UCS C3000 High Density Rack Server

May 19, 2015

Legal Disclaimer

Many products and features described herein remain in varying stages of development and will be offered on a when-and-if-available basis

This roadmap is subject to change at the sole discretion of Cisco and Cisco will have no liability for delay in the delivery or failure to deliver any of the products or features set forth in this document



© 2013-2014 Cisco and/or its affiliates. All rights reserved.

New Application Architectures Driving Storage

Changing Storage Needs

Unstructured Data



Video / CDN



Cloud



Unlimited scale, limited budget

Application Trends

Open



Distributed



Cost Effective



Storage Aware



Software-Defined Storage

- Use of servers with DAS to provide application storage
- Application responsible for data resiliency
- Servers can be compute *and* storage
- Change at the speed of software



© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Cisco UCS - Powering Applications at Every Scale



Customer Needs

Power and Operational Simplicity in the Data Center Core

1

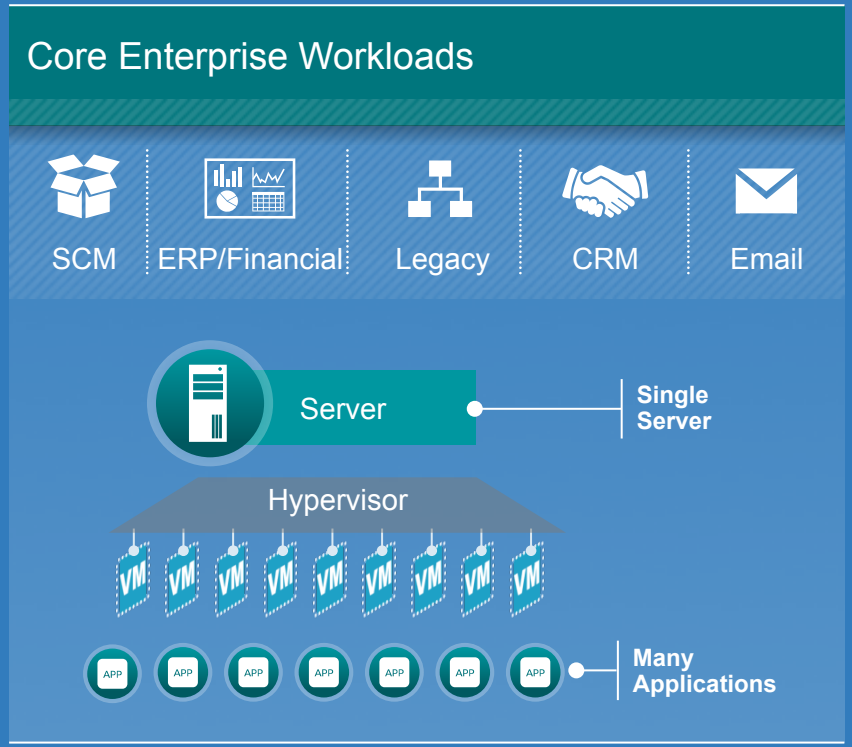
Seamlessly Extend the Data Center to the Edge

