

Setting up Severalnines ClusterControl on Nutanix AHV

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Introduction

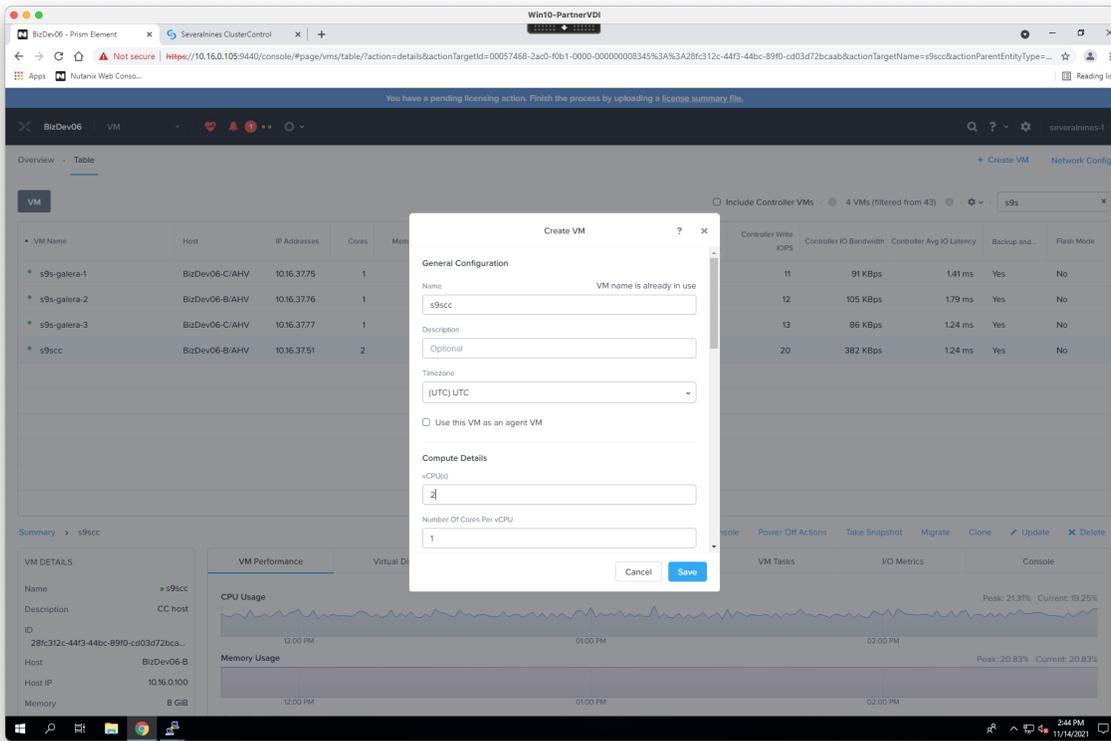
This document highlights the steps involved in creating Nutanix AHV virtual machines, installing and setting up the operating system, installing Severalnines' ClusterControl and finally installing and setting up database clusters from ClusterControl. As an example, we show how to install and setup a three node MySQL/MariaDB Galera (multi-master) database cluster using ClusterControl on Nutanix AHV.

The general steps are:

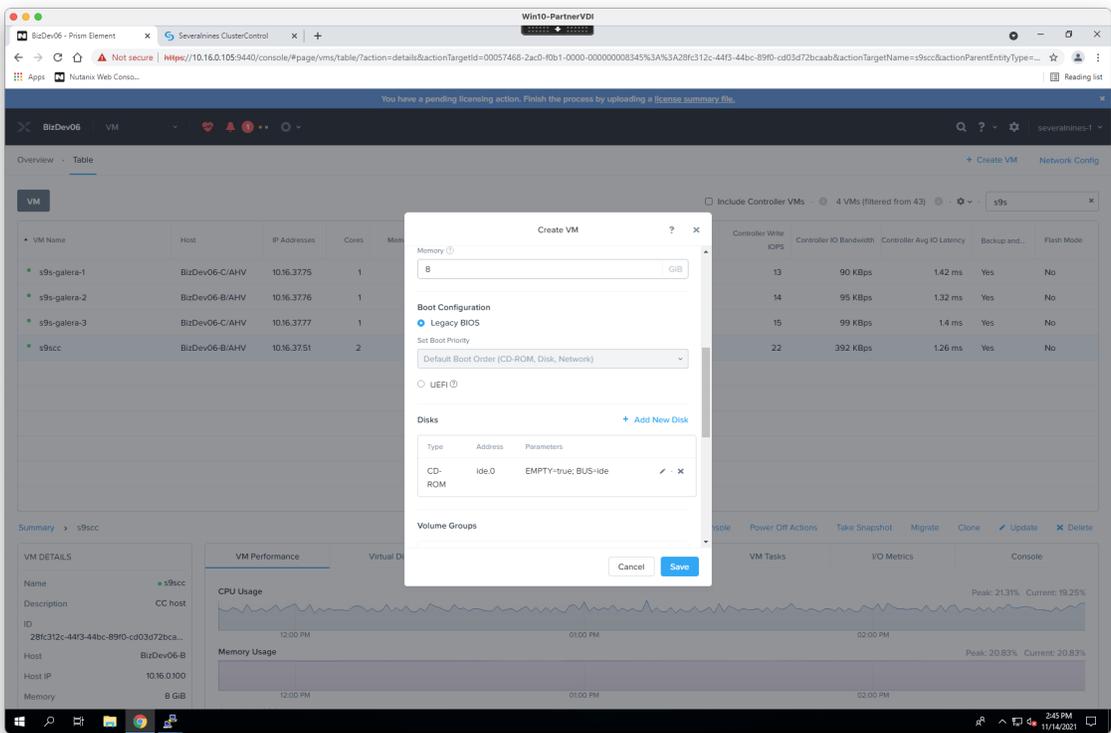
- Create a Nutanix AHV host for ClusterControl
 - Install Operating System on the host
 - Install ClusterControl software
- Create three Nutanix AHV hosts for each of the three database nodes (called databases hosts)
 - Install Operating System on each host
- Create Galera cluster using ClusterControl

Creating AHV VMs for ClusterControl host

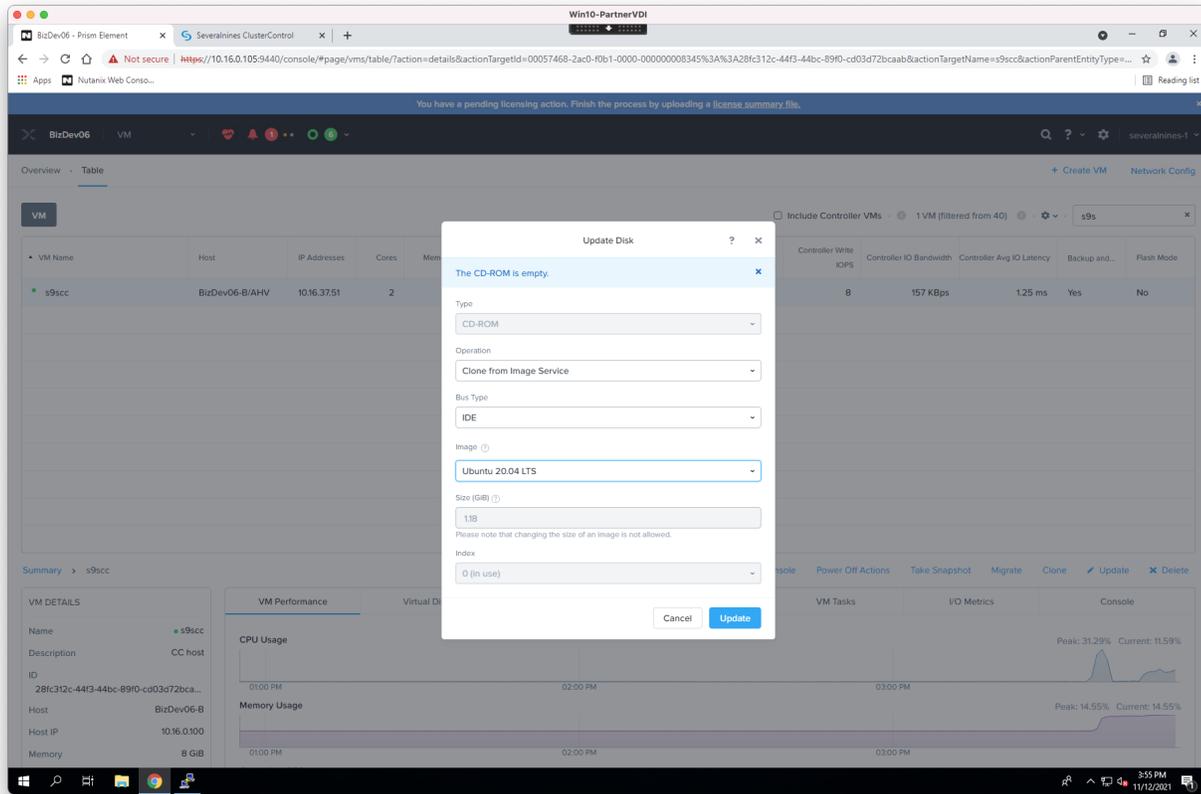
Click on “Create VM”, and follow the screens to create a VM to host ClusterControl



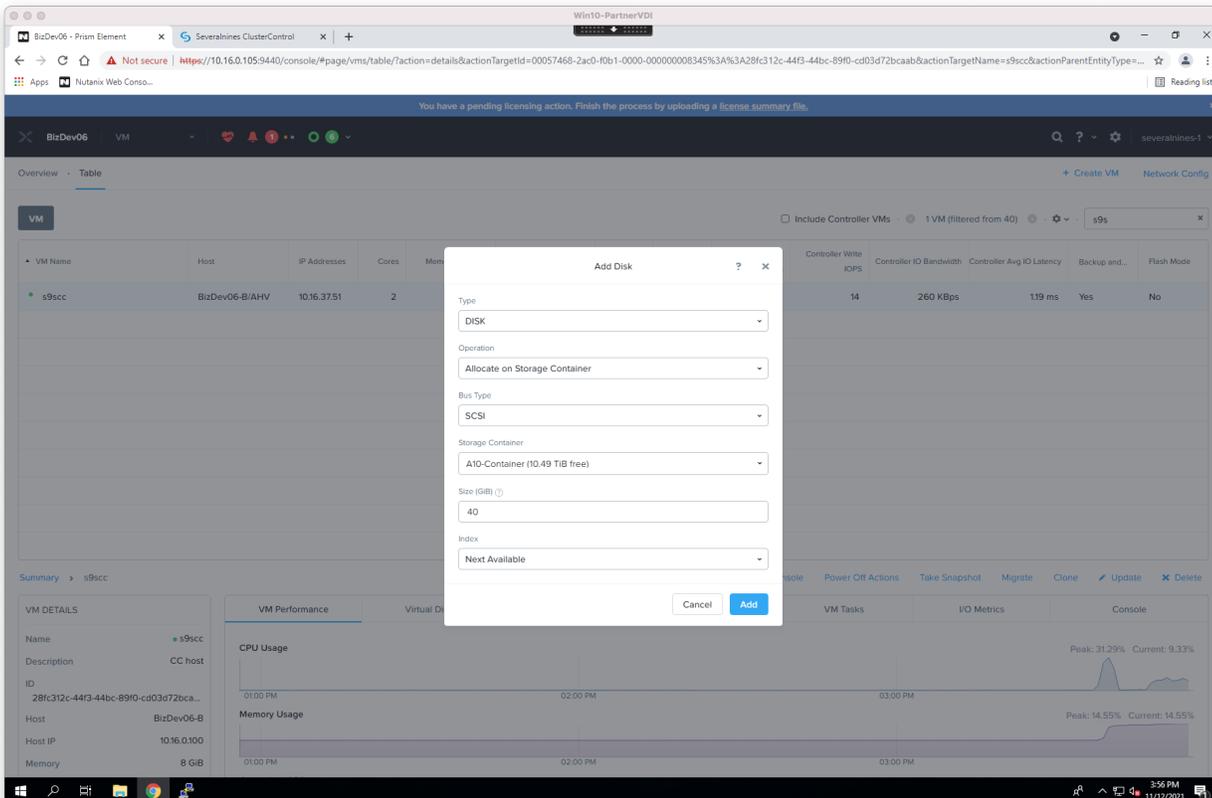
Allocated two(2) vCPUs and 8GB of RAM for the VM



