Cisco Enterprise
HyperConverged Infrastructure Solutions

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Key Customer Challenges

**Moving at the Speed of Business**
Consumption of infrastructure adds time, cost and inefficiency

**Operationalizing Speed and Simplicity**
Proliferation of point solutions creating silos that complicates operations

**CFOs Expect a Cloud Economics On-Premise**
Expectation of pay-as-you-go economics with scaling on-demand

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What Is Hyperconvergence?

Traditional Approach - Converged

HCI is an Appliance that incorporates Server – Storage – Network And layers on SDS Software

HyperConverged

NO LEGACY STORAGE CONTRACTS

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HCI Evolution
Hyperconvergence

First Gen HCI

Simplicity  Fast Time to Market
Hyperconvergence

- Gaps:
  - New management silos
  - Inefficient scaling and data optimization
  - Network not included in the system

- First Gen HCI:
  - Simplicity
  - Fast Time to Market
IT is Looking for a Better Answer

Next Gen HCI

Gaps
- New management silos
- Inefficient scaling and data optimization
- Limited app performance and workload support

First Gen HCI
- Simplicity
- Fast Time to Market

Agile
- Simplicity
  + Integration with Existing Data Center

Efficient
- Easy Scaling
  + Resource Efficiency

Adaptable
- Existing Apps
  + Next Gen

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Introducing Cisco HyperFlex Systems
Cisco UCS Solutions: One Compute System for All Workloads

Current offering

Fourth Generation UCS

New Offering

Cisco HyperFlex System
C-Series with FI’s, UCSM & Cisco (Branded) SW

Current offering

UCS MINI
UCS B-SERIES
INTEGRATED INFRASTRUCTURE
HYPERCONVERGED
SCALE OUT

ONE SYSTEM, ONE OPERATING MODEL - BUT ONE SIZE DOES NOT FIT ALL

Edge
Core Data Center
Cloud

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Cisco UCS Solutions: One Compute System for All Workloads

Current offering

One System, One Operating Model

But One Size Does Not Fit All

Core Data Center

Edge

Cloud

Cisco UCS B-Series

Integrated Infrastructure

Hyperconverged

Scale Out

UCS B-Series

Current offering

Fourth Generation UCS

New Offering

Cisco HyperFlex System

C-Series with FI’s, UCSM & Cisco (Branded) SW

UCS C-Series with FI’s, UCSM & Cisco (Branded) SW

UCS C3000 Series

Current offering

UCS MINI
## HX Data Platform Overview

### Enterprise Grade
- Robust Data Integrity
- Continuous Availability
- Proactive Auto-support
- VM-level Snapshots for Instant Backups

### Maximum Simplicity
- Fast Installation and Configuration
- 100% vCenter-based Management
- Rapid Cloning for VM Provisioning

### Economical Scaling
- Inline De-duplication and Inline Compression
- Scale Out Just-in Time
- Scale Compute and Storage Independently
- Annual Subscription Pricing

Hyperconverged Data Platform That Allows Companies to Leverage Compute Servers for Storing and Managing Their Data without Compromising on Features or Performance
HyperConverged Scale Out and Distributed File System

Start With as Few as Three Nodes
Hyperconverged Data Platform Installs in Minutes
Add Servers, One or More at a Time
Linearly Scale Compute, Storage Performance, and Capacity
Distribute and Rebalance Data Across Servers Automatically
Retire Older Servers
Independent Scaling of Compute and Capacity

HyperFlex

HX Data Platform

Add Nodes

Scale Cache or Capacity Within Nodes

Scale Compute

Non-HyperFlex Hosts Can Connect to Storage with IOVisor

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High Resiliency, Fast Recovery

Platform Can Sustain Node Failures Without Data Loss; Replication Factor Is Tunable

If a Node Fails, the Evacuated VMs Re-attach With No Data Movement Required

Replacement Node Automatically Configured Via UCS Service Profile
HX Data Platform Automatically Re-Distributes Data to Node
Dynamic Data Distribution

Systems built on conventional file systems write locally, then replicate, creating performance hotspots.

- HX Data Platform stripes data across all nodes simultaneously, leveraging cache across all SSDs for fast writes.
- Balanced space utilization: no data migration required following a VM migration.
...and Efficient Capacity and Network Utilization

Balanced Space Utilization

No Data Migration on VM Migration
Less Stress on Network
DC Infrastructure Strategy
SDx and Policy Driven Infrastructure

Software Defined Infrastructure

Common Policy Extension

Common Platform

Multi-Cloud

Public

Hybrid

Private

ACI

CloudCenter

UCS

Director

HyperFlex

Policy-Model

Security

Automation
Cisco HyperFlex with Cisco ACI

Diverse Workload Deployments at Enterprise Scale

Automated, Application Centric Policy Model

Flexible Application Service Policies

Simplified Capacity Expansion
Configurations/Bundles
Hyperconvergence Meets Unified Computing

HyperFlex HX-Series

Bundles and Configure to Order

HX220c Nodes
- Smallest footprint
- 3 to 8 Node Cluster (VDI, ROBO)

HX240c Nodes
- Capacity-heavy
- 3 to 8 Node Cluster
  (VSI: IT/Biz Apps, Test/Dev)

HX240c + B200 for HF

Hybrid Nodes
- Up to 4 CPU Nodes for Compute-heavy hybrid
  (Compute bound apps/VDI)

Annual Subscription Software Model

Integrated with vSphere

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Primary HyperFlex Use Cases

### Virtual Desktop Infrastructure
- Low upfront costs
- Consistent performance
- Predictable scaling

### Server Virtualization
- Reduce operational complexity
- Adaptive scaling
- Always-on resiliency

### Test and Development
- Agile provisioning
- Frequent iterations
- Instant cloning and snapshots

### Large Remote Branch Office
- Simple deployment
- Centralized management
- No “fly-and-fix” missions
Early Customer Success

Health Care
- Desktop virtualization, test, and development

High Tech / Industrial Mfg.
- Virtual machine farms, desktop virtualization

Retail
- Remote services, desktop virtualization

Online Services / Social Media
- Infrastructure management, co-location/remote services, video surveillance, virtual machine farms

Travel and Hotel Services
- Desktop virtualization
Architecture and Management
Cisco Hyperflex Architecture

Software and operations
- vCentre, DNS, AD
- vCenter Hyperflex Plugin
- vCenter UCS Manager Plugin
- ESXi, HX Data platform

Hardware and hardware management
- Industry Standard APIs
- UCS Manager
- Fabric Interconnects
- Compute + SSD + Disks
Efficient Data Management

Pointer-Based Snapshots
- Space Efficient
- Fast creations and deletions
- VM-Level or VM Folder Level
- VAAI integrated
- vCenter Snapshot Manager
- Schedules, Retention period

Ready Clones
- Batch creation GUI
- Apply unique names
- Use customization spec to apply IP
Continuous Data Reduction

Log-Structured File System Yields More Efficient Data Optimization

Inline Deduplication
20–30% space savings

Inline Compression
30–50% space savings

No Special Hardware
No Performance Impact
Integrated Management and Data Services

**vCenter Plugin**
- Instant provisioning, cloning and snapshotting of virtual machines from within vCenter
- No separate console, no learning curve

**UCS Manager**
- Server *and* network deployment settings in pre-configured Service Profiles
- Automated firmware updates
Management Built for Server Admin
100% vCenter-Based Management

- Extends virtualization management seamlessly
- No switching between management consoles
- View storage alerts/alarms alongside with ESX alerts/alarms
- Command line interface for automation
Fast and Easy Installation

**STEP 0**
VMware and HX Data Performance Software Installed on Servers at Factory/Reseller Before Shipping to Customer

**STEP 1**
Rack Up Servers, Power on, and Add to vCenter
Drag and Drop Configuration (JSON) File
Create, Cluster, and Datastore

Start Provisioning VMs

60 MINUTES OR LESS

“The HX installer is clean. It is straightforward, easy to understand, and makes the install a nearly click…click…done scenario.” – Financial Customer
Summary
### Cisco vs. First Generation HCI Solutions

<table>
<thead>
<tr>
<th></th>
<th>Complete Solution</th>
<th>Scaling</th>
<th>Data Availability</th>
<th>Management Simplicity</th>
<th>Architectural Underpinning</th>
<th>Total Cost of Ownership</th>
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<tbody>
<tr>
<td><strong>HCI 2.0 Cisco</strong></td>
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<td>Storage</td>
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<td>Networking – Integrated &amp; Auto setup.</td>
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<td>Security built in</td>
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<td>Independent Scaling – Upgrade just CPU, Storage, Cache as required</td>
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<td>Wide Striping – No performance bottlenecks as all resources available to all nodes and data in the cluster</td>
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<td>100% vCenter</td>
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<td>Purpose Built H/W and S/W – Single subscription for all features</td>
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<td>Pricing Advantage</td>
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<td>Use of existing resources</td>
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<td>TAC – One contract.</td>
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<td>One call</td>
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<td>Financially Secure</td>
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| **HCI 1.0 vendor**                                             | X                 | X                | X                 | X                     | X                         | X                      |
| Compute                                                         |                   |                  |                   |                       |                           |                        |
| Storage                                                         |                   |                  |                   |                       |                           |                        |
| Networking…? - Requires Multicast!                             |                   |                  |                   |                       |                           |                        |
| Security…?                                                     |                   |                  |                   |                       |                           |                        |
| Only Linear Scaling – Need the entire Appliance… including SW licenses |                   |                  |                   |                       |                           |                        |
| Local Data – Hot Spots causing performance bottlenecks in a Node |                   |                  |                   |                       |                           |                        |
| Multiple Management Frameworks and new tools to learn and support |                   |                  |                   |                       |                           |                        |
| White box H/W                                                  |                   |                  |                   |                       |                           |                        |
| Open Source S/W                                                |                   |                  |                   |                       |                           |                        |
| Custom add on cost option features                             |                   |                  |                   |                       |                           |                        |
| Point Solution                                                 |                   |                  |                   |                       |                           |                        |
| Replace Existing Servers                                       |                   |                  |                   |                       |                           |                        |
| Support…?                                                      |                   |                  |                   |                       |                           |                        |
| Venture capital running out…!                                  |                   |                  |                   |                       |                           |                        |

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Cisco HyperFlex Systems

Learn more about the Cisco HyperFlex Solutions at:

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Thank You.

TOMORROW starts here.