cisco

Fast Innovation requires Fast IT

UCS Session

Cisco Connect

Play To Win: Unified Computing Roadmap and Innovations

David Nguyen
Tchnical Marketing Engineer, UCS

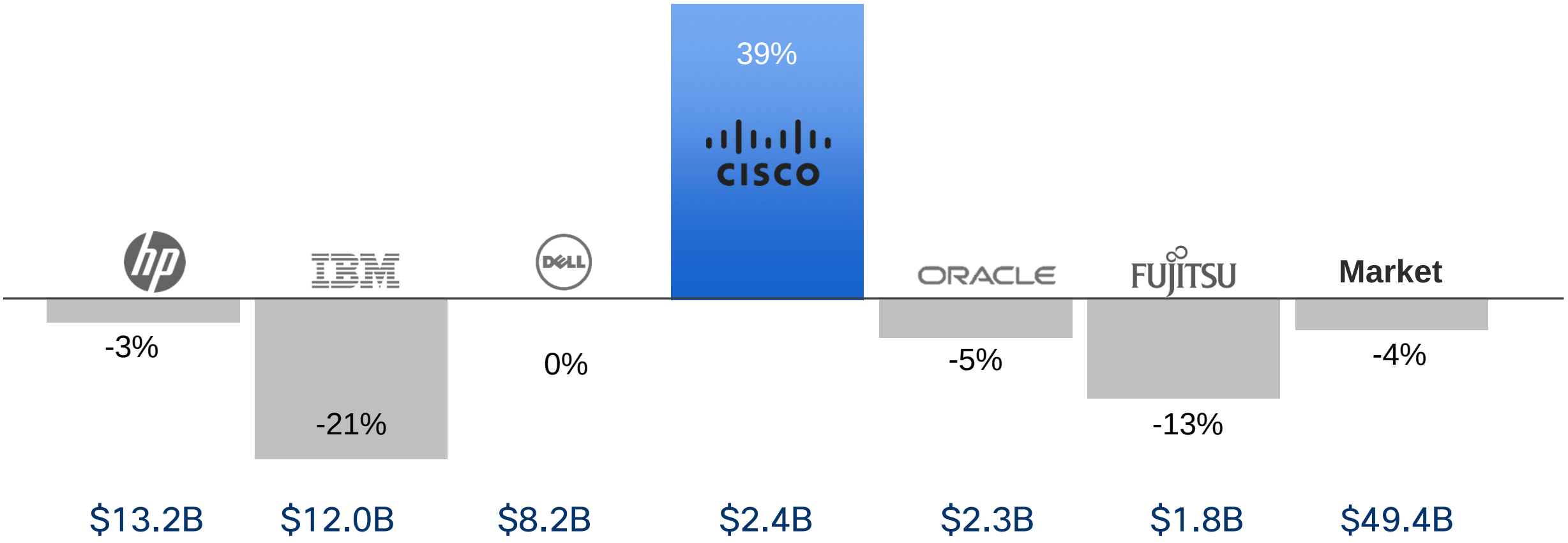
Agenda

Cisco Connect

- UCS Traction and Opportunity
- UCS Differentiation and New Innovations
- Cisco's recent server innovation launch
- The Software Differentiation
- Summary and Call to Action

Cisco UCS Leading Overall Server Revenue Growth (Y/Y)

Cisco Connect

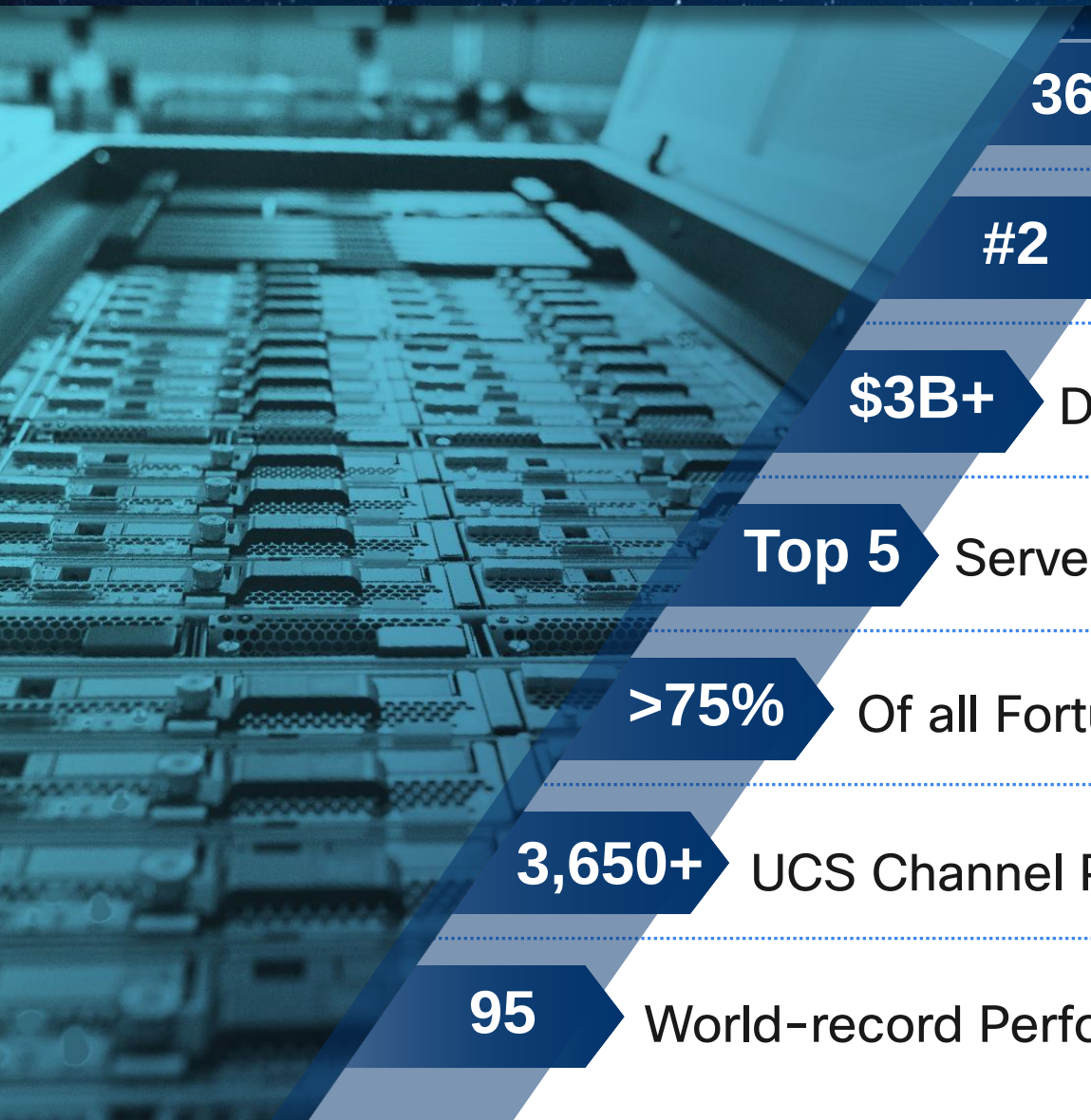


Source: IDC Worldwide Quarterly Server Tracker, 2014Q1, May 2014, Vendor Revenue Share Revenue is cumulative 4 quarters (Q2CY13 – Q1CY14)

