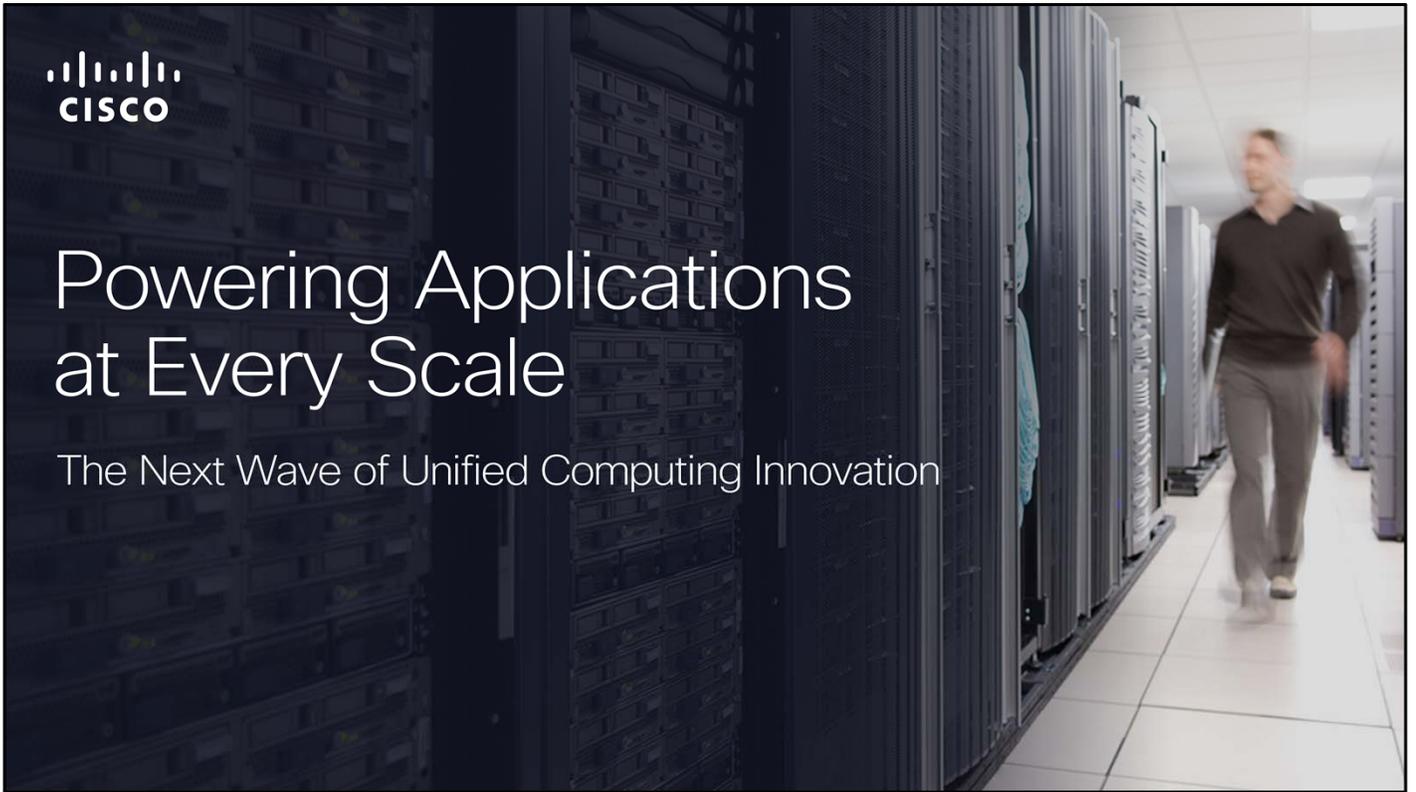




Powering Applications at Every Scale

The Next Wave of Unified Computing Innovation



Cisco Unified Computing System

Fastest Growing Product in the Market

<p>#1</p> <p>Americas revenue market share in x86 blades¹</p>	<p>36,500+</p> <p>Unique UCS Customers²</p>	<p>30%</p> <p>YoY Growth²</p>
<p>3,600+</p> <p>UCS Channel Partners</p>	<p>+75%</p> <p>of all Fortune 500 customers have invested in UCS</p>	<p>\$3B+</p> <p>Annualized Revenue Run Rate²</p>



Source: ¹ IDC Worldwide Quarterly Server Tracker, 2014Q1, May 2014, Vendor Revenue Share
 Source: ² As of Cisco Q4FY14 earnings results. Data Center Revenue is defined as Cisco UCS and Nexus 1000V

Unified Computing: Inspired by Customer Needs

Industry in Transition: 2005-2010

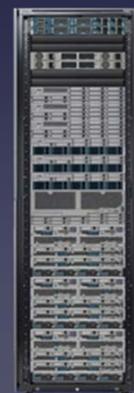
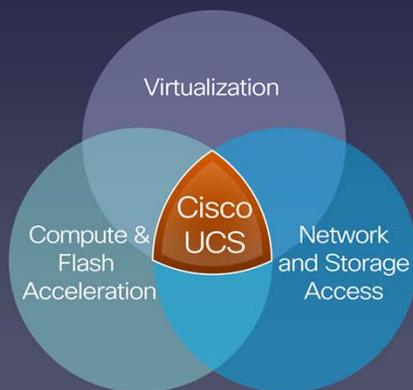
Help Me:

- Reduce complexity that drives OPEX
- Get the most out of virtualization
- Automate and move faster
- Get ready for cloud

Operational
Simplicity

Application
Centricity

Platform for
IT Innovation



Internet of Everything is Here

Networked Connection of People, Process, Data, Things



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Cisco calls this IoE - the networked connection of people, process, data and things

IoE is the business opportunity happening now

Along with industry experts, Cisco takes this inflection point seriously

Powering Applications at Every Scale



In a moment we will be joined by Satinder Sethi, who will take you through the elements of our new UCS portfolio that address these three key areas.

