Unified Computing Product Innovation
Innovation to Improve Applications

**UCS Management**
- Reduced time to deploy new apps
- Reallocate resources quickly and efficiently

**Unified Fabric**
- Reduced infrastructure
- Cohesive resource pools

**Virtualized I/O**
- Improved scalability and flexibility
- Increased performance

**Compute With NO Compromise**
- Blade and rack servers in a single UCS managed domain
- Physical and virtual workloads
Traditional Element Configuration

- Subject matter experts consumed by manual configuration chores
- Serial processes and multiple touches inhibit provisioning speed
- Configuration drift and maintenance challenges

Compute, LAN, SAN Seamlessly Through Software

- QoS settings
- Border port assignment per vNIC
- NIC transmit/receive rate limiting
- VLAN assignments for NICs
- VLAN tagging config for NICs
- Number of vNICs
- PXE settings
- NIC firmware
- Advanced feature settings
- Remote KVM IP settings
- Call home behavior
- Remote KVM firmware
- Server UUID
- Serial over LAN settings
- Boot order
- IPMI settings
- BIOS scrub actions
- BIOS firmware
- BIOS settings

- FC fabric assignments for HBAs
- Number of vHBAs
- HBA WWN assignments
- FC boot parameters
- RAID settings
- Disk scrub actions
UCS Service Profiles
Configuration Portability

SIM Card
Identity for a Phone

Service Profile
Identity for a Server

UCS Service Profile
Unified Device Management

- Network Policy
- Storage Policy
- Server Policy
UCS: Embedded Automation
Integrated, Policy-Based Infrastructure Management

1. Subject Matter Expert
   Define Policies

2. Policies Used to Create
   Service Profile Templates

3. Service Profile Templates
   Create Service Profiles

4. Associating Service Profiles
   with Hardware Configures
   Servers Automatically

- Uplink port configuration,
  VLAN, VSAN, QoS, and
  EtherChannels

- Server port configuration
  including LAN and SAN settings

- Network interface card (NIC)
  configuration: MAC address,
  VLAN, and QoS settings

- Host bus adapter HBA configuration:
  worldwide names (WWNs), VSANs,
  and bandwidth constraints;
  and firmware revisions

- Unique user ID (UUID),
  firmware revisions,
  and RAID controller settings

- Service profile assigned to server,
  chassis slot, or pool

© 2013-2014 Cisco and/or its affiliates. All rights reserved.
UCS: Programmable Infrastructure

Extends Abstraction Beyond the Hypervisor to System Elements

Infrastructure Automation Through API and Policy

Truly Elastic

Fully Orchestrated

Workload Defined
Unified Management
Blade and Rack Servers Managed a Cohesive Resource Pool

UNIFIED MANAGEMENT
A SINGLE UNIFIED SYSTEM FOR BLADE AND RACK SERVERS

A Major Market Transformation in Unified Server Management

Benefits of UCS Manager and Service Profiles for Both Blade and Rack-Optimized Servers

Add Capacity Without Complexity
UCS Central
Global Stateless Computing
All Workloads, Common Platform Unified Management

Data Center 1
- Performance Intensive, Scale-Up Apps
  - SAP HANA
  - Oracle E-Biz
  - UCS Manager

Data Center 2
- Virtualized Servers and Apps
  - Test Dev
  - Exchange
  - vSphere
  - UCS Manager

Data Center 3
- Business Continuity
  - Disaster Recovery
  - Test Dev
  - Exchange
  - Test Dev

Data Center 4
- Cloud
  - Test Dev
  - Exchange
  - Test Dev
  - Exchange
  - Tenant 1
  - Tenant 2
  - UCS Manager

Data Center 5
- E-Commerce
  - Apps
  - Web Server
  - App Server
  - E-commerce Platform
  - UCS Manager

Data Center 6
- Scale-Out Apps
  - Big Data Cluster
  - UCS Manager

UCS Central

© 2013-2014 Cisco and/or its affiliates. All rights reserved.
UCS Is Redefining Server Management
10,000 UCS Servers: Monitor and Manage Seamlessly

UCS CLI + UCS Manager + UCS Central + UCS Director

Third Party

Customer

Blade and rack servers in the same domain—form factor agnostic

Standards-based XML API presents bidirectional single interface to entire solution

UCS offers the customers the broadest choice of Cisco or third-party management tools

© 2013-2014 Cisco and/or its affiliates. All rights reserved.
Reducing Physical Infrastructure: Servers
UCS Simplifies

Rack Mount

Blade Servers

UCS
Server Deployment Today

Over the past 20 years

- An evolution of size, not thinking
- More servers & switches than ever
- Virtualization only amplifies the problem
- Management applied, not integrated

Result

- More points of management
- More difficult to maintain policy coherence
- More difficult to secure
- More difficult to scale
Our Solution: Unified Computing System

A single system that encompasses:
- Network: Unified fabric
- Compute: Industry standard x86
- Storage: Access options
- Virtualization optimized

Unified management model
- Dynamic resource provisioning

Efficient Scale
- Same effort for 1 or 160 blades

Lower cost
- Fewer servers, switches, adapters, cables
- Lower power consumption
- Fewer points of management
Integrates with existing infrastructure
## UCS Compute Portfolio

Performance Optimized for Bare Metal, Virtualized, and Cloud Applications

### UCS B460 M4
- Mission-Critical, 4-Socket Blade for CPU-Intensive Bare Metal and Virtualized Applications
- Double-Height Blade – Four E7v2 CPUs – 96 DIMM Slots – Up to 320Gb of IO