Cisco Unified Computing System

Fastest Growing Product in the Market

Cisco Connect



36,500+ Unique UCS Customers

#2 Worldwide Revenue Share in x86 Blades

$3B+ Data Center Annualized Revenue Run Rate

Top 5 Server Vendor

>75% Of all Fortune 500 Customers Have Invested in UCS

3,650+ UCS Channel Partners

95 World-record Performance Benchmarks to Date

Application Challenges in Today's Data Centers

Cisco Connect

Business Requirements

- IT Budget Constraints
- Globalization
- Mergers and Acquisitions
- Rapidly Changing Business Requirements
- Rapidly Changing Capacity Requirements
- Evolving Skills Required

Application Requirements

- Scalability
- Performance
- Availability
- Security and Compliance
- Delivery Model
- Time to Provision

UCS Differentiation and New Innovations

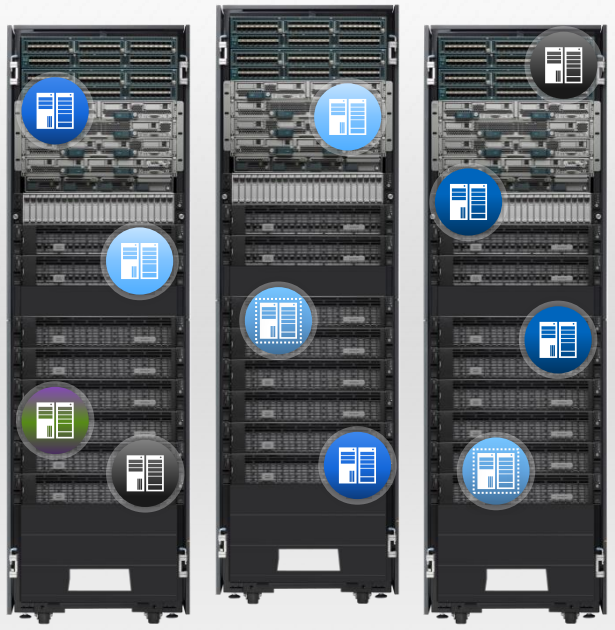
Why Have We Seen Such Momentum

UCS Value Proposition

Cisco Connect

Data Center Silos → **Virtualization** → **New Emerging Applications**

- Legacy Apps
- Web Apps
- Collaboration Apps
- Business Critical Apps
- Dev./Test Sandboxes
- Desktop Virtualization



- Private
- HYBRID
- Public

Big Data & Business Analytics

Mobile Applications

Social Media Applications

Back End Consumer Applications

Cisco Unified Computing System

A differentiated/revolutionary approach

Cisco Connect

Simplified Architecture

- Networking with fewer components
- Lower cost and easier scaling
- Fewer management touch points
- Stateless: any resource, any time
- Better TCO/ROI

Unified Management

- Faster deploy/ provision
- Unification leads to reduced complexity
- Management via a single interface

Higher Performance

- Brings out the best of x86 architecture
- Optimized resource utilization for compute, networking, and management

Scale

- Ultimate Scalability
- Enhanced design capability
- Designed for the future, today

Cisco UCS: Driving Business Outcomes

Proven value and over 36,500 customers world wide

Cisco Connect

"We're able to offer leading-edge solutions to our customers and continue to expand our business."

Martin Breslin
Infrastructure Architect, SEI

"Our Cisco Unified Computing System decision is a game-changer."

Wes Wright
CIO, Seattle Children's

"With Cisco UCS, we can adapt much more quickly to user demand."

Mark Adams
VP Information Technology, HireRight

84%
Reduction in Provisioning Times

77%
Cabling Reduction

61%
Reduction of Management Costs

54%
Reduction of Power and Cooling Costs

94
World-record Performance Benchmarks

Source: Cisco UCS Changing the Economics of the Datacenter, Customer Case Studies, Cisco UCS Performance Benchmarks

Strategy for Driving Growth

Why Cisco Is Going to Continue to Be Successful

Cisco Connect

Driving business outcomes for customers

New Innovations to address new environments and use cases

Product Differentiation with an Architectural Focus

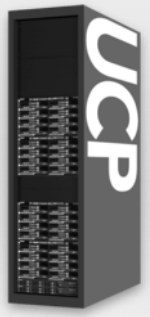
Cisco UCS Integrated Infrastructure

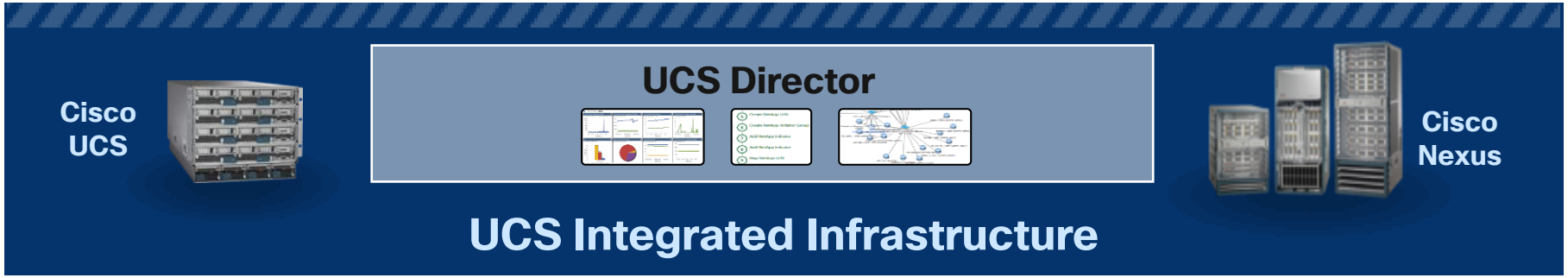
Cisco Connect

Cisco is #1 and a partner in ~69% of all Integrated Infrastructure*

Exclusive in the top 2 solutions (FlexPod and Vblock) and ~50% in the #3 solution (VSPEX)*

*IDC Worldwide Integrated Infrastructure & Platforms Tracker, April 29, 2014

FLEXPOD	VBLOCK	VSPEX	HDS UCP Select
			
NetApp	VCE	EMC²	HITACHI



Seamless Infrastructure Management with UCS Director

Cisco Connect

Unified Computing System

Nexus Product Family

Out of the box monitoring rules and thresholds

UCS Performance Manager

Manage congestion for integrated infrastructure

Virtualization

Microsoft vmware redhat Xen Server

L4-7 Services

Storage

EMC² NetApp

UCS Invicta

New!
Integrated application containers for secure workload provisioning

New!
Hadoop integration to easily manage large clusters

New!
Wizard based configuration

New!
Open Developer Kit for Ecosystem Acceleration

Cisco ONE Software Suites

Cisco Connect

Software Suites

- Logical bundles for customer scenarios
- Greater value – more features
- Reduced complexity

Investment Protection

- Software license portability:
- To next-gen hardware
- Physical and virtual machines

On-going Innovation

- Access to the new products incorporated into the bundles

Flexible Licensing

- Perpetual and subscription options
- Amazing bundle value

Give your customers an easier and more valuable path to our software capabilities

Attend the Cisco ONE Software Suites breakout session

Recently Launched by Cisco

UCS 2.0

Applications Have Unique Requirements at Every Scale

Cisco Connect

Connecting to Opportunity **Faster Decisions** **Deeper Insight**

Edge-Scale Computing | **Core Data Center Workloads** | **Cloud-Scale Computing**

