Setup Guide

USS-HA

Unified Storage and Server Hyperconverged Appliance

2x 2U HCI Controllers

12-bay 2U HA RAID Array

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Chapter-1: Introduction

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1.1 Introduction

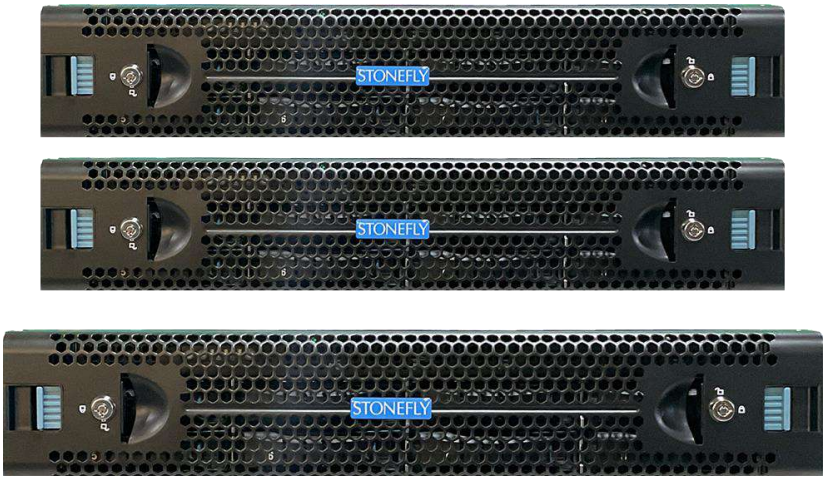
This document is aimed for system administrators who would like to know how to get started with StoneFly USS Appliance. It describes initial steps for launching the appliance.

The StoneFly USS is the ideal purpose-built hyperconverged infrastructure solution for enterprise virtual workloads which allows you to consolidate compute, storage, and networking into one easy to manage appliance.

This guide gives an overview of the product, rack mounting instructions and initial installation procedure. Information for using the features of the StoneFusion software is found in the Storage Concentrator User Guide.

- StoneFly Resource Library
- The StoneFly SCVM™ Webpage

Each StoneFly USS comes preconfigured with VMware vSphere or Microsoft Hyper-V hypervisor, a StoneFly SCVM™ Virtual Storage Controller, and an Enterprise Backup Engine running on a second VM. Additional Virtual Machines can be installed on the USS as needed as long as adequate processing cores and system memory are available to support those VMs. Contact your StoneFly sales representative for details.



USS-HA 2U Controllers with 12-bay RAID Array (with front bezel)

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1.1.1 Icons

Icon	Type	Description
	Note	Special instructions or information
	Warning	Risk of system damage or a loss of data

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Chapter-2: Initial Installation

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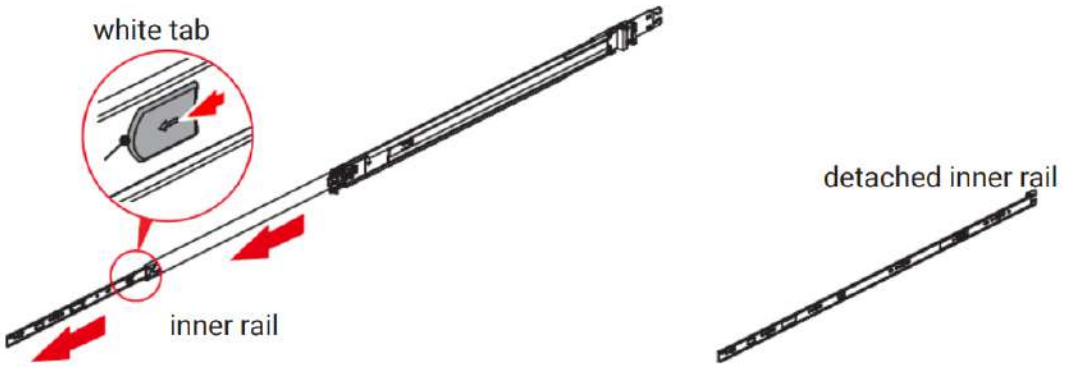
2.1. Rack Installation Instructions for HCI Controllers

This section provides information on installing the server into a rack unit with the rack rails provided. There are a variety of rack units on the market, so the assembly procedure may differ slightly. Refer to the installation instructions that came with your rack.

