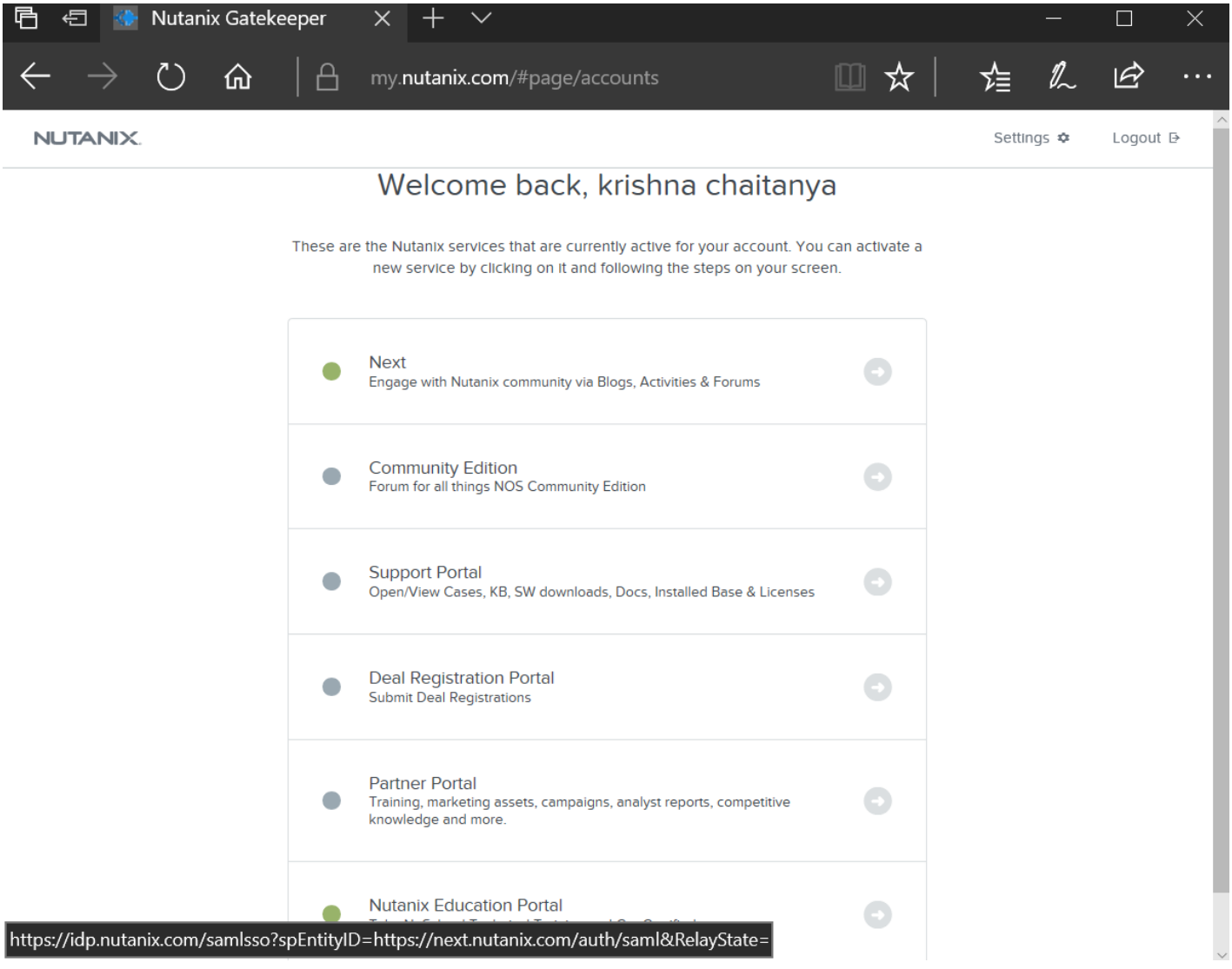
(1) Login and take a screenshot. I should see the Title. E.g. "Welcome back, Bob"



(2) Describe each Prism element

Home:

The Home dashboard displays cluster-level performance and usage statistics on the left, heath status information in the middle, and the most recent alert and event messages on the right.Health:

Health:

Displays the health and the status of 6 entities (VMs, Hosts, Disks, Storage pools, etc.). Each of 6 entities can again be categorized into sub groups with respect to entities. For example, VMs can be grouped based on Host, Memory, Disk capacity, Health, Reserved memory. When VMs are grouped based on hosts, each host group is displayed along with the health status of each VM in the host group.

VM:

The virtual machine (VM) dashboard displays dynamically updated information about virtual machines in the cluster. The VM Overview view displays VM-specific performance and usage statistics on the left plus the most

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recent VM-specific alert and event messages

Storage:

The Storage Overview view displays storage-specific performance and usage statistics on the left plus the most recent storage-specific alert and event messages on the right. Several fields include a slide bar on the right to view additional information in that field. The displayed information is dynamically updated to remain current.

Network:

Network tab shows relationship between the virtual network and their assigned hosts along with the switch that is connected to the corresponding hosts pictorially. It also displays the number of ports created and highlights the port that is connected to the switch. The entire representation can be grouped based on power state, hosts, and based on VM types.

Hardware:

As the storage element, hardware section too has 3 tabs namely the Overview, Diagram, Table. Overview tab gives the summary and the details of the hardware such as hosts, disks, CPU, Hardware events, etc. The Diagram tab contains the host groups and the storage pools associated with them. Table tab lists the hosts, disks and the switch and their corresponding details and summary. Options such as expanding clusters and repair host boot device are available here.

File Server:

This element tables the list of file servers and the file transfer logs along with file server alerts and events. It also has options to create a new file server and change the network configurations.

Data Protection:

The Overview tab of Data Protection element has all the details about the data security such as the replication, bandwidth, protection events. Options to add new protection domain and remote site is available in this tab. Table tab lists the remote sites and the protection domains that are already created along with snapshots, metrics and events related to that.

Analysis:

Analysis element displays charts and graphs along with the audit logs on the user logins and logouts. Data related to these aspects are depicted and ordered day by day. Charts can be created based on different parameters such as CPU, memory usage, etc. Two types of charts can be created, charts based on metrics (Latency, Bandwidths, IOPs) and charts based on entity (Hosts, VMs, etc.).

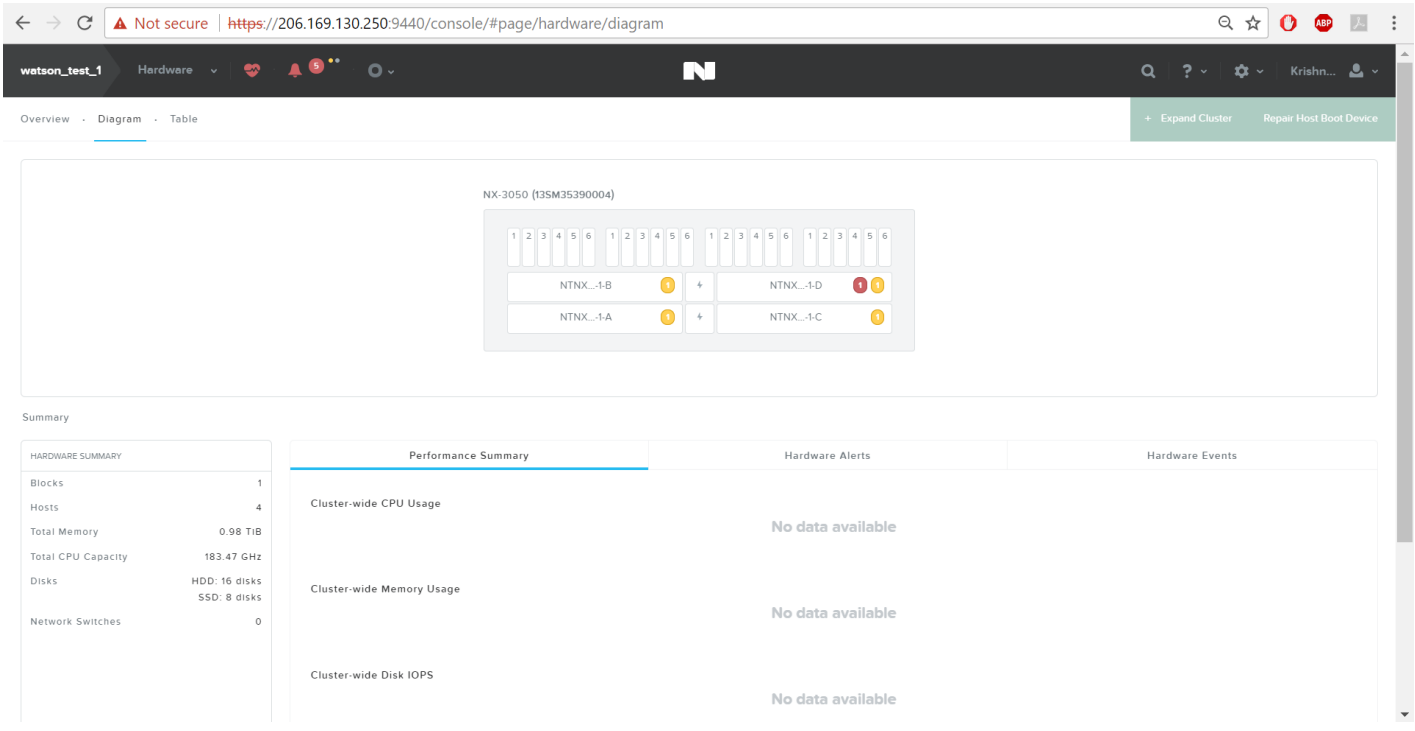
Alert:

New Alert policies and email configurations for these alerts can be created under this element. The list of alerts logged in the system are also shown and they can be ordered based on the severity. The cause and the resolution for the alerts can be documented to understand the defects better. Events tab logs all the events associated with user logins and logouts.

