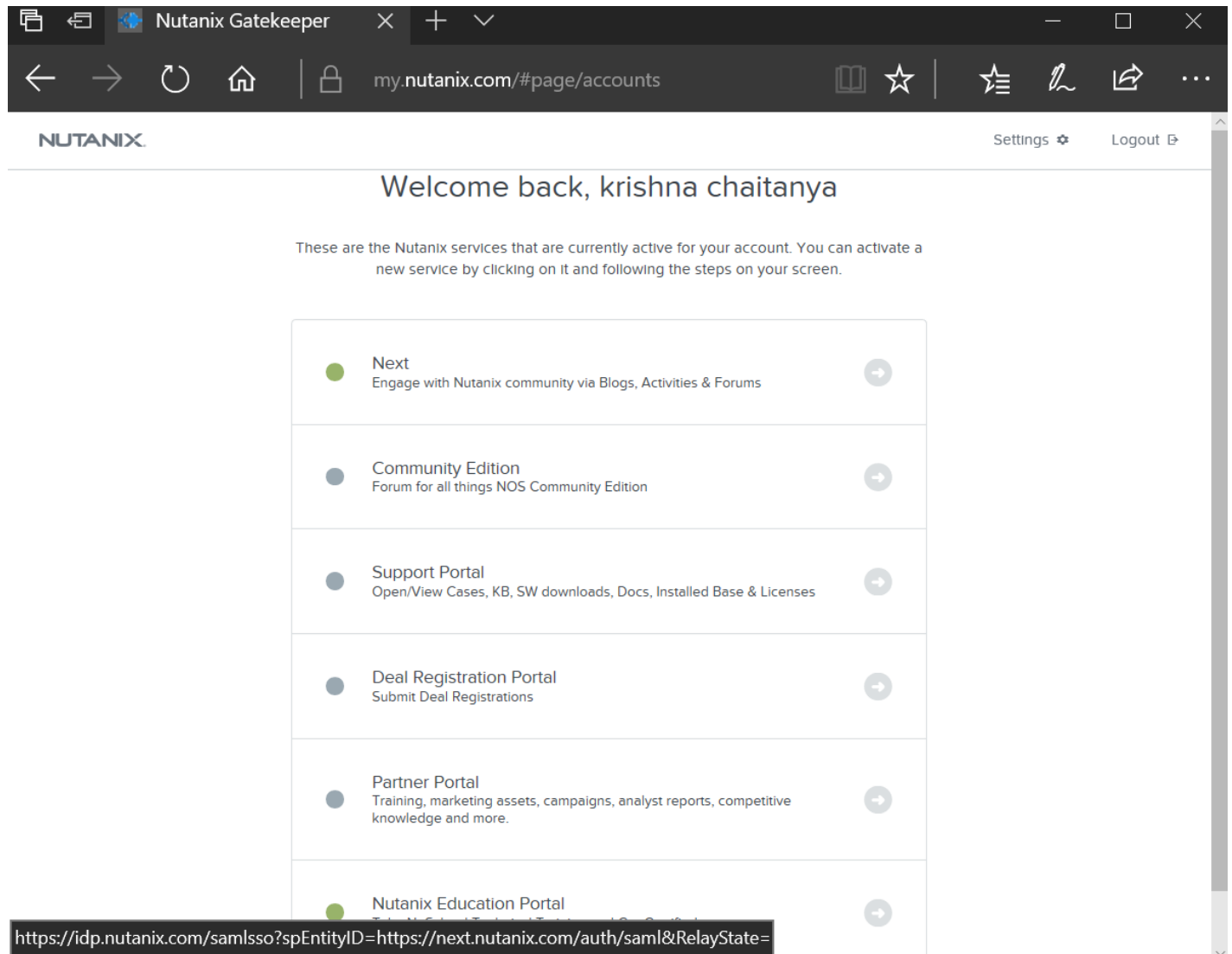


**(1) Login and take a screenshot. I should see the Title. E.g. “Welcome back, Bob”**



**(2) Describe each Prism element**

**Home:**

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

**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

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:

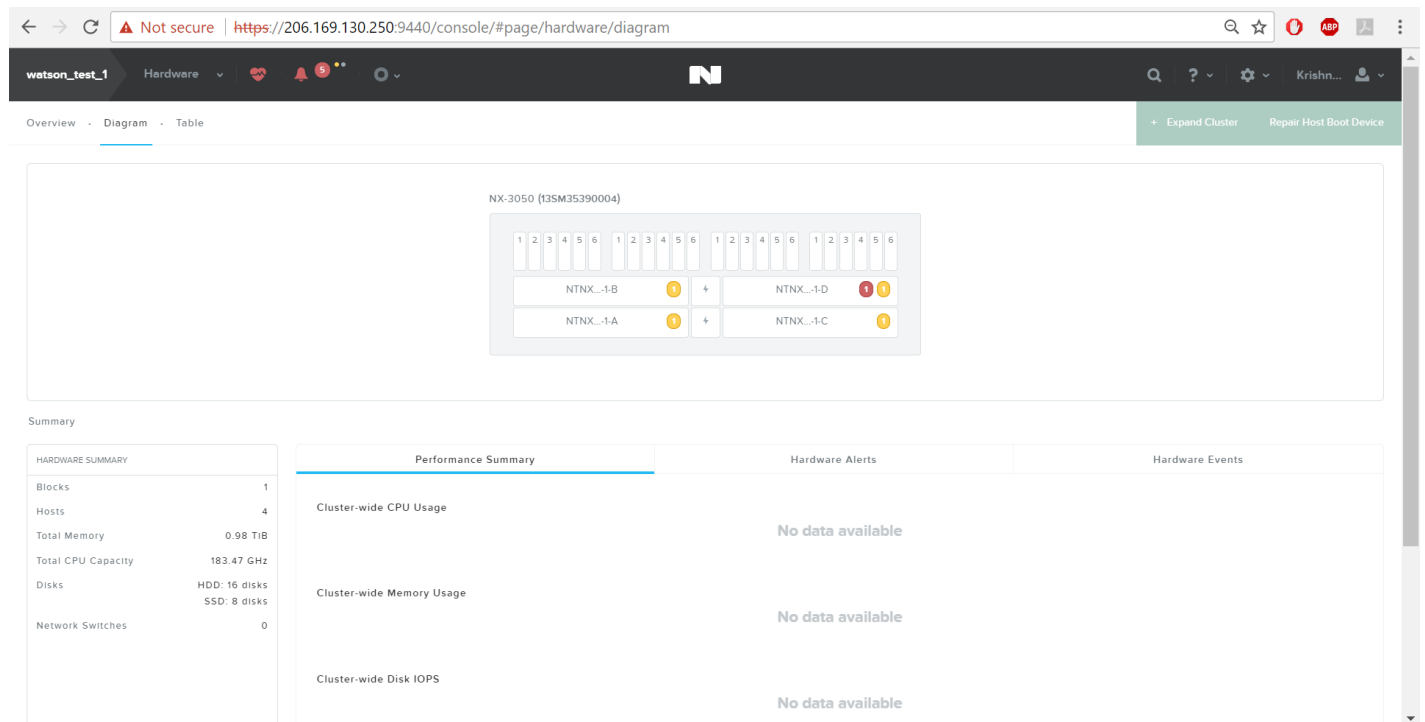
Analysis element displays charts and graphs along with the audit logs on the user logins and logouts. Data related to these aspects are depicted and ordered day by day. Charts can be created based on different parameters such as CPU, memory usage, etc. Two types of charts can be created, charts based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

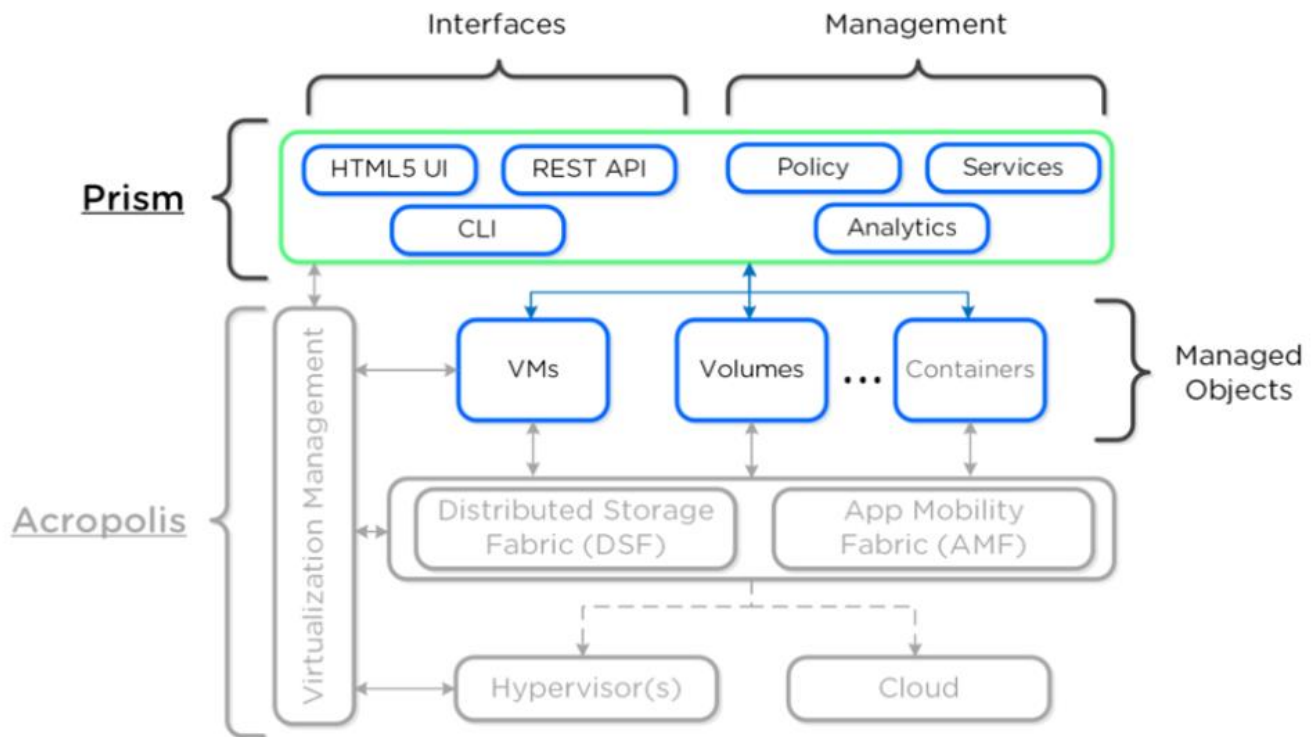
**(4) What does a cluster consist of?**

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

**(5) What does a Node consist of?**

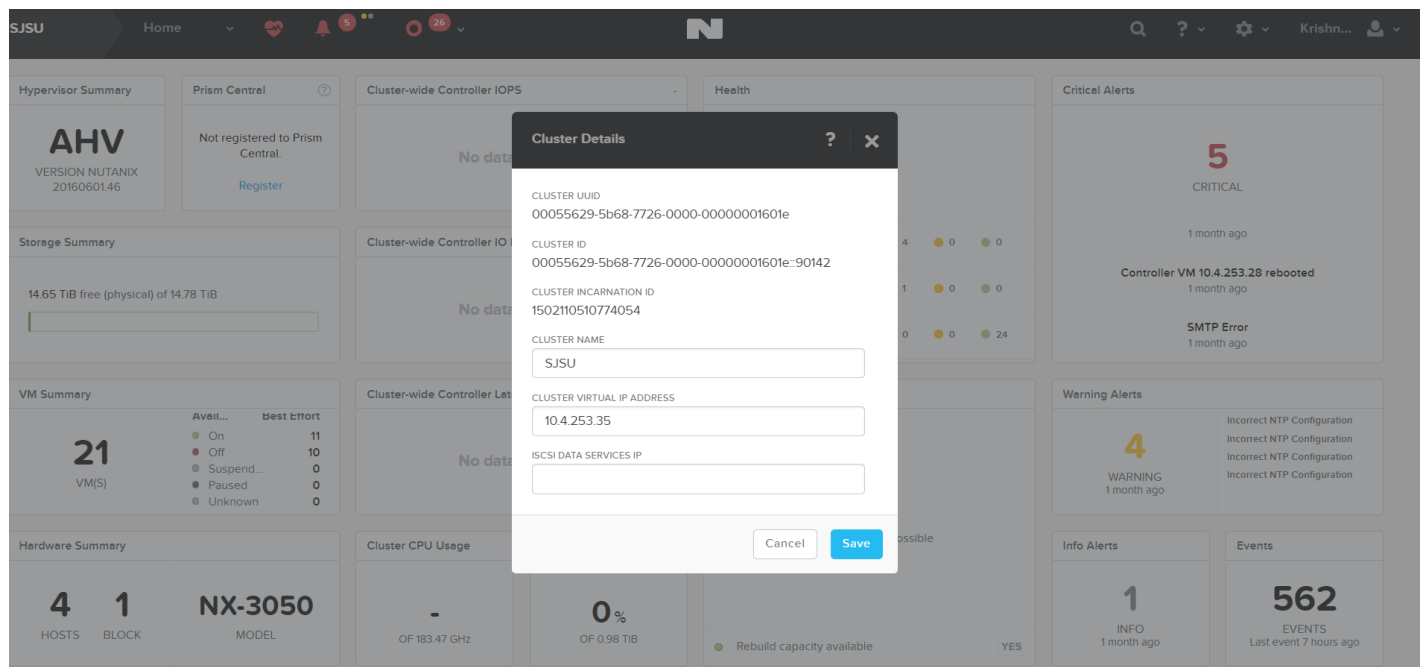
Node is the foundation block of a Nutanix cluster. It runs a standard Hypervisor and contains processors, memory and local storage (SSD and hard disks)

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

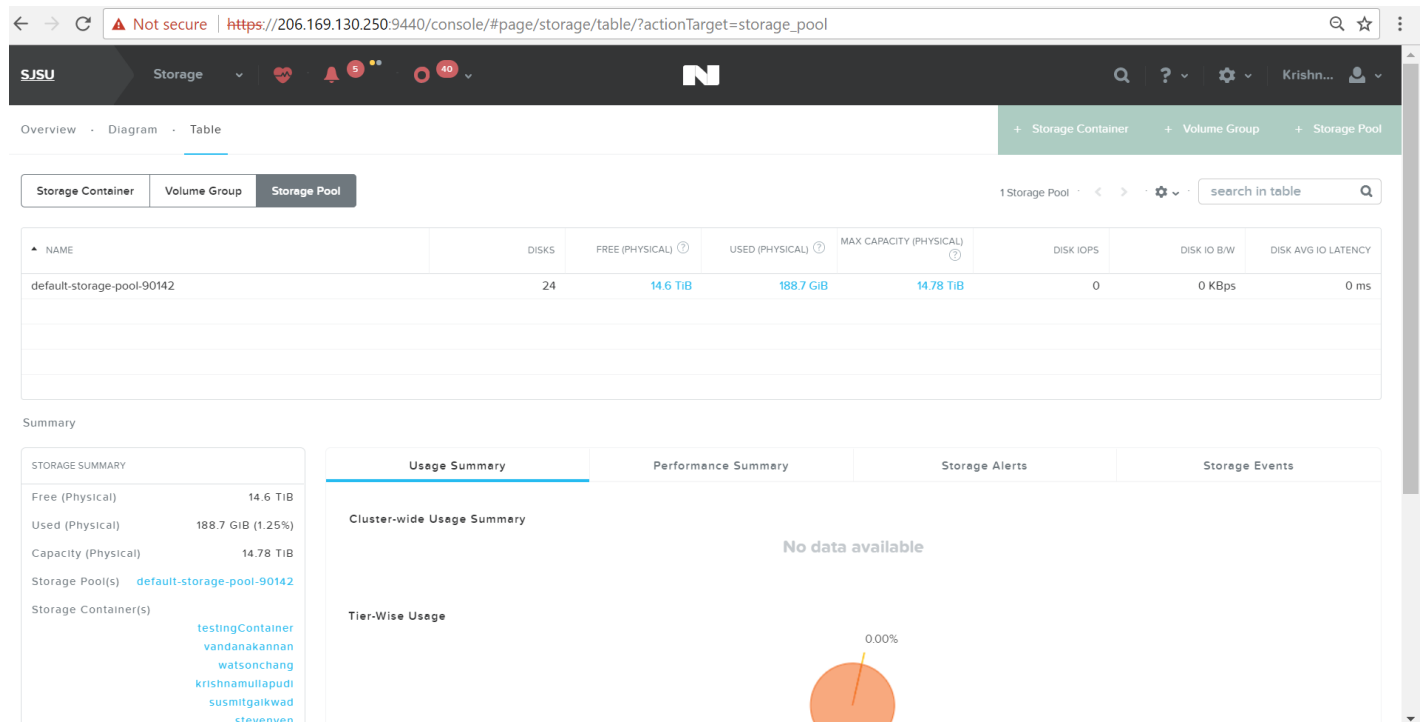


High – level Prism Architecture

(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.**

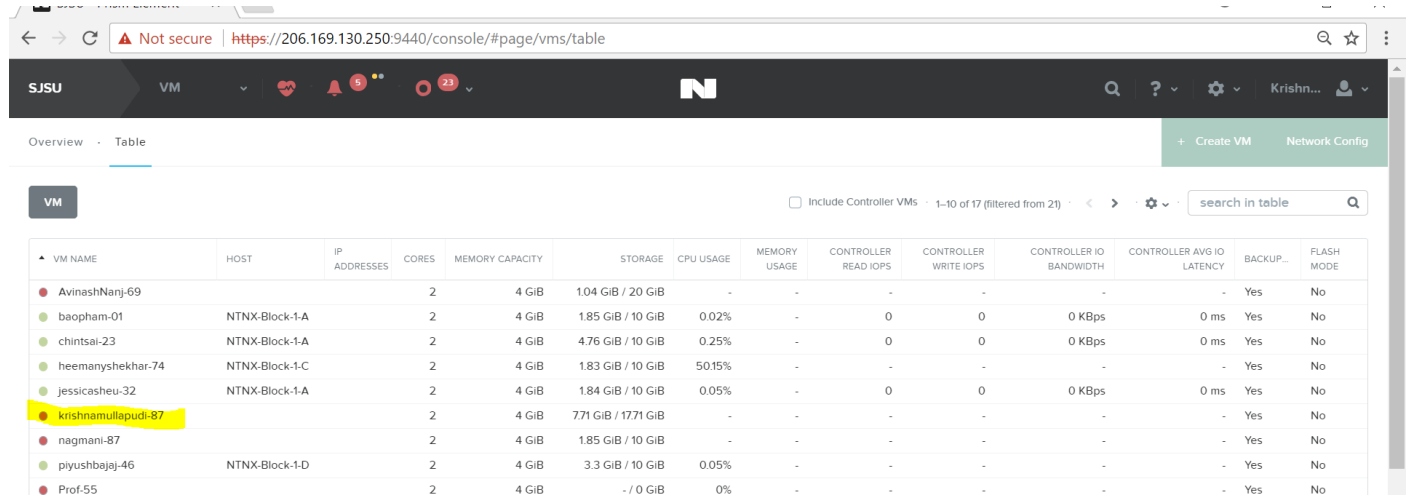
The screenshot shows the Nutanix Prism Element console interface. The browser address bar displays `https://206.169.130.250:9440/console/#page/storage/table`. The page title is "watson\_test\_1". The navigation bar includes "Storage", "Home Dashboard", "Nutanix Gatekeeper", and "Illenium - Sleepwalkers". The main content area is titled "Storage" and shows a table view of storage containers. The table has columns for NAME, RF, COMPRESSION, CACHE DEDUPLICATION, CAPACITY DEDUPLICATION, ERASURE CODING, FREE (LOGICAL), USED, MAX CAPACITY, CONTROLLER IOPS, CONTROLLER IO BW, and CONTROLLER IO LATENCY. The table lists several containers, including "ChinTsai", "default-container-90142", "krishnamullapudi", "NutanixManagementShare", and "Prof". Below the table, there is a "Summary" section with a "Storage Summary" sidebar and a "Usage Summary" main area. The "Usage Summary" area shows a "Cluster-wide Usage Summary" and a "Tier-Wise Usage" pie chart. The pie chart shows 0.00% for DAS-SATA and 100.00% for SSD. The "Storage Summary" sidebar shows details for "Free (Physical)", "Used (Physical)", "Capacity (Physical)", "Storage Pool(s)", and "Storage Container(s)".

NAME	RF	COMPRESSION	CACHE DEDUPLICATION	CAPACITY DEDUPLICATION	ERASURE CODING	FREE (LOGICAL)	USED	MAX CAPACITY	CONTROLLER IOPS	CONTROLLER IO BW	CONTROLLER IO LATENCY
ChinTsai	2	Off	Off	Off	Off	7.36 TiB	7.34 GiB	7.37 TiB	0	0 KBps	0 ms
default-container-90142	2	Off	Off	Off	Off	7.36 TiB	16.63 GiB	7.37 TiB	0	0 KBps	0 ms
krishnamullapudi	2	Off	Off	Off	Off	7.36 TiB	0 GiB	7.36 TiB	0	0 KBps	0 ms
NutanixManagementShare	2	Off	Off	Off	Off	7.36 TiB	0 GiB	7.36 TiB	0	0 KBps	0 ms
Prof	2	Off	Off	Off	Off	7.36 TiB	842.31 MiB	7.36 TiB	0	0 KBps	0 ms

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

The screenshot shows the Nutanix Prism Element console interface. The browser address bar displays `https://206.169.130.250:9440/console/#page/vms`. The page title is "SJSU - Prism Element". The navigation bar includes "SJSU", "VM", and "Home Dashboard". The main content area is titled "VMs" and shows a "Hypervisor Summary" section with "AHV" and "Nutanix 20160601.46 VERSION". Below this, there is a "VM Summary" section showing "19 VM(S)" and "62 PROVISIONED VCPUS". A "Create NIC" dialog box is open in the foreground, showing a dropdown menu for "VLAN NAME" with "krishnamullapudi" selected. The dialog also shows "VLAN ID" as "vlan.87", "VLAN UUID" as "ca462777-eca4-4843-95c0-ef0717aa7b20", and "NETWORK ADDRESS / PREFIX" as "NONE". The dialog has "Cancel" and "Add" buttons.

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



Overview · Table

+ Create VM Network Config

VM ☐ Include Controller VMs · 1-10 of 17 (filtered from 21) search in table

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...	FLASH MODE
AvinashNanj-69			2	4 GiB	1.04 GiB / 20 GiB	-	-	-	-	-	-	Yes	No
baopham-01	NTNX-Block-1-A		2	4 GiB	1.85 GiB / 10 GiB	0.02%	-	0	0	0 KBps	0 ms	Yes	No
chintasai-23	NTNX-Block-1-A		2	4 GiB	4.76 GiB / 10 GiB	0.25%	-	0	0	0 KBps	0 ms	Yes	No
heemanyshekhhar-74	NTNX-Block-1-C		2	4 GiB	1.83 GiB / 10 GiB	50.15%	-	-	-	-	-	Yes	No
jessicasheu-32	NTNX-Block-1-A		2	4 GiB	1.84 GiB / 10 GiB	0.05%	-	0	0	0 KBps	0 ms	Yes	No
krishnamullapudi-87			2	4 GiB	7.71 GiB / 17.71 GiB	-	-	-	-	-	-	Yes	No
nagmani-87			2	4 GiB	1.85 GiB / 10 GiB	-	-	-	-	-	-	Yes	No
piyushbajaj-46	NTNX-Block-1-D		2	4 GiB	3.3 GiB / 10 GiB	0.05%	-	-	-	-	-	Yes	No
Prof-55			2	4 GiB	- / 0 GiB	0%	-	-	-	-	-	Yes	No

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

krishnamullapudi-87

NTNX-Block-1-A

nagmani-87

piyushbajaj-46

Prof-55

Prof-55a

siddharthkulkarni-28

2

4 GiB

1.64 GiB / 10 GiB

0.1%

-

-

0

0

0 KBps

0 ms

Yes

No

2

4 GiB

3.3 GiB / 10 GiB

0.02%

-

-

-

-

-

-

Yes

No

2

4 GiB

- / 0 GiB

0%

-

-

-

-

-

-

Yes

No

2

4 GiB

1.37 GiB / 10.55 GiB

0.03%

-

-

-

-

-

-

Yes

No

2

4 GiB

1.39 GiB / 10 GiB

-

-

-

-

-

-

-

Yes

No

Summary > krishnamullapudi-87

Manage Guest Tools

Launch Console

Power Off Actions

Take Snapshot

Migrate

Pause

Clone

Update

Delete

VM DETAILS

Name

krishnamullapudi-87

ID

7513c3e2-c58b-446d-b8ce-2146115acb49

Host

NTNX-Block-1-A

Host IP

10.4.253.21

Memory

4 GiB

Cores

2

Network Adapters

1

IP Addresses

Storage Container

krishnamullapudi

Virtual Disks

1

VM Performance

Virtual Disks

VM NICs

VM Snapshots

VM Tasks

I/O Metrics

Console

1 Snapshot

<

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⚙

search in table

Q

▼ CREATE TIME

NAME

ACTIONS

09/30/17, 6:31:06 PM

krishnamullapudi-1

Details · Clone · Restore · Delete

## (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



## Nutanix Lab

← → ↻ 🔒 Not secure | https://206.169.130.250:9440/console/#page/vms/table/?action=details&actionTargetId=00055629-5b68-7726-0000-00000001601e%3A%3A7513c3e2-c58b-... 🔍 ☆

SJSU VM 5 25

🔍 ? ⚙️ Krishn...

VM NAME	HOST	ADDRESSES	CPUS	MEMORY (GB)	STORAGE	CPU USAGE	USAGE	READ IOPS	WRITE IOPS	BANDWIDTH	LATENCY	ENERGY	MODE
avinashnanj-69	NTNX-Block-1-D		2	4 GiB	1.22 GiB / 10 GiB	50.11%	-	-	-	-	-	Yes	No
baopham-01	NTNX-Block-1-A		2	4 GiB	1.85 GiB / 10 GiB	0.02%	-	-	-	-	-	Yes	No
chintsai-23	NTNX-Block-1-A		2	4 GiB	4.76 GiB / 10 GiB	0.22%	-	-	-	-	-	Yes	No
heemanyshekhhar-74	NTNX-Block-1-C		2	4 GiB	1.83 GiB / 10 GiB	49.89%	-	-	-	-	-	Yes	No
jessicasheu-32	NTNX-Block-1-A		2	4 GiB	1.84 GiB / 10 GiB	0.03%	-	-	-	-	-	Yes	No
krishnamullapudi-87	NTNX-Block-1-A		2	4 GiB	1.64 GiB / 10 GiB	0.03%	-	-	-	-	-	Yes	No
nagmani-87			2	4 GiB	1.85 GiB / 10 GiB	-	-	-	-	-	-	Yes	No
piyushbajaj-46	NTNX-Block-1-D		2	4 GiB	3.3 GiB / 10 GiB	0.05%	-	-	-	-	-	Yes	No
Prof-55			2	4 GiB	- / 0 GiB	0%	-	0	0	0 KBps	0 ms	Yes	No
Prof-55a	NTNX-Block-1-D		2	4 GiB	1.37 GiB / 10.55 GiB	0.03%	-	-	-	-	-	Yes	No

Summary > krishnamullapudi-87

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

VM DETAILS

Name krishnamullapudi-87

ID 7513c3e2-c58b-446d-b8ce-2146115acb49

Host NTNX-Block-1-A

Host IP 10.4.253.21

Memory 4 GiB

Cores 2

Network Adapters 1

IP Addresses

Storage Container krishnamullapudi

VM Performance Virtual Disks VM NICs **VM Snapshots** VM Tasks I/O Metrics Console

1 Snapshot < > ⚙️ search in table 🔍

CREATE TIME	NAME	ACTIONS
09/30/17, 6:31:06 PM	krishnamullapudi-1	<a href="#">Details</a> · <a href="#">Clone</a> · <a href="#">Restore</a> · <a href="#">Delete</a>

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

SJSU VM 5 25

🔍 ? ⚙️ Krishn...

VM NAME	HOST	ADDRESSES	CPUS	MEMORY (GB)	STORAGE	CPU USAGE	USAGE	READ IOPS	WRITE IOPS	BANDWIDTH	LATENCY	ENERGY	MODE
avinashnanj-69	NTNX-Block-1-D		2	4 GiB	1.22 GiB / 10 GiB	50.06%	-	-	-	-	-	Yes	No
baopham-01	NTNX-Block-1-A		2	4 GiB	1.85 GiB / 10 GiB	0.03%	-	-	-	-	-	Yes	No
chintsai-23	NTNX-Block-1-A		2	4 GiB	4.76 GiB / 10 GiB	0.23%	-	-	-	-	-	Yes	No
heemanyshekhhar-74	NTNX-Block-1-C		2	4 GiB	1.83 GiB / 10 GiB	49.81%	-	-	-	-	-	Yes	No
jessicasheu-32	NTNX-Block-1-A		2	4 GiB	1.84 GiB / 10 GiB	0.03%	-	-	-	-	-	Yes	No
krishnamullapudi-87	NTNX-Block-1-C		2	4 GiB	- / 10 GiB	-	-	-	-	-	-	Yes	No
nagmani-87			2	4 GiB	1.85 GiB / 10 GiB	-	-	-	-	-	-	Yes	No
piyushbajaj-46	NTNX-Block-1-D		2	4 GiB	3.3 GiB / 10 GiB	0.02%	-	-	-	-	-	Yes	No
Prof-55			2	4 GiB	- / 0 GiB	0%	-	0	0	0 KBps	0 ms	Yes	No
Prof-55a	NTNX-Block-1-D		2	4 GiB	1.37 GiB / 10.55 GiB	0.02%	-	-	-	-	-	Yes	No

Summary > krishnamullapudi-87

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

VM DETAILS

Name krishnamullapudi-87

ID 7513c3e2-c58b-446d-b8ce-2146115acb49

Host NTNX-Block-1-C

Host IP 10.4.253.23

Memory 4 GiB

Cores 2

Network Adapters 1

VM Performance Virtual Disks VM NICs **VM Snapshots** VM Tasks I/O Metrics Console

1 Snapshot < > ⚙️ search in table 🔍

CREATE TIME	NAME	ACTIONS
09/30/17, 6:31:06 PM	krishnamullapudi-1	<a href="#">Details</a> · <a href="#">Clone</a> · <a href="#">Restore</a> · <a href="#">Delete</a>

Node after migration – NTNX-Block-1-C

**(17) Take a screenshot of your clone**

SJSU

VM

25

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Krishn...

▲ 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...	FLASH MODE
avinashnanj-69	NTNX-Block-1-D		2	4 GiB	771 GiB / 1771 GiB	34.84%	-	861	0	110.26 MBps	01 ms	Yes	No
baopham-01	NTNX-Block-1-A		2	4 GiB	1.85 GiB / 10 GiB	0.02%	-	0	0	0 KBps	0 ms	Yes	No
chintsai-23	NTNX-Block-1-A		2	4 GiB	4.76 GiB / 10 GiB	0.25%	-	0	0	0 KBps	0 ms	Yes	No
heemanyshekhhar-74	NTNX-Block-1-C		2	4 GiB	1.83 GiB / 10 GiB	49.71%	-	-	-	-	-	Yes	No
jessicashew-32	NTNX-Block-1-A		2	4 GiB	1.84 GiB / 10 GiB	0.03%	-	0	0	0 KBps	0 ms	Yes	No
krishnamullapudi-87	NTNX-Block-1-C		2	4 GiB	1.64 GiB / 10 GiB	0.02%	-	0	0	0 KBps	0 ms	Yes	No
krishnamullapudi-87-clone	NTNX-Block-1-A		2	4 GiB	1.64 GiB / 10 GiB	20.6%	-	21	0	1.8 MBps	109 ms	Yes	No
nagmani-87			2	4 GiB	1.85 GiB / 10 GiB	-	-	-	-	-	-	Yes	No
piyushbajaj-46	NTNX-Block-1-D		2	4 GiB	3.3 GiB / 10 GiB	0.02%	-	0	0	0 KBps	0 ms	Yes	No
Prof-55			2	4 GiB	- / 0 GiB	0%	-	0	0	0 KBps	0 ms	Yes	No

Summary

krishnamullapudi-87-clone

Manage Guest Tools

Launch Console

Power Off Actions

Take Snapshot

Migrate

Pause

Clone

Update

Delete

VM DETAILS

Name

krishnamullapudi-87-clone

ID

b16e879c-f250-4b42-8951-285621c42b8a

Host

NTNX-Block-1-A

Host IP

10.4.253.21

Memory

4 GiB

Cores

2

Network Adapters

1

VM Performance

Virtual Disks

VM NICs

VM Snapshots

VM Tasks

I/O Metrics

Console

CentOS Linux 7 (Core)

Kernel 3.10.0-514.el7.x86\_64 on an x86\_64

localhost login: krishnamullapudi

Password:

Last login: Sat Sep 30 21:24:39 on tty1

[krishnamullapudi@localhost ~]\$

### (18) Take a screenshot of your VM Tasks

Summary > krishnamullapudi-87

Manage Guest Tools

Launch Console

Power Off Actions

Take Snapshot

Migrate

Pause

Clone

Update

Delete

VM DETAILS

Name

krishnamullapudi-87

ID

7513c3e2-c58b-446d-b8ce-2146115acb49

Host

NTNX-Block-1-C

Host IP

10.4.253.23

Memory

4 GiB

Cores

2

Network Adapters

1

IP Addresses

Storage Container

krishnamullapudi

Virtual Disks

1

NGT Enabled

No

NGT Mounted

No

VM Performance

Virtual Disks

VM NICs

VM Snapshots

VM Tasks

I/O Metrics

Console

11-20 of 24

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search in table

🔍

OPERATION	ENTITIES	PERCENT COMPLETE	PROGRESS STATUS	CREATE TIME	DURATION
Update	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:38:25 PM	Under 1 second
Create Virtual Disk	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:34:52 PM	Under 1 second
Delete Virtual Disk	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:33:11 PM	Under 1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:29:23 PM	1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:26:25 PM	2 seconds
Update	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:26:20 PM	Under 1 second
Create Virtual Disk	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:25:57 PM	Under 1 second
Delete Virtual Disk	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:25:11 PM	Under 1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:24:48 PM	1 second
Delete Virtual Disk	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Failed : Cannot complete request in state kOn	09/30/17, 5:24:24 PM	Under 1 second

The screenshot shows the Nutanix Prism interface. On the left, a sidebar lists VM details for 'krishnamullapudi-87':

- Name: krishnamullapudi-87
- ID: 7513c3e2-c58b-446d-b8ce-2146115acb49
- Host: NTNX-Block-1-C
- Host IP: 10.4.253.23
- Memory: 4 GiB
- Cores: 2
- Network Adapters: 1
- IP Addresses: (empty)
- Storage Container: krishnamullapudi
- Virtual Disks: 1
- NGT Enabled: No
- NGT Mounted: No

The main area displays a table of operations performed on this VM:

OPERATION	ENTITIES	PERCENT COMPLETE	PROGRESS STATUS	CREATE TIME	DURATION
Clone	VM : krishnamullapudi-87 Snapshot (UUID) : dca1f7da-7e83-4746-8a20-7279c2198912 VM (UUID) : b16e879c-f250-4b42-8951-285621c42b8a	100	Succeeded	09/30/17, 7:05:46 PM	1 second
Migrate	VM : krishnamullapudi-87 Node : NTNX-Block-1-A Node : NTNX-Block-1-C	100	Succeeded	09/30/17, 6:53:59 PM	3 seconds
Create Snapshot	VM : krishnamullapudi-87 Snapshot : krishnamullapudi-1	100	Succeeded	09/30/17, 6:31:05 PM	Under 1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-A	100	Succeeded	09/30/17, 6:23:09 PM	2 seconds
Update	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 6:23:01 PM	Under 1 second
Delete Virtual Disk	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 6:22:43 PM	Under 1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-B	100	Succeeded	09/30/17, 6:22:11 PM	1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-B	100	Succeeded	09/30/17, 6:05:21 PM	2 seconds
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 6:05:06 PM	1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:39:23 PM	1 second

The screenshot shows the Nutanix Prism interface with a list of VMs at the top:

VM Name	Host	Cores	Memory	Storage	Power State	NGT Enabled	NGT Mounted
piyushbajaj-46	NTNX-Block-1-D	2	4 GiB	3.3 GiB / 10 GiB	0.03%	-	-
Prof-55	NTNX-Block-1-D	2	4 GiB	- / 0 GiB	0%	-	-
Prof-55a	NTNX-Block-1-D	2	4 GiB	1.37 GiB / 10.55 GiB	0.02%	-	-

The main area shows the 'VM Tasks' tab for VM 'krishnamullapudi-87':

OPERATION	ENTITIES	PERCENT COMPLETE	PROGRESS STATUS	CREATE TIME	DURATION
Update Virtual Disk	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:21:20 PM	Under 1 second
Update Virtual Disk	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:21:20 PM	Under 1 second
Set Power State	VM : krishnamullapudi-87 Node : NTNX-Block-1-D	100	Succeeded	09/30/17, 5:14:23 PM	2 seconds
Create	VM : krishnamullapudi-87	100	Succeeded	09/30/17, 5:06:58 PM	Under 1 second

### 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?**

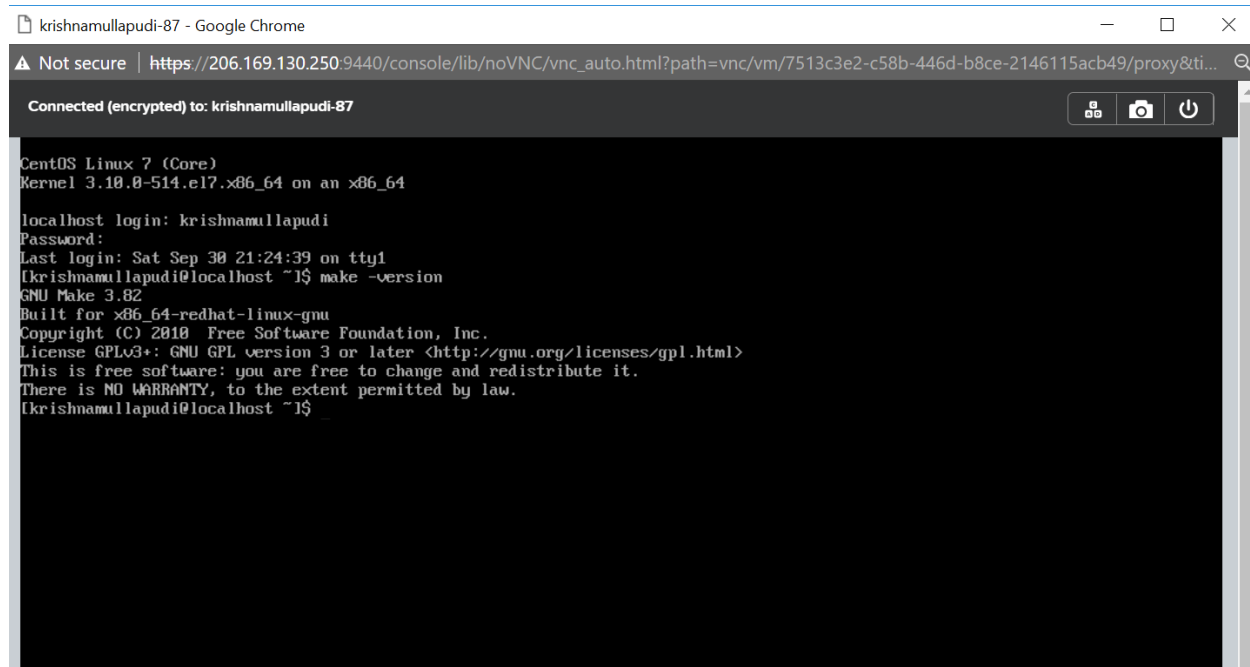
The possible potential levels of failure in Nutanix Distributed Systems can be characterized as :

- **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 re-protection.
- **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.**



```
krishnamullapudi-87 - Google Chrome
https://206.169.130.250:9440/console/lib/noVNC/vnc_auto.html?path=vnc/vm/7513c3e2-c58b-446d-b8ce-2146115acb49/proxy&ti...
Connected (encrypted) to: krishnamullapudi-87

CentOS Linux 7 (Core)
Kernel 3.10.0-514.el7.x86_64 on an x86_64

localhost login: krishnamullapudi
Password:
Last login: Sat Sep 30 21:24:39 on tty1
[krishnamullapudi@localhost ~]$ make -version
GNU Make 3.82
Built for x86_64-redhat-linux-gnu
Copyright (C) 2010 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
[krishnamullapudi@localhost ~]$
```

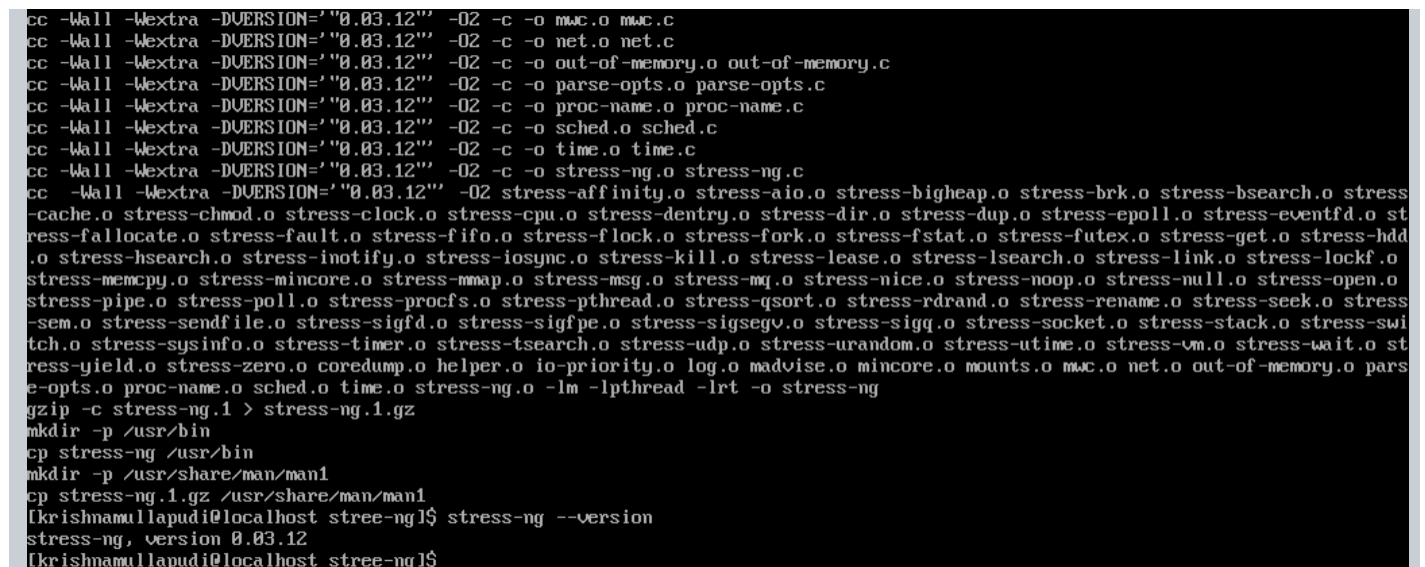
**(25) What is your linux command to mount it?**

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**



```
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o mwc.o mwc.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o net.o net.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o out-of-memory.o out-of-memory.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o parse-opts.o parse-opts.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o proc-name.o proc-name.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o sched.o sched.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o time.o time.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 -c -o stress-ng.o stress-ng.c
cc -Wall -Wextra -DVERSION='0.03.12' -O2 stress-affinity.o stress-aio.o stress-bigheap.o stress-brk.o stress-bsearch.o stress-
-cache.o stress-chmod.o stress-clock.o stress-cpu.o stress-dentry.o stress-dir.o stress-dup.o stress-epoll.o stress-eventfd.o st
ress-fallocate.o stress-fault.o stress-fifo.o stress-flock.o stress-fork.o stress-fstat.o stress-futex.o stress-get.o stress-hdd
.o stress-hsearch.o stress-inotify.o stress-iosync.o stress-kill.o stress-lease.o stress-lsearch.o stress-link.o stress-lockf.o
stress-memcpy.o stress-mincore.o stress-mmap.o stress-msg.o stress-mq.o stress-nice.o stress-noop.o stress-null.o stress-open.o
stress-pipe.o stress-poll.o stress-procfs.o stress-pthread.o stress-qsort.o stress-rdrand.o stress-rename.o stress-seek.o stress-
sem.o stress-sendfile.o stress-sigfd.o stress-sigpe.o stress-sigsegv.o stress-sigq.o stress-socket.o stress-stack.o stress-swit
ch.o stress-sysinfo.o stress-timer.o stress-tsearch.o stress-udp.o stress-urandom.o stress-utime.o stress-vm.o stress-wait.o st
ress-yield.o stress-zero.o coredump.o helper.o io-priority.o log.o madvise.o mincore.o mounts.o mwc.o net.o out-of-memory.o pars
e-opts.o proc-name.o sched.o time.o stress-ng.o -lm -lpthread -lrt -o stress-ng
gzip -c stress-ng.1 > stress-ng.1.gz
mkdir -p /usr/bin
cp stress-ng /usr/bin
mkdir -p /usr/share/man/man1
cp stress-ng.1.gz /usr/share/man/man1
[krishnamullapudi@localhost stree-ng]$ stress-ng --version
stress-ng, version 0.03.12
[krishnamullapudi@localhost stree-ng]$
```

(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)

The screenshot shows the Nutanix Health dashboard. On the left, a list of checks is displayed under categories like 'Manage Checks', 'CVM | Hardware', and 'CVM | Memory'. The 'HDD Disk Usage' check is selected. The main panel shows the check's description: 'Verify whether the current amount of disk usage is below 75 %'. Below this is a table titled 'History of entities evaluated by this check' with columns for dates from Sep 26 to Today. The table shows four entities: NTN-Block-1-A, NTN-Block-1-B, NTN-Block-1-C, and NTN-Block-1-D, each with a green bar indicating disk usage. On the right, the 'Causes & Resolutions' section provides details on failure causes, resolutions, and impact.

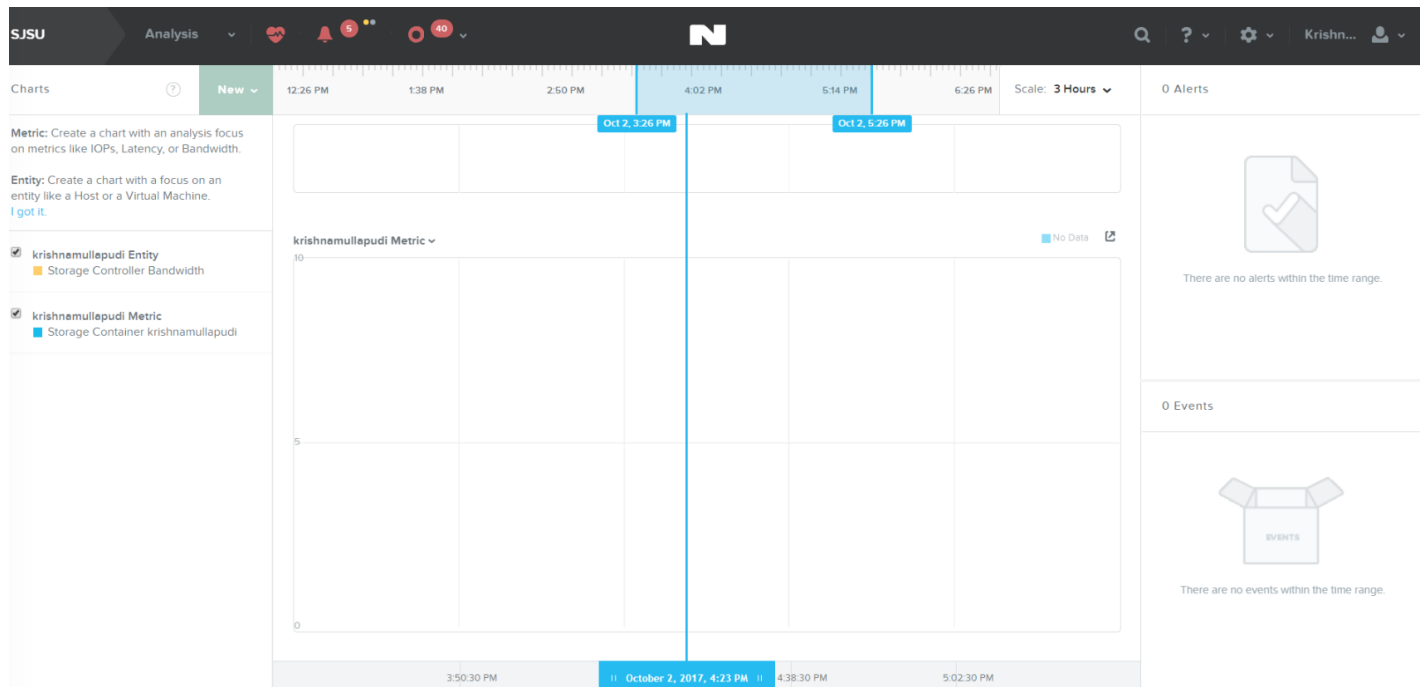
	Sep 26	Sep 27*	Sep 28	Sep 29	Sep 30	Oct 01	Today
NTNX-Block-1-A	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
NTNX-Block-1-B	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
NTNX-Block-1-C	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
NTNX-Block-1-D	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

(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. Your screenshot should include your VM information (as shown below)

The screenshot shows the 'VMs hosted on NTN-Block-1-D' section. On the left, there are buttons for '5 Groups' and '3 Groups'. The main area shows a bar chart for NTN-Block-1-D with a value of 7. Below the bar chart, there are seven green circles, with the first one having a checkmark. A tooltip is displayed over the first circle, showing the following information: VM : krishnamullapudi-87, Host : NTN-Block-1-D, Guest OS : None, Memory : 4 GiB, Disk Capacity : 10 GiB, Power State : on, vCPUs : 2.

**(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