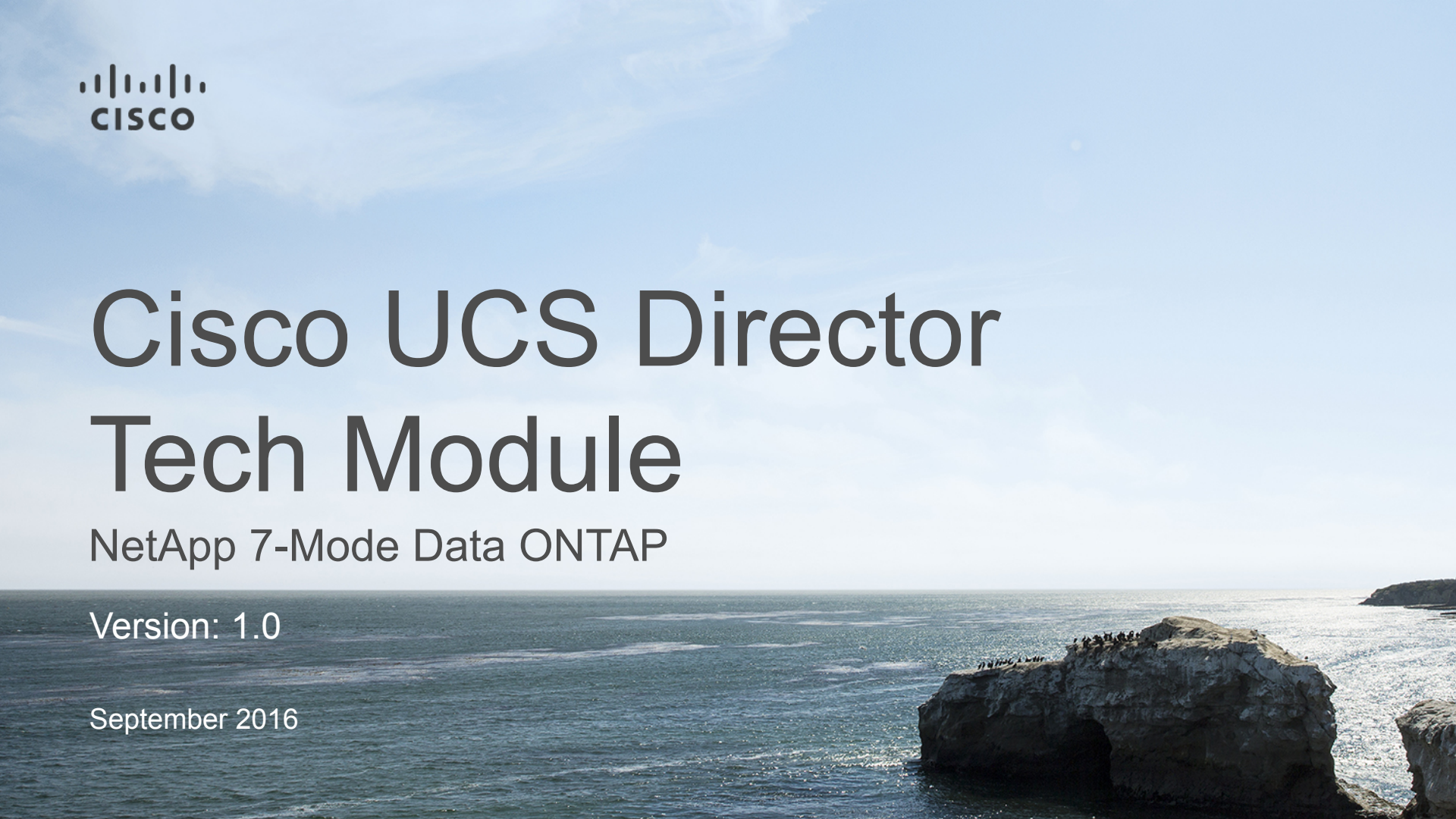

Cisco UCS Director Tech Module

NetApp 7-Mode Data ONTAP

Version: 1.0

September 2016

Agenda

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

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Overview & Architecture

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NetApp Data ONTAP

- NetApp offers multiple Enterprise-level storage array platforms
  - NetApp FAS, E-Series, SolidFire, etc.
- UCS Director currently supports only the NetApp FAS storage family of arrays
- The entire family of NetApp FAS arrays run the same operating system called NetApp “Data ONTAP” or “ONTAP” for short

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NetApp Data ONTAP Modes

- There are two modes of operation for ONTAP…
  1. **Data ONTAP 7-Mode** – legacy mode which has been phased out as of ONTAP 8.3
  2. **Clustered Data ONTAP** – newer version of ONTAP, future of NetApp FAS arrays moving forward

UCS Director supports both ONTAP modes, however this tech module focuses solely on NetApp 7-Mode Data ONTAP