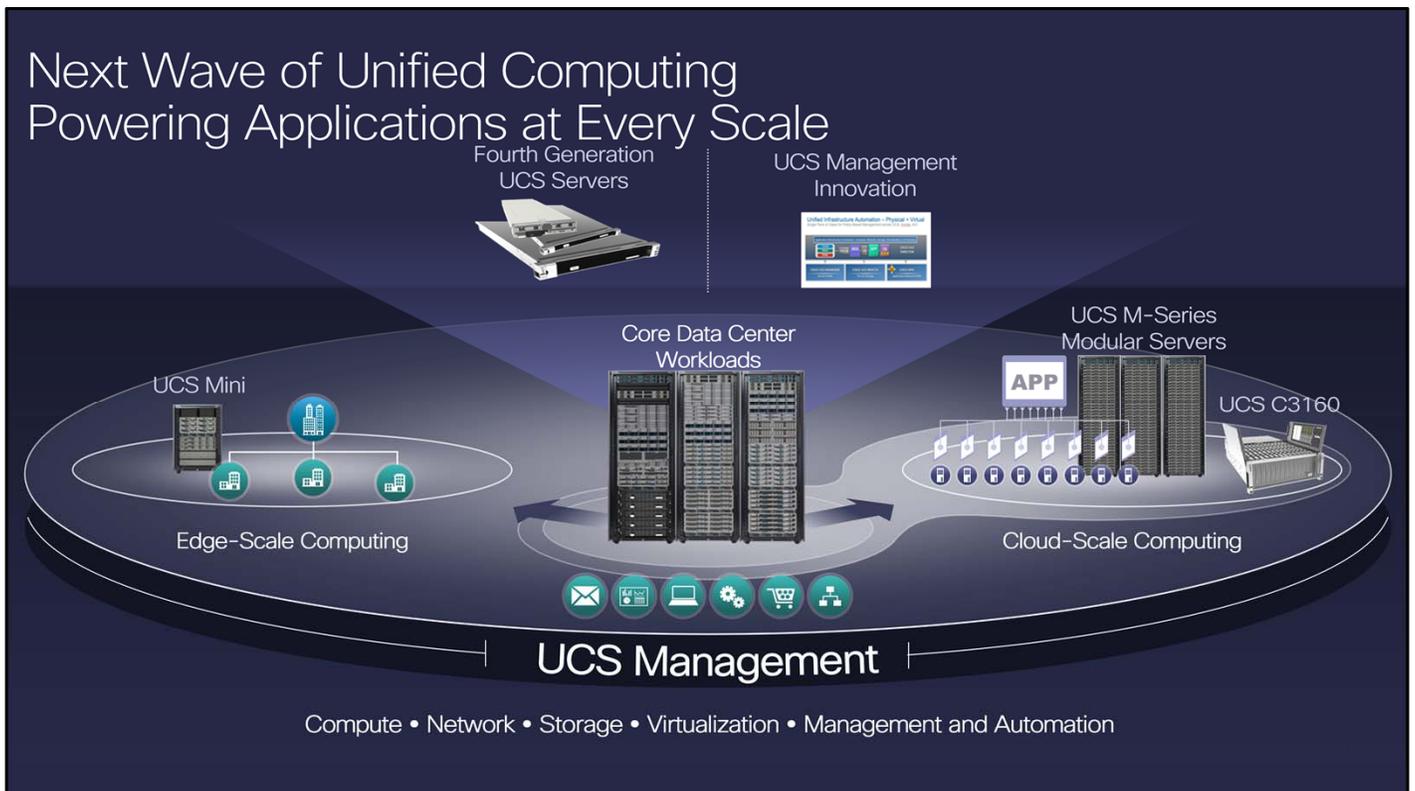
This next wave of UCS represents Cisco's ongoing strategy of application centric, composable infrastructure. The objective of this technology is to allow customers to bring computing resources to applications at any location, at the right time, in the right ratios and at the right scale.

<<Paul, any other comments you want to make on our architectural results and how customers have informed our strategy>>

I'd like to thank the customers and partners who have given us the inspiration and direction to develop this next wave of Unified Computing Innovation and I'd like to congratulate the team at Cisco for delivering on this

promise.

Thank you for joining me here today to celebrate this accomplishment. Now, please give a warm welcome to Satinder Sethi who will show us the details of next generation of UCS.



<<CLICK 1>> CORE DATA CENTER WORKLOADS

First, building on the existing UCS portfolio that powers core data center workloads, we are announcing the fourth generation of our workhorse two socket blade and rack servers as well as broad set of new functionality for UCS Management.

<<CLICK 2>> EDGE SCALE

Second, we are expanding the scope of UCS to the realm of Edge-scale computing, with UCS Mini

<<CLICK 3>> CLOUD SCALE

Third, we are taking the proven operational advantages of UCS, as well as a groundbreaking new approach that revolutionizes server architecture, into the Cloud-scale computing domain.....with UCS M-Series Modular servers

and the new C3000 series server.

Crucially, all of these new capabilities are components of the Unified, extensible architecture that is the heart of UCS.

As we enter these new categories and segments we bring customer-proven operational advantages that are the hallmark of UCS: simplicity, automation and an application centric approach to data center infrastructure.

Now more than ever, with this expanded portfolio, our customers have the capability to deliver infrastructure at the right location, at the right scale and in the right configuration to meet the unique needs of applications across the edge, the core, and into cloud-scale

Fourth Generation UCS

Fourth Generation
UCS Servers



UCS Management
Innovation



UCS Mini



Edge-Scale Computing



UCS M-Series
Modular Servers

UCS C3160

Cloud-Scale Computing

1

Power and Simplicity for the Data Center Core

Let's begin in the Core, where, in addition to simplifying and accelerating IT operations, customers seek more power and control for data-intensive analytics and new levels of application acceleration across a wide variety of workloads

Cisco UCS M4 Series Servers

Continuing a Tradition of Versatility and Industry-Leading Application Performance



UCS B200 M4 Blade Server
Versatile performance and density without compromise



UCS C220 M4 Rack Server
Density-optimized for general purpose workloads



UCS C240 M4 Rack Server
Storage and I/O-optimized for big data analytics, virtualization, and bare metal applications



UCS VIC 1300

Next generation convergence and virtualization capabilities

85% Lower Latency

Cisco UCS: Five Years of Game-Changing Customer Results

UP TO

39% Improved TCO

UP TO

86% Faster Provisioning

UP TO

53% Lower Power

UP TO

77% Reduction In Cabling

Confidence Monitor Prompts:

- UCS B and C series raising the bar on Enterprise class stateless computing
- More modularity to scale compute, I/O and storage to even further expand reach in and out of the datacenter.
- Usability and flexibility enhancements across the board

Script

<<Team: need to tighten up the scripting for this slide and add this script for the final metrics build to the bottom of it>>

“These new servers will extend the proven benefits of UCS, which we’ve observed in customer-reported results for several years and have listed here. Customers can

expect to see dramatic increases in performance and efficiency from the next generation Intel Xeon E5 processor family, which these products will feature. “

UCS B200 M4: include modular, raid controller with multiple performance options, including choice of flash backed write cache, includes the option to support SAS, SATA, SSD or PCIe flash devices. (Controller is optional)

UCS C220 M4: modular HBA, choice of small form factor or large form factor, optional support for PCIe flash devices

UCS 240 M4: modular HBA, choice of expanded or non-expanded controller options (8, 16, small form factor SFF drive options) 24 drive SFF or 12 drive LFF, plus two internal boot drives. Include optional support for PCIe.

→Scaling the storage subsystem to match the workload

Cisco UCS M4 Servers are the best-selling servers optimized for the widest set of use cases in the enterprise. We have built upon the success of these platforms (the M3 versions) with the same uncompromised capabilities (highest performance CPUs + max memory + Highest I/O). Besides support for fastest / highest core count E5 v3 CPUs and DDR4 Memory, we have added significant flexibility to the platforms via Modular LOM, Modular HBAs and Flex Storage options. M4 Servers are now capable of being optimized for an even wider range of enterprise

applications. These rock-solid, powerful compute platforms, combined with the capabilities of UCS VIC, UCS Manager, UCS, UCS Director and UCS Central, form the most powerful, flexible, and capable enterprise infrastructure in the market.

With the M4 generation of servers we are introducing our 3rd gen VIC technology. Our VIC technology has been a corner stone of the UCS innovation and as you'll see the 3rd gen also provides the foundation of our next wave of products. The 3rd Gen brings native 40Gb and low latency RDMA capabilities to UCS. As really fast flash storage becomes main stream and clustered applications gain popularity, high bandwidth, low latency interconnect technology will be required for application performance to improve. The 3rd Gen VIC provides investment protection with its 40Gb and RDMA capabilities and ensures that these performance gains will be available to UCS customers without dedicated custom built **Infiniband** fabrics.

The 3rd Gen VIC has built in capabilities that make it ideal for next generation virtualization deployment. It accelerates VXLAN and NVGRE flows and supports tool kits for service provider and enterprise customers to deploy elastic network services for virtualized environments.

In short, the 3rd Gen VIC extends our differentiation, and provides the right foundations for our customers as they prepare for the next generation of data center

technologies, such as flash storage or as they take virtualization to the next level.