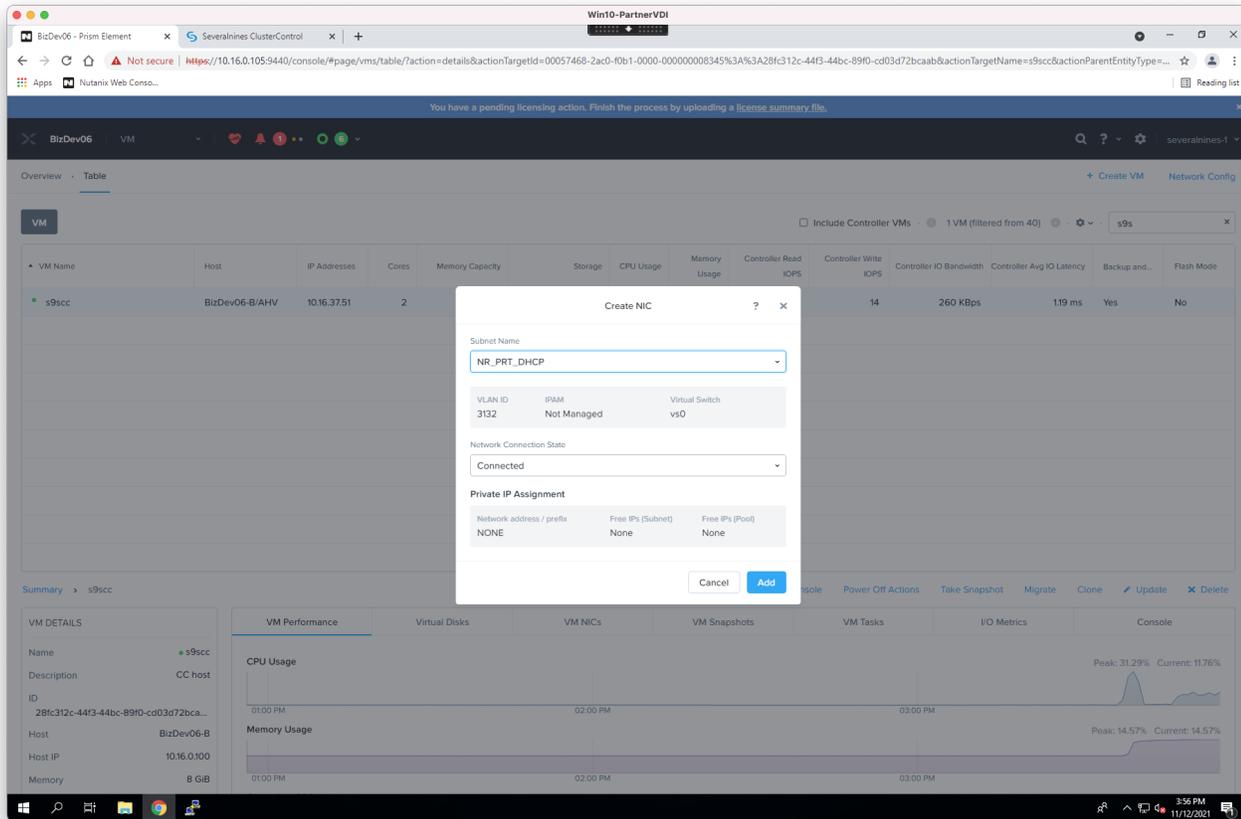
Under “Disks”, click on the pencil icon under CDROM, select the **Ubuntu 20.04 LTS** image as shown below.



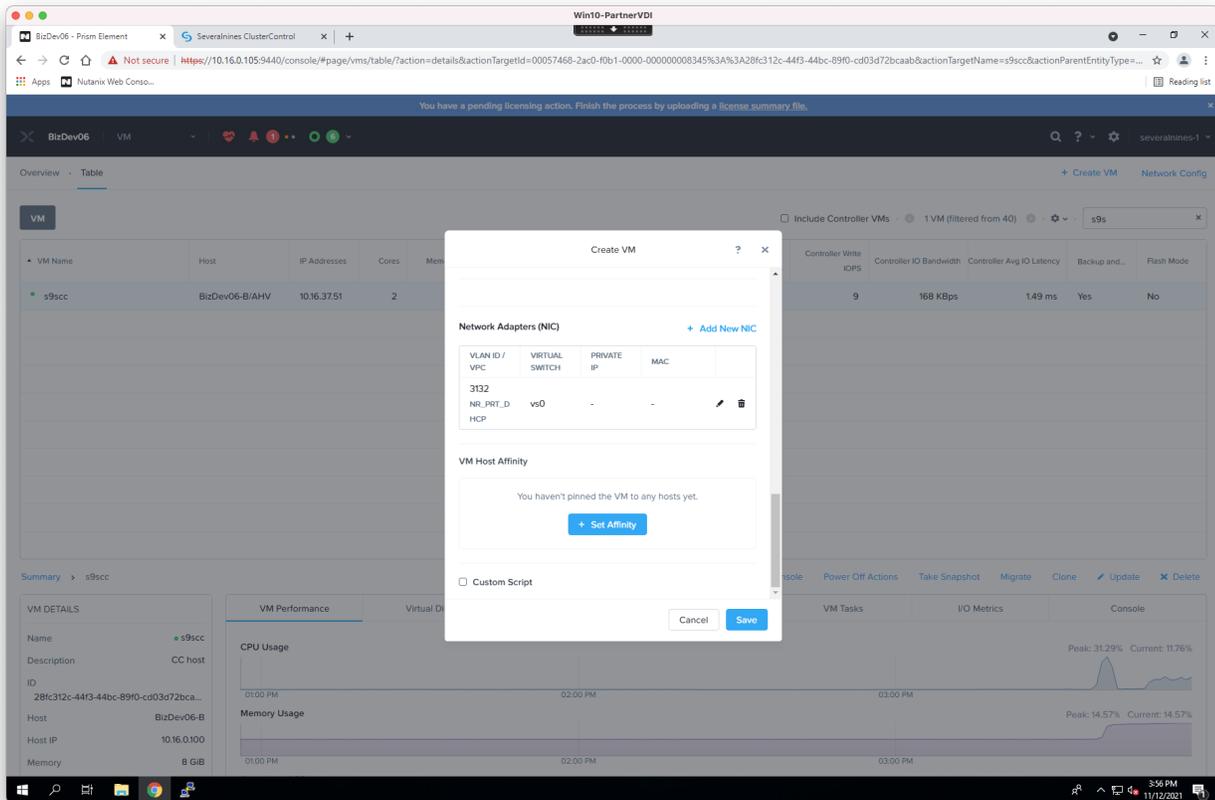
Under “Disks”, add a new disk volume for the Operating System as shown below. Allocate at least **60GB** to it.



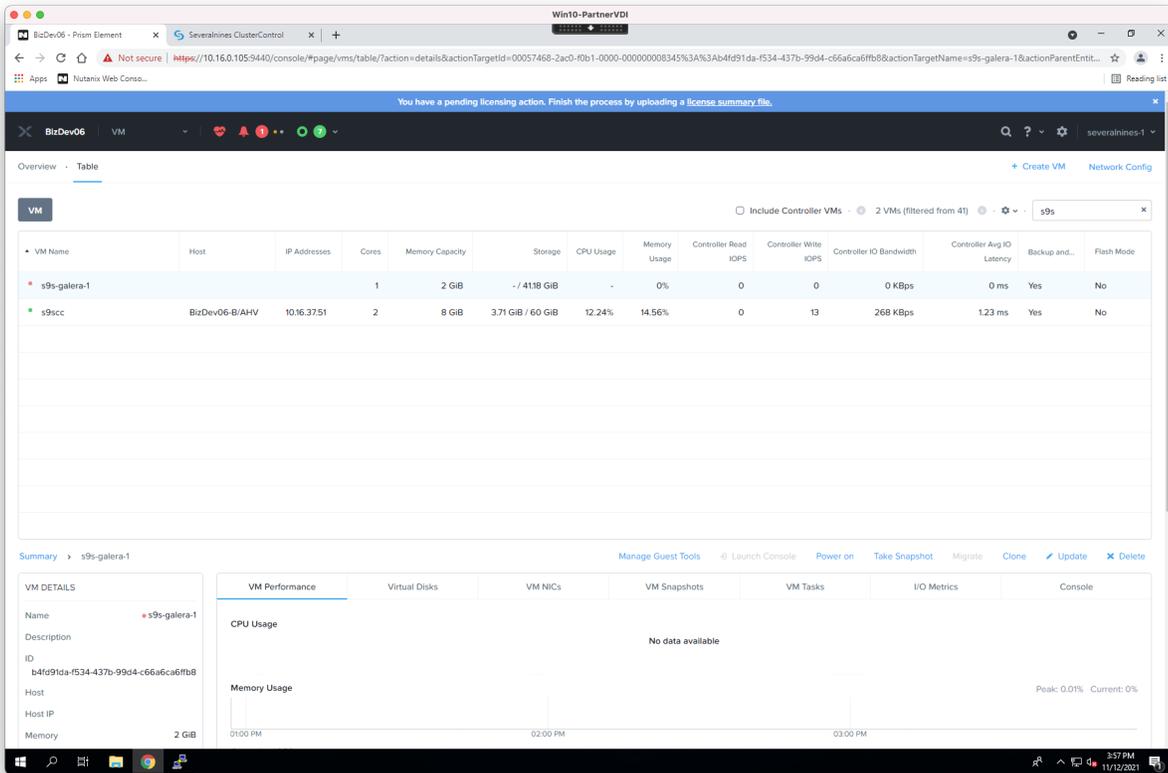
Under “Add New NIC”, add a network interface as shown below. (Use the appropriate one for your situation).



