Deploying UCS
Hints & tips from the field

T-DC3 / L2
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What is this session about?

• It’s an advanced session
  Basic UCS knowledge is a prerequisite

• A collection of hints and tips gathered from UCS deployments

• My challenge is 45 minutes, 7 subjects 😊
  Address pools management
  Boot from SAN
  Service profiles: networking
  UCS 2.0: Upgrade
  UCS 2.0: Disjoint L2 consideration
  UCS 2.0: iSCSI boot
  UCS 2.0: VMFEX

• I’ll be completely available for questions after the session
A few words of introduction
What do we see in France?

- Majority of deployments (80%+) run a mix of Hypervisors and bare-metal
  “Standalone”, vBlock, Flex Pod

- Hypervisor is for the large part (90%) VMware’s vSphere ESXi
  ESXi 4.1 Update 2 primarily, a little bit of ESXi 5.0
  Microsoft’s Hyper-V comes second (and growing!)

- Bare-metal deployments consist of Windows 2008 R2 server and RHEL 5/6

- All types of LAN & SAN networking / Storage infrastructures
UCS Service Profiles: A Quick Recap
Service Profiles and Templates

- Physical blades inherit a desired configuration through a Service Profile (SP)
  One SP can be either unassociated or associated to one blade

- Service Profiles specify
  Desired boot order
  Number of vNICs with VLANs and vHBAs
  Where to get addresses for those vNICs/vHBAs
  Various policies (BIOS configuration, IPMI, etc.)

- SP Templates are master templates from which SPs can be spawned
  Either manually (from 1 to N with auto-naming)
  Associated to a pool of servers
Address Pools: Best practices
UUID Pools

- UUID: global ID that is unique to a given server
  Composed of Prefix and Suffix
  **Best practice: don’t modify the prefix**

**Recommendations:**
- Use root “default” pool as the global default pool for all Service Profiles
- Populate the default pool with a block of 512 IDs
- Don’t alter original Prefix, this is unique to this UCS
- Optional: choose a “Domain ID” for this UCS - used later in other ID pools
Assigning addresses to adapters
MAC Address Pools

- Prefer pools to burnt-in values whenever possible
  L2/MAC troubleshooting is a full time job… Please help Network team 😊
Pools let you control the exact allocation following your naming convention
Makes it easy to identify a given blade or OS type on switches

- On the VIC (M81KR, 1240…) adapter this is a must
  VIC can instantiate N interfaces → there are no burnt-in addresses →
  “Insufficient resources”

- Best practice
  MAC pools: create pools that are multiple of 64
  Encode Domain/Site ID and OS Type

<table>
<thead>
<tr>
<th>MAC Pool</th>
<th>256 MACs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUI</td>
<td>Extension ID</td>
</tr>
<tr>
<td>00</td>
<td>25</td>
</tr>
</tbody>
</table>

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Assigning addresses to adapters

World Wide Name Pools

- Using pools lets you communicate WWNs to SAN team ahead of deployment
  - Pre-provision LUNs for boot-from-SAN
  - Proactively perform zoning and LUN masking configuration

- One blade uses one Node WWN and as many Port WWN as there are vHBAs

- Node pool best practice: create one large pool that’s a multiple of 16
  - Create the pool at the Root organization (you can use the default pool)
  - Zoning and masking does not use Node WWN

- Ensure node pools and port pools do not overlap

Instead, use “FF”/”00” in the 2nd high-order byte to identify node names
Port WWN pools

Best Practices

• Always create pools that are multiple of 16 and contain less than 128 entries
  This ensures vHBA0 (SAN A) and vHBA1 (SAN B) have the same low-order byte

• Counter-example using 233-entries pools

• Much better for both vHBAs to have the same low-order byte and a unique SAN Fabric identifier
  Presence of “0A” or “0B” in the port WWN indicates SAN Fabric
Port WWN pools
Suggested Design Patterns

• At the very minimum, create pools that identify the SAN Fabric

For deployments with several OS types and multiple UCS, you could do this:
Port pools

Use Expert setting when creating vNICs / vHBAs

How would you like to configure SAN connectivity?

- Simple
- Expert
- No vHBAs
- Hardware Inherited

World Wide Node Name

WWNN Assignment: Select (pool default used by default)

Select WWNN assignment option. If nothing is selected, the WWNN will be assigned from the default pool.

WARNING: The selected pool does not contain any available entities. You can select it, but it is recommended that you add entities to it.