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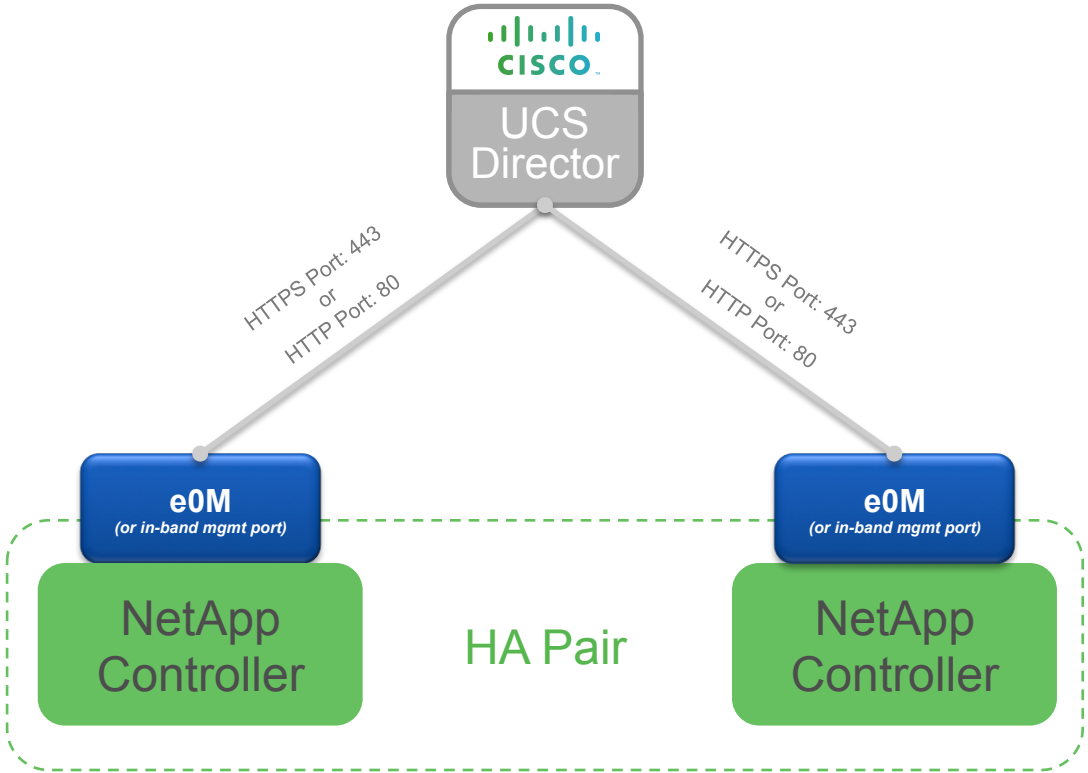
UCS Director – NetApp 7-Mode ONTAP Architecture



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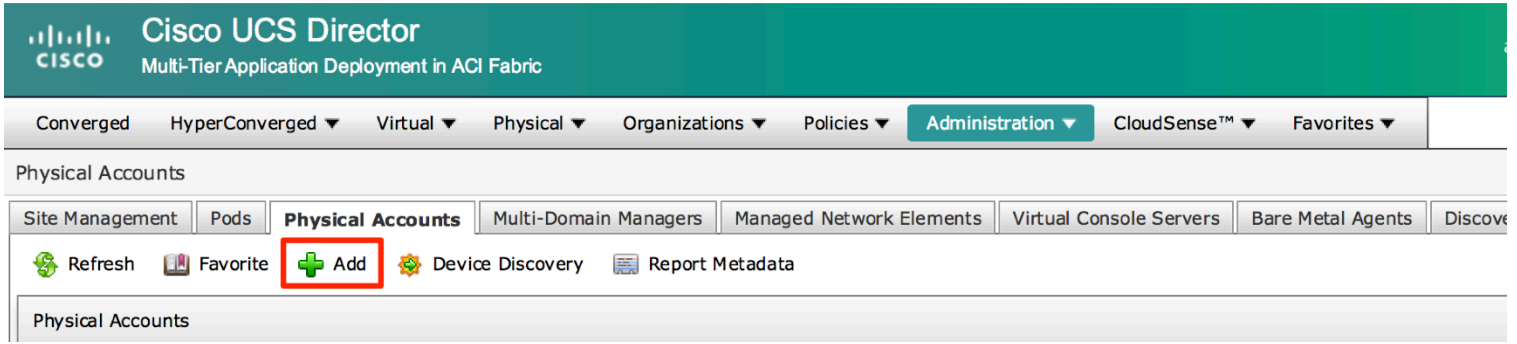
Adding a NetApp 7-Mode Account

- Navigate to **Administration → Physical Accounts**, choose the **Physical Accounts** tab and click **Add**



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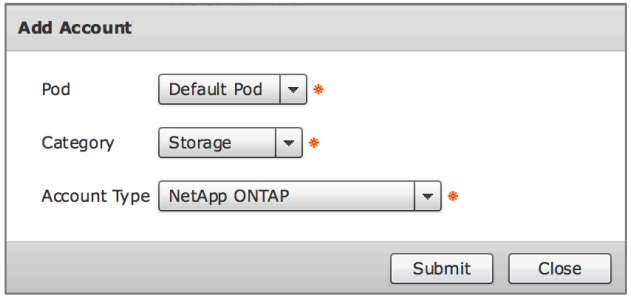
Adding a NetApp 7-Mode Account

- Select the appropriate **Pod**
- Set **Category** to **Storage**
- Set **Account Type** to **NetApp ONTAP**