They rack may tilt and fall due to incorrect installation or placed on uneven grounds.

The rack must be placed in a flat surface before you begin to slide the system barebone in for servicing.

1. Pull the inner rail out of the slide rail until it clicks.
2. Detach the inner rail completely from the slide rail by pulling the white tab forward



3. After the inner rail is dislodged, adjust the middle rail back to its original position by pushing the tab on the middle rail.

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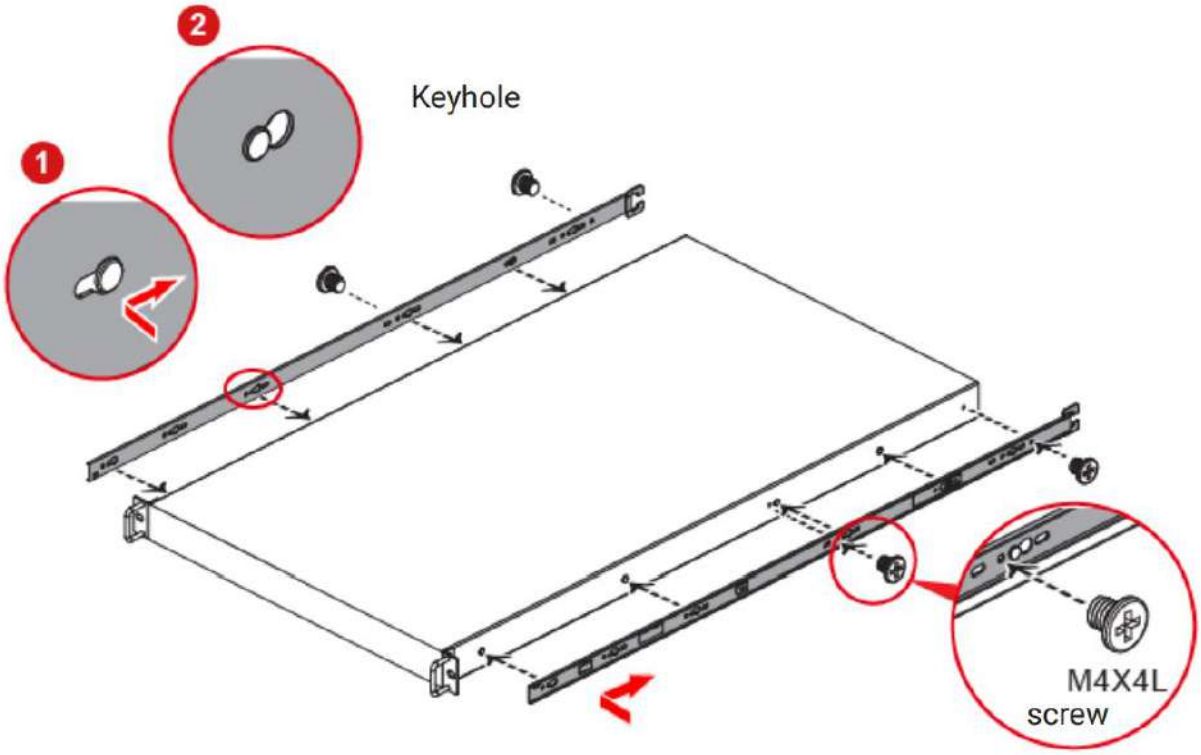
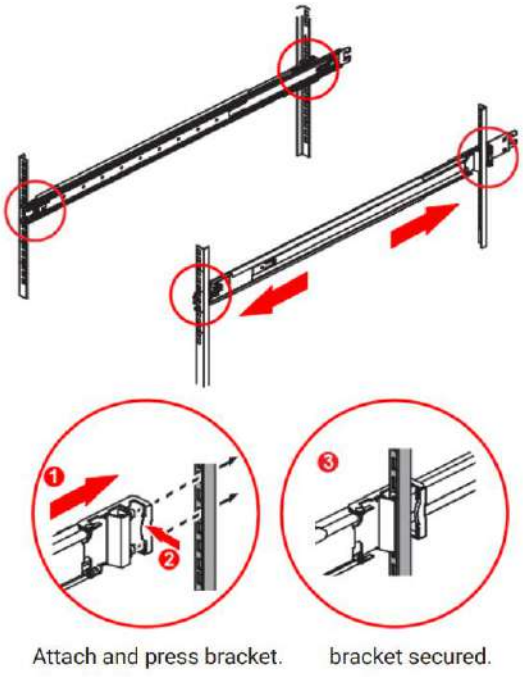
4. Install the inner rail onto the system barebone. Lock the keyholes and secure the screws.