Powering Applications at Every Scale

The Next Wave of UCS Innovation

Cisco Connect

Edge-Scale Computing | **Core Data Center Workloads** | **Cloud-Scale Computing**

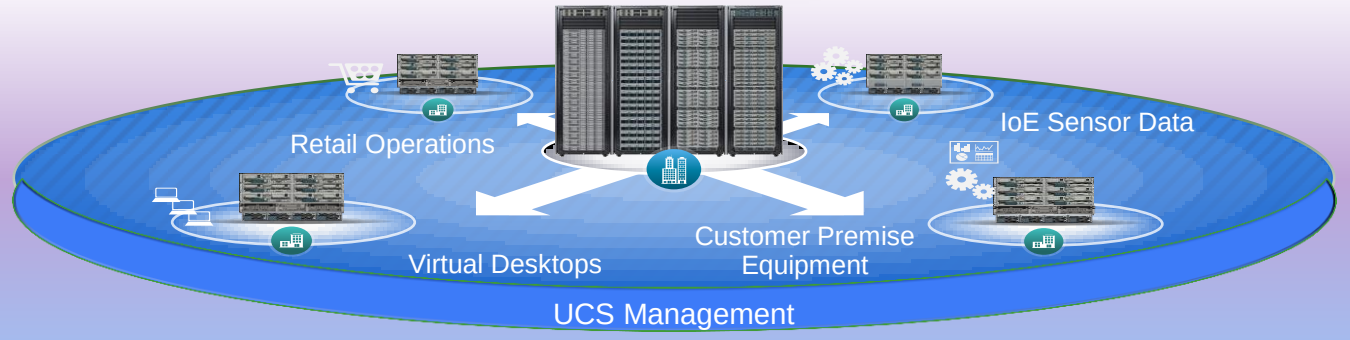
UCS Mini

UCS Director Enhancements

UCS Blade & Rack M4 Servers

UCS M-Series

UCS C3160 Server



Unmatched Continuum of Scale

Powering Applications at Every Scale

The Next Wave of UCS Innovation

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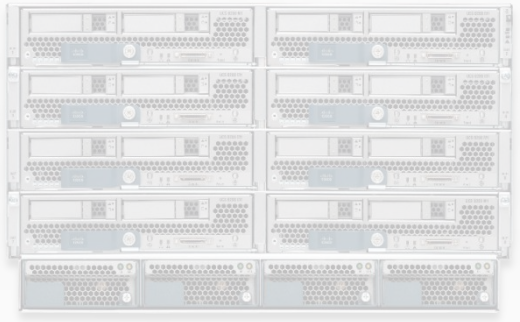
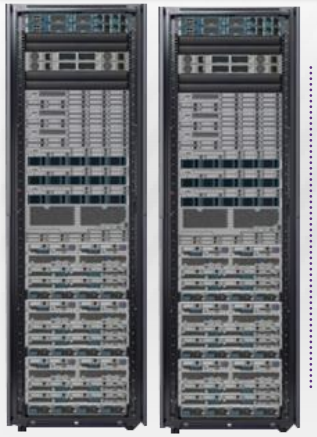
Edge-Scale Computing

UCS Mini



Core Data Center Workloads



UCS Director Enhancements

UCS Blade & Rack M4 Servers

Cloud-Scale Computing

UCS M-Series

UCS C3160 Server

Unmatched Continuum of Scale

Cisco UCS M4 New Generation Servers

Cisco Connect

Many Form Factors, One System

UCS B200 M4 Blade Server

Delivers market-leading performance, versatility, and density without compromise

UCS C220 M4 Rack Server

Density-optimized enterprise-class rack server for general purpose workloads

UCS C240 M4 Rack Server

Storage and I/O-optimized for big data analytics, virtualization, and bare metal applications

Powering Applications at Every Scale

The Next Wave of UCS Innovation

Cisco Connect

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UCS Mini

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UCS M-Series

UCS C3160 Server

Unmatched Continuum of Scale

UCS Mini

Cisco Connect

New architectural entry point for Unified Computing

UCS in an All-in-One package:

- Compute
- Solid-state
- Networking
- UCS Manager
- Unified Computing in 6U
- Chassis-Integrated Fabric Interconnects
- UCS Manager
- Standard UCS Blades / Fans / Power Supplies

UCS Manager 3.0

C240 M3 Rack Server

B200 M3 Blade Server

C220 M3 Rack Server

6324 Fabric Interconnects

UCS Mini

Enterprise Capability at Edge Scale

Connect up to 7 C-Series rack servers for expanded capacity

UCS Mini

Cisco Connect

New architectural entry point for Unified Computing

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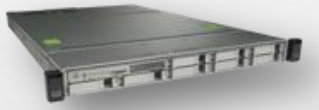
C240 M3 Rack Server

B200 M3 Blade Server

C220 M3 Rack Server



6324 Fabric Interconnects

Up to **29%** CapEx Savings

Up to **36%** TCO

Up to **34%** Lower Power

Up to **80%** Fewer Cables

Enterprise Capability at Edge Scale

Connect up to 7 C-Series rack servers for expanded capacity

UCS Mini

Cisco Connect

SMB

- Only need 4 – 8 servers
  - Expand to 16
- Not an IT shop
  - Simplicity is key
- UCSM makes things easy
  - Firmware updates
  - Faulty blade replacement
- Managed Service
  - Remotely managed through

ROBO & Industry Verticals

- Large number of geographically dispersed sites
- Need centralized management & control
  - Consistency
  - Compliance
- No local IT staff
- UCS Central & UCS Mini
  - Manage 100 sites like managing 1

Data Center/Mini Data Center

- Managed Services
  - Onsite premises
  - Application migration
- Security
  - DMZ
  - Hardware Separation for compliances
- Smaller failure domains