Click “Save”



Select the “s9scc” host and click on the “Power on” option



Finally, click on the “Launch Console” link in order to launch the console to go through the installation of the operating system on the VM

The screenshot displays the Nutanix Prism Element web interface. At the top, a navigation bar shows the current page as 'Win10-PartnerVDI'. Below this, a blue banner indicates a pending licensing action. The main content area is titled 'VM' and contains a table listing virtual machines. Two VMs are visible: 's9s-galera-1' and 's9scc'. The 's9s-galera-1' VM is selected, and its details are shown in a sidebar on the left. The details include the name 's9s-galera-1', description, ID 'b4fd991da-f534-437b-99d4-c66a6ca6ffb8', host 'BizDev06-C', host IP '10.16.0.101', and memory '2 GiB'. The main area shows performance metrics for 's9s-galera-1', including CPU Usage and Memory Usage graphs, and a 'Launch Console' button.

VM Name	Host	IP Addresses	Cores	Memory Capacity	Storage	CPU Usage	Memory Usage	Controller Read IOPS	Controller Write IOPS	Controller IO Bandwidth	Controller Avg IO Latency	Backup and...	Flash Mode
s9s-galera-1	BizDev06-C/AHV		1	2 GiB	- / 4118 GiB	-	-	0	0	0 KBps	0 ms	Yes	No
s9scc	BizDev06-B/AHV	10.16.3751	2	8 GiB	3.71 GiB / 60 GiB	12.24%	14.56%	0	9	137 KBps	1.42 ms	Yes	No

VM DETAILS for s9s-galera-1

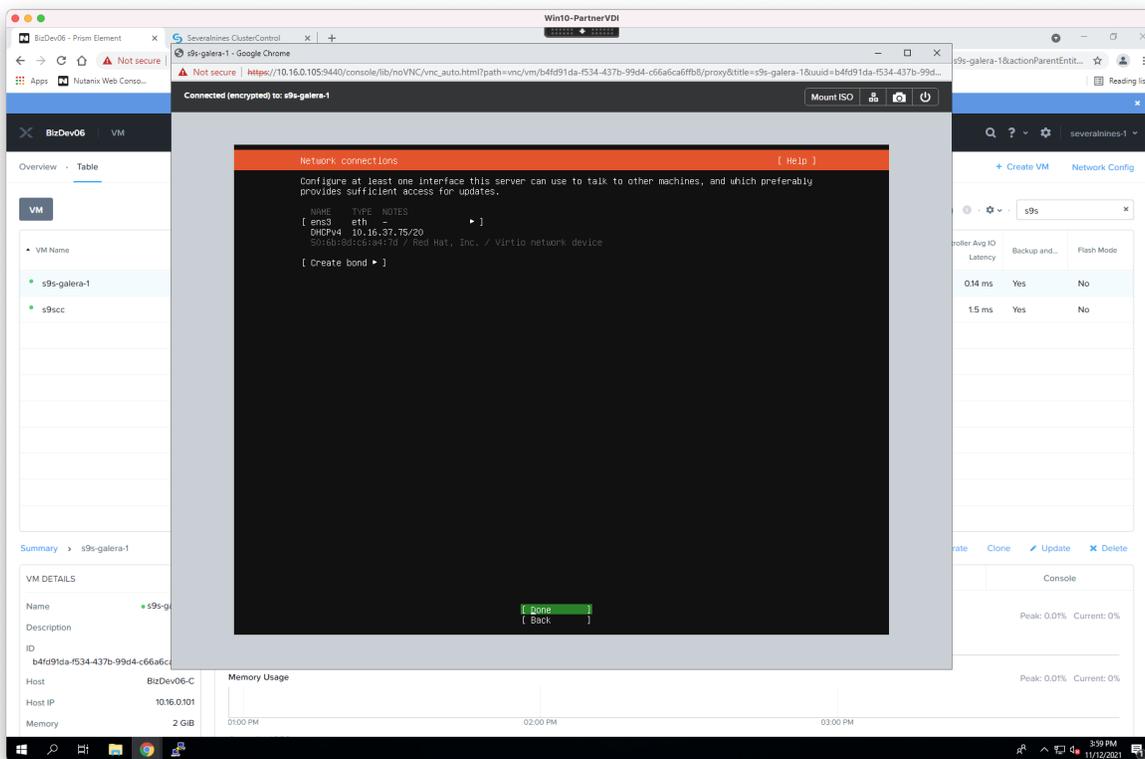
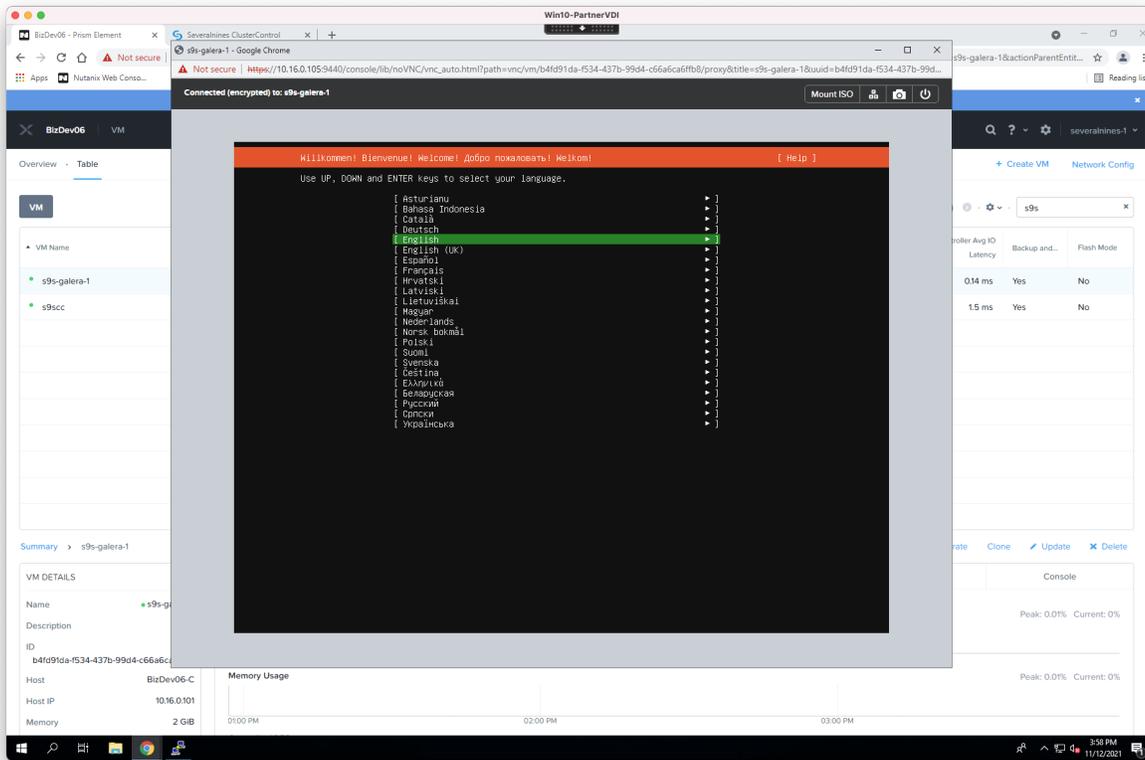
- Name: s9s-galera-1
- Description:
- ID: b4fd991da-f534-437b-99d4-c66a6ca6ffb8
- Host: BizDev06-C
- Host IP: 10.16.0.101
- Memory: 2 GiB

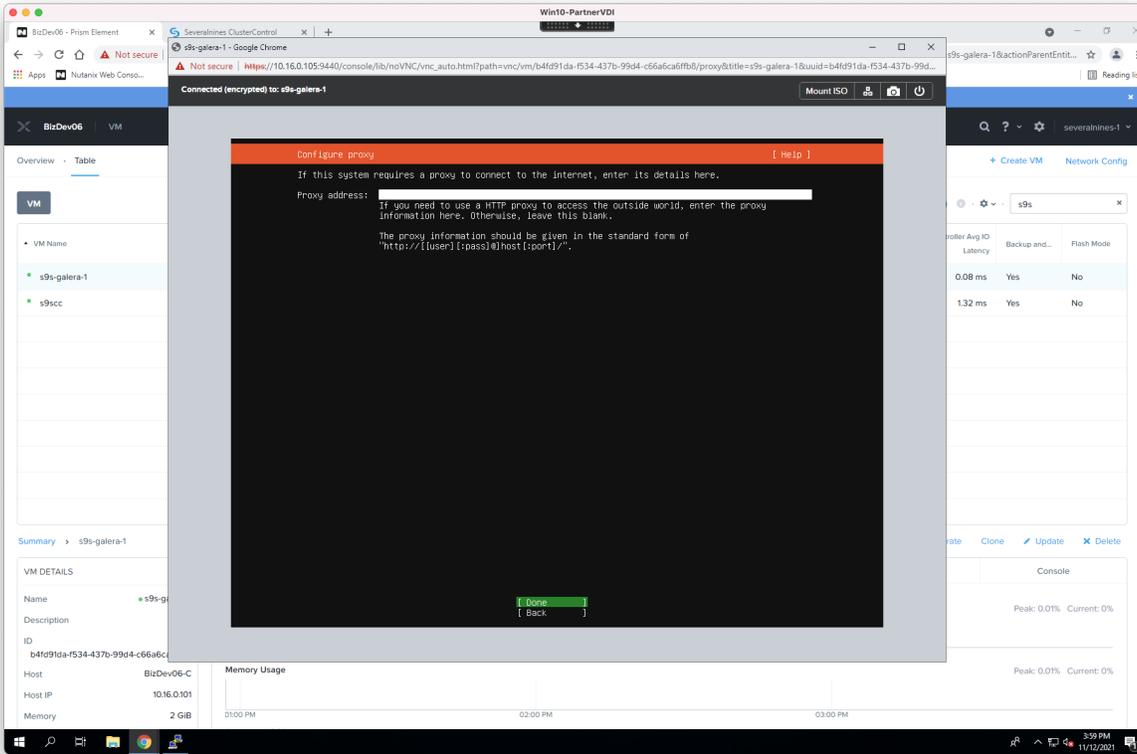
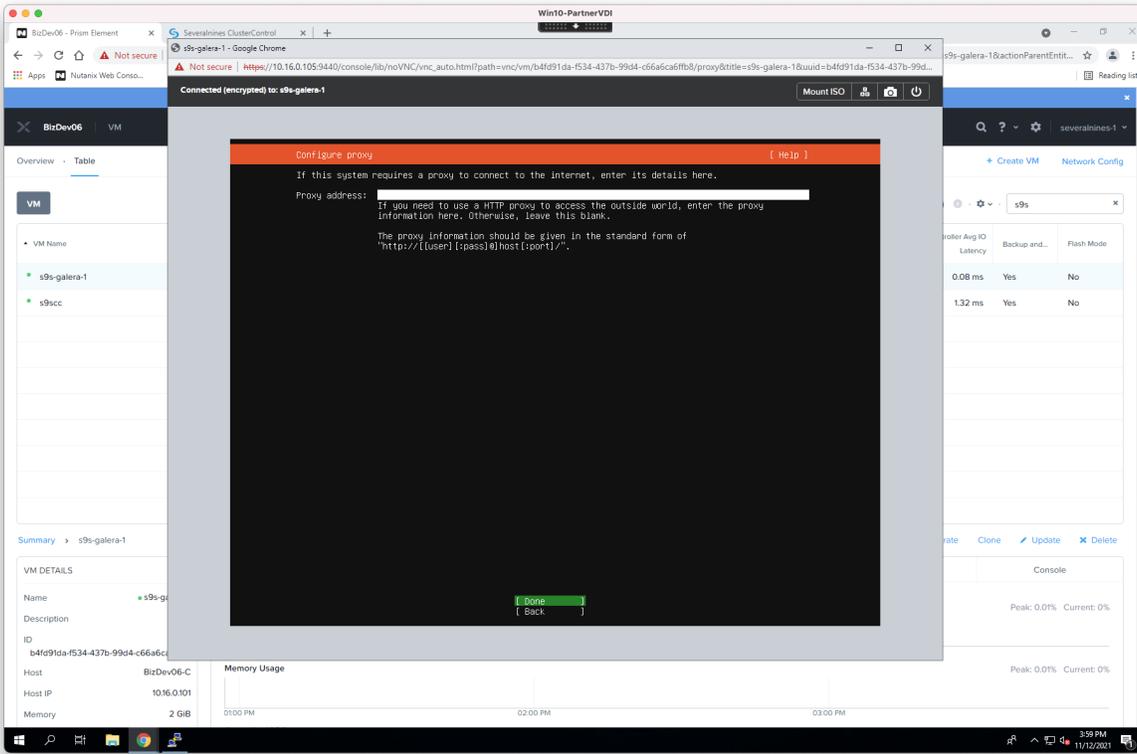
VM Performance

