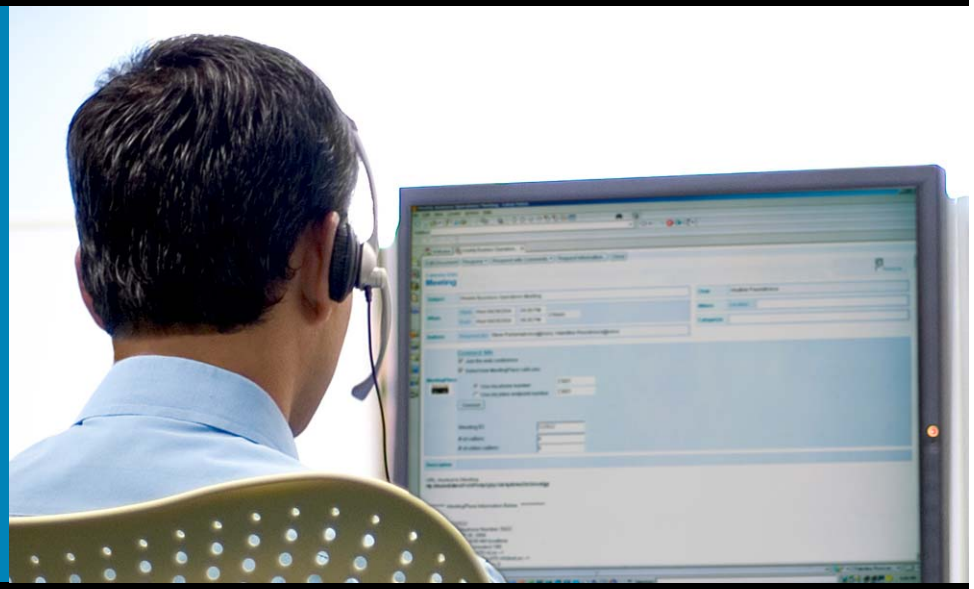
Cisco Expo 2009

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**

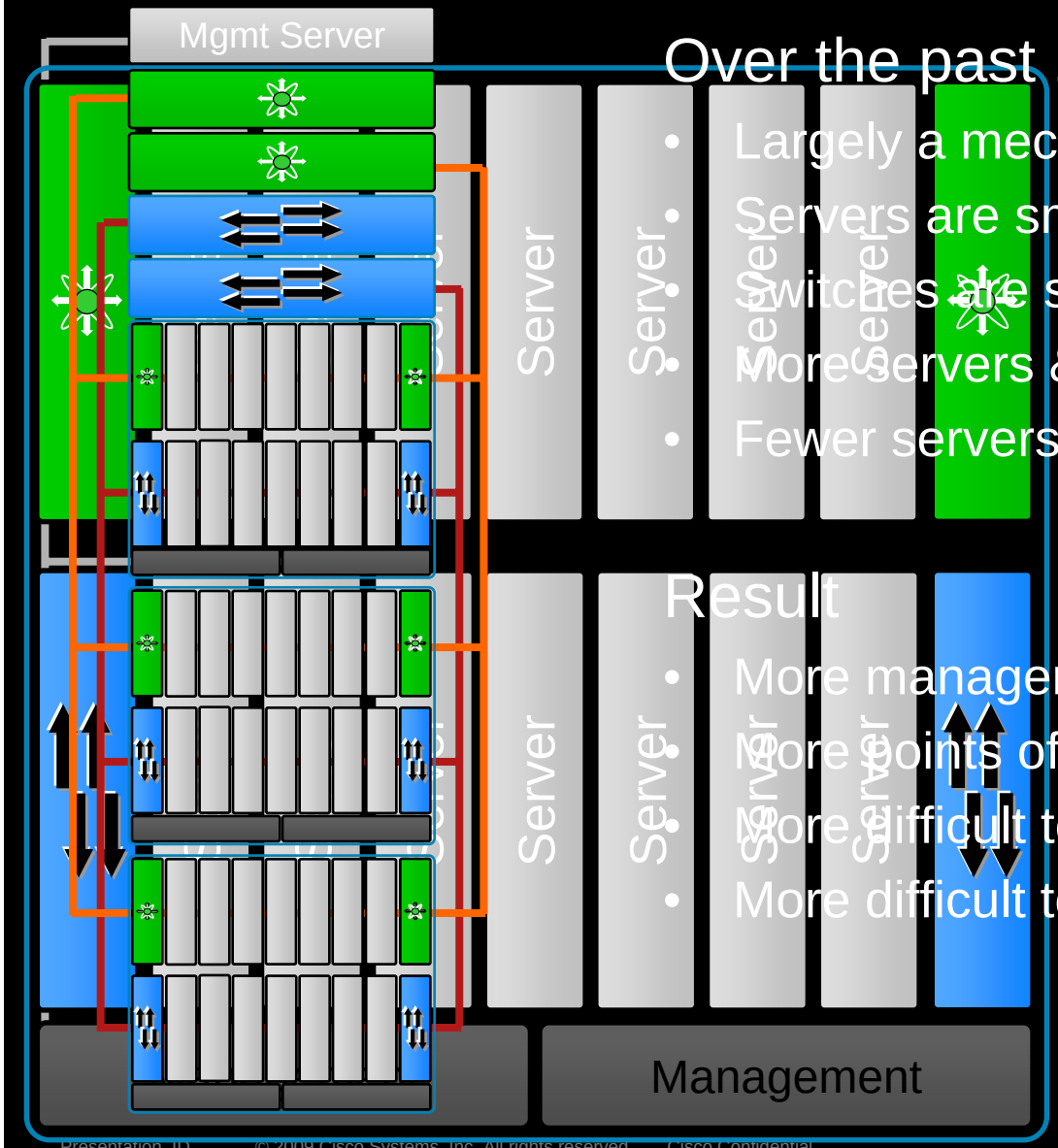
  That formed the foundation for unified computing for the past year

- **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



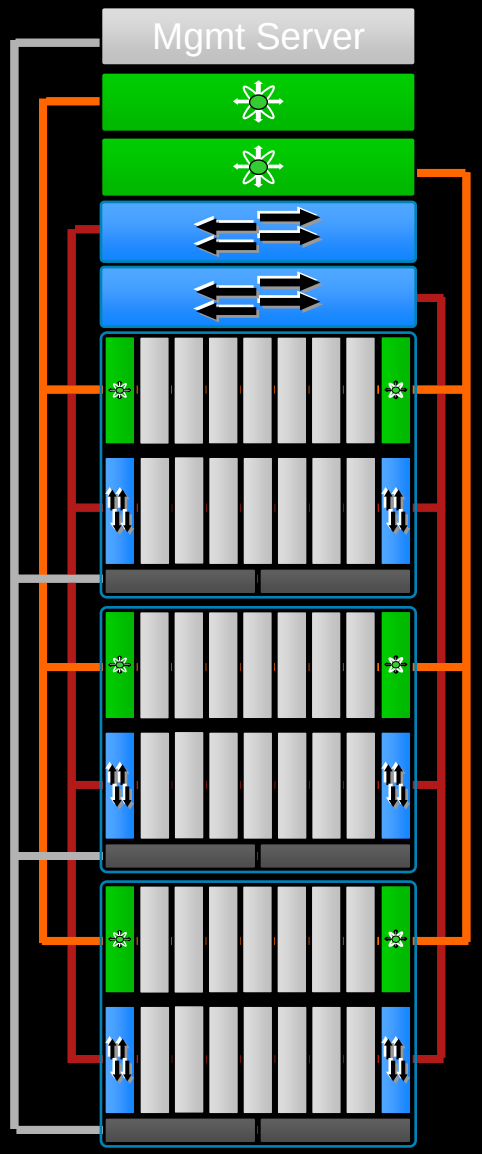
Over the past 10 years

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

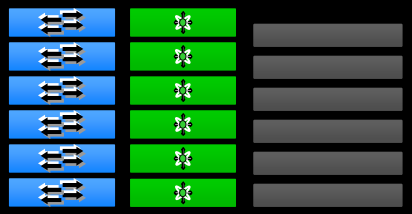
Result

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

Our Solution

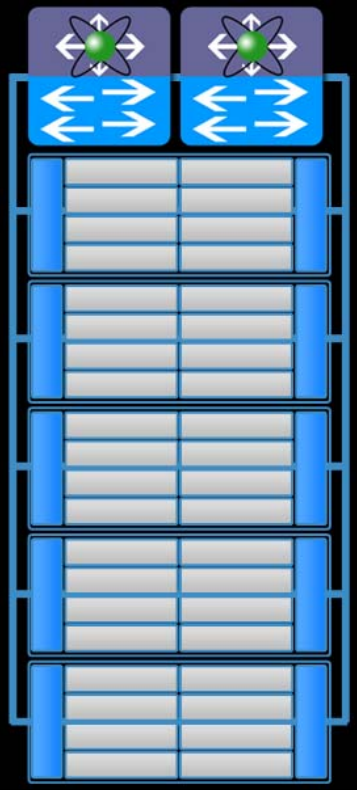


- Embed management
- Consolidate LAN & SAN switches
- Remove unnecessary
  - Blade switches,
  - Adapters
  - Management modules
- Less than 1/3rd infrastructu