5. Continue installing the outer rail bracket to the mounting frame. Attach the outer rail assembling to the frame and press the bracket to fix the rail onto the frame. Repeat to fully mount the bracket assembly.



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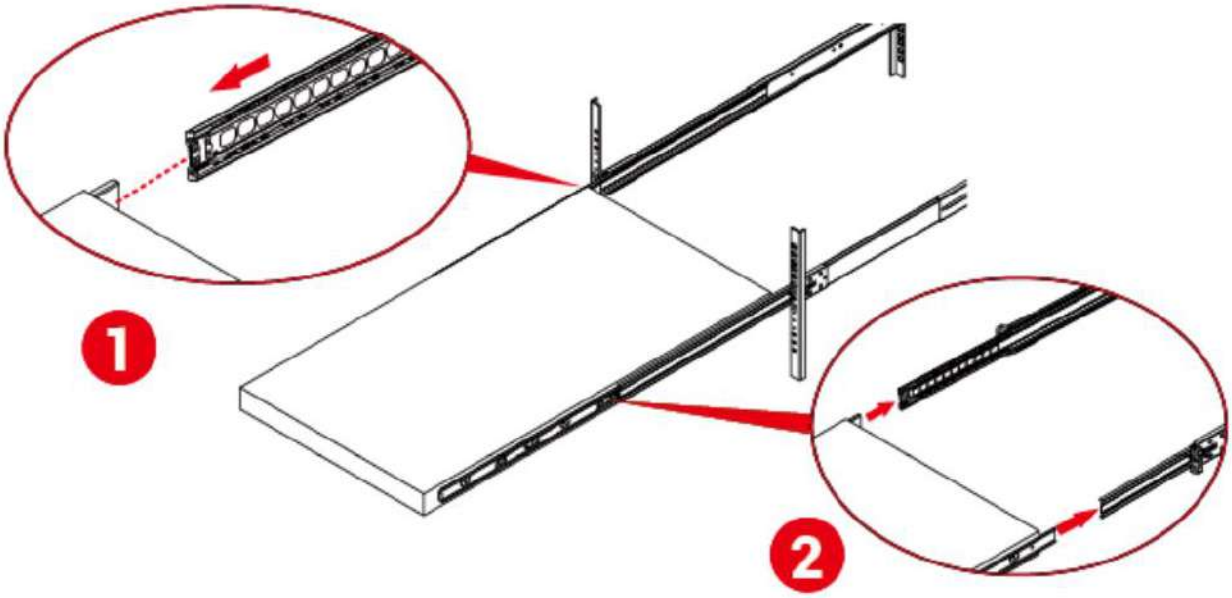
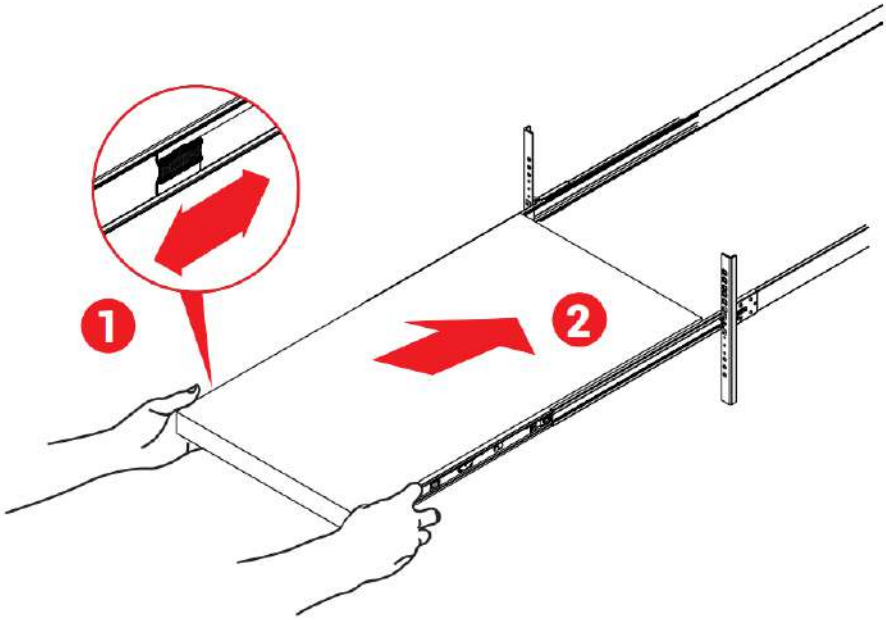
6. Pull out the middle channel until the ball bearing retainer is locked forward.



