Cisco Unified Computing System (UCS)

Changing the Economics of the Data Center

CONNECTING UCS TECHNOLOGY INNOVATIONS TO TCO IMPROVEMENT

Jorge Portugal
Consulting Systems Engineer
Innovation Day, Porto, 28 Maio 2015
Agenda

Evolução do Mercado em Soluções de Computação

O Que é o UCS?

Novidades:

- UCS Mini – compacto e poderoso
- UCS M-Series
- UCS Capacity Optimized Server
Cisco UCS #1 in North America X86 Blade Server Market in CY2104
Q3CY09 vs. CY14 Vendor Shares

Source:¹ IDC Worldwide Quarterly Server Tracker, 2014Q4, March 2015, Vendor Revenue Share
X86 Server Blade Market Share CY 2014

**US**
- **Cisco**: #1 with 39.0%
- **HP**: #2 with 26.3%
- **Dell**:
- **IBM**:
- **Lenovo**:
- **SGI**:

#1 in US for 2014 (39.0%), growing 28% YoY

#2 Worldwide for 2014 (26.3%) growing 29% YoY

**Worldwide**
- **HP**:
- **Cisco**: #2 with 26.3%
- **IBM**:
- **Dell**:
- **Lenovo**:
- **Hitachi**:
- **SGI**:

UCS momentum
- 41,000+ Unique Customers
- 19,500+ Repeat Customers

Source: 1 IDC Worldwide Quarterly Server Tracker, 2014 Q4, March 2015, Vendor Revenue Share
UCS Market Share Growth
X86 Server Blade Market Share Trend

# 2 Worldwide for 2014 (26.3\%)\(^1\)
Growing 29% YoY\(^1\)

UCS momentum
41,000+ Unique Customers
19,500+ Repeat Customers

Source: 1 IDC Worldwide Quarterly Server Tracker, 2014 Q4, March 2015, Vendor Revenue Share
Cisco is a Leader in the 2013 Gartner Magic Quadrant for Blade Servers

Read the Full Report here:
Gartner 2013 Magic Quadrant for Blade Servers
By Andrew Butler and George J. Weiss, G00250031, April 29, 2013, © 2013 Gartner Inc

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By Andrew Butler, George J. Weiss, Philip Dawson  
16 June 2014 ID:G00252466 © 2015 Gartner Inc

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What is VersaStack?

Combining best-of-breed technologies

**Cisco** UCS Integrated Infrastructure
- Cisco UCS Manager (UCSM)
- Cisco UCS Compute
- Cisco Nexus & MDS switches

**IBM** Storwize V7000 Unified storage
O que leva o mercado a mudar e escolher as soluções UCS da Cisco?
UCS = Simplicidade + Escalabilidade

“Simplicity is the ultimate sophistication”
- Leonardo da Vinci, génio do sec. XV - XVI

“Escalabilidade é uma característica desejetável (...) estar preparado para crescer”
- Wikipédia

“Escalabilidade no UCS representa poder aumentar a capacidade de computação sem aumentar a complexidade na gestão”
- Jorge Portugal, génio (não reconhecido) do sec. XX - XXI
Data Center Economics

Overall Spend Distribution

- People: 29%
- Software: 7%
- Energy / Facilities: 22%
- Servers: 12%
- Networking: 7%
- Storage: 7%
- Disaster Recovery: 2%

Source: Gartner, Cisco IT, "Data Center Cost Portfolio"

Server-Related Spend

Cisco UCS = +Escalabilidade -Complexidade

Sistemas de Blades Tradicionais:

- Building block é o chassis (enclosure)
- Módulos de gestão (redundantes - $$)
- Switches Ethernet ($$)
- Switches Fibre Channel ($$)

Nada se aproveita quando se introduz mais enclosures ($$$$

- Software de gestão “overlay”
- Licenças para “features”

- Gestão embebida
- Remover desnecessário:
  - Switches
  - Adapters
  - Management Modules

- Rede Unificada
- Power & Cooling
  - Menos infraestrutura
  - 63% open design
  - Componentes de baixo consumo

- Optimizado para Virtualização
  - VM/host ratio
  - 20+% I/O improvement
Blade Infrastructure Costs: Chassis/Switching

BLADE CHASSIS SAVINGS AT SCALE—BLADE SLOT SOLUTION

Cisco pricing MSRP on December 17, 2014; HP pricing publically available on December 17, 2014; IBM pricing publically available December 17, 2014.

All pricing is for blade chassis and networking only. Servers are not included.

Cisco UCS 5108:
UCS 5108 chassis with UCS 6248 FI
(Two Uplinks per FEX)

Cisco pricing MSRP on December 17, 2014; HP pricing publically available on December 17, 2014; IBM pricing publically available December 17, 2014. All pricing is for blade chassis and networking only. Servers are not included.
Arquitetura Cisco UCS

Escalabilidade: 20 chassis suportados (160 blades)
Innovation: UCS Mini
UCS Mini

New architectural entry point for Unified Computing at 1~15 server scale

Full Power UCS in an all-in-one package:
- Compute
- Networking
- UCS Manager
- Standard UCS Blades / Fans / Power Supplies

Enterprise Capability at Edge Scale
Connect up to 7 C-Series Rack Servers for Expanded Capacity

UP TO 29% CapEx Savings
UP TO 36% TCO
UP TO 34% Lower Power
UP TO 80% Fewer Cables
ECONÓMICO
Rackmount Servers

