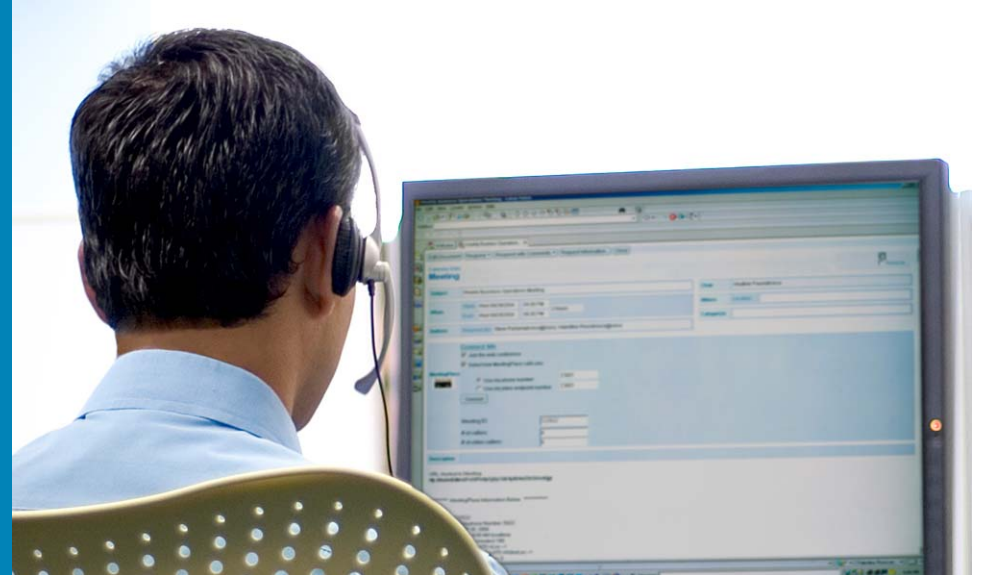




**Cisco Expo
2009**

Unified Computing designs i datacentret



Hans Donnerborg, hans@cisco.com

Why Cisco?

- **Cisco is uniquely positioned**

The network touches everything
in the data center

- **Three years ago Cisco**

Began the journey to simplify data
center infrastructure

- **We assembled a team**

Of experts from across the industry: Dell, Egenera,
HP, Oracle, Sun, Veritas/Symantec, VMware, Xensource, and others

- **Delivered the innovative technology**

That formed the foundation for unified
computing for the past year

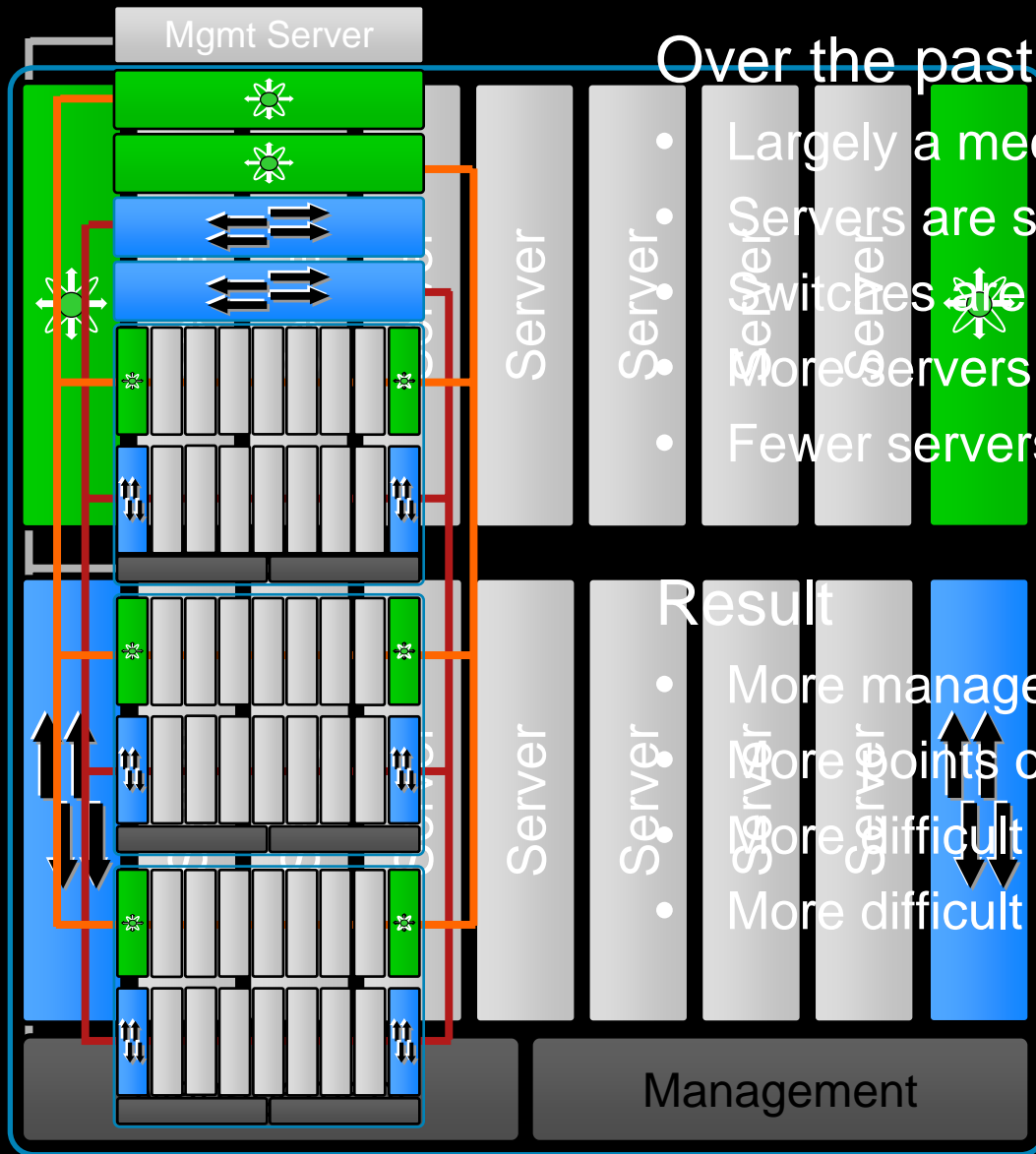
- **We have a track record of success in market innovations:**

- IP telephony: new use of IP capability
- TelePresence: new use of video
- Collaboration: improve business productivity

