What You Make Possible
Hardware “State” Abstraction

- MAC Address
- NIC Firmware
- NIC Settings
- UUID
- BIOS Firmware
- BIOS Settings
- Boot Order
- BMC Firmware
- Drive Controller F/W
- Drive Firmware
- WWN Address
- HBA Firmware
- HBA Settings

Abstracted from hardware

LAN Connectivity
OS & Application
Storage Connectivity
Agenda

- Introduction
- UCS Key Features
- Hardware Overview
- Ethernet Connectivity
- Storage Connectivity
Introduction
Building Blocks of Cisco UCS

- **UCS Manager**
  Embedded – manages entire UCS

- **UCS Fabric Interconnect**
  10GE unified fabric switch

- **UCS Fabric Extender (I/O Module)**
  Remote line card

- **UCS Blade Server Chassis**
  Flexible bay configurations

- **UCS Blade and Rack Servers**
  x86 industry standard
  Patented extended memory

- **UCS I/O Adapters**
  Choice of multiple adapters
Physical Architecture

Chassis 1

IO M A
CNA1
Half blade

Chassis 20

IO M A
CNA1
Full blade

Fabric Switch
Extenders

Fabric

SAN A
ETH 1
ETH 2
SAN B

MGMT

Uplink Ports
OOB Mgmt
Server Ports

Virtualised Adapters
Compute Blades
Half / Full width
UCS Key Features
Cisco Unified Computing System

“Stateless” Computing
Hardware Abstraction

Service Profiles
Just-in-time Provisioning

Unified Fabric
Consolidated I/O

UCS Manager
Single Management Domain

Virtual Adapters
Virtualised I/O
“Stateless” Computing

Hardware “State” Abstraction

Chassis-1/Blade-2

UUID: 56 4dcd3f 59 5b...
MAC : 08:00:69:02:01:FC
WWN: 5080020000075740
Boot Order: SAN, LAN

Chassis-8/Blade-5

Same identity moved

Chassis-1/Blade-2

UUID: 56 4dcd3f 59 5b...
MAC : 08:00:69:02:01:FC
WWN: 5080020000075740
Boot Order: SAN, LAN

Chassis-8/Blade-5
Service Profiles

- Logical container of server state information
- User-defined
  - Each profile can be individually created
  - Profiles can be generated from a template
- Applied to physical blades at run time
  - Without profiles, blades are just anonymous hardware components

Benefits:
- Consistent and simplified server deployment
- Simplified server upgrades
- Enhanced server availability
Unified Fabric
Consolidated I/O

Legacy Blade Vendors

<table>
<thead>
<tr>
<th></th>
<th>Chassis</th>
<th>4</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Devices</td>
<td></td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Chassis Management Devices</td>
<td></td>
<td>8</td>
<td>20</td>
</tr>
</tbody>
</table>

Convergence inside each chassis

True FCoE of LAN/SAN & MGMT

<table>
<thead>
<tr>
<th></th>
<th>Chassis</th>
<th>4</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Devices</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Chassis Management Devices</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Cisco Confidential – Internal Use Only
- All of the benefits of blades applied to rack servers
- Single point of management
- Firmware management
- Service profiles – “stateless” agility
UCS Manager: Multi-Domain Management

Do It Yourself
- SDK & Emulator
- GoUCS
- PowerShell & .NET
- Most flexible
- Most powerful

Open Source
- UCS Dashboard
- Flexible
- Leverage power of community

Cisco Product
- Multi UCS Manager
- Cisco CIAC
- Cisco NSM
- Cisco support and roadmap

ISV Partners
- System Centre plug-in
- BMC Integration
- CA integration etc
- Multi-vendor support
- Incumbency
- Broadest use cases

Multi-UCS Management Solutions
UCS XML API
UCS XML API
UCS XML API
UCS XML API
Cisco UCS Virtual Interface Card