Tasks:

As the name implies, this element lists all the tasks created and the details about the tasks. Task data such as the percent completed, the status of the task and the time stamp on when it was created along with the duration it ran are also displayed.

(3) Take a screenshot of the Diagram view and describe what the boxes are.



The diagram view has hosts and disks, when clicked on hosts or disks it will give the summary of the selected element

NTNX 1A, NTNX 1B, NTNX 1C, NTNX 1D are the hosts

Host Details: selecting a host gives the host details at the bottom left

Host Name- Displays the name of the host.

Hypervisor IP -Displays the IP address assigned to the hypervisor running on the host.

Controller VM IP -Displays the IP address assigned to the Controller VM.

IPMI IP -Displays the IP address of the Intelligent Platform Management Interface (IPMI) port. An IPMI port is used for the hypervisor host console. This field does not appear in Prism Central.

Node Serial -Displays the node serial number. The node serial is a unique number passed through from the manufacturer

Block Serial- Displays the block serial number.

Block Model- Displays the block model number

Storage Capacity - Displays the total amount of storage capacity on this host.

Disks: Displays the number of disks in each storage tier in the host. Tier types vary depending on the Nutanix model type

Memory - Displays the total memory capacity for this host.

CPU Capacity- Displays the total CPU capacity for this host.

No. of VMs - Displays the number of VMs running on this host.

Oplog Disk %- Displays the percentage of the operations log (oplog) capacity currently being used.

Monitored - Displays whether the host is high availability (HA) protected. A true value means HA is active for this host. A false value means VMs on this host are not protected (will not be restarted on another host) if the host fails. Normally, this value should always be true. A false value is likely a sign of a problem situation that should be investigated.

Hypervisor - Displays the name and version number of the hypervisor running on this

Datastores -Displays the names of any datastores.

Disk Details: selecting any disk gives the disk details at the bottom left

ID- Displays the disk identification number.

Serial Number- Displays the disk serial number.

Storage Tier -Displays the disk type. Nutanix models can contain disk tiers for PCIe solid state disks (SSD-PCIe), SATA solid state disks (SSD-SATA), and direct attach SATA hard disk drives (DASSATA) depending on the model type

Used- (Physical) Displays the amount of used space on the drive

Capacity- (Physical) Displays the total physical space on the drive

Hypervisor- Displays the IP address of the hypervisor controlling the disk. (IP address)

Storage Pool -Displays the name of the storage pool in which the disk resides.

Status: Displays the operating status of the disk.

Self Encryption - Drive Displays whether this is a self-encrypting drive (SED).

Password Protection Mode [SED only] -Displays whether data-at-rest encryption is enabled for the cluster.

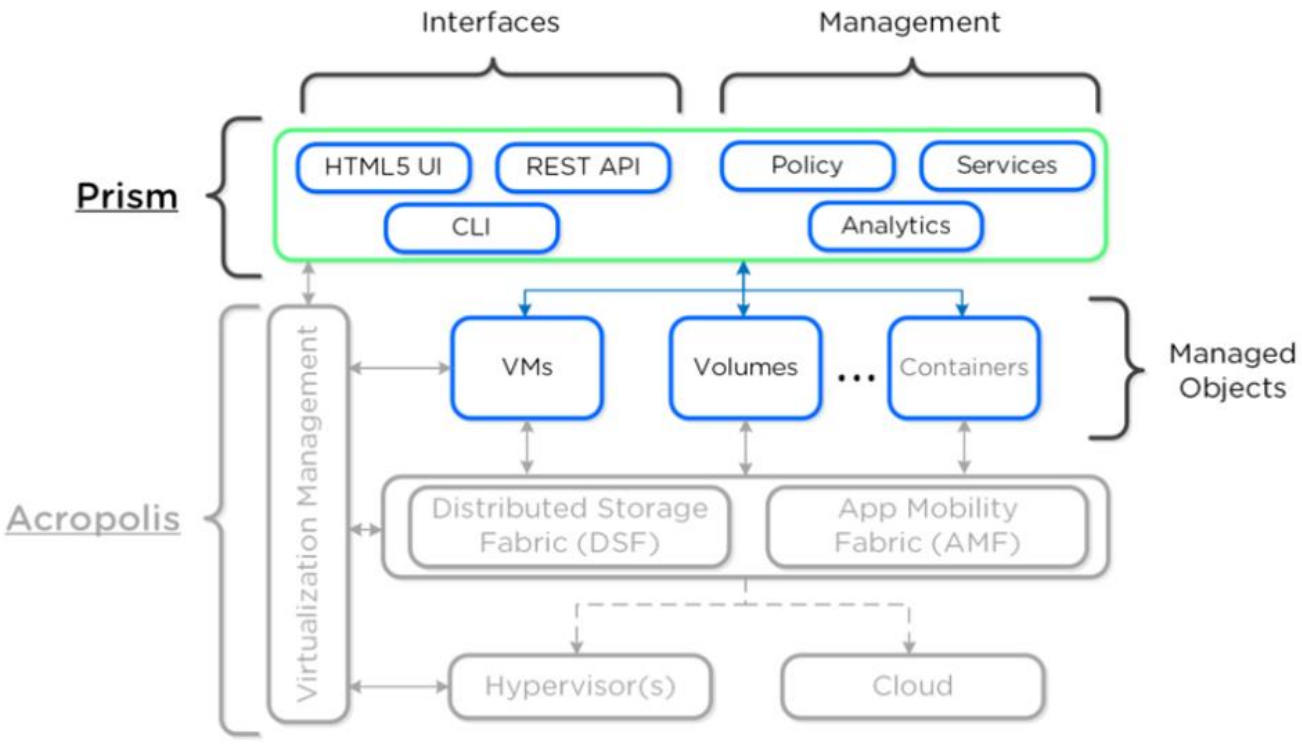
(4) What does a cluster consist of?

The Nutanix cluster consists of nodes which provide pool of tiered storage and resources to the VMs

(5) What does a Node consist of?

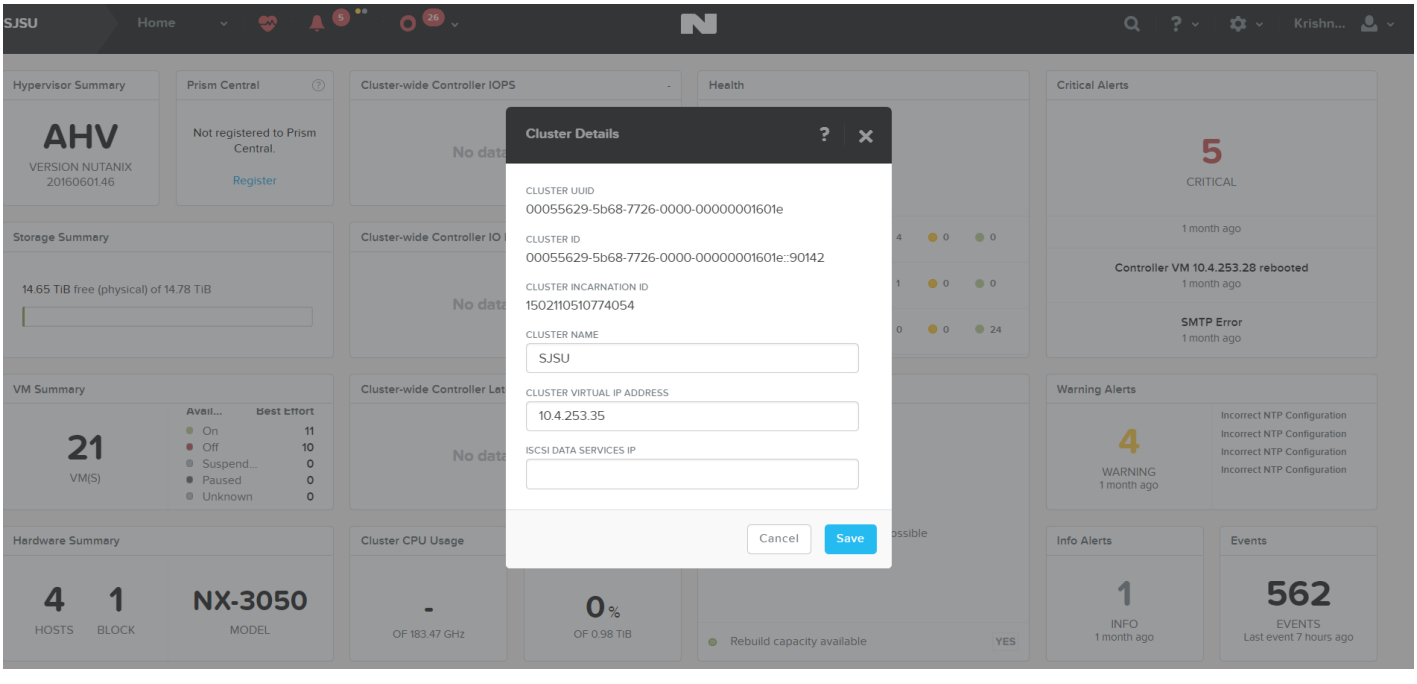
Node is the foundation block of a Nutanix cluster. It runs a standard Hypervisor and contains processors, memory and local storage (SSD and hard disks)

