Workshop Acropolis Hyper Visor

For supporting NPP understanding – based on the Nutanix CE version

GO

Acropolis

**NUTANIX.**

Acropolis Hyper Visor Workshop

NPP supporting hands-on document

This demo guide is showing Acropolis Hyper Visor (AHV) based on the Nutanix CE version.

Login to the cluster. Username to be used is **admin** and the password is **nutanix/4u** .The below screen should appear after logging in.
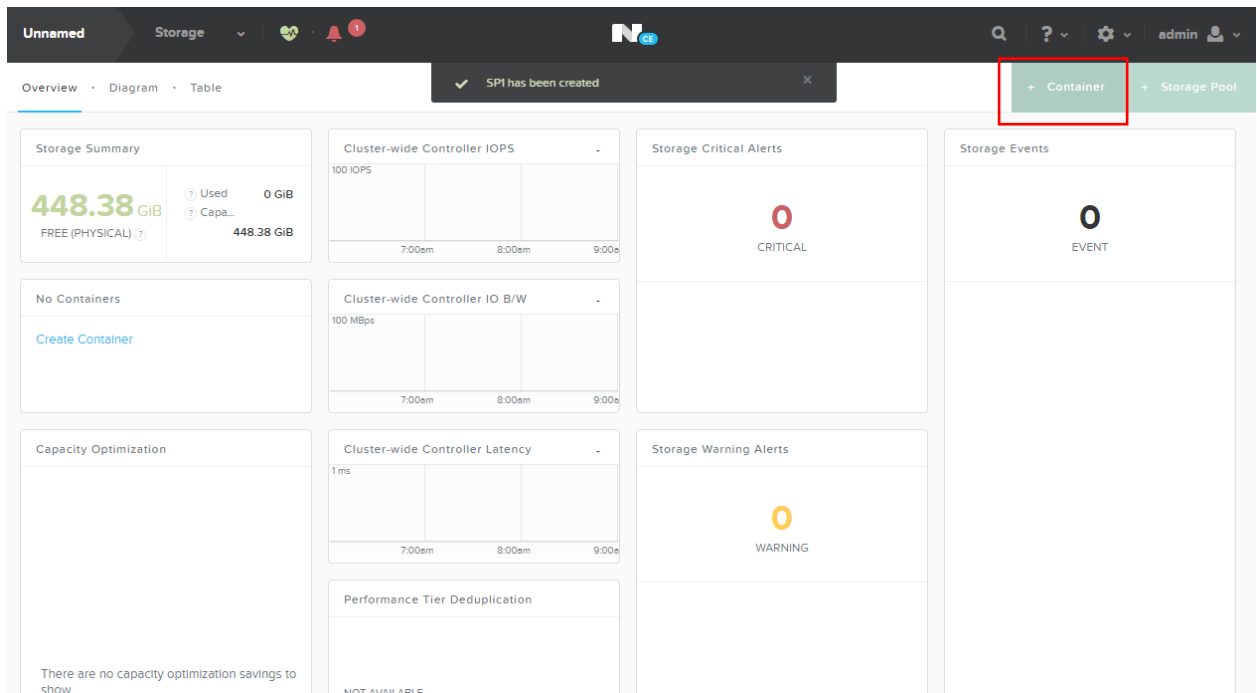
✔ NEXT account is enabled.

✔ Pulse is enabled.

✔ Your Acropolis version is up to date.
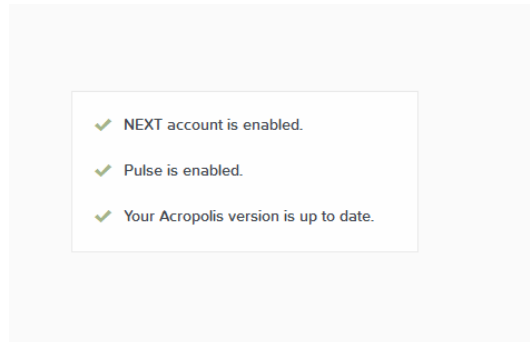
Then the HOME View should appear
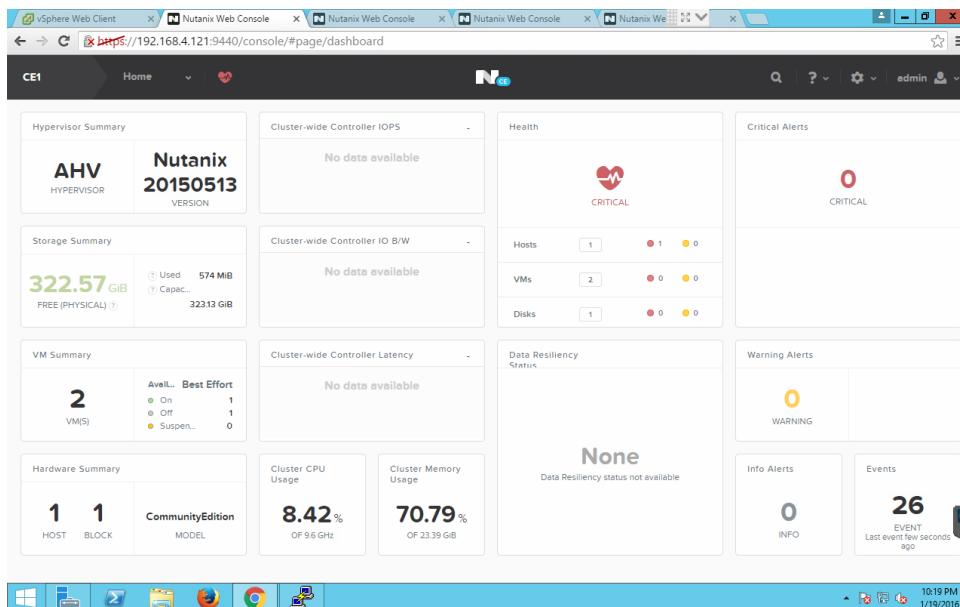
Create Containers

As a Storage Pool has been created containers can be created. In the overview screen like below, click on **+ Container** to create a container.