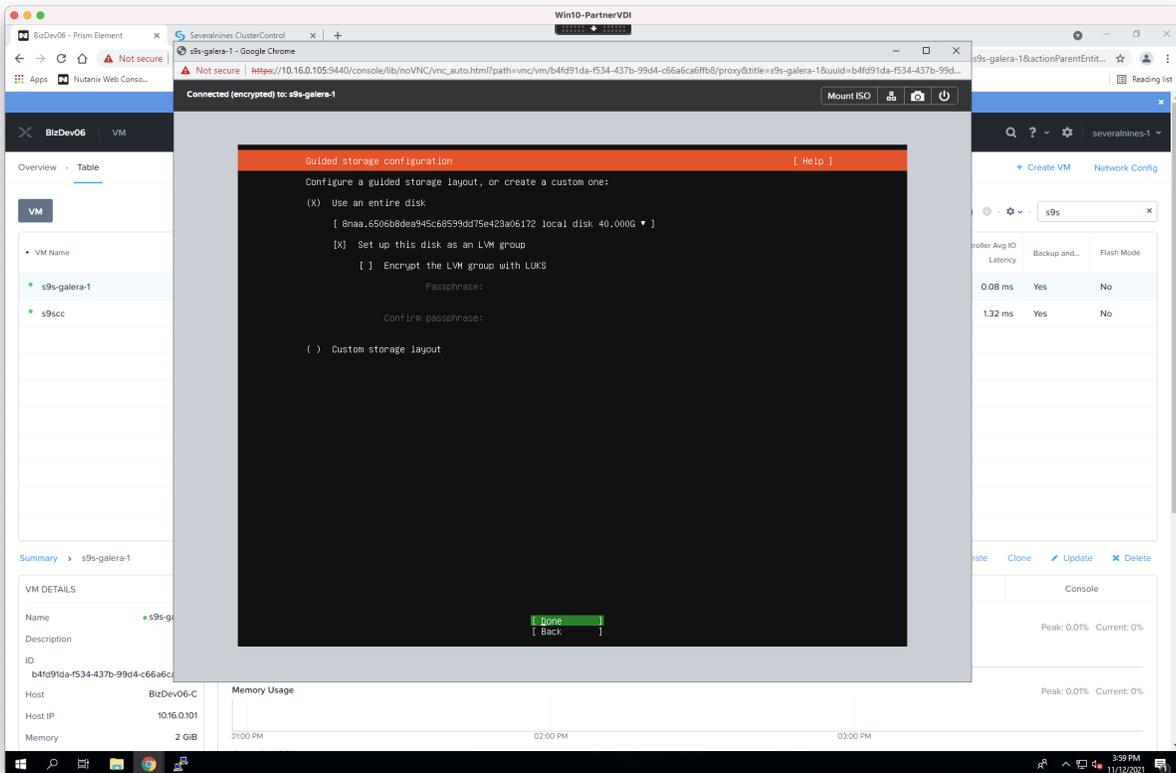
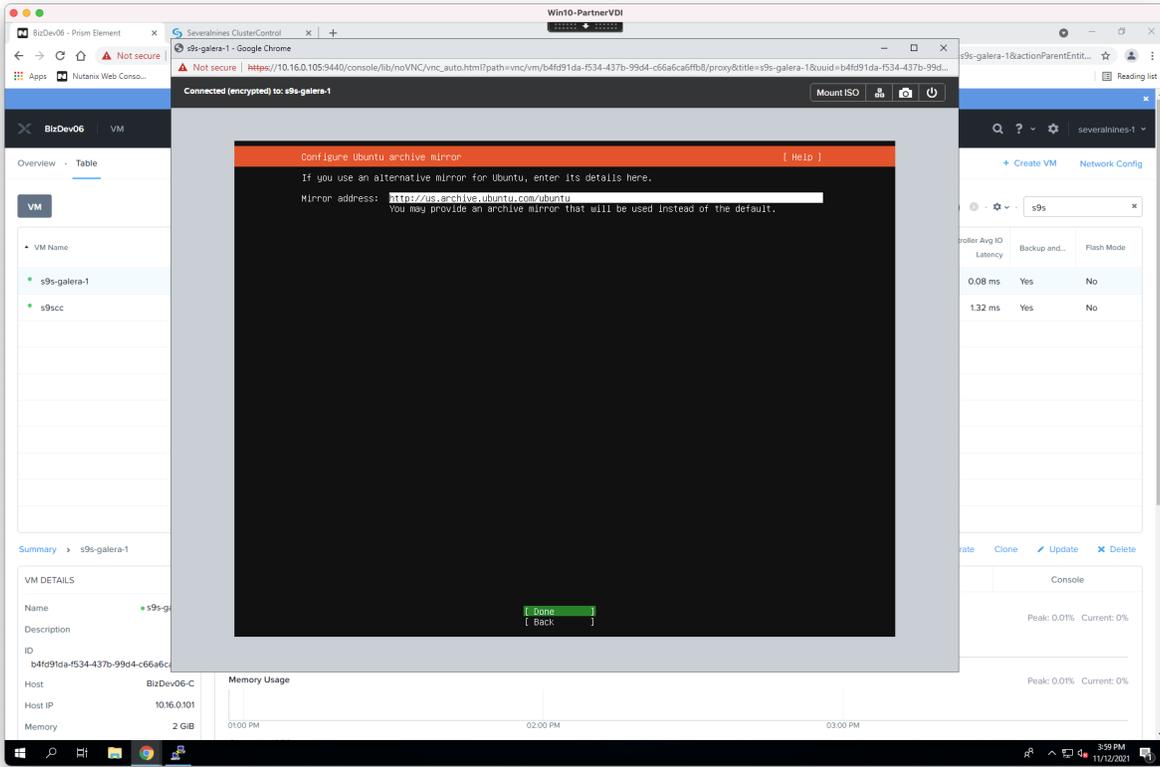
- CPU Usage: Peak: 0.01%, Current: 0%
- Memory Usage: Peak: 0.01%, Current: 0%

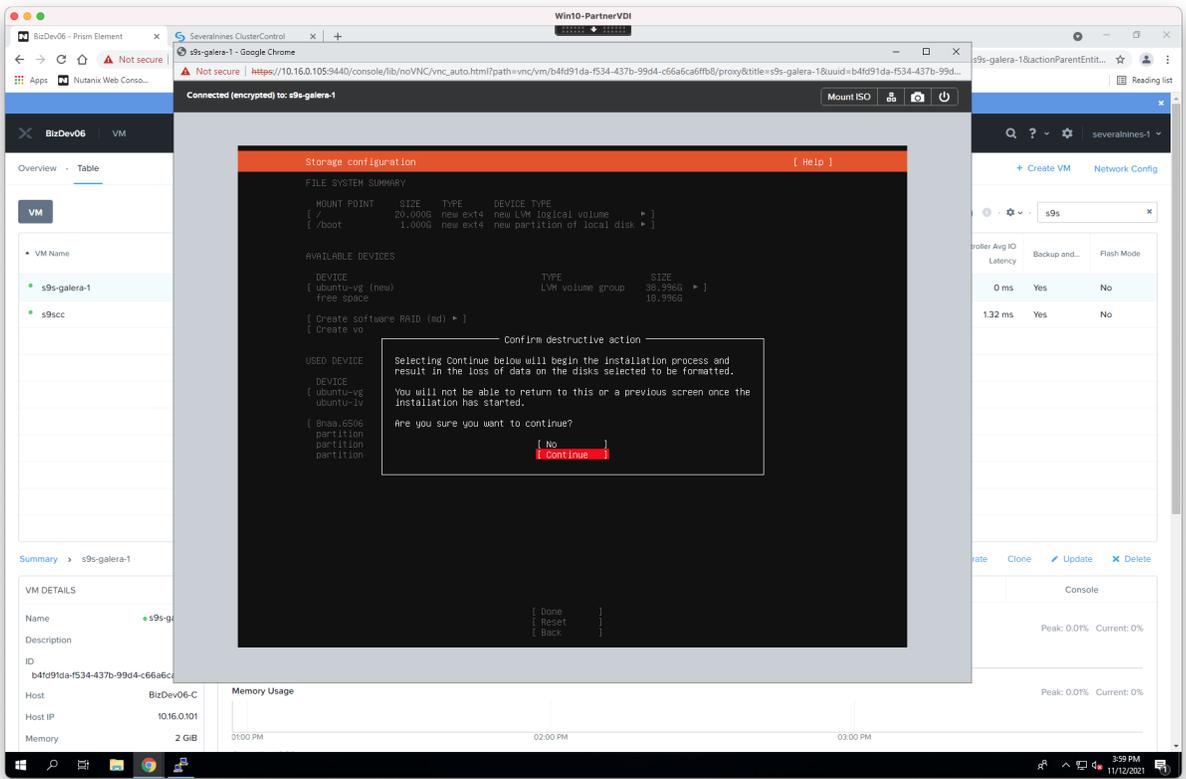
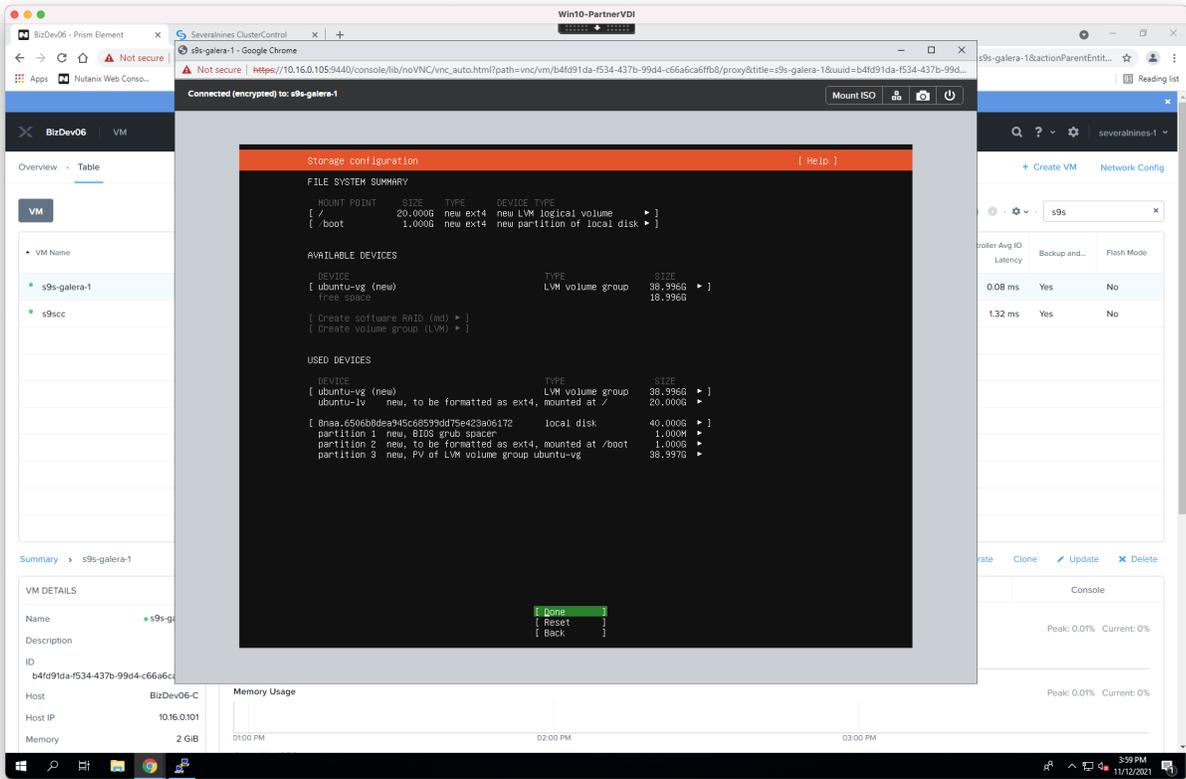
Actions: Manage Guest Tools, Launch Console, Power Off Actions, Take Snapshot, Migrate, Clone, Update, Delete