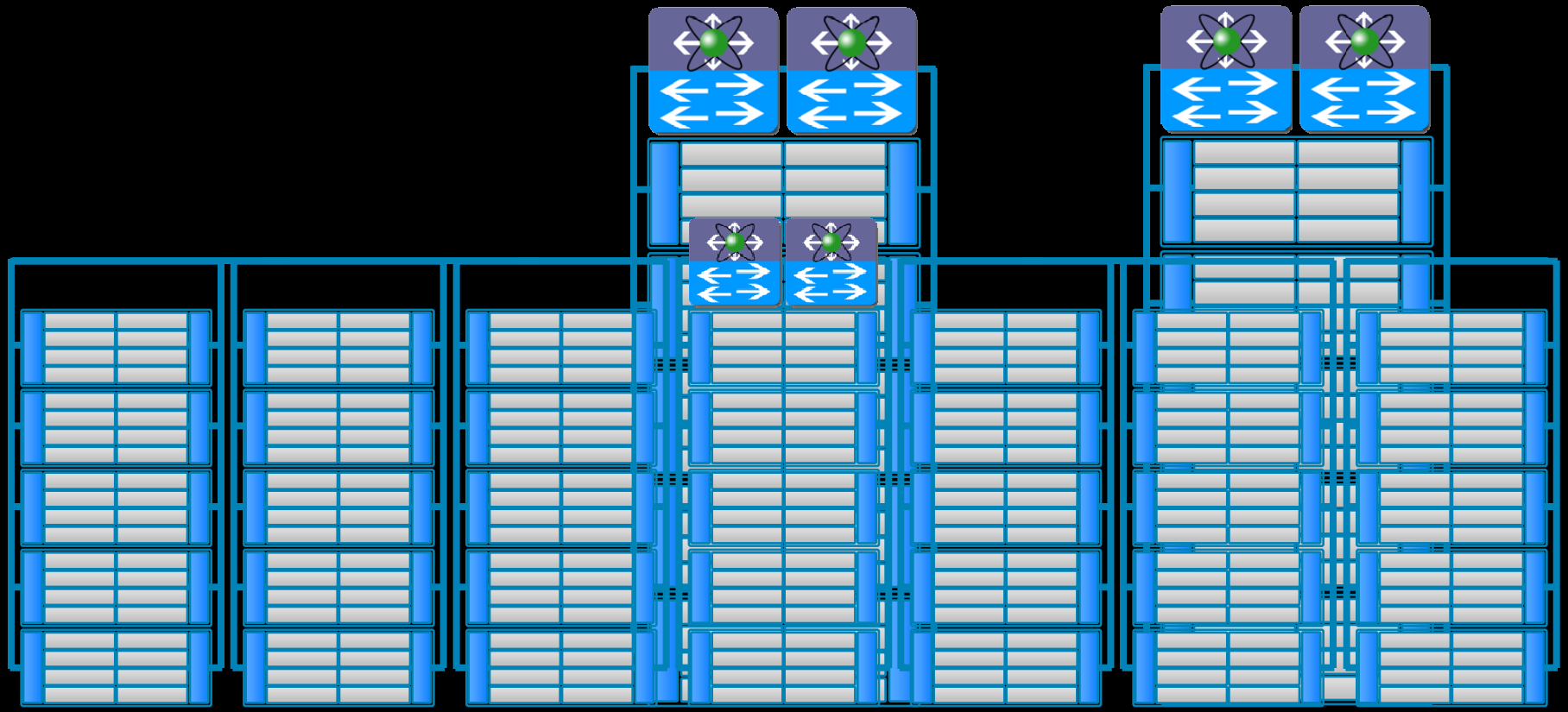
Solution Overview

- 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

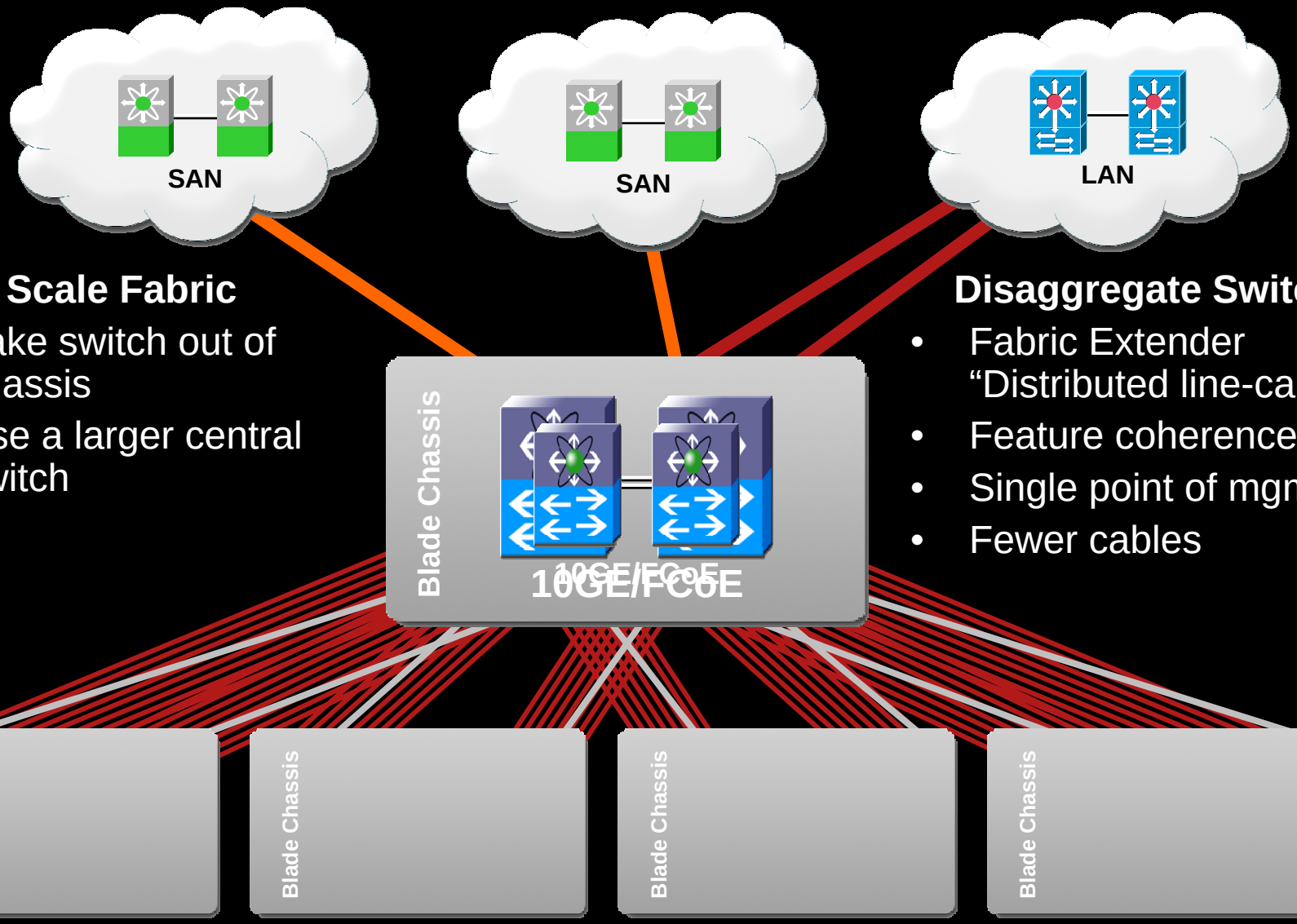


Our Solution

- Consolidated elastic infrastructure
- Single point of management



Switch Disaggregation



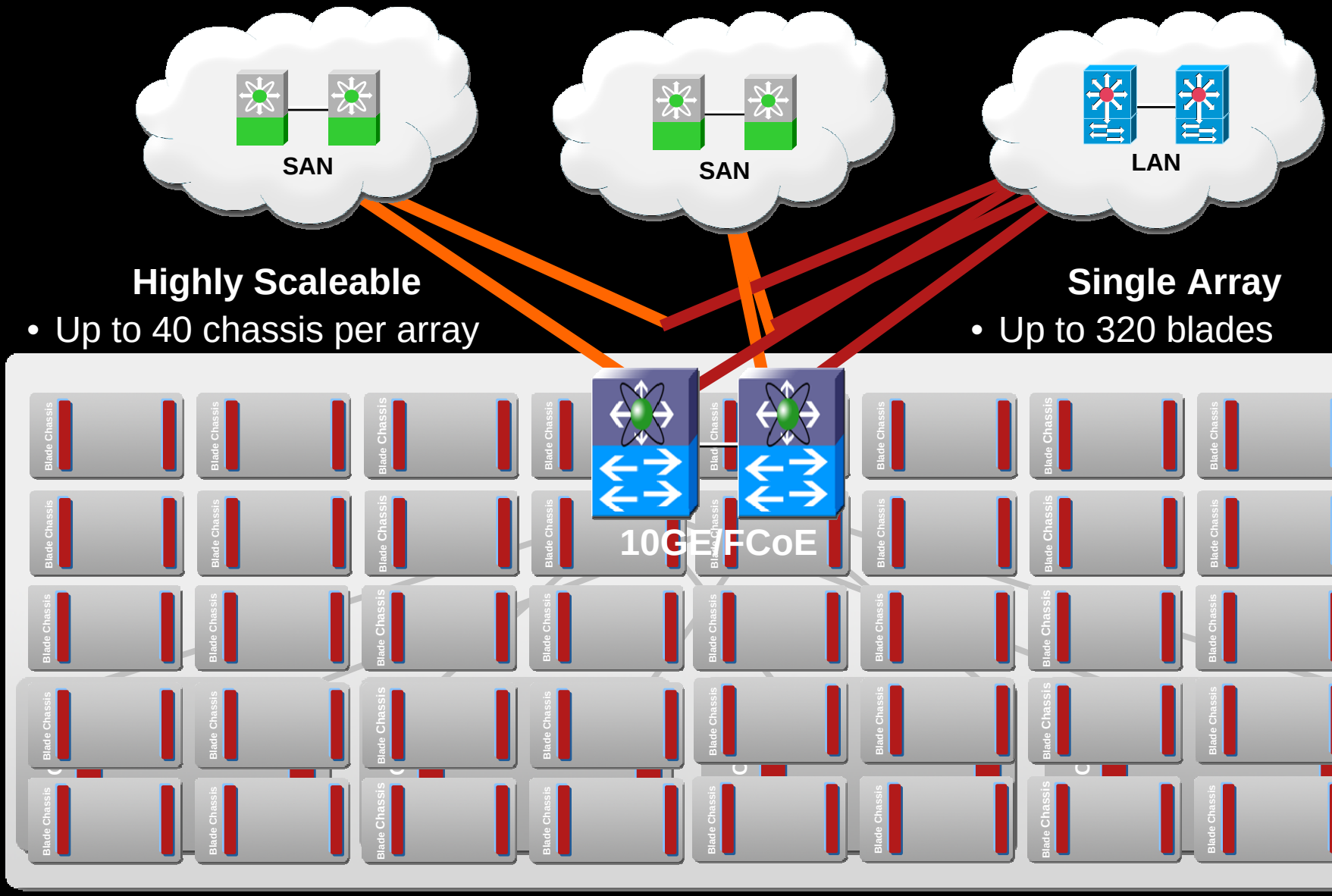
Scale Fabric

- 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



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

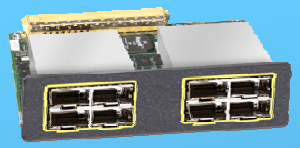
Cisco UCS 6120XP, UCS 6140XP

Switch Family

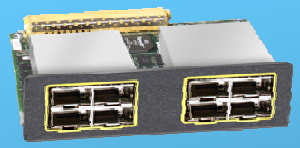
1U High, 28-Port switch
- 20 Ports 10 GE/FCoE
  - 4 uplink/downlink ports
  - SFP+ interfaces
- 1 Uplink Module: 8 ports
- 560 Gbps Fabric