Agenda

- Solution overview
- Building blocks
- Unified Computing System Manager

Server Deployment Today



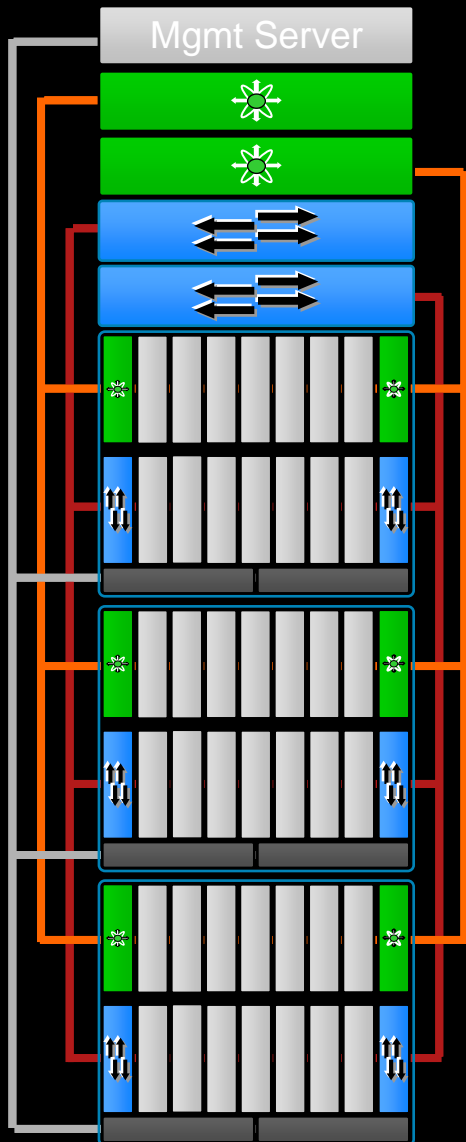
Over the past 10 years

- Largely a mechanical evolution
- Servers are smaller
- Switches are smaller
- More servers & switches
- Fewer servers per switch

Result

- More management overhead per server
- More points of management per server
- More difficult to maintain policy coherence
- More difficult to secure

Our Solution



- Embed management
- Consolidate LAN & SAN switches
- Remove unnecessary
Blade switches,
Adapters
Management modules
- Less than 1/3rd infrastru