85% improvement in latency. Standard technology would take 17 usecs low latency on VIC would take 2.5 usec.

Metrics Substantiation:

From published customer case studies as documented in *Cisco UCS: Changing the Economics of Datacenter* -

<http://www.slideshare.net/Ciscodatacenter/cisco-unified-computing-system-ucs-changing-the-economics-datacenter-21179192>

TCO improvement from *The Total Economic Impact of Cisco Unified Computing System*, July 2014 -

<http://www.cisco.com/c/dam/en/us/products/servers-unified-computing/the-total-economic-impact-of-ucs.pdf>

TCO is a compare of a mix Blade and Rack environment HP Gen8 vs Cisco M3,

UCS B200 M4

Next Gen Density-Optimized Blade Server

An uncompromised combination of CPU, Memory, IO, and expansion capabilities in a modular blade form-factor

- *Designed for a wide range of enterprise workloads including virtualization and bare metal applications*
- *Provides enterprise-level capabilities and features*
- *Ultimate density-optimized general compute blade platform*



Two E5v3 CPUs

Up to 18 cores per socket

Up to 80G of I/O

One PCIe 3.0 mezzanine slot

24 DDR4 DIMM Slots

Up to 2133 MHz speeds

Flexible Storage

Controller / Cache / Media Options

Modular LOM (mLOM)

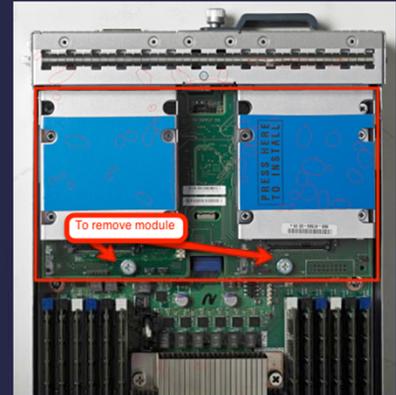
3rd Generation VIC

UCS B200 M4

Density-Optimized Enterprise Blade Server

New local drive storage modularity and options for B200 M4

- With Cisco's FlexStorage®, configure UCS B200 M4 to meet your local storage requirements without buying or powering more components than you need:
- Choose enterprise-class RAID controller, or go without any controller or drive bays if not booting from local drives
- Flexibility to easily add, change, or remove FlexStorage local storage modules



3rd Gen Cisco VIC

The ultimate engine for true stateless computing unleashes maximum network bandwidth, features and performance

- Doubles host PCIe performance, BW and Root complex resources
- Doubles embedded processing, for datapath (fNIC, sNIC) and future services
- Support for RDMA for SMB Direct, ROCE



PCIe Gen 3

Enables Greater Bandwidth

Support for Overlay Networks

Stateless offloads for NVGRE and VXLAN

Four Form Factors

Blade mLOM, Mezz, PCIe Half Height, PCIe MLOM

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UCS C220 M4

Next Gen Density-Optimized Rack Server

A modular blend of CPU, Memory, Storage, IO and expansion capabilities in a dense 1U form-factor

- *Designed for a wide range of enterprise workloads including virtualization and bare metal applications*
- *Stand-alone or UCS-managed operations*
- *Provides enterprise-level capabilities and features*
- *Ultimate density-optimized, modular general compute platform*



Two E5v3 CPUs

Up to 18 cores per socket

24 DDR4 DIMM Slots

Up to 2133 MHz speeds, 1.5TB of RAM

Security Bezel

Optional

UCS C220 M4

Density-Optimized Enterprise Rack Server

Two PCIe 3.0 Slots

Two NCSI "VIC-Optimized"

Modular LOM (mLOM)

VIC or CNA Options

Flexible Storage

*Up to 8 SFF or 4 LFF drives
PCIe SSD support*

UCS C240 M4

Next Gen Storage & IO-Optimized Rack Server

A modular blend of CPU, Memory, Storage, IO and expansion capabilities in a 2U form-factor

- Designed for a wide range of enterprise workloads including virtualization, big data, and bare metal applications
- Stand-alone or UCS-managed operations
- Provides enterprise-level capabilities and features
- Ultimate configurable, modular general compute platform
- Supports up to two double-wide GPUs



Two E5v3 CPUs
Up to 18 cores per
socket

24 DDR4 DIMM Slots
Up to 2133 MHz speeds

Security Bezel
Optional

UCS C240 M4
Storage and IO-Optimized
Enterprise Rack Server

Six PCIe 3.0 Slots
Four Full / Full - Four NCSI

Modular LOM (mLOM)
VIC or CNA Options

Flexible Storage
Up to 24 SFF or 12 LFF
+2 SFF boot drives
PCIe SSD support

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Configuring a C240 M4 Server

Select Base Server Chassis PID

PID	DESCRIPTION	GPL
UCSC-C240-M4S	UCS C240 M4 SFF 8 HD w/o expdr,CPU,mem,HD,PCle,PS, rail kit	\$3,855
UCSC-C240-M4L	UCS C240 M4 LFF 12 HD w/o CPU,mem,HD,PCle,PS w/expdr, rail kit	\$3,935
UCSC-C240-M4SX	UCS C240 M4 SFF 24 HD w/o CPU,mem,HD,PCle,PS w/expndr, rail kit	\$4,495
UCSC-C240-M4S2	UCS C240 M4 SFF 16 HD w/o CPU,mem,HD,PCle,PS w/expndr, rail kit	\$4,255



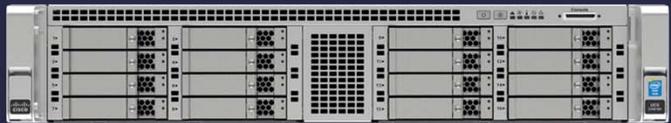
UCSC-C240-M4SX FCS Target: October 2014

UCS C240 M4 x24 HDD Backplane
Maximum Storage Expandability & Performance
 Up to 24 x 2.5-inch 12Gbps HDD or SSDs + optional two internal 2.5-inch boot drives



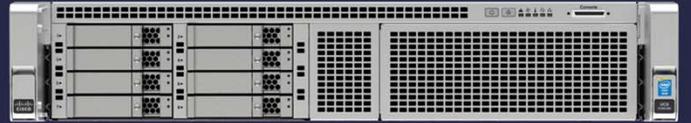
UCSC-C240-M4L FCS Target: October 2014

UCS C240 M4 x12 HDD Backplane
Maximum Storage Capacity
 Up to 12 x 3.5-inch 12Gbps HDDs + optional two internal 2.5-inch boot drives



FCS Target: September 2014

UCSC-C240-M4S2
UCS C240 M4 x16 HDD Backplane
Balanced Cost & Expandability
 Up to 16 x 2.5-inch 12Gbps HDD or SSDs



FCS Target: October 2014

UCSC-C240-M4S
UCS C240 M4 x8 HDD Backplane
Cost Effective 2U Server
 Up to 8 x 2.5-inch 12Gbps HDD or SSDs

UCS Mini



Here in the second part of our announcement I am going to show you how the UCS Mini solution extends the computing power and operational efficiency of UCS beyond the walls of the data center to Edge-Scale computing environments.