- Creates multiple x16 PCIe Ethernet and FC interface adapters
- Provides redundant path to fabric interconnect using dual 10 Gigabit Ethernet ports
- Centralised management of virtual interfaces from UCS Manager
- Offers Virtualisation aware networking with best performance (VM-FEX)
VM-FEX with VMware

Emulated Mode
- Each VM gets a dedicated PCIe device
- 12%-15% CPU performance improvement
- Appears as distributed virtual switch to hypervisor
- vMotion supported

PCle Pass-Thru or VMDirectPath
- Co-exists with Standard mode
- Bypasses Hypervisor layer
- 30% improvement in I/O performance
- Appears as distributed virtual switch to hypervisor
- Currently supported with ESX 5.0 only
- vMotion supported
Hardware Overview
Unified Ports

Customer benefits
Simplify fabric purchase by removing port ratio estimates
Increase design flexibility

Feature details
- Flexibility to configure any port at Ethernet (1/10 Gigabit with SFP+) or FCoE or Native FC Ports (8/4/2/1G with FC Optics)
- All ports on UCS 6200 Series
- 16-port expansion module (E16UP)
- Uses existing Ethernet / Fibre Channel SFP and SFP+ transceiver
- Compared to 6100 Series, Fibre Channel is standard. No requirement to buy FC module
UCS 6248 Fabric Interconnect

Customer benefits

Higher density and performance
Unified ports

Feature details

- Double the port density at 1RU compared to UCS 6100 Series
- 32 fixed unified ports and 1 expansion module
- All ports are usable as uplinks/downlinks
- Reduced port latency to 2µs
- Dual power supplies
- DC option introduced
- Layer 3 ready via daughter card
UCS 6248 Fabric Interconnect

Front Panel
- 32 x Fixed ports: 1/10 GE or 1/2/4/8 FC
- Fabric Interconnect Cluster Connectivity
- Out of Band Mgmt 10/100/1000
- Console
- Fan Module
- Fan Module
- Power Entry
- Power Entry

Rear Panel
- Expansion Module (GEM)
- N + N Redundant Fans
- N + N Power Supplies
# UCS 6296 Fabric Interconnect

## Customer benefits
- Higher density and performance
- Unified ports

## Feature details
- High density, 96 ports in 2RU
- 48 fixed unified ports and 3 expansion modules
- Increased 2Tbps Switching Performance
- All ports are usable as uplinks/downlinks
- Reduced port latency to 2µs
- Dual power supplies, AC/DC option
- Layer 3 ready via daughter card
UCS FI 6296 Front Panel

Fabric Interconnect
Out of Band Mgmt
10/100/1000
Console
USB Flash

Power Entry
Power Entry
Fan Module
Fan Module
Fan Module
Fan Module

N + N Power Supplies
N + 1 Redundant Fans
UCS FI 6296 Rear Panel

Expansion Module

Expansion Module

Expansion Module

48 x Fixed ports 1/10 GE or 1/2/4/8 FC
UCS 6200 Series Expansion Module

Customer benefits
Simplify fabric purchase by removing port ratio estimate
More ports

Feature details
- 16 unified ports can be configured as either Ethernet/FCoE or Native FC ports
- Ethernet operations at 1/10 Gigabit Ethernet
- Fibre Channel operations at 8/4/2/1G
- Uses existing Ethernet SFP+ and Cisco 8/4/2G and 4/2/1G FC optics
- Not backwards compatible with 6100 Series
- Slider based FC port configuration
UCS 5108 Blade Chassis

- Up to 8 half slot blades
- Up to 4 full slot blades
- 4x power supplies, N+N grid redundant
- 8x fans included
- 2x UCS Fabric Extender
- All items hot-pluggable
- AC / DC
UCS 5108 Blade Chassis Parts