Specify the virtual host bus adapters (vHBAs) that the server should use to connect to a SAN. To specify more than two vHBAs, select the Expert configuration mode.

vHBA 0 (Fabric A)
- Name: fc0
- Select VSAN: default
- Create VSAN

WARNING: there are not enough WWN addresses available in the default pool. This vHBA will be created with an invalid WWN address.

vHBA 1 (Fabric B)
- Name: fc1
- Select VSAN: default
- Create VSAN

WARNING: there are not enough WWN addresses available in the default pool. This vHBA will be created with an invalid WWN address.

Expert lets you specify port WWN pools.
Boot from SAN
Tune your BIOS policy
Let the server speak up

• Boot from SAN involves several key components working hand in hand
  Correct UCSM boot-from-SAN policy with the right target port WWNs
  Correct SAN zoning and LUN masking are imperative
  SAN array must present a LUN (storage groups, initiator groups, etc.)

• During your first trial a component won’t work the way it’s supposed to

• UCSM lets you create BIOS policies that you can attach to the Service Profile

• **Best Practice:** for Boot-from-SAN you always want **Quiet Boot disabled**
Physical topology
What yours should look like

- SAN network designers always want SAN A / SAN B isolation

Write down the array’s port WWNs before configuring your Service Profile!

1. SAN Primary, target primary
2. SAN Primary, target secondary
3. SAN Secondary, target primary
4. SAN Secondary, target secondary
Build your boot policy

One path works, but if resiliency matters …

- UCS can boot from 4 different paths
  
  You can boot with just a single target boot policy, but not ideal for resiliency

- Typically, you’ll want a boot policy that goes like this:

<table>
<thead>
<tr>
<th>Name</th>
<th>Order</th>
<th>vNIC/vHBA</th>
<th>Type</th>
<th>Lun ID</th>
<th>WWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAN primary</td>
<td>1</td>
<td>fc0</td>
<td>primary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAN Target primary</td>
<td>0</td>
<td></td>
<td></td>
<td>50:06:01:63:16:E0:17:69</td>
<td></td>
</tr>
<tr>
<td>SAN Target secondary</td>
<td>0</td>
<td></td>
<td></td>
<td>50:06:01:63:16:E0:17:69</td>
<td></td>
</tr>
<tr>
<td>SAN secondary</td>
<td></td>
<td>fc1</td>
<td>secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAN Target primary</td>
<td>0</td>
<td></td>
<td></td>
<td>50:06:01:64:16:E0:17:69</td>
<td></td>
</tr>
<tr>
<td>SAN Target secondary</td>
<td>0</td>
<td></td>
<td></td>
<td>50:06:01:6C:16:E0:17:69</td>
<td></td>
</tr>
<tr>
<td>CD-ROM</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- That policy says:
  
  First try vHBA fc0 pWWN “63” via fc0 → Storage Processor A, port A3
  Then try vHBA fc0 pWWN “6B” via fc0 → Storage Processor B, port B3
  If those fail, then try fc1 (first pWWN “64” on SP A; then pWWN “6C” on SP B)

- Windows: Don’t forget to append CD-ROM or PXE after the SAN targets
Let’s boot the server

Keep an eye out

• Associate the boot policy you just defined then boot the server

• With a M81KR adapter, this is what you’ll see for each vHBA

If you do not see the array show up here, there’s probably a zoning or masking error

Note: the 4th byte here is “60” because we are booting from a different array than slide 18
Troubleshoot
Attach VIC firmware

Chassis / Server / Adaptor

```
UCS-6100-A# connect adapter 1/1/1
adapter 1/1/1 # connect
adapter 1/1/1 (top):1# attach-fls
adapter 1/1/1 (fls):1# vnic

<table>
<thead>
<tr>
<th>vnic</th>
<th>ecpu</th>
<th>type</th>
<th>state</th>
<th>lif</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>fc</td>
<td>active</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>fc</td>
<td>active</td>
<td>4</td>
</tr>
</tbody>
</table>
```

Useful (see next slide)
The cool command: VIC lunlist

Before driver loading

- FLOGI State: flogi est (fc_id 0xa70a04)
- PLOGI Sessions
  - WWNN 20:00:00:1f:93:00:12:9e WWPN
  - LUN's configured (SCSI Type, Version, Vendor, Serial No.)
    LUN ID: 0x00000000000000000000000000000000
  - REPORT LUNs Query Response
  - Nameserver Query Response
    - WWPN: 20:00:00:1f:93:00:12:9e
    - WWPN: 20:00:00:1f:93:00:12:9f
    - WWPN: 20:00:00:1f:93:00:12:9c
    - WWPN: 20:00:00:1f:93:00:12:9d

- Boot policy
- LUN Masking
- LUN id mismatch
- WWPN mismatch
- Zoning issue
- What the SAN says
Microsoft Windows Boot from SAN Checklist

- **Best practice:** ask the SAN team to present a single target pWWN for now
- Don’t proceed unless you’ve seen the target’s port WWN on the previous screen!
  
