Tomorrow’s Cloud Starts Today

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Enterprise Director
By 2015…

More Users

>1 Billion
More Netizen’s

More Devices

>15 Billion
Connected Devices

More Data

>1 Zetabyte
Internet Traffic

Is the Infrastructure Ready?

In The Last 5 Years Alone:

- 20x Performance/Watt
- Half The Platform Idle Power
- 15:1 Consolidation

We Have Made Tremendous Progress…
Addressing Security

Identity Protection & Fraud Deterrence
Detection & Prevention of Malware
Securing Data and Assets
Recovery and Enhanced Patching

TXT, AES-NI, ITP SECURITY & TRUST TECHNOLOGY BUILT-IN

Are providing, the Industry changing protection model for all layers of the stack.
The Compute Model Evolution

Mainframes → Client/Server → Web → Cloud Architecture

Pervasive → Ubiquitous → Many → Researchers
Cloud Computing Can Once Again Transform the Economics of Computing & Services

- Save $25B of IT Spend in 2015
- Accelerate $100B of Industry Services through 2015
- Save 45 Giga Watts in 2015
Introducing: Cloud 2015 Vision

**FEDERATED**
Share data securely across public and private clouds

**AUTOMATED**
IT can focus more on innovation and less on management

**CLIENT AWARE**
Optimizing services based on device capability

Desktops  Laptops  Netbooks  Personal Devices  Smartphones  Smart TVs  Embedded
Open & Interoperable Solutions Essential

* Other names and brands may be claimed as the property of others.
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Intel Xeon® Processor
Product Line Positioning

Intel® Xeon® Processors 3000 Sequence
- Small Business
  - Economical, dependable 1-socket servers
- Entry-level Workstations
  - Delivering more features and performance than traditional desktop systems

Intel® Xeon® processors 5000 Sequence
- Mainstream Enterprise
  - Maximize performance density & performance per watt
  - Cloud Computing
    - Efficient, secure, and open platforms for Internet datacenters and IAAS
- High Performance Computing & Workstations
  - Bandwidth optimized for high performance analytics and visualization

Intel® Xeon® Processors 7000 Sequence
- Scalable Enterprise
  - Scalable performance and flexible virtualization for demanding workloads
- Mission Critical
  - Scalability and advanced reliability for large workloads requiring highest levels of availability
  - Cloud Computing
    - More virtualization performance density with advanced reliability for enhanced workload isolation
- High Performance Computing
  - Greater scaling and memory capacity for large SMP technical computing

Increasing capability
## B-Series Family Comparison

**UCS B200 M2**  
General Purpose Blade Server

**UCS B250 M2**  
Extended Memory Blade Server

**UCS B440 M1**  
High-Performance Blade Server

**UCS B230 M1**  
Compact - Performance Blade Server

### High-density server with balanced compute performance and I/O flexibility

Memory-intensive server for virtualized and large-data-set workloads

Compute & memory-intensive server for enterprise-critical workloads

Compute & memory-intensive server for enterprise-critical workloads

<table>
<thead>
<tr>
<th>Item</th>
<th>Size</th>
<th>CPUsockets</th>
<th>CPU</th>
<th>Memory</th>
<th>Disks</th>
<th>I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCS B200 M2</td>
<td>Half</td>
<td>2</td>
<td>Intel Xeon 5600</td>
<td>12 DIMM 96 GB</td>
<td>2 SFF SAS</td>
<td>1 Mezz</td>
</tr>
<tr>
<td>UCS B250 M2</td>
<td>Full</td>
<td>2</td>
<td>Intel Xeon 5600</td>
<td>48 DIMM 384 GB</td>
<td>2 SFF SAS</td>
<td>2 Mezz</td>
</tr>
<tr>
<td>UCS B440 M1</td>
<td>Full</td>
<td>4</td>
<td>Intel Xeon 7500</td>
<td>32 DIMM 256GB</td>
<td>4 SFF SAS/SATA</td>
<td>2 Mezz</td>
</tr>
<tr>
<td>UCS B230 M1</td>
<td>Half</td>
<td>2</td>
<td>Intel Xeon 6500/7500</td>
<td>32 DIMM 256GB</td>
<td>2 7MM SSD</td>
<td>1 Mezz</td>
</tr>
</tbody>
</table>
# C-Series Product Details

<table>
<thead>
<tr>
<th>Item</th>
<th>Size</th>
<th>CPU Sockets</th>
<th>CPU</th>
<th>Memory</th>
<th>Disks</th>
<th>I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCS C460 M1</td>
<td>4RU</td>
<td>2</td>
<td>Intel Xeon 5600</td>
<td>64 DIMM 512GB</td>
<td>12 SFF SAS/SATA</td>
<td>10 PCIe</td>
</tr>
<tr>
<td>UCS C250 M2</td>
<td>2RU</td>
<td>2</td>
<td>Intel Xeon 5600</td>
<td>48 DIMM 384 GB</td>
<td>8 SFF SAS/SATA</td>
<td>5 PCIe</td>
</tr>
<tr>
<td>UCS C210 M2</td>
<td>2RU</td>
<td>4</td>
<td>Intel Xeon 7500</td>
<td>12 DIMM 96 GB</td>
<td>16 SFF SAS/SATA</td>
<td>5 PCIe</td>
</tr>
<tr>
<td>UCS C200 M2</td>
<td>1RU</td>
<td>2</td>
<td>Intel Xeon 6500/7500</td>
<td>12 DIMM 96GB</td>
<td>4 x 3.5&quot; SAS/SATA</td>
<td>2 PCIe</td>
</tr>
</tbody>
</table>