Rear
- 2 Fabric Extenders (I/O modules)
- 8 Fan Modules
- 4 Power Connectors

Front
- 4 to 8 Blades
- 4 Power Supplies

6U, 19" Rack

BRKCOM-1001 © 2013 Cisco and/or its affiliates. All rights reserved. Cisco Public
UCS 5108 Blade Chassis Backplane

Blade Connectors

I/O Modules

PSU Connectors

Redundant data and management paths
UCS 2104 Fabric Extender (I/O Module)

- Connects UCS blade chassis to the Fabric Interconnect
- Four 10 Gigabit Ethernet, FCoE capable, SFP+ ports
- Up to 2 Fabric Extenders per chassis for redundancy and up to 80 Gbps of bandwidth per chassis
- Built-in chassis management functionality
- Fully managed by UCS Manager through Fabric Interconnect
- No local switching
Block Diagram: Next Gen UCS Fabric Details

Fabric Interconnects:
- 16x SFP+
- 16x SFP+
- Expansion Module

IO Modules:
- 2208XP

Midplane:

Mezzanine:
- Mezz Card
- x16 Gen 2

Server Blade:
- IOH
- CPU
- CPU

UCS Blade Chassis

UCS 6248

8 x Network Interface (NIF)
Up from 4 to 8
Double the Fabric Uplinks

Host Interface (HIF)
Up from 8 to 32
Quadruple the Downlinks
2208XP Fabric Extender (I/O Module)

Customer benefits

Double the uplink bandwidth to the FI

Quadruple the downlink bandwidth to the server slots

Lower latency and better QoS

Feature details

- Double the uplinks
  - 8x 10GE uplinks to FI
  - Total 160 Gbps per chassis
- Quadruple the downlinks
  - 32x 10GE to blades
- Lower latency (0.5µs within IOM)
- Backward compatible
Block Diagram: Next Gen UCS Fabric Details

Fabric Interconnects
- UCS 6248
- 16x SFP+ 16x SFP+ Expansion Module
- 16x SFP+ 16x SFP+ Expansion Module
- 16x SFP+
-扩张模块

IO Modules
- 2204XP

Midplane

Mezzanine
- Mezz Card
- x16 Gen 2

Server Blade
- IOH
- CPU
- CPU

UCS Blade Chassis

Cisco Public

BRKCOM-1001  © 2013 Cisco and/or its affiliates. All rights reserved.
## 2204 Fabric Extender (I/O Module)

### Customer benefits
- Double the downlink bandwidth to the server slots
- Lower latency and better QoS

### Feature details
- 80 Gbps per chassis
- Double the downlinks
  - 16x 10GE to blades
- Increased support for 8 egress CoS queues
- Lower latency (0.5µs within IOM)
- Backwards compatible
Compute Serves: B series

RAS and Performance Optimised

UCS B440 M2
Database Consolidation Virtualisation

Mission Critical

UCS B230 M2
Database and Virtualisation

Price / Performance Optimised

Enterprise Class

UCS B420 M3
Virtualisation, VDI, database, ERP and CRM

UCS B200 M3
IT/Web Infrastructure, distributed database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Web/IT Infrastructure, distributed database, ERP and CRM

Mission Critical

Enterprise Class

Price / Performance Optimised

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series

Virtualisation, VDI, database, ERP and CRM

Scale-Out

UCS B22 M3
Web/IT Infrastructure Proxy/Caching

UCS B series
Virtualisation Interface Card 1200

Customer benefits

- Dual 4x10 GE (80 Gb per host)
- VM-FEX scale, up to 112 VM interfaces /w ESX 5.0

Feature details

- Dual 4x10 GE port-channels to a single server slot
- Host connectivity PCIe Gen2 x16
- HW Capable of 256 PCIe devices
  - OS restriction apply
- PCIe virtualisation OS independent (same as M81KR)
- Single OS driver image for both M81KR and 1280 VIC
- Fabric Failover supported
Ethernet Connectivity
Switching Modes: End Host