Verify ball bearing retainer is locked forward.

7. Slide the release tab and push barebone into rack. Make sure the barebone is completely installed onto the rack.



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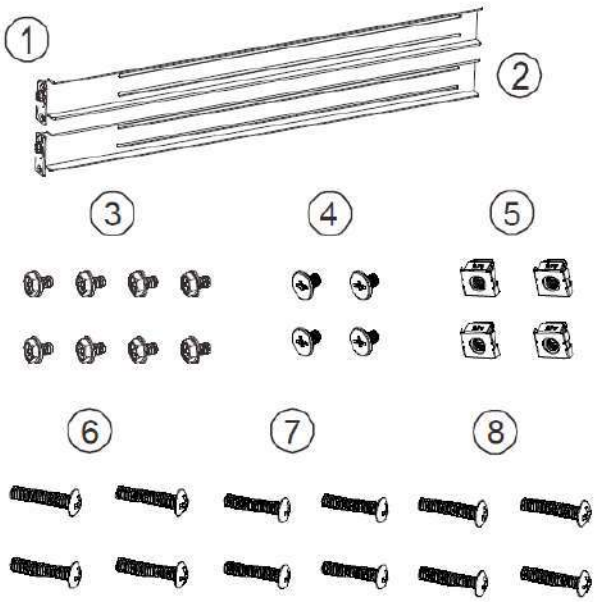
2.2. Rack Installation Instructions for HA RAID Array

Rack Ear Mount Kit

The following table shows all accessories that came with the rack ear mount kit.

Item	Description	Quantity
01	Mounting bracket assembly, left-side	1
02	Mounting bracket assembly, right-side	1
03	Hexagon washer screws #6-32mm	8
04	Truss head screws M5 x 9.0mm	4
05	M5 cage nuts	4
06	M5 x 25mm	4
07	M6 x 25mm	4
08	#10-32 x 25.4mm	4