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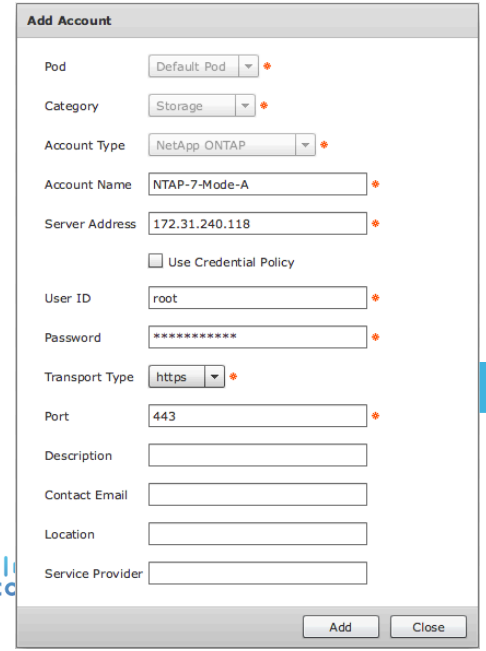
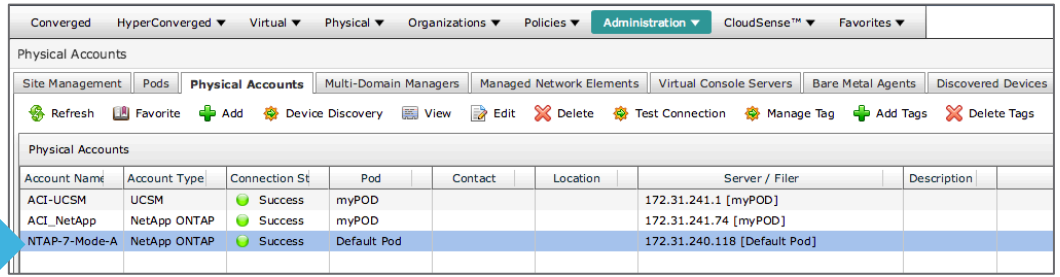
Adding a NetApp 7-Mode Account

- Enter the information about the NetApp controller to add the account





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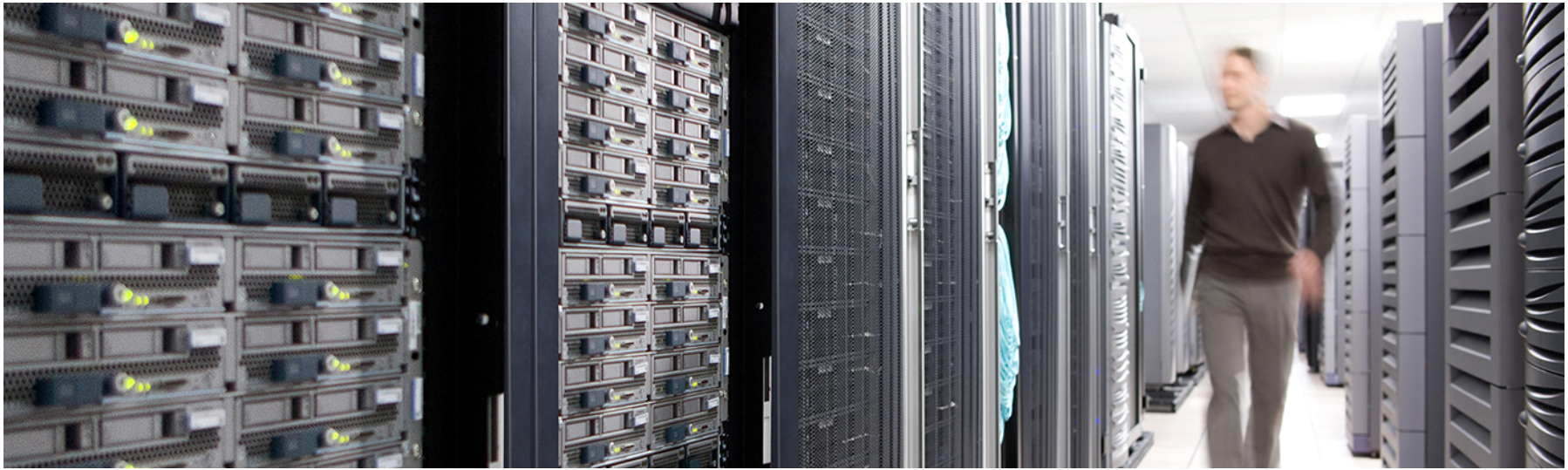

Hardware & Software Compatibility

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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

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UCS Director Supported NetApp Storage Platforms *(As of UCS Director 6.0)*

Currently **Supported** NetApp Storage Platforms

- NetApp FAS Storage

Currently **Unsupported** NetApp Storage Platforms

- NetApp E-Series
- NetApp SolidFire

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UCS Director 7-Mode Data ONTAP Support

(As of UCS Director 6.0)

Supported NetApp FAS Hardware Platforms

- Support all NetApp FAS hardware platforms running a supported version of 7-Mode Data ONTAP software