  Your SAN team can pre-register hosts; you know the server’s pWWN!
- Make sure you have the latest Cisco drivers iso image handy!
- Your boot policy **must** have the SAN targets first before PXE or CD-ROM
  
  If you put PXE or CD-ROM first, the installer will refuse to install on the LUN!
- Mount the virtual media (or ensure PXE is working) and boot the server
- Do not press F6 to force select boot options, UCSM has taken care of that
- After a few click-next (accept EULA; select Custom Installation), you’ll see a screen asking you where to install Windows
Windows: nowhere to install!
Drivers to the rescue

• You should now see this:

![Windows Installation Screen](image)

• Windows **does not** ship with built-in drivers for Cisco CNAs
  Unmap the installation ISO image and map the Cisco drivers image
  Then click “Load Driver”
Drivers loaded
LUN appears

- Load the driver then wait a bit and the LUN will appear

- If the LUN does not appear, check FLOGI database on SAN switches

- If FLOGI is present, check zoning
  - If it is not present, double check the VSAN membership of the vHBA
  - Don’t forget to activate the new zoning configuration

- If zoning is correct, verify the host pWWN is/are registered on the array
  - Present a boot LUN (for Windows 2008 R2 typically 40GB) only to that host
I am getting an error!
What did I do wrong?

• You’re very likely going to run into this error:

  ▪ At this point, unmap the Cisco drivers ISO image and remap the Windows installation media
    ▪ You may need to click Refresh
    ▪ The installer should now proceed

After the installation, enable MPIO (register your array with the MPIO driver) then present all available SAN paths
VMware ESXi Boot from SAN

Easy as pie

- All ESXi versions ship with Cisco CNA drivers built-in
  But check Cisco & VMware matrix (inbox vs async)
  Cisco OEM image for ESXi 5.0 soon

- The installer is more forgiving than with Windows
  You could place the virtual CD-ROM or PXE before the SAN targets and it will work

- The installer is multipath-aware
  It is okay to present all available paths at installation time

- **Best practice**: through LUN masking only present the boot LUN while installing
  If you data is important, do not present VMFS datastores just yet!

- Before ESXi 5.0 you only get one chance
  If LUN masking is incorrect, the installer won’t refresh and you’ll have to reboot
  The ESXi 5.0 installer introduces a proper refresh function which will save you a lot of time
Recommended Service Profile Network Designs
What’s a Service Profile design?

• Question: “how many vHBAs and vNICs should I assign to my Windows profile? How about ESXi?”
  
  If you don’t have a Cisco VIC adapter, the answer is simple: 2 plus 2!
  We’re going to focus on VIC use cases

• For bare-metal deployments: the answer is “it depends”
  Consult the application owner(s)
  Empirical observation: typically 4 to 6 vNICs; 0 to 2 vHBAs

• For ESXi: most of the times 6-8 vNICs and 2 vHBAs
  Depending on Failover mode

• For Hyper-V: most of the times 5 vNICs and 2 vHBAs
  Details in the next slides
Sample HyperV design

Local switching
Technical flows

FI 6248UP

Local switching
Application flows

FI 6248UP

Fabric
Failover

vNIC0
Parent partition

vNIC1
VMs data

vNIC2
Live Migration

vNIC3
CSV

vNIC4
future

vHBA0

vHBA1

MPIO
The dilemma
Fabric failover or vSwitch mac-pinning?

+ Less vNIC
+ HyperV support (KB 968703)
+ Local switching
  - No load sharing
  - Not supported in Eth Switch mode (since 2.0)

+ Load sharing across fabric
+ Supported in Eth Switch mode (teaming driver)
+ Traditional approach
  - “Bad” HyperV support (KB 968703)
  - East-West through north
Service Profiles: OS versus UCSM view
SP view vs UCSM view
Do they disagree?