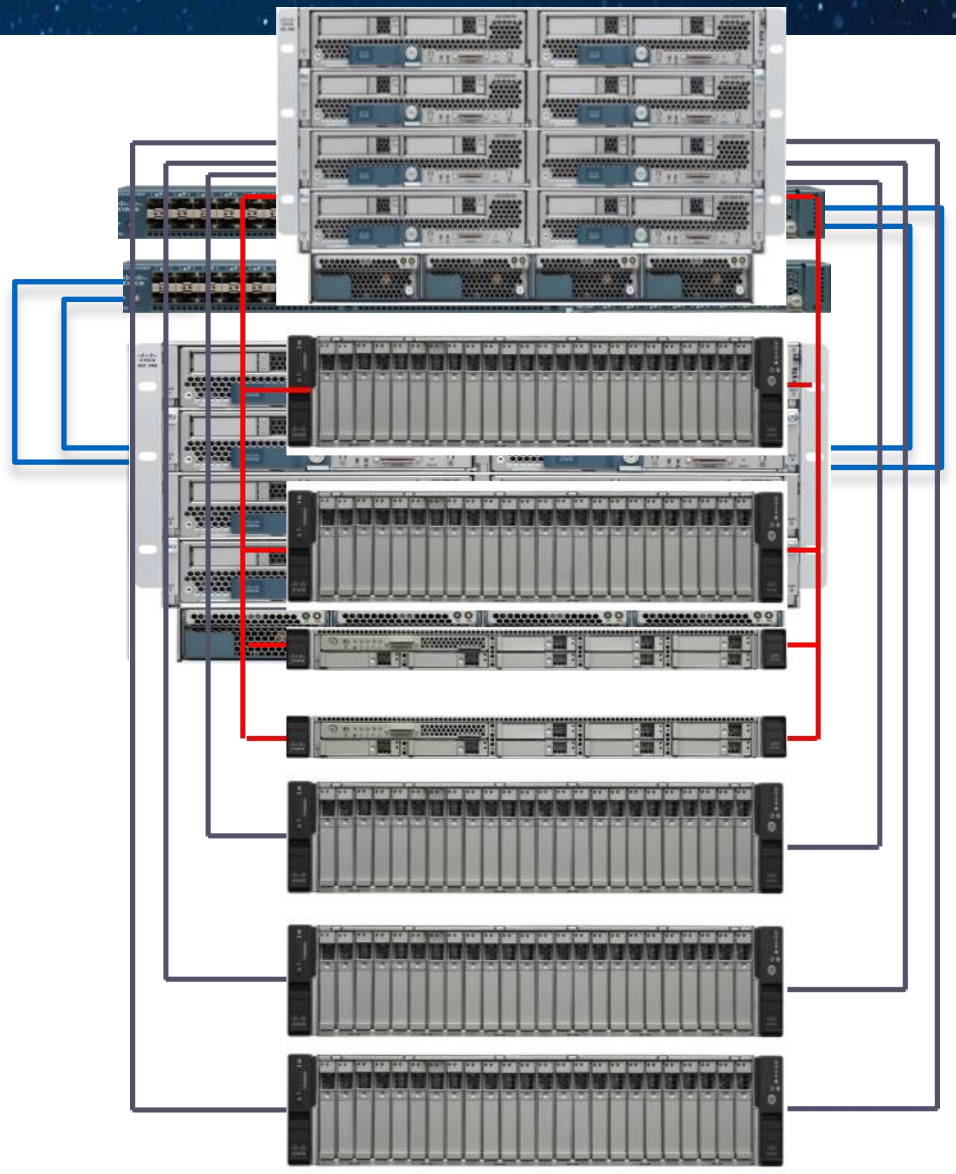
UCS Mini: Product Concept

Cisco Connect

- Based on current chassis
- Embed Fabric Interconnect Capability in the IOM slot
- Match current UCS Network model
  - Ethernet End Host Mode
- Common Management with UCS
  - UCSM, Service Profiles

Expansion

- Up to 8 Blades
  - Cisco UCS B200 M3
- Up to 7 rack mount servers
  - C220M3
  - C240M3
- Managed through UCSM