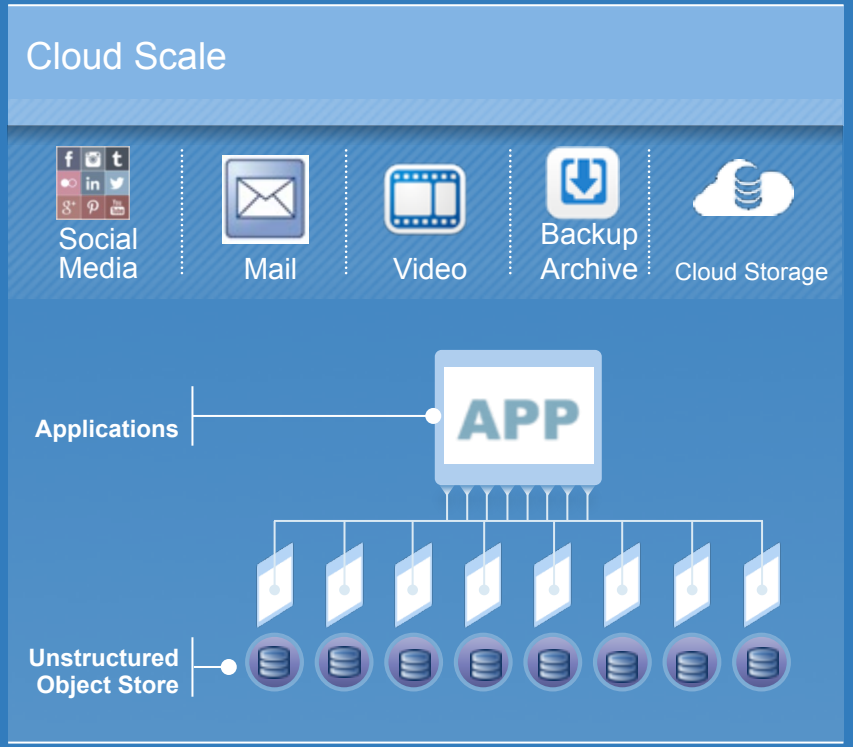
2

More Efficient Way to Power Cloud-Scale Applications

3

Cloud-Scale Changes Compute+Local Storage Architecture





© 2013-2014 Cisco and/or its affiliates. All rights reserved.

The Unstructured Data Explosion

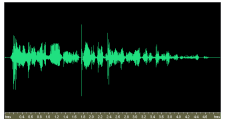
Unstructured Data Growing
100X every 10 years



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

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Poll Question: Data Growth



How much unstructured data growth in PBs has your organization had in the last 2 years and what is expected in the next 3?

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Introducing UCS C3000 Rack Server Family



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

Compute Resources

Full-Featured Modular Two-Socket Xeon Server
Stand-alone CIMC, CIMC Supervisor and *UCSM (in future)*

Storage Resources

Massive Local Storage
Up to 240TB (with 4TB HDD) @ and 360TB (with 6TB HDD) of dense storage in a compact 4U Form Factor that fits in a standard rack

Network Resources

High I/O Bandwidth
Powered by Cisco VIC

cisco

UCS C3000 Advantages

- Fully Modular Chassis
  - Lower TCO and $/GB
- Shorter Depth with innovative airflow
  - Less than 32 inches – no need for extended rack
- Investment Protection
  - Designed for future upgradeability with Server Refresh, HDD, SDD
- Best Sequential I/O and System Throughput
  - Designed for 12Gbps Performance with support for SAS-3 and 4K Native Drives
  - Capable of up to 160Gbps Throughput



© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Use Cases for the UCS C3000 Server Family

Cisco UCS C3160

Service Providers, Enterprise, Cloud	Service Providers	Service Providers, Enterprise	Service Providers, Enterprise
Software Defined Storage Object Store	Media Streaming and Content Distribution	Exchange Backup and Archive (as Service)	Big Data and Analytics
openstack, ceph, SCALITY	CentOS, redhat		Big Data

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Poll Question: Software Defined Storage