Solution Overview

- 3rd Generation Consolidated Infrastructure:
Data Center 3.0

 - Natural aggregation point: Network

 - Less overhead per server

- Wire once: I/O on demand

 - LAN, SAN, IPC

- Centralized management

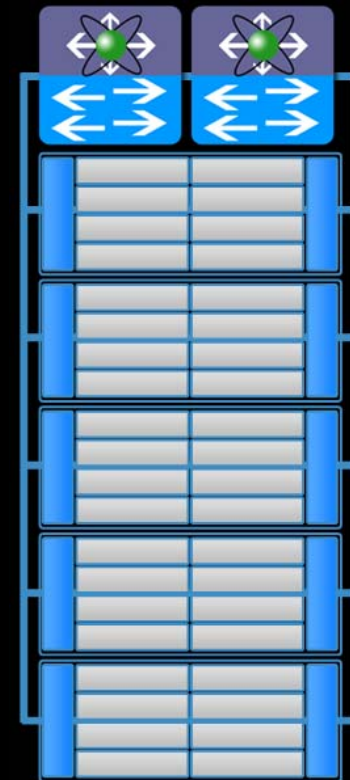
 - Embedded native management

 - Fewer switches, management modules

- Lower cost

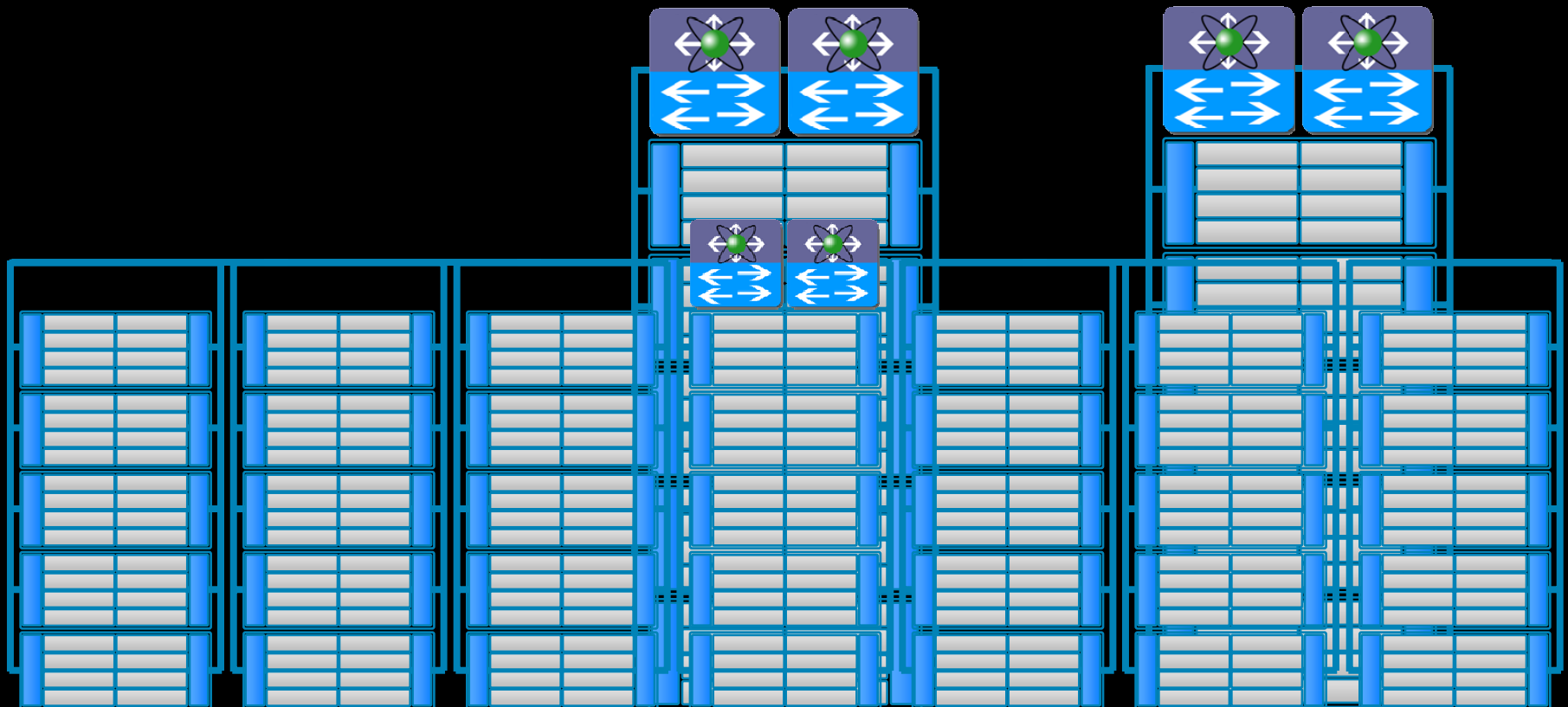
 - Fewer switches, adapters, cables

 - Lower power consumption

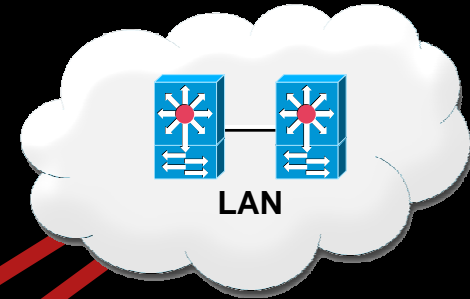
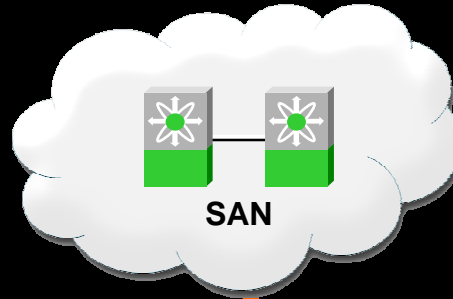
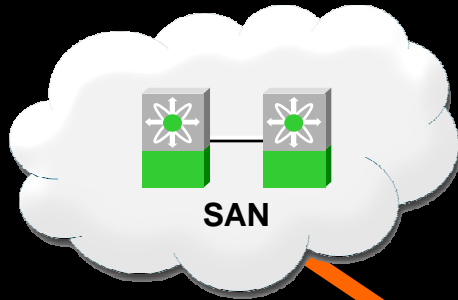


Our Solution

- Consolidated elastic infrastructure
- Single point of management



Switch Disaggregation

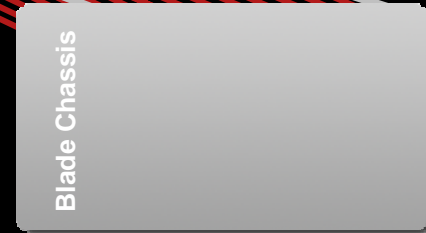
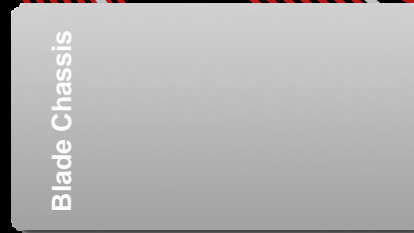
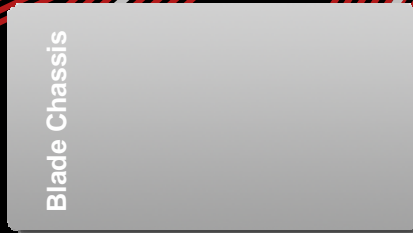
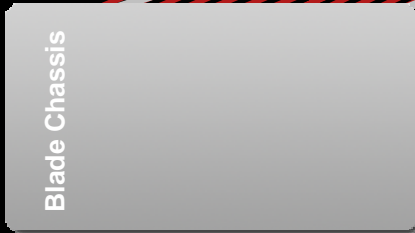


Scale Fabric

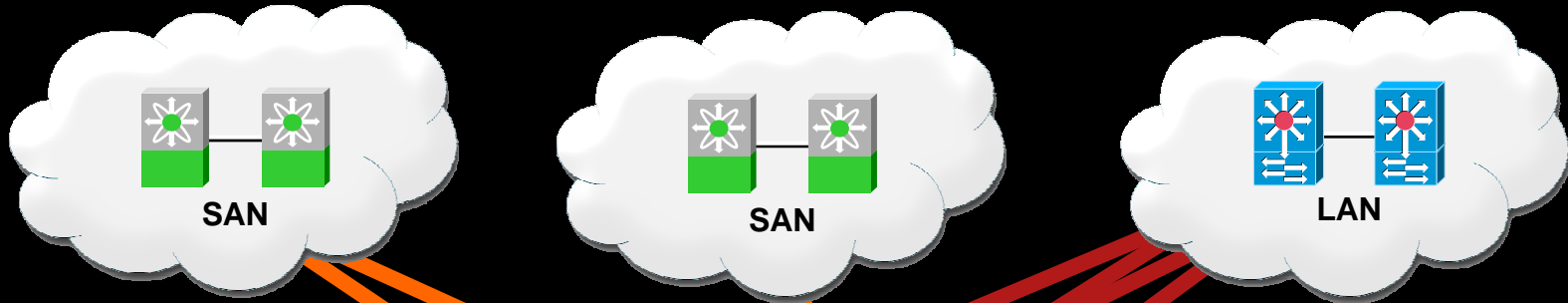
- Take switch out of chassis
- Use a larger central switch

Disaggregate Switch

- Fabric Extender
“Distributed line-card”
- Feature coherence
- Single point of mgmt
- Fewer cables