Name the container according to the earlier mentioned table in the naming convention *vms-<clustername>*. Below is a screenshot of the cluster ce1
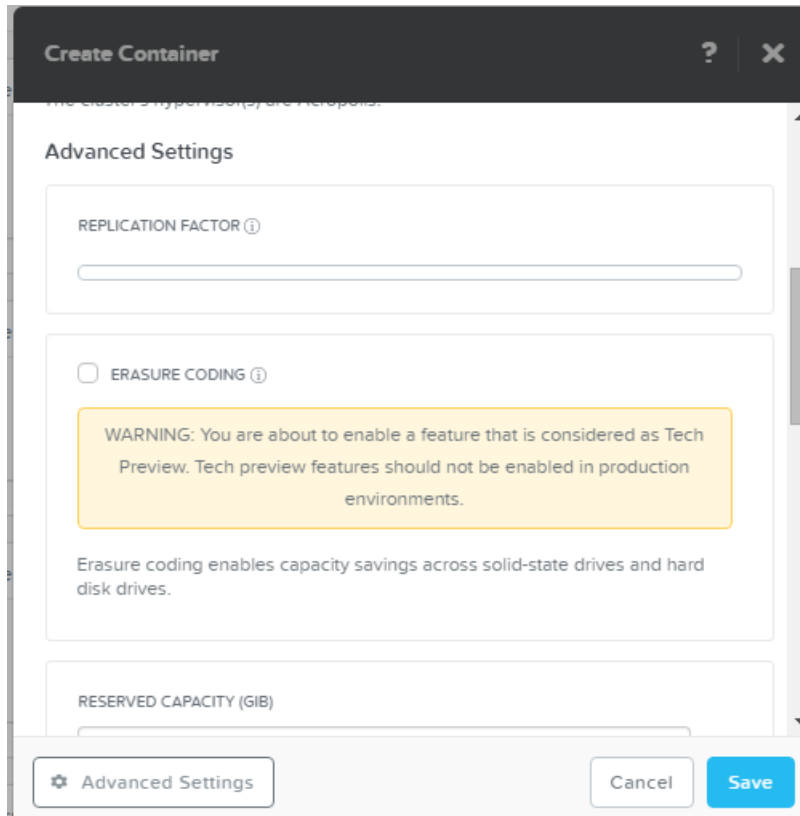
Click on the **Advanced Settings** button to see other parameters that can be set on a per container bases. Just have a look at all the options you can tick.

REMARK: Keep the settings to default as the demo is running CE with limited resources during this workshop.

Create Container

RESERVED CAPACITY (GIB)

```
0
```

ADVERTISED CAPACITY (GIB)

```
Total GiB
```

☐ PERF TIER (RAM/SSD) DEDUPLICATION (FINGERPRINT ON WRITE) ⓘ

This enables performance improvements by intelligently deduplicating data in the premium (RAM/SSD) tiers.

☐ CAPACITY TIER (HDD) DEDUPLICATION (ON-DISK) ⓘ

⚙ Advanced Settings   Cancel   Save

Create Container

On-Disk Deduplication works in conjunction with "Fingerprint on Write" and enables capacity savings across all tiers - RAM, SSD, & Hard Disk - in addition to performance improvements.

☐ COMPRESSION

Inline compression is enabled if the delay is set to 0 minutes.
Offline compression is enabled if there's a delay.

FILESYSTEM WHITELISTS

```
Enter commma separated entries
```

Use this format for entries: **nnn.nnn.nnn.nnn/xxx.xxx.xxx.xxx**. Also, note that setting a container whitelist will override any global whitelists for this container.

⚙ Advanced Settings   Cancel   Save

Also create a second container for the replication part of this workshop according to the same table as mentioned earlier, for the replication partner. Naming convention should be: *DR-vms-<clustername partner>*. The below screenshot is using the ce2 cluster as its replication partner.
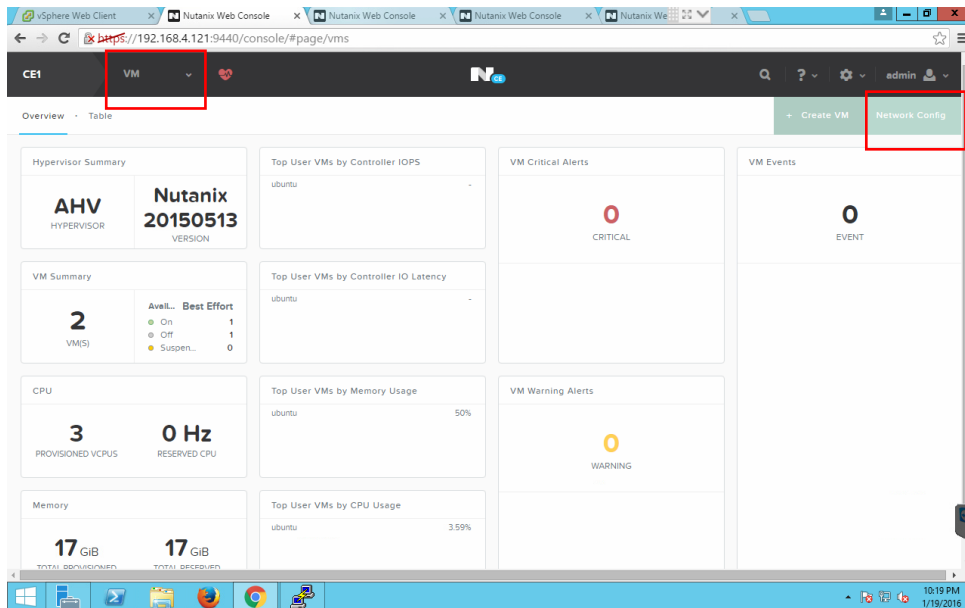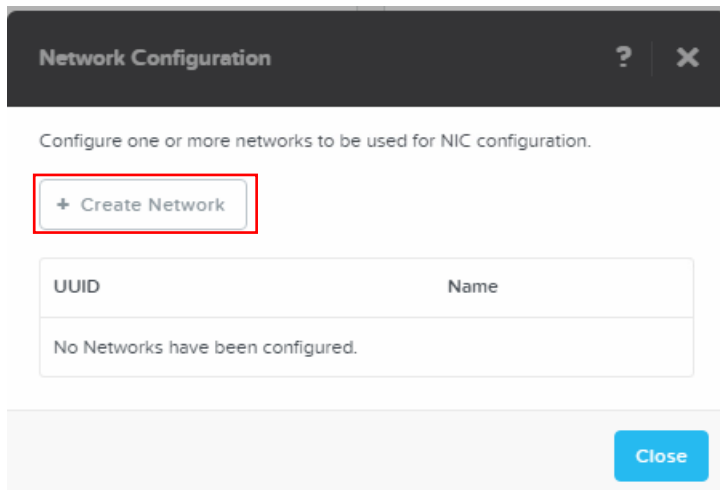

THIS CONCLUDES STORAGE RELATED SECTION OF THIS DOCUMENT

Creating a Virtual Network

Change the View to VM and click **"Network Config"** on the right side of the screen. We need networking, so we need to create virtual networks first.

In the screen below hit the **+ Create Network** button to create a new virtual network.
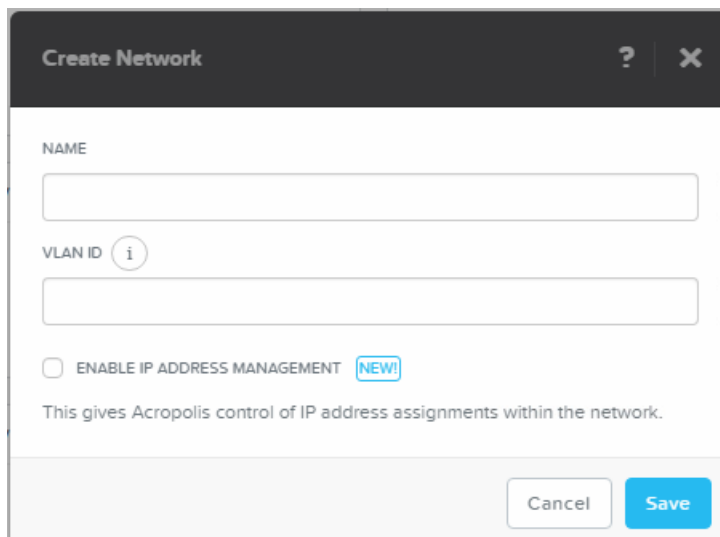

Fill the needed fields (use the below value as an example):

Name: vlan0

VLAN ID: 0

Check the **ENABLE IP ADDRESS MANAGEMENT** checkbox to see what else can be configured in the virtual network. Use again as an example the values in the screenshot

To create a DHCP-Pool in the virtual network, click the **+ Create Pool** button and use the below values again as an example

When done, click the Submit button

The screen should now look like the above screenshot. Now click the Submit again to get the virtual network created in the AHV environment.