- **UCS C200 M2** High-Density Rack-Mount Server: High-density server with balanced compute performance and I/O flexibility.
- **UCS C210 M2** General-Purpose Rack-Mount Server: General-purpose server for workloads requiring economical, high-capacity, internal storage.
- **UCS C250 M2 Extended Memory Rack-Mount Server**: High-performance, memory-intensive server for virtualized and large-data-set workloads.
- **UCS C460 M1** High-Performance Rack-Mount Server: Compute & memory-intensive server for enterprise critical workloads.
Many more products

Switching
- Nexus 7K
- Nexus 5K
- UCS 6100
- UCS B-Series Blade Servers
- UCS 5100
- Catalyst 6K
- Catalyst 4K
- Catalyst 3K
- Catalyst 2K

Routing
- CRS-3
- ASR 9000
- MCP RP2
- ASR 1000
- Informers ISR3925/3945

Media Products
- CTS1000
- MXE3000
- DMP 440G
- Video Surveillance Encoding Server
- Cius
- DMA2100
Summary

Cloud 2015 Vision: Federated, Automated, Client Aware

Open Data Center Alliance:
Prioritizing IT Requirements for Open, Interoperable Cloud Solutions

Cisco and Intel Providing solutions for Tomorrow
Leading the innovation in the data center and beyond
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- Server power efficiency chart based on measured performance and power results on the SPECjbb2005* benchmark results (Intel Corporation March 2010). Platform power was measured during the steady state window of the benchmark run.
  - 2004 and 2005 platforms: Intel based server with two 64-bit Intel® Xeon Processor 3.60Ghz with 1M L2 Cache, 800 FSB, 8x1GB DDR2-400 memory, 1 hard drive, 1 power supply, Microsoft® Windows® Server 2003 Ent. SP1, BEA® JRockit® build P27.4.0-windows-x86_64 run with 2 JVM instances. Same configuration used for measurement with two 64-bit Intel® Xeon® Processor 3.80Ghz with 2M L2 Cache for 2005 platform.
  - 2006-2008 platforms: Intel based server with two dual-core Intel® Xeon® 5160 3.0GHz, 1333 FSB, 8x2GB DDR2-667 FBDIMM memory, 1 hard drive, 1 power supply, Microsoft® Windows® Server 2003 Ent. SP1, BEA® JRockit® build P27.4.0-windows-x86_64 run with 2 JVM instances. Same configuration used for measurement with two quad-core Intel® Xeon® E5345 2.33GHz for 2007 platform. Same configuration used for measurement with two quad-core Intel® Xeon® E5450 3.00GHz for 2008 platform. E5345 and E5450 results run with 4 JVM instances.
  - 2009 platform: Intel based server with two quad-core Intel® Xeon® processor X5570, 2.93 GHz, 8MB L3 cache, 6.4QPI, 24GB memory (6x2GB DDR3-1333), 1 hard drive, 1 power supply. Microsoft Windows Server 2008 Ent. SP1, BEA JRockit build P27.4.0-windows-x86_64 run with 2 JVM instances.
  - 2010 platform: Intel based server with two Intel® Xeon® Processor X5670 (12M Cache, 2.93 GHz, 6.40 GT/s Intel® QPI), 24 GB memory (6x4GB DDR3-1333), 1 SATA 10k rpm 150GB hard drive, 1 800w power supply. Microsoft Windows Server 2008 64 bit SP2, Oracle® JRockit® build P28.0.0-29 run with 4 JVM instances.

- Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit Intel Performance Benchmark Limitations.
Source Information for “But Not Enough” slide

Sources:

1. IDC  Market Analysis, January 2010

2. Power savings calculated based on projected performance improvements from Intel roadmap while keeping power / system flat. Moore’s Law drives ~2x perf / 18 months. At 5 years, that equals 10X. We assume that compared to 2010, we’re saving 9X (i.e. the 10x less the 1X for what you’ll need). It assumes we keep power per system constant at 200W. We assume we’ll need 16M servers in 2015 (based on market model) – that means we save 16M x 9X x 200W (average system power) x 1.6 PUE = ~45GW. The estimated power/coal plant is 1Gw 45GW = ~ 45 coal plants needed which equates to approximately 30 million homes according to the EPA website:  http://www.epa.gov/RDEE/energy-resources/refs.html#coalplant

3. The 451 group August 2010

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• 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.
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