



# Cisco UCS Director Tech Module

EMC VNX and VNX2

Version: 1.0

September 2016



# Agenda

- Overview & Architecture
- Hardware & Software Compatibility
- Licensing
- Orchestration Capabilities
- Reports
- Example Use-Cases

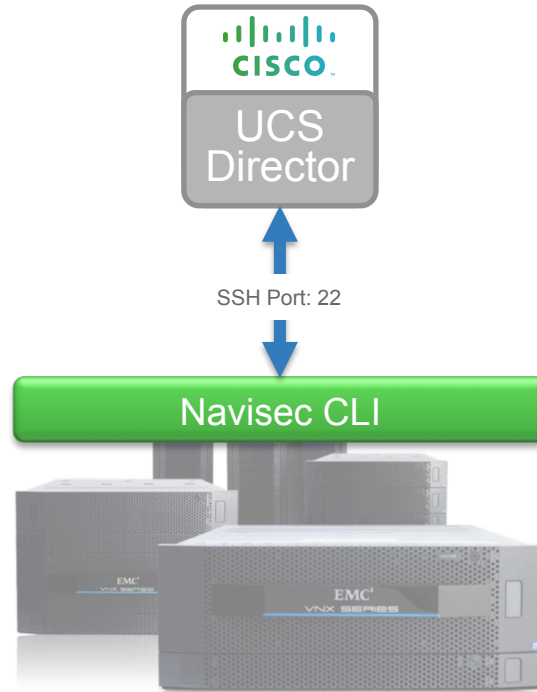


# Architecture & Overview

# EMC VNX/VNX Architecture

- VNX and VNX2 are enterprise grade storage platforms from EMC
- EMC VNX2 is the newer generation of the original VNX series
- EMC VNX & VNX2 support three modes of operation
  - Block protocols only (FC & iSCSI)
  - File protocols only (NFS & CIFS)
  - Unified (both File and Block protocols)

# UCS Director and EMC VNX/VNX2 Integration **Block Only**



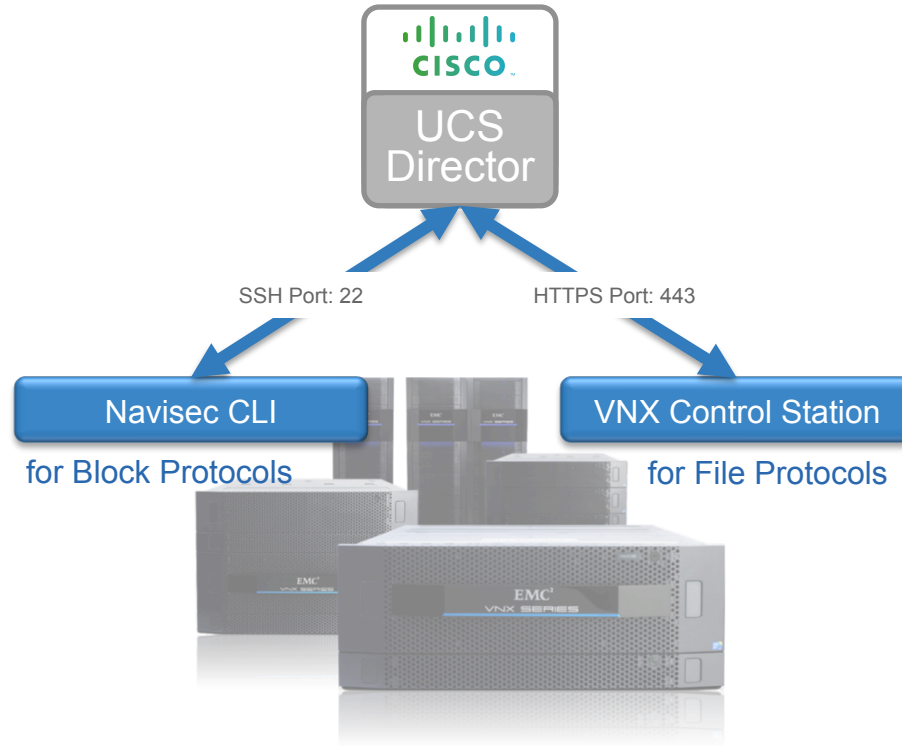
**Block Storage Protocols Only**

# UCS Director and EMC VNX/VNX2 Integration **File Only**



**File Storage Protocols Only**

# UCS Director and EMC VNX/VNX2 Integration **Unified**





# Hardware & Software Compatibility



# IMPORTANT!!

- The following slide featuring support information may be out of date
- **ALWAYS** check the most up to date version of the UCS Director Compatibility Matrix
- The latest Compatibility Matrix and other supporting UCS Director documentation can be found at the following location:

[http://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/ucs-director/doc-roadmap/b\\_UCSDirectorDocRoadmap.html](http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-director/doc-roadmap/b_UCSDirectorDocRoadmap.html)

# UCS Director EMC VNX Support

(as of UCS Director 6.0)

Supported Models	File Protocol Software Support	Block Protocol Software Support
VNX 5100 VNX 5500 VNX 5700 VNX 7500	DART 7.0.53-x  VNX Control Station v7.0.53-x	Flare OS 05.31.000.5.x  Navisphere Navisec CLI 7.30.15.0.44
VNX 5300	DART 7.0.53-x or DART 7.1.79-8  VNX Control Station v7.0.53-x	Flare OS 05.31.000.5.x or Flare OS 05.32.000.5.218  Navisphere Navisec CLI 7.30.15.0.44

# UCS Director EMC VNX2 Support

(as of UCS Director 6.0)

Supported Models	File Protocol Software Support	Block Protocol Software Support
VNX 5200	MCx OS, v8.1.0	Flare OS 05.33.000.5.015
VNX 5400	or	
VNX 5600	MCx OS, v8.1.0.15	Navisphere Navisec CLI
VNX 5800		7.30.15.0.44
VNX 7600		
VNX 8000		



# Licensing

# Licensing Information

- UCS Director licensing is purchased solely in the form of physical server licenses
- Each physical server license includes a storage device license and a network device license as well.
- UCS Director tracks the number of physical servers, storage and network devices being managed against the number of installed licenses.
- If additional storage and/or network device licenses are required, you can purchase additional physical server licenses
- EMC VNX storage is licensed per storage processor. To manage a VNX Storage Array, you need minimum of two storage licenses as each storage array contains two storage processors



# Orchestration Capabilities

# Orchestration Capabilities

## Storage Pools

- Create VNX Block Storage Pool
- Delete VNX Block Storage Pool
- Expand VNX Block Storage Pool

## RAID Groups

- Create VNX RAID Group
- Delete VNX RAID Group

## LUNs

- Create VNX LUN
- Create VNX Meta LUN
- Expand VNX LUN
- Delete VNX LUN

## Storage Groups

- Create VNX Storage Group
- Add Host to VNX Storage Group
- Add VNX LUN to Storage Group
- Remove Hosts from VNX Storage
- Remove LUN from VNX Storage Group
- Delete VNX Storage Group

## Host Initiators

- Add VNX Host Initiator Entry
- Remove VNX Initiator

## CIFS

- Add VNX CIFS Server
- Add VNX CIFS Share
- Add VNX DNS Domain
- Delete VNX CIFS Server
- Delete VNX CIFS Share
- Delete VNX DNS Domain

## NFS

- Add VNX NFS Export
- Modify VNX NFS Export
- Delete VNX NFS Export

## File Storage

- Create VNX Volume
- Create VNX File System
- Extend VNX File System
- Delete VNX Volume
- Delete VNX File System

## Network Interfaces

- Create VNX Network Interface
- Delete VNX Network Interface

## vSphere VMFS Datastore

- Associate VNX LUN as Datastore



# Reports



# EMC VNX Storage Array Reports

- UCS Director discovers VNX Storage Array configuration through an inventory process and provides the below reports

[*Under VNX Storage Account*]

- Data Movers
- VNX File Storage Pools
- Volumes
- File Systems
- Storage Processors
- Block Storage Pools
- RAID Groups
- Disks
- Initiators
- Storage Groups
- LUNs

# EMC VNX Storage Array Reports Contd...

- Meta LUNs
- Hosts
- Ports
- VMs

*[Under VNX Storage Account → Data Movers → View Details]*

- Mounts
- CIFS Servers
- CIFS Shares
- NFS Exports
- Mover Interfaces
- Devices
- DNS Domains