(6) Draw or provide a drawing of the high-level prism architecture

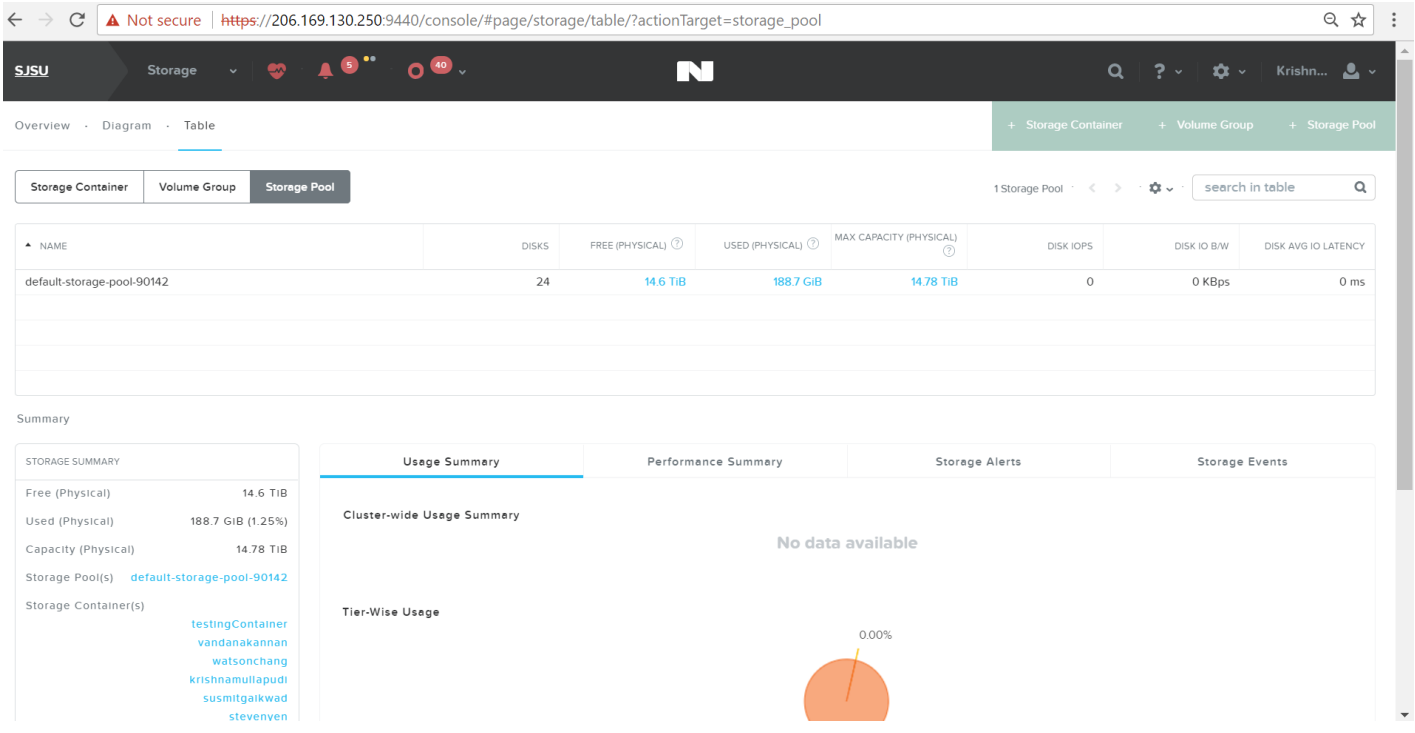


High – level Prism Architecture

(7) Take a screenshot of the cluster details from Prism



(8) Take a screenshot of the storage pool in table format from Prism



(9) What are the cluster components and what do they do (1-2 sentences)?

A Nutanix cluster has group of nodes. Cluster components according to Nutanix bible is

Cassandra – Distributed metadata storage
Zookeeper – cluster configuration manger
Stargate – Data I/O manager
Prism – UI for cluster management
Genesis – cluster component and service manager
Chronos – job and task scheduler
Acropolis service - Acropolis Slave runs on every CVM with an elected Acropolis Master which is responsible for task scheduling, execution, IPAM, etc. Similar to other components which have a Master, if the Acropolis Master fails, a new one will be elected.
Curator – mapreduce cluster management and cleanup
Pithos – vDisk configuration manager

(10) What is the minimum amount of nodes in a cluster?

Minimum number of nodes – 3 per cluster

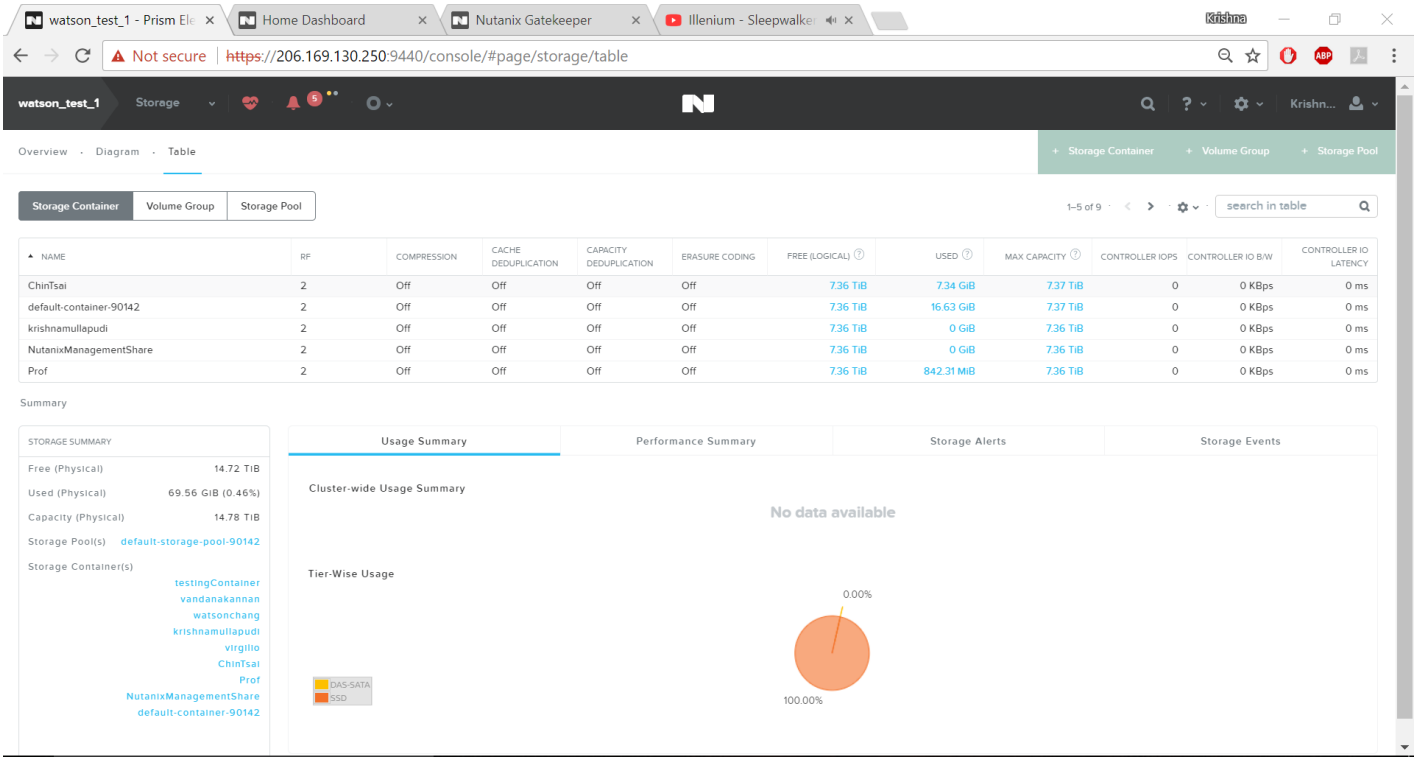
(11) What is a Storage Pool?