From the top a screen should drop down to tell that the network has been created, and the **Network Configuration** screen should show the just created network with its UUID and name. If you want to change anything just click the Pencil Icon right to the name of the virtual network. Repeat as many as needed.

Creating a VM in AHV.

Back in the VM View, Click the **+ Create VM** button on the right side of the screen.
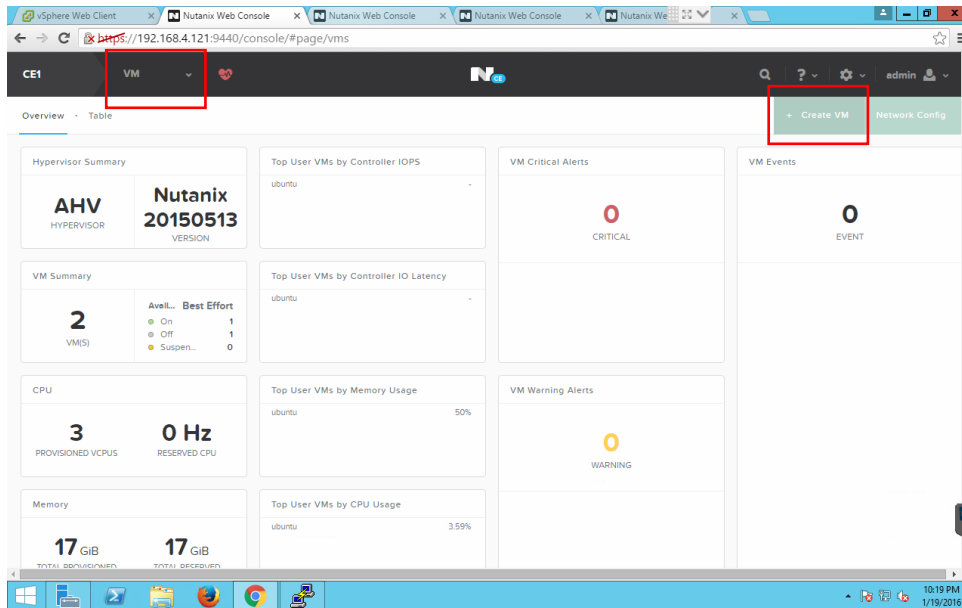
The below screen will pop up. Use the values in the screenshot for your VM you going to create. For the name please use the following namingconvention:

ub-srv-<name of the cluster> example for cluster ce1 **ub-srv-ce1** as shown below

Define a disk so we can write data to the VM. Hot the **+ New Disk** button to create as many disk one at a time as we need for the VM.

Change the container to the one we've created earlier. If you haven't created it, Cancel this action and go to the Storage View and create a container quickly. Name it vms-<clustername>. As an example on cluster 1, called CE1, you create a container called vms-**ce1**, and return to the VM creation and disk creation screen like above.

Create a 10GB disk in the right container. Create a 10GB disk

Now let's change the CD to something useful instead of an empty one. Click the pencil button just right to the CDROM
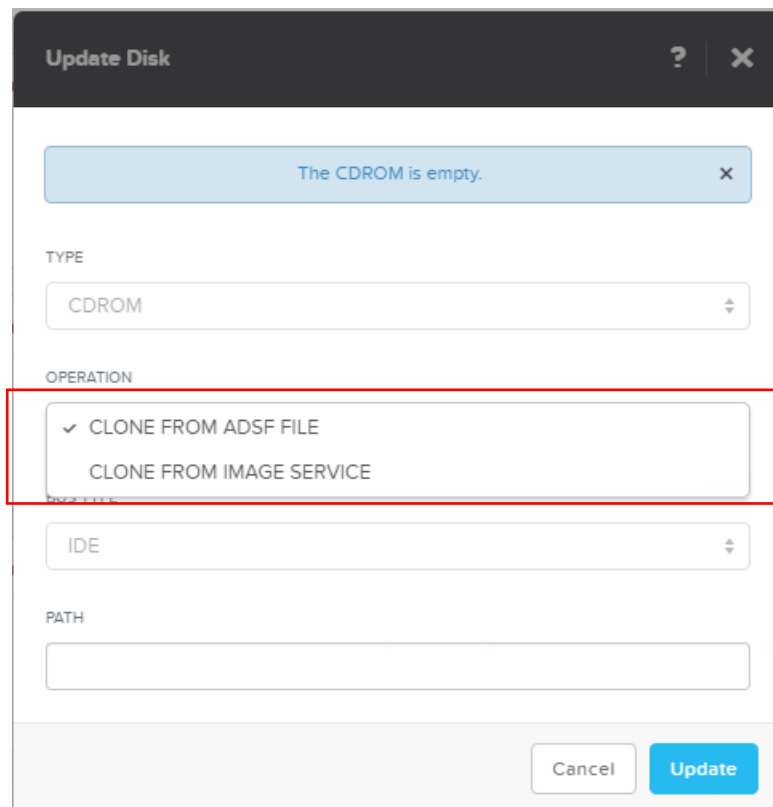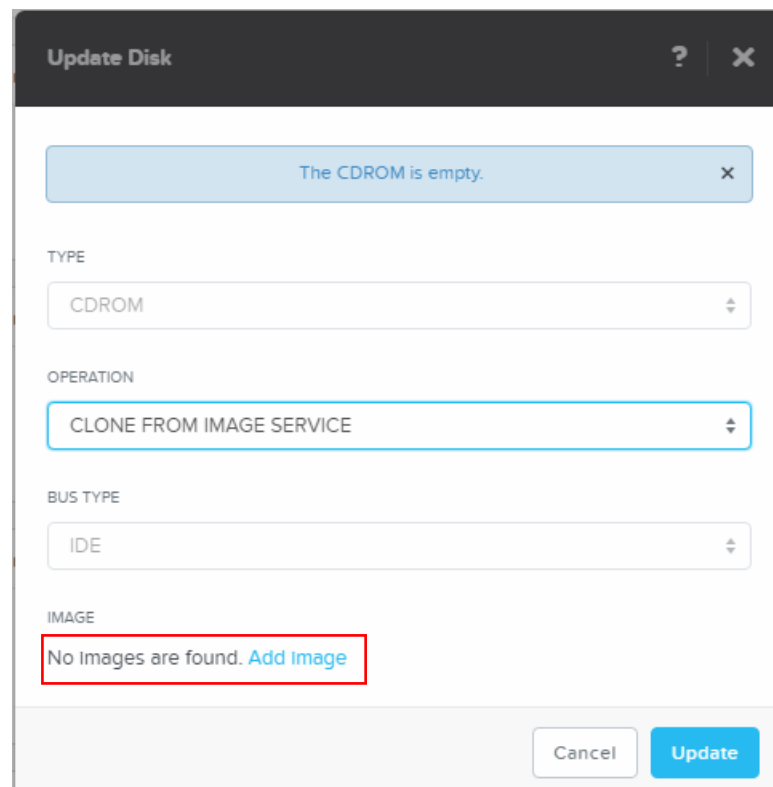
A new screen will appear