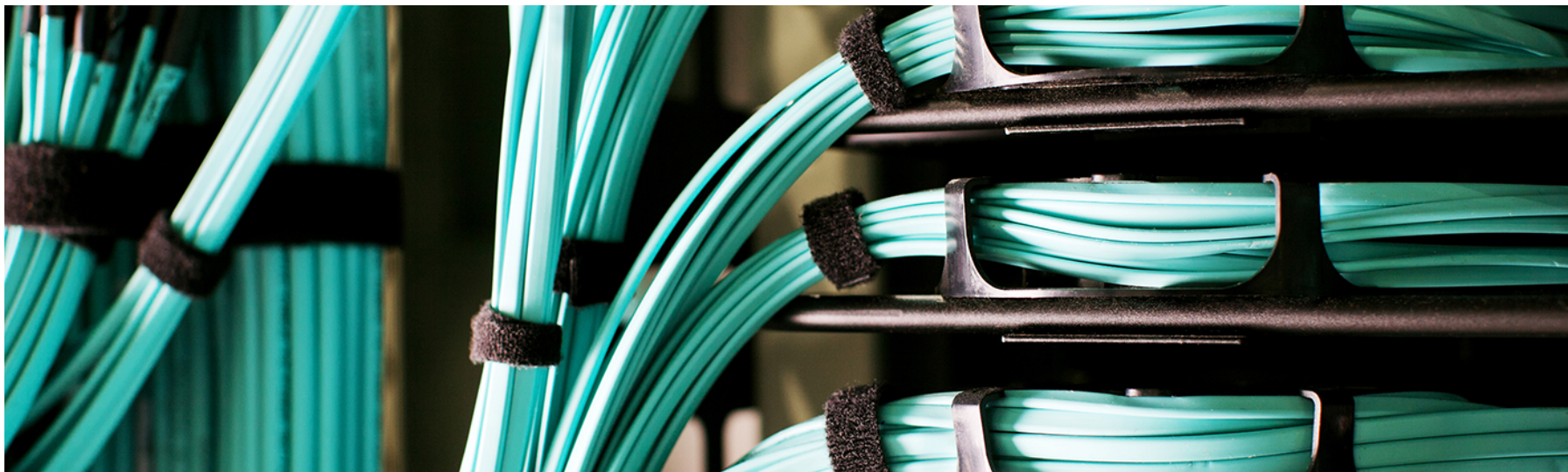
# EMC VNX Storage Array Reports Contd...