Installing Operating System on ClusterControl AHV host

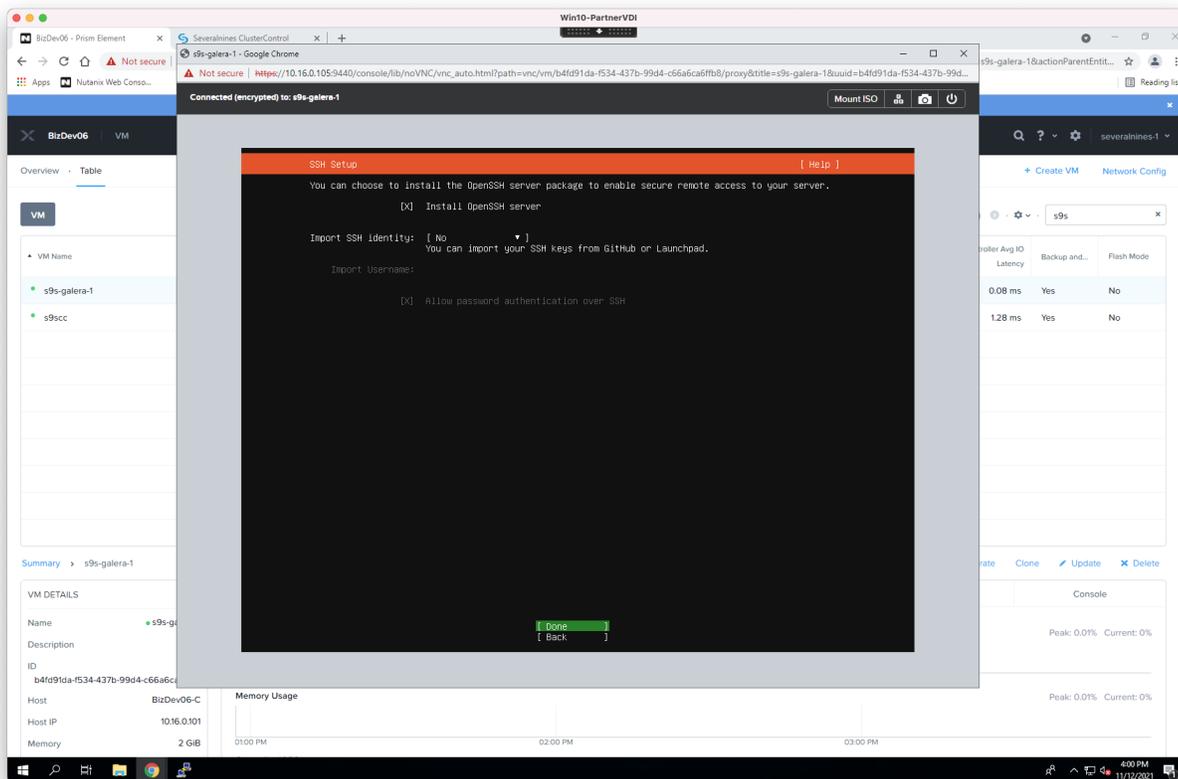
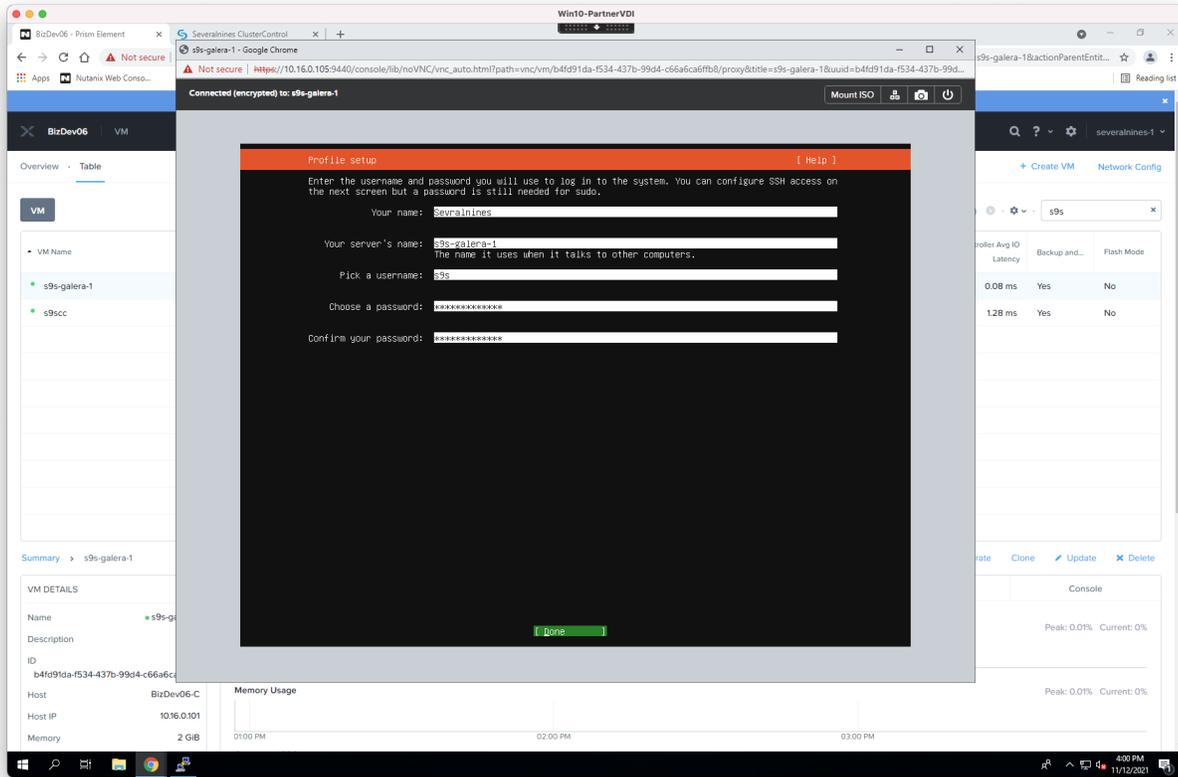