Change the OPERATION into **CLONE FROM IMAGE SERVICE**

As there is no ISO image yet in the cluster we need to upload one. Click the **Add Image** text

A new screen will appear. Click the **+ Upload Image** button.

Give the too be uploaded ISO a name which is easy to understand what the image is all about. As an example use the below parameters and change the **IMAGE TYPE** to ISO like below. Also make sure you use the right container. Fill out the URL folder as below.

WARNING: The field is case sensitive.
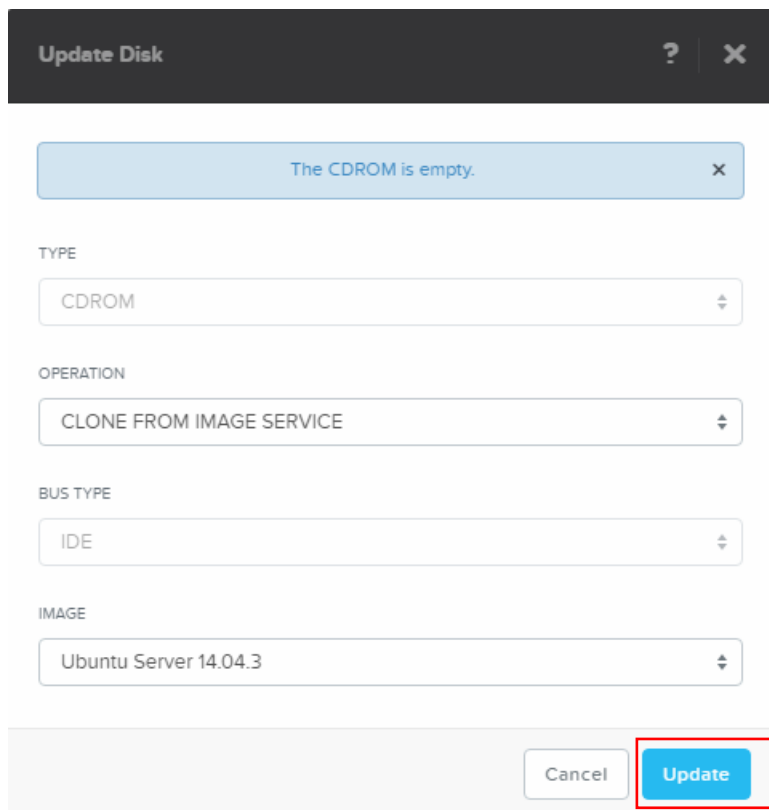
Click the **Save** button to upload the ISO file into the cluster. The below screen will appear to show the progress of the upload.
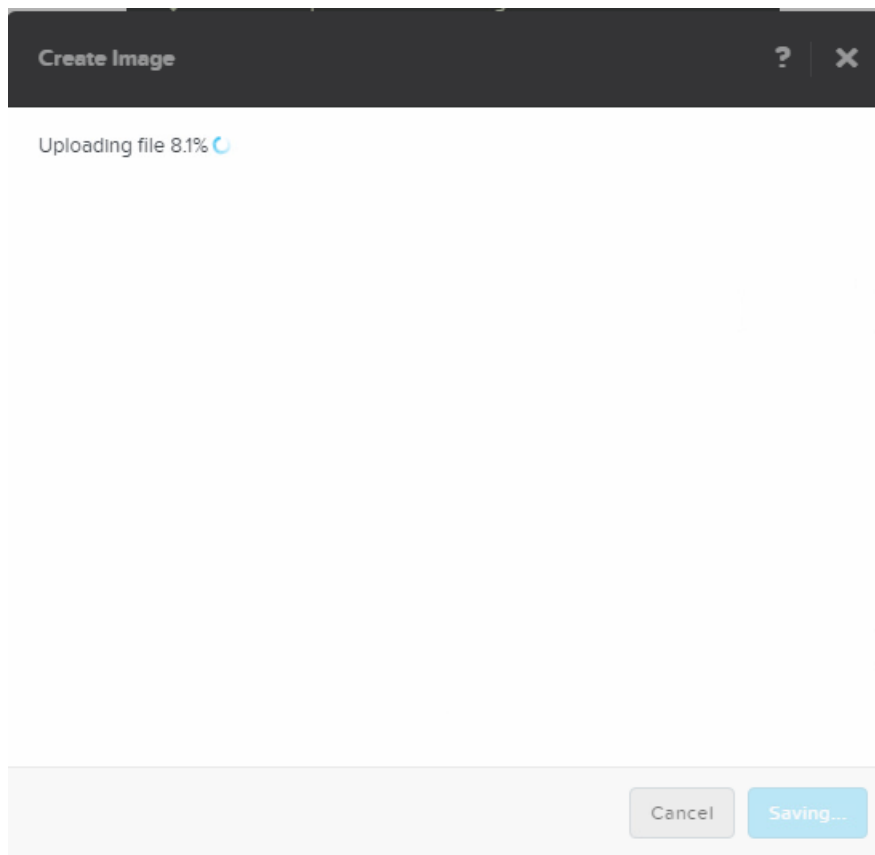
And will end with the below screenshot.
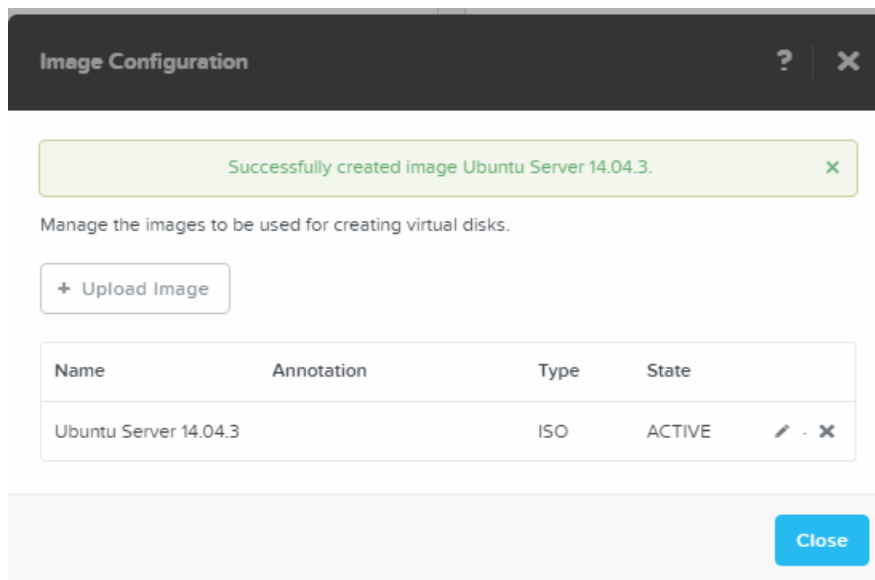
Click the **Close** button to return to the CDROM setting of the VM.