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

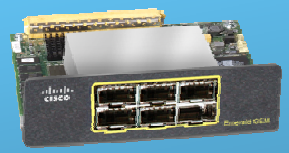
Uplink Modules



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

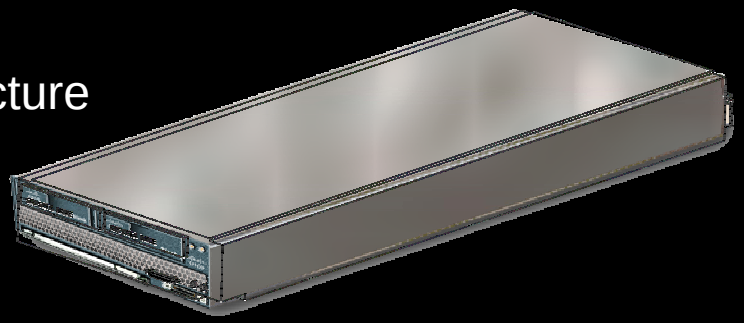
- Cooling
  - Front to rear cooling
    - Flow through airflow design, 63% of center plane open
  - Sized to support all blades at full power budget
  - 8 hot-plug dual fan modules
  - Status indicators on each fan module

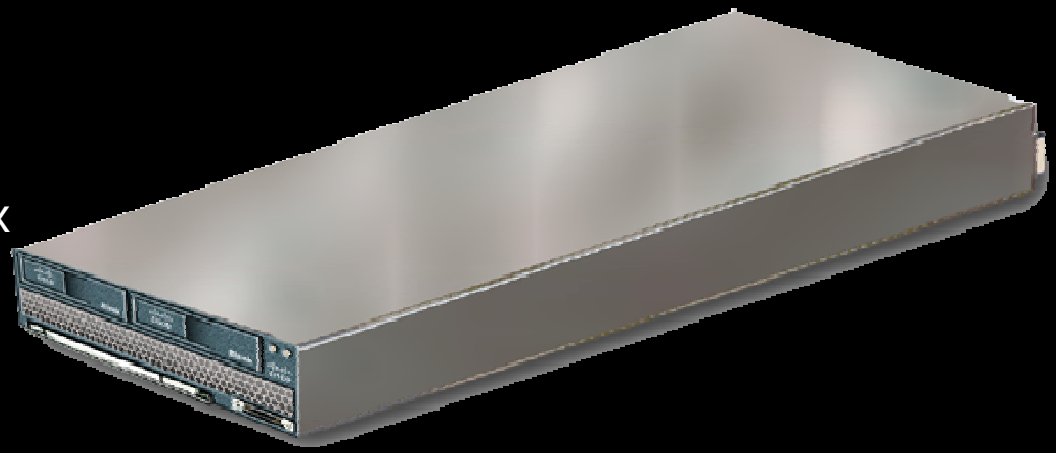
Cisco UCS2104XP

- Part of the switch: distributed “line card”
  - Extends the I/O fabric into the blade chasses
  - 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 Nehelam-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