• Problem statement
  an SP instantiates 6 vNICs and 2 vHBAs
  Windows 2008 R2 is installed on the blade
  NIC ordering at the OS level does not match what the SP shows

• Typically encountered with Microsoft Windows OS, usually not an issue with ESXi
What’s specific to Microsoft Windows and UCS

- Two variables come in the picture:
  - Windows does not ship with built-in drivers for M81KR
  - Once you load the driver the OS decides in which order to bring up the devices
    - That order does not have a direct relation with PCI-bus addressing

- You often end up with this:
How to reconcile the OS and SP view
When order matters

• First make sure the vNICs have a sequential order in the SP

  Modify vNIC/vHBA Placement
  Specify how vNICs and vHBAs are placed on physical network interface cards.

  vHBA Placement specifies how vNICs and vHBAs are placed on physical network interface cards in a server hardware configuration in an independent way.

  Select Placement: Let System Perform Placement

  System will perform automatic placement of vNICs and vHBAs based on PCI order.

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>vNIC e0</td>
<td>00:25:80:1A:FE:61</td>
<td>1</td>
</tr>
<tr>
<td>vNIC e1</td>
<td>00:25:80:1A:FE:62</td>
<td>2</td>
</tr>
<tr>
<td>vNIC e2</td>
<td>00:25:80:1A:FE:63</td>
<td>3</td>
</tr>
<tr>
<td>vNIC e3</td>
<td>00:25:80:1A:FE:64</td>
<td>4</td>
</tr>
<tr>
<td>vHBA fc0</td>
<td>20:00:00:25:18:80:8A:21:0F</td>
<td>5</td>
</tr>
<tr>
<td>vHBA fc1</td>
<td>20:00:00:25:18:80:8B:21:0F</td>
<td>6</td>
</tr>
</tbody>
</table>

  • vHBAs can appear before vNICs, it doesn’t really matter
  • Just ensure your vNIC order column follow the correct sequence

• Install Windows then launch the Device Manager
Device Manager View

Identify PCI bus order of each vNIC

- **Before** installing the device drivers, right-click on each vNIC one by one
  
  - Write down the PCI address of each vNIC
  - This is where the device order in the UCS SP comes into play – the first vNIC or vHBA is usually at PCI 06

- Install the drivers sequentially following the PCI bus order you discovered
UCS 2.0
Upgrading
Upgrading to UCS Gen2
Software and Hardware

• Capitola: Major announcements
  FI with more ports, all Unified Ports
  More VNTags for better Adapter / VMFEX scalability
  Software features

• Gen2 hardware ships with UCSM 2.0, but Gen1 can provide the software features

• 3 major points to consider and it will be fine
  1. Strictly apply upgrade procedure
  2. Ensure that FCoE VLANs don’t overlap with Ethernet VLANs
     • FCoE VLAN set for every VSAN
  3. If you upgrade FI, ensure to have the same version on Gen1 and Gen2
UCS 2.0
Disjoint L2
Disjoint Layer 2 Support

- In UCS 2.0, End host mode is aware of multiple L2 domains upstream.
- VLANs can be filtered on uplinks.
- A single uplink port designated as multicast and broadcast receiver on each VLAN.
- There mustn’t be VLANs overlapping!
- No VLAN translation.
Is it secured?

- VLAN-based isolation
  UCS since 1.4 passed EAL4+ Common Criteria certification
  http://www.niap-ccevs.org/cc-scheme/st/vid10403/

- Hardened End Host Mode forwarding scheme
  Disjoint L2 only add mapping & M/B receiver

- What is the risk? What is the cost?
  Then you choose 😊
  Most customer keep exposed / not exposed physical separation
Considerations

• By default, everything is everywhere
  Every uplink carry all VLANs
  New uplinks will carry all VLANs
  New VLANs will be carried on all uplinks
  Removing VLAN from ALL its member uplinks will make it be carried by all uplinks

• vNIC is still pinned to uplinks
  Pin groups take the lead (configuration warning)
  vNIC can trunk VLANs from 1 domain

  So VIC is almost mandatory…
UCS 2.0
iSCSI Boot
iSCSI Boot Support in UCS Manager

Feature details

- Adapters
  - M81KR / VIC 1280
    - iBFT, no iSCSI offloads
  - M51KR-B
    - full offload, iSCSI HBA
- Operating System support
  - VMware
  - Windows
  - Linux Red Hat

Refer release notes for specific versions supported and UCS Configuration guide:
  - Windows failure scenarios
  - HBA mode during installation…

It is boot from SAN: so take care of your storage array mode of operation and failure scenarios
Policies

Create iSCSI Adapter Policy

Name: [conset]
- Connection Timeout: [0-255]
- LUN Busy Retry Count: [0-60]
- DHCP Timeout: [60-300]
- Enable TCP Timestamp: [ ]
- HBA Mode: [ ]
- Boot To Target: [ ]

These are not supported by Cisco VIC

Create Boot Policy

Name: [conset-boot]
- Order: [ ]
- Boot Order Change: [ ]
- Enable [NIC/VMCS] Name: [ ]

WARNING:
The type (primary/secondary) does not indicate a boot order presence. The effective order of boot devices within the same device class (iSCSI/SCSI) is determined by PCI bus scan order.