Click the **Update** button to return to the VM definition.

If you want to change uploaded ISO images after creation of the VM, click on the gear-icon in the top right hand corner and select **Image Configuration**.
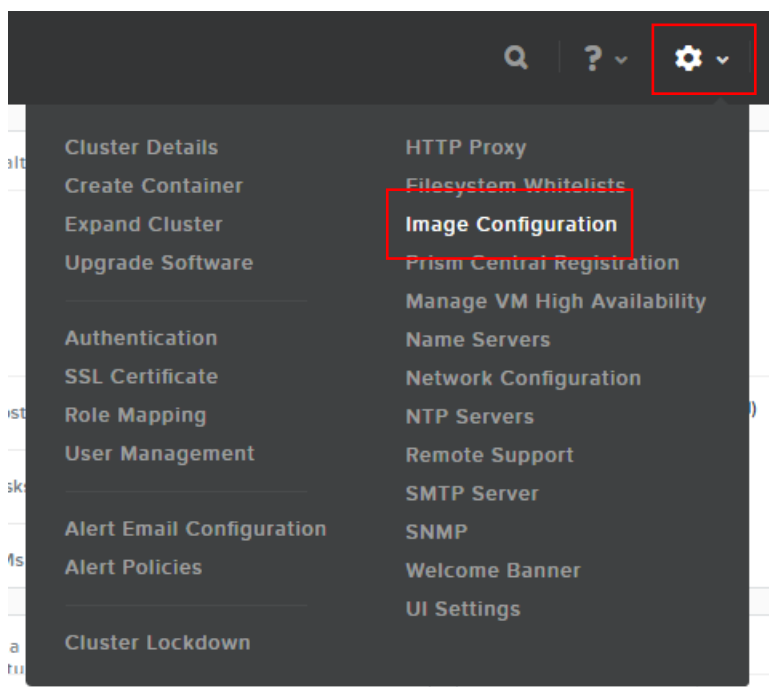
As this is an example we are going to use the earlier created virtual network. Click **+ New NIC** to add a network connection to one of the created virtual networks

Click the **Add** button to have the network connection added to the VM.

Now click the **Save** button to have the VM be created. The below screen should be seen from the top coming down slowly. This will show you that a VM ub-srv-ce1 has be created.
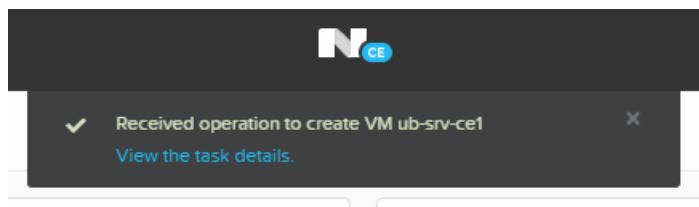
In the tableview we were in we should no see our just created VM.

Now let's start the VM. Hit the **Power On** button halfway of the page after having the VM selected!.

After having the machine given the Power On status, a host will appear in the table view. Not sooner!

Now hit the **Launch Console** button to the left side of the **Power On** button to see the console of the VM.

A VNC screen will open top show the console of the VM.

If you want, test all button on the right-hand side of the VNC console to see what they do.

THIS CONCLUDES THE CREATE VIRTUAL NETWORK AND VM SECTION OF THIS DOCUMENT

VM Cloning

Let's clone a VM using the PRISM interface. Click the **Clone** button kin the PRISM interface.
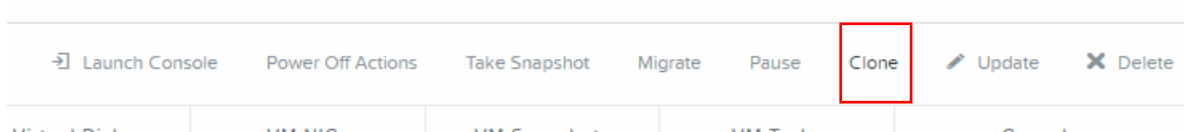
Use the below settings for the clone use for the name the original name and add **-clone** to it. Look at all options you can change!

After you have clicked the **Save** button the VM clone should appear in the PRISM UI like below.

Look at all the options you can monitor after you've clicked on one of the VM's. Information should be there for the first created and powered-on VM.

THIS CONCLUDES THE VM CLONING SECTION OF THIS DOCUMENT
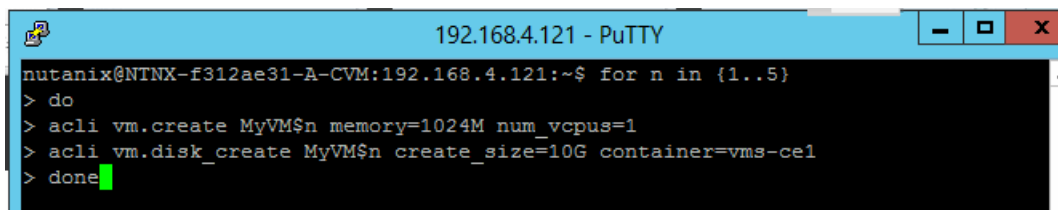
AHV Scripting

AHV is very powerful from a scripting interface the so called acli. The flowing section is providing some basic scripts/commands that can be used in the acli interface.