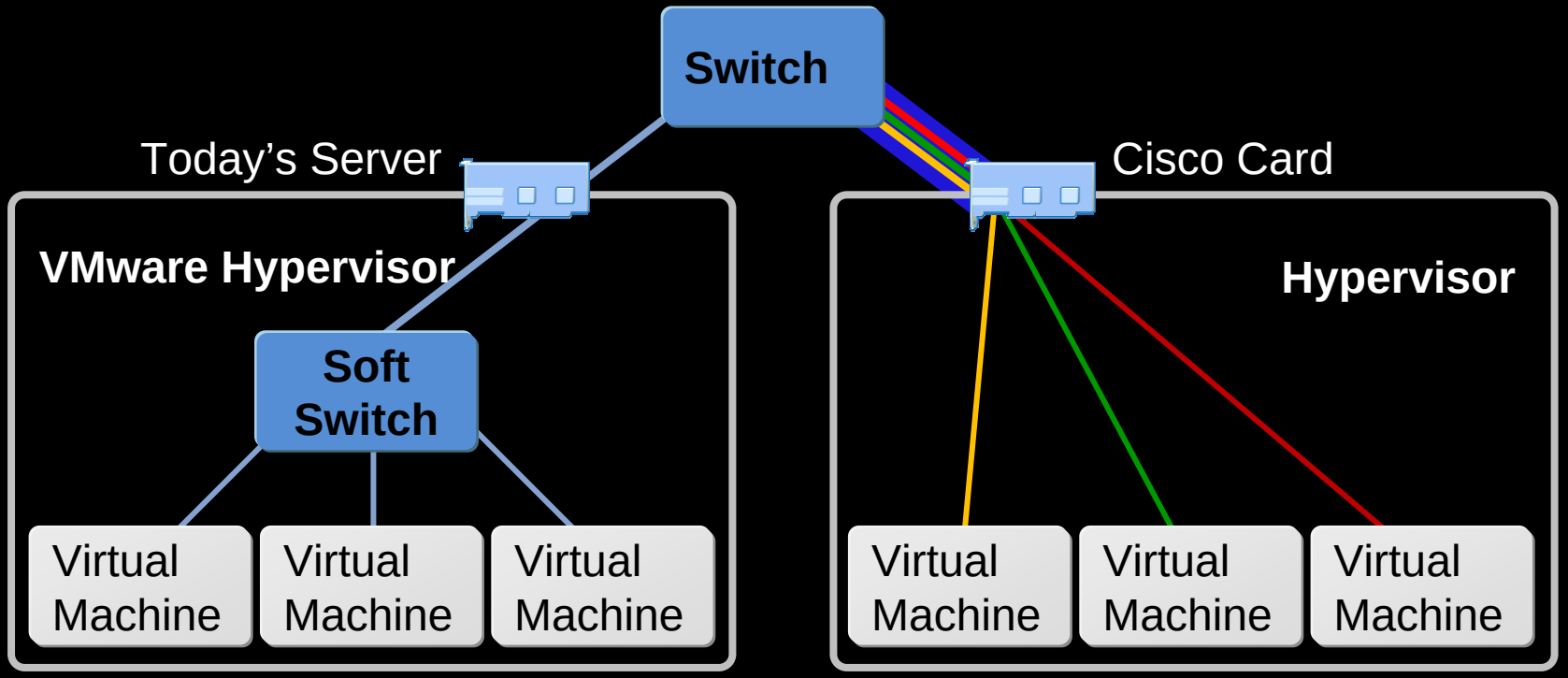
Virtualization Adapter

True **wire once** architecture – highly dynamic

Network policy and visibility brought to VMs

Hypervisor bypass support – increases performance

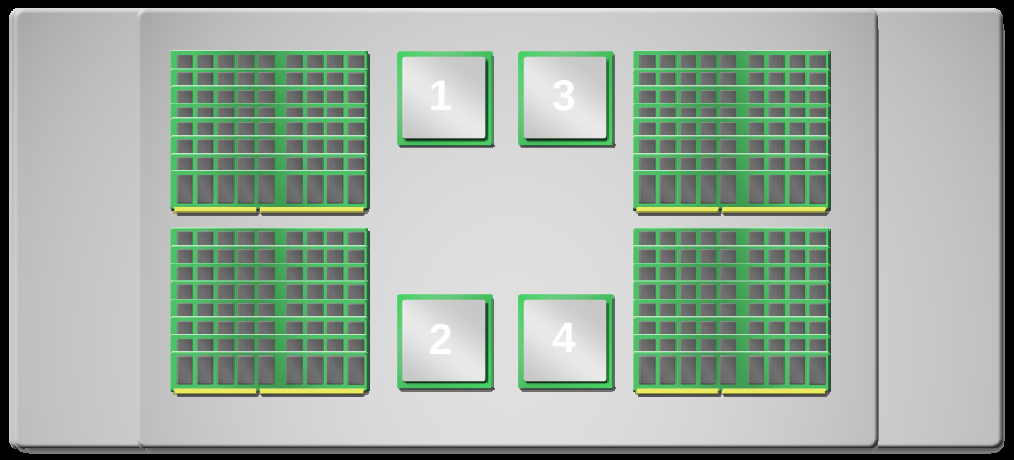
Reduce NIC card infrastucture

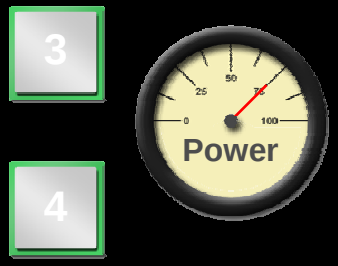


Memory Expansion

Higher server consolidation & larger VM density

Reduces CPU, power/cooling, and SW licensing costs





Savings

Cisco UCS
6120XP 20-Port
Fabric Interconnect

Cisco UCS
Manager
(Embedded)

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

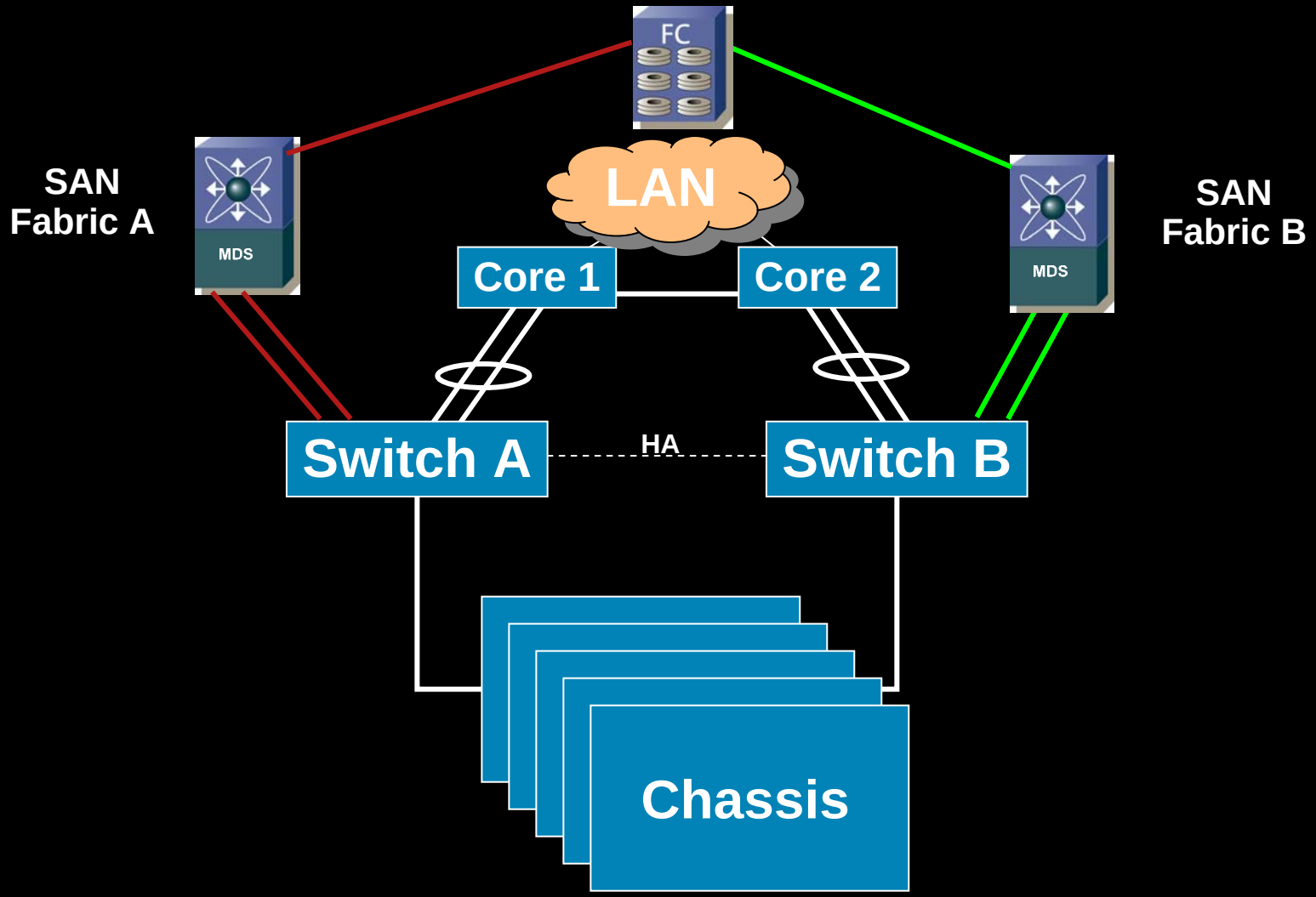
Cisco UCS 5108
Blade Server Chassis
(Up to 40 per System and Up
to 320 Half-Width Blades)