Maximum of two iSCSI VNIC can be added

Note: does not say "iSCSI"

Must be at least 12 characters
IP Address pool

Create a Block of IP Addresses

- From: 8.8.8.8
- Size: 10
- Subnet Mask: 255.255.255.0
- Default Gateway: 8.8.8.1
- Primary DNS: 0.0.0.0
- Secondary DNS: 0.0.0.0

Fault Summary

- Equipment: 1
- Servers: 58
- LAN: 7
- SAN: 16

Filter: All
Overlay & iSCSI vNICs

1. Overlay (parent) vNIC Objects. Normal Creation
2. Add iSCSI vNICs with vNICs as overlay created in (1)

No fabric failover
iSCSI vNIC configuration

1. Object name, user preference
2. Overlay vNIC created in previous step. Child object, inherits some attributes
3. Adapter Policy previously created before SP process
4. VLAN, inherited from overlay vNIC, drop down list of available VLANs assigned to overlay vNIC. **MUST BE THE NATIVE VLAN with VIC**
5. **For VIC set to “None”** For Broadcom you can use the Standard MAC Pool
6. Max of 2 iSCSI vNICs per SP is allowed
Define iSCSI boot parameters

Modify Boot Parameters here
Target modes
iSCSI boot troubleshooting on VIC

UCS-6100-A# connect adapter 1/1/1
adapter 1/1/1 # connect
adapter 1/1/1 (top):1# attach-mcp
adapter 1/1/1 (mcp):1# iscsi_get_config

vnic iSCSI Configuration:
---------------------------
vnic_id: 6
   link_state: Up

Initiator Cfg:
   initiator_state: ISCSI_INITIATOR_READY
   initiator_error_code: ISCSI_BOOT_NIC_NO_ERROR
   vlan: 0
dhcp status: false
   IP Addr: 10.20.13.179
   Subnet Mask: 255.255.255.0
   Gateway: 10.20.13.250

Target Cfg:
   Target Idx: 0
   State: ISCSI_TARGET_READY
   Prev State: ISCSI_TARGET_DISABLED
   Target Error: ISCSI_TARGET_NO_ERROR
   IP Addr: 10.20.13.151
   Port: 3260
   Boot Lun: 0
   Ping Stats: Success (9.553ms)

Session Info:
   session_id: 0
   host_number: 0
   bus_number: 0
   target_id: 0

UCS-6100-A# connect adapter 1/1/1
adapter 1/1/1 # connect
adapter 1/1/1 (top):1# attach-mcp
adapter 1/1/1 (mcp):1# iscsi_ping

id   name   tgt      address   port   tcp ping status
---   -----   ---------  ---------  -----  ----------------
       6 vnic_2 0 100.65.160.181 3260 Not issued
       6 vnic_2 1 100.65.160.181 3260 Not issued
       7 vnic_3 0 100.65.160.145 3260 Not issued
       7 vnic_3 1 100.65.160.145 3260 Not issued

adapter 1/1/1 (mcp):2# iscsi_ping start

adapter 1/1/1 (mcp):3# iscsi_ping

id   name   tgt      address   port   tcp ping status
---   -----   ---------  ---------  -----  ----------------
       6 vnic_2 0 100.65.160.181 3260 Success (2.740ms)
       6 vnic_2 1 100.65.160.181 3260 Success (2.666ms)
       7 vnic_3 0 100.65.160.145 3260 Success (2.555ms)
       7 vnic_3 1 100.65.160.145 3260 Success (2.261ms)
UCS 2.0

VMFex with vMotion
VM-FEX
Extending the FEX Architecture to VM’s

One Network
Virtual Same As Physical

- Consolidates virtual and physical network
- VM vNIC attached to the network using VM-FEX and gets a dedicated port on switch
- Operates in Standard (Emulated) or DirectPath I/O (UPT) Mode
- Uses Pre-standard IEEE 802.1BR