Supported Clustered ONTAP Software Versions

- 8.2.2P1
- 8.1.4P1
- 8.2.1
- 8.2.0
- 7.3.x
- 8.2.2P2

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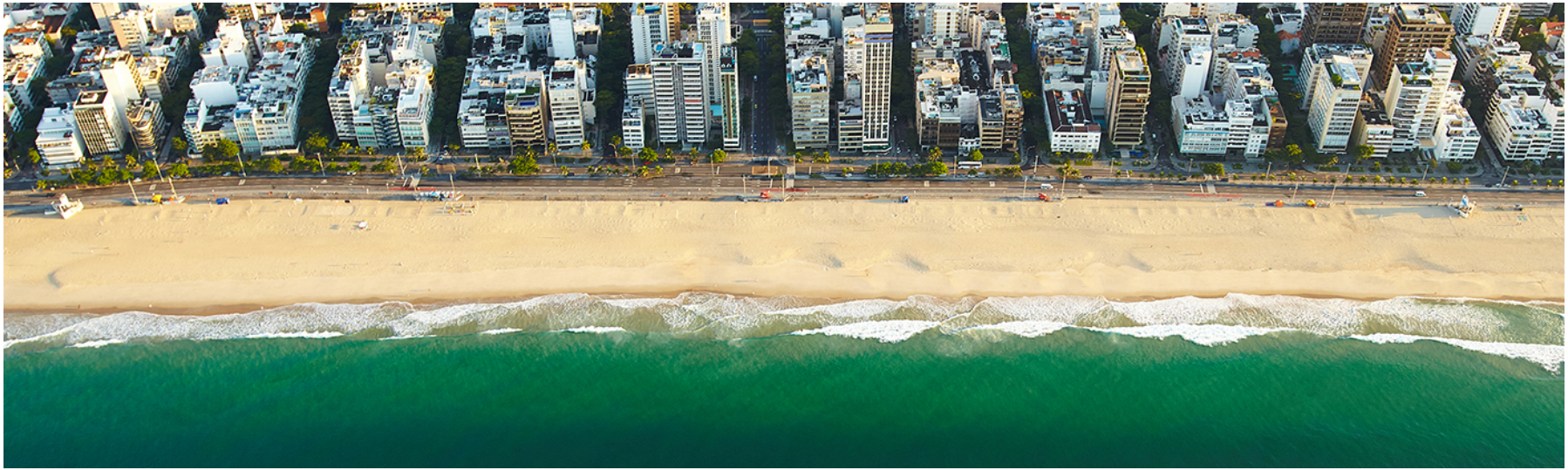

Licensing

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Licensing Information

- UCS Director licensing is purchased solely in the form of physical server licenses
- However, included in each physical server license purchased is a storage device license and a network device license
- In addition to physical server tracking and licensing, UCS Director tracks the number of storage and network devices being managed against the number of licenses available
- If additional storage and/or network device licenses are required, they can be acquired by purchasing additional physical server licenses

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Licensing Information

- Each 7-Mode Data ONTAP storage controller requires a UCS Director storage device license
- **NOTE!**: storage device licenses are included in and solely available by purchasing additional physical server licenses

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Licensing Examples

Example 1

Qty. to be managed

Total licenses available

X $6_{/50}$

X **$50_{/50}$**

X $8_{/50}$

Total Physical Server Licenses Required: **50**

Example 2

X $0_{/8}$

X $0_{/8}$

X **$8_{/8}$**

Total Physical Server Licenses Required: **8**

Storage Device License Included in Physical Server License

Example 3

X **$10_{/10}$**

X $4_{/10}$

X $2_{/10}$

Total Physical Server Licenses Required: **10**

Network Device License Included in Physical Server License

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Orchestration Capabilities

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Orchestration Capabilities

Aggregates
- Create Aggregate
- Add Disk to Aggregate
- Delete Aggregate

Flexible Volume
- Create Flexible Volume
- Resize Flexible Volume
- Destroy Flexible Volume
- Create Volume Snapshot

vFiler
- Create vFiler Setup
- Create vFiler using ONTAP
- Destroy vFiler using ONTAP
- Resize vFiler Volume
- Add Storage to vFiler
- Remove Storage from vFiler
- Add vFiler NFS Volume Export
- Remove vFiler NFS Volume Export
- Add IP Address to vFiler
- Remove IP Address from vFiler
- Create vFiler Initiator Group
- Delete vFiler Initiator Group
- Add vFiler Initiator to Initiator Group
- Remove vFiler Initiator from Initiator Group
- Map vFiler LUN to Initiator Group
- Unmap vFiler LUN from Initiator Group
- Create vFiler LUN
- Destroy vFiler LUN
- Resize vFiler LUN

SnapMirror
- Create Snapmirror Schedule
- Delete Snapmirror Schedule
- Configure Snapmirror
- Snapmirror Destination Actions

SnapVault
- Create Snapvault
- Modify Snapvault
- Delete Snapvault
- Release Snapvault
- Abort Snapvault
- Update Snapvault
- Restore Snapvault

NFS
- Add NFS Export
- Remove Volume NFS Export

CIFS
- Setup CIFS on vFiler
- Remove CIFS Volume Share
- Set CIFS Volume Share Access
- Add CIFS Volume Share

VMware Datastore
- Associate Volume as NFS Datastore
- Associate vFiler Volume as NFS Datastore
- Resize VM Datastore (NetApp)

LUNs
- Create LUN
- Destroy LUN
- Move LUN
- Resize LUN
- Clone LUN
- Map LUN to Initiator Group
- Unmap LUN from Initiator Group

IPSpaces
- Create IPSpace
- Assign VLAN to IPSpace
- Delete IPSpace

VLAN Interfaces
- Create VLAN Interface
- Delete VLAN Interface
- Configure VLAN Interface

Initiator Groups
- Create Initiator Group
- Delete Initiator Group
- Add Initiator to Initiator Group
- Remove Initiator to Initiator Group
- Add Existing Initiator to Initiator Group

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Orchestration Capabilities Cont.