Unified Computing System

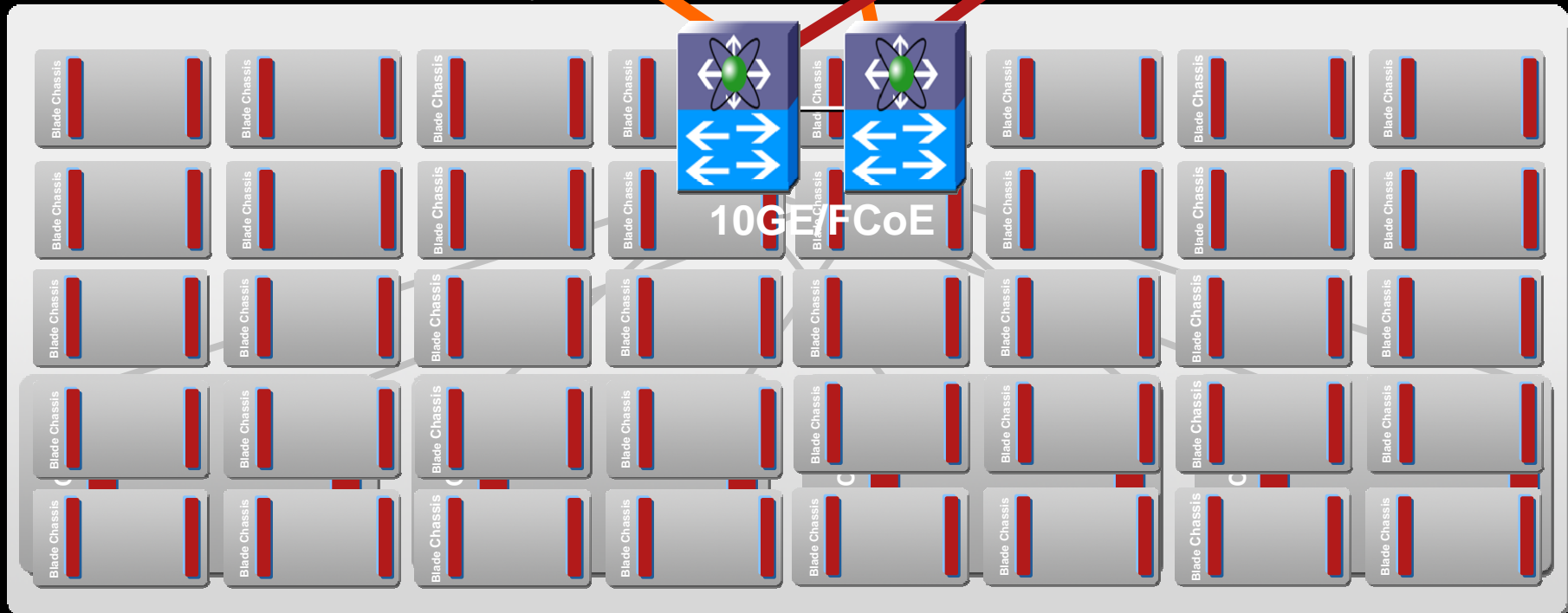


Highly Scalable

- Up to 40 chassis per array

Single Array

- Up to 320 blades



Physical Building Blocks

Unified Computing System Manager
Embedded in Central Switch

UCS 6100 – Fabric Interconnect
28 Port 10Gb FCoE
56 Port 10Gb FCoE

UCS 2100 – IO Module
Logically part of Central Switch
Inserts into Blade Chassis

UCS 5100 - Blade Chassis
8 half or 4 full-width slots
Logically part of Central Switch

B-Series – Blade server
Half & full width
Inserts into Blade Chassis

Adapters
Cost, Compatability, Virtualization
Insert into blades



Cisco UCS 6120XP, UCS 6140XP

Switch Family



1U High, 28-Port switch

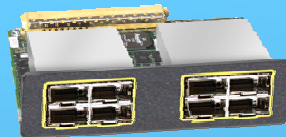
- 20 Ports 10 GE/FCoE
 - 4 uplink/downlink ports
 - SFP+ interfaces
- 1 Uplink Module: 8 ports
- 560 Gbps Fabric



2U High, 56-Port switch

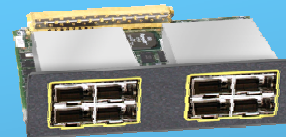
- 40 Ports 10 GE/FCoE
 - 8 uplink/downlink ports
 - SFP+ Interfaces
- 2 Uplink Modules, 8 ports each
- 1.12 Tbps Fabric

Uplink Modules



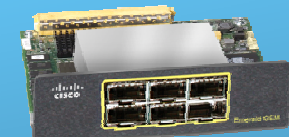
Fibre Channel

- 8 Ports 1/2/4G FC, SFP



Combo: FC + Ethernet

- 4 Ports 10GE/FCoE, SFP+
- 4 Ports 1/2/4G FC, SFP



Ethernet

- 6 Ports 10GE/FCoE, SFP+

Management

Unified Computing System Manager

Cisco UCS 5108 - Blade Chassis

- 6RU Chassis

Blades and Power supplies plug-in from front

- Blades

Power & cooling budget allows leading edge processor performance and memory capacity

Combinations of half slot and full slot blades

Up to 8 Half slot blades

550W budget per ½ slot

Up to 4 Full slot blades

1100W budget per slot

- Power Supplies

4x 2,500W hot-plug Power Supplies

90% efficient

N+N redundancy (grid redundant)



Cisco UCS 5108 - Blade Chassis

- Managed by Unified Computing Server Manager
- 2x IO Module slots



- Cooling

Front to rear cooling

Flow through airflow design, 63% of center plane open

Sized to support all blades at full power budget

8 hot-plug dual fan modules

Status indicators on each fan module

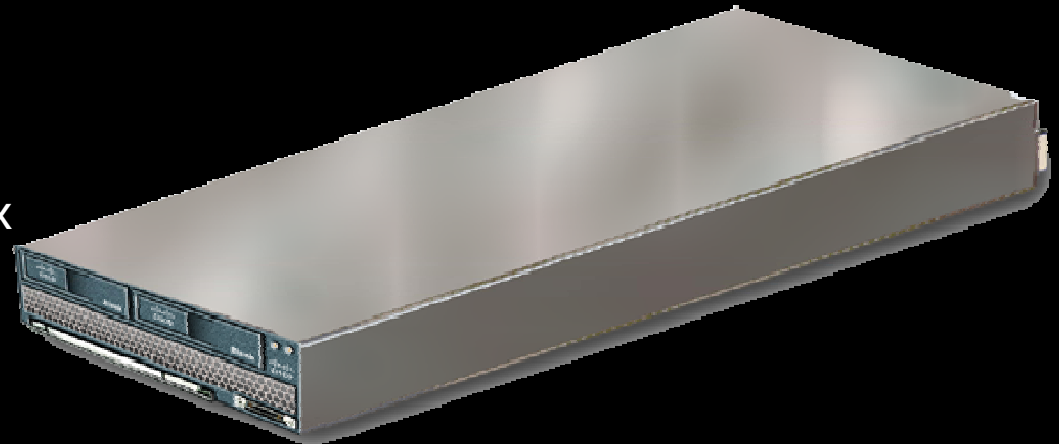
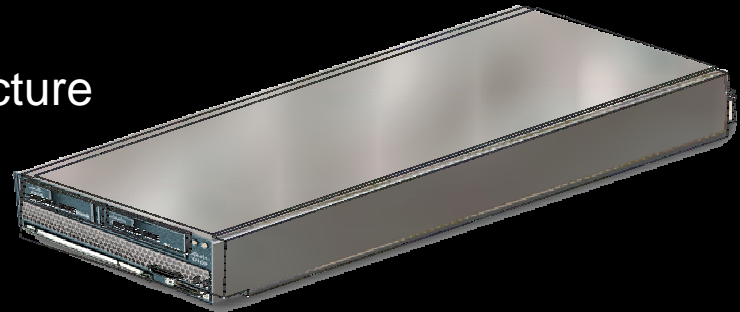
Cisco UCS2104XP