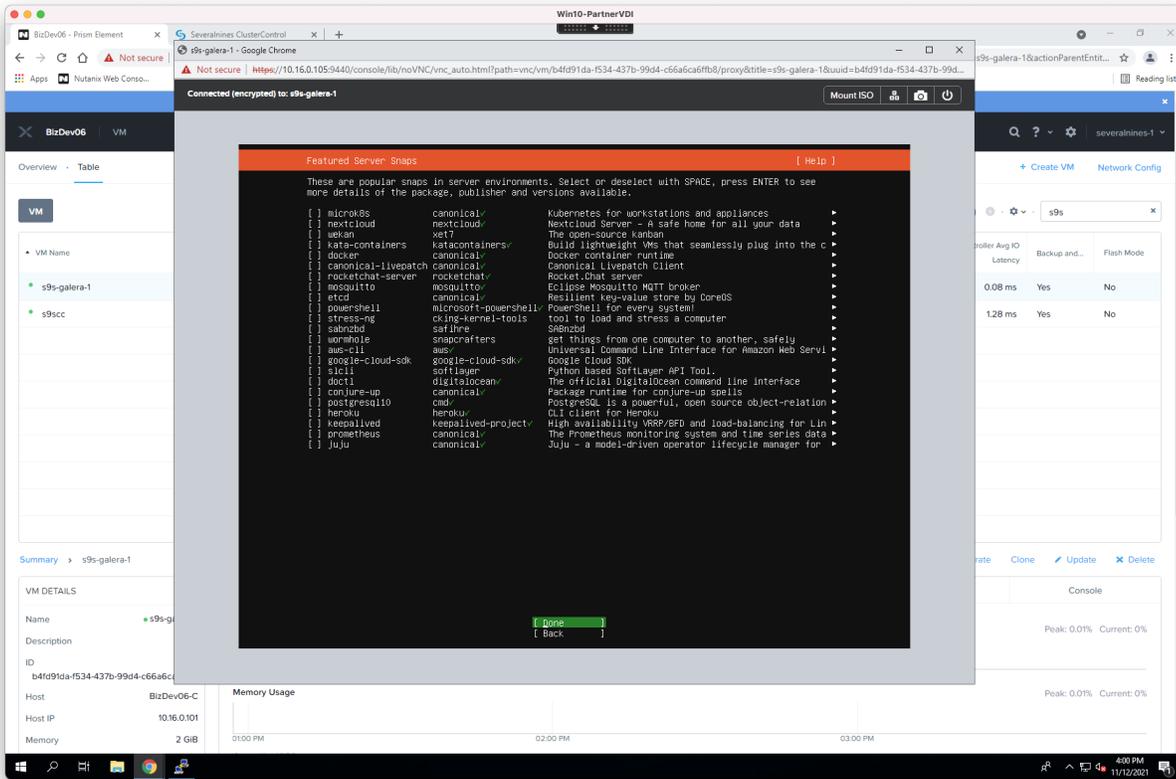




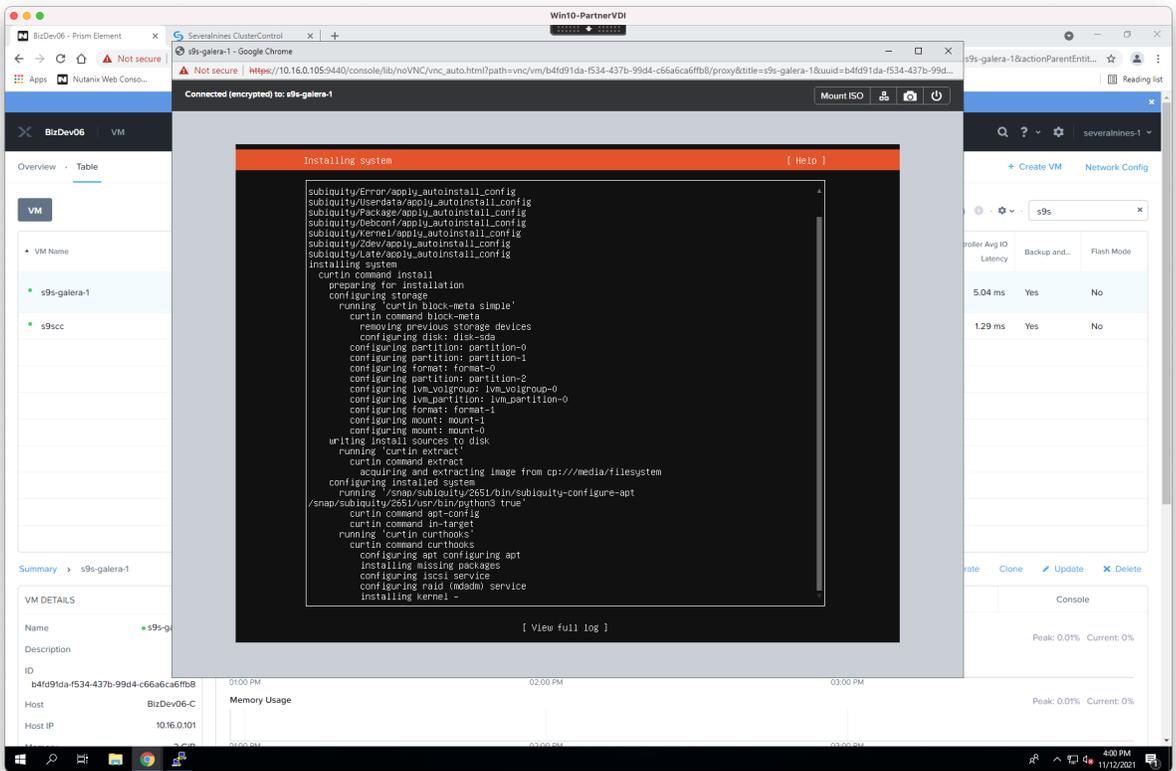


Select appropriate Host, User, etc. (We have selected **s9sgcc** and **s9s** in this example)





Reboot the VM once the installation is complete.



Installing ClusterControl on the AHV host

After the VM host, `s9scc`, has been set up, find its IP from the Nutanix PE console and log into it.

General steps are:

- Generate SSH key pair (public and private) for passwordless SSH login by ClusterControl. (NOTE: do this as the sudo user. Root user works as well)
 - NOTE: the sudo user can generate SSH key pair and make them available on each (including the ClusterControl host) host by using the “ssh-copy-id” tool”. For more information please refer to ClusterControl [documentation](#).

Assumptions:

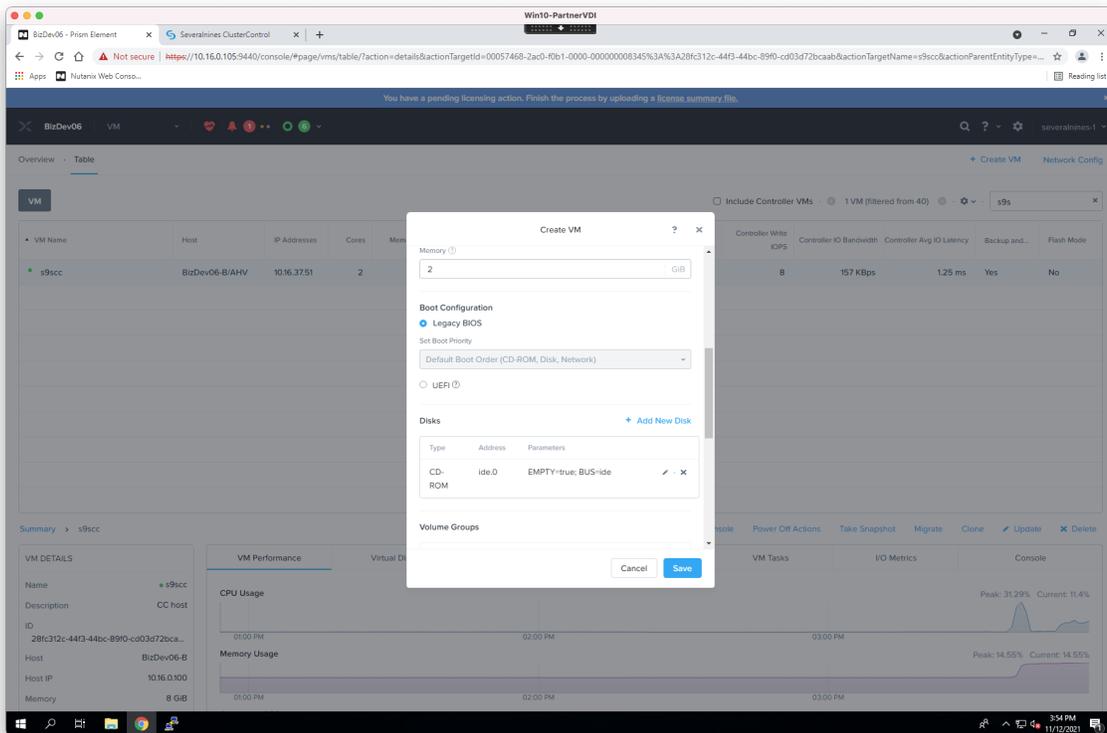
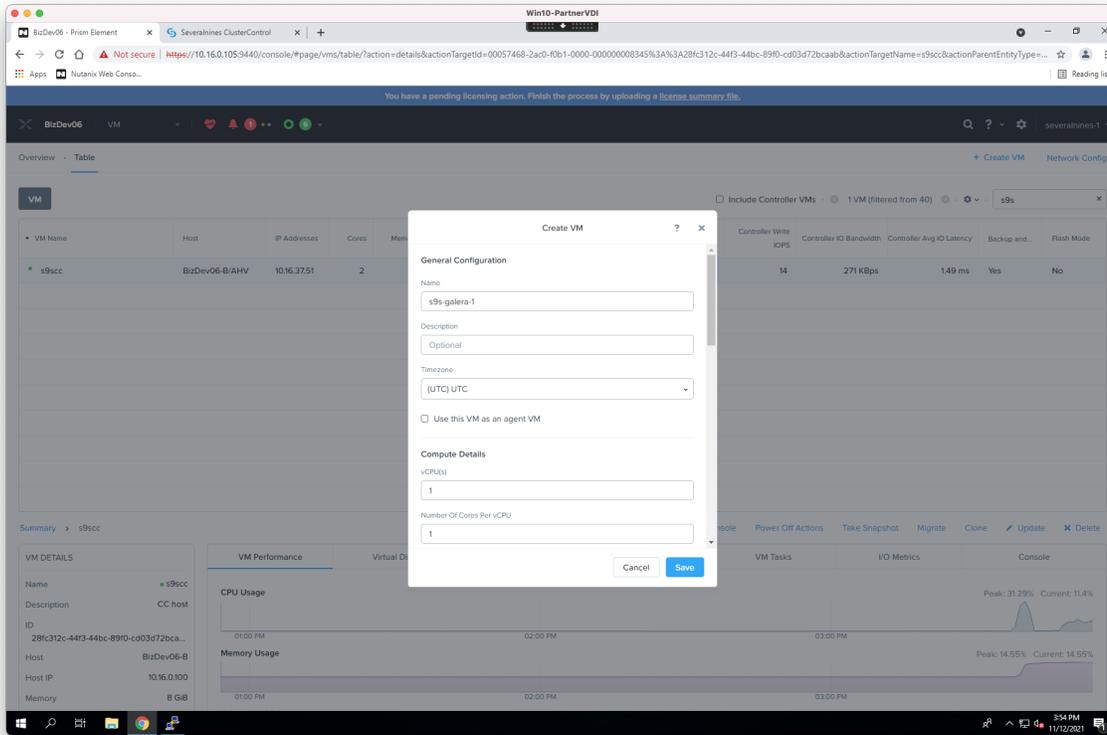
- `s9s` is the user created during Ubuntu installation. If not, make the appropriate substitution in the commands below
- Substitute values for `S9S_CMON_PASSWORD`, `S9S_ROOT_PASSWORD`, and `HOST`, below. Below, we assume the host ClusterControlled is being installed is, `s9scc`,