*[Under VNX Storage Account → Storage Processors → View Details]*

- Initiators
- LUNs
- Meta LUNs
- Ports

*[Under VNX Storage Account → Storage Group → View Details]*

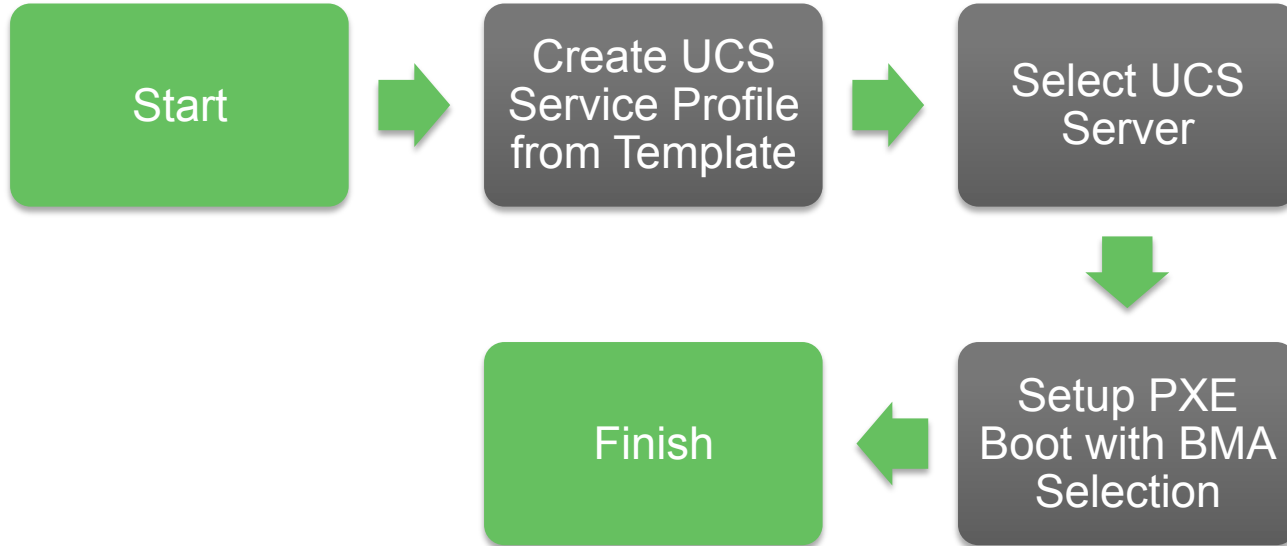
- LUNs
- Meta LUNs
- Hosts



# Example Use-Cases

# EMC VNX Storage Array Automation Use Case - 1

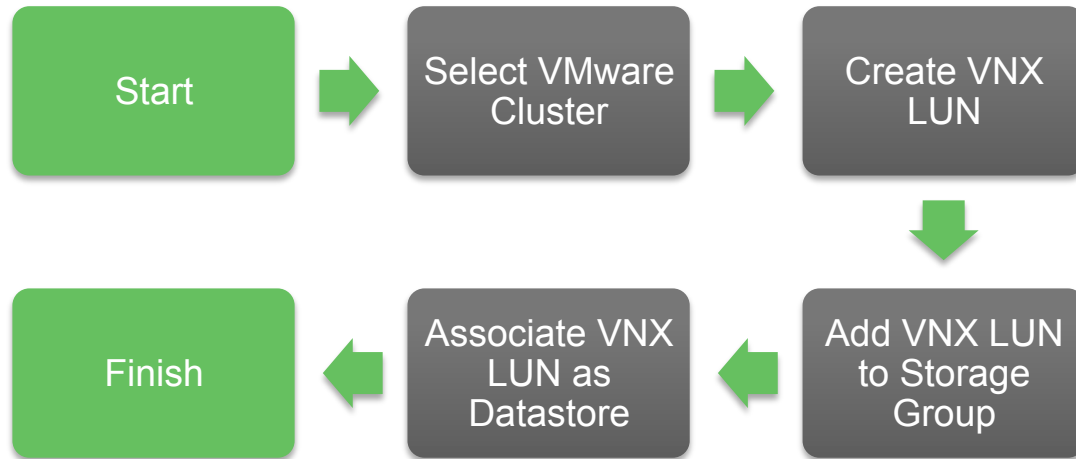
- Workflow to provision OS (ESXi) on bare-metal servers with SAN Boot from VNX Storage Array



**Note:** For a sample workflow, please refer <https://communities.cisco.com/docs/DOC-53971>

# EMC VNX Storage Array Automation Use Case - 2

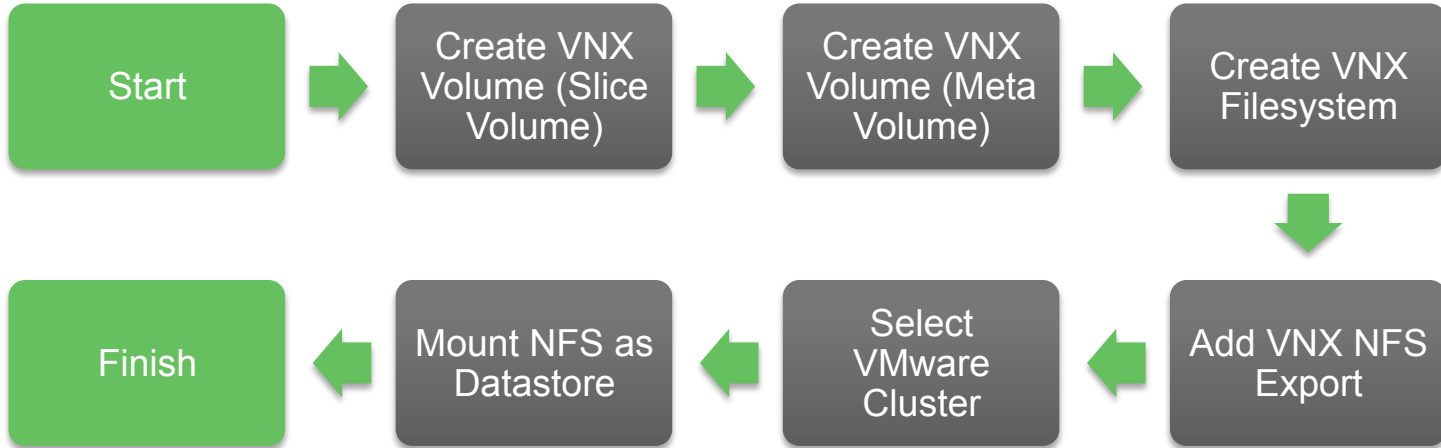
- Workflow to provision VMFS Datastore on VMware ESXi Cluster



**Note:** For a sample workflow, please refer <https://communities.cisco.com/docs/DOC-55004>

# EMC VNX Storage Array Automation Use Case - 3

- NFS Datastore provisioning on VMware ESXi Cluster



**Note:** For a sample workflow, please refer <https://communities.cisco.com/docs/DOC-54052>



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*TOMORROW starts here.*