- Part of the switch: distributed “line card”
 - Extends the I/O fabric into the blade chassis
 - 1 to 4 Chassis-Switch 10Gb uplinks
 - 8:4 over-subscription
- Maximizes switch utilization
 - Direct 10Gb connectivity between blades and switch
 - Simplifies diagnostics & management
- Blade I/O bandwidth
 - 10Gb per blade port – 2 ports per blade
 - Blade connects to both Fabric Extender slots in chassis

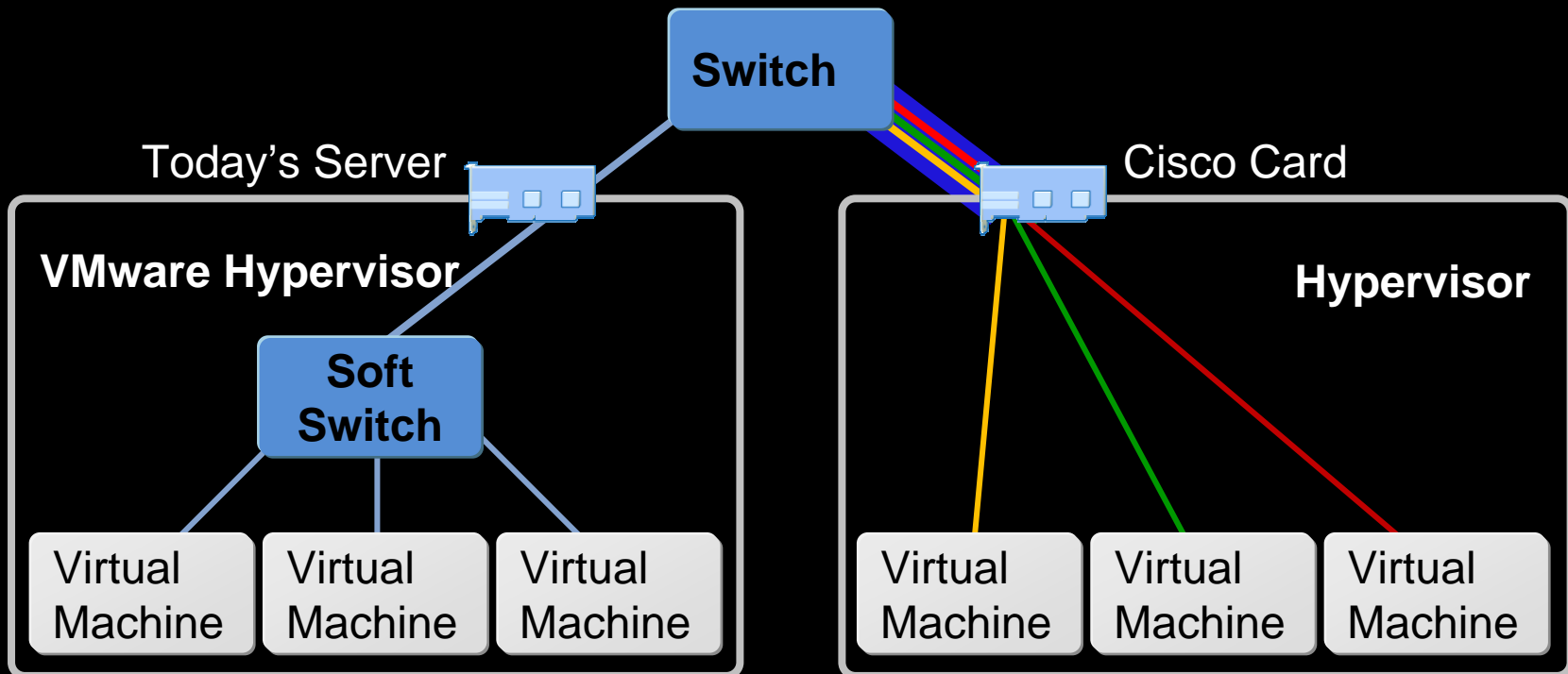
Compute Blade

- Based on Intel Nehalem-EP platform
 - Full range processor performance
 - Hardware-enabled Virtualization architecture
- Half slot blade
 - Two Sockets
 - Twelve DDR3 DIMM sockets
 - Up to two SAS/SATA Disks
 - H/W RAID 0 & 1
 - Single mezzanine adapter
 - Dual port 10Gb full duplex
- 3 Mezzanine cards options
- OS support:
 - VMware, Windows,
 - Redhat, Novell/SuSE etc.
- Remote and front panel KVM, vMedia and Console



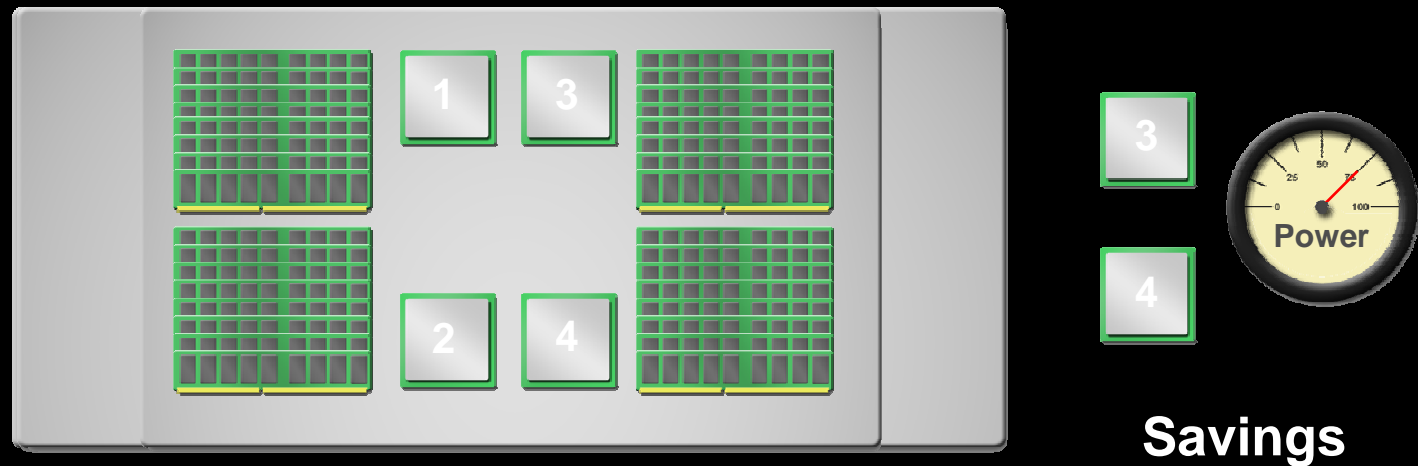
Virtualization Adapter

True **wire once** architecture – highly dynamic
Network policy and visibility brought to VMs
Hypervisor bypass support – increases performance
Reduce NIC card infrastructure