UCS Mini

6248 Fabric Interconnects



See notes next slide

UCS Mini

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

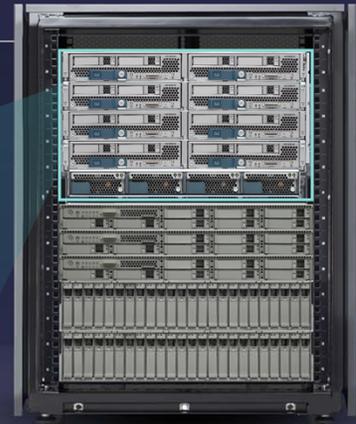
Full Power UCS in an all-in-one package:

- Compute
- Networking
- UCS Manager
- Standard UCS Blades / Fans / Power Supplies

6324 Fabric Interconnects



UCS Mini



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

Key Elements:

- Bringing Power of Core Data Center to Edge; IoT, bringing compute closer to data collection points
- Power of UCS Manager, policy and control to the edge where people resources limited
- Can scale compute, storage I/O to support demands of evolving applications at the edge

And put it into a new form-factor. [click]

- Embedded in the chassis
- Saves both CapEx and OpEx

And put it into a new form-factor. [click]

And embedded it directly in the chassis. This delivers all

the power and functionality of Unified Computing for up to 15 blade and rack servers.

New Competitive Advantages to Highlight:

we can support high end systems, performance is a strength, system can be remote, but high performing

UCS Managed, UCS operating environment, programmatic, stateless computing, policy based management

We have the capacity to scale higher, greater amount of compute, bandwidth, given the way that we have allowed Mini to scale, connecting the two chassis and connecting rack server to the mini domain (For example Nvidia virtualized GPU, optimized for virtual desktop,)

Simplified Networking

*Easily connect to upstream
networks with end host mode
SFP+ supports 10Gbit & 1GbE for
future proofing
Redundant networking capability
built in
Simple expansion for additional
compute*



Expansion

Up to 8 Blades

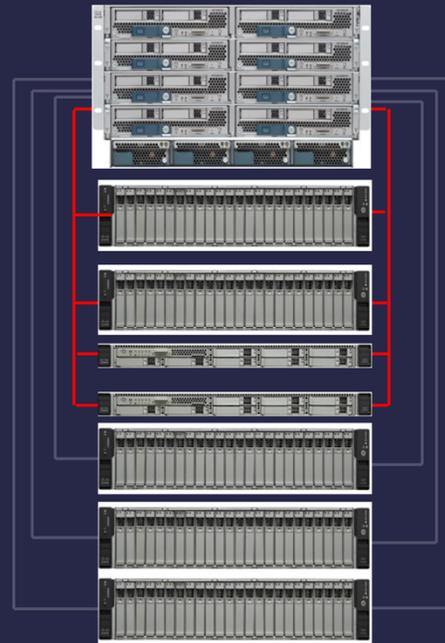
Cisco UCS B200 M3

Up to 7 rack mount servers

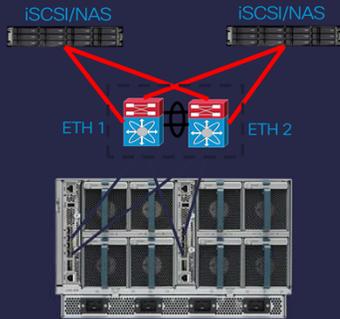
C220M3

C240M3

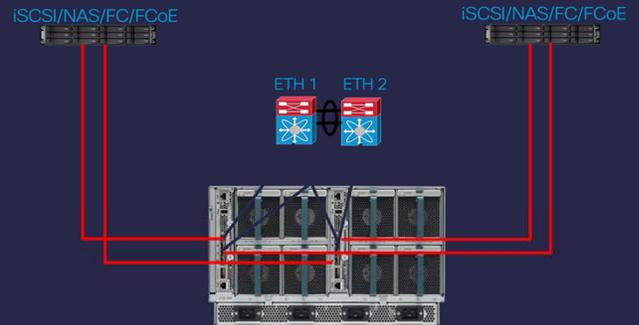
Managed through UCSM



6324 Fabric Interconnect Storage Connectivity



- *Network attached storage*



- *Direct Attach storage*

Cisco UCS Manager

*Manage blade and rack servers,
networking and storage
connectivity from a single console
Cisco UCS Manager*

*Monitor and manage UCS
servers*

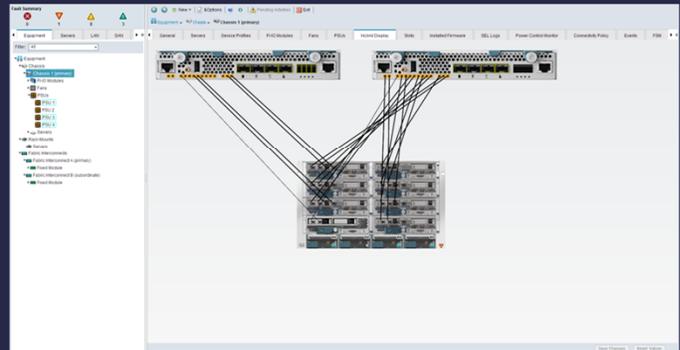
Built in management at no cost

Full API for 3rd part integration

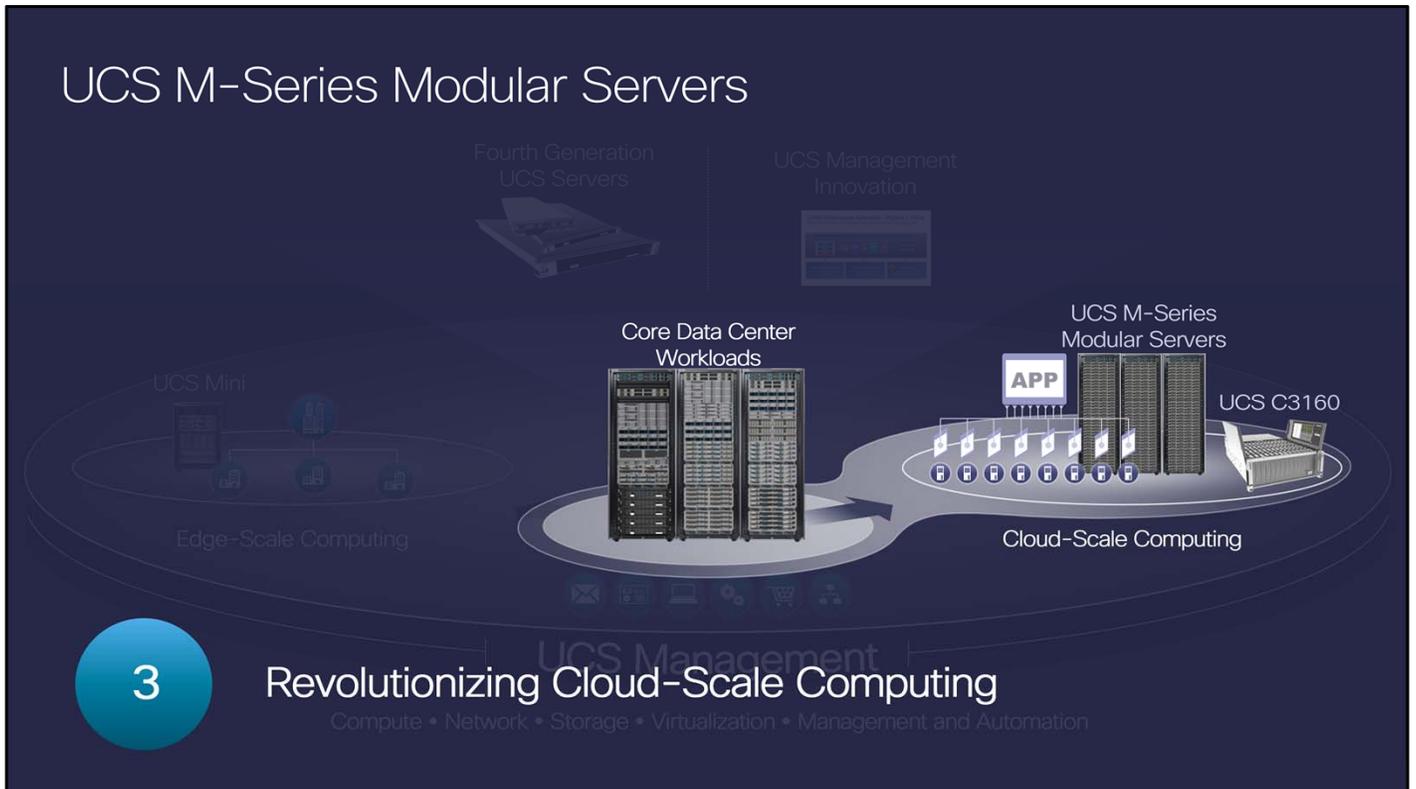
*Cisco Integrated Management
Controller*