Qtrees
- Create Qtree
- Destroy Qtree
- Add Qtree NFS Export
- Remove Qtree NFS Export

Quotas
- Add Quota
- Delete Quota

Other
- Get NetApp Partner Info
- Add License to Filer
- Persist Network Configuration
- Execute NetApp CLI

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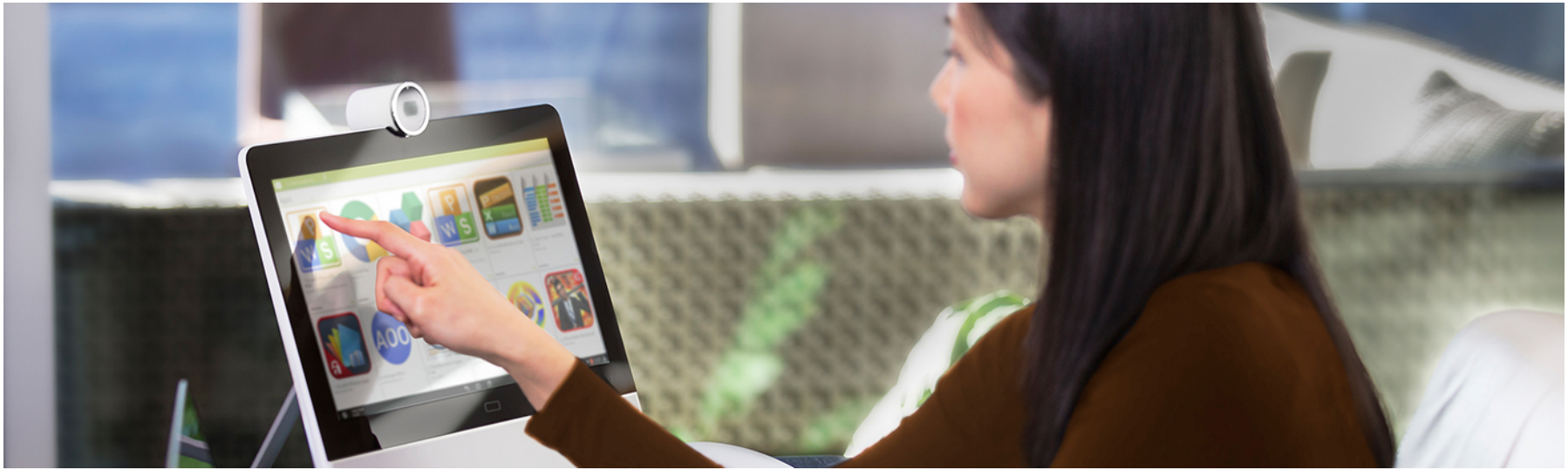

Reports

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Tabular Reports and Information

At ONTAP Controller Level

- Aggregates
- Volumes
- Qtrees
- Quotas
- VMs
- LUNs
- Disks
- Initiators Groups
- Initiators
- License
- SnapMirrors
- SnapVault

- vFilers
- IP Spaces
- Interfaces
- FC Adapters
- NFS Exports
- CIFS Shares

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Tabular Reports and Information

At ONTAP vFiler Level

- Volumes
- LUNs
- Qtrees
- Quotas
- Initiator Groups
- Initiators
- SnapMirros
- NFS Exports
- CIFS Shares
- VMs

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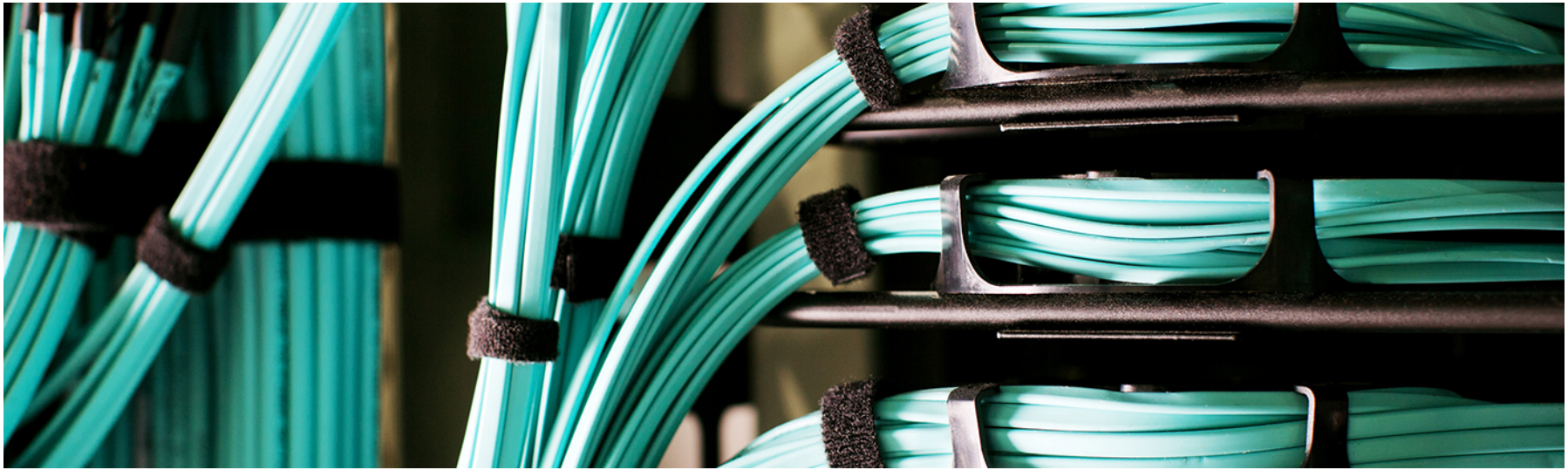