Memory Expansion

Higher server consolidation & larger VM density
Reduces CPU, power/cooling, and SW licensing costs



Cisco UCS
6120XP 20-Port
Fabric Interconnect



Cisco UCS
Manager
(Embedded)



Cisco UCS U2104XP Fabric Extender
(Up to 2 in Each Enclosure)



Cisco UCS 5108
Blade Server Chassis
(Up to 40 per System and Up
to 320 Half-Width Blades)

Cisco UCS B250 M1 2-Socket
Extended Memory Blade Server

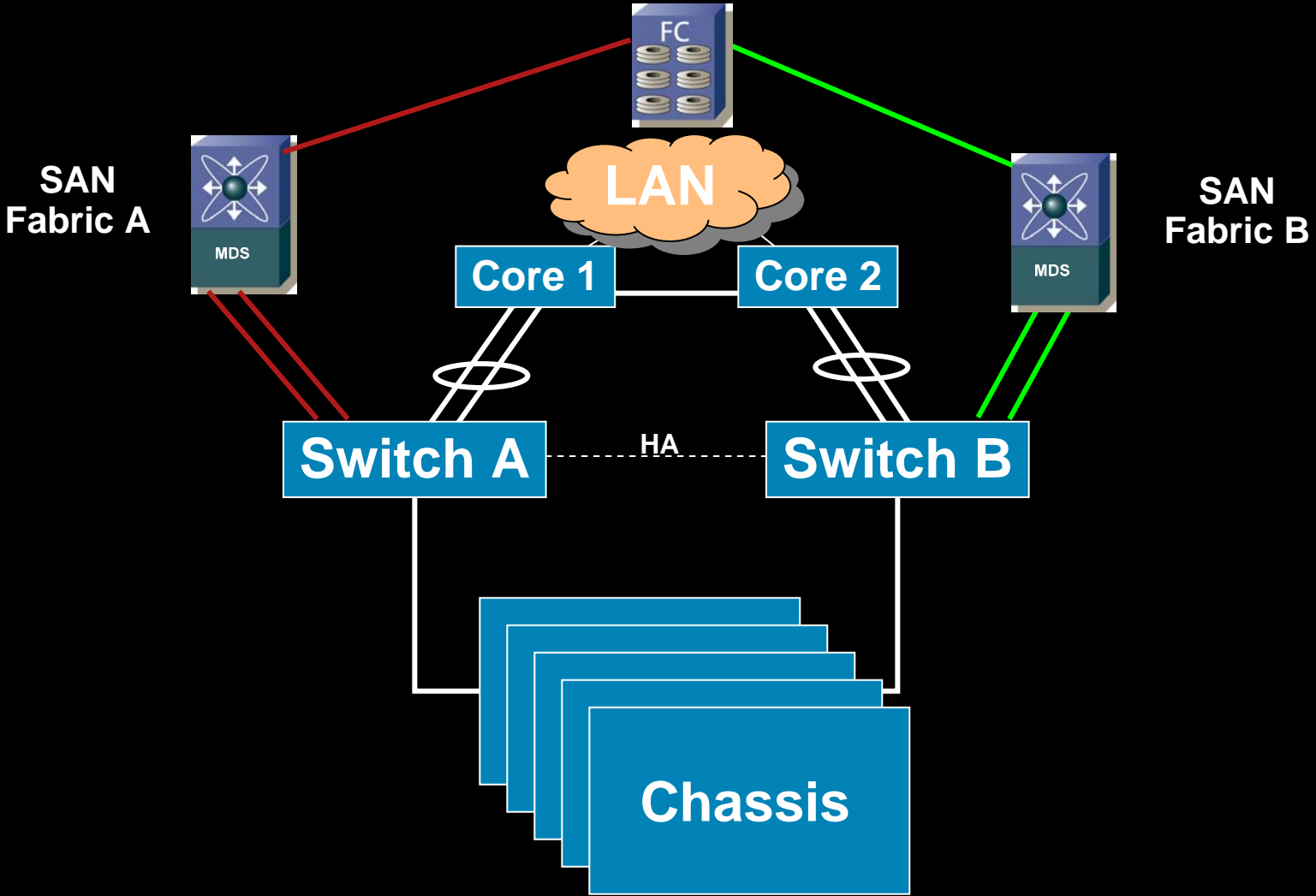


Cisco UCS B200 M1
2-Socket Blade Server



Cisco UCS B-Series
Blade Servers
(2 Types)