Agent-free management

No license required



UCS M-Series Modular Servers



Confidence Monitor Prompts

Script

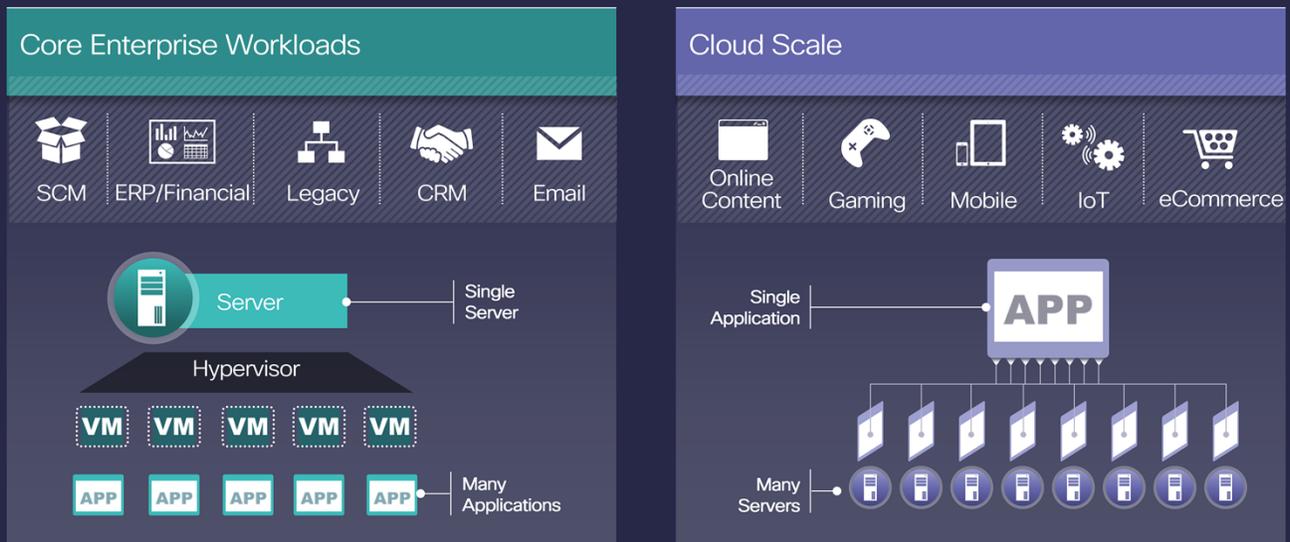
In many ways, the third and final area of innovation in our announcement today represents history repeating itself. When UCS was announced in 2009, it defied the conventional approach to computing with a fundamental re-thinking of data center architecture.

Today, with the M-Series Modular Server, Cisco thrown away the rulebook once again, and applied true innovation that solves many customer needs left unmet by conventional approaches.

M-Series marks an architectural leap forward, at the most

fundamental levels, to lead the industry transition to Cloud-scale computing.

Cloud-Scale Inverts Computing Architecture



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Key Elements:

Focused on making enterprises efficient / agile and virtualization + HW resiliency has been the right tool, right sizing by virtualization

Cloud need elastic scaling, resiliency at scale and the tool of choice is horizontally scaling app

The new generation applications can be flexibly sized.

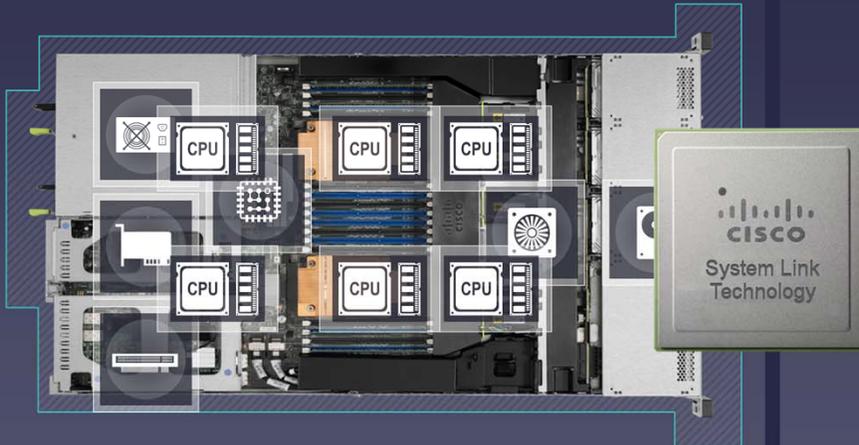
Right sizing by app instance

Cisco System Link Technology

Extending the UCS Fabric inside the server

Compute

Shared Infrastructure



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3 Confidence bullets

<<Initial +click 1>>: Basic computing system hasn't changed. 1/3 the server cost is in peripherals, Under utilized resources. Ex HDD (90% wasted)

<<C -2>> Re architect to flexibly optimize for utilization, real estate and power. Life cycle example - network vs CPU/mem

<<C -3>> "Cisco System Link" technology - Bringing the benefits of UCS fabric to inside the actual server

Detailed Script:

<<initial screen>>

Cloud scale computing is changing the way we interact with our world. The needs of cloud scale applications is very different. However, the infrastructure that supports it has essentially remained same. It is a dual Socket Intel

Xeon E5 server. Crucially, the CPU and memory account for 2/3rd of the server cost, while whereas the peripherals viz Disk Drives, Power Supplies, Fans, Interface Cards, PCI assembly occupies 2/3 of “real estate” within the server.

<<Click 1>>

It is very common for these peripherals to be sparsely utilized. Case in point .. the hard disk. The small capacity these days is about 1/2 TB. There are many applications that are fine with under 50 GB of local disk space, that’s means 90% of that resource is wasted while it is still consuming significant power. There other peripherals within the system that are similarly under utilized yet occupy real estate and constantly consume power.

<<Click 2>>

So, we challenged ourselves to come up with a different server design with the objective to make the fundamental server architecture much more flexible. An architecture that allows us to scale different resources according to the need of the application. Sharing the peripherals amongst multiple nodes such that utilization, real estate and power is optimized. Additionally, disaggregating the traditional server also enables better life cycle management. Often peripherals follow a much longer life cycle than CPU and memory. For example, network goes thru a speed bump once every few years, whereas CPU and memory transition every **12-18 months**. This architecture allows you to reuse peripherals like network

controller while upgrading the CPU/Mem

<<Click 3>>

Introducing “Cisco System Link” technology. An extension of our VIC technology that brings the full power of UCS fabric to within the server, giving us the ability to compose computing infrastructure that is “**just right**” for the target application. This foundational technology is the building block for our M-series Modular servers

UCS M-Series Modular Servers



Compact Chassis
8 Compute cartridges

Lightweight Compute Cartridge
Two Independent Intel Xeon E3 Servers
No adapters or HDDs

Shared Local Resources
Network and storage 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 compute nodes

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Key Elements:

1. Based on System link and targeted for Cloud scale applications
2. 8 compute slots, “**First**” cartridge is a E3

M-Series modular server is an extension to the current UCS portfolio. The platform is targeted for specific workloads and not a general purpose compute platform. The platform consists of a new chassis in a 2 RU form factor. It houses 8 front loadable cartridges. Each cartridge in turn comprises of 2 independent server nodes. All of the servers in the chassis share the peripherals. The back of the chassis can hold upto 4 SSDs, 2 power supplies and 2 * 40 Gb network uplinks. A single chassis can hence have upto 16 servers, 1/2

TB of Memory and upto 6.4 TB of disk capacity. Of course, most of the deployments will have multiple chassis or multiple racks.