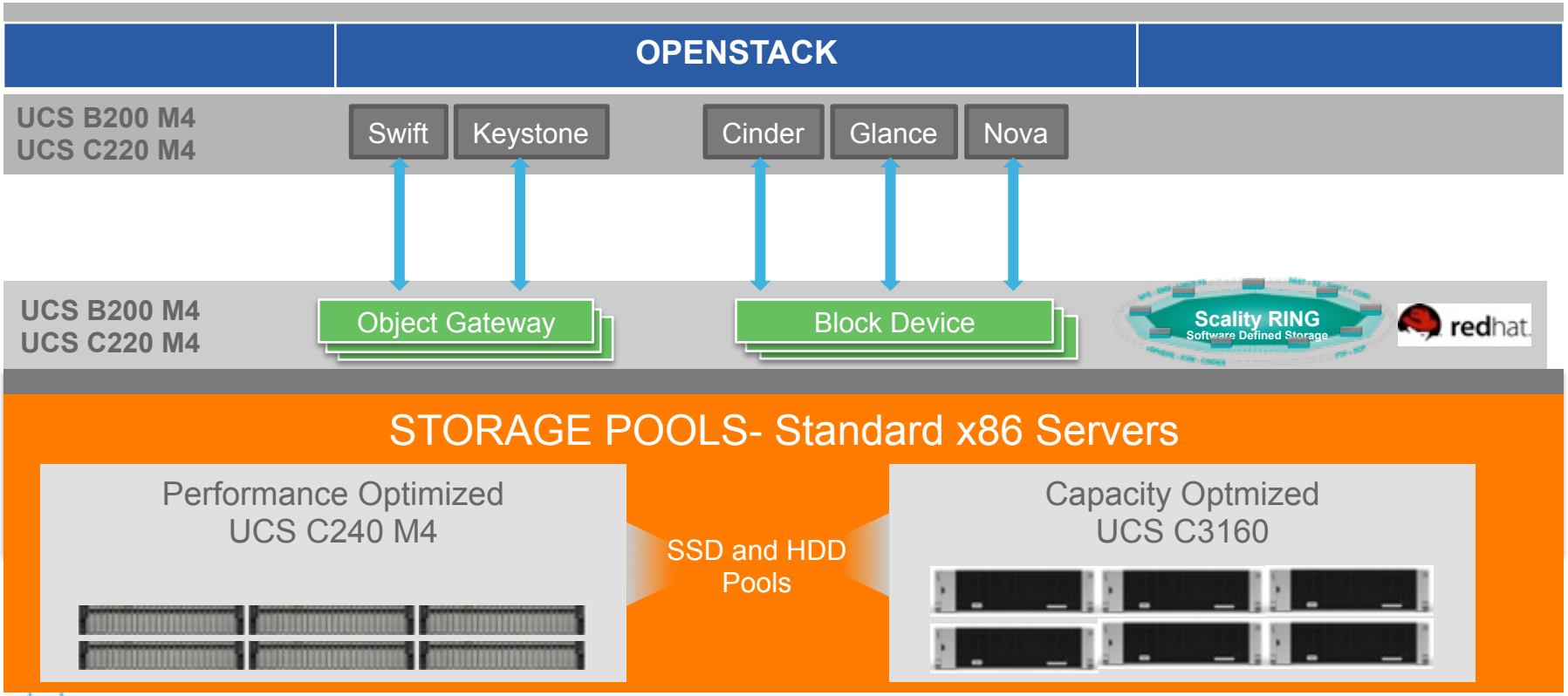


Is your organization exploring or deploying and of the following software defined storage?

1. CEPH/SWIFT
2. Scality
3. Cleversafe
4. Caringo
5. Others: Please let us know which one
6. None right now

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Software Defined Storage Architectures



© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Poll Question: Cost/GB for you current storage environment

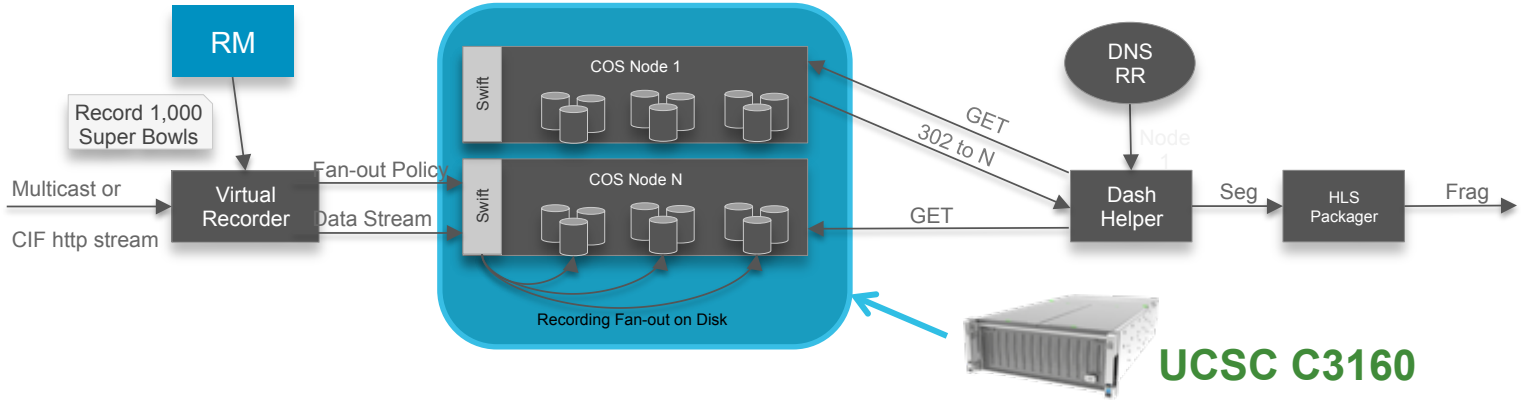


How much are you paying or planning to pay for your storage in a software defined storage environment?