A storage pool is a group of physical storage devices including PCIe SSD, SSD, and HDD devices for the cluster. The storage pool can span multiple Nutanix nodes and is expanded as the cluster scales.

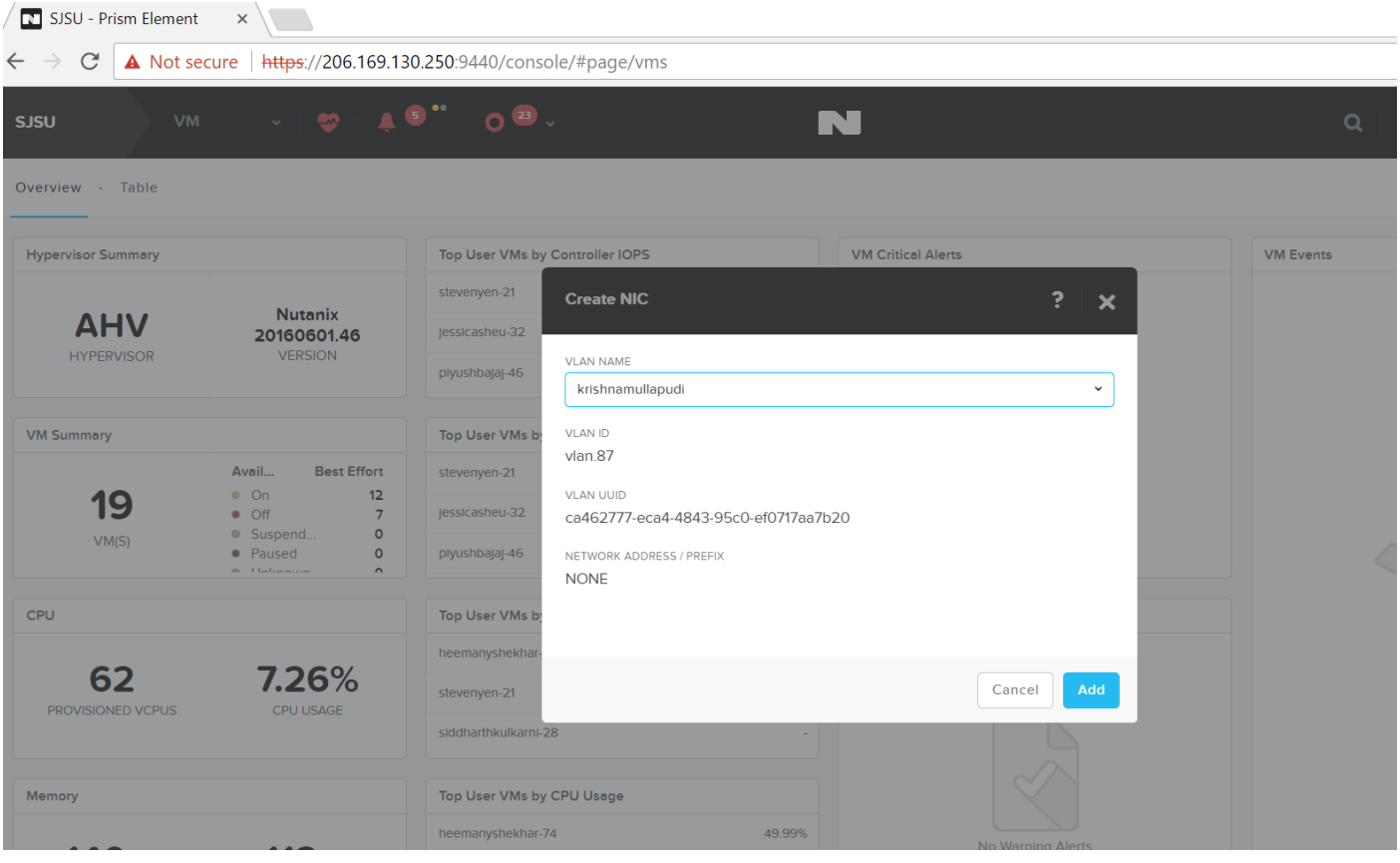
(12) What is the maximum amount of storage pools as well as the pool size?

There can be 2 storage pools maximum for a single Nutanix cluster
The pool size depends on the available disk capacity in the Nutanix cluster which has no logical limit

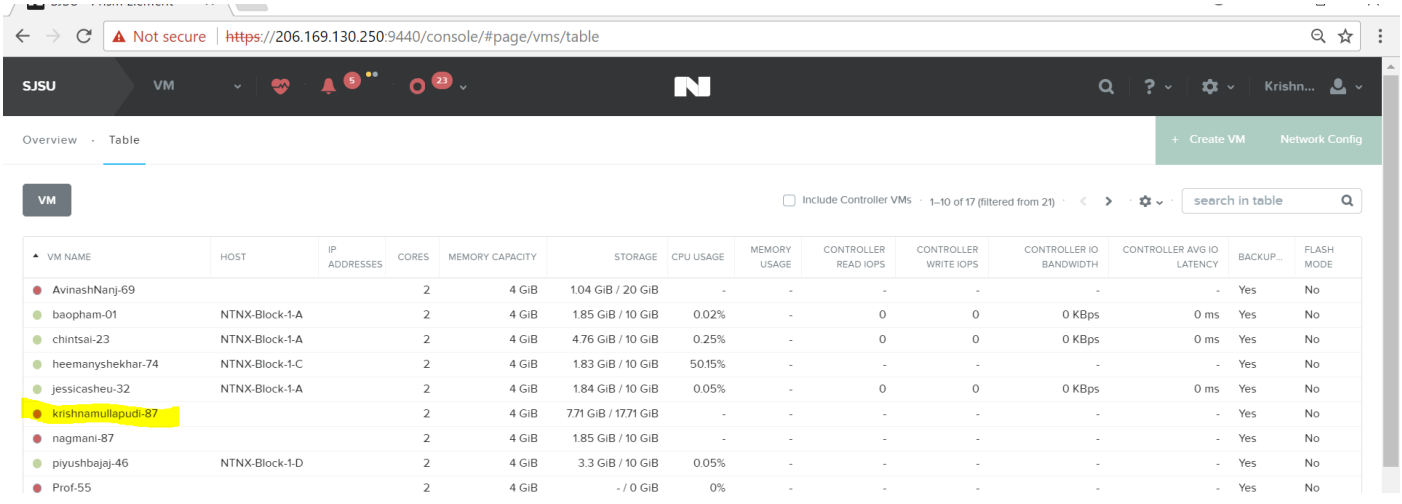
(13) Go to Table view and take a screenshot. I should see your container.



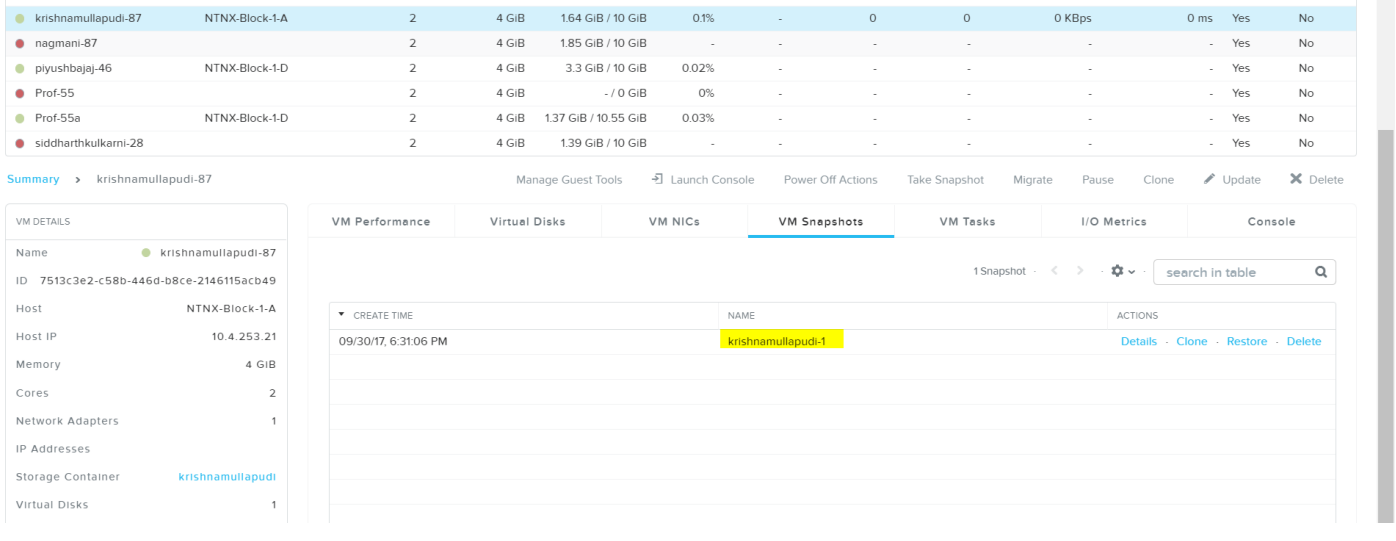
(14) Once you select your VLAN NAME take a screenshot



2.2. When the VM is created take a screenshot in the table view



(15) Take a screenshot of your Snapshot Details. Name the snapshot your name -1. e.g. natekong-1



(16) What node did you start on and what node did you migrate to? Take screenshots that includes the VM name and the host name for the before and after.