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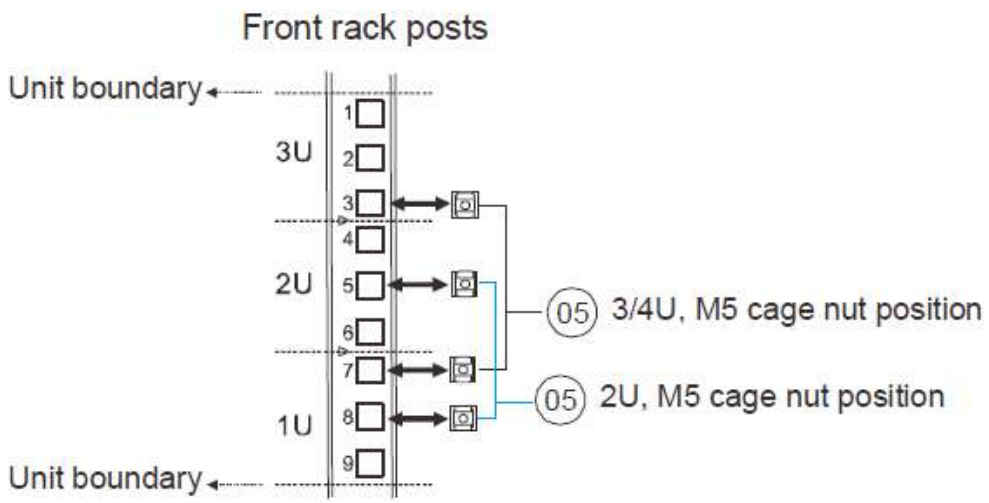
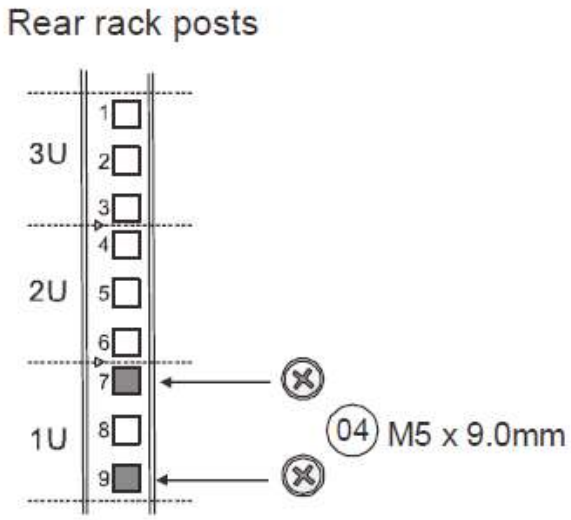
Installation Procedure

- The installation begins with determining the installation position and M5 cage nut (5) insertion location.





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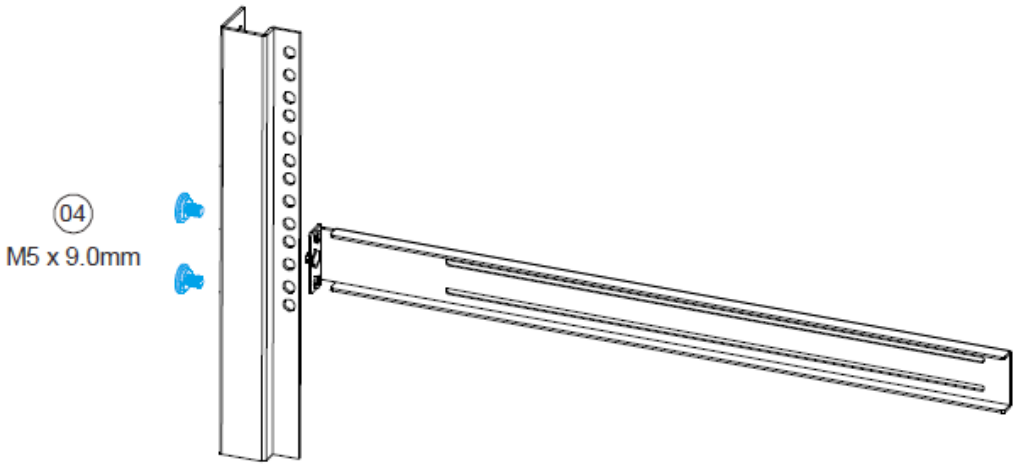
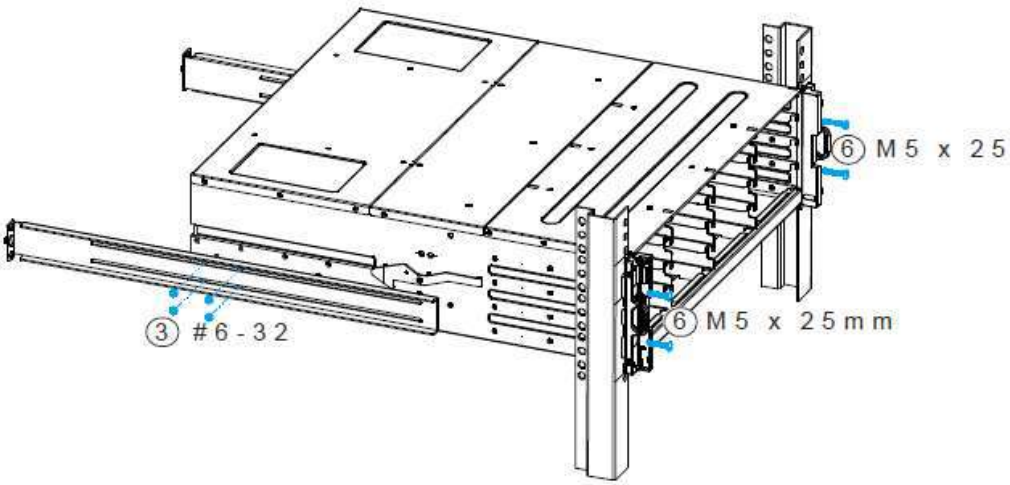
- Install the fixed rack ear mount to the rear posts and secure them using truss head screws (4)