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

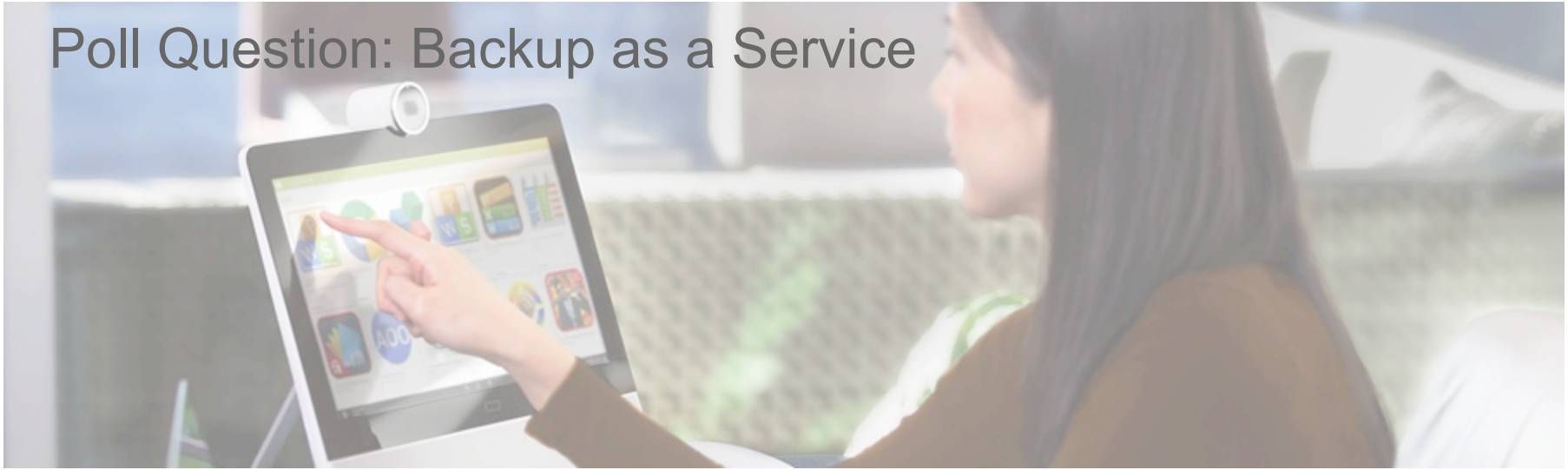
Service Provider CloudDVR Content Store

- Cisco SP CloudDVR Object Store Applications available on UCS C3160



© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Poll Question: Backup as a Service

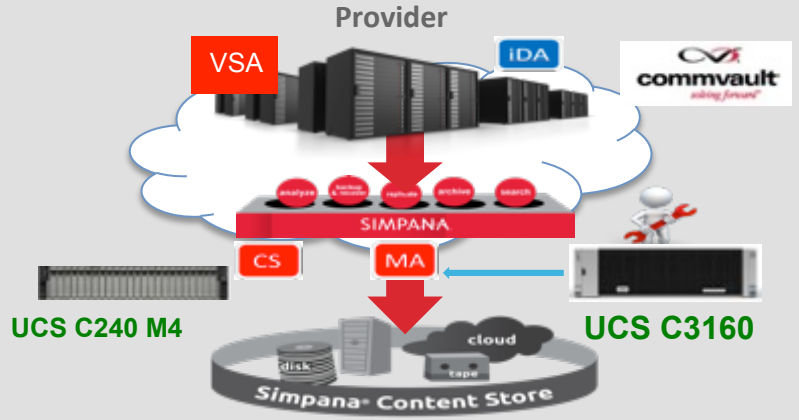


Are you offering or planning to offer Backup as a Service for your customer base

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Backup And Replication (As Service)