- UCS connects to the LAN like a server, not like a switch
- Server vNIC pinned to an uplink port
  - No Spanning Tree Protocol
- Reduces control plane load on FI
- Simplified upstream connectivity
- Maintains MAC table for servers only
  - Eases MAC table sizing in the access layer
- Allows multiple active uplinks per VLAN
- Doubles effective bandwidth vs STP
- Prevents loops by preventing uplink-to-uplink switching
- Completely transparent to upstream LAN
- Traffic on same VLAN switched locally
End Host Mode: Pinning

- Dynamic pinning
  - Server ports pinned to an uplink port/port-channel automatically

- Static pinning
  - Specific ping groups created and associated with adapters
  - Static pinning allows traffic management, if required for certain applications/servers
End Host Mode: Upstream Connectivity

Without vPC

With vPC
End Host Mode: Disjoint Layer 2 Networks

Customer benefits

Ability to support multiple layer 2 disjoint networks upstream to UCS in End Host Mode

Feature details

- Static or dynamic vNIC pinning based on VLAN membership of the uplink
- A VLAN can exist only in one L2 disjoint network, i.e. no overlap
- A vNIC is mutually exclusive to a L2 network upstream, i.e. a L2 network per vNIC
- More than two L2 disjoint networks supported per host with virtual interface card
Switch Mode

Application Specific Scenarios

- Certain application like MS-NLB (unicast mode) have the need for unknown unicast flooding, which is not done in EHM (End Host Mode)
- Certain network topologies provide better network path out of the Fabric Interconnect due to STP root placement and HSRP L3 hop
- Switch Mode is “catch all” for different scenarios when EHM is not an option
Block Diagram: Host To Network Pinning

Fabric Interconnects

IO Modules

Midplane

Mezzanine

Server Blade

UCS 6200

16x SFP+
16x SFP+
Expansion Module

2X0X XP

Mezzanine Card

x16 Gen 2

x16 Gen 2

CPU

CPU

UCS Blade Chassis

Network Interfaces (NIF) to FI

Host Interface (HIF) to blades

Cisco Public
UCS 2X0X (Gen 1/2 FEX) : Host to Network Pinning

Server slots pinned to uplink

- Uplink: slots 1,2,3,4,5,6,7,8
- Uplink 1: slots 1,3,5,7
- Uplink 2: slots 2,4,6,8
- Uplink 1: slots 1,5
- Uplink 2: slots 2,6
- Uplink 3: slots 3,7
- Uplink 4: slots 4,8
UCS 2208 (Gen 2 FEX) : Host to Network Pinning

Server slots pinned to uplink

Uplink 1: slot 1
Uplink 2: slot 2
Uplink 3: slot 3
Uplink 4: slot 4
Uplink 5: slot 5
Uplink 6: slot 6
Uplink 7: slot 7
Uplink 8: slot 8
Fabric Port-Channel

Customer benefits

- Resilience and flexibility

Feature details

- Up to 8 * 10 Gb aggregated bandwidth to each fabric in a chassis
- Port-channel is a user configurable choice, default mode discrete
- Addition of links does not require chassis re-acknowledge
- Supported number of links in a port-channel: 1,2,3,4,5,6,7 or 8
- Load balancing
UCS 2200 (Gen 2 FEX): Host to Network Pinning

Server slots channelled across all uplinks

- Uplink 1: slots 1-8
- Uplink 2: slots 1-8
- Uplink 3: slots 1-8
- Uplink 4: slots 1-8

Server slots channelled across all uplinks

- Uplink 1: slots 1-8
- Uplink 2: slots 1-8
- Uplink 3: slots 1-8
- Uplink 4: slots 1-8
- Uplink 5: slots 1-8
- Uplink 6: slots 1-8
- Uplink 7: slots 1-8
- Uplink 8: slots 1-8
UCSM C-series Integration (Nexus 2232)