- With the assistance of another person holding the enclosure at the installation height, the other person can place four M5 x 25mm (6) at the front of the enclosure and eight #6-32 screws (3), four on each side, to secure the enclosure into the rack.



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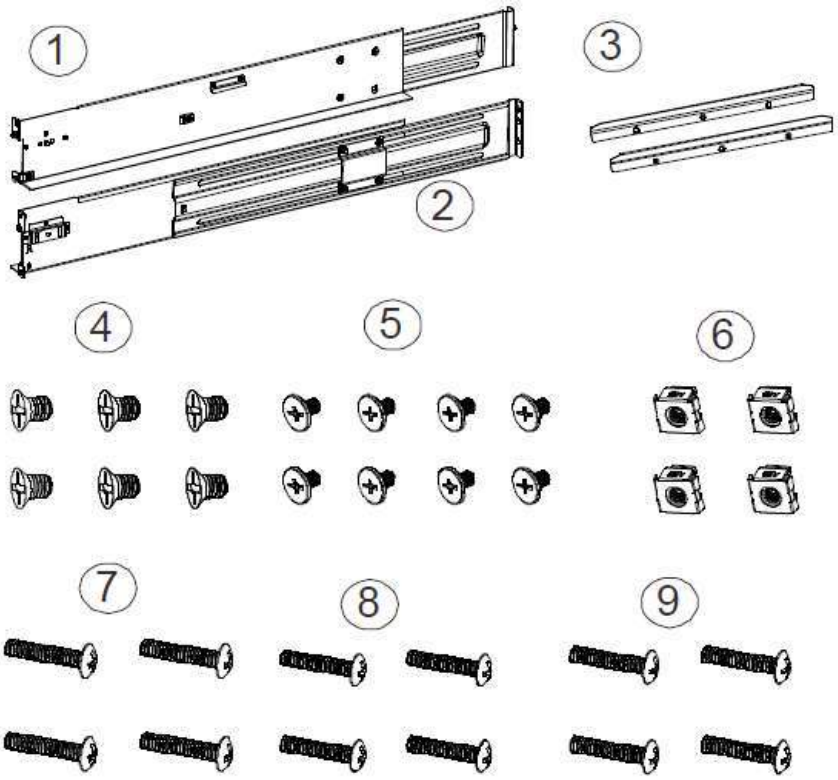
Slide Rail Kit

The following table shows all accessories that came with the slide rail kit.

Item	Description	Quantity
01	Mounting bracket assembly, left-side	1
02	Mounting bracket assembly, right-side	1
03	Inner glides	2
04	Flathead #6-32 L4	6
05	Truss head screws with M5 x 9.0mm	8
06	M5 cage nuts	4
07	M5 x 25mm	4
08	M6 x 25mm	4
09	#10-32 x 25.4mm	4



- The installation begins with determining the installation position (front and rear rack positions) and M5 cage nut (5) insertion location.