- Backup as a Service with Commvault
  - Agent Only: Data Storage at provider site
  - Local Rentention Dual storage on customer side and copy on provider site
  - BaaS for IaaS



- Modern, Disaster Recovery Solution for any Vmware vSphere or Microsoft Hyper-V enviroments
  - High-speed VM recovery with reduced total cost of ownership
  - Designed for future data growth

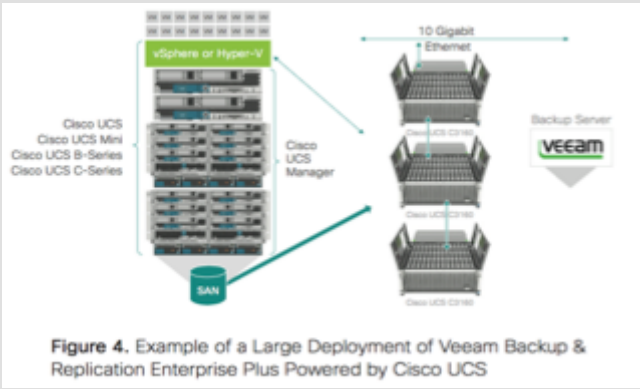


Figure 4. Example of a Large Deployment of Veeam Backup & Replication Enterprise Plus Powered by Cisco UCS

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

UCS C3000 Products

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

UCS C3000 Capacity Optimized Server Family

Common Chassis, Drives, PSU, 12Gbps SAS-3 Infrastructure

Shipping Today

C3160 Rack Storage Server

- Single Server Node
- 40Gbps Connectivity with 4x10Gbps
- Standalone CIMC and CIMC Supervisor



C3260 Rack Storage Server

Mid 2015

- Dual Server Node
- Drives available to both Server Nodes, asymmetric split of drives between nodes available
- 160Gbps with 4x 40Gbps(QSFP)
- Standalone CIMC, CIMC Supervisor, and UCSM



Single/Dual Server	Up to 1TB Memory	Dual Modular LOM (mLOM)	Up to 4GB RAID Cache	Up to 62 Drive Bays	Up to 12Gbps
Dual CPU Socket per server	512GB per Server	Multiple Connectivity Options	Enterprise Storage Features	60 LFF with support for up tp 14 SSDs, plus up to 4 SFF Boot SSD	SAS-3 4K Native Drives Supported

Modular Architecture of the UCS C3000



HDD
4 Rows of hot-swappable HDD
4TB/6TB with up to 1 row of 400GB SSD
Total top load: 56 drives