Example Use-Cases

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Example Use-Cases

- Use-Case #1: Create Flexible Volume, Export via NFS and Mount on ESXi Cluster
- Use-Case #2: Create LUN and Map to iSCSI Client

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Use-Case #1: Create Flexible Volume, Export via NFS and Mount on ESXi Cluster

- The following use case example highlights how to automate the provisioning and configuration of a new NFS datastore in VMware from NetApp Data ONTAP 7-Mode storage.
- The automated workflow will create a new Flexible Volume, export the Flexible Volume via NFS and then mount the Flexible Volume as an NFS datastore to the selected ESXi hosts

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Use-Case #1: Create Flexible Volume, Export via NFS and Mount on ESXi Cluster

Pre-requisites for Use-Case #1:

- NetApp Data ONTAP 7-Mode controller already added to UCS Director as a storage account
- One ore more interfaces are configured on the storage controller that have network connectivity to one or more VMkernel interfaces on the target ESXi hosts

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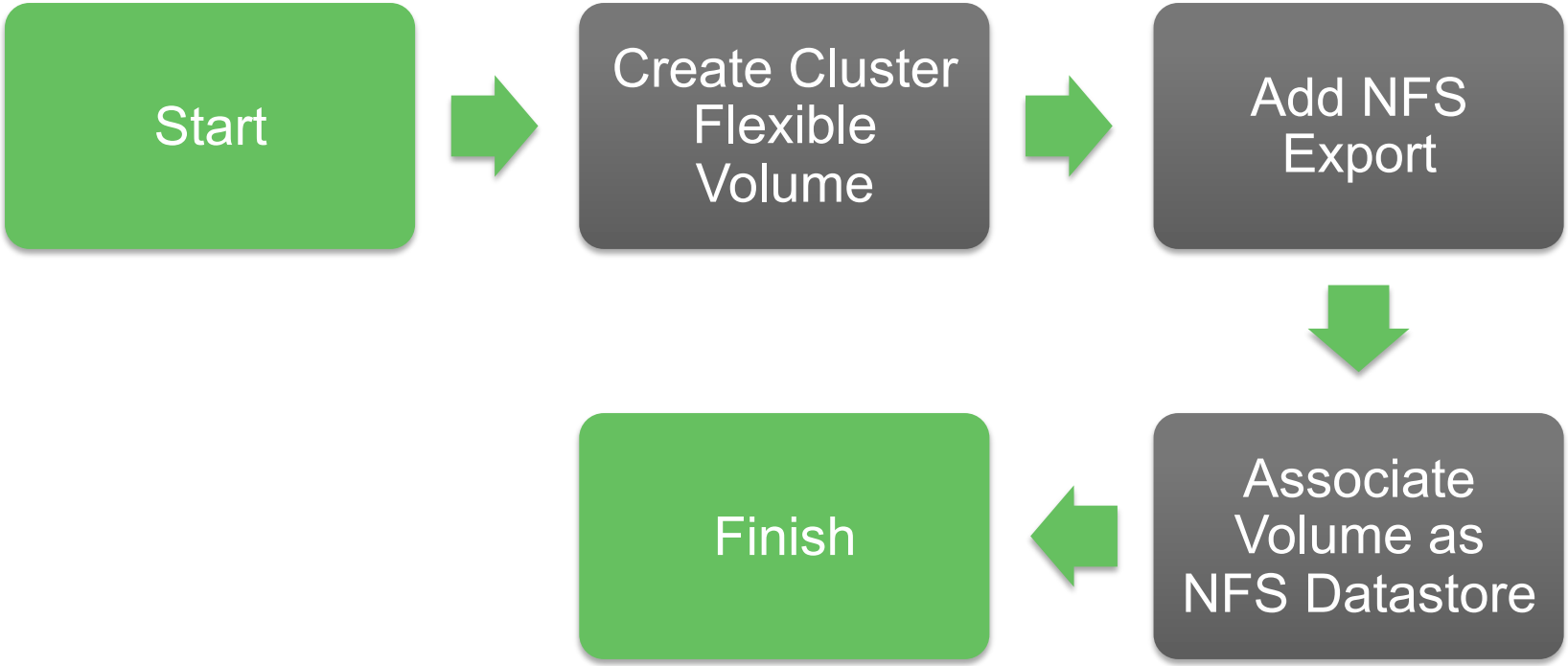
Use-Case #1: Create Flexible Volume, Export via NFS and Mount on ESXi Cluster