VM Creation - Basics
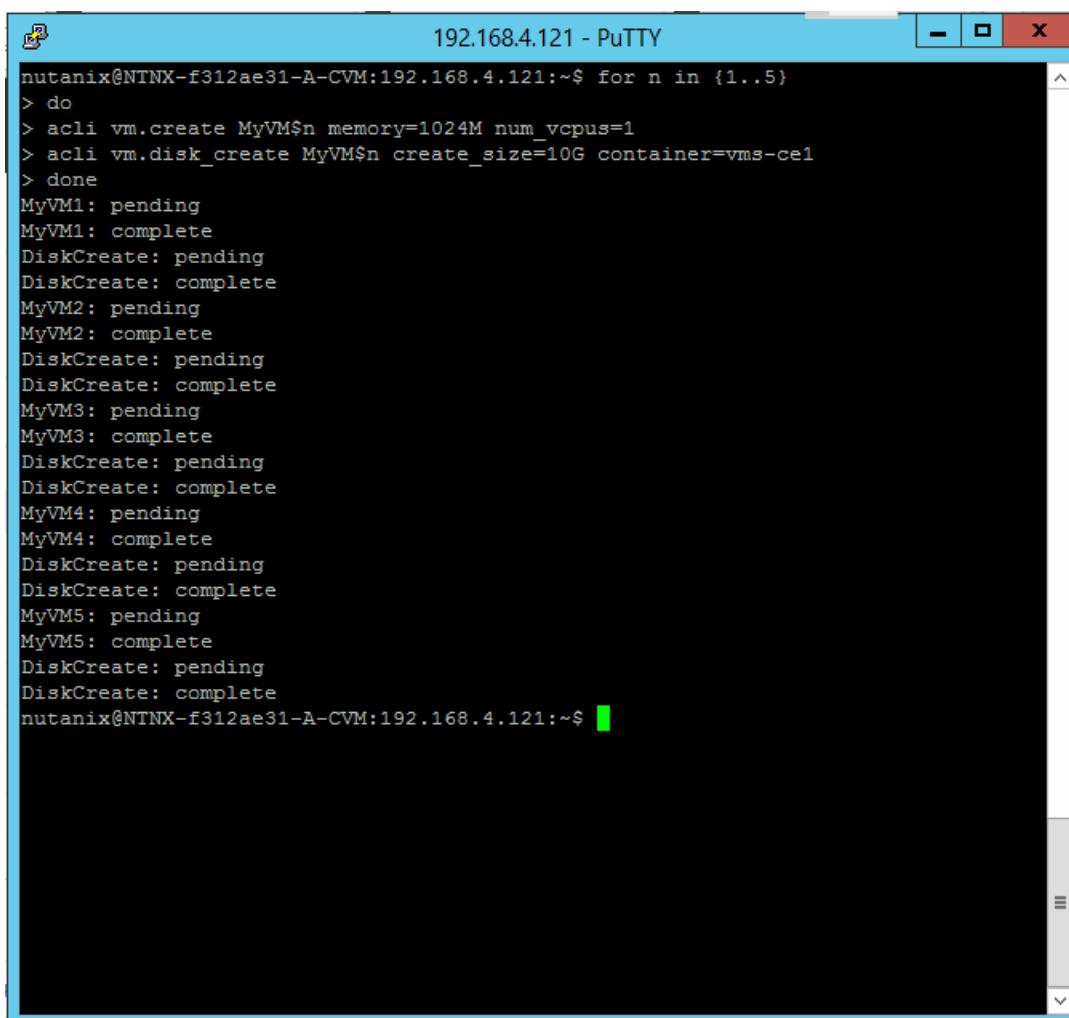
Connect to the CVM using the IP address of your cluster. Use **nutanix** and the **nutanix/4u** as username and password combination.

After the connection is successful type the following command to create a VM with 1G of RAM, 1vCPU and a 10GB disk. For demo purposes the CDROM and the NIC are not used but can be added if wanted. For a full reference to all acli command's look in the Application Mobile Fabric guide on the support site.

```
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$ for n in {1..5}
> do
> acli vm.create MyVM$n memory=1024M num_vcpus=1
> acli vm.disk_create MyVM$n create_size=10G container=vms-ce1
> done
```

This command should lead in having 5 VM's named MyVM1 to MyVM5 all with the earlier mentioned parameters. The below screen shows all lines returned by the cluster.

```
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$ for n in {1..5}
> do
> acli vm.create MyVM$n memory=1024M num_vcpus=1
> acli vm.disk_create MyVM$n create_size=10G container=vms-ce1
> done
MyVM1: pending
MyVM1: complete
DiskCreate: pending
DiskCreate: complete
MyVM2: pending
MyVM2: complete
DiskCreate: pending
DiskCreate: complete
MyVM3: pending
MyVM3: complete
DiskCreate: pending
DiskCreate: complete
MyVM4: pending
MyVM4: complete
DiskCreate: pending
DiskCreate: complete
MyVM5: pending
MyVM5: complete
DiskCreate: pending
DiskCreate: complete
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$
```

PRISM will show all just 5 newly EXTRA created VM's

▲ VM NAME	HOST	IP ADDRESSES	CORES	MEMORY CAPACITY	CPU USAGE	CONTROLLER READ IOPS	CONTROLLER WRITE IOPS	CONTROLLER IO BANDWIDTH	CONTROLLER AVG IO LATENCY	BACKUP...
● MyVM1	NTNX-f312ae31-A		1	1 GiB	0%	0	0	0 KBps	0.38 ms	Yes
● MyVM2	NTNX-f312ae31-A		1	1 GiB	0%	0	0	0 KBps	5.44 ms	Yes
● MyVM3	NTNX-f312ae31-A		1	1 GiB	0%	0	0	0 KBps	0.45 ms	Yes

▲ VM NAME	HOST	IP ADDRESSES	CORES	MEMORY CAPACITY	CPU USAGE	CONTROLLER READ IOPS	CONTROLLER WRITE IOPS	CONTROLLER IO BANDWIDTH	CONTROLLER AVG IO LATENCY	BACKUP...
● MyVM1	NTNX-f312ae31-A		1	1 GiB	0%	0	0	0 KBps	0.38 ms	Yes
● MyVM2	NTNX-f312ae31-A		1	1 GiB	0%	0	0	0 KBps	5.44 ms	Yes
● MyVM3	NTNX-f312ae31-A		1	1 GiB	0%	0	0	0 KBps	0.45 ms	Yes

VM Cloning

Before we can clone machines, we need to get some resources freed-up. So power done the earlier created clone using the UI named ub-srv-cex by using the **acli vm.off** command

The PRISM should show a gray coloured icon infront of the VM like below.

Now let's delete that VM by using the **acli vm.delete** command and reply **yes** to the asked question if you are sure.

Also delete all earlier created MyVM1 till 5 using the acli vm.delete MyVM[1-4] command like below and reply with yes as well.

In the PRISM UI the VM's should be gone except for two.

No let's clone the MyVM5 into 5 new machines called MyVMClone1 to MyVMClone5 by using the **acli vm.clone** command as shown below.

```
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$ acli vm.clone MyVMClone[1..5] clone_from_vm=MyVM5
MyVMClone1: pending
MyVMClone2: pending
MyVMClone3: pending
MyVMClone4: pending
MyVMClone5: pending
MyVMClone1: complete
MyVMClone2: complete
MyVMClone3: complete
MyVMClone4: complete
MyVMClone5: complete
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$
```

PRISM should show

VM		
▲ VM NAME	HOST	IF
○ MyVM5		
○ MyVMClone1		
○ MyVMClone2		
○ MyVMClone3		
○ MyVMClone4		
○ MyVMClone5		
○ ub-srv-ce1	NTNX-f312ae31-A	

Let's power on the first three just created VM's by using **acli vm.on MyVMClone[1-3]** command like below.

```
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$ acli vm.on MyVM[1-3]
MyVM1: pending
MyVM2: pending
MyVM3: pending
MyVM2: complete
MyVM1: complete
MyVM3: complete
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$
```

PRISM should show the VM's with a green ball in front of the VM.