Initial node – NTNX-Block-1-A

Migrated to node - NTNX-Block-1-C

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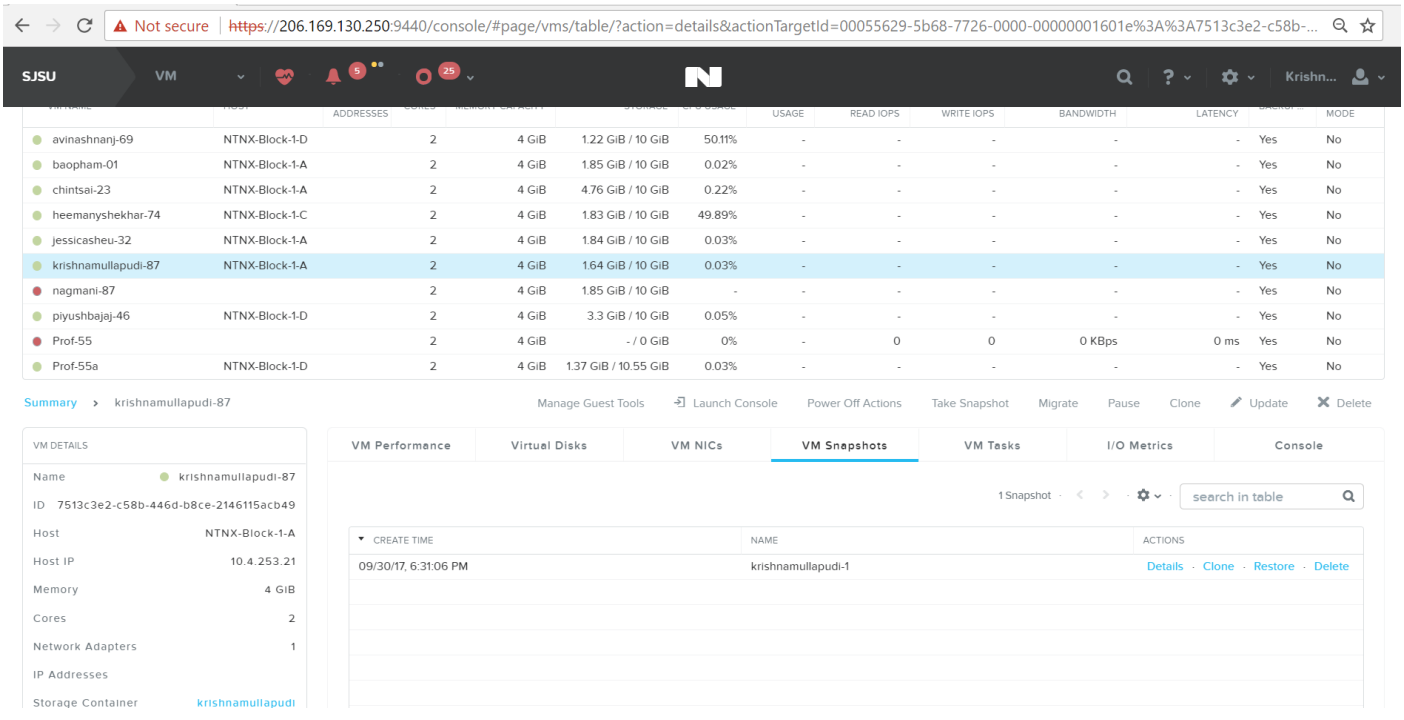
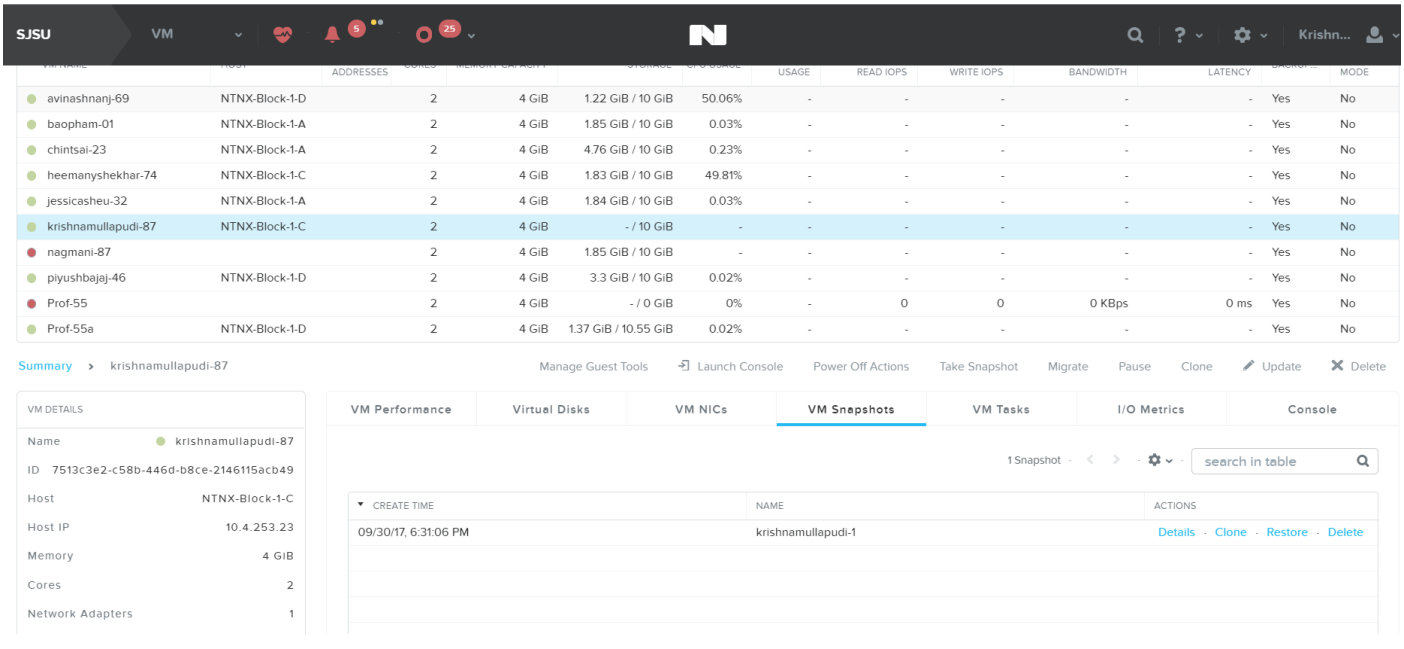