*IEEE 802.1BR pre-standard
DirectPath I/O with vMotion

- Data traffic from VM bypasses the hypervisor
  
  Take care about OS support

- Available in vSphere 5

- Other names it is known by
  
  - VM-FEX High Performance Mode
  - UPT
  - VMDirectpath Gen2

- Co-exists with standard mode – Cisco VIC required

- UCS specifically called out in vSphere 5 Networking Guide (Page 42)

You can enable DirectPath I/O with vMotion for virtual machines in a datacenter on a Cisco UCS system that has at least one supported Cisco distributed switch.
VMDirectPath VMotion in action

- 8GB VM, sending UDP stream using pktgen (1500MTU)
- UCS B200 blades with UCS VIC card
- vSphere 5
DirectPath I/O

- Data traffic from VM bypasses the hypervisor
- Does not follow the vNetwork distributed switch model – PCI devices explicitly assigned
- Following features unavailable
  - vMotion / DRS
  - Suspend and resume
  - Record and replay
  - Fault tolerance
  - High availability
  - Snapshots

Not Recommended / Tested on Cisco VIC
Some key points:

- Always use VEM bits from [http://your-UCSM/vmfex/vmfex.html](http://your-UCSM/vmfex/vmfex.html)
- One ESX cannot be part of a N1000v and VMFEX in the same time
- If you move one ESX from one to the other, uninstall / reinstall VEM bits will make things easier (VEM keep track of VMFEX / N1kv modes)
Why different models?

VMs DENSE ENVIRONMENTS, RICHER FEATURE SET & FLEXIBLE DEPLOYMENT

Hypervisor switch: Nexus 1000v

Nexus 1000V & Generic Adapter / Server
Nexus 1000V & VIC on UCS Server

HIGHER PERFORMANCES & BETTER I/O MANAGEMENT

Port Ext. w/VM-Fex (.1BR)

UCS 6200 & VIC
UCS 6200 & VMDirect Path
DirectPath I/O with vMotion
Creating Dynamic vNICs

- Policies are to automatically provision dynamics vNICs on Servers
- Dependent on the number of Fabric Interconnect to IO Module connections

(# IOM to FI links * 63) – 2 on Gen2
DirectPath I/O with vMotion

Building Service Profile

- 2 Statics – 1 to each UCS Fabric
- Change dynamic vNIC connection policy to setup dynamics
- Keep cool: Dynamic vNIC are hidden in vCenter (different PCI device ID)
Configure port-profile

You can / should use VM FEX for all your interfaces (VMs, vmk…)

Turns on DirectPath I/O for a port profile
DirectPath I/O with vMotion

Communication with Manager

- Same Plug-in Method used in Nexus 1000v
- 8 Separate managers today
DirectPath I/O with vMotion
Configuration in VCenter
DirectPath I/O with vMotion
Configuration in VCenter

![Virtual Machine Properties](image)
DirectPath I/O Status
Customers’ new subject of interest
Cloud-ready platform
On-demand/Self provisioning, Elastic, Pay-per-use, Secure

Business

IT Business Services

Performance / Availability / Incident Mgt

Self-Service Portal

Services catalog

Orchestration

Service Tiering in Environment Container

DR DC/ Hybrid Cloud

Nexus LAN

MAN DCI

Nexus LAN

Data Center 1
Cisco Intellige**:nt Automation for Cloud

Cloud Automation Pack

Service Catalog and Self-Service Portal
Cisco Cloud Portal

Global Orchestration and Reporting
Cisco Process Orchestrator

Adapter Framework

Hardware Managers
e.g., UCS Manager

Virtualization Managers
e.g., VMware vCenter, Cisco NSM

OS/Software Provisioning
Cisco Tidal Server Provisioner

Hardware Managers
Virtualization Managers
OS/Software Provisioning

Compute Resources
Virtual Infrastructure
Network Resources
Storage Resources

CMDB
IT Service Management Tools
Billing/Chargeback
Monitoring and Governance
Useful links

• UCS B-Series documentation roadmap
  Search „UCS Roadmap“ on cisco.com

• Cisco Developer Network
  UCS Manager Emulator
  UCS Dashboard
  goUCS
  http://developer.cisco.com/web/unifiedcomputing/home
Otázky a odpovědi

- Twitter  www.twitter.com/CiscoCZ
- Talk2Cisco  www.talk2cisco.cz/dotazy
- SMS  721 994 600

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  2.den 16:30 – 17:00
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