Now let's delete all earlier created VM by using the **acli vm.delete** command using wildcards like below and answer the question asked with **yes**.

```
nutanix@NTNX-f312ae31-A-CVM:192.168.4.121:~$ acli vm.delete MyVM*
Delete 6 VMs? (yes/no) yes
MyVM5: pending
MyVMClone1: pending
MyVMClone2: pending
MyVMClone3: pending
MyVMClone4: pending
MyVMClone5: pending
MyVM5: complete
MyVMClone2: complete
MyVMClone3: complete
MyVMClone1: complete
MyVMClone5: complete
MyVMClone4: complete
```

Only one VM should exist in the cluster.

VM

▲ VM NAME
○ ub-srv-ce1

THIS CONCLUDES THE AHV BASIC Scripting SECTION OF THIS DOCUMENT

Replication – A-Synchronous

For this section you will be working with another cluster to start A-Synchronous replication using two CE installations. Use the below table to get the information needed.

| Clustername	IP Address CVM (starting 172.31.100.xxx)	Container 1	Container 2
CE1	11	vms-ce1	DR-vms-ce2
CE2	16	vms-ce2	DR-vms-ce1
CE3	21	vms-ce3	DR-vms-ce4
CE4	26	vms-ce4	DR-vms-ce3
CE5	31	vms-ce5	DR-vms-ce6
CE6	36	vms-ce6	DR-vms-ce5
CE7	41	vms-ce7	DR-vms-ce8
CE8	46	vms-ce8	DR-vms-ce7
CE9	51	vms-ce9	DR-vms-ce10
CE10	56	vms-ce10	DR-vms-ce9
CE11	61	vms-ce11	DR-vms-ce12
CE12	66	vms-ce12	DR-vms-ce11
CE13	71	vms-ce13	DR-vms-ce14
CE14	76	vms-ce14	DR-vms-ce13
CE15	81	vms-ce15	DR-vms-ce16
CE16	86	vms-ce16	DR-vms-ce15
CE17	91	vms-ce17	DR-vms-ce18
CE18	94	vms-ce18	DR-vms-ce17

We start by creating a Remote Site and then a Protection Domain.

Remote Site creation

To get A-Sync running we firstly need to define a remote site. Click on **Data Protection** in de main screen bar.
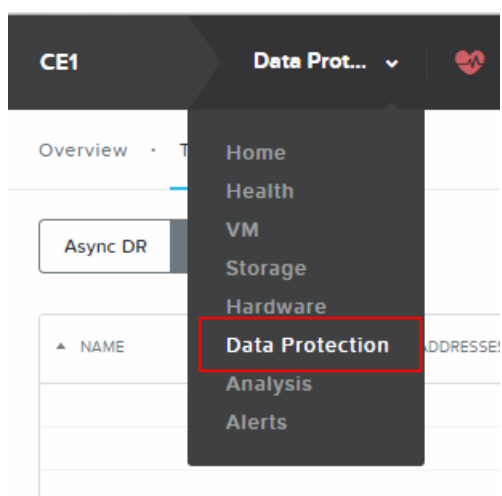
On the right-hand side click on the **+ Remote Site** and then on **Physical Cluster** as the sync partner is a "physical cluster".
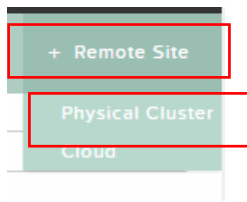
REMARK: The screenshots further on in this document use CE1 as the source and the CE2 cluster as the remote side for example reasons!

In the Remote Site screen type the information of the partner cluster. Give the remote site a name which makes the remote site understandable where and what it is. Also provide the IP address of the partner cluster and click Add Site.

REMARK: In real live production environments use the External IP address of the cluster. In our demo environment we use the IP address of the CVM as we only have one node in the Nutanix Cluster.

REMARK: As we are working in pairs the other partner cluster will have your cluster as the remote site defined so we don't need to do anything on that cluster as mentioned in orange just below the NAME field in the screen. In production time you MUST do this. Otherwise the replication will fail!

The below dropped down screen should been seen.
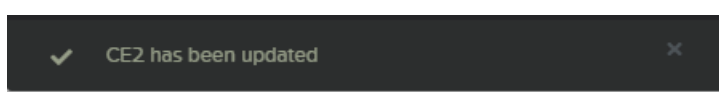
The screen, after clicking on the **Save** button should show a green text stating that the Remote site has been created successfully. Scroll down and leave all setting default till you see **NETWORK MAPPING** and **VSTORE NAME MAPPING** as we need to tell the cluster how to map these two.

For network mapping we need to tell the cluster how to map the networks on both cluster to each other. This has to be done if the networks on both cluster are not named the same. In our environment we use AHV-vlan0 and both.

For the **VSTORE NAME MAPPING** we need to tell the mapping between **Source VStore** and **Destination VStore**. In our environments we need to change these to the below screenshot. Again use your parameters according to the table earlier. As example in the screenshot vms-ce2 on *ce2* is mapped to DR-vms-ce2 on the *ce1* cluster.

After creation of the Remote Site the below screenshot should be shown where you see the settings which you have created earlier. If you don't see this, click on the Table view and then on Remote Site.
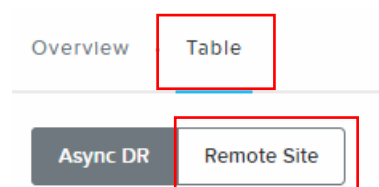
After selecting the Remote Site you just created you should be able to use the **Test Connection** button. If you've created the remote site correctly, you should see a **green checkmark** left to the button like below screenshot.
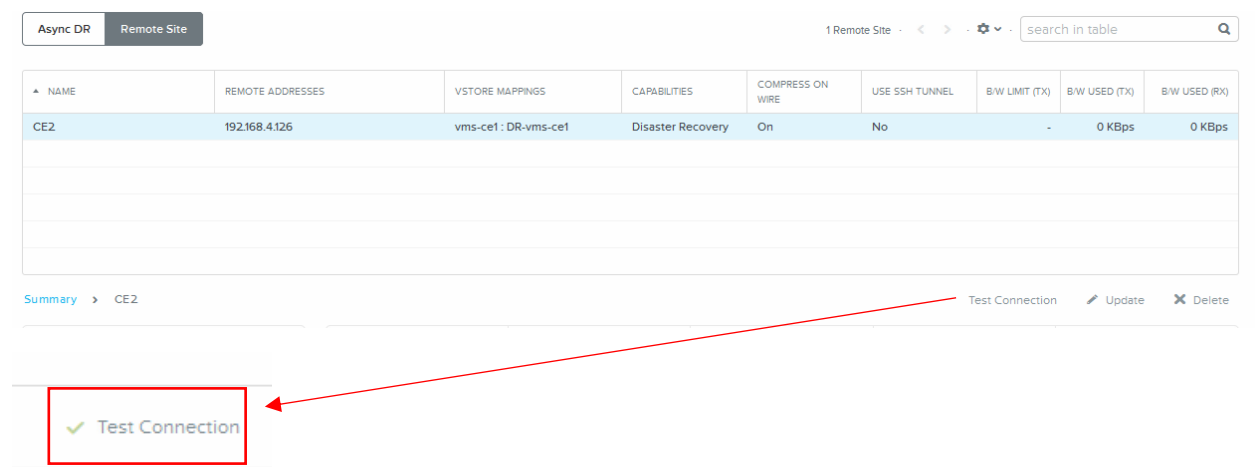
Creating a Protection Domain

When clicking on the **Async DR** button there should not be shown anything.
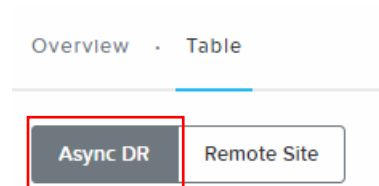
On the right hand-side of the screen click on the **+ Protection Domain** and the on **Async DR**.
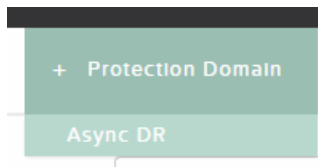
A new screen appears in which a name is asked for. Give the Protection Domain a useful name like CE1-CE2 and click the **Create** button.