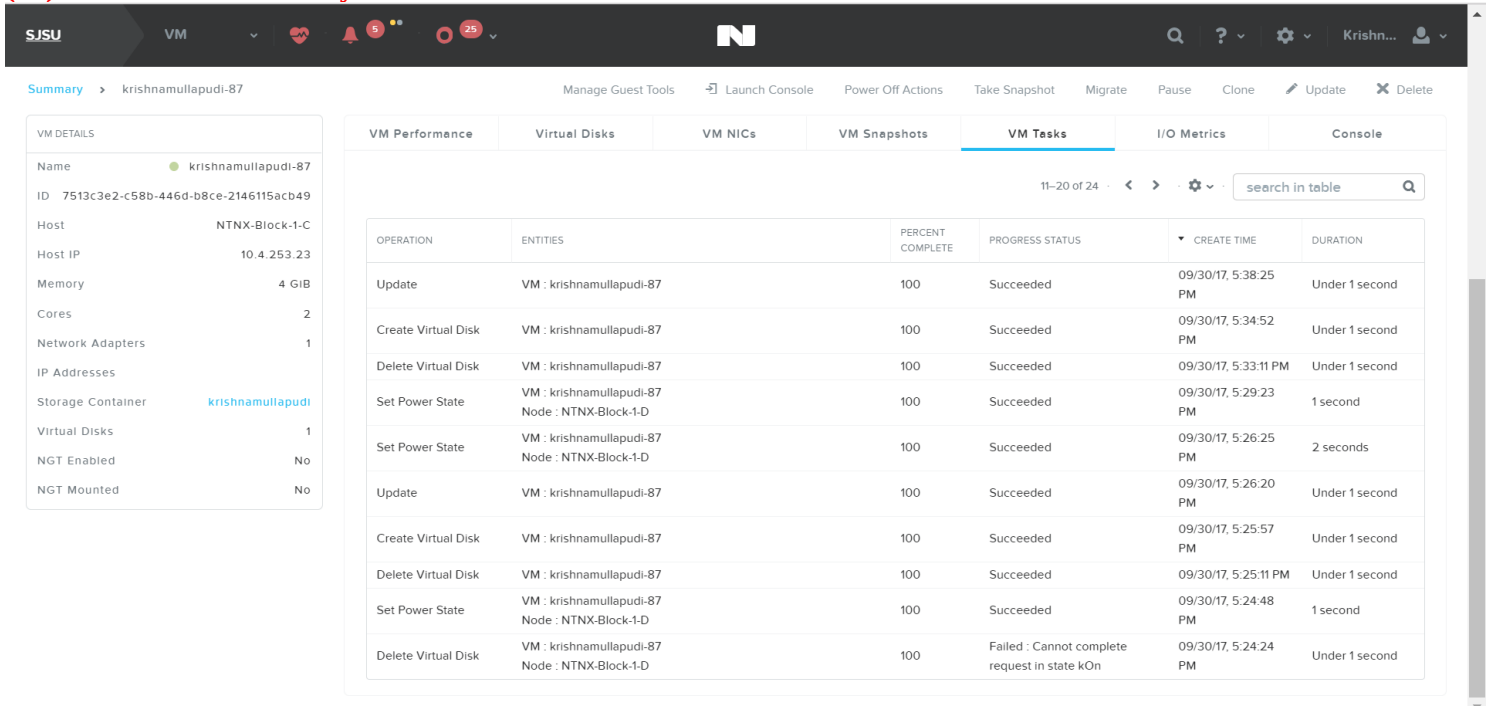
Initial Node before migration - NTNX-Block-1-A

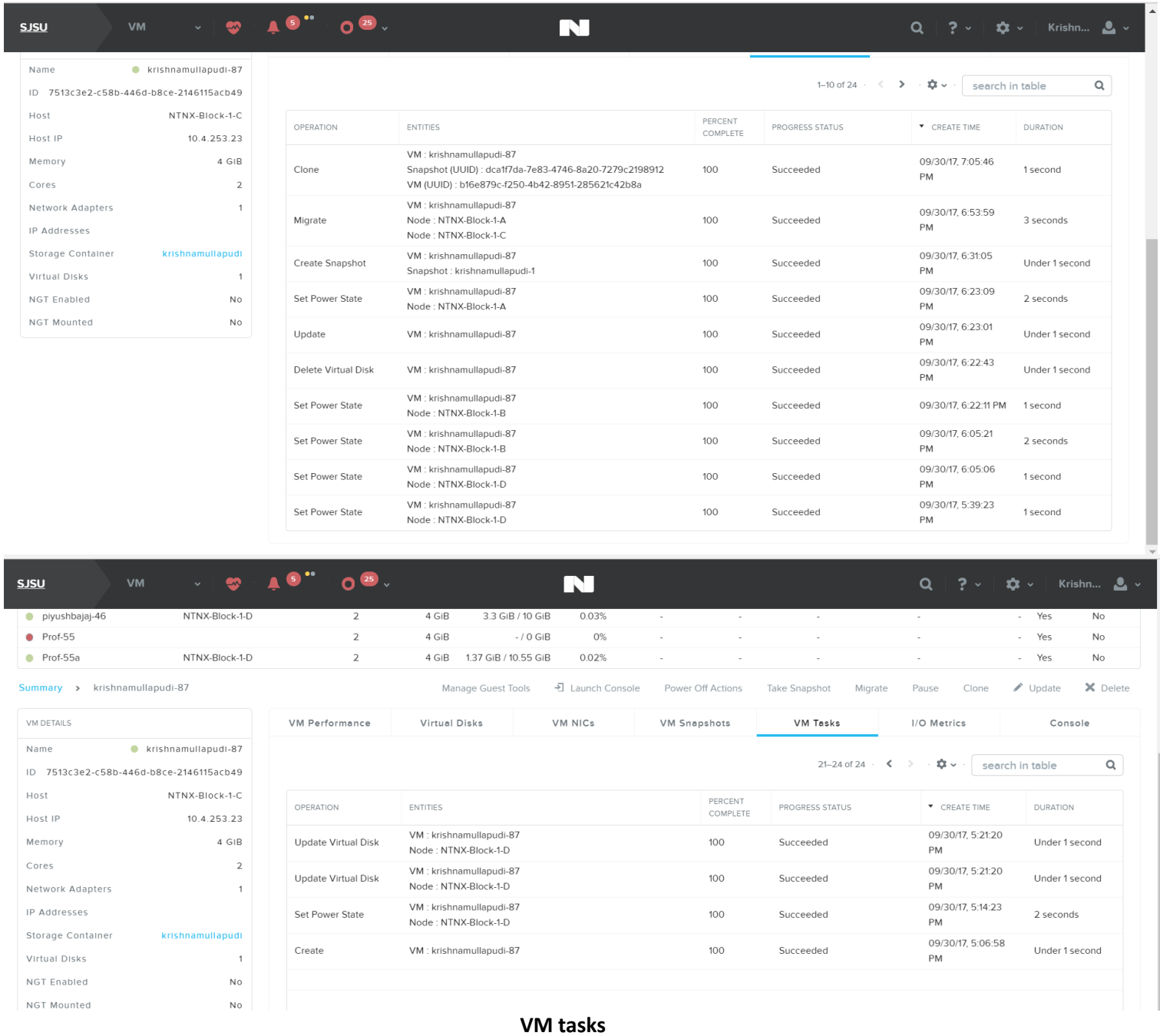


Node after migration – NTNX-Block-1-C

(17) Take a screenshot of your clone

(18) Take a screenshot of your VM Tasks





VM tasks

(19) What is the maximum number of VMs per cluster?

Maximum VMs per cluster: 8,000 (2,048 per datastore if HA is enabled)

(20) What are reserve Hosts?

When a host fails, the reserved host becomes the destination host, and all the VMs from the failed host are restarted on the reserved host. The reserved host now becomes a normal host and you can schedule VMs on this host. The least used host in the cluster is selected as a reserve host, and all the VMs on that host are migrated off to other hosts in the cluster so that the full capacity of that host is available for VM failover.

(21) In your own words, how does VM availability work?

In the event of a host or block outage ,the VMs which were running healthy on that node will be restarted on other healthy nodes of the cluster. By default any AHV cluster will do its best to restart VM(s) in the event of a host failure. In this mode, when a host becomes unavailable, the previously running VMs will be restarted on the remaining healthy hosts if possible. Since this is best effort (meaning resources aren't reserved) the ability to restart all VMs will be dependent on available AHV resources.

(22) What are the potential levels of failure and how do they recover?

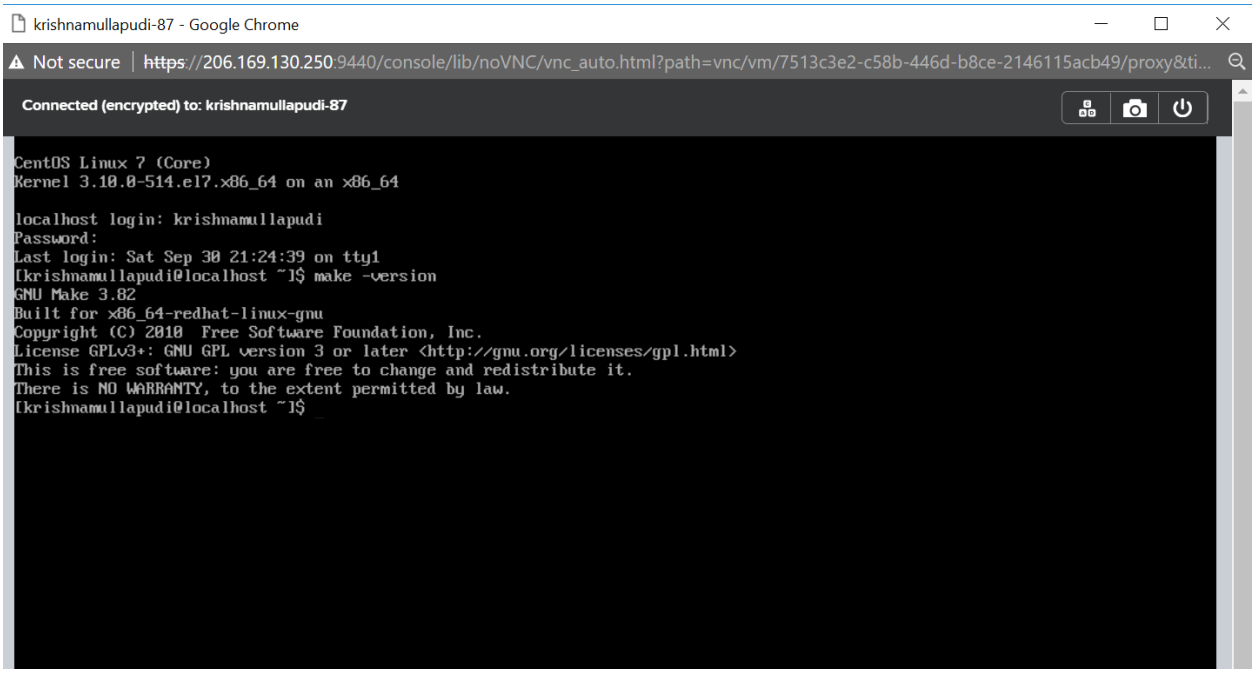
The possible potential levels of failure in Nutanix Distributed Systems can be characterized as :