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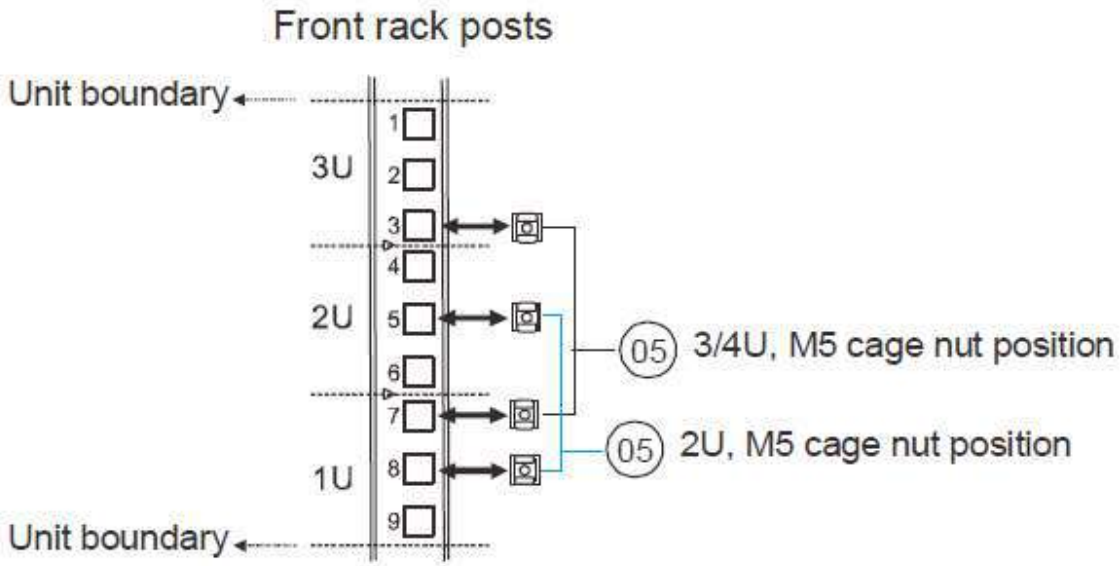