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



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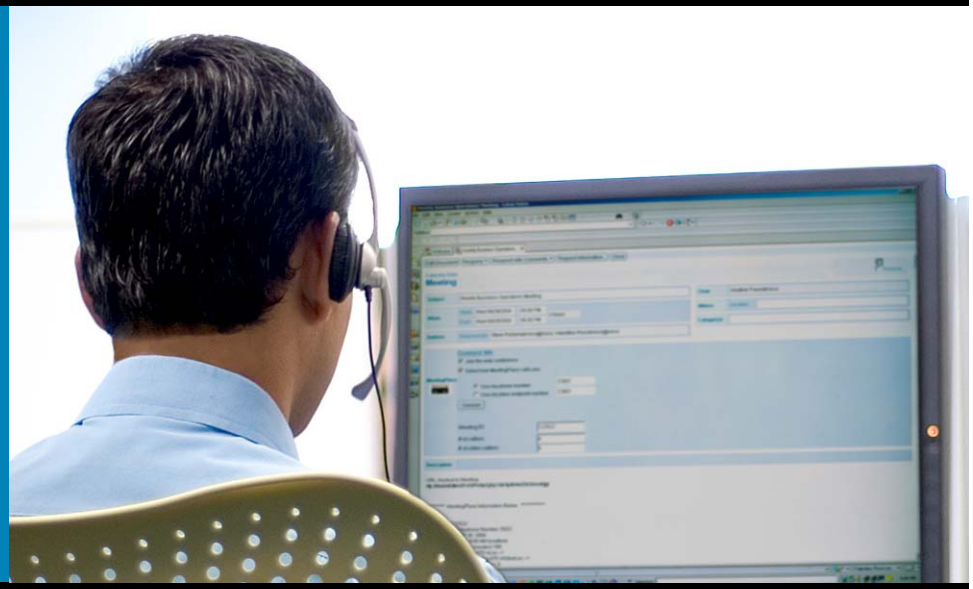
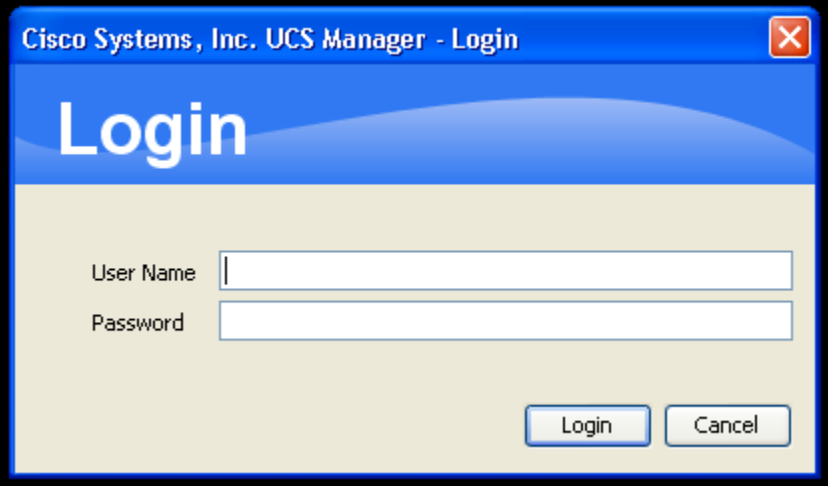
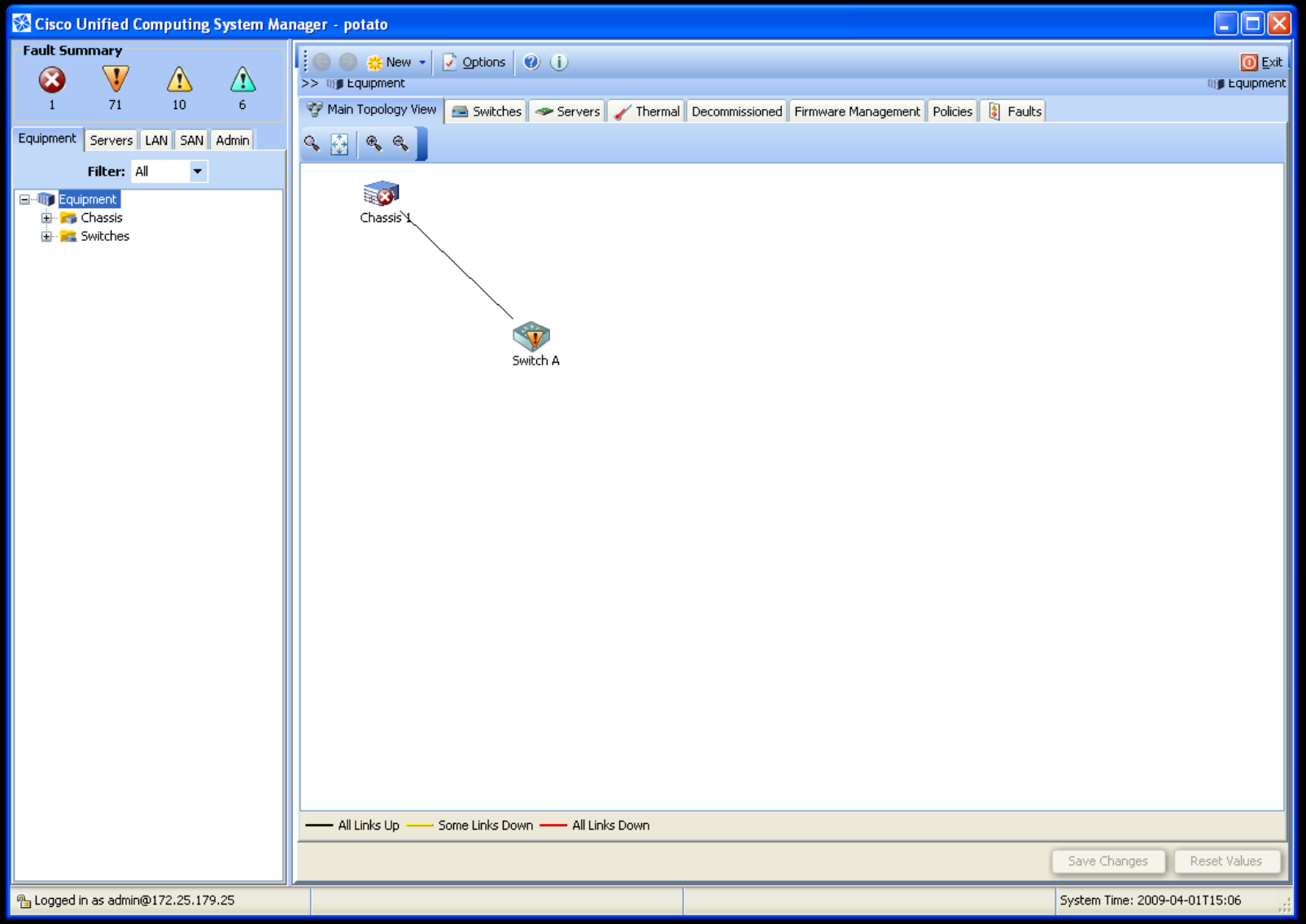
Unified Computing System Manager