The next phase will be to assign VM's to the Protection Domain. Select the **ub-srv-cex** VM which you created earlier and click on the **Protect Selected VMs** button.

Protection Domain (Async DR)

Name · **Virtual Machines** · Schedule

Unprotected VMs (1)

Filter by: [VM Name] [Host Name]

☐	▲ VM	HOST
☑	ub-srv-ce1	NTNX-f312ae31-A

Pick a Consistency Group ?

- ◉ Use VM Name
- ○ Use an existing CG ▾
- ○ Create a new CG

Protect Selected VMs (1) ❯

Protected VMs (None)

Filter by: [VM Name] [CG Name]

☐	▲ VM	CG

❮ Unprotect Selected VMs

Next

This should end up in a screen like below. Click the **Next** button.

Now we need to tell the cluster according to which schedule it has to make snapshots and should they be replicated to another remote site. Click the **New Schedule** button.

Try to create a repeatable time smaller than 60 minutes like below.

This should return an error as soon as you click on another parameter in the top of the schedule.

REMARK: The lowest number which can be set in the minutes is 60 minutes!

Set the parameters according to above screenshot and click the **Create Schedule** button.
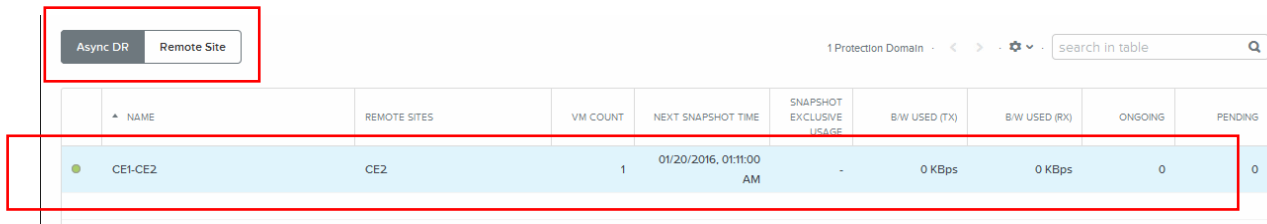
This should result in a screen just like below.

Click the **Close** button to close the creation of the Protection Domain.

Test the Replication
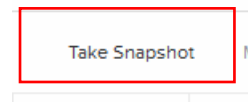
To test all simple click on the **Async DR** button and select the protection domain we've just created.
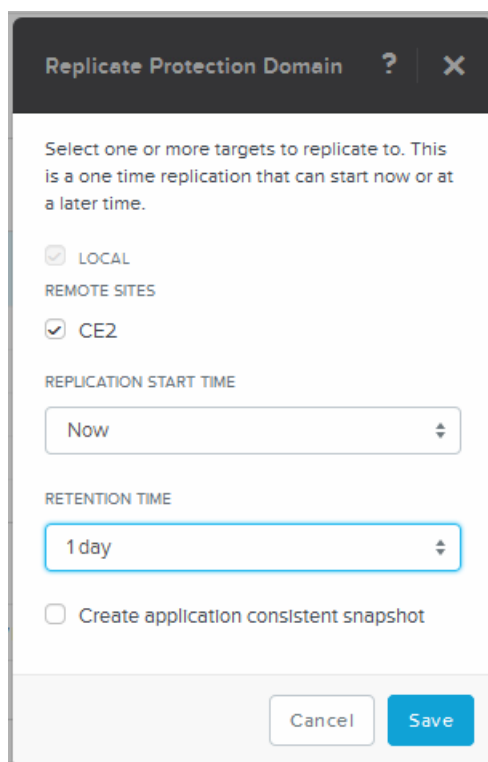

The **Take Snapshot** button should now be available. Click this button.


Now let's create a snapshot of the VM in the selected protection domain and set the settings to the below screenshot. This will result in a snapshot be create, replicated to the remote site, scheduled now and with a retention of 1 day. Don't forget to select the **REMOTE SITES** otherwise ther will only be a local snapshot created. Click on **Save** when done.

That click should provide a dropped down screen stating that the schedule has been created.
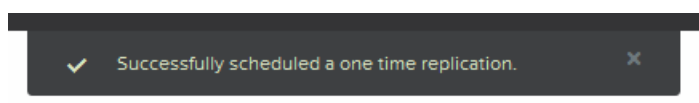
Select the protection domain again and then look at the Replications tab. There should be a line stating what it is doing.

DIRECTION	PROTECTION DOMAIN	REMOTE SITE	SNAPSHOT	START TIME	TIME REMAINING	DATA COMPLETED
Outgoing	CE1-CE2	CE2	102	01/20, 12:16:20am	35s	75.76 MiB

If the replication has worked and is completed, there will be in the same tab of **Replications** at mention of this lower in that subscreen. Example is below.

Last Successful (1)

DIRECTION	REMOTE SITE	SNAPSHOT ID	START TIME	END TIME
Outgoing	CE2	102	01/20, 12:16:20am	01/20, 12:16:41am

Take a look at all tabs which are available.

VMs tab

VM NAME	CONSISTENCY GROUP	POWER STATE ON RECOVERY	
ub-srv-ce1	ub-srv-ce1	power state at time of snaphot	Unprotect

Schedules tab

TYPE	REPEAT ON	START DATE	END DATE	RETENTION POLICY	
Hourly	Every 1 hour	01/19/16, 11:11:00pm	-	Local: 1, CE2: 1	✏ . ✕

Local Snapshots tab

	ID	CREATE TIME	RECLAIMABLE SPACE ⓘ	CHANGED BYTES ⓘ	EXPIRY TIME	
☐	102	01/20/2016, 12:16:20 AM	Processing	0 GiB	01/21/2016, 12:16:20 AM	Details . Restore . ✕

Remote Snapshots tab

Alerts and **Events** tab.

If it didn't work, use the Alerts tab to see what is wrong.

On the left hand-side of the bottom half of the screen you will find Summary information of the protection domain.

THIS CONCLUDES THE REPLICATION – A-SYNCHRONOUS SECTION OF THIS DOCUMENT