### UCS B260 M4
- Mission-Critical, 2-Socket Blade for CPU-Intensive Bare Metal and Virtualized Applications
- Full-Width Blade – Two E7v2 CPUs – 48 DIMM Slots – Up to 160Gb of IO

### UCS B420 M4
- Dense 4-Socket Blade for CPU-Intensive Bare Metal and Virtualized Applications
- Full-Width Blade – Four E5v3 CPUs – 48 DIMM Slots – Up to 160Gb of IO

### UCS B200 M4
- Ideal for Bare Metal Enterprise, VDI, or Dense Virtualization/Consolidation Workloads
- Half-Width Blade – Two E5v3 CPUs – 24 DIMM Slots – up to 80Gb of IO

### UCS C460 M4
- Mission-Critical Server for Large, CPU-Intensive Applications
- 4 RU - Four E7v2 CPUs – 96 DIMM Slots - 10 PCIe Slots

### UCS C240 M4
- Optimal Platform for Big Data, ERP, and Database Applications
- 2 RU - Two E5v3 CPUs – 24 DIMM Slots - 6 PCIe Slots – up to 26 HDD

### UCS C220 M4
- Versatile, General Purpose Enterprise Infrastructure, and Application Server
- 1 RU – Two E5v3 CPUs – 24 DIMM Slots - 2 PCIe Slots – up to 8 HDD

### UCS C3160
- Ideal for large unstructured data repositories, media streaming and content distribution
- 4 RU - Two E5v2 CPUs – 16 DIMM Slots – up to 60 LFF HDD - up to 360TB

### UCS M-Series
- Designed for Cloud Scale Applications and Deployment
- 2 RU – 16 E3v3 Servers – 4 DIMMs / Server - up to 32 Cores / RU
# Cisco UCS Performance: 90+ Records

A History of World Record Performance on Industry-Standard Benchmarks

<table>
<thead>
<tr>
<th>Best CPU Performance</th>
<th>Best Virtualization and Cloud Performance</th>
<th>Best Database Performance</th>
<th>Best Enterprise Application Performance</th>
<th>Best Enterprise Middleware Performance</th>
<th>Best HPC Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2004 1-Node 2-Socket C250 M2</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-H 100GB Microsoft SQL Server C460 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-H 100GB Microsoft SQL Server C460 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
<tr>
<td>SPECint rate base 2006 X86 2-Socket B200 M1</td>
<td>VMmark 1.x 2-Socket B200 M1</td>
<td>TPC-C Oracle DB 11g and CEL C250 M2</td>
<td>Oracle E-Business Suite Xtra Large Model Payroll Order-to-Cash B200 M2</td>
<td>SPECjbb2005 X86 2-Socket B200 M1</td>
<td>SPECCompBase 2001 2-Socket B200 M2</td>
</tr>
</tbody>
</table>

Cisco UCS benchmarks that held world record performance records as of date of publication.

© 2013-2014 Cisco and/or its affiliates. All rights reserved.

Cisco Confidential
Simpler Architecture
Dynamic Scaling

Industry
- Large hardware blocks to add compute capacity
- Multiple networking components
- Multiple touch points
- Multiple management points for servers and networking

Cisco UCS
- Compute added in smaller increments
- Networking with fewer components
- Management via a single interface

© 2013-2014 Cisco and/or its affiliates. All rights reserved.
### Simple Architecture

**Fewer Management Touch Points**

#### 32 Blades

<table>
<thead>
<tr>
<th>Component</th>
<th>Touch Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Interconnects</td>
<td>0</td>
</tr>
<tr>
<td>Intra Chassis Switches</td>
<td>4</td>
</tr>
<tr>
<td>Chassis Management Module</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Management Points</strong></td>
<td><strong>8</strong></td>
</tr>
</tbody>
</table>

#### 32 Blades

<table>
<thead>
<tr>
<th>Component</th>
<th>Touch Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Interconnects</td>
<td>2</td>
</tr>
<tr>
<td>Intra Chassis Switches</td>
<td>0</td>
</tr>
<tr>
<td>Chassis Management Module</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Management Points</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>
Simpler Architecture
HP Doubling Servers = Doubling Touches; UCS = One Touch Point

64 Blades

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Interconnects</td>
<td>0</td>
</tr>
<tr>
<td>Intra Chassis Switches</td>
<td>8</td>
</tr>
<tr>
<td>Chassis Management Module</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total Management Points</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

80 Blades

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Interconnects</td>
<td>2</td>
</tr>
<tr>
<td>Intra Chassis Switches</td>
<td>0</td>
</tr>
<tr>
<td>Chassis Management Module</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Management Points</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>
Where did all the cables go?
Cisco Developer Network

WEB-BASED DEVELOPER COMMUNITY
http://developer.cisco.com/web/unifiedcomputing/home

Downloads
- UCS Platform Emulator (UCSPE)
- goUCS automation tool
- XML API, Perl, PowerShell samples (44 and counting)
- Microsoft: PowerShell library, SCOM MP
- Plug-ins: VMware, Microsoft, Oracle

Documentation
- Programming and developer guides
- White papers
- Reference guides

Collaboration
- Blogs
- Peer to peer forums
- Videos
- Access to Cisco experts
UCS Platform Emulator

- Full-featured emulator for the UCS Manager
- Installs as a virtual machine
- Provides complete support for all XML API calls
- Import and replicate existing live UCS Manager physical inventory
- Drag-and-drop hardware builder to create custom physical inventory
- Use cases: Developers, dry-run changes, training, demonstrations
Thank you.