- Disk failure - In the event of a disk failure, a Curator scan (MapReduce Framework) will occur immediately. It will scan the metadata (Cassandra) to find the data previously hosted on the failed disk and the nodes / disks hosting the replicas. Once it has found that data that needs to be “re-replicated”, it will distribute the replication tasks to the nodes throughout the cluster.
- Node Failure - In the event of a node failure, a VM HA event will occur restarting the VMs on other nodes throughout the virtualization cluster. Once restarted, the VMs will continue to perform I/Os as usual which will be handled by their local CVMs. Similar to the case of a disk failure above, a Curator scan will find the data previously hosted on the node and its respective replicas. Once the replicas are found all nodes will participate in the reprotection.
- CVM Failure - A CVM "failure” can be characterized as a CVM power action causing the CVM to be temporarily unavailable. The system is designed to transparently handle these gracefully. In the event of a failure, I/Os will be re-directed to other CVMs within the cluster. The mechanism for this will vary by hypervisor. A CVM "failure” can be characterized as a CVM power action causing the CVM to be temporarily unavailable. The system is designed to transparently handle these gracefully. In the event of a failure, I/Os will be re-directed to other CVMs within the cluster. The mechanism for this will vary by hypervisor. A CVM "failure” can be characterized as a CVM power action causing the CVM to be temporarily unavailable. The system is designed to transparently handle these gracefully. In the event of a failure, I/Os will be re-directed to other CVMs within the cluster. The mechanism for this will vary by hypervisor.

(23) What happens when a node becomes unavailable?

In the event of a node failure, a VM High Availability event will occur restarting the VMs on other nodes throughout the virtualization cluster. Once restarted, the VMs will continue to perform I/Os as usual which will be handled by their local CVMs.

(24) Take a screenshot of your terminal. This should have your first and last name as well as the make command.



(25) What is your linux command to mount it?

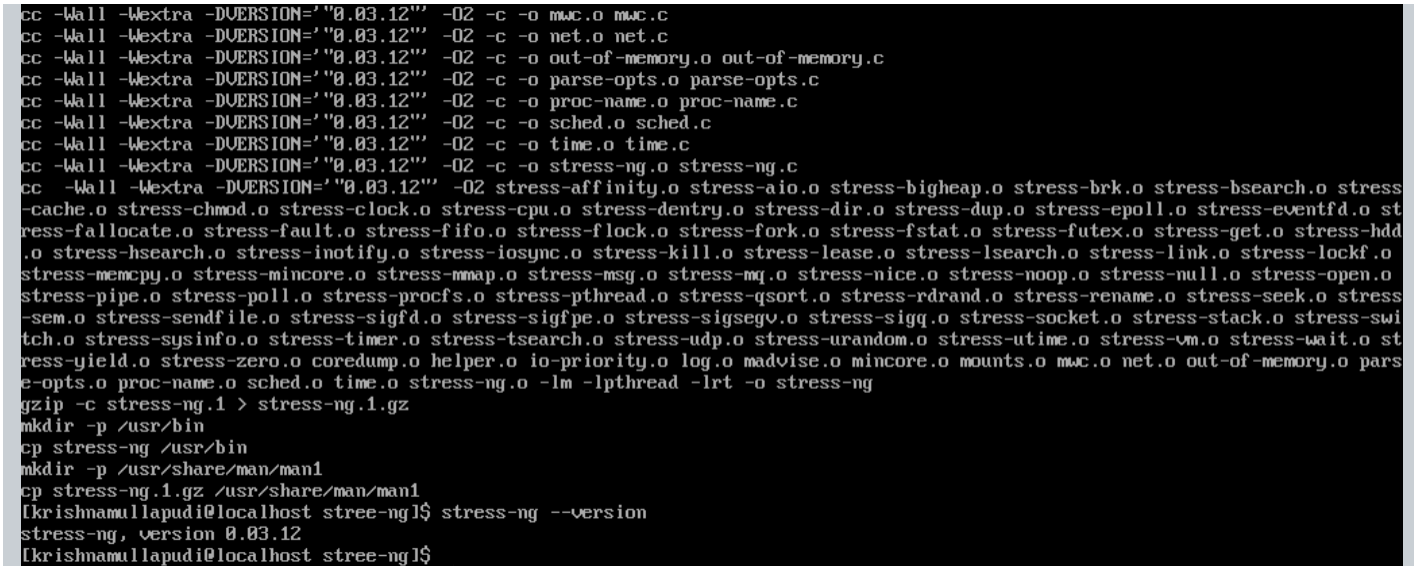
Linux command to mount the contents of CD ROM at /dev/cdrom to /mnt folder is

$Mount /dev/cdrom /mnt

(26) What is your linux command to copy the files?

Copy command **: $cp -a /mnt/* /home/krishnamullapudi/stress-ng**

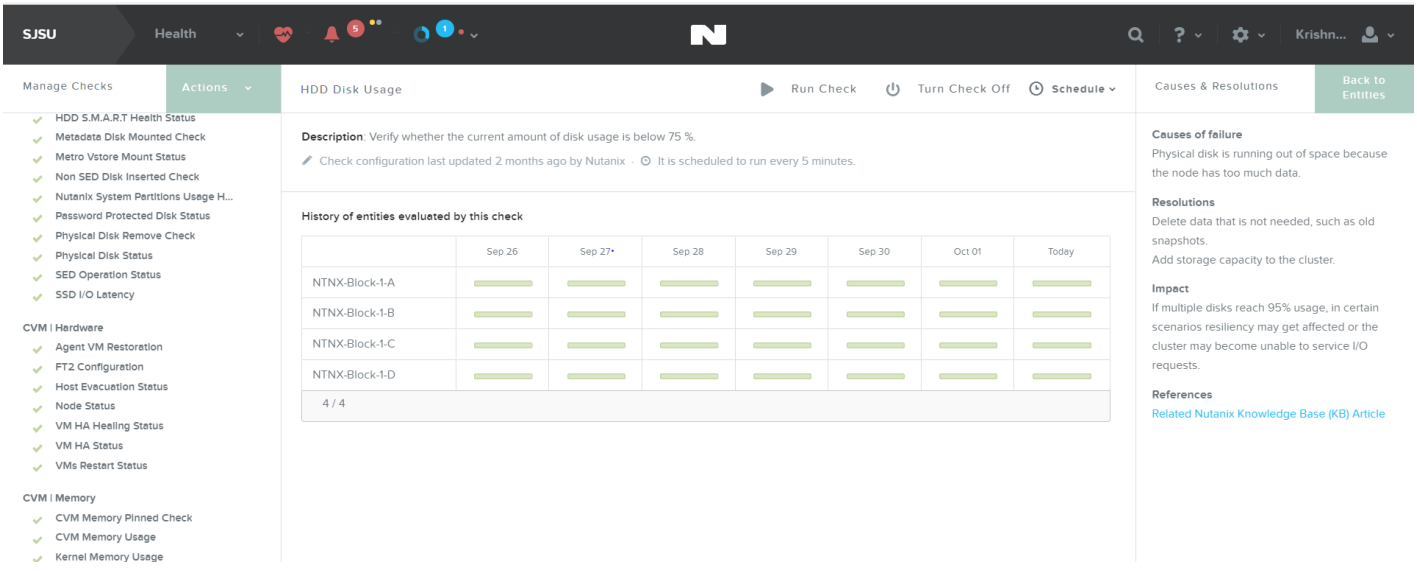
(27) Take a screenshot of your terminal



(28) What are the different warning levels of a check? (hint: how many colors are used to indicate the status of each check?)

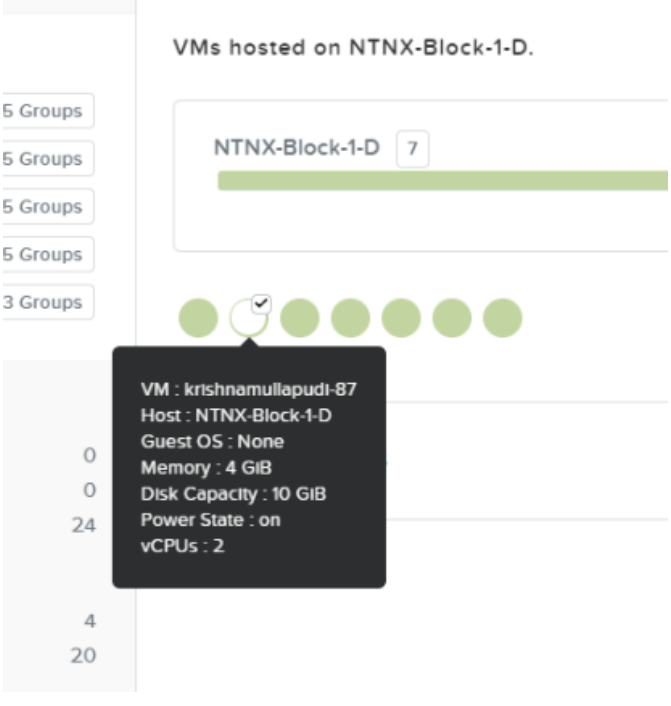
Different warning levels**: Passed, Failed, Warning, Error, Off**

(29) What is the Cause, Resolution and Impact if this check reaches critical status? (take a screenshot)

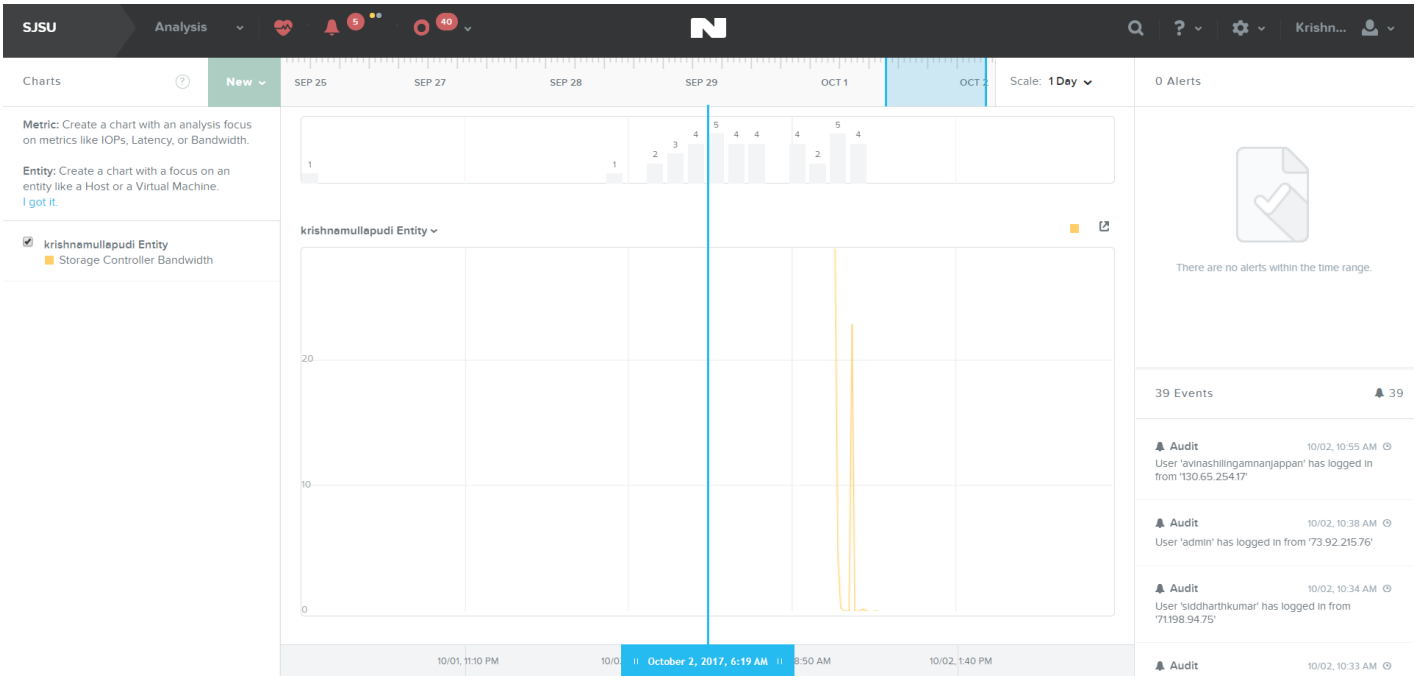


(30) How many checks are run if you select to run "All Checks"?
Total number of checks – 220

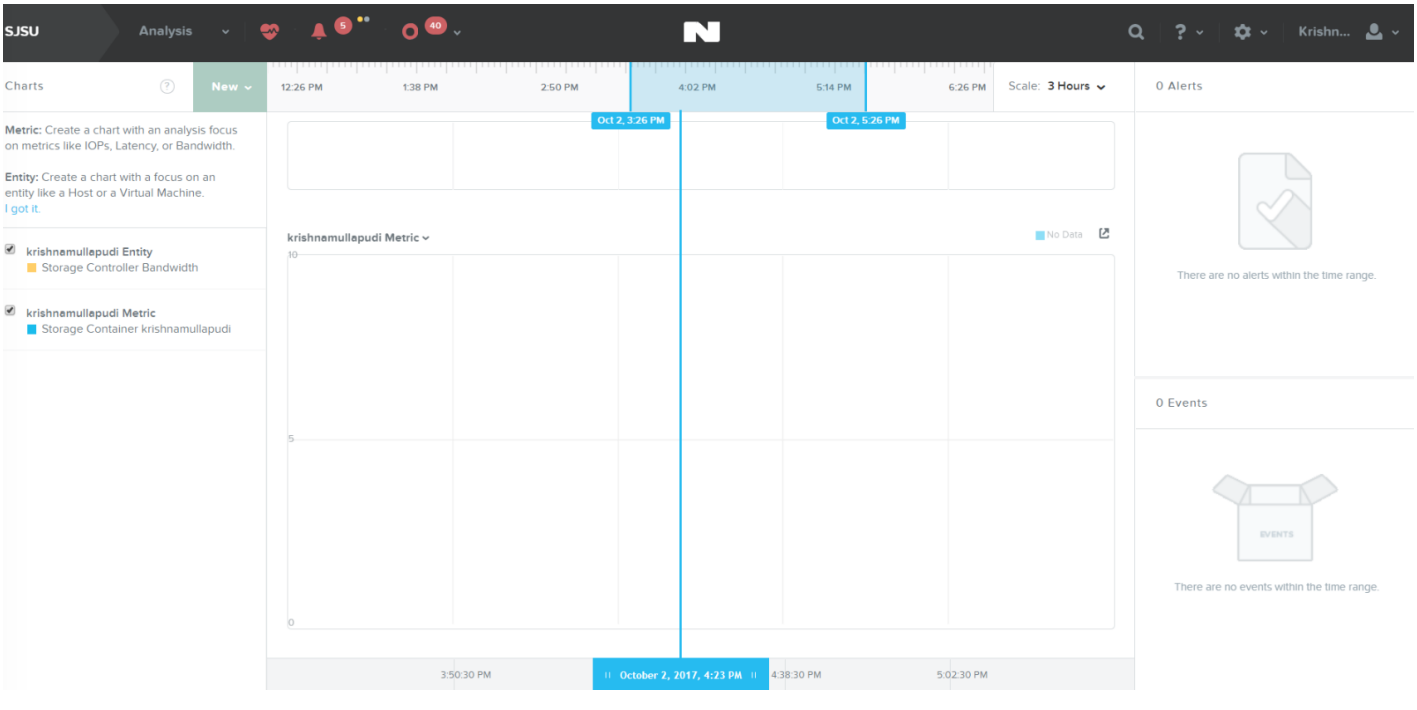
(31) Take a screenshot of your VM on your host. You screenshot should include your VM information (as shown below)



(32) Take a screenshot of your chart from a large view



(33) Take a screenshot of your chart only showing the past 2 hours. Make sure I can clearly tell it is ONLY 2 hours.



Oct 2, 3:26 PM to 5:26 PM

(34) How does Nutanix provide the ability to leverage persistent containers?

Nutanix provides the ability to leverage persistent containers on the Nutanix platform using Docker. It was previously possible to run Docker on Nutanix platform; however, data persistence was an issue given the ephemeral nature of containers. Container technologies like Docker are a different approach to hardware virtualization. With traditional virtualization each VM has its own Operating System (OS) but they share the underlying hardware. Containers, which include the application and all its dependencies, run as isolated processes that share the underlying Operating System (OS) kernel.

(35) What is the difference between VMs and Containers?

A Container's system requires an underlying operating system that provides the basic services to all of the containerized applications using virtual-memory support for isolation. VMs, on the other hand, have their own operating system using hardware VM support by the Hypervisor. A Container provides an abstract OS, while A VM provides an abstract machine that uses device drivers targeting the abstract machine