FAN
8 hot-pluggable fans

Server Node
2x E5-2600 V2 CPUs
128/256GB RAM
1GB/4GB RAID Cache
SAS HBA Node

Optional Disk Expansion
4x hot-swappable, rear-load LFF
4TB/6TB HDD

System I/O Controller (SIOC)
Cisco mLOM Slot

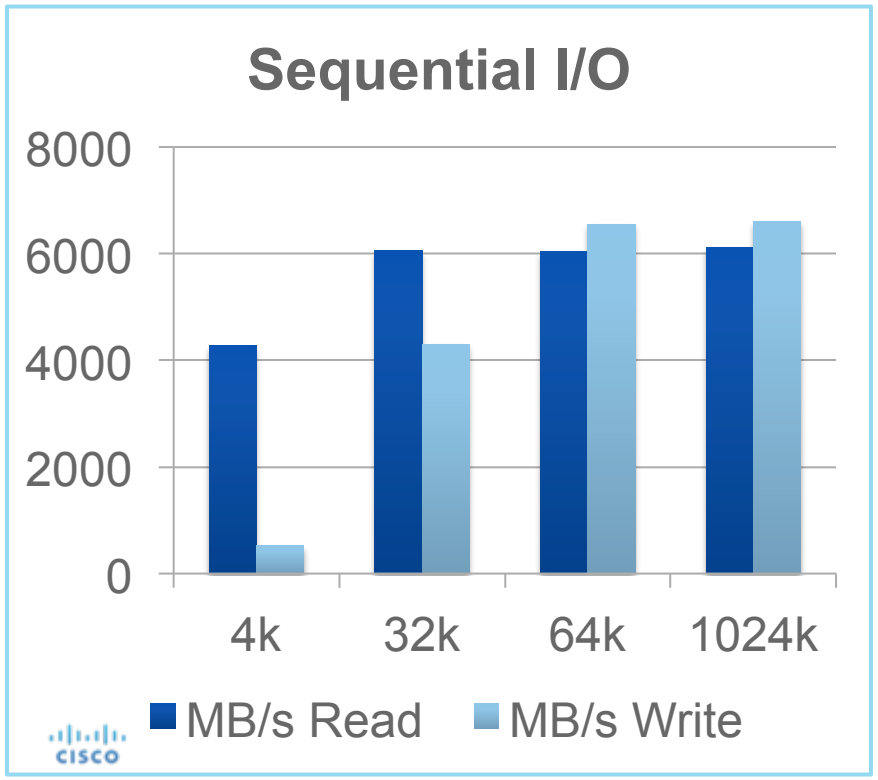
Power Supply
4 hot-pluggable PSUs

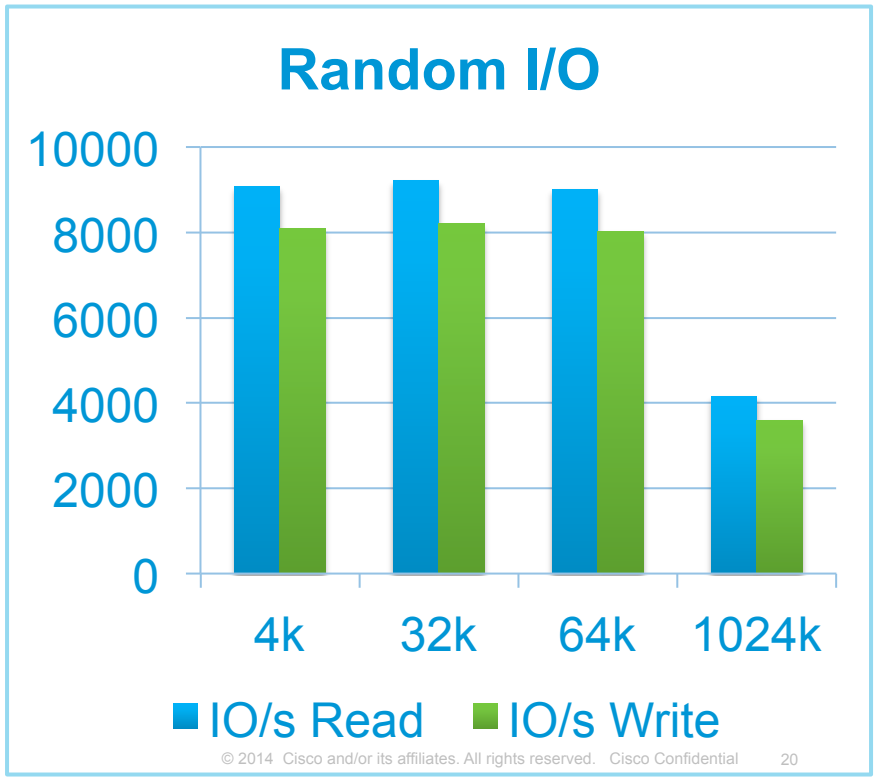
Two 120GB/480GB SSDs
Hot-Plug OS/Boot

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Performance on the UCS C3160

60 6TB/12Gb SAS-3 Disks Configured as JBOD





© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential



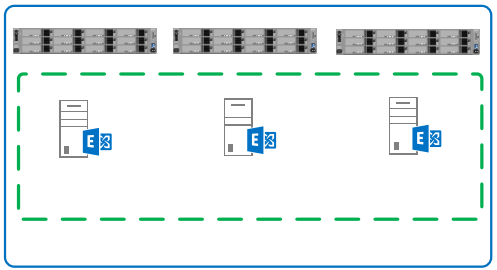
TOMORROW starts here.