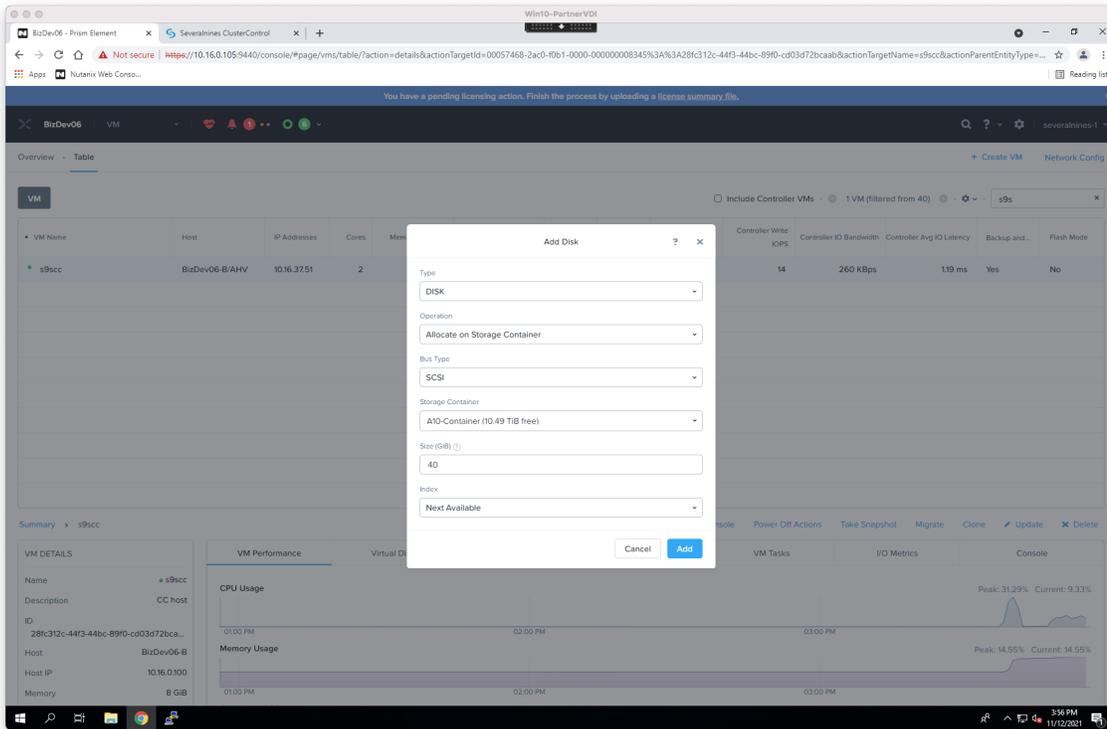
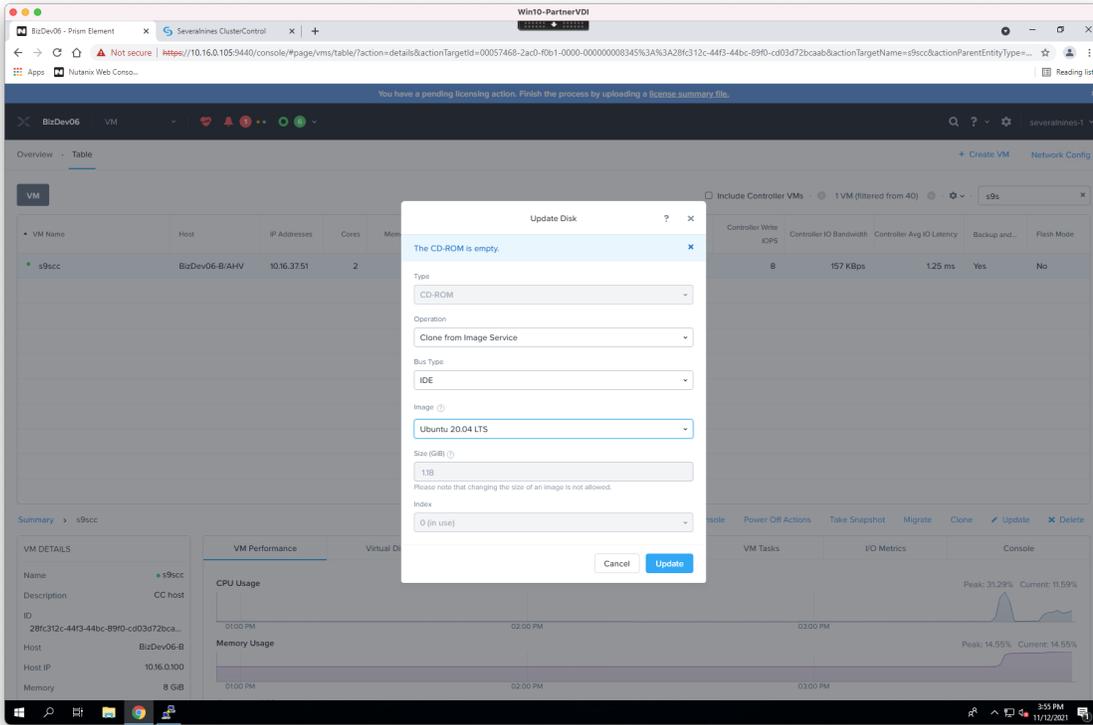
```
$ ssh-keygen -t rsa
$ ssh-copy-id <cluster-control-host>
$ wget http://www.severalnines.com/downloads/cmon/install-cc
$ chmod +x install-cc
$ sudo S9S_CMON_PASSWORD=<your-cmon-pw> S9S_ROOT_PASSWORD=<your-mysql-pw> \
HOST=<cluster-control-host> ./install-cc
# At the end of the installation you will be provided with the URL for CC web UI
# Sub the IP found in Nutanix console for the CC host
Private/internal IP => http://<privateIP>/clustercontrol
```

Creating AHV VMs for Database hosts

1st Database host (VM)

Host **s9s-galera-1**:





The screenshot shows the Nutanix Prism Element interface for a VM named 's9scc'. A 'Create NIC' dialog box is open, allowing configuration of network settings. The dialog includes the following fields:

- Subnet Name:** NR_PRT_DHCP
- VLAN ID:** 3132
- IPAM:** Not Managed
- Virtual Switch:** vs0
- Network Connection State:** Connected
- Private IP Assignment:**
 - Network address / prefix: NONE
 - Free IPs (Subnet): None
 - Free IPs (Pool): None

Buttons for 'Cancel' and 'Add' are visible at the bottom of the dialog. The background shows VM performance graphs for CPU and Memory usage.

The screenshot shows the Nutanix Prism Element interface for creating a new VM. A 'Create VM' dialog box is open, showing network adapter configuration and host affinity options. The dialog includes the following sections:

- Network Adapters (NIC):** A table with columns for VLAN ID / VPC, VIRTUAL SWITCH, PRIVATE IP, and MAC. One entry is shown:

VLAN ID / VPC	VIRTUAL SWITCH	PRIVATE IP	MAC
3132 NR_PRT_DHCP	vs0	-	-
- VM Host Affinity:** A section indicating that the VM has not been pinned to any hosts yet, with a '+ Set Affinity' button.
- Custom Script:** A checkbox option that is currently unchecked.

Buttons for 'Cancel' and 'Save' are visible at the bottom of the dialog. The background shows the same VM performance graphs as the first screenshot.

Select "Power On" the VM:

The screenshot shows the VMware vSphere interface for a VM named 's9s-galera-1'. The 'Power on' button is highlighted in blue. The VM details panel shows the following information:

VM Name	Host	IP Addresses	Cores	Memory Capacity	Storage	CPU Usage	Memory Usage	Controller Read IOPS	Controller Write IOPS	Controller IO Bandwidth	Controller Avg IO Latency	Backup and...	Flash Mode
s9s-galera-1	BizDev06-B/AHV	10.16.37.51	1	2 GiB	- / 4118 GiB	-	0%	0	0	0 KBps	0 ms	Yes	No
s9scc	BizDev06-B/AHV	10.16.37.51	2	8 GiB	3.71 GiB / 60 GiB	12.24%	14.56%	0	13	268 KBps	1.23 ms	Yes	No

VM DETAILS for s9s-galera-1:

- Name: s9s-galera-1
- Description:
- ID: b4fd91da-f534-437b-99d4-c66a6ca6f6b8
- Host: BizDev06-B/AHV
- Host IP: 10.16.37.51
- Memory: 2 GiB

VM Performance graphs for CPU Usage and Memory Usage are shown, both indicating 'No data available'.

Click on "Launch Console":

The screenshot shows the VMware vSphere interface for the same VM 's9s-galera-1'. The 'Launch Console' button is now highlighted in blue. The VM details panel shows the following information:

VM Name	Host	IP Addresses	Cores	Memory Capacity	Storage	CPU Usage	Memory Usage	Controller Read IOPS	Controller Write IOPS	Controller IO Bandwidth	Controller Avg IO Latency	Backup and...	Flash Mode
s9s-galera-1	BizDev06-C/AHV		1	2 GiB	- / 4118 GiB	-	-	0	0	0 KBps	0 ms	Yes	No
s9scc	BizDev06-B/AHV	10.16.37.51	2	8 GiB	3.71 GiB / 60 GiB	12.24%	14.56%	0	9	137 KBps	1.42 ms	Yes	No

VM DETAILS for s9s-galera-1:

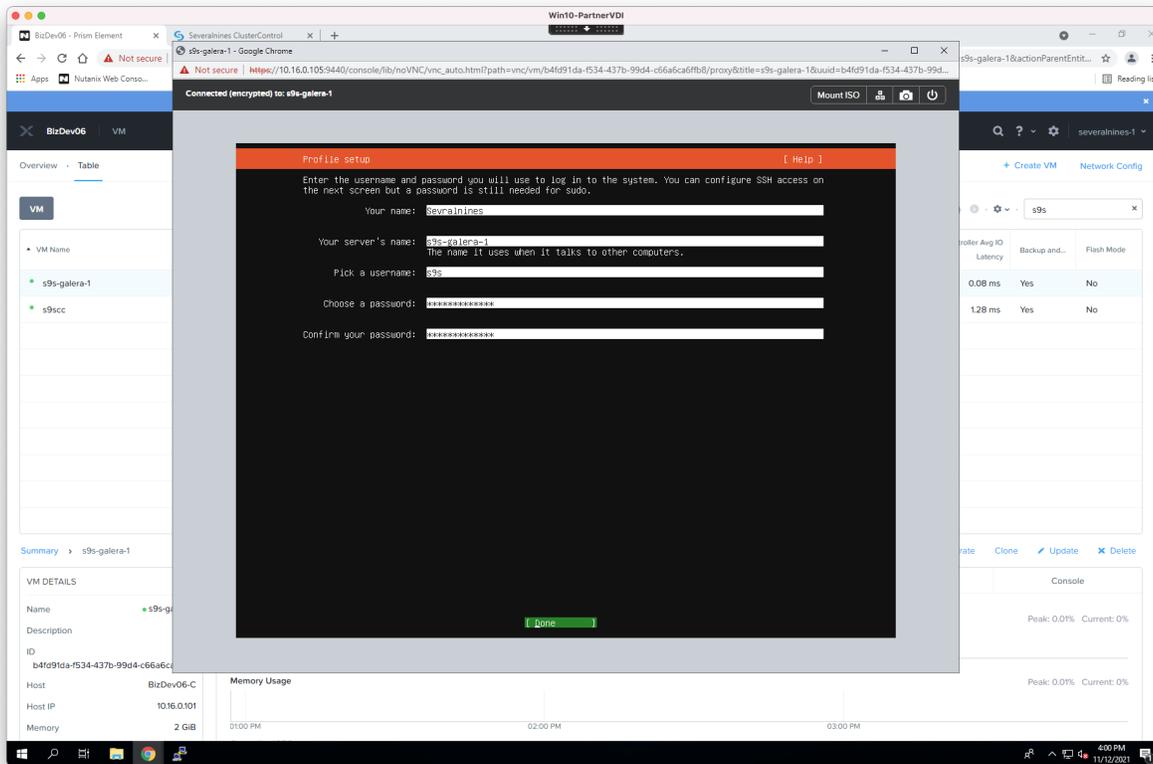
- Name: s9s-galera-1
- Description:
- ID: b4fd91da-f534-437b-99d4-c66a6ca6f6b8
- Host: BizDev06-C
- Host IP: 10.16.0.101
- Memory: 2 GiB

VM Performance graphs for CPU Usage and Memory Usage are shown, both indicating 'Peak: 0.01% Current: 0%'.