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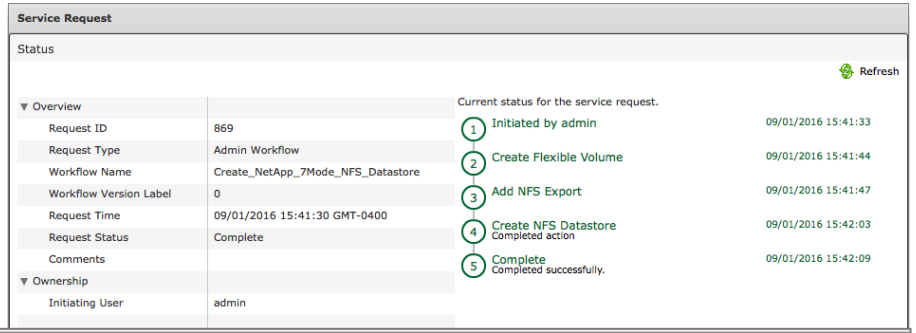
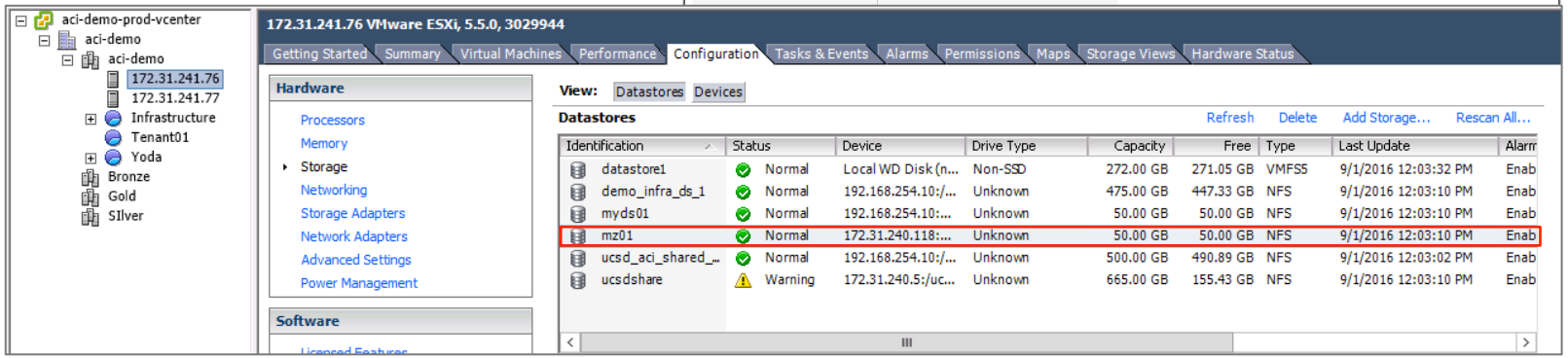
Use-Case #1: Create Flexible Volume, Export via NFS and Mount on ESXi Cluster

- NFS Datastore Creation Successfully Completed





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Use-Case #1: Create Flexible Volume, Export via NFS and Mount on ESXi Cluster

- Use Case #1 workflow can be downloaded from the UCS Director community site here: https://communities.cisco.com/docs/DOC-69433
- The UCS Director community site also includes other workflows, custom tasks and information

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Use-Case #2: Create LUN and Map to iSCSI Client

- The following use case example highlights how to automate the provisioning and configuration of a new iSCSI LUN and map the newly created LUN to a remote iSCSI client.

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Use-Case #2: Create LUN and Map to iSCSI Client

Pre-requisites for Use-Case #2:

- NetApp Data ONTAP 7-Mode controller already added to UCS Director as a storage account
- One ore more interfaces are configured on the storage controller that have IP network connectivity to one or more iSCSI clients
- iSCSI service is licensed and running on NetApp Data ONTAP 7-Mode controller

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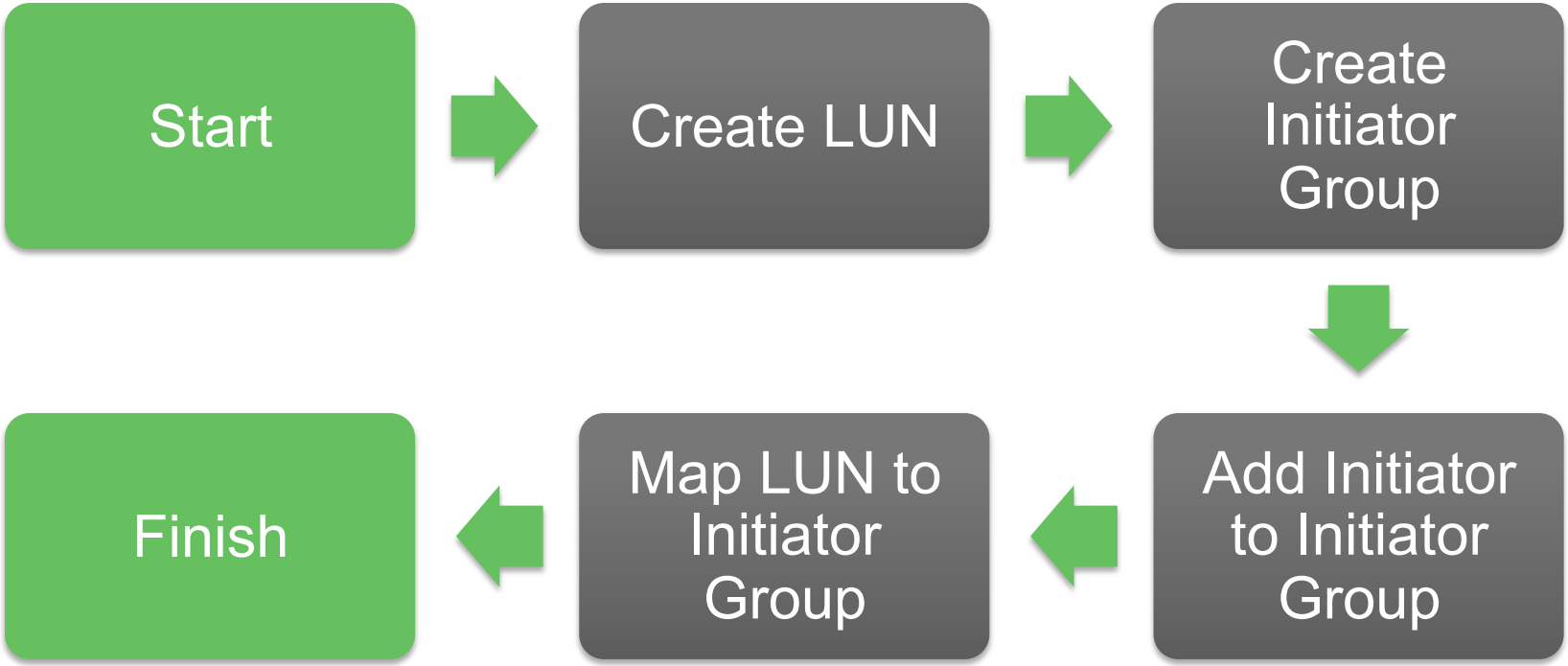
Use-Case #2: Create LUN and Map to iSCSI Client