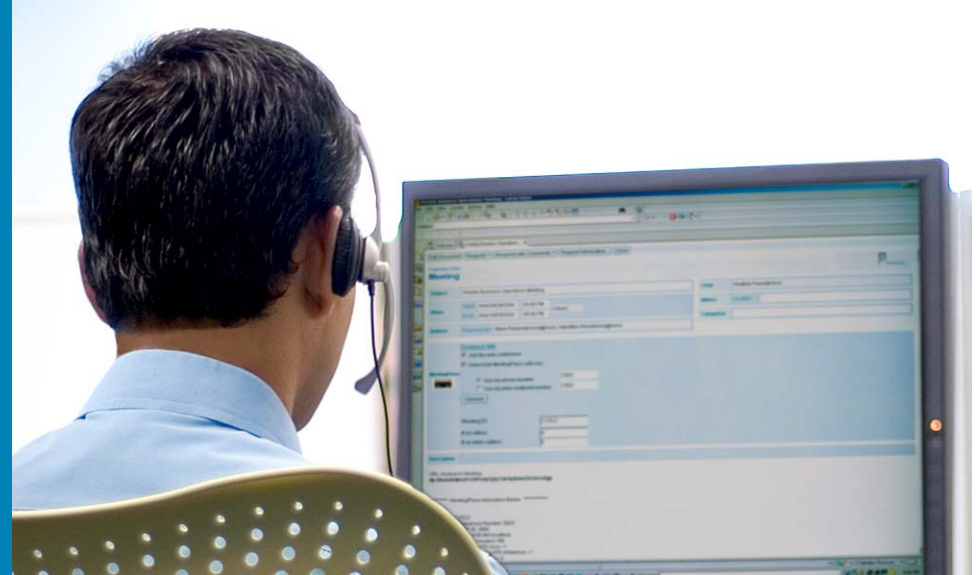
Network connectivity



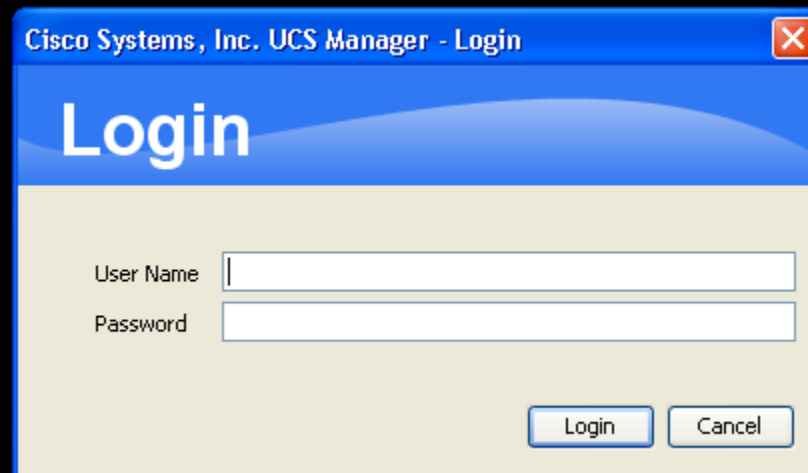


Cisco Expo
2009

Unified Computing System Manager



Launch



The image shows a login dialog box for Cisco Systems, Inc. UCS Manager. The dialog has a blue title bar with the text "Cisco Systems, Inc. UCS Manager - Login" and a close button (X) on the right. Below the title bar, the word "Login" is displayed in a large, white, sans-serif font. The main area of the dialog is light beige and contains two input fields: "User Name" and "Password". The "User Name" field is a simple white rectangle with a vertical cursor on the left. The "Password" field is a white rectangle with a vertical cursor on the left. At the bottom right of the dialog, there are two buttons: "Login" and "Cancel", both with a light blue gradient and a thin border.

Main topology view

The screenshot displays the Cisco Unified Computing System Manager interface. The main window title is "Cisco Unified Computing System Manager - potato". The interface is divided into several sections:

- Fault Summary:** Located at the top left, it shows four status icons with corresponding counts: 1 (critical), 71 (warning), 10 (info), and 6 (ok).
- Navigation:** Below the fault summary are tabs for "Equipment", "Servers", "LAN", "SAN", and "Admin". A "Filter: All" dropdown is also present.
- Left Panel:** A tree view under "Equipment" shows "Chassis" and "Switches" as sub-items.
- Main Topology View:** The central area displays a network diagram with "Chassis 1" connected to "Switch A".
- Legend:** At the bottom of the topology view, a legend indicates link status: a black line for "All Links Up", a yellow line for "Some Links Down", and a red line for "All Links Down".
- Bottom Bar:** Contains "Save Changes" and "Reset Values" buttons, along with the text "Logged in as admin@172.25.179.25" and "System Time: 2009-04-01T15:06".

Chassis / General

Cisco Unified Computing System Manager - potato

Fault Summary

0 61 13 19

Equipment Servers LAN SAN Admin

Filter: All

Equipment

- Chassis
 - Chassis 1
 - Fans
 - IO Modules
 - PSUs
 - Servers
 - Server 1
 - Server 2
 - Server 3
 - Server 4
 - Server 5
 - Server 6
 - Server 7
 - Interface Cards
 - Server 8
 - Interface Cards
 - Switches

Chassis / Hybrid Display

The screenshot displays the Cisco Unified Computing System Manager interface. The main window is titled "Cisco Unified Computing System Manager - potato". The left sidebar shows a tree view with "Equipment" expanded to "Chassis 1". The top navigation bar includes tabs for "General", "Servers", "Service Profiles", "IO Modules", "Fans", "PSUs", "Hybrid Display", "Slots", "Installed Firmware", "Faults", "Events", "FSM", and "Statistics". The "Hybrid Display" tab is active, showing a graphical representation of a chassis with multiple server slots. A network switch is connected to the top of the chassis, with lines indicating connections to various server slots. The bottom status bar shows "Logged in as admin@172.25.179.25" and "System Time: 2009-04-02T14:02".

Service Profile - Wizard

Create Service Profile

Boot Order

Primary Boot Device Secondary Boot Device

Type: local-disk local-disk
 san
 lan
 virtual CD-ROM
 virtual Floppy

Server Association (Optional)

Filter Export Print

Select	Chassis Id	Slot	Serial	Model	Part Number	Memory	Processors	NICs	HBAs		
<input checked="" type="checkbox"/>	1	3	QC1125200JH	Cisco Systeme...	N2U-bbb2U-1	8	16	8192	1	2	0
<input type="checkbox"/>	1	5	QC1125200JT	Cisco Systeme...	N2O-B6620-1	8	16	8192	1	2	0