Traditional vs. Disaggregated Servers

16 Server Footprint



The most commonly deployed x86 server in majority of the data centers is a 2 Socket Intel Xeon E5 server. This is regardless of what application runs on that server. The CPU and Memory is about 2/3 of the server BOM whereas the peripherals viz Disk Drives, Power Supplies, Fans, Interface Cards, PCI assembly occupies 2/3 of real estate within the server. We have also observed that most of these peripherals are sparsely utilized. Case in point .. Let us take the example of a hard disk. The small capacity these days is about 1/2 TB. Most applications utilize under 100 GB of local disk space. So, we challenged ourselves to come up with a different server design specifically catering to the needs of horizontally scaled applications as discussed previously. The intent was to better amortize the space and cost of the peripherals across more number of

CPUs and associated memory. Also, we were wondering if we can refresh components within a server independently without breaking the cost model.

UCS M-Series Explained



Aggregate Capacity per Chassis

16 Servers, 64 Cores, 512 GB Memory



Compute Cartridge



CPU	Intel Xeon E3	1275Lv3, 1240Lv3, 1220Lv3
Memory	8 GB UDIMM	32 GB Max/Cartridge
Disks	2 or 4 SSDs	SATA (240 GB, 480 GB, 960 GB) SAS (400 GB, 800 GB, 1.6 TB)
RAID Ctlr	Cisco 12 Gb Modular RAID Controller with 2GB Flash-Backed Write Cache (FBWC)	
Network	2 * 40 Gb	
Power	2 * 1400W	

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 360TB in a compact 4U Form Factor

Bare Metal and Virtualization



BIG DATA



openstack



ceph



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

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Key Elements:

- Provides Complimentary Storage to the compute of M-series
- Ideal for Business Analytics and Media Streaming and Transcoding applications
- Cisco VIC capabilities

Target FCS: October 2014

Example of C3160 and M-series use case

The C3160 provides the complementary storage to the compute from M-series. Where M-series provides the transactional front end, C3160 provides the storage for context and content. A large telecom service provider

that delivers content to home is interested M-series and C3160. There are many services that are delivered to the set top box at home, video content ofcourse but also services like channel guide, home email, weather, etc. The M-series would provide the front end and service the sessions to all the home set top boxes and the C3160 would serve as the storage node in that deployment for all the frequently accessed content. In this case the customer is using Open stack for cost effective and easy-to-deploy benefits of open stack. M-series would serve as the compute nodes (nova) and C3160 would serve as the storage node running Ceph.

For applications that need compute with the right mix of capacity and density of storage, the C3160 Rack server is the optimal solution.

These are applications that need storage accessibility and availability to the other compute nodes. The C3160 has the optimal amount of resiliency and performance, scaled appropriately for a particular set of applications.

The C3160 provides compute and storage together, but allows you to scale them independently. Traditional server does not have the right compute to storage ratio. This solves one problem...

Due to the way that the C3160 is designed, it allows the local storage resource to be scaled far beyond a traditional two-socket server. Like the M-Series, this platform will benefit from the unique Cisco 3rd Generation VIC ASIC (need to add brand name to this technology) that will enable some exciting new features. In the

future, the C3160 will allow for an additional server and IO to be added. The C3160 not only allows for storage capacity and performance scaling, but also compute performance. Another future capability will be to manage single or dual server configurations directly via UCS Manager. At that point, the C3160 becomes a highly available and scalable compute platform that exposes significant compute and storage resources within a UCS management domain.

UCS C3160 Rack Server

Designed for large unstructured data repositories, media streaming and content distribution

High-performance compute and storage throughput

Stand-alone CIMC Management

Up to 240TB (with 4TB HDD) @ launch and 360TB (with 6TB HDD)-post-FCS of dense storage in a compact 4U Form Factor that fits in a standard rack



UCS C3160
Dense Rack Server

Single Server

Dual CPU socket per server

Up to 256GB Memory

8 DIMMs per socket

Up to 62 Drive Bays

60 LFF, plus 2 SFF

Up to 4GB RAID Cache

Enterprise storage features

Dual Modular LOM (mLOM)

Multiple Connectivity Options

Optional Bezel

Modular Architecture of the UCS C3160



UCS C3160 Specs

What	Specifications	Quantity Required
Base Chassis: UCS C3160	Base Chassis, 2x 120GB SSDs, 4 PSU, 1 Rail Kit	Min of 1 Chassis
Server Node: 4 Workload Specific Configured Nodes Available	2x E5-2620 V2/128 GB/1GB RAID Cache 2x E5-2620 V2/256 GB/4GB RAID Cache 2x E5-2660 V2/256 GB/4GB RAID Cache 2x E5-2695 V2/256 GB/4GB RAID Cache	Must choose 1 Server Node
Drives: Main Drive Bay Filled by rows of 14 Capacity: 224TB @ FCS 336TB Post-FCS	14x 4TB 7200RPM LFF 28x 4TB 7200RPM LFF 42x 4TB 7200RPM LFF 56x 4TB 7200RPM LFF	Must choose at least 1 row of disks. Note: Post-FCS 6TB rows will be available
SIOC: System I/O Controller with Cisco mLOM	Cisco VIC 1227 10GbE SFP+ (Dual) Intel i350 mLOM NIC (Quad 1GbE)	Requires min 1/max 2 SIOC Requires 1 NIC per SIOC
Optional Disk Expansion Node: 16TB @ FCS/24TB Post FCS	Tray+4x 4TB 7200 LFF @ FCS, 4x6TB Post FCS	Optional
Physical Dimensions	4U height / 31.8 inch depth	
Stand-alone Management	Cisco Integrated Management Controller - CIMC	

Note: All LFF Drives on the UCS C3160 has to be of the same capacity/type

UCS C3160 as Ceph Storage Node

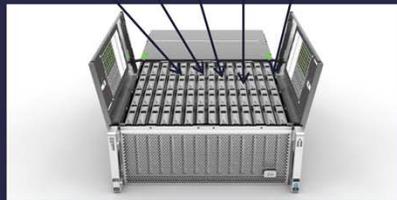
C3160 is ideal for Ceph Object Stores and as well as block based Ceph deployments

Optimized for high throughput workloads

Power efficient server

Petabytes of local storage in a standard 19inch rack

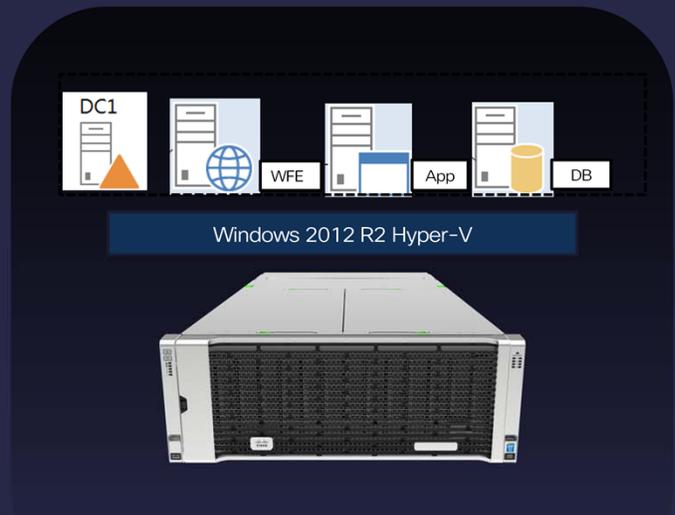
Investment protection and reduced operational cost