- 8x1U Rack Servers
- 16x Redundant Fan kits
- 8 x Dual NIC Placas
- 16 Cabos de LAN
- 2x SAN Switches
- 16x Redundant Power Supply
- 16x Ethernet Switches Com Mais Portas
- 16x HDD

**Cabos**

<table>
<thead>
<tr>
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<th>#</th>
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<tr>
<td>Power</td>
<td>16</td>
</tr>
<tr>
<td>Ethernet</td>
<td>8 gestão OOB + 16x 10G = 24</td>
</tr>
<tr>
<td>Fibre Channel</td>
<td>16</td>
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<tr>
<td>TOTAL</td>
<td>56 ✖</td>
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UCS Mini tem tudo incluído e pronto a usar

- Em apenas 6U:
  - 2x FI6324 com:
    - IP/iSCSI/FC/FCoE
    - Comunicações Unificadas
  - 8x B200M4 com:
    - 2x 18C
    - 768GB
  - Total de:
    - 288 Cores
    - 6.1TB RAM

<table>
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<tr>
<th>Cabos</th>
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<tr>
<td>Power</td>
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<tr>
<td>Ethernet</td>
<td>2 gestão OOB + 2x 10G = 4</td>
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<tr>
<td>Fibre Channel</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL =</td>
<td>10 😊</td>
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Legenda:
- Ethernet 1/10Gbs
- Fibre Channel 8Gbs e/ou FCoE 10Gbs
UCS Mini
Escalabilidade

- Em apenas 12U:
- **2x FI6324 com:**
  - IP/iSCSI/FC/FCoE
  - Comunicações Unificadas
- **16x B200M4 com:**
  - 2x 18C
  - 768GB
- Total de:
  - 576 Cores
  - 12.2TB RAM

2x Rackmount Servers

Legenda:
- Ethernet 1/10Gbs
- Fibre Channel 8Gbs e/ou FCoE 10Gbs
- QSFP to 4 Copper Direct Attach Breakout Cable
- Storage FC/FCoE/iSCSI
Innovation
UCS M-Series Modular Servers

- **Compact Chassis**
- **Lightweight Compute Cartridge**
- **Shared Local Resources**

**UCS M-Series True Server Disaggregation**

- Based on Cisco System Link Technology
  3rd Gen VIC extends UCS fabric to within the server

- **Shared Local Resources**
  Four shared SSDs in the chassis
  Shared dual 40Gb connectivity

- **Compute Density**
  16 Intel Xeon E3 Compute nodes in 2RU chassis
  Each cartridge holds two independent

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Capacity Optimized Server
UCS C3000 Series Rack Server Family

C3160 Rack Storage Server

- High-density local disk combined with modular high-performance compute
- Dual processor server with up to

Bare Metal and Virtualization

- Large scale content storage and data repositories
- Distributed file-systems
- Big Data and Hadoop applications
- Media streaming and transcoding

**Single / Dual Server**
- Dual CPU socket per server
- Up to 1TB Memory
- 512GB per server

**Dual Modular LOM (mLOM)**
- Multiple Connectivity Options

**4GB RAID Cache**
- Enterprise storage features

**Up to 64 Drive Bays**
- 60 LFF, plus 4 SFF

**Security Bezel**
- Optional
Gestão do UCS: Também é Simples e Escalável?
<table>
<thead>
<tr>
<th>What</th>
<th>O Que fazer</th>
<th>Inspiração</th>
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<tbody>
<tr>
<td>How</td>
<td>Como Fazer</td>
<td>Transpiração</td>
</tr>
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</table>
POLÍTICAS: Como quero os meus servidores configurados?

- Política de firmware (RAID, NIC, HBA, etc.)
- Política de BIOS
- Quantos interfaces de rede, em que VLAN’s, qual o QoS, optimização, etc;
- Quantos HBA, optimização, etc.
- Política de RAID;
- Política de Boot;
- … mais de 100 parâmetros

Zé … vai ao Data Center e configura estes 50 servidores de acordo com estas políticas. Quando acabares podes tirar o resto do dia.
# Unified, Embedded Management

1. **Subject Matter Experts Define Policies**
   - Storage SME
   - Server SME
   - Network SME

2. **Policies Used to Create Service Profile Templates**
   - Server name
   - UUID, MAC, WWN
   - Boot information
   - LAN, SAN config
   - Firmware policy

3. **Service Profile Templates Create Service Profiles**
   - Server name
   - UUID, MAC, WWN
   - Boot information
   - LAN, SAN config
   - Firmware policy

4. **Associates Service Profiles with Hardware Configures Servers Automatically**
   - Server name
   - UUID, MAC, WWN
   - Boot information
   - LAN, SAN config
   - Firmware policy

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**Provisioning**

- Ongoing Administration
- Servers
- Infrastructure and Cabling
- Power and Cooling
- System Management
- Real World TCO Examples
System Management

True “Single Pane of Glass” Management

UCS Manager for a Single Domain (160 Servers and Access Layer Networking)
System Management

True “Single Pane of Glass” Management
UCS Manager for a Single Domain (160 Servers and Access Layer Networking)
UCS Central Across Multiple Domains
Extend Reach of SMEs Globally

UCS Manager

Server
Chassis
Domain

UCS Central

Single Data Center
Global Data Centers

Provisioning
Ongoing Administration
Servers
Infrastructure and Cabling
Power and Cooling
System Management
Real World TCO Examples
Follow-up

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TOMORROW starts here.