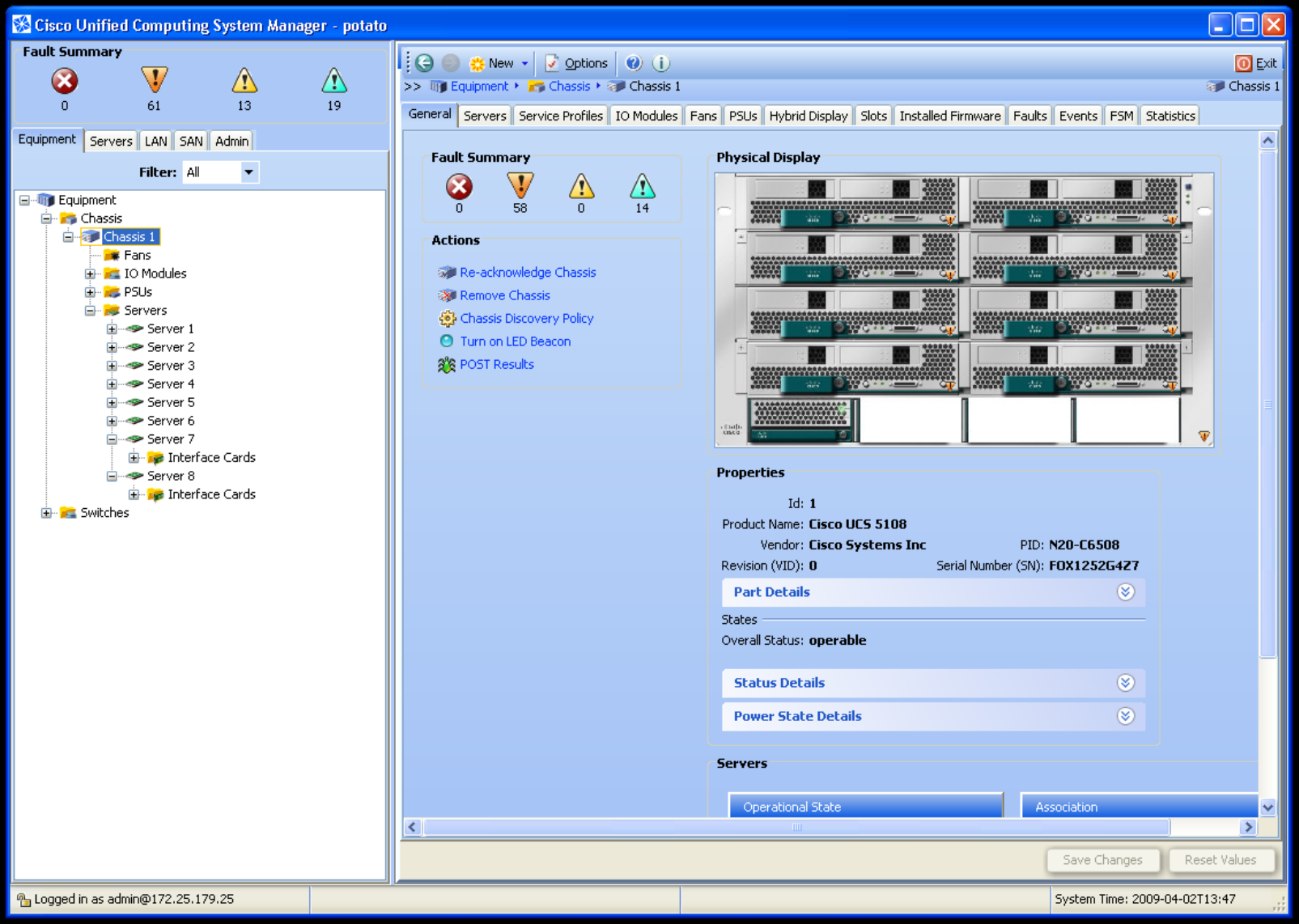
Launch



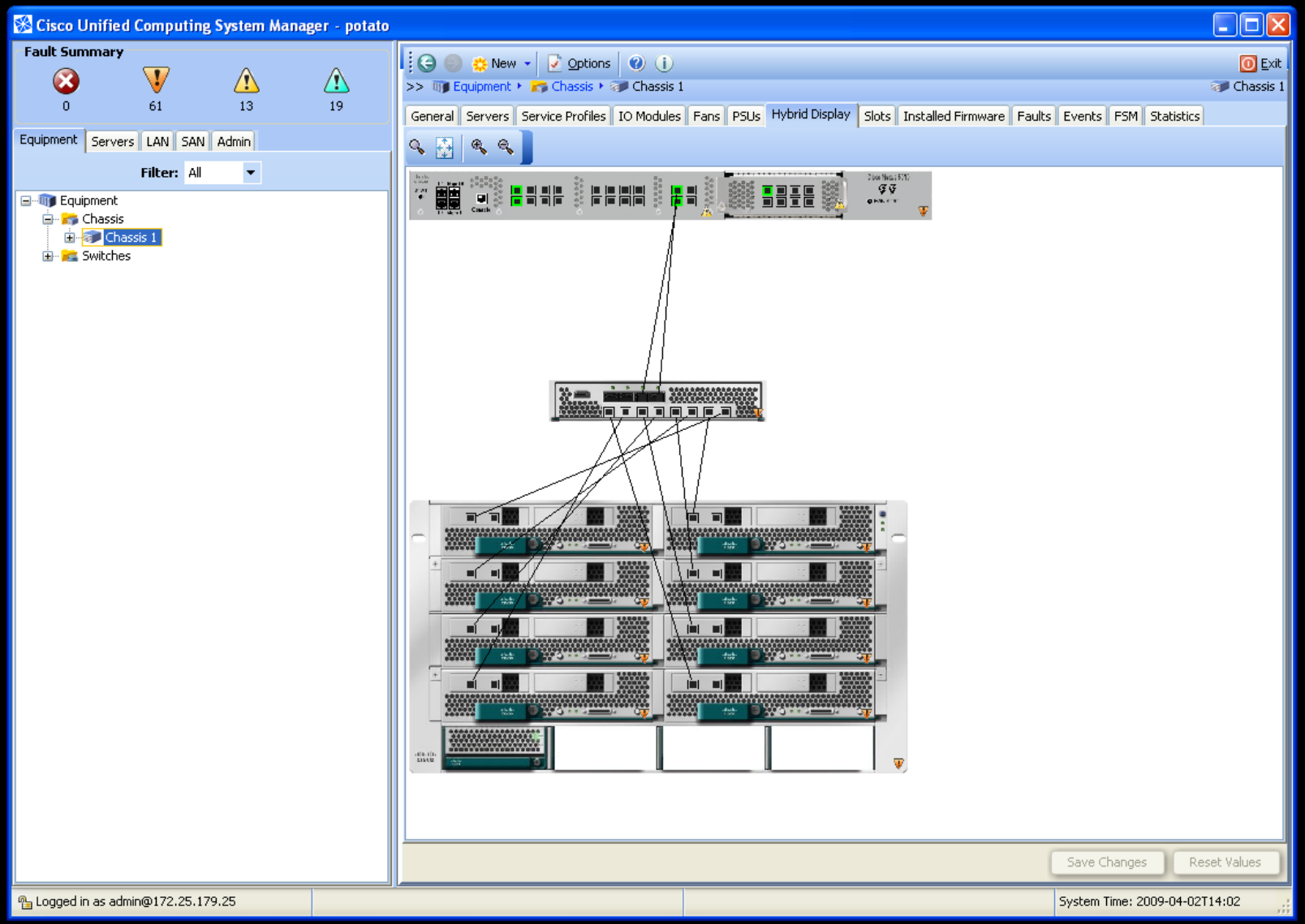
Main topology view



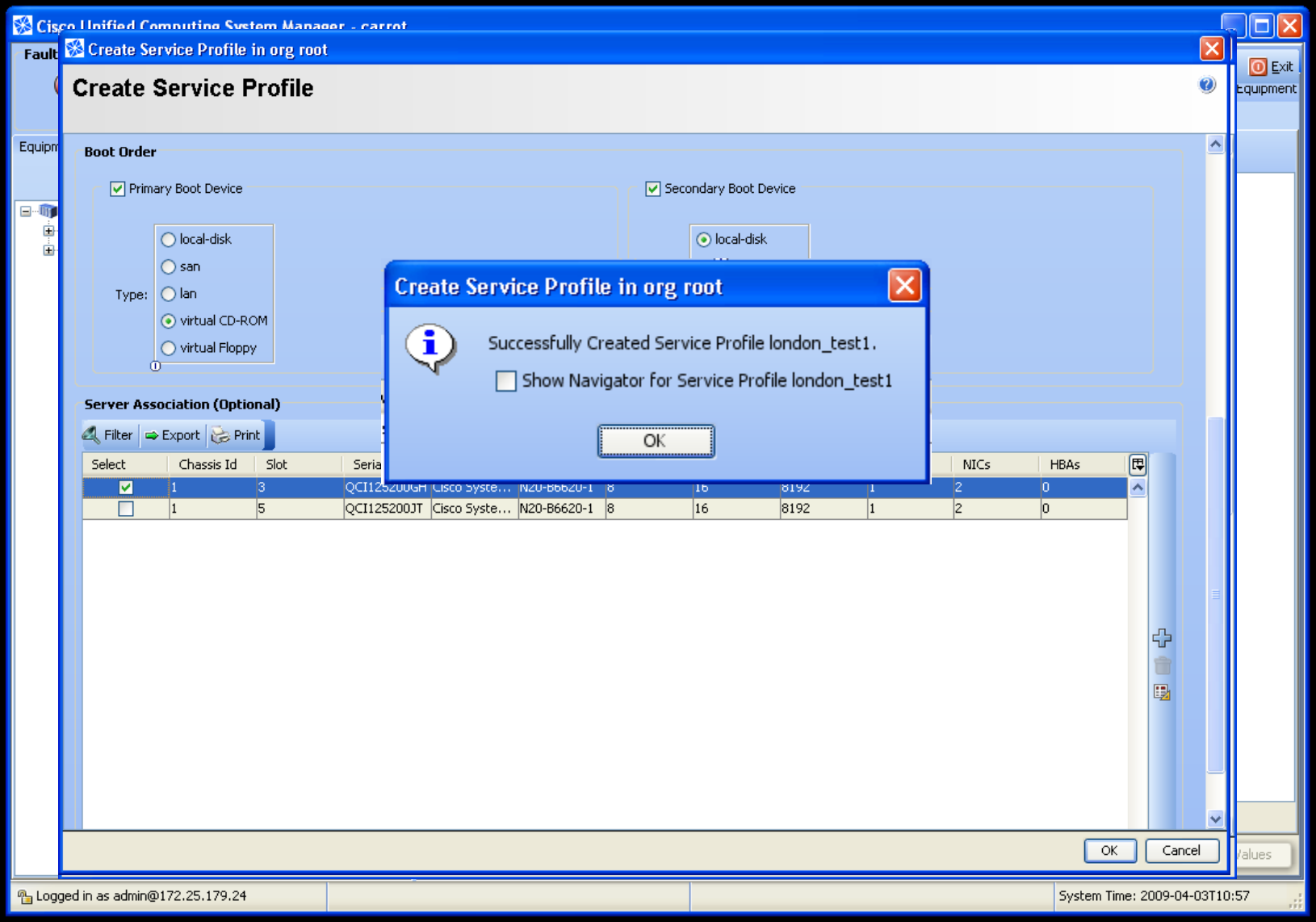
Chassis / General



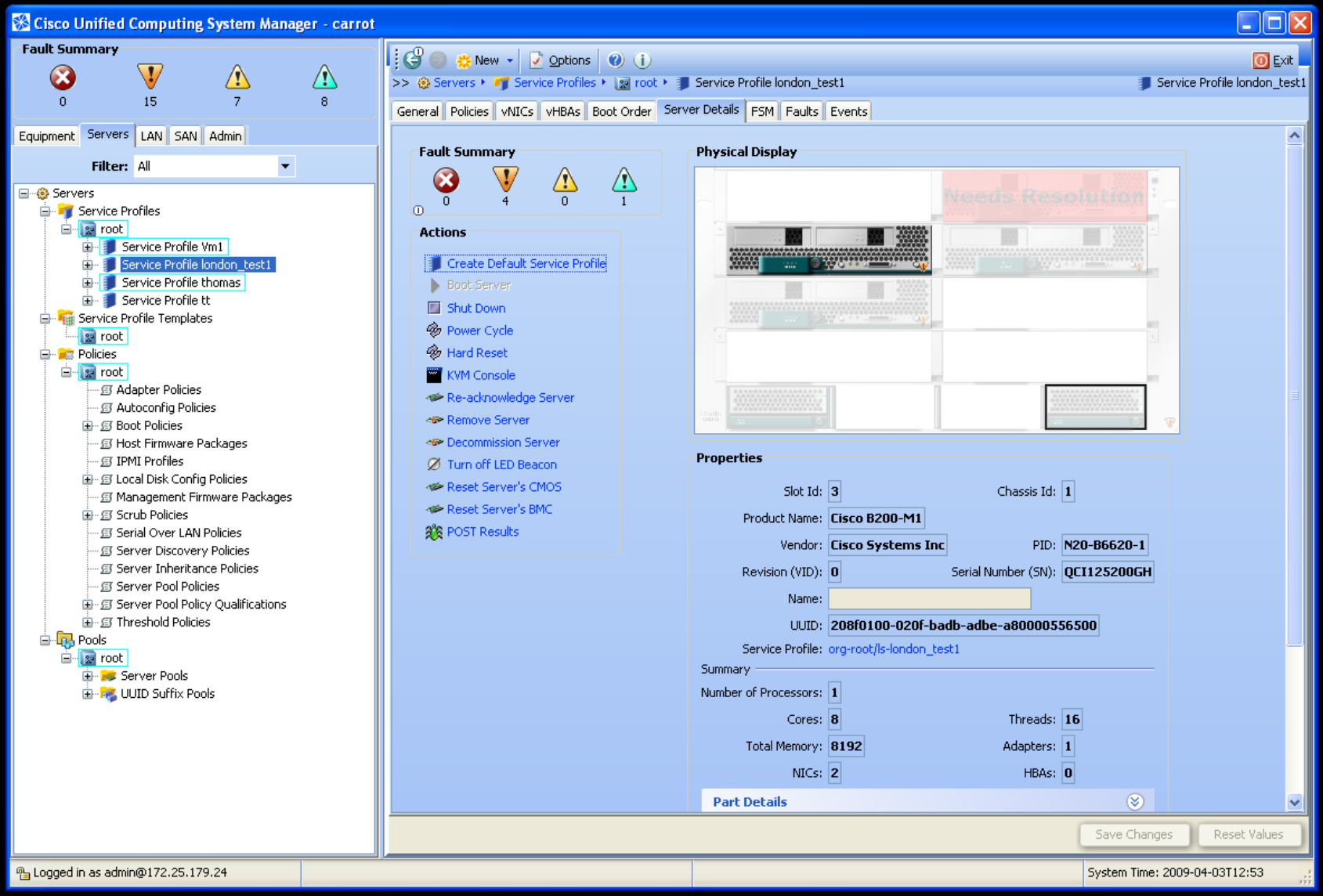
Chassis / Hybrid Display