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UCS C3160 for SharePoint 2013

- Components
 - C3160 – Compute/Local Storage
- Benefits
 - **SharePoint Farm Solution**
 - UCS C3160 Rack Server – Compute and Local Storage
 - End to End 10G Network
 - SSD holds hot data
 - Cost effective solution



High Performance, built to scale with high bandwidth network fabric

Seamless Infrastructure Management

Automation Powered by UCS Director



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Key Elements:

- Containers: deploy multiple applications in a common resource pool
- 30% of Hadoop problems are configuration related: automate!
- Configure ACI network and services along with compute and storage

Our strategy for infrastructure management addresses the reality that IT professionals must operate the entire infrastructure – bare metal and virtual – to offer their services reliably and at scale. Solutions that address only virtualization place the onus on IT to figure out the rest on their own – often manually. Our approach delivers greater business agility, enabling IT to deploy applications faster,

while reducing opex by making administrators more efficient, and operations more reliable.

UCS Director already manages compute, network, storage, and virtualization and supports both Cisco and third-party infrastructure products. Today, we are announcing several key advancements:

Application containers provide IT with the confidence and security to run multiple workloads on the same resource pool in an enterprise environment. Resource pooling is fundamental to cloud operating models and flexible resource allocation to increase data center utilization. It is about delivering the right resources, on-demand, via a programmable API, as required by the application. However, customers need a reliable method of ensuring that applications running within the resource pool do not conflict with each other. Our new containers capability provides both virtual and bare metal isolation of workloads, automated with UCS Director. Users simply request a container for a particular set of application components and UCS Director deploys the necessary infrastructure configuration required.

Data analytics and Hadoop in particular are huge interest areas for our customers. Cisco UCS has seen strong demand with Hadoop clusters in the 100's of nodes. The challenge on infrastructure is how to get these large clusters to scale, be easily managed and at reasonable cost. Our enterprise customers care about simplicity of deployment and scale. UCS Director works directly with

major Hadoop distributions and the integrated infrastructure to ensure consistent cluster configuration, relieving customers from manual operations.

UCS Director now supports Cisco's new Application centric infrastructure and Nexus 9000 product family to seamlessly deploy and configure broader network and services along with compute and storage. UCS Director integrates the software programmable ACI fabric including L4-L7 services along with UCS, storage and virtualization. Users can deploy applications and ensure the ACI fabric adapts to meet the connectivity requirements including quality of service, bandwidth and failover.

With its focus on infrastructure automation and management, UCS Director is delivering a software development kit and open API to accelerate third party integration with Cisco's technology partners. UCS has successfully followed an open API strategy, resulting in broad ecosystem integration and adoption. Public announcements of broader third-party device support leveraging UCS Director's new API will occur later this year.

Cisco UCS Director



UCS Director Platform

- Self-Service Portal
- Extensible platform with open automation
- New Bare Metal Agent
- Resource Groups across physical and virtual resource pools
- Reporting
- Metering and Chargeback

ACI Integration

- Definition of virtual machine and application catalog
- Tenant onboarding
- Applications containers available from infrastructure portal
- Lifecycle management of application-aware infrastructure workloads

Network Enhancements

- ASAv, Nexus 7700, 9508, 9396, 93128
- F5
- Trustsec (ISE)
- Update to N1KV connector
- Update to N7K connector
- Physical ASA via Trustsec
- VX LAN support on application container
- APIC Integration

Storage Enhancements

- Vblock Updates Models 200, 300, and 700
- Vblock - VPLEX Support Models 200, 300, and 700
- Vblock - Vision I/O Integration Models 200, 300, and 700
- EMC Isilon support
- Vblock Cloud Acceleration Services Kit

Virtual Application Container Services

- Automated configuration and deployment of secure complaint containers for logical isolation of VMs. It includes virtual services in single SKU

Compute Enhancements

- UCS Manager EI Capitan 2.2 Service Profile and Template synch
- HP C7000 Onboard Administrator Interface

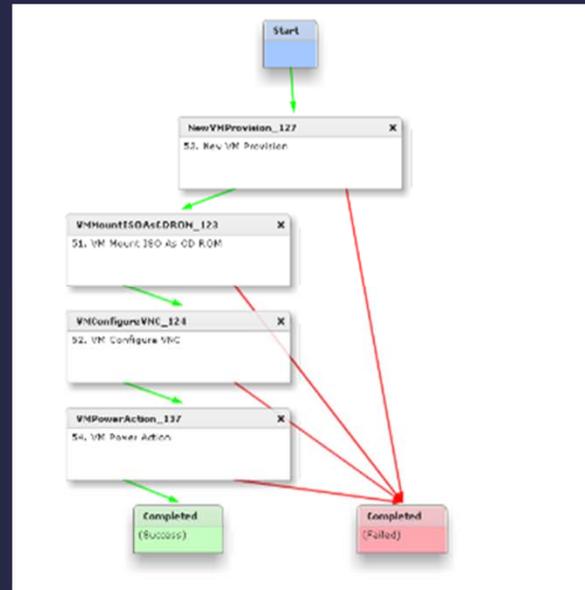
Virtualization

- Red Hat KVM 6.5
- VMware:
 - vSphere 5.5
 - vMotion, Storage vMotion
 - SRM, Linked Clone
 - VM-FEX Adaptor
 - Reports
 - Host Profile

IaaS Management

Reduces Data Center Complexity & Operational Costs

- Enriched Task Library > 1,000 tasks
- Resource Groups/Pools
 - Span physical & virtual resources
 - Management of one pool does not affect others resource pool
 - Elevate resource utilization
- Automated bare-metal infrastructure provisioning through user interface
- Enhanced security through Cisco TrustSec integration and ASA v Firewall automation



UCSD Express for Big Data:

Integrated, Policy-Based Hadoop Infrastructure Management



Instant Hadoop Cluster

The screenshot shows a web browser window displaying the Cisco UCS Director interface. A modal dialog titled "Create Instant Hadoop cluster" is open, showing the following configuration fields:

- Big Data Account Name: AccIntel
- Hadoop Cluster Name: icluster
- Hadoop Node Count: 4
- SSH Username: root
- SSH Password: [masked]
- Host Node Prefix: ND
- UCS Account Name: UCSM-40
- OS Version: RHEL6.4
- Big Data Cluster Type: intel
- Cluster Manager Version: intelhadoop-2.5+19314-en
- Organization: root
- Select from existing UUID Pool: default
- Admin Host IP: 10.29.160.45

Below the fields, there is a note: "Please Click Arrow Button for vNICs Ordering". At the bottom, there is a "vNIC Template" section with a dropdown menu and "Submit" and "Close" buttons.