OK Cancel values

Logged in as admin@172.25.179.24 System Time: 2009-04-03T10:57

Service Profile / Server Detail

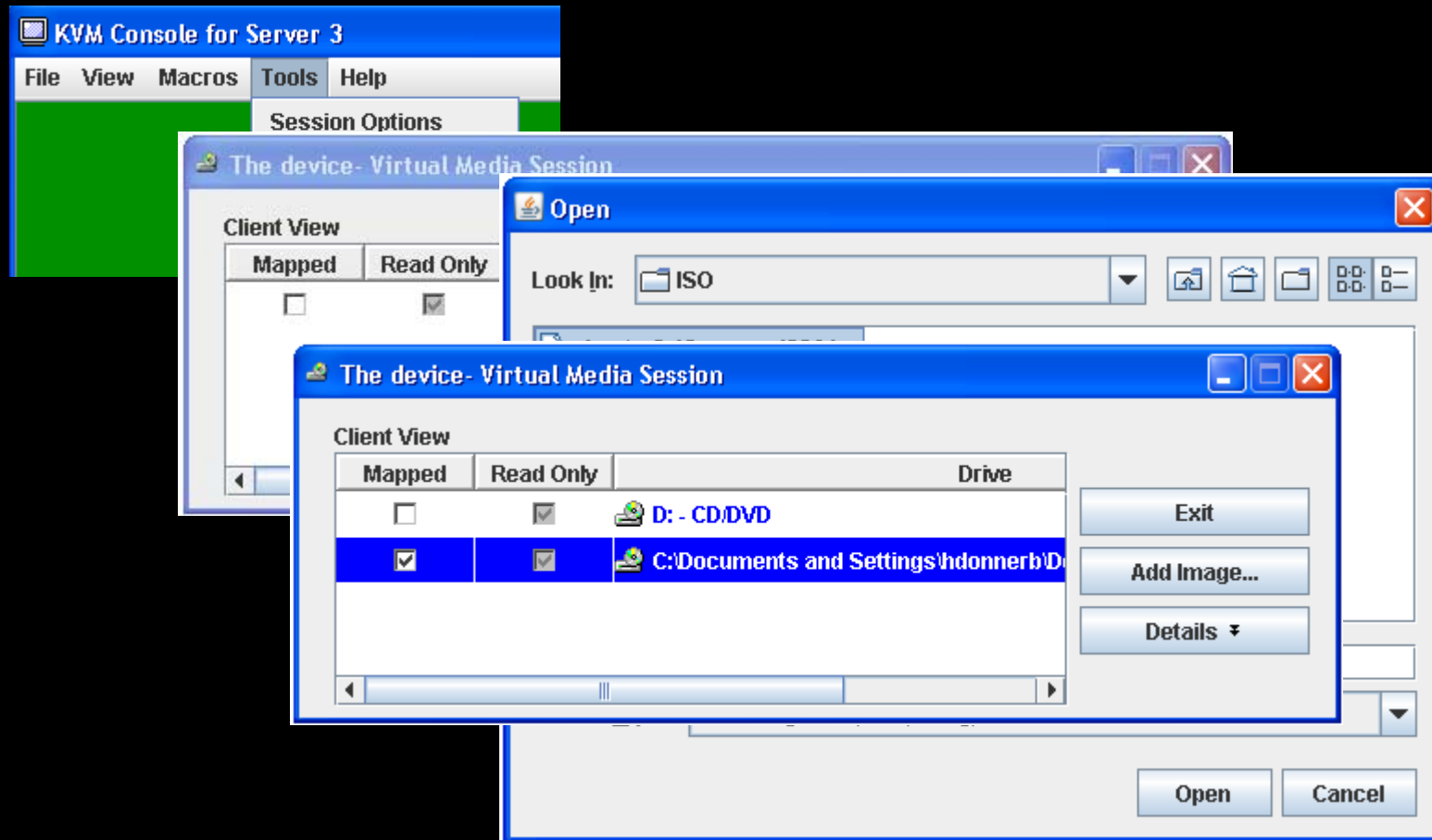
The screenshot displays the Cisco Unified Computing System Manager interface. The main window title is "Cisco Unified Computing System Manager - carrot". The breadcrumb path is "Servers > Service Profiles > root > Service Profile london_test1". The interface is divided into several sections:

- Fault Summary:** Shows 0 critical, 15 major, 7 minor, and 8 warning faults.
- Physical Display:** Shows a rack of servers with a red overlay indicating "Needs Resolution".
- Properties:** Lists server details:
 - Slot Id: 3, Chassis Id: 1
 - Product Name: Cisco B200-M1
 - Vendor: Cisco Systems Inc, PID: N20-B6620-1
 - Revision (VID): 0, Serial Number (SN): QC1125200GH
 - UUID: 208f0100-020f-badb-adbe-a80000556500
 - Service Profile: org-root/london_test1
- Actions:** Includes "Create Default Service Profile", "Boot Server", "Shut Down", "Power Cycle", "Hard Reset", "KVM Console", "Re-acknowledge Server", "Remove Server", "Decommission Server", "Turn off LED Beacon", "Reset Server's CMOS", "Reset Server's BMC", and "POST Results".

The left sidebar shows a tree view of the system hierarchy, including "Servers", "Service Profiles", "Policies", and "Pools". The "Service Profiles" section is expanded to show "Service Profile london_test1".

At the bottom, the status bar shows "Logged in as admin@172.25.179.24" and "System Time: 2009-04-03T12:53".

KVM Console



KVM Console

The image shows a KVM Console window for 'Server 3' displaying BIOS boot information. A 'Virtual Media Session' dialog box is open, showing drive mapping details.

KVM Console for Server 3 - BIOS Output:

```

Cisco Systems Inc
Version 1.23.1114
Press <F2> to enter BIOS Setup

Bios Version: S...
Platform ID: S5...
8192 MB system
Current Memory
Intel(R) Xeon(C...
Intel(R) Xeon(C...
USB keyboard de...
USB mouse dete...
    
```

Virtual Media Session - Client View:

Mapped	Read Only	Drive
<input type="checkbox"/>	<input checked="" type="checkbox"/>	D: - CD/DVD
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	C:\Documents and Settings\hdonnerb\D...

Virtual Media Session - Details:

Target Drive	Mapped To	Read Bytes	Write Bytes
Virtual CD/DVD	C:\Documents and S...	1.325M	0
Virtual Floppy	Not mapped		

Buttons: Exit, Add Image..., Details ±, USB Reset

Disassociate Service Profile

The screenshot displays the Cisco Unified Computing System Manager interface. The main window is titled "Cisco Unified Computing System Manager - carrot" and shows the configuration for "Service Profile london_test1". The left sidebar contains a tree view of the system hierarchy, including Servers, Service Profiles, Policies, and Pools. The "Service Profiles" section is expanded, showing "Service Profile london_test1" selected. The main content area is divided into "Fault Summary" and "Properties" sections. The "Properties" section shows the name "london_test1", description "Wizard test server", and associated server "sys/chassis-1/blade-3". A "Disassociate Service Profile" dialog box is open in the foreground, asking "Are you sure you want to disassociate Service Profile london_test1?". The dialog box has a yellow warning icon and two buttons: "Yes" and "No". The "Disassociate Service Profile" option in the "Actions" list is circled in red.

Logged in as admin@172.25.179.24

System Time: 2009-04-03T13:12

Conclusion

- Unified Fabric
- Virtualization
- Memory Expansion
- Embedded Management
- Service Profiles

Q and A

Kom til Nexus 1000v
demo stand





CISCO