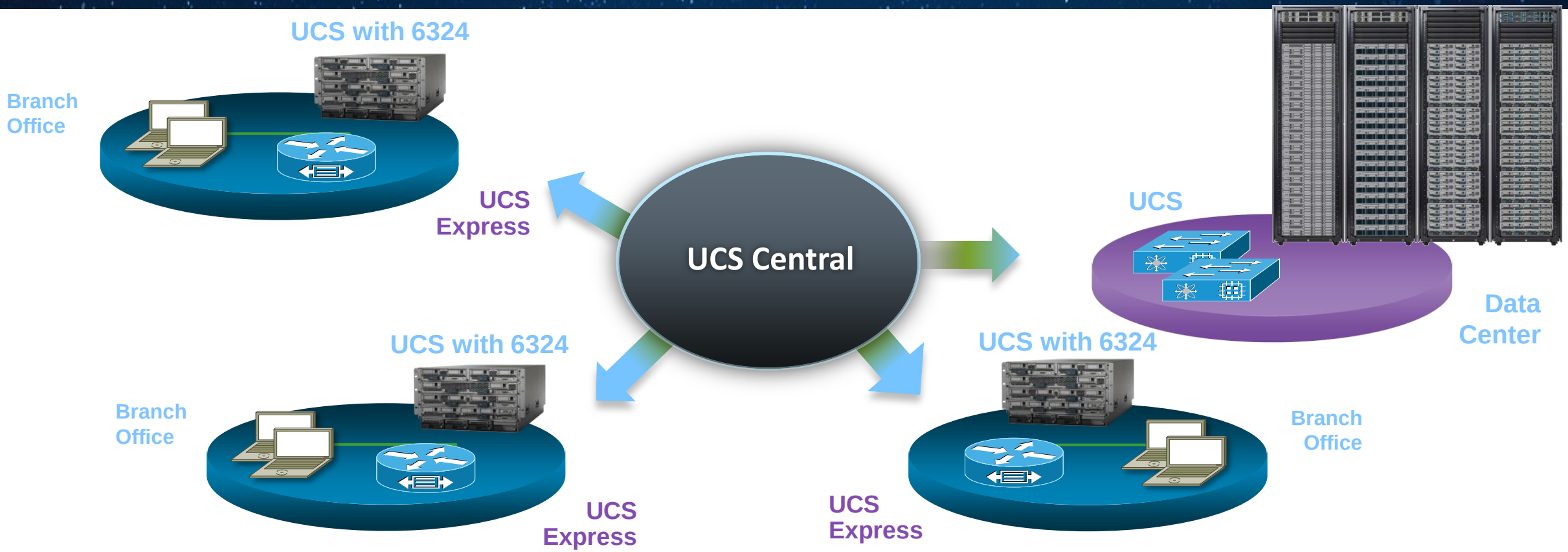


UCS Mini

Unifying Branch and Datacenter Management

Centralizing Visibility and Control of UCS with UCS Central

Cisco Connect

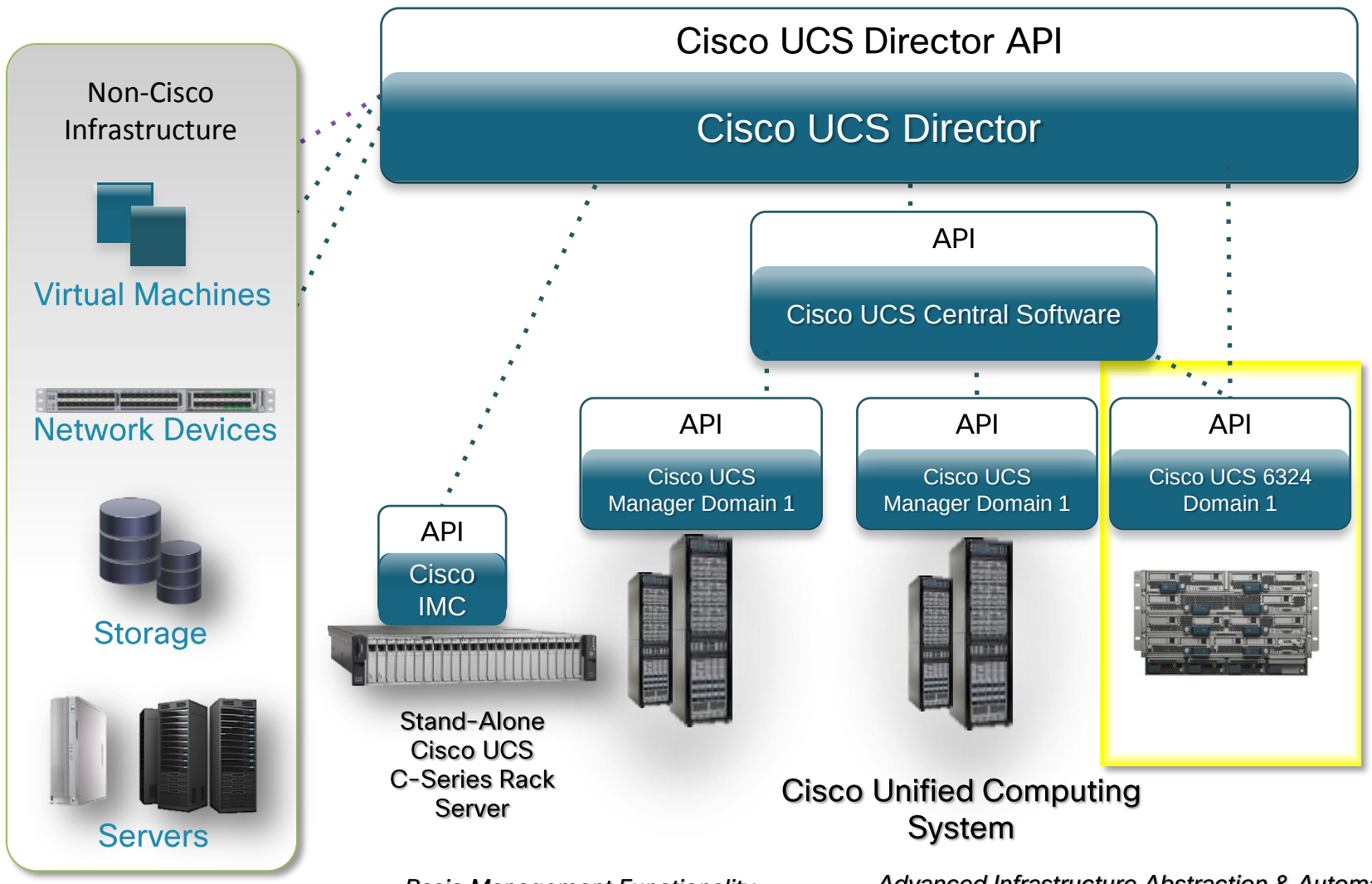


Extend Management to Branch Offices

Centralize Control at Every Level of Virtual Infrastructure

Streamline, Standardize, and Automate Remote Infrastructure

UCS Mini
6324 Fabric Interconnect Management



- Single office locations
  - UCSM converges management of servers, storage and networking
  - Full featured management no limitations
- Datacenters
  - Take advantage of the full Cisco Management Suite
  - Integrated with third-party ecosystems (Microsoft, VMware, CA, IBM)
  - Common management of UCS in the datacenter and 6324 Fabric Interconnect domains at remote offices