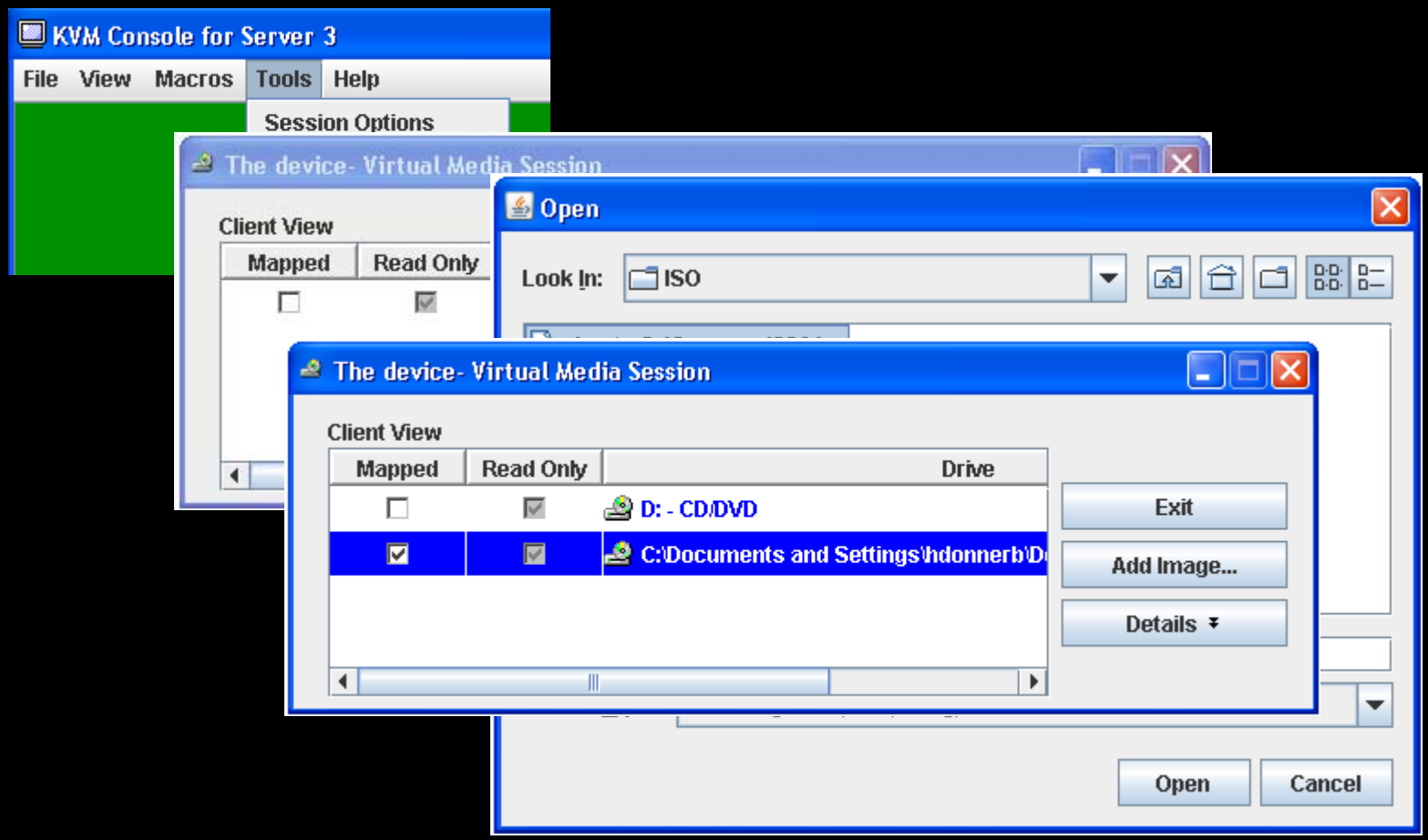
Service Profile - Wizard



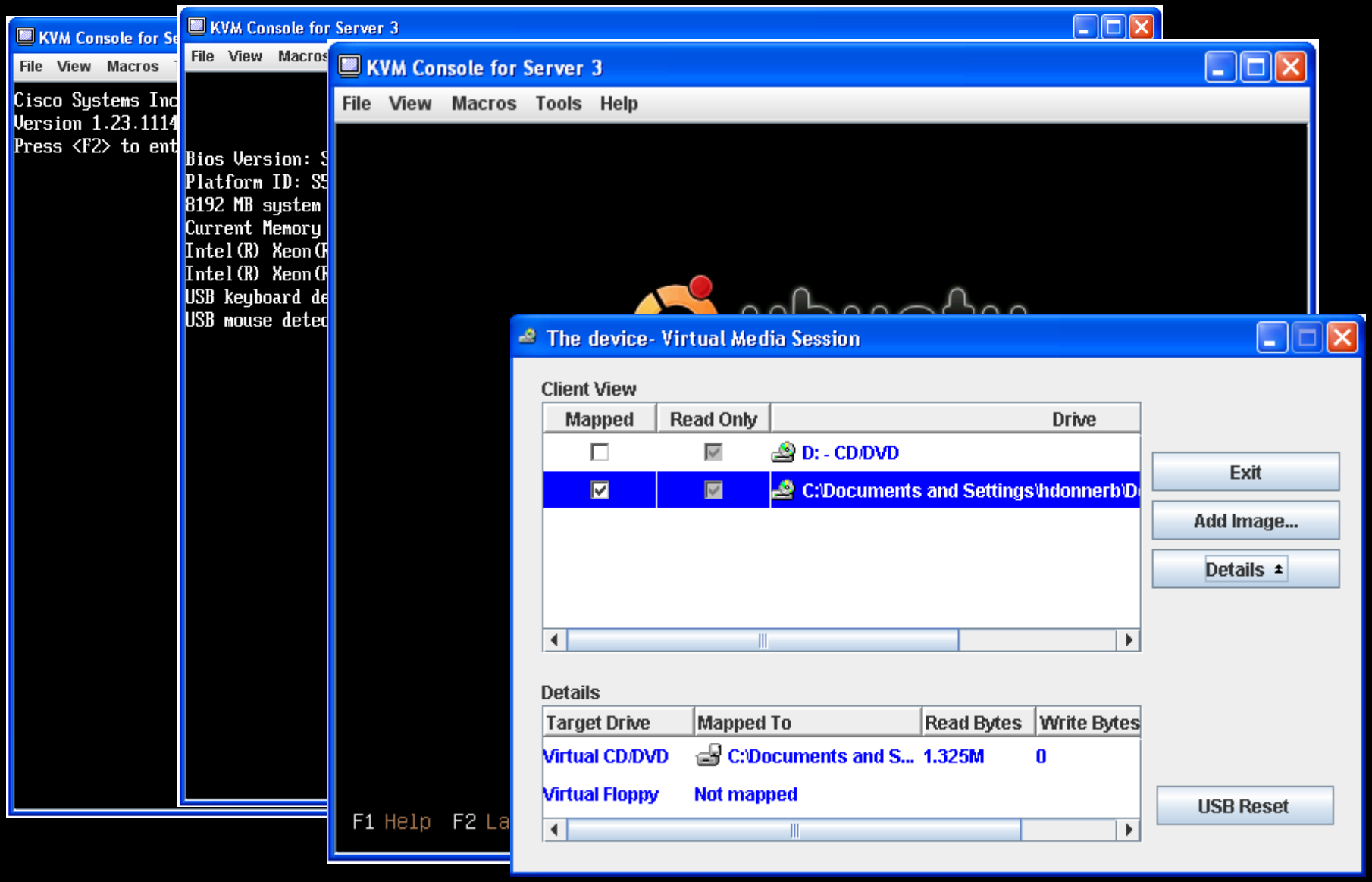
Service Profile / Server Detail



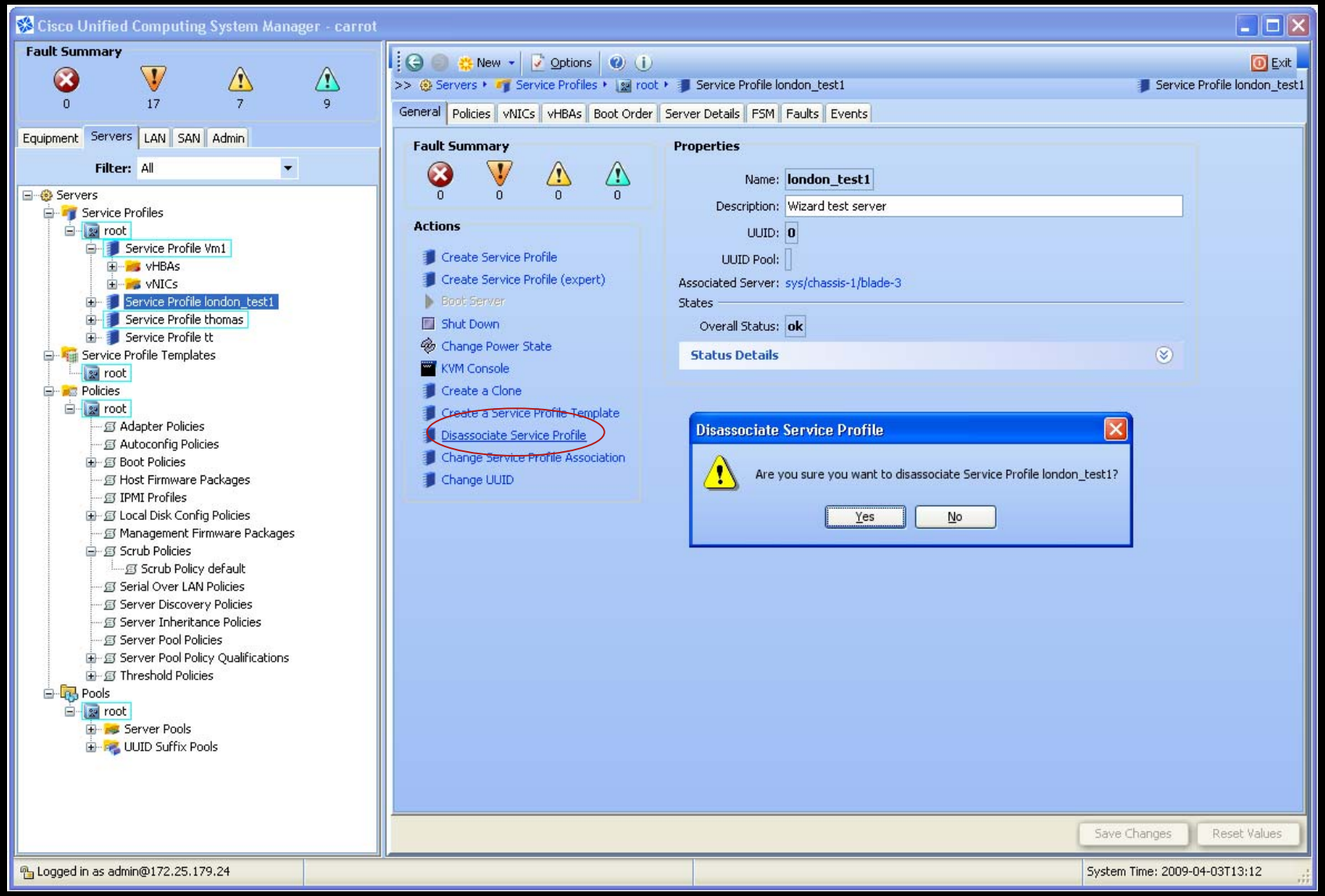
KVM Console



KVM Console