- DelMar and C-Peak MR6 Required for VIC 1225
- Default CIMC Settings
  - Shared-LOM-EXT
- Dual Wire Mode still supported
- Multiple VIC 1225 supported
  - C240, C260, C420, C460
- NO Direct FI SUPPORT
Block Diagram: Fabric Failover

Fabric Interconnects

IO Modules

Midplane

Mezzanine

Server Blade

16x SFP+
16x SFP+
Expansion Module

1280 VIC

x16 Gen 2

x16 Gen 2

Fabric Failover

CPU

UCS Blade Chassis

16x SFP+
16x SFP+
Expansion Module

2208XP

UCS 6248

UCS 6248

UCS 6248

UCS Blade Chassis

UCS 6248

UCS 6248

UCS Blade Chassis
End Host Mode: Fabric Failover for Ethernet

- Fabric provides NIC failover capabilities when defining a service profile
- Traditionally done using NIC bonding driver in the OS
- Provides failover for both unicast and multicast traffic
- Works for any OS on bare metal
- Recommended in case of bare metal OS
- Hyper - V
Block Diagram: Next Gen UCS Fabric Details

- 4x10 Gbps Ether channel from VIC 1200 to 2208 IO Modules
- 2 x 10 Gbps Ether channel from VIC 1200 to 2204 IO Modules
- No user configuration required
- vNIC flows are Load Balanced across links
- Each individual flow limited to 10Gb
- Fabric Failover available
Adapter Port Channel

Up to 32 Gbps throughput per vNIC using flow based port-channel hash

VM Flows
1. 10 Gb FTP traffic
2. 10 Gb UDP traffic

- Implicit Port-channel between UCS 1280 VIC adapter and UCS 2200 IOM
- Flow based hash
- A vNIC is active on side A or B
- A vNIC have access to up to 32 Gbps throughput
Block Diagram: VM-FEX

- Fabric Interconnects
  - 16x SFP+
  - 16x SFP+
  - Expansion Module

- UCS 6200
  - 2200XP
  - 1280 VIC
  - IOH

- Server Blade
  - CPU

- IO Modules
  - 16x SFP+
  - 16x SFP+

- Midplane

- Mezzanine
  - x16 Gen 2

- UCS Blade Chassis

- VM-FEX
VM-FEX with RedHat KVM

Customer benefits

Ability to unify virtual and physical network infrastructure for Red Hat KVM

Feature details

- Available with RHEL 6.1
- Default cluster for standard based port extenders
- No UCSM and RHEV-M interactions in UCS 2.0
- Virtual machine management via Libvirt tool

UCS 6k + VIC + VM Mgmt Link

UCS Manager

Management Plane Integration Future

Hypervisor

FEX

VM Host

1 2 54

VM VM VM
Storage Connectivity
NPV

- N-Port Virtualiser (NPV) utilises NPIV functionality to allow a “switch” to act like a server performing multiple logins through a single physical link.
- Physical servers connected to the NPV switch login to the upstream NPIV core switch.
  - Physical uplink from NPV switch to FC NPIV core switch does actual “FLOGI”
  - Subsequent logins are converted (proxy) to “FDISC” to login to upstream FC switch.
- No local switching is done on an FC switch in NPV mode.
- FC edge switch in NPV mode does not take up a domain ID.
SAN “End Host” NPV Mode

N-Port Virtualisation Forwarding

- Fabric Interconnect operates in N_Port Proxy mode
  - Simplifies multi-vendor interoperation
  - Simplifies management
- SAN switch sees Fabric Interconnect as an FC End Host with many N_Ports and many FC IDs assigned
- Server facing ports function as F-proxy ports
- Server vHBA pinned to an FC uplink in the same VSAN. Round Robin selection
- Provides multiple FC end nodes to one F_Port off an FC Switch
- Eliminates the FC domain on UCS Fabric Interconnect
- One VSAN per F_port (multi-vendor)
- F_Port Trunking and Channelling with MDS, 5K
SAN “End Host” NPV Mode
N-Port Virtualisation Forwarding with MDS, Nexus 5000