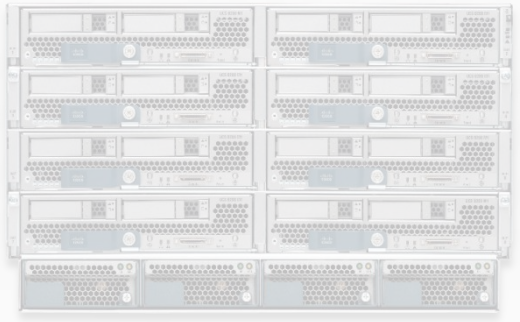
Powering Applications at Every Scale

The Next Wave of UCS Innovation

Cisco Connect

Edge-Scale Computing

UCS Mini



Core Data Center Workloads

UCS Director Enhancements

UCS Blade & Rack M4 Servers

Cloud-Scale Computing

UCS M-Series

UCS C3160 Server

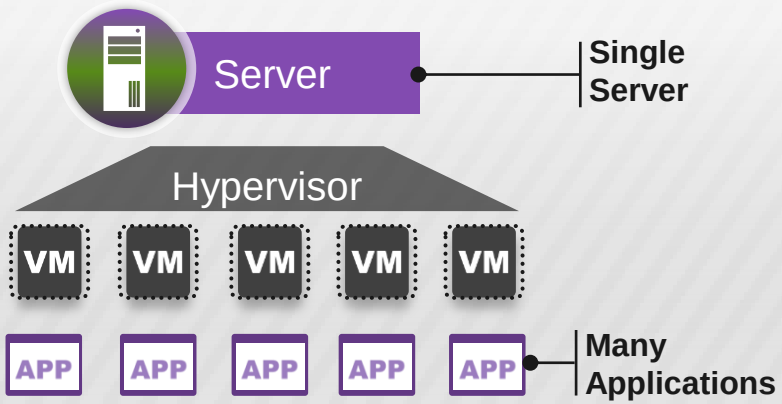
Unmatched Continuum of Scale

Cloud Scale Turns Computing Architecture Upside-Down

Cisco Connect

Mainstream IT Applications

Fixed Application Size



Multi-Threaded on Bare Metal

ORACLE

sas

SAP

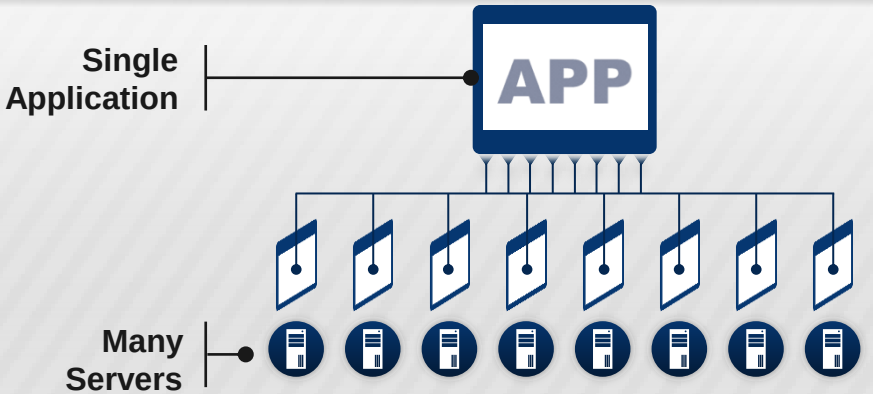
Virtualized Applications

Microsoft

vmware

Cloud Scale Applications

Horizontal Scaling



Software Built for the Cloud

hadoop

Hortonworks

MAPR

cloudera

cassandra

mongoDB

Grid Computing

Traditional vs Disaggregated Servers – 16 Server Footprint

Cisco Connect

The Foundation for New Cloud-Scale Applications

Introducing UCS M-Series Modular Servers

UCS fabric for local server resources

Cisco Connect

Compact Chassis
8 Compute cartridges

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

Shared Local Resources
Network & storage resources

UCS M-Series

Using Cisco Innovation to Disaggregate the Server

Based on Cisco Virtual Interface Card

3rd Gen VIC creates local fabric for compute nodes

Shared Local resources

4 shared SSDs in the chassis

Shared dual 40Gb connectivity

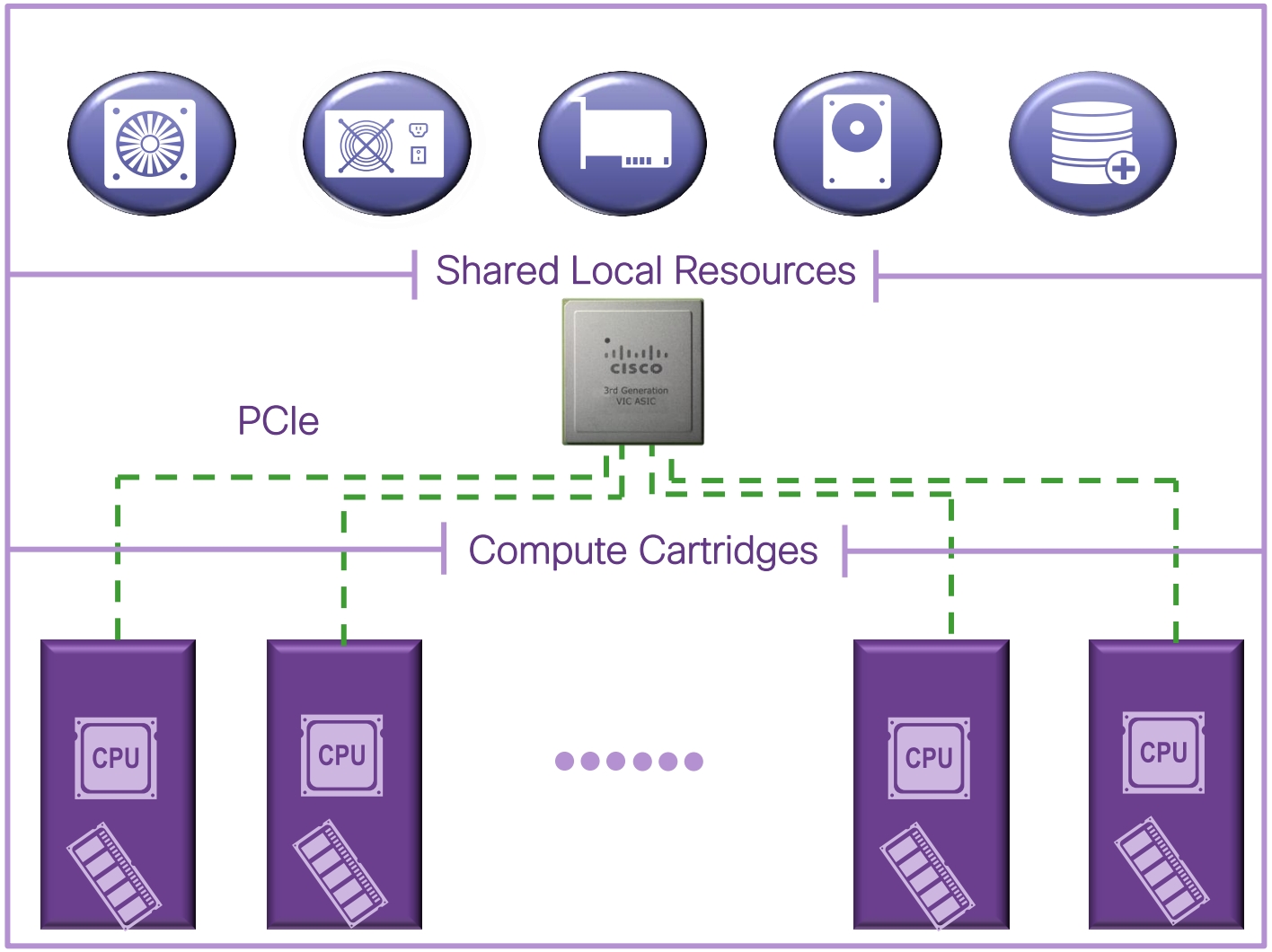
Compute Density

16 Intel Xeon E3 Compute nodes in 2RU chassis

Each cartridge holds 2 independent compute nodes

Deconstructing the Monolithic Server

Cisco Connect



Disaggregated Server

Shared Local Resources

Shared Local Resources

- Improved utilization of resources
- Resource amortization over smaller nodes

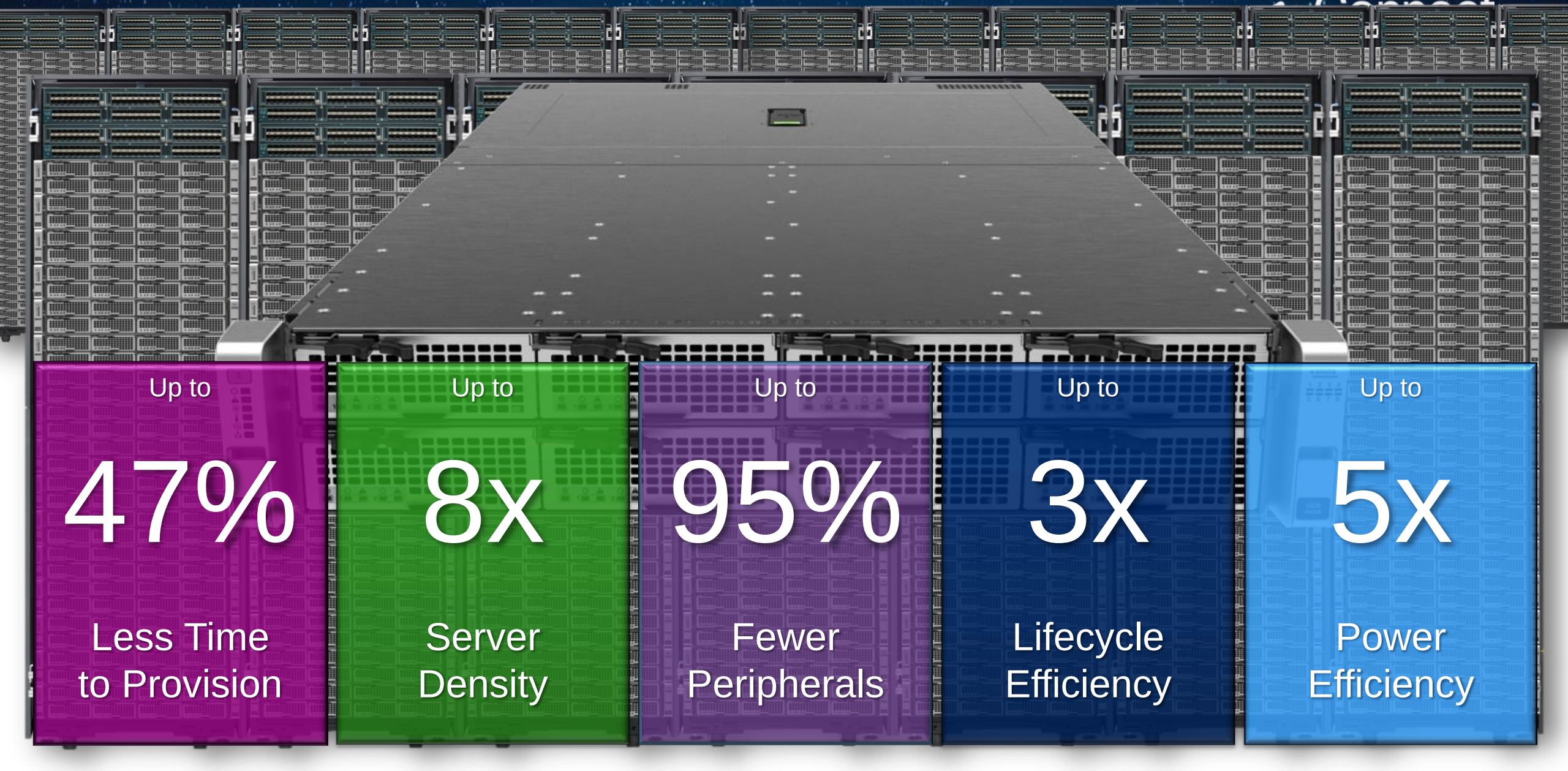
Modular Design

- Improved subsystem lifecycle management
- Ability to scale individual subsystems independently