Microsoft Exchange 2013 example
6000 Mailbox config

UCS C240 M4 based design

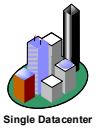
- 3 X C240 M4
  - Dual E5-2670v3 Processors
  - 256GB RAM
  - Two Internal 960GB SSD's for OS and Transport DB
  - 12 4TB 7200 RPM SAS Drives
- 3 HA Databases Copies
- Tolerance for One Offline Servers
- Physical Server (Bare-Metal)
- Multi-Role Deployment
- UCSM Managed or Standalone

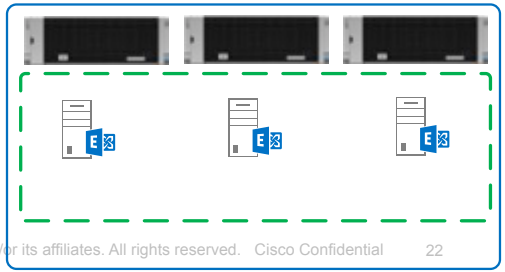




UCS C3160 based design

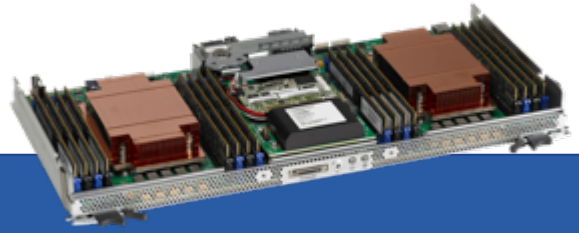
- 3 X C3160
  - Dual E5-2695v2 Processors
  - 256GB RAM
  - 32 X 4TB 7200 RPM SAS Drives
- 3 HA Databases Copies
- Tolerance for One Offline Servers
- Physical Server (Bare-Metal)
- Multi-Role Deployment
- Standalone Management





© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Server Nodes



Server Configs	CPU Type (clock / cache) QTY: 2	Cores per node	Memory	RAID Cache	Workloads
SVRN1	Intel E5-2620v2 2.1GHz / 15MB	12	128GB	1GB	Object Storage / Sequential IO workloads, lowest cost config
SVRN2	Intel E5-2620v2 2.1GHz / 15MB	12	256GB	4GB	Increased memory for versatile use cases, increased RAID cache
SVRN3	Intel E5-2660v2 2.2GHz / 25MB	20	256GB	4GB	Content stores, in-node compute such as transcoding / processing
SVRN4	Intel E5-2695v2 2.4GHz / 30MB	24	256GB	4GB	High performance in-node compute (dedupe, transcoding)
SVRN5	Intel E5-2695v2 2.4GHz / 30MB	24	512GB	4GB	
SVRN6	Intel E5-2660v2 2.2GHz / 25MB	20	128GB	SAS HBA	Windows Storage Server, Windows Storage Spaces
SVRN7	Intel E5-2695v2 2.4GHz/30MB	24	256	SAS HBA	CEPH, Cloud Storage

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

UCS C3160 System I/O Controller



- There are up to 2 System & IO Controllers (SIOC) per C3160 system
  - Responsible for system services, CIMC, network management
- Each SIOC has a dedicated management port
- SIOC also contains a single Cisco C-series mLOM adapter slot for modular network I/O

Cisco mLOM Adapter	Total # of ports	Network Bandwidth	Throughput Capacity
VIC 1227 Dual 10GbE SFP+	4(2 per card)	40Gb/s	Up to ~4.8GB/s
Intel i350 Quad 1 Gigabit RJ45	8(4 per card)	8Gb/s	Up to ~880MB/s
Post- FCS: VIC 1227 Dual 10GBASE-T	4(2 per card)	40Gb/s	Up to ~4.8GB/s

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Connecting to Gen 2 FI

- UCS C3160 can be connected to the Gen2 FI via Appliance Port
- UCSM Release 2.2(4) (Codename: ElCap MR3) will have support for up to 8 Appliance port for UCS C3160

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

UCSC C3160 Management

- Cisco Integrated Management Controller (CIMC)
- IMC Supervisor v1.0.0.4

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential

Drives

Drive/Capacity	Timeline
4TB SAS2 LFF	Available Now
400GB SAS2 SSD (Up to 14)	Available Now
6TB SAS3 LFF	Available Now
400GB SAS3 SSD (Up to 14)	Available Now
8TB SAS3 LFF	In planning
Higher Capacity SATA SSDs	In Planning
120GB and 480GB Boot SSDs Min: 1 and Max:2 per server node	Available Now

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential