



SevOne NMS Installation Guide - Virtual Appliance

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SevOne Documentation

All documentation is available from the [IBM SevOne Support customer portal](#).

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1 About

This document describes the installation of a SevOne virtual appliance. A virtual appliance can be a SevOne Performance Appliance Solution (vPAS) or a SevOne Dedicated NetFlow Collector (vDNC), each of which runs the SevOne Network Management Solution (NMS) software.

Terminology usage...

In this guide if there is,

- [any reference to *master*] OR
- [[if a CLI command contains *master*] AND/OR
- [its output contains *master*]],
it means *leader*.

And, if there is any reference to *slave*, it means *follower*.

Create Support Account

To create a user account to enable **SevOne Support** engineers to provide support services, go to <https://www.ibm.com/mysupport/>. Or, contact **SevOne Support** via [phone](#).

1. In the address field on your web browser enter <https://www.ibm.com/mysupport/> and press **Enter**.
2. Click **Login** to display the IBM SevOne Support Login page.
3. In the **Create New Account** section, enter the following information.
 - Your Full Name
 - Email Address
 - Phone Number
 - Company
4. Click **Create Account**.
5. Your account is created instantly and **SevOne Support** reviews the account validity within the next business day.

1.1 Multi Peer and Hot Standby Implementations

The SevOne NMS Cluster Manager provides an Integration tab to enable you to build your cluster and to add a new PAS appliance and/or a new vPAS as a peer into an existing cluster.

When your new virtual appliance is a Hot Standby Appliance, perform the steps in chapters 3 and 4 to install the SevOne software and to integrate the computer into your network then contact **SevOne Support** via [phone](#) or go to [IBM SevOne Support customer portal](#) to ensure that the Hot Standby Appliance is appropriately implemented into the cluster.

2 Prerequisites

There are three methods to download the image for a virtual SevOne appliance.


- VMware - Standard method for all virtual SevOne software installations via a .ova file download from <http://fileshare.sevone.com/ftp/login/>.
- KVM (Kernel-based Virtual Machine) - A virtualization infrastructure for the Linux kernel that turns it into a hypervisor. This method uses a .QCOW2 file.
- Microsoft Azure - The method used to install is a Virtual Hard Disk (VHD) image.

All three methods have the following hardware requirements.

2.1 Hardware Requirements

Recommendation

In a cluster that contains mixed sized appliances, the largest hardware capacity appliance should be the Cluster Leader. There is RAM overhead exerted on the Cluster Leader based on its additional responsibilities. Due to this, SevOne strongly advises you to implement this recommendation.

 The average **Input / Output Operations Per Second (IOPS)** is 19,000KBs.

Hardware Component	vCPU Cores	RAM (GB)	Hard Drives	Flow Limit (FPS)
vPAS5k	2	8	150GB	-
vPAS20k	8	24	600GB	-
vPAS60k	8	44	150GB/1.3TB	-
vPAS100k	8	96 Higher demands (for example, xStats) may require more memory.	500GB/2TB	-
vPAS200k	16	220	600GB/4TB	-
vDNC100	8	16	150GB/400GB	30,000
vDNC300	16	48	150GB/800GB	80,000
vDNC1000	24	96	150GB/1500GB	80,000
vDNC1500	24	128	150GB/3000GB	80,000

Used hard drive space vs Provisioned Capacity.

Modern SANs - Thin-provisioning recommended

Virtual machines are thin-provisioned and used space is based on polling the maximum number of licensed objects for 1 year at 5 minute intervals.
Any SAN with SSDs and supporting thin-provisioned LUNs is considered modern.

3 Download Virtual Appliance Image File

For VMware, you need the .ova file. For KVM, .QCOW2 file is required. And, for Microsoft Azure, you will need the .vhd file.

The virtual appliance image file can be downloaded from **IBM Passport Advantage** (https://www.ibm.com/software/passportadvantage/pao_download_software.html) via *Passport Advantage Online*. However, if you are on a legacy / flexible SevOne contract and do not have access to IBM Passport Advantage but have an *active* Support contract, please contact **SevOne Support Team** for the image file. Download can take ~30 minutes.

4 VMware Considerations

A vPAS/vDNC installation using VMware has the following host system requirements

- Intel-VT or AMD-V CPU extensions
- VMware ESXi v5.0 (minimum requirement). Tested with ESXi 6.7 and later (VM version 14)
- Installation using VMware is supported on any premise or VMware Cloud Infrastructure as long as it is compatible with the ESXi and VM versions listed above.
- Does not run on VMware Workstation / VMware Player

The following are the VMware initial setup best practices.

- The SevOne .ova image file contains a `vmware-tools` package to provide emulation for what vCenter and the ESX need to get from the VM. This package provides a set of utilities and drivers to help you improve the performance and management of virtual machines.
- VMware Tools include the VMXNET3 network driver. The VMXNET3 adapter is a virtualized Network Interface Card that offers better performance and should be used for the vPAS100k.
- Turn on Storage I/O Monitoring in vCenter for all data stores used by the appliance to diagnose performance issues.
- Ensure that hyperthreading is enabled by default in the virtual data center. Hyperthreading is enabled or disabled in the BIOS when the system is booted.
- Ensure adequate CPU and memory allocation as described earlier in this document. Do not inadvertently limit CPU or memory and ensure that the Unlimited check box is selected.

For a physical system, the concept of a CPU is easy term to understand. However, in the virtualized space it is difficult to determine how many cores a CPU has and whether hyperthreading is turned on. One way to normalize the values you should use to plan your virtual environment is to use the SPECint benchmark published by SPEC. SPEC breaks out CPU performance metrics for:

- CPU Speed (*cint*)
- CPU Throughput (*rint*)

The *cint* performance runs a single instance of the benchmark test to measure the speed of the system to perform a single task. *rint* runs the same number of instances of the benchmark test as there are threads in the machine to measure parallelization. Although a system may have a faster processor, other factors can reduce the number of parallel tasks, so *rint* is as important a measurement as *cint*. SevOne software provides good parallelization that benefits from more effective CPUs rather than from a smaller number of faster CPUs.

Example

A machine with two CPUs and four cores per CPU, with one thread per core, may have a speed rating of 10 and a throughput rating of 40, rather than 80, which would be the expected value if all cores and threads were completely independent so this machine has 4 effective CPUs. To expand further, consider a PAS10K which runs on Dell R620 hardware. There are 2 physical CPUs with 8 cores and hyperthreading is enabled. This should result in 32 effective CPUs, but the *cint* and *rint* values of 54.7 and 585 determine an effective CPU rating of almost 11, not 32. Similar results exist for the PAS200K (R720xd) which should have 40 effective CPUs but actually rates about 14.

Virtualization can provide better efficiency of the underlying hardware through a fundamental model of over subscription. When set up properly, VMs can freely move about within the cluster of hypervisors to resolve temporary resource constraints without administrator intervention. It is important to note the following:

- Since the system may attempt to resolve resource contention issues autonomously, performance related postmortem analysis can be difficult via the VM alone.
- From the VM, it is difficult to determine if you actually have the resources you think you have without an attempt to continuously allocate them, which degrades performance.
- Some things that constrain the performance of VMs are not things that trigger a VM to move within the cluster.
- Data points that describe the level of resource contention and over subscription are intentionally not revealed to the VMs and access to vCenter in those scenarios is not universal.

Migration

NOTICE# 1

SevOne NPM supports migration from one host to a compatible-versioned host, provided they are on the same vSphere installation.
VMware Hybrid migration with vMotion has not been tested and is not a supported migration.

NOTICE# 2

Using VMware Snapshot functions to move SevOne NPM between VMware Instances has not been tested and is not a supported migration.

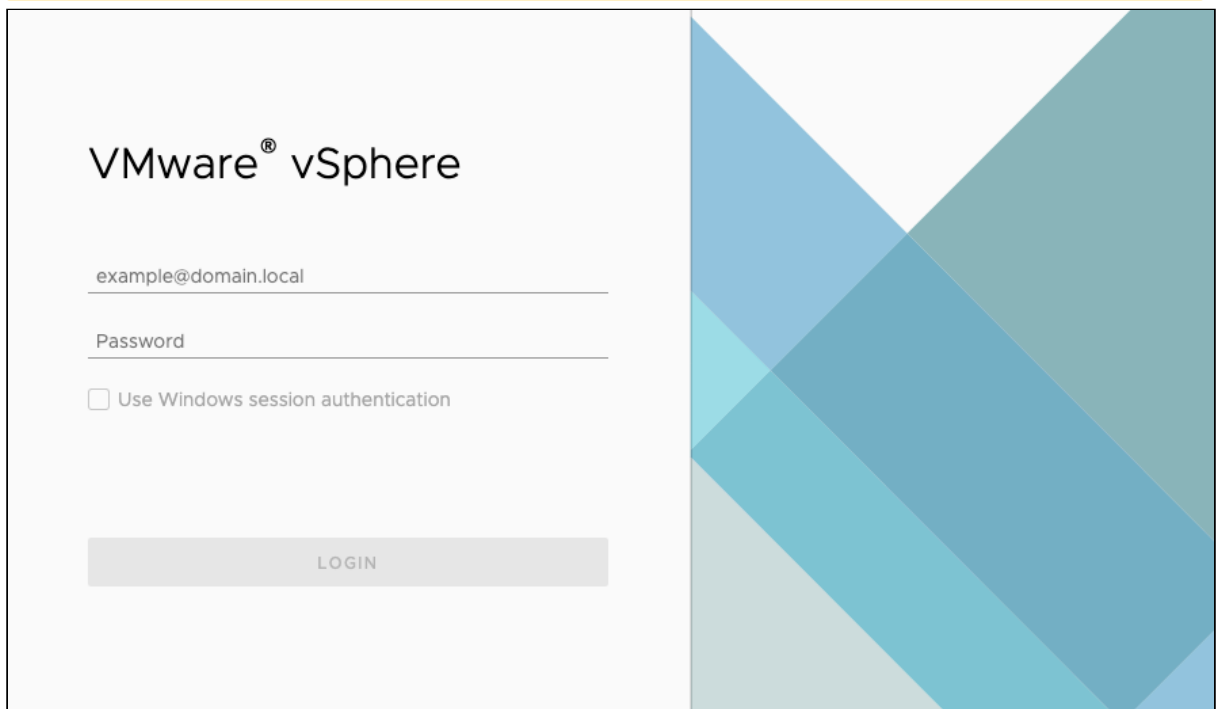
4.1 Troubleshooting System Performance

- Ensure that CPU utilization is in the range of 50-70%. For VMs above this range, vCPUs must be added to the SevOne VM. **Note that adding more vCPUs than necessary may adversely affect performance.**
- Ensure adequate reserve of CPU and memory for the VM. Through testing and experience, analyzing esxtop data, the appropriate level of reservation can be determined. Reservations only take effect when there are insufficient resources to meet the needs of all the VMs on a particular ESX server.

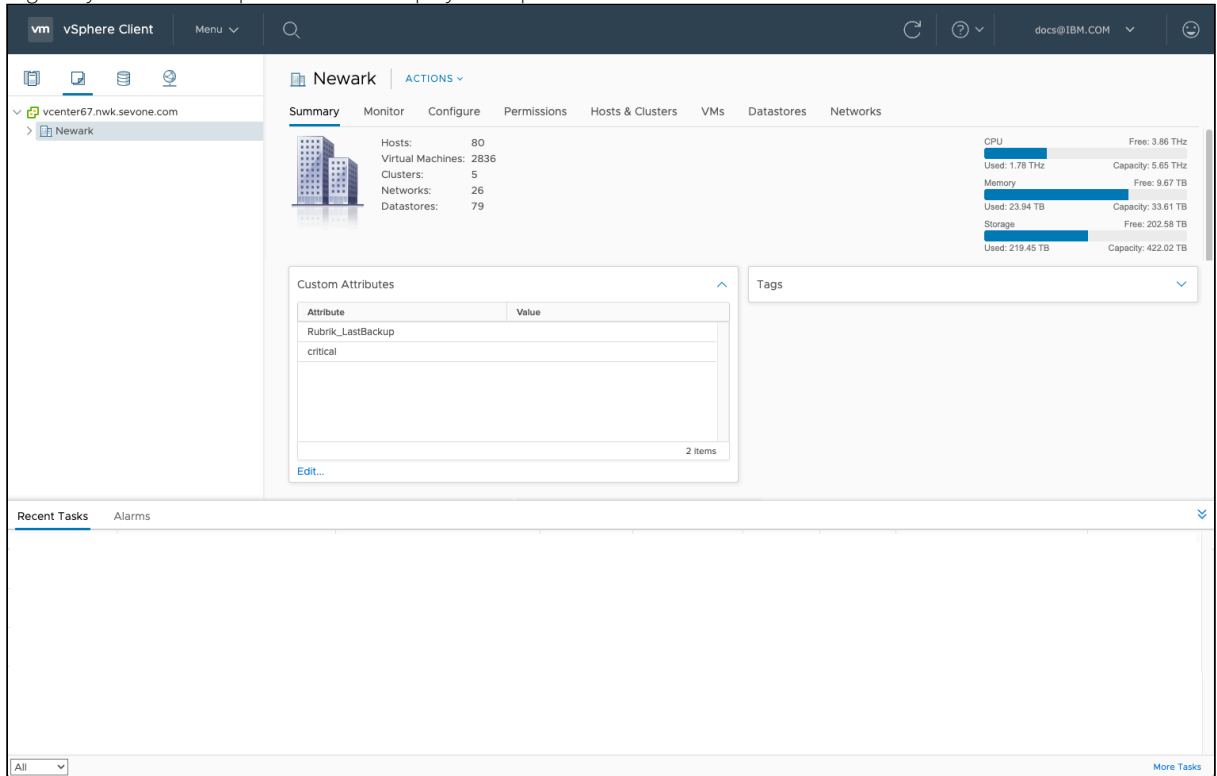
4.2 VMware Implementation

1. Open your VMware vSphere Client.

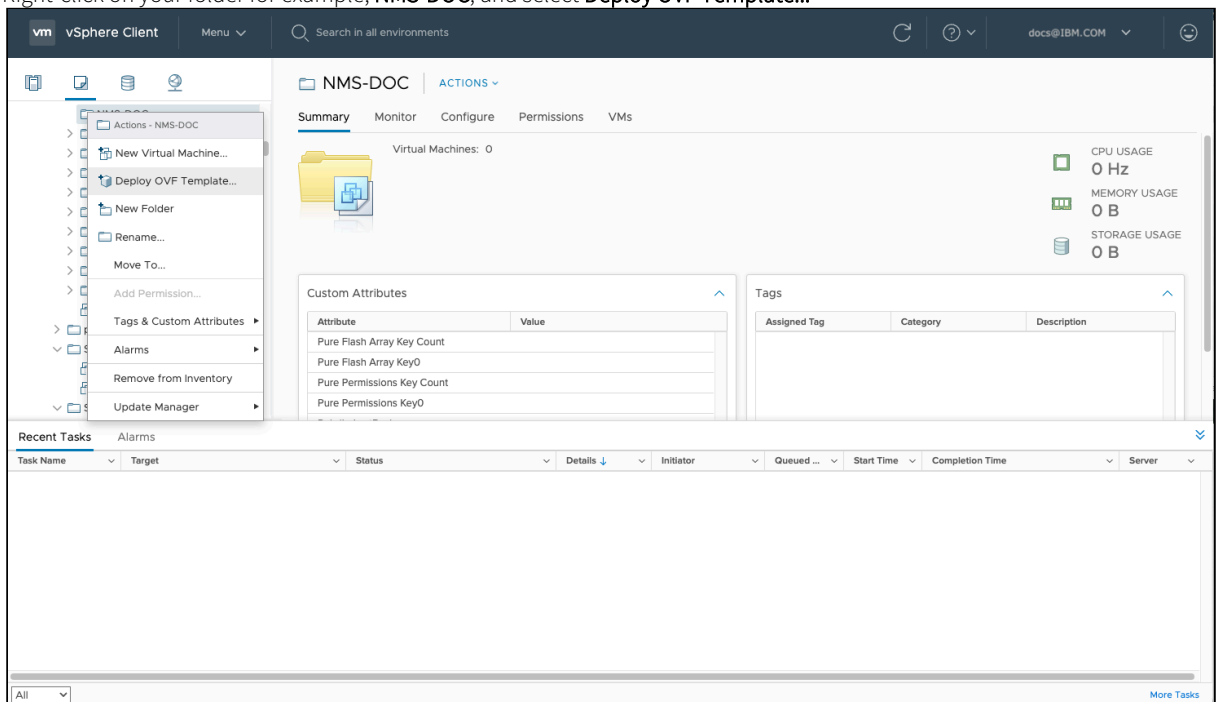
⚠ Your pages may vary from the screenshots in the steps below.



2. Login to your VMware vSphere Client to display the vSphere Client.



3. Right-click on your folder for example, **NMS-DOC**, and select **Deploy OVF Template...**



4. Enter the **URL** or the browse for your **Local file** (.ova file saved locally).

Deploy OVF Template

- 1 Select an OVF template**
- 2 Select a name and folder
- 3 Select a compute resource
- 4 Review details
- 5 Select storage
- 6 Ready to complete

Select an OVF template
Select an OVF template from remote URL or local file system

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

URL

`http://artifactory01.devops.sevone.com/app-image-staging/NMS/vPAS20K_CentOS/v6.5.0/vPAS20K_CentOS_v6.5.0.ova`

Local file

No file chosen

5. Click **NEXT**.
6. Enter the **Virtual machine name** you want to create. For example, `vPAS20K_CentOS_v6.5.0`, and choose the location where you want to create your virtual machine. For example, `NMS-DOC`.

Deploy OVF Template

- ✓ **1 Select an OVF template**
- 2 Select a name and folder**
- 3 Select a compute resource
- 4 Review details
- 5 Select storage
- 6 Ready to complete

Select a name and folder
Specify a unique name and target location

Virtual machine name: `vPAS20K_CentOS_v6.5.0`

Select a location for the virtual machine.

- > NMS-DOC
- > SDI-DOC
- > Smoketest
- > Templates

7. Click **NEXT**.

8. Select the destination compute resource. For example, **QA**.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- 3 Select a compute resource
- 4 Review details
- 5 Select storage
- 6 Ready to complete

Select a compute resource
Select the destination compute resource for this operation

- ▼ Newark
 - > DevOps-IT
 - > Engineering
 - > GSA
 - > QA
 - > Support

Compatibility

✓ Compatibility checks succeeded.

CANCEL
BACK
NEXT

9. Click **NEXT**.
10. Review the template details and click **NEXT**.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- 4 Review details
- 5 Select storage
- 6 Select networks
- 7 Ready to complete

Review details
Verify the template details.

Publisher	No certificate present
Download size	12.9 GB
Size on disk	19.1 GB (thin provisioned)
	600.0 GB (thick provisioned)

CANCEL
BACK
NEXT

11. Select the storage for the configuration and disk files.
 - a. From **Select virtual disk format** drop-down, choose **Thin Provision**. This is only an example.

i Each virtual machine must have the ability to grow up. Please make sure the virtual disk format for your virtual machine can accommodate the necessary requirement. Please refer to section [Hardware Requirements](#).

b. Select the storage. For example, **QA-Pure**.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- 5 Select storage
- 6 Select networks
- 7 Ready to complete

Select storage
Select the storage for the configuration and disk files

Select virtual disk format: Thin Provision

VM Storage Policy: ⚠

Disable Storage DRS for this virtual machine

Name	Capacity	Provisioned	Free	Type	Cluster
QA-Overflow	27 TB	21.81 TB	5.19 TB		
QA-Pure	109.99 TB	60.73 TB	49.27 TB		
QA-Unity	9 TB	4.03 TB	4.97 TB		
ISOs	38.04 TB	2.2 TB	37.01 TB	NFS v3	

Compatibility

✓ Compatibility checks succeeded.

CANCEL
BACK
NEXT

12. Click **NEXT**.

13. For the Source Network, select the **Destination Network**. For example, **dev-dhcp-VL2808**.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 Select storage
- 6 Select networks
- 7 Ready to complete

Select networks
Select a destination network for each source network.

Source Network	Destination Network
VM Network	dev-dhcp-VL2808

1 items

IP Allocation Settings

IP allocation: Static - Manual

IP protocol: IPv4

CANCEL
BACK
NEXT

14. Click **NEXT**.

15. You are now ready to create your Virtual Machine. Check the details and click **FINISH**.

Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 Select storage
- ✓ 6 Select networks
- 7 Ready to complete

Ready to complete
Click Finish to start creation.

Provisioning type	Deploy OVF From Remote URL
Name	vPAS20K_CentOS_v6.5.0
Template name	vPAS20K_CentOS_v6.5.0
Download size	12.6 GB
Size on disk	18.8 GB
Folder	NMS-DOC
Resource	QA
Storage mapping	1
All disks	Datastore: QA-Pure; Format: Thin provision
Network mapping	1
VM Network	dev-dhcp-VL2808
IP allocation settings	
IP protocol	IPV4
IP allocation	Static - Manual

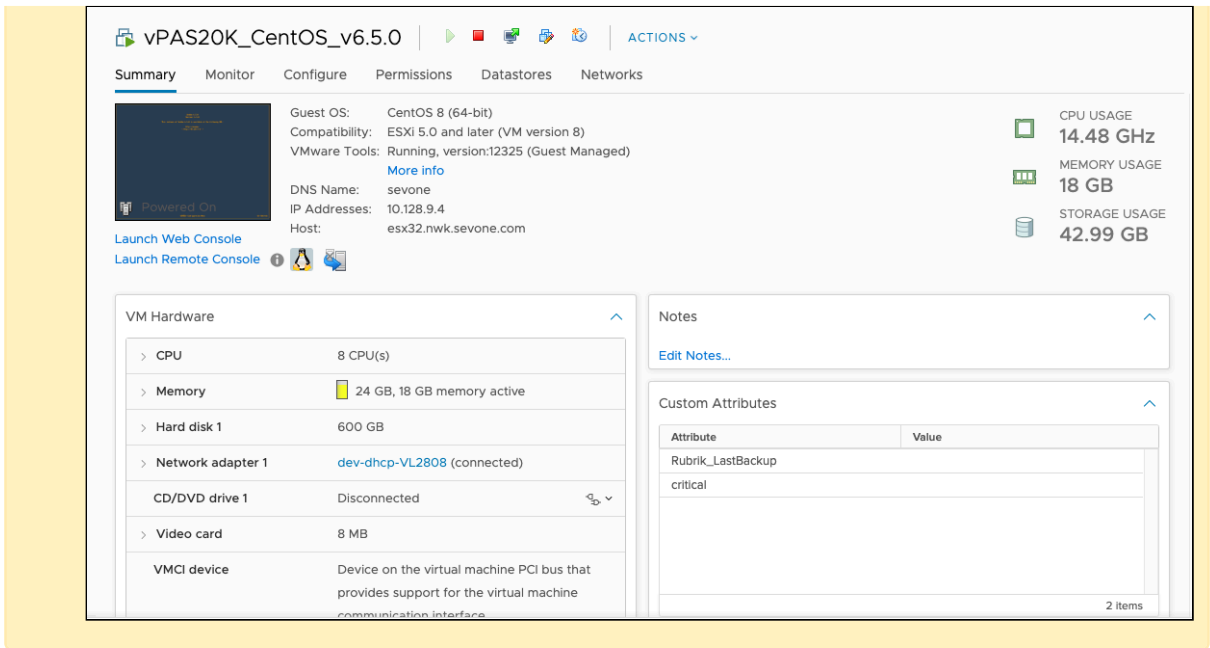
CANCEL
BACK
FINISH

This will take several minutes.

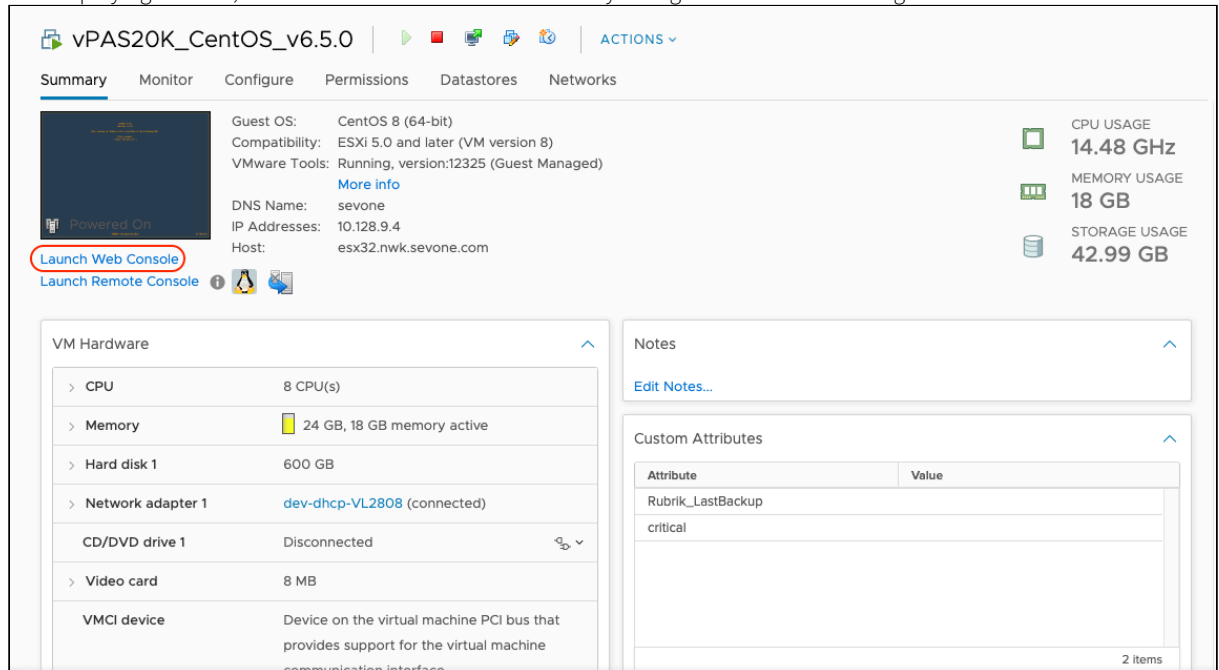
16. You are now ready to power on your Virtual Machine. From **ACTIONS** drop-down, select **Power > Power On**.

The screenshot shows the vSphere Client interface. The selected VM is **vPAS20K_CentOS_v6.5.0**, which is currently **Powered Off**. The **ACTIONS** dropdown menu is open, and the **Power > Power On** option is highlighted. The VM hardware summary shows 8 CPU(s), 24 GB memory, and a 600 GB hard disk. The **Recent Tasks** pane at the bottom shows two completed tasks: 'Deploy OVF template' and 'Import OVF package'.

This will take a few minutes. An IP address will be assigned to the Virtual Machine created.



17. After deploying the .ova, click **Launch Web Console** to manually configure the network settings.



Optional

Virtual Machine with DNS Name = **sevone** and IP Address = **10.128.9.4** has been created. You may change the name of your virtual machine by executing the following steps.

```
$ ssh sevone@<virtual machine IP address or hostname>
$ sudo hostnamectl set-hostname "<enter hostname>"
```

```
$ ssh sevone@10.128.9.4  
$ sudo hostnamectl set-hostname "pandora-01"
```

After resetting the hostname, *log out* and *log back in* for it to take effect.

18. Please refer to [OS-level User Names and Passwords](#) section to change the **admin**, **root**, and **support** user *default* passwords.
19. Please proceed to configure your network settings via [configshell](#).

5 KVM Implementation

Each KVM implementation varies dependent upon your environment. The following workflow reflects an Openstack implementation. The typical implementation is to set up a private, internal network for the Openstack instances to use for communication. This private network is made available to the public network via NAT. You apply a floating IP address from the public network to the instance's main interface in the private network. Users connect to the floating IP address via their regular network. SevOne instances (each virtual appliance you peer into the cluster) is peered to one another via the private IP address. The private IP address must be reachable (i.e., in the same Neutron network, or otherwise routable). Otherwise, you should use floating IP addresses from the public network to establish peering. Metadata service is not supported.

The KVM image file has a QCOW2 file extension. QCOW2 is a file format for disk image files used by QEMU, a hosted virtual machine monitor. It stands for QEMU Copy On Write and uses a disk storage optimization strategy that delays allocation of storage until it is actually needed. You followed the steps earlier in this document to download the QCOW2 image.

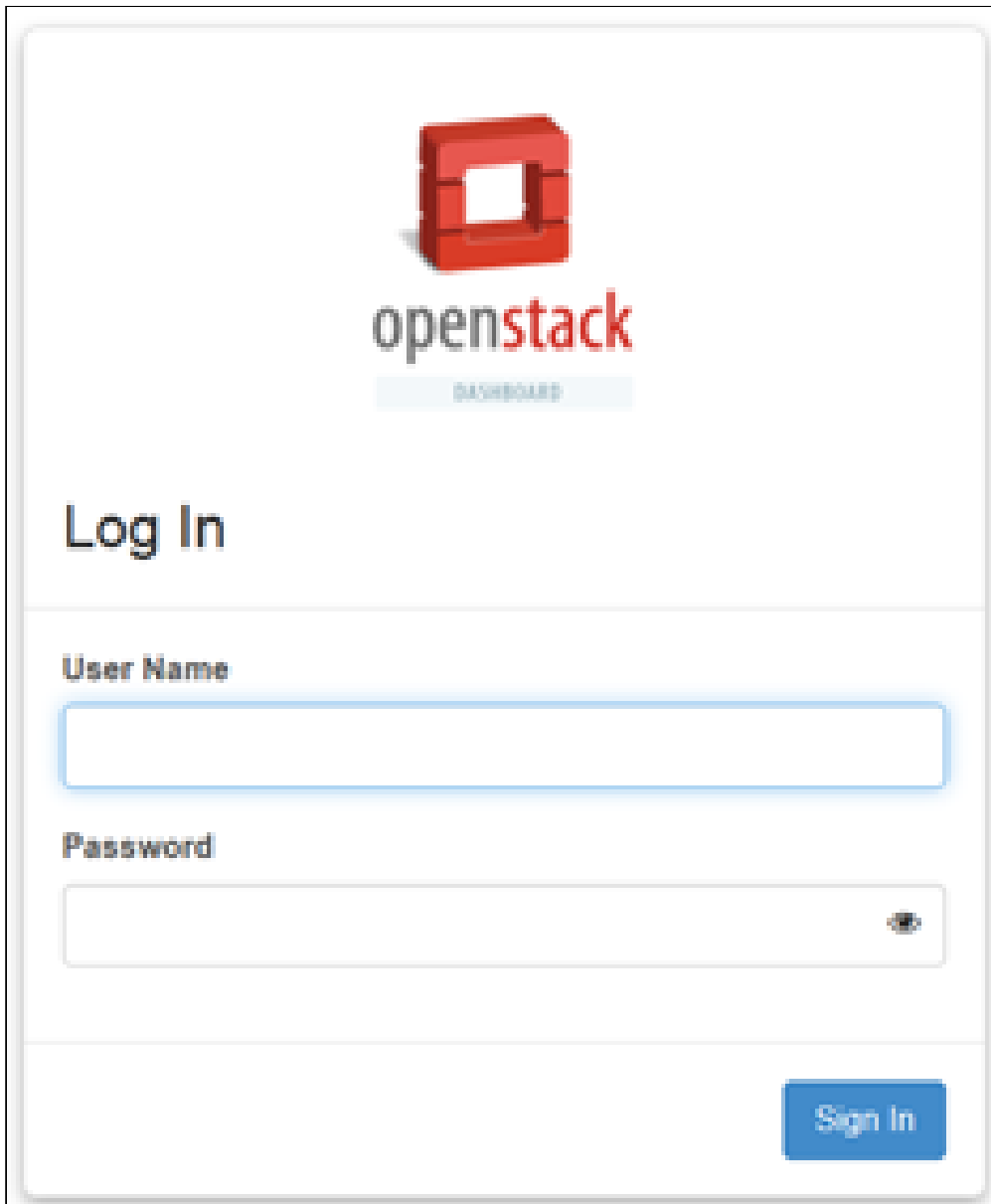
5.1 Openstack Installation

Perform the following steps to incorporate the SevOne image via Openstack.

Get image into Openstack

```
$ glance image-create --name "SevOne Image" --is-public true --disk-format qcow2 \  
  --container-format bare \  
  --file SevOne.qcow2
```

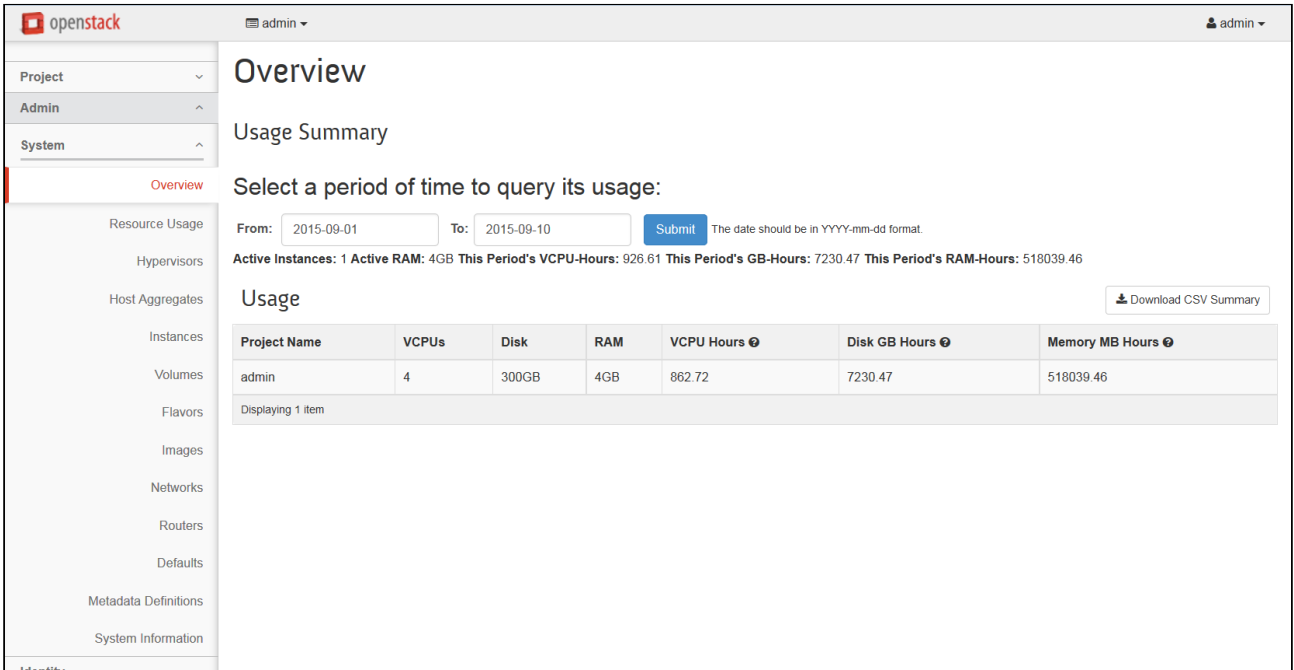
Log on to Openstack. If you do not have the Openstack GUI or you prefer to use command line Openstack, see the end of this section for command line instructions.



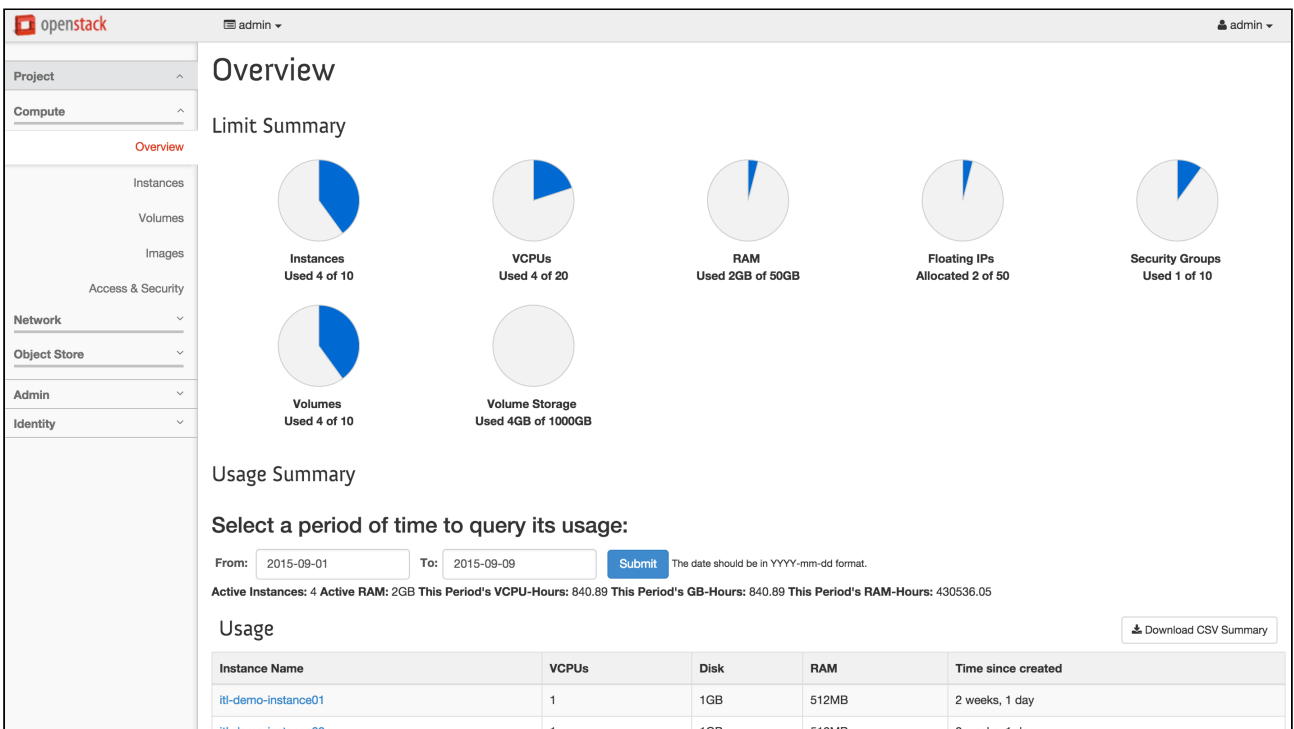
The image shows the OpenStack Dashboard login interface. At the top center is the OpenStack logo, which consists of a red 3D cube with a white square in the center, and the text 'openstack' in a sans-serif font below it. Underneath the logo is a light blue button labeled 'DASHBOARD'. Below this is a large heading 'Log In'. The form contains two input fields: 'User Name' and 'Password'. The 'User Name' field is a simple text box. The 'Password' field is a text box with a small eye icon on the right side to toggle visibility. At the bottom right of the form is a blue button labeled 'Sign In'.

1. In the **Username** field, enter your Openstack user name.
2. In the **Password** field, enter your Openstack password.
3. Click **Sign In**.

The Overview page appears with the System - Overview tab displayed.



In the left menu, click **Project**, then select **Compute**, and then select **Overview** to display the statistics that enables you to determine if you have enough space for the virtual appliance. For details, please refer to section [Hardware Requirements](#).



After you confirm that there are enough resources to install the virtual appliance, perform the following steps to create a flavor.

1. In the left menu select **System** then select **Flavors**.

The screenshot shows the OpenStack dashboard interface. The left-hand navigation menu is expanded to the 'System' section, where 'Flavors' is highlighted in red. The main content area is titled 'Flavors' and contains a table listing various flavor configurations. At the top right of the table area, there is a search filter, a '+ Create Flavor' button, and a 'Delete Flavors' button. The table has the following data:

<input type="checkbox"/>	Flavor Name	VCPUs	RAM	Root Disk	Ephemeral Disk	Swap Disk	ID	Public	Metadata	Actions
<input type="checkbox"/>	m1.tiny	1	512MB	1GB	0GB	0MB	1	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.small	1	2GB	20GB	0GB	0MB	2	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.medium	2	4GB	40GB	0GB	0MB	3	Yes	No	Edit Flavor
<input type="checkbox"/>	SevOne 5K	4	4GB	150GB	150GB	4MB	004cccc9-a262-47fe-981d-411372ce8666	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.large	4	8GB	80GB	0GB	0MB	4	Yes	No	Edit Flavor
<input type="checkbox"/>	m1.xlarge	8	16GB	160GB	0GB	0MB	5	Yes	No	Edit Flavor

Below the table, it says 'Displaying 6 items'.

2. Click **Create Flavor**.

Create Flavor ✕

Flavor Information *

Flavor Access

Name *

Flavors define the sizes for RAM, disk, number of cores, and other resources and can be selected when users deploy instances.

ID

VCPUs *

RAM (MB) *

Root Disk (GB) *

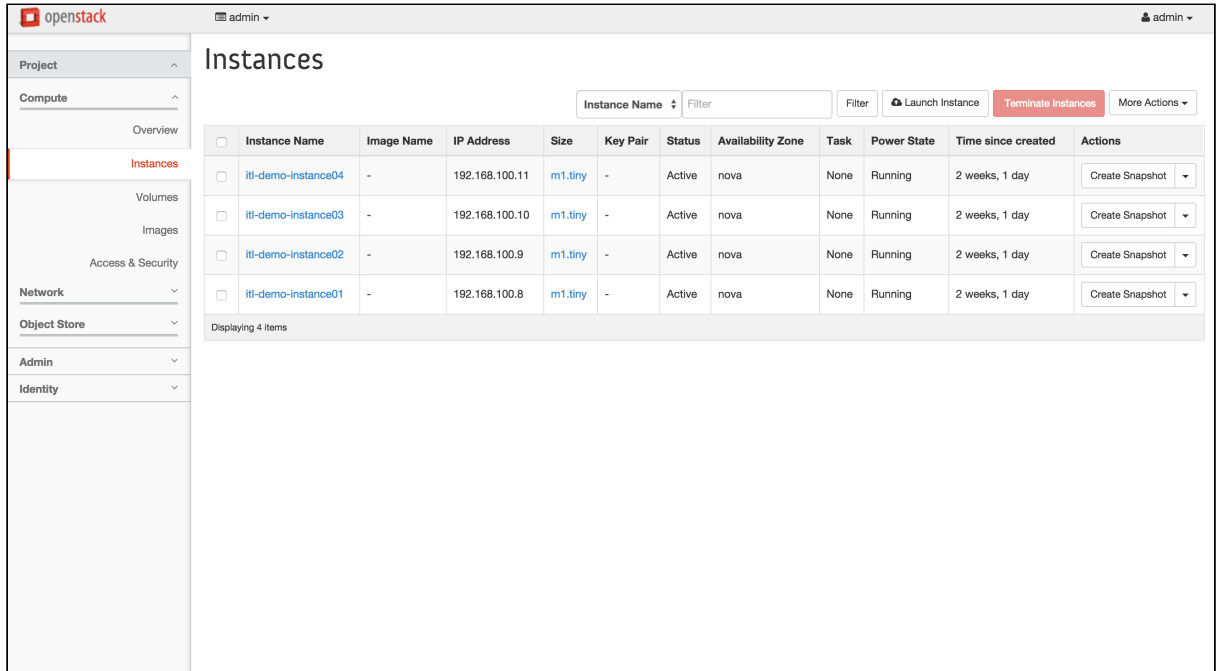
Ephemeral Disk (GB) *

Swap Disk (MB) *

3. In the **Name** field, enter the name of the flavor.
4. In the **ID** field, enter the flavor identifier.
5. In the **VCPUs** field, enter the number of virtual CPUs. This is equal to the number of CPUs plus the number of cores listed in the requirements.
6. In the **RAM** field, enter the amount of RAM.
7. In the **Root Disk** field, enter the amount of space to allocate on the root disk.
8. In the **Ephemeral Disk** field, enter the amount of space to allocate on the ephemeral disk.
9. In the **Swap Disk** field, enter the amount of space to allocate on the swap disk.
10. Click **Create Flavor** to return to the Flavors page with the new flavor displayed in the list.

Perform the following steps to launch the instance for the virtual appliance.

1. In the left menu, select **Compute** then select **Instances** to display the Instances page that displays the status of your instances.



2. Click **Launch Instance** to display the Launch Instance page, Details tab, Advanced Options that enable you to define the details to launch an instance.

Launch Instance ✕

Project & User *
Details *
Access & Security
Networking *
Post-Creation

[Advanced Options](#)

Availability Zone

nova

Instance Name *

SevOne 5K

Flavor * ?

SevOne 5K

Instance Count * ?

1

Instance Boot Source * ?

Boot from image (creates a new volume)

Image Name *

SevOne KVM Image (12.7 MB)

Device size (GB) * ?

150

Delete on Terminate ?

Specify the details for launching an instance.

The chart below shows the resources used by this project in relation to the project's quotas.

Flavor Details

Name	SevOne 5K
VCPUs	4
Root Disk	150 GB
Ephemeral Disk	150 GB
Total Disk	300 GB
RAM	4,096 MB

Project Limits

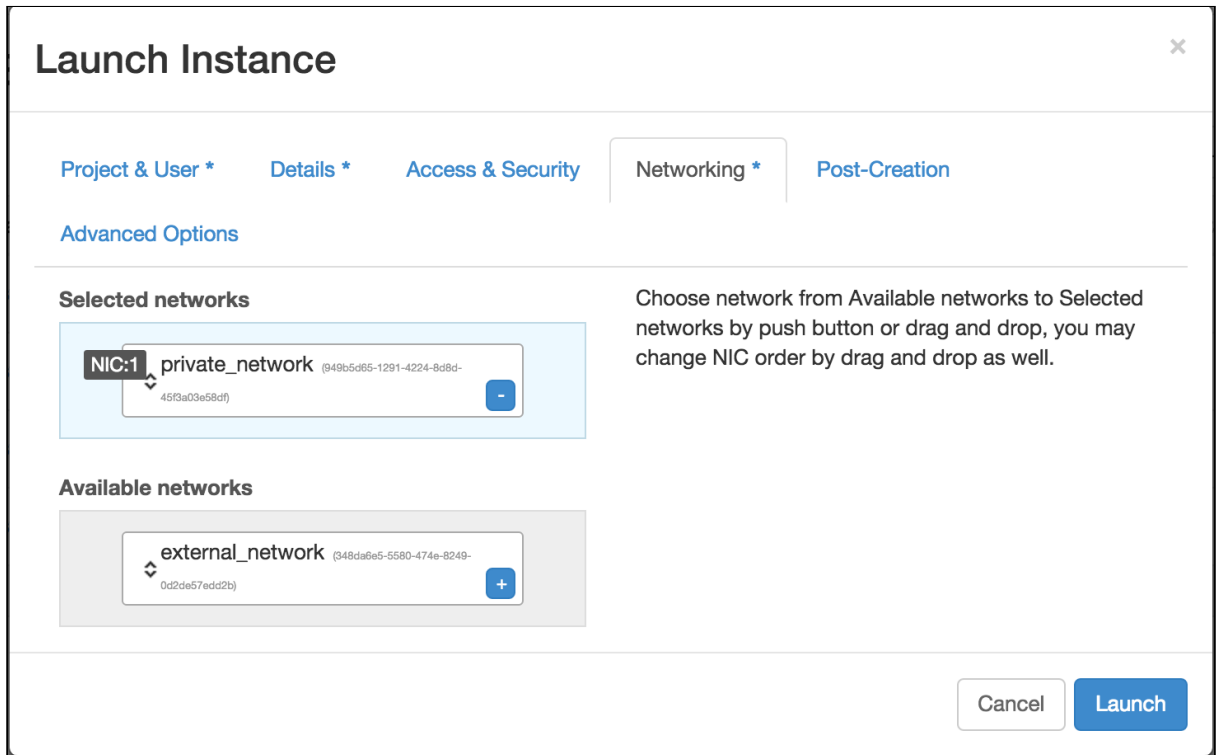
Number of Instances 4 of 10 Used

Number of VCPUs 4 of 20 Used

Total RAM 2,048 of 51,200 MB Used

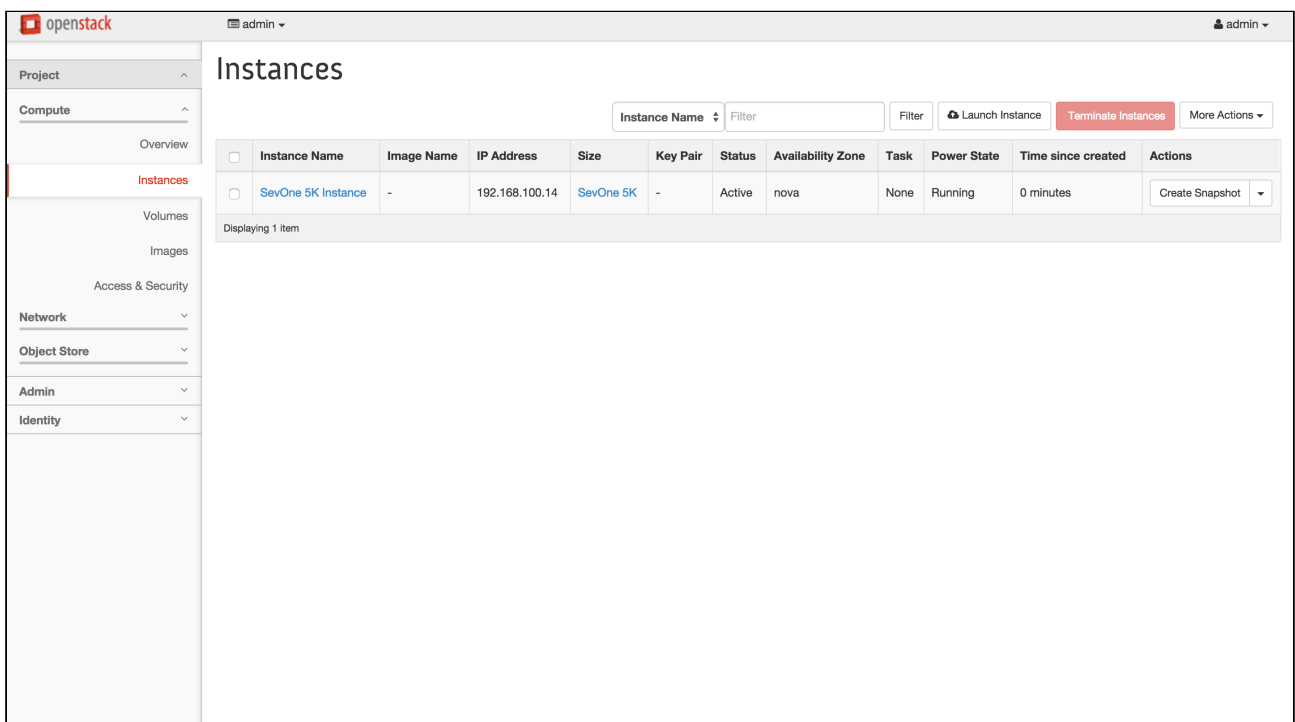
Cancel Launch

3. Click the **Availability Zone** drop-down and select an availability zone.
4. In the **Instance Name** field, enter the instance name.
5. Click the **Flavor** drop-down and select the flavor you created in the previous section.
6. In the **Instance Count** field, enter the instance count.
7. Click the **Instance Boot Source** drop-down and select **Boot From Image (Creates New Volume)**.
8. Click the **Image Name** drop-down and select the image name.
9. In the **Device Size** field, enter the size of the device.
10. Click Launch to display the Launch Instance page Networking tab.

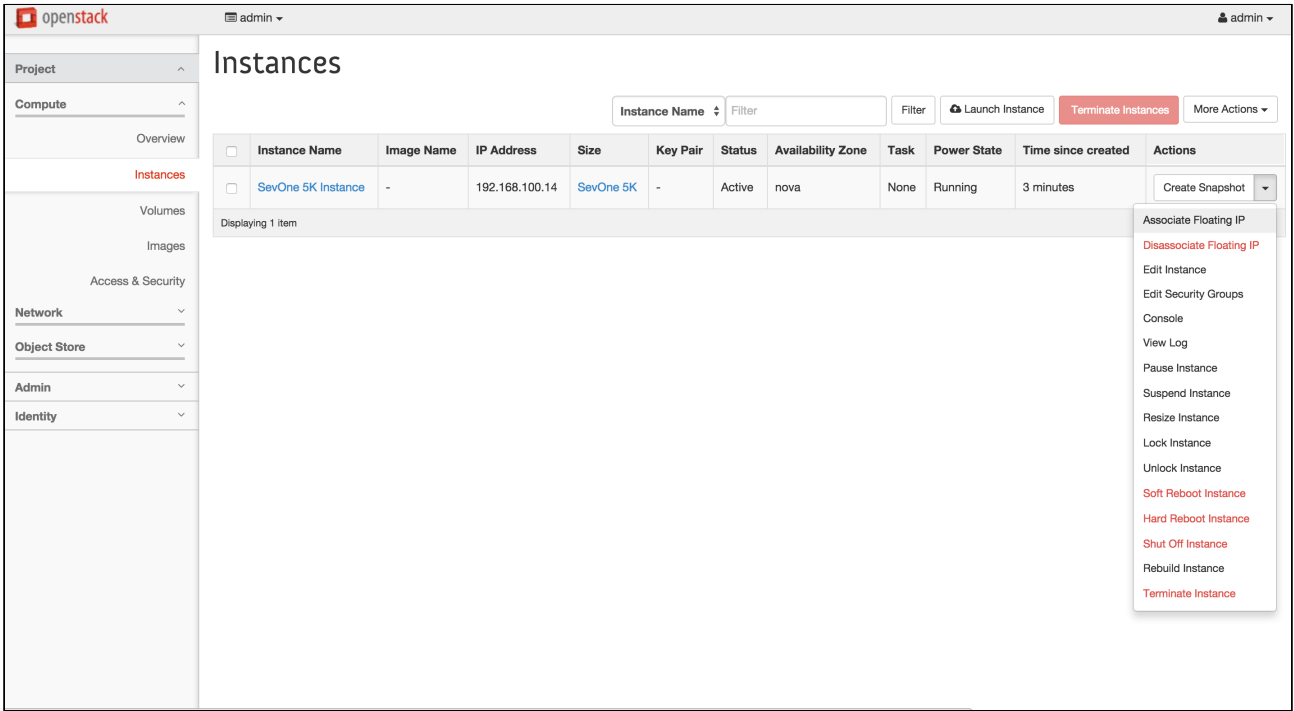


11. In the **Available Networks** section, click the **+** next to **Private Network** to move the Private Network to the **Selected Networks** field.
12. Click **Launch** to return to the Instances page and to add the new instance to the Instances list.

The Instances list now displays your instance.



Perform the following steps to associate a floating IP address to the instance.



1. Click the **Create Snapshot** drop-down and select **Associate Floating IP** to display the **Allocate Floating IP** page.

Manage Floating IP Associations ✕

IP Address *

IP Address *

172.21.40.214

+

Select the IP address you wish to associate with the selected instance or port.

Port to be associated *

SevOne 5K Instance: 192.168.100.14

Cancel

Associate

2. Click the **IP Address** drop-down and select an IP address or click + next to the IP Address field to display the the Allocate Floating IP pop-up.

Allocate Floating IP ✕

Pool *

external_network
▼

Description:

Allocate a floating IP from a given floating IP pool.

Project Quotas

Floating IP (3) 47 Available

Cancel
Allocate IP

3. Click the **Port to be Associated** drop-down and select the instance for the virtual appliance.
4. Click **Associate**.

Instance Name	Image Name	IP Address	Size	Key Pair	Status	Availability Zone	Task	Power State	Time since created	Actions
SevOne 5K Instance	-	192.168.100.14 Floating IPs: 172.21.40.214	SevOne 5K	-	Active	nova	None	Running	6 minutes	Create Snapshot

Enter the following command to boot the SevOne KVM implemented appliance.

Boot SevOne KVM implemented appliance

```
$ qemu SevOne.qcow -boot c -net nic -net user -m 196 -localtime
```

5.2 Openstack / KVM Command Line Implementation

If you do not have the Openstack GUI or you prefer to install the virtual appliance via an **Openstack** command prompt, please execute the following command.

```
$ openstack server create --image <virtual appliance size>_CentOS_v6.<x.y>-kvm.qcow2 --flavor
<virtual appliance size> --security-group default --nic net-id=421d3d2d-4b29-4a43-89fa-4717f506fcb3
<virtual appliance size>_CentOS_v6.<x.y>-kvm-qcow2-test
```

Example: for vPAS 20K virtual appliance

```
$ openstack server create --image vPAS20K_CentOS_v6.<x.y>-kvm.qcow2 --flavor vPAS20K --security-group
default --nic net-id=421d3d2d-4b29-4a43-89fa-4717f506fcb3 vPAS20K_CentOS_v6.<x.y>-kvm-qcow2-test
```

if x=3 and y=0, version is for SevOne NMS 6.3.0 release.

Alternatively, you can use the following command from the **KVM** command prompt.

```
$ virt-install \
-n <virtual appliance size> \
--description "<description>" \
--os-type=Linux \
--os-variant=virtio26 \
--ram=4096 \
--vcpus=4 \
--disk path=/var/lib/libvirt/images/NAME-OF-SEVONE-IMAGE.qcow2,bus=virtio,size=600 \
--graphics none \
--network bridge:br0
```

Example: for vPAS 20K virtual appliance

```
$ virt-install \
-n sevone-vpas-20k \
--description "SevOne vPAS 20K" \
--os-type=Linux \
--os-variant=virtio26 \
--ram=4096 \
--vcpus=4 \
--disk path=/var/lib/libvirt/images/NAME-OF-SEVONE-IMAGE.qcow2,bus=virtio,size=600 \
--graphics none \
--network bridge:br0
```

where,

- **n** - name of your Virtual Machine.
- **description** - some valid description about your Virtual Machine.
- **os-type** - operating system type. For SevOne virtual appliances, use **Linux**.
- **os-variant** - distribution type for the above **os-type**. For SevOne virtual appliances, use **virtio26**.
- **ram** - memory for the Virtual Machine in MB. For details, please refer to section [Hardware Requirements](#).
- **vcpu** - total number of virtual CPUs for the Virtual Machine. For details, please refer to section [Hardware Requirements](#).
- **disk path** - path where the SevOne virtual appliance image files are stored. For example, **/var/lib/libvirt/images/NAME-OF-SEVONE-IMAGE.qcow2,bus=virtio,size=600**. The size is in GB. In this example, the image file is 600GB.

- **graphics** - this instructs **virt-install** to use a text console on the Virtual Machine serial port instead of graphical VNC window. If you have the **xmanager** set up, then you can ignore this parameter.
- **network** - SevOne Virtual Machine uses bridged adapter **br0**. For example, **bridge:br0**.

5.3 KVM Drive Configuration

It is assumed that the SAN volume space has been created (blank) and attached to the KVM image in Openstack (or other management system). Additionally, it is assumed that the volume is attached as **/dev/vdb**. If the attachment differs from this, please use the correct path for your environment.

⚠ Prior to deployment, determine the size of the hard drive required based on the virtual appliance you are deploying. For details, please refer to section [Hardware Requirements](#).

For **Data Volume Configuration**, perform the steps below.

Format the volume for xfs

```
$ mkfs.xfs /dev/vdb
```

Create the mount directory

```
$ mkdir -p /mnt/data_volume
```

Add the entry to fstab

Using a text editor of your choice, manually add the following entry to fstab to avoid formatting issues.

```
$ sed -i '$ a /dev/vdb /mnt/data_volume xfs defaults 1 2' /etc/fstab
```

Mount using the updated fstab entry

```
$ mount -a
```

Shutdown both MySQL instances (data and config) and stop SevOne daemons

The following is a precautionary step.

```
$ supervisorctl stop mysqld mysqld2 SevOne-netflowd SevOne-polld
```

Move existing data directories to newly mounted volume

```
$ mv /data /mnt/data_volume  
$ mv /data2 /mnt/data_volume
```

Add symlink to the new locations

```
$ ln -s /mnt/data_volume/data /data  
$ ln -s /mnt/data_volume/data2 /data2  
$ ln -s /mnt/data_volume/data/index /index
```

Change file permissions to MySQL user

```
$ chown -R mysql:mysql /data /data2 /mnt/data_volume
```

Start SevOne daemons and both MySQL instances (data and config)

The following is a precautionary step.

```
$ supervisorctl start mysqld mysqld2 SevOne-netflowd SevOne-polld
```

Fill the ballasts (to prevent checkout errors)

```
$ for directory in system index data; do SevOne-ballast fill-all $directory; done
```

5.4 SevOne Appliance Configuration

Please refer to *SevOne NMS Appliance Configuration Guide* for details on how to set the correct application configuration for the customer's license type and count.

6 Deploy a Virtual Appliance Using a VHD on Azure

For steps to deploy a virtual appliance using a .vhd file on Microsoft Azure, see Microsoft's documentation at <https://docs.microsoft.com/en-us/azure/virtual-machines/linux/create-upload-centos>.

7 Network Configuration Via the Config Shell for VMware, KVM, and Azure Implementations

Use the **configshell** to configure your network settings. For a KVM implementation, many of the config shell settings have already been entered. To access the config shell from a command prompt, enter the following command.

```
$ configshell
```

To configure your SevOne appliance, you will need the following information.

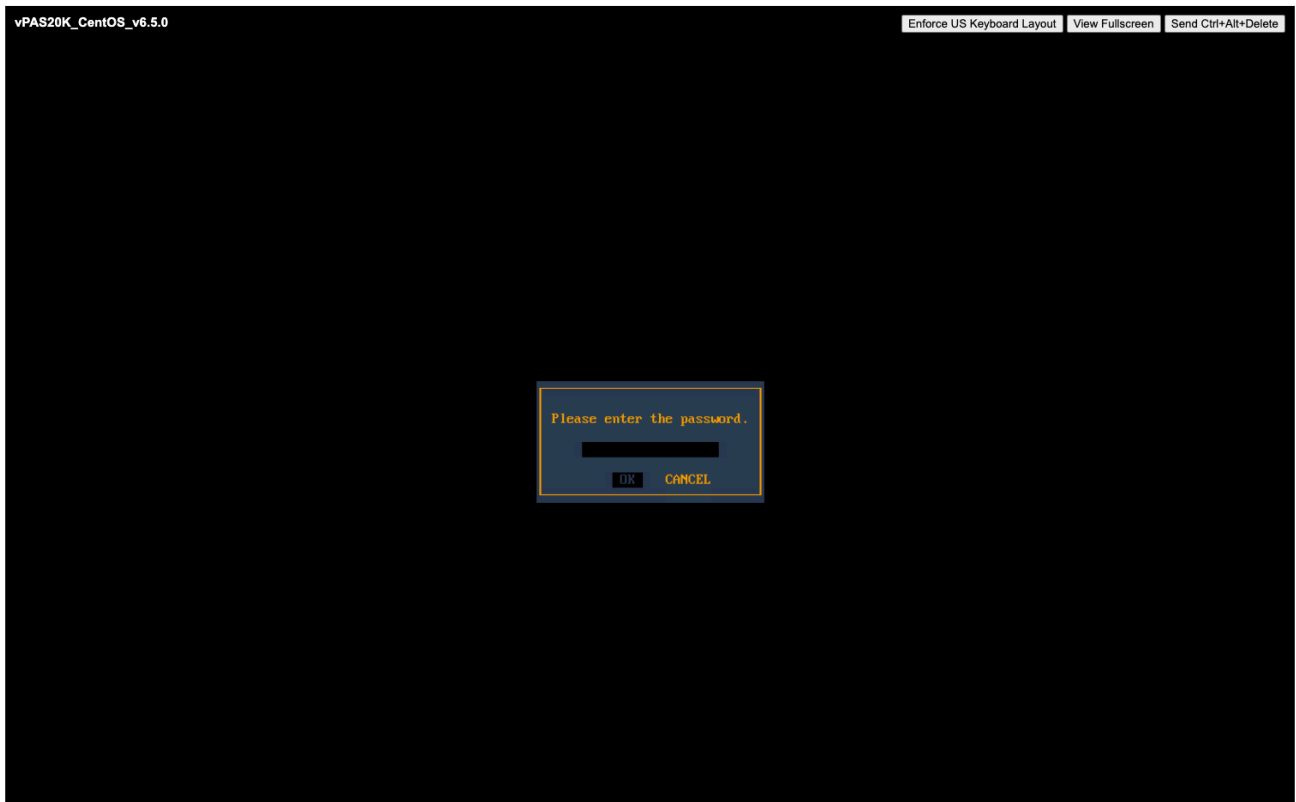
- System Name (Host Name)
- Host IP address and sub-netmask
- Broadcast address
- Default Gateway IP address
- DNS primary & secondary IP address
- NTP (Time Server) IP address
- SNMP Settings
- Domain Name

```
SevOne 6.5.8
Version: 6.5.8

This instance of SevOne 6.5.8 is available at the following URL:
http://sevone/
( http://10.128.9.4/ )

<ENTER> Configuration Menu          <R> Refresh
```

On the first page, press **Enter** to display the logon page that controls access to the Configuration Menu.

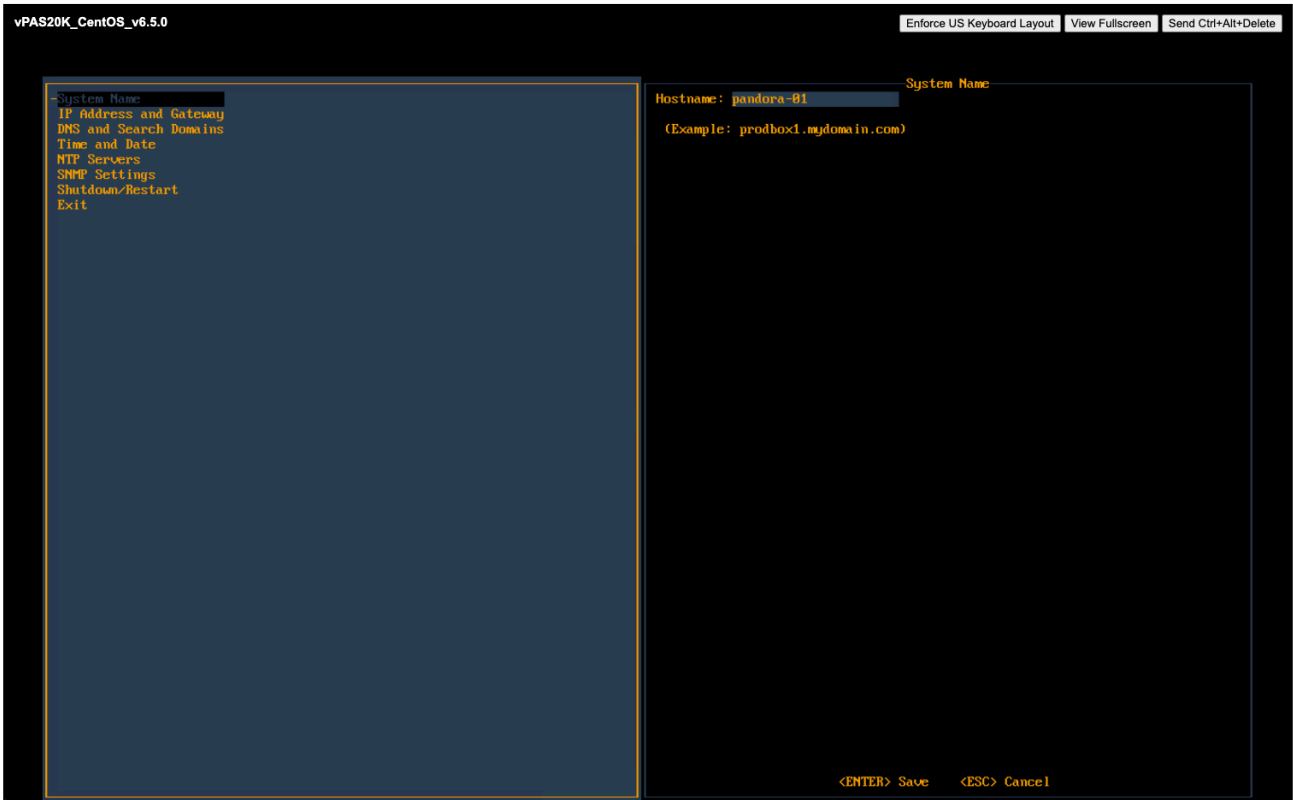


1. Enter the default password, **supportuser**.

i When you log in here for the first time, you are logging as the user **support**. Steps for changing the default password for the **support** user are in the [OS-level User Names and Passwords](#) section. It is important that you change the default password.
Failure to change the default password presents a significant security risk.

2. Press **Enter** to display the system configuration menu.

Press the down arrow to select **System Name** in the left menu and press **Enter** to display the System Name fields on the right.



1. In the **Hostname** field, enter the hostname for the SevOne appliance.
2. Press **Enter** to save the System Name settings and return the focus to the menu on the left.

Press the down arrow to select **IP Address and Gateway** and press **Enter** to display the IP address and gateway fields on the right.



If your network uses DHCP type **Y** to disable the following fields and skip the IP Address and Gateway steps. If your network does not use DHCP, type **N** and complete the following fields.

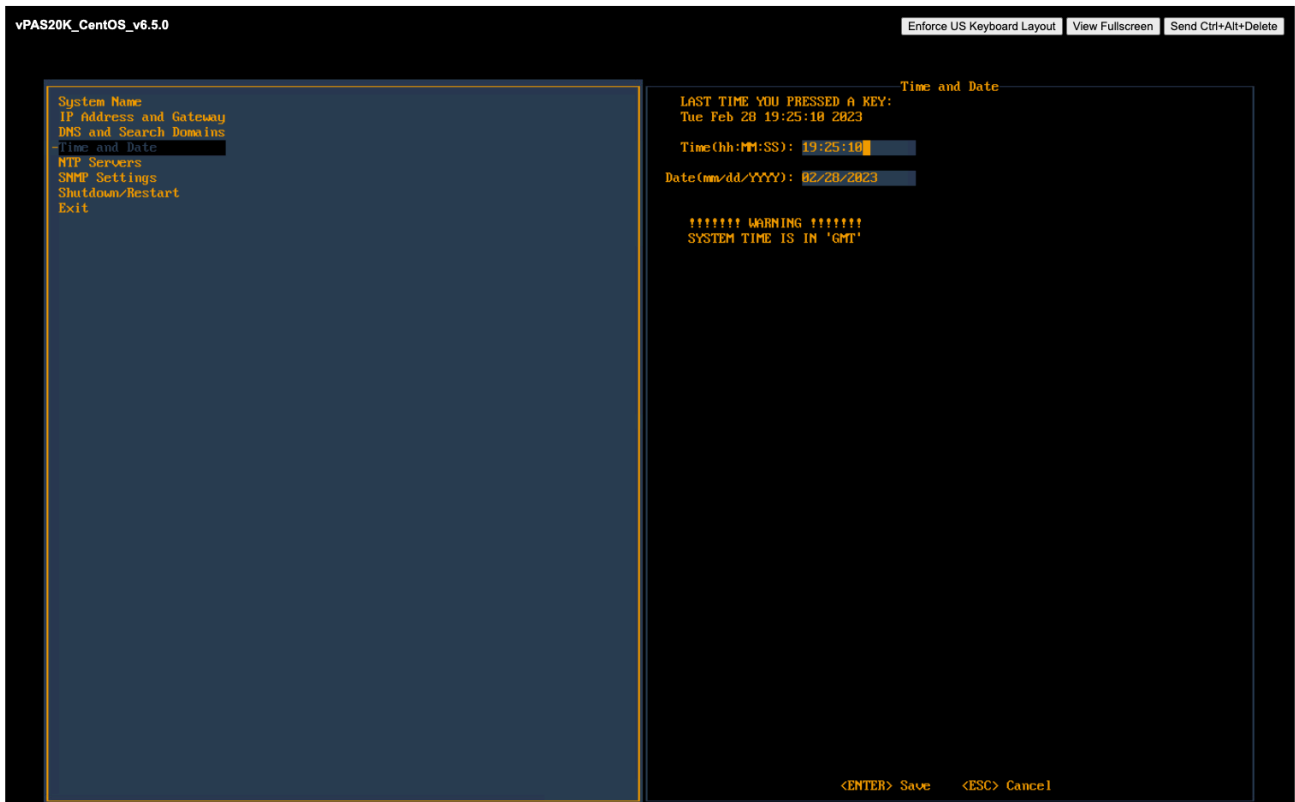
1. In the **IP Address** field, enter IP address of the SevOne appliance and press **Tab**.
2. In the **Netmask** field, enter the netmask of the SevOne appliance and press **Tab**.
3. In the **Gateway** field, enter the IP address of the SevOne appliance and press **Tab**.
4. In the **Broadcast** (*optional*) field, enter the SevOne appliance broadcast IP address.
5. Press **Enter** to save the IP Address and Gateway settings and return the focus to the menu on the left.

Press the down arrow to select **DNS and Search Domains** and press **Enter** to display the DNS and Search Domains fields on the right.



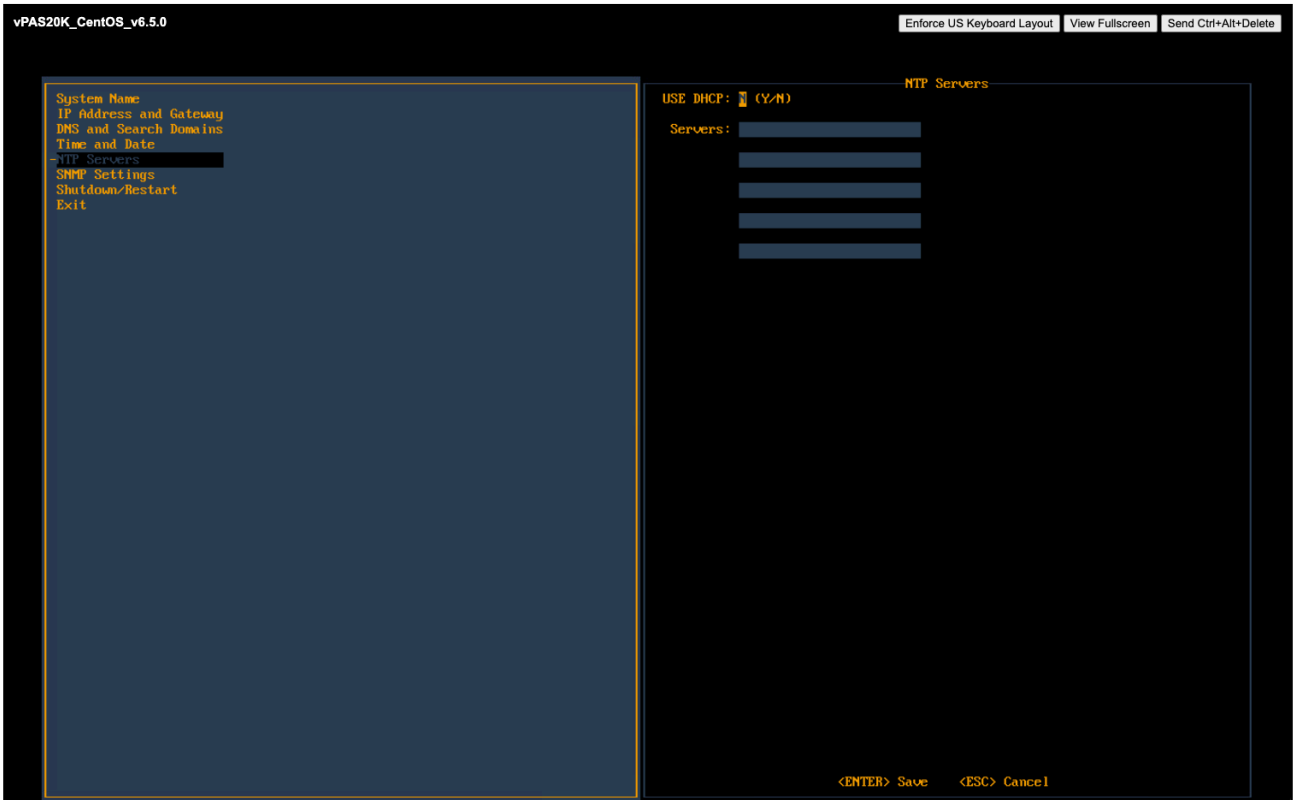
1. In the **Primary DNS** field, enter the IP address of the DNS server for the SevOne appliance to use first and press **Tab**.
2. In the **Secondary DNS** field, enter the IP address for the SevOne appliance to use second, if applicable and press **Tab**.
3. In the **Tertiary DNS** field, enter the IP address of the DNS server for the SevOne appliance to use third, if applicable and press **Tab**.
4. In the **Search Domains** field, enter the domain names or IP addresses for the search domains for the SevOne appliance to use (separated by a space).
5. Press **Enter** to save your DNS and Search Domains settings and return the focus to the menu on the left.

Press the down arrow to select **Time and Date** and press **Enter** to display the Time and Date fields on the right.



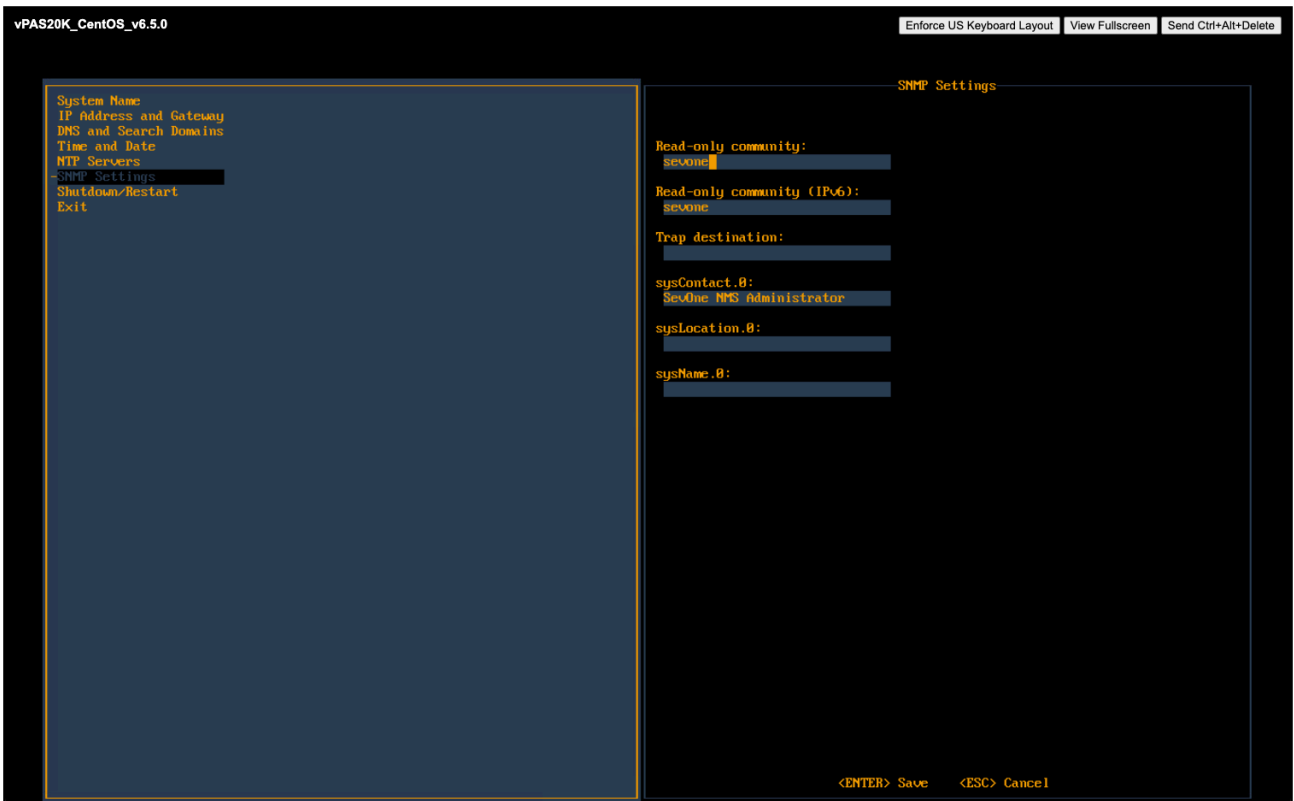
1. Confirm that the time and date are correct for Greenwich Mean Time (GMT) (a.k.a. Coordinated Universal Time (UTC)). This is SevOne NMS system time. You define time and date settings for users, devices, and reports via the SevOne NMS graphical user interface in a later step.
2. If needed, enter the time and date using the appropriate format in the fields provided.
3. Press **Enter** to save the Time and Date settings and to return the focus to the menu on the left.

Press the down arrow to select **NTP Servers** and press **Enter** to display the NTP Servers fields on the right.



1. In the **Servers** field, enter the DNS name or IP address of the time server for the SevOne appliance to use to maintain time settings.
2. Press **Enter** to save the NTP Servers settings and to return the focus to the menu on the left.

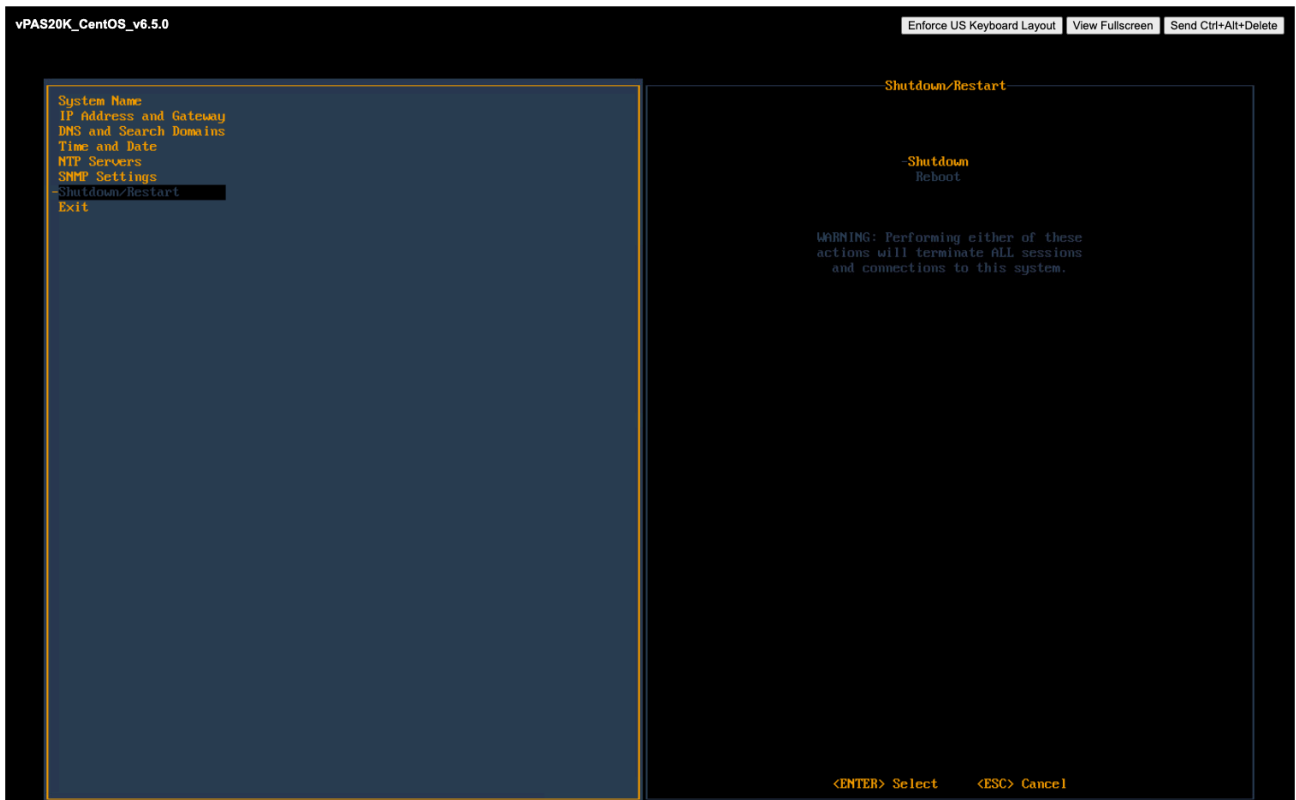
Press the down arrow to select **SNMP Settings** and press **Enter** to display the SNMP Settings fields on the right.



1. In the **Read Only Community** field, enter the SNMP read community string for other devices to use to poll SNMP data on the SevOne appliance when communicating via IPv4 and press **Tab**.
2. In the **Read Only Community (IPv6)** field, enter the SNMP read community string for other devices to use to poll SNMP data on the SevOne appliance when communicating via IPv6 and press **Tab**.
3. In the **Trap Destination** field, enter the IP address or hostname of the destination where traps the SevOne appliance generates are to be sent and press **Tab**.
4. In the **sysContact.0** field, enter the text you get when you SNMP walk the sysContact OID and press **Tab**.
5. In the **sysLocation.0** field, enter the text you get when you SNMP walk the sysLocation OID and press **Tab**.
6. In the **sysName.0** field, enter the text you get when you SNMP walk the sysName OID.
7. Press **Enter** to save the SNMP Servers settings and to return the focus to the menu on the left.

If you changed the System Name settings or the IP Address and Gateway settings, press the down arrow to select **Shutdown and Restart** and press **Enter** to display a Shutdown option and a Restart option on the right.

For all other configuration setting changes, you can press the down arrow to select **Exit**.



In the Shutdown/Restart section select an option and press **Enter** to shut down or reboot the SevOne appliance.

If you highlight **Exit**, when you press **Enter** the initial Configuration Menu Welcome page appears.



For details on advanced Network Configurations such as configuring Virtual IP (CentOS) or peer communication over NAT, please refer to *SevOne NMS Advanced Network Configuration Guide* for details.

8 OS-level User Names and Passwords

You will need to change the default passwords for the **admin**, **root**, and **support** user accounts. This is important for security reasons.

Failure to change the default passwords presents a significant security risk. This publication includes default passwords and this document has probably been made available to the public.

8.1 Change Admin Password

The **admin** user is not used by any SevOne utilities. It exists for administrators/customers. This password should be changed on all peers. Perform the following steps to change the password for **admin**.

1. SSH into your SevOne NMS appliance and log in as **admin**.
2. At the **Password** prompt, enter **adminuser**.

```
$ ssh admin@10.128.9.4
(admin@10.128.9.4) Password: <enter 'adminuser'>
(admin@10.128.9.4) You are required to change your password immediately (administrator
enforced)
Current password: <enter 'adminuser'>
(admin@10.128.9.4) New password: <enter new password>
(admin@10.128.9.4) Retype new password: <re-enter new password>
```

Example

```
$ ssh admin@10.128.9.4
(admin@10.128.9.4) Password: adminuser
(admin@10.128.9.4) You are required to change your password immediately (administrator
enforced)
Current password: adminuser
(admin@10.128.9.4) New password: te5ting123
(admin@10.128.9.4) Retype new password: te5ting123
```

3. You will be prompted and required to change the **admin** user password. Enter a new password when prompted.
4. Exit the session when you are done.

8.2 Change Root Password

i Change Root Password Before Peering

You must change the **root** password for new appliances when you SSH into the system. You will be prompted for the default password and will be required to change the password. This must be completed before incorporating the new peer into a cluster. Security concerns prevent incorporation of peers that use the default password.

SevOne NMS uses the **root** account for everything. This password should be changed on all peers. Perform the following steps to change the password for **root**.

1. SSH into your SevOne NMS appliance and log in as **root**.
2. At the **Password** prompt, enter **dRum&5853**.

```
$ ssh root@10.128.9.4
(root@10.128.9.4) Password: <enter 'dRum&5853'>
```

```
(root@10.128.9.4) You are required to change your password immediately (administrator
enforced)
Current password: <enter 'dRum&5853'>
(root@10.128.9.4) New password: <enter new password>
(root@10.128.9.4) Retype new password: <re-enter new password>
```

Example

```
$ ssh root@10.128.9.4
(root@10.128.9.4) Password: dRum&5853
(root@10.128.9.4) You are required to change your password immediately (administrator
enforced)
Current password: dRum&5853
(root@10.128.9.4) New password: te5ting123
(root@10.128.9.4) Retype new password: te5ting123
```

3. You will be prompted and required to change the **root** user password. Enter a new password when prompted.
4. Exit the session when you are done.

8.3 Change Support Password

The **support** user is used by configshell. Configshell does not store the password for this account anywhere. You will need the password you specify here when logging in to configshell. This password should be changed on all peers. Perform the following steps to change the password for **support**.

1. SSH into your SevOne NMS appliance and log in as **support**.
2. At the **Password** prompt, enter **supportuser**.

```
$ ssh support@10.128.9.4
(support@10.128.9.4) Password: <enter 'supportuser'>
(support@10.128.9.4) You are required to change your password immediately (administrator
enforced)
Current password: <enter 'supportuser'>
(support@10.128.9.4) New password: <enter new password>
(support@10.128.9.4) Retype new password: <re-enter new password>
```

Example

```
$ ssh support@10.128.9.4
(support@10.128.9.4) Password: supportuser
(support@10.128.9.4) You are required to change your password immediately (administrator
enforced)
Current password: supportuser
(support@10.128.9.4) New password: te5ting123
(support@10.128.9.4) Retype new password: te5ting123
```

3. You will be prompted and required to change the **support** user password. Enter a new password when prompted.
4. Exit the session when you are done.

⚠ Change IP Address, Configure Network Bonding

For details on how to change the IP address on a SevOne appliance or how to configure networking bonding, please refer to the respective sections in *SevOne NMS Advanced Network Configuration Guide*.

9 Enable Firewall

Firewall can be enabled / disabled at cluster-level or on a selected peer.

9.1 at Cluster-level

By default, firewall service is *disabled* for the cluster. Please refer to *SevOne NMS System Administration Guide* > section **Cluster Manager** > **Cluster Settings** tab > **Firewall** subtab for details.

9.2 at Peer-level

By default, **Override Cluster Settings** is disabled. To override cluster-level firewall settings with firewall settings at the selected peer-level, enable **Override Cluster Settings**. Once **Override Cluster Settings** field is enabled, field **Enable Firewall** becomes available. By default, **Enable Firewall** is disabled. Please refer to *SevOne NMS System Administration Guide* > section **Cluster Manager** > select a peer > click **Peer Settings** tab > **Firewall** subtab for details.

10 Shut Down and Reboot SevOne NMS

SevOne NMS can run for extended periods of time. Occasionally it is necessary to shut down or reboot an appliance. SevOne NMS stores data in cache and writes to the disk on a regular basis.

Use the configshell to shut down the software or the following shell commands back up the memory ring tables to the database on the disk to ensure that you do not lose data.

Shutdown SevOne NMS

```
$ SevOne-shutdown shutdown
```

Reboot SevOne NMS

```
$ SevOne-shutdown reboot
```