Disassociate Service Profile

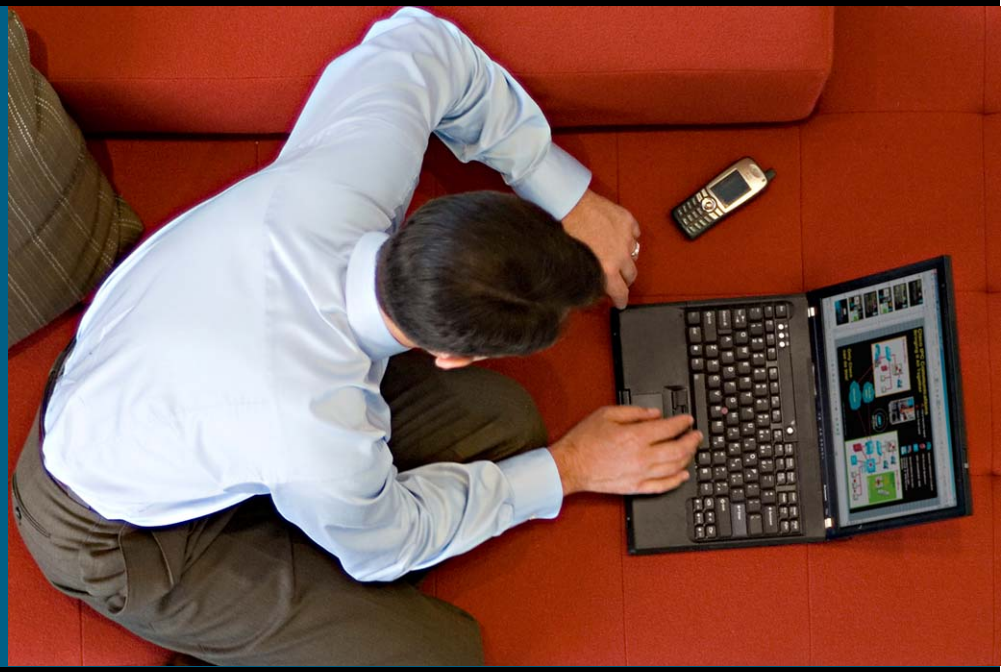


Conclusion

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

Q and A

Kom til Nexus 1000v demo stand

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