Lean Componentry

- Improved compute density
- Cost and power optimization

UCS M-Series Modular Servers



Up to **47%** Less Time to Provision

Up to **8x** Server Density

Up to **95%** Fewer Peripherals

Up to **3x** Lifecycle Efficiency

Up to **5x** Power Efficiency

Capacity Optimized Server

UCS C3000 Series Rack Server Family

Cisco Connect

UCS C3160 Rack Server

- High-density local disk combined with modular high-performance compute
- Scale compute and local storage as needed
- Up to 24 cores with Intel Xeon EP processors and 4TB or 6TB drives for 360TB in a compact 4U Form Factor

Virtualization and Bare-Metal

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

The Unstructured Data Explosion

Cisco Connect

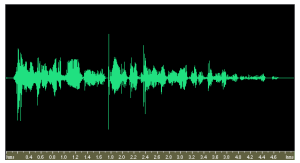
Unstructured Data Growing
100X every 10 years

MUST HAVE

- Best Sequential I/O
- Low Cost Per GB
- Manage Massive Scale (Petabytes) of Data

High Res
50,000,000 KB/object

Video
5,000,000 KB/movie



Audio
5,000 KB/movie

Photos
1,000 KB/photo

Text
500 Kb/file

*Source: IDC and Other Online Research

Organizations often have petabytes of unstructured data

Organizations often have petabytes of unstructured data

UCS C3160 Rack Server

Cisco Connect

- *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

Use Cases for the UCS C3000 Server Family

Cisco Connect

UCS C3160

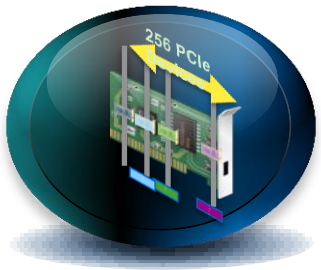
Service Providers, Enterprise, Cloud	Service Providers	Enterprise	Service Providers, Enterprise
Object Store	Media Streaming & Content Distribution	Exchange	Big Data & Analytics
openstack, ceph	CentOS, redhat	Windows Storage Server 2012	Hadoop, Big Data

Addressable Market >$2B WW*

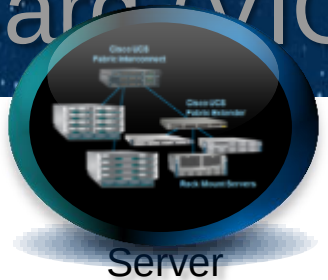
*Source: IDC

Cisco Virtual Interface Card (VIC)

Cisco Connect

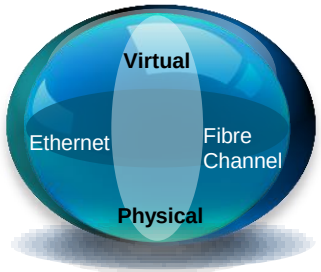


Virtual Devices
Over 256 per adapter
Ethernet, HBA, USNIC, DPDK



Server Management
Cisco Single-Connect

Blade Servers
VIC 1240, 1280, 1340, 1380

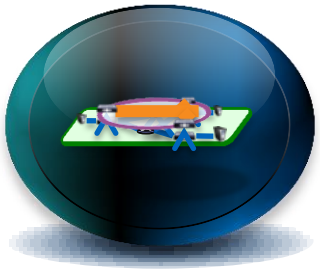


Converged Network Infrastructure
Ethernet, Fibre Channel, IB Technologies

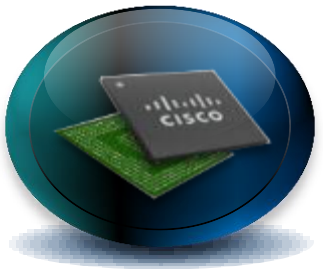
Cisco VIC is an industry leading virtual network adapter for Cisco Blade and Rack servers.

Rack Servers
VIC 1225, 1225T, 1285, 1227

40Gb FCoE
Multiple ports of 10Gb and 40Gb. Up to 160Gb per server

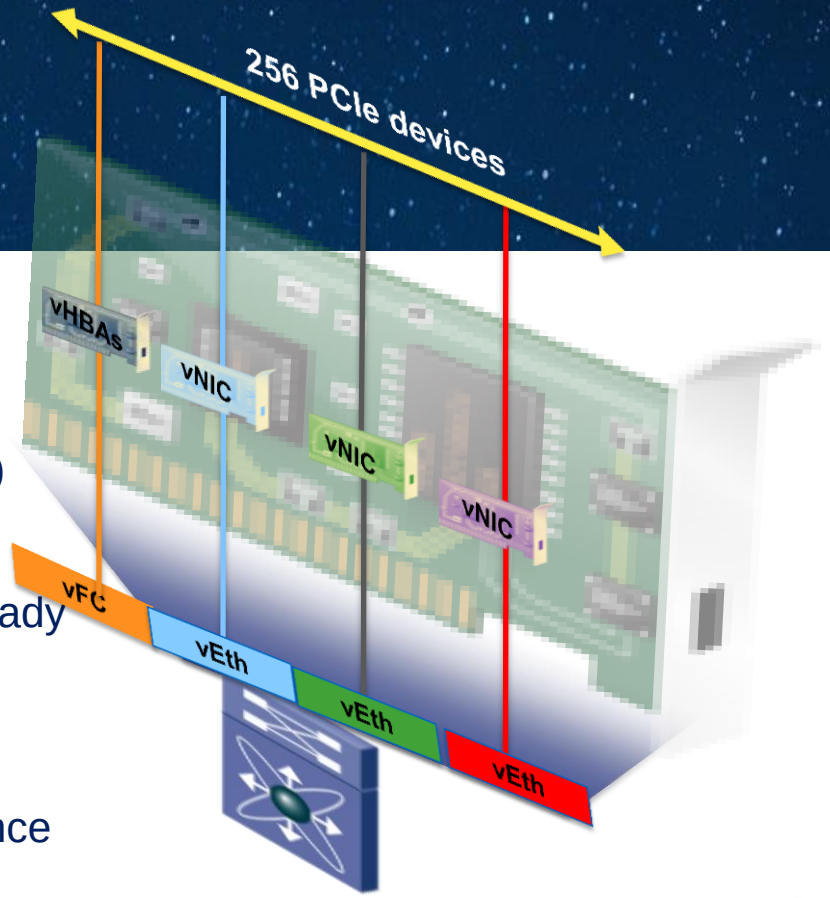


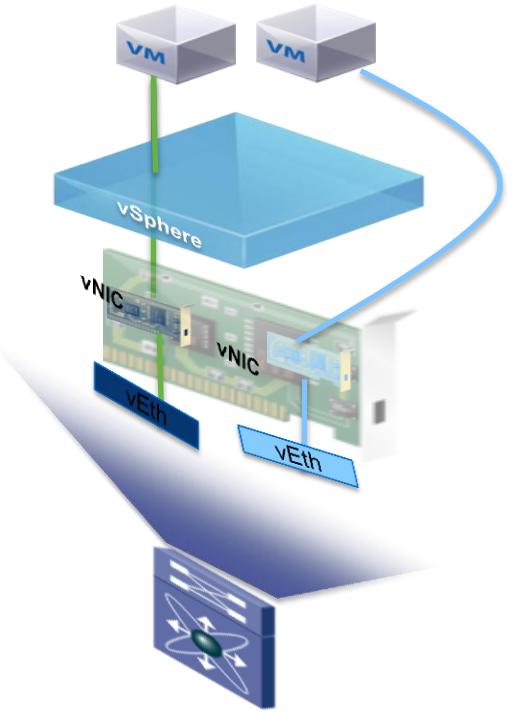
Advanced Network Features
VM-FEX for ESX and Hyper-V, NVGRE, VXLAN, USNIC, RoCE-ready