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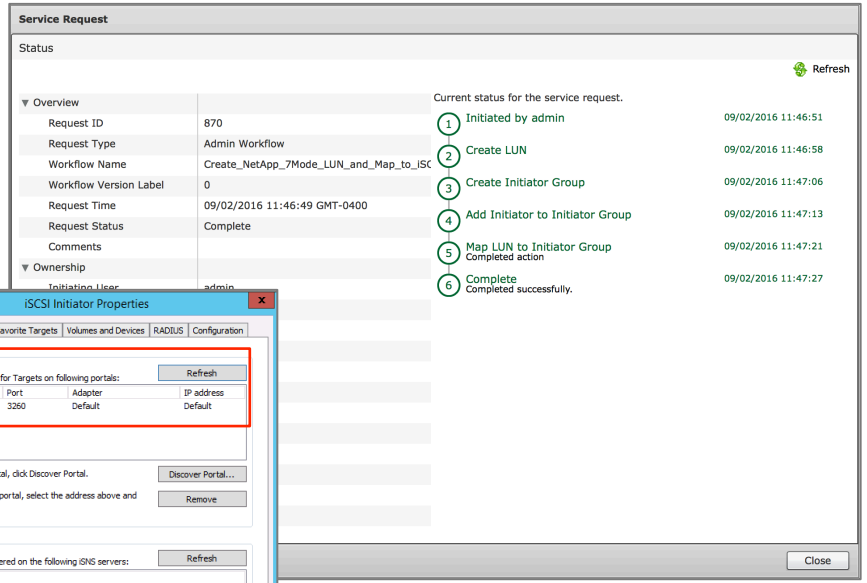
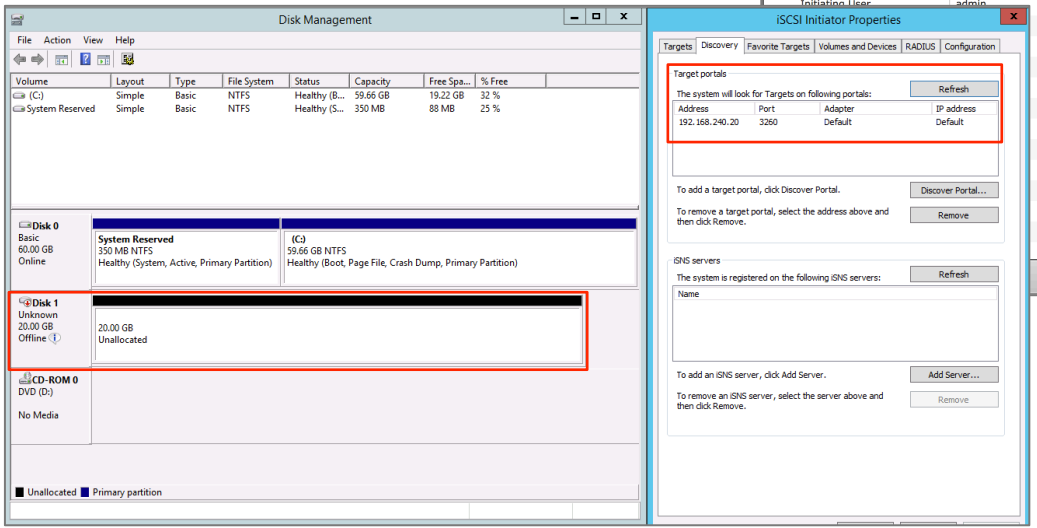
Use-Case #2: Create LUN and Map to iSCSI Client

- iSCSI LUN Creation Successfully Completed





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Use-Case #2: Create LUN and Map to iSCSI Client

- Use Case #2 workflow can be downloaded from the UCS Director community site here: https://communities.cisco.com/docs/DOC-69442
- The UCS Director community site also includes other workflows, custom tasks and information

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