Support from the Open Source community

Deploying Service Processor Management – Conclusion: advantages and potential

As the discussed problems (scalability, consolidation, security, etc) get overcome, SPs have the potential to become the most commonly used Out-Of-Band management interface. It could be deployed alongside with (and in some cases replace) KVM Switches and cards, Console Servers, intelligent power strips, etc, with extras including sensor information and alarm, logging, SNMP.



References

- *Cyclades Technical Booklet Series:*
Service Processors for Server Management, by Tom Wingfield (soon to become available)
- google for:
 - hp ilo
 - ibm rsa-ii
 - ipmi
 - sun alom
 - dell drac
- <http://www.dmtf.org/standards/smash/>
- <http://www.dmtf.org/standards/cim/>

References

Other presentations about DMTF CIM and SMASH/CLP at linux.conf.au:

Part of the SysAdmin Miniconf:

System Monitoring with WBEM

Tim Potter

Monday: 15:00

SBLIM: creating a set of providers from scratch

Rodrigo Ceron Ferreira de Castro

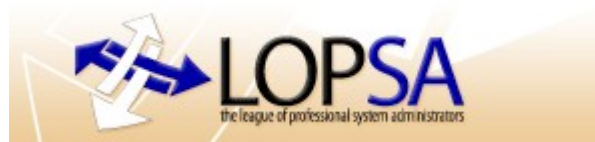
Location: Burns 7

Friday: 10:55am to 11:45am

System Administrators Associations



SAGE-AU - <http://www.sage-au.org.au/>



LOPSA - <http://lopsa.org/>



Questions ?