Cisco Developed ASIC
Built-in classification engine and network offload services

VIC Momentum





UCS Differentiators:

- Stateless computing: 1K PCIe devices (NICs or HBAs)
- Host Connectivity: 16 lanes of PCIe Gen3
- Network Connectivity: Dual 4x10Gb Capable, 40Gb ready
- Virtualization:
  - Consolidate virtual and physical switching
  - Bypass Hypervisor for near bare metal performance

Market & Eco System Momentum

- Port Shipments: **57%** of total 10Gb blade server ports *
- Revenue Share: **69%** of total 10Gb blade server ports revenue*

* Based on Crehan Research Q4 2013 Market Share Report

UCSD Express for Big Data

On-demand Hadoop Deployment

Cisco Connect

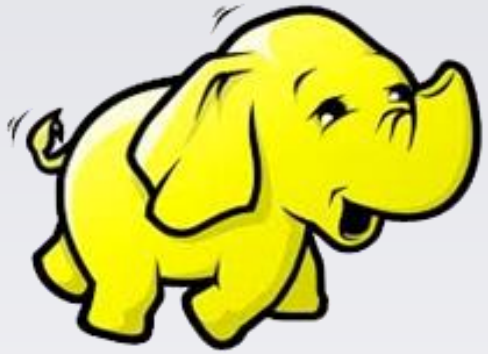
Zero Touch Deployment of Hadoop Clusters

On Demand Cluster Sizing

Dashboard for status and health monitoring

Centralized End-to-End Visibility

- Accelerating time to value for Hadoop Deployment
- Single Management Pane for Hadoop Clusters
- Extends UCS Management value prop into Hadoop Infrastructure



UCSD Express for Big Data:
Rapid Integrated, Policy-Based Hadoop Infrastructure Management

Cisco Connect

1 Subject Matter Expert Define Policies → 2 Policies Used to Create Hadoop and Infrastructure Service Profile Templates → 3 Service Profile Templates Create Service Profiles → 4 Ready-for-use Hadoop Clusters

Hadoop SME | Storage SME | Server SME | Network SME

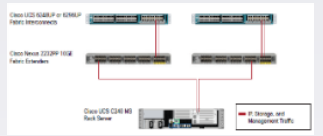
- Create Infrastructure Profile
- Create Hadoop Profile
- Create Hadoop Application Profile

Namenode, data node configuration
Configure Hadoop services
Setup heap size and memory buffers
HDFS, MapReduce configuration
Setup other hadoop services

Uplink and server port configuration
Network interface card (NIC) configuration: MAC address, VLAN, and QoS settings;
worldwide names (WWNs),,
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

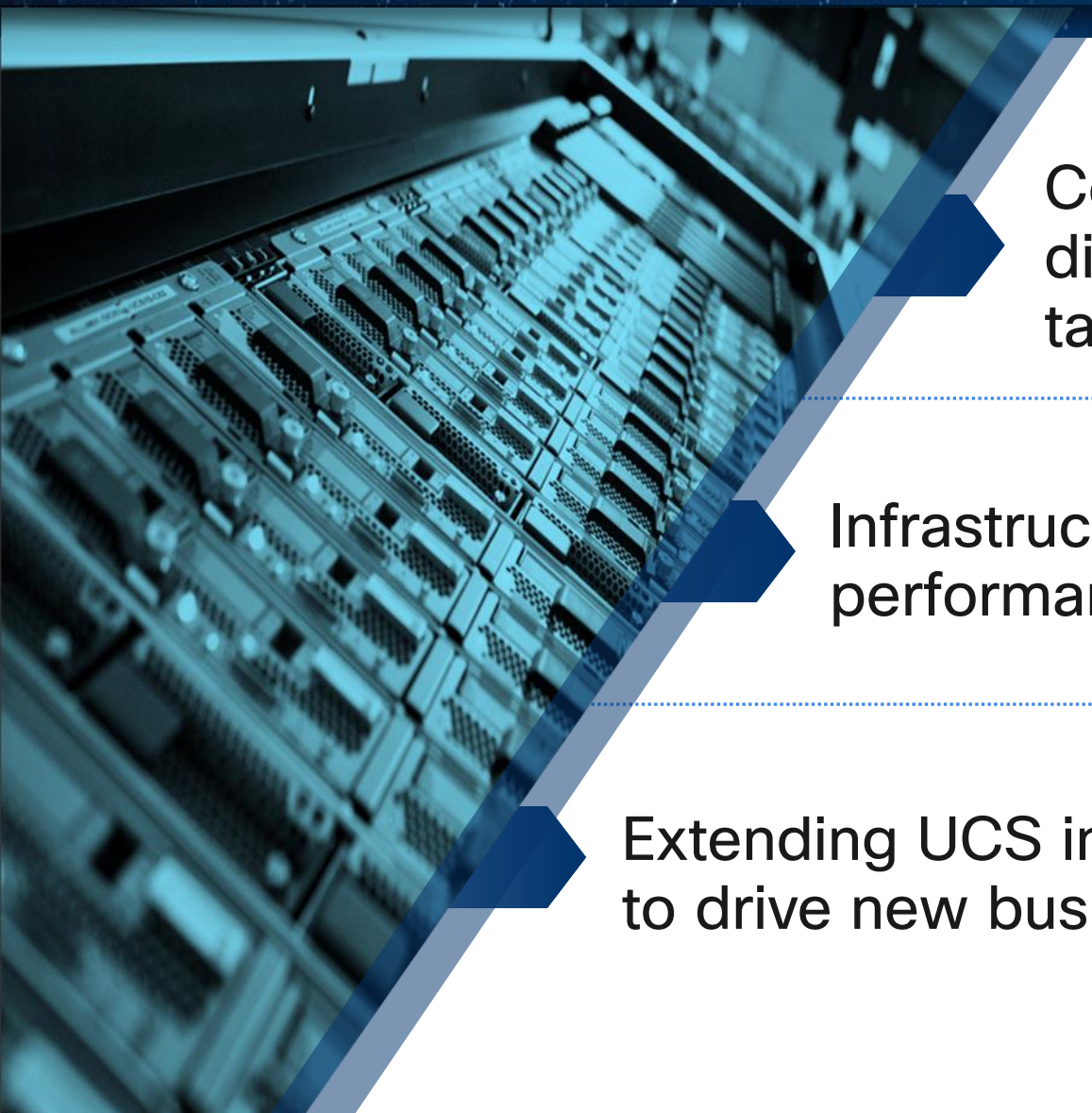
hadoop



Powering Applications at Every Scale

The Next Wave of UCS Innovation

Cisco Connect



Continuing to innovate original differentiation of the UCS Architecture: taking it to the next level

Infrastructure optimized for application performance: not constrained by it

Extending UCS into new markets, with new use cases: to drive new business outcomes for customers

Summary