Installing Operating System on Database node AHV hosts

Start installing the Operating System (only dissimilar screens from the [ones used to install the ClusterControl](#) host are shown here).

Select appropriate Host, User, etc. (We have selected **s9s-galera-1** and **s9s** in this example)



Complete installation and Reboot the VM.

2nd Database host

Host **s9s-galera-2**:

Follow instructions to install [1st Database node \(VM\)](#), making appropriate substitutions for the host as noted above.

3rd Database host

Host **s9s-galera-3**:

Follow instructions to install [1st Database node \(VM\)](#), making appropriate substitutions for the host as noted above.

Setting up new Galera Cluster in ClusterControl

General steps:

- Enable SSH using keys
- Setup hosts files to be able to access hosts via hostname vs IP address
- Create Galera Cluster from ClusterControl web UI

Enabling SSH using keys

```
# Copy the SSH key to the DB hosts
$ ssh-copy-id <dbhost1>
$ ssh-copy-id <dbhost2>
$ ssh-copy-id <dbhost2>
```

Setting up ClusterControl's hosts file

On the ClusterControl host, **s9scc**, do the following as the **s9s** user (NOTE: substitute the actual IP address of the hosts):

```
# Edit the hosts file and add entries for CC and DB hosts
sudo vi /etc/hosts
127.0.0.1 localhost.localdomain localhost
10.16.37.51 s9scc s9scc
10.16.37.75 s9s-galera-1 s9s-galera-1
10.16.37.76 s9s-galera-2 s9s-galera-2
10.16.37.77 s9s-galera-3 s9s-galera-3
```

Setting up Database nodes' host files

On each of the the DB hosts, s9s-galera-1, s9s-galera-2, etc., do the following (NOTE: substitute the actual IP address of the hosts):

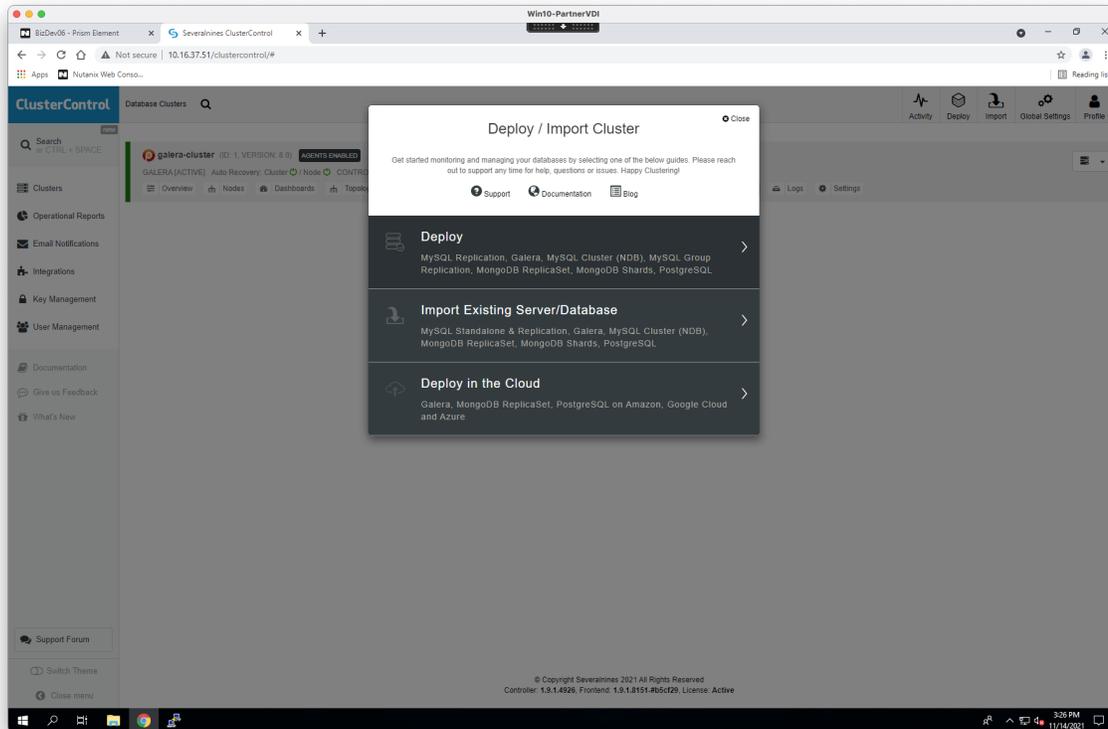
```
sudo vi /etc/hosts
127.0.0.1 localhost.localdomain localhost
10.16.37.51 s9scc s9scc
10.16.37.75 s9s-galera-1 s9s-galera-1
10.16.37.76 s9s-galera-2 s9s-galera-2
10.16.37.77 s9s-galera-3 s9s-galera-3
```

Deploying the Database from the ClusterControl Web UI

Navigate to the ClusterControl UI by pointing your browser as noted in the [Installing ClusterControl on the AHV host](#) section. (<http://<privateIP>/clustercontrol>)

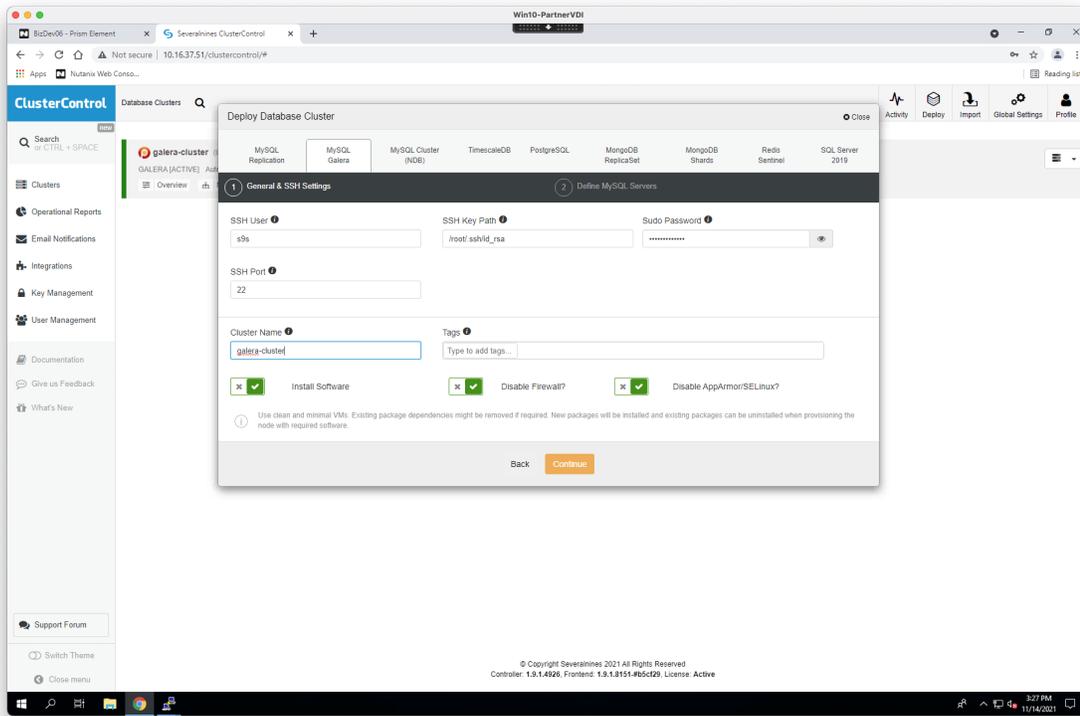
Register your installation with Severalnines (if not already done so)

Start deploying a MySQL (Percona XtraDB) Galera Cluster using the ClusterControl WebUI by following the screens below.

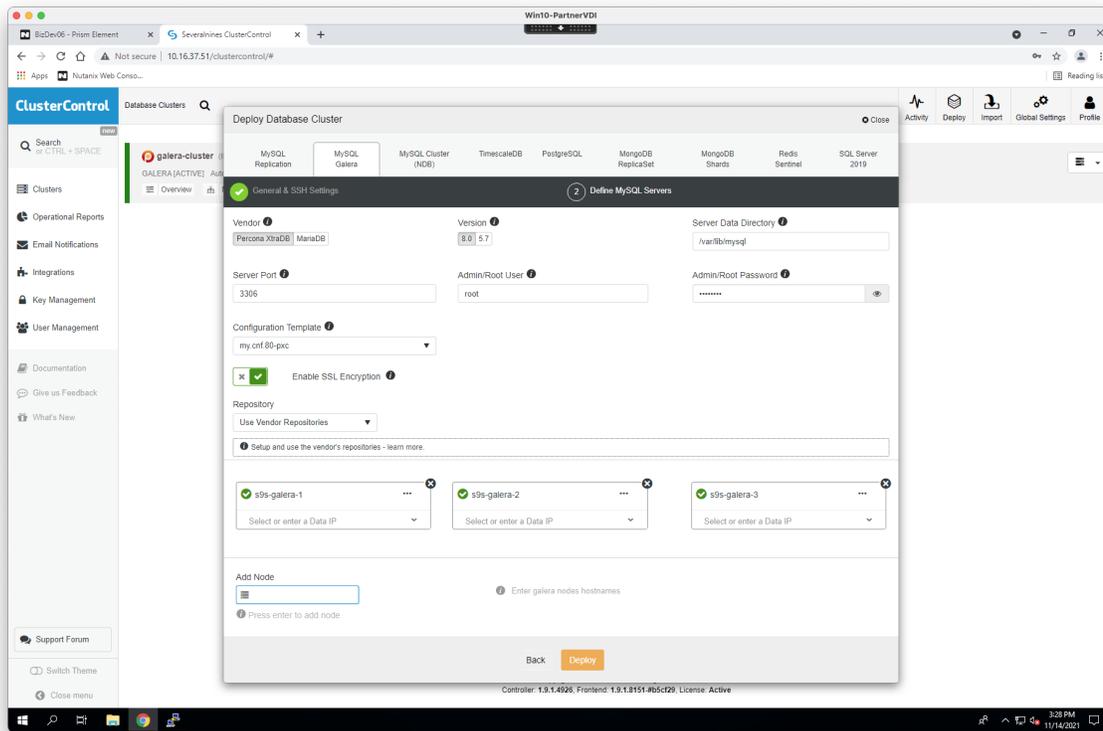


Select the “s9s” sudo user you setup while installing Ubuntu OS on the VMs (NOTE: substitute appropriate user).

NOTE: the path for SSH key: “/home/<sudo-user>/.ssh/id_rsa” (or “/root/.ssh/id_rsa”)



Add the DB node hosts, s9s-galera-1, s9s-galera-2, and s9s-galera-3. Finally, click “Deploy” to deploy the DB cluster.



Once the cluster is set up, the “Topology” tab should display something like the following.