- F_Port Channelling and Trunking from MDS or Nexus 5000 to UCS
- FC Port Channel behaves as one logical uplink
- FC Port Channel can carry all VSANs (Trunk)
- UCS Fabric Interconnects remains in NPV end host mode
- Server vHBA pinned to an FC Port Channel
- Server vHBA has access to bandwidth on any link member of the FC Port Channel
- Load balancing based on FC Exchange_ID – per flow
SAN FC Switch Mode

- UCS Fabric Interconnect behaves like an FC fabric switch
- Storage ports can be FC or FCoE
- Light subset of FC Switching features
  - Select storage ports
  - Set VSAN on storage ports
- No zoning configuration inputs in UCSM
- Connection to an external FC switch is required:
  - Zoning configured and pushed to UCS from MDS
- Fabric Interconnect uses a FC Domain ID
NAS Direct Attach

- Default (recommended) - End Host Mode
  - Superior traffic engineering
  - Easier integration into network
  - 1.4 Introduced Appliance Ports which allow direct connect NAS filers
- Options - Ethernet Switching Mode
  - As of 1.4, no need to use this mode for NAS direct connect
  - Previous releases required switching mode for direct connect NAS
iSCSI Boot Support in UCS Manager

Customer benefits

Comprehensive storage protocol support

Feature details

- Adapters
  - Virtual Interface Card
    - iBFT, no iSCSI offloads
  - Broadcom 57112
    - Full offload, iSCSI HBA
- Operating System support
  - VMware 4.1U1
  - Windows 2008 R2
  - Linux Red Hat 5.6, 6.0, 6.1
# Direct Connection of FC/FCoE Storage

## Customer benefits
- Support to directly connect FC/FCoE
- Lower cost point for small deployments

## Feature details
- Support for EMC and NetApp direct attached FC/FCoE storage (other vendors planned)
- Local Zoning OR Upstream Zoning
- UCS Configured in FC Switch Mode
- Ethernet and FC switching modes are independent
Key Considerations of FC/FCoE Direct Connect

- As of April 2011 Default Zoning Not Supported
  - Default Zoning Explicitly set to DENY in 2.1.1a
  - Default Zoning GUI/CLI Controls Removed
  - Do Not Upgrade to 2.1.1a if Default Zoning is being Used

- Local Zoning OR Upstream Zoning
  - Parallel Local and Upstream Zoning Currently NOT Supported
  - Upstream Zoning Provided by MDS/N5k
  - Migrating from Upstream to Local Zoning
    - CLI Commands to Remove Residual Upstream Zoning

- Supported FC/FCoE Direct Connect Arrays
  - Check Note 5 on HCL for Updated List
Unified Appliance Support

- File and block data over a single port/cable
  - FCoE, iSCSI, NFS, CIFS
- Port and cable consolidation
- New port type: Unified Appliance Port
  - Appliance port of today + FCoE
- Initial support for NetApp storage and their Unified Target Adapter
Demo
Q & A
Complete Your Online Session Evaluation

Give us your feedback and receive a Cisco Live 2013 Polo Shirt!

Complete your Overall Event Survey and 5 Session Evaluations.

- Directly from your mobile device on the Cisco Live Mobile App
- By visiting the Cisco Live Mobile Site www.ciscoliveaustralia.com/mobile
- Visit any Cisco Live Internet Station located throughout the venue

Polo Shirts can be collected in the World of Solutions on Friday 8 March 12:00pm-2:00pm

Don’t forget to activate your Cisco Live 365 account for access to all session material, communities, and on-demand and live activities throughout the year. Log into your Cisco Live portal and click the "Enter Cisco Live 365" button.

www.ciscoliveaustralia.com/portal/login