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Instant cluster dialog :

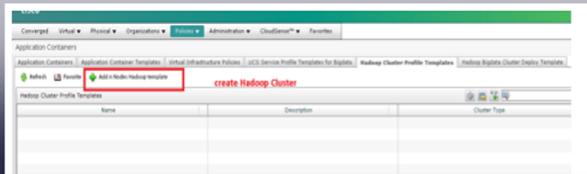
- 1.Go to policies
- 2.Select application containers
- 3.Click on hadoop Bigadata cluster deploy template
- 4.Click on Instant hadoop cluster tab

Instant hadoop cluster contain following:

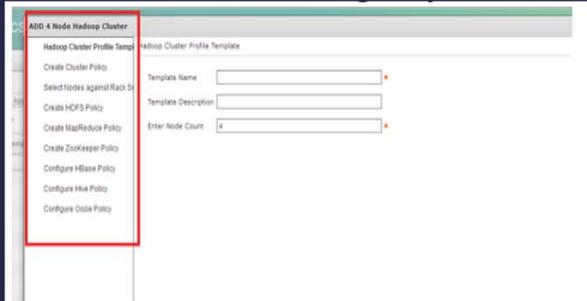
- 1.Node count
- 2.Bigadata Account name
- 3.SSH Username
- 4.SSH Password
- 5.Host node prefix
- 6.UCS Account name
- 7.OS Version
- 8.Bigadata Cluster Type

- 9.Cluster manager version
- 10.Organizations
- 11.UUID Pool
- 12.Admin ip
- 13.VNIC Template

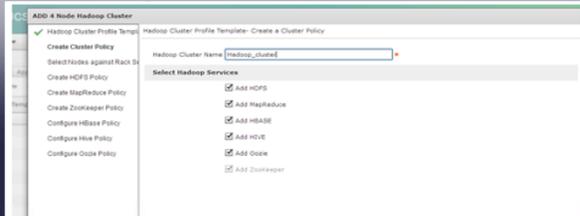
Customized Hadoop Cluster



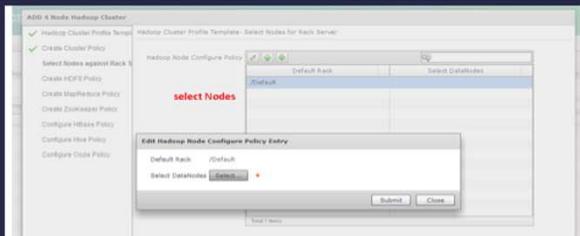
Select custom policies for each service



Select Hadoop services



Select cluster nodes to run service



For custom configuration, a few additional GUI options are traversed before the Hadoop Cluster process is initiated. This provides flexibility in making additional choices prior to kicking off the automated cluster creation.

Big Data Cluster Creation: Child Workflow

Child Workflow for Each Node

Create UCS Service Profile from Template

Associate UCS Service Profile to Blade Server

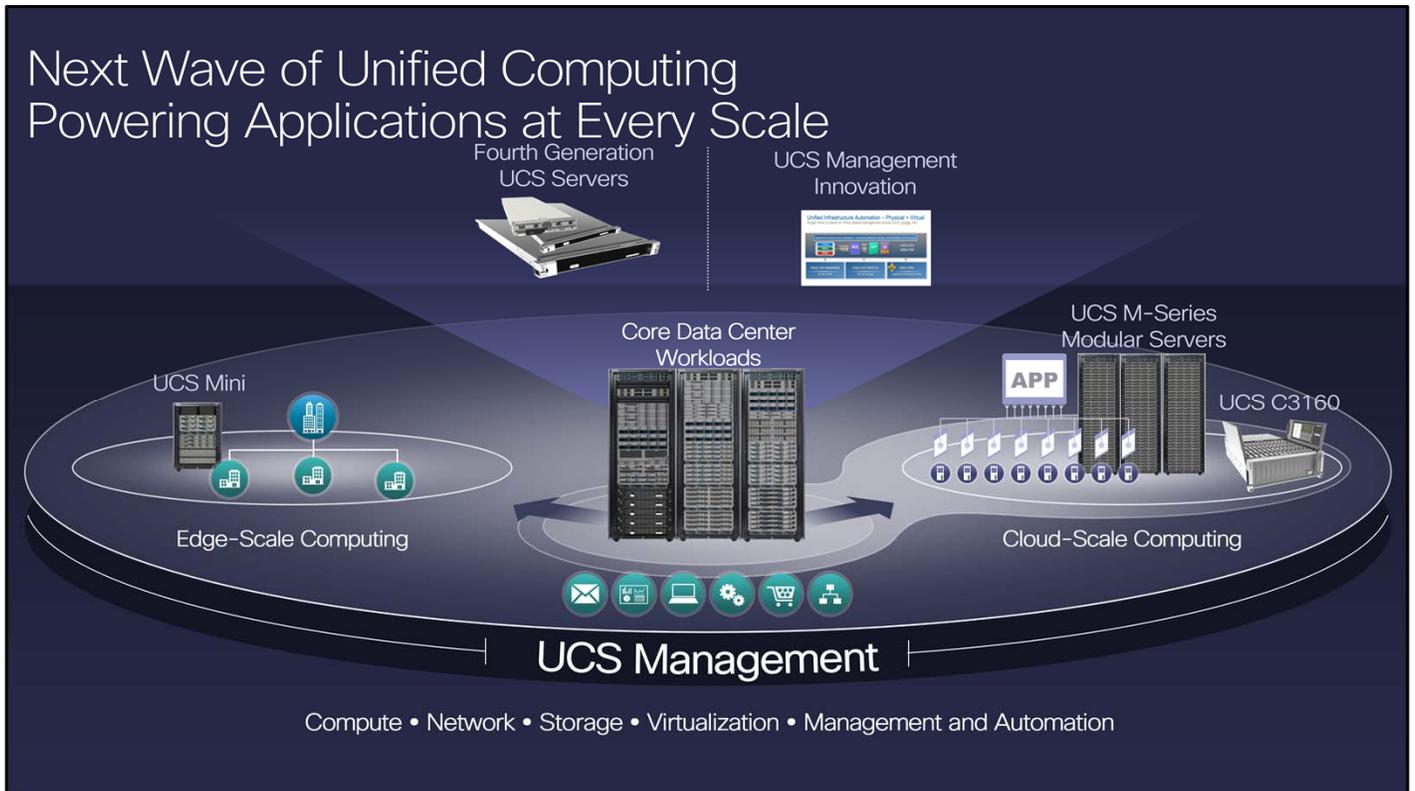
Setup PXE Boot (CentOS Live) – Raid 0 configuration on all disks

Setup PXE Boot (RHEL 6.2)

Change Service Profile boot Policy

Post PXE boot configuration using SSH (IDH Software upload)





Confidence Monitor Prompts

- New capabilities are being added to an extensible, proven System
- Over 36K customers can extend game-changing operating model to new areas
- Next, let's look at how this comes together across Edge, Core and Cloud Scale

Script

Today, I've shown you the full range of new technology we've added to the Unified Computing System, and it's difficult to overemphasize the term "System"

When Cisco developed UCS, particular attention was paid

to creating a unified control plane and an application centric systems management approach that Unifies all of the elements of computing infrastructure. This, in addition to automation... programmability... virtual and physical integration... those traits we heard Padma identify earlier as the keys to Fast IT... all of these attributes of the UCS SYSTEM create an extensible foundation on which we are building.

Over 36000 customers have deployed UCS and embraced an operating model that, for many, has revolutionized what IT can do to accelerate business. As we add these new capabilities today, our customers can easily extend the power of UCS to take on new workloads and extend enterprise grade computing beyond the walls of the traditional data center. As they do that, they will be taking UCS Management and the operating model for Fast IT with them.

Let's take a look at how all of this can come together as customers deploy UCS across their environment, from Edge, to Core to Cloud Scale

<<transition to E2E use case>>



Thank You