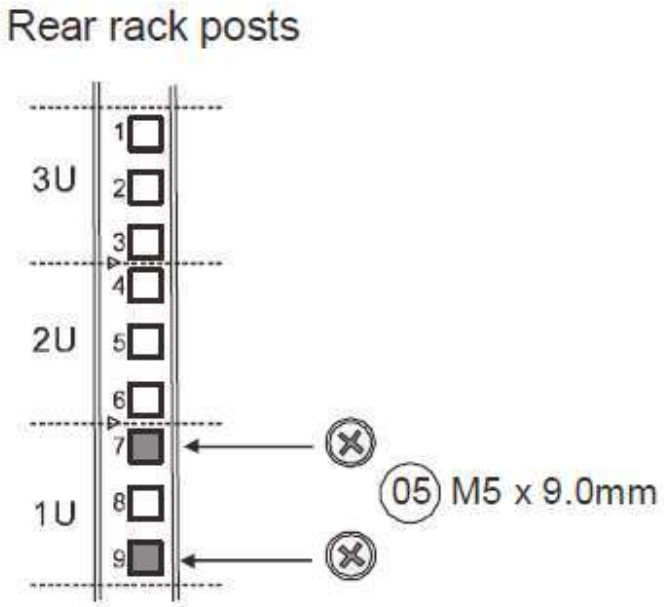

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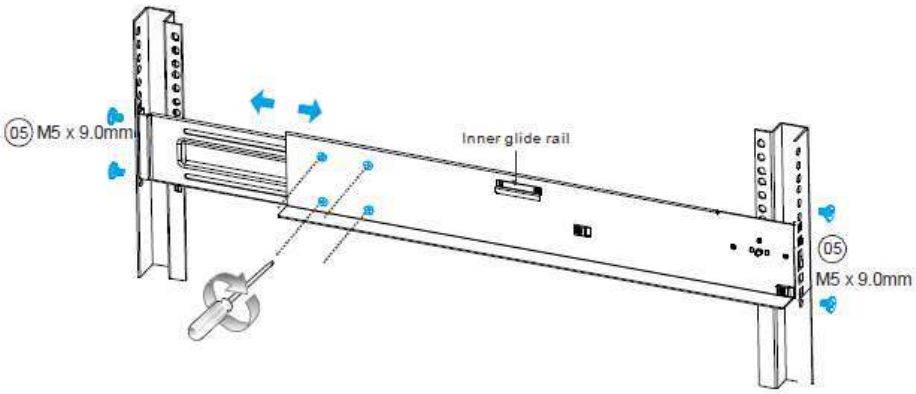
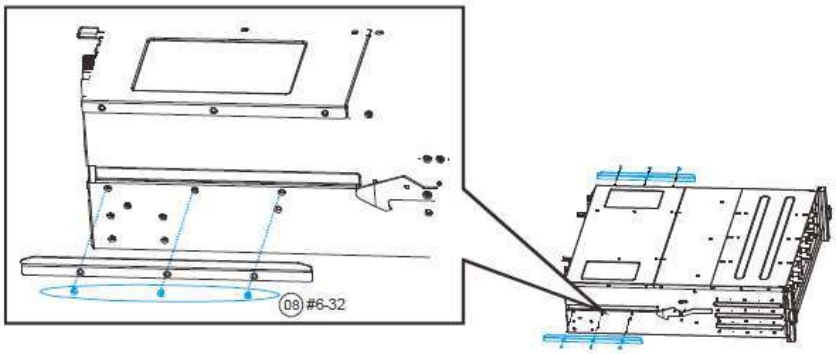
- Adjust the length by loosening the four screws on the slide rail. Secure the slide rails to front and rear posts using truss head screws. Tighten the four screws on the slide to fix the length.



- Attack the inner glides to BOTH sides of the enclosure using flathead screws #6-32 (8)



- With the assistance of another person, lift and insert the enclosure onto the slide rail. Make sure the inner glides on both sides of the enclosure meets the inner glide rail. Secure the enclosure with M5 or M6 screws from the front.

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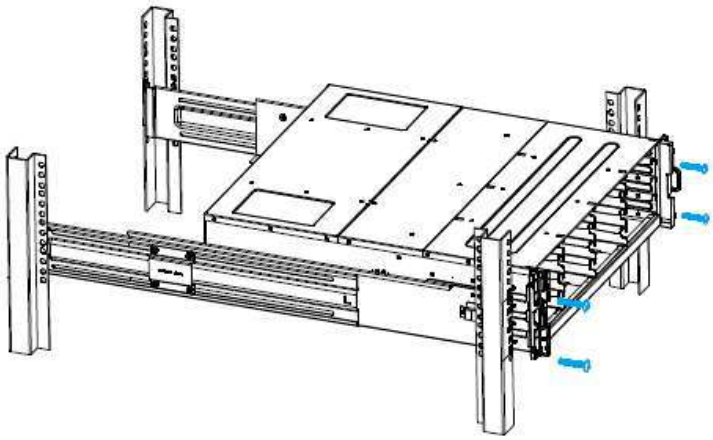

2.2.1 Safety Reminders

If you must relocate the enclosure after installation

- Cease all input / output transactions, shut down the system, disconnect all the cables (please refer to the User Manual for details).
- Empty all drive bays (hard drives + hard drive trays) and transport them separately in safe packaging.
- Modules came installed within the enclosure need not be removed.
- Follow the instructions provided in the StoneFly Getting Started Guide.

When the system is in operation

1. Module and drive bays must not be empty! They must have a dummy cover / plate in place to stabilized internal airflow!
2. Should a module fail, leave it in its place until you have the replacement item on-hand to take its place.
3. Allow at least 18~20cm of clearance space at the rear of the enclosure for ventilation.
4. Avoid touching the PCB and gold-finger connections.

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Chapter-3: Cabling Connections & Power Up

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1.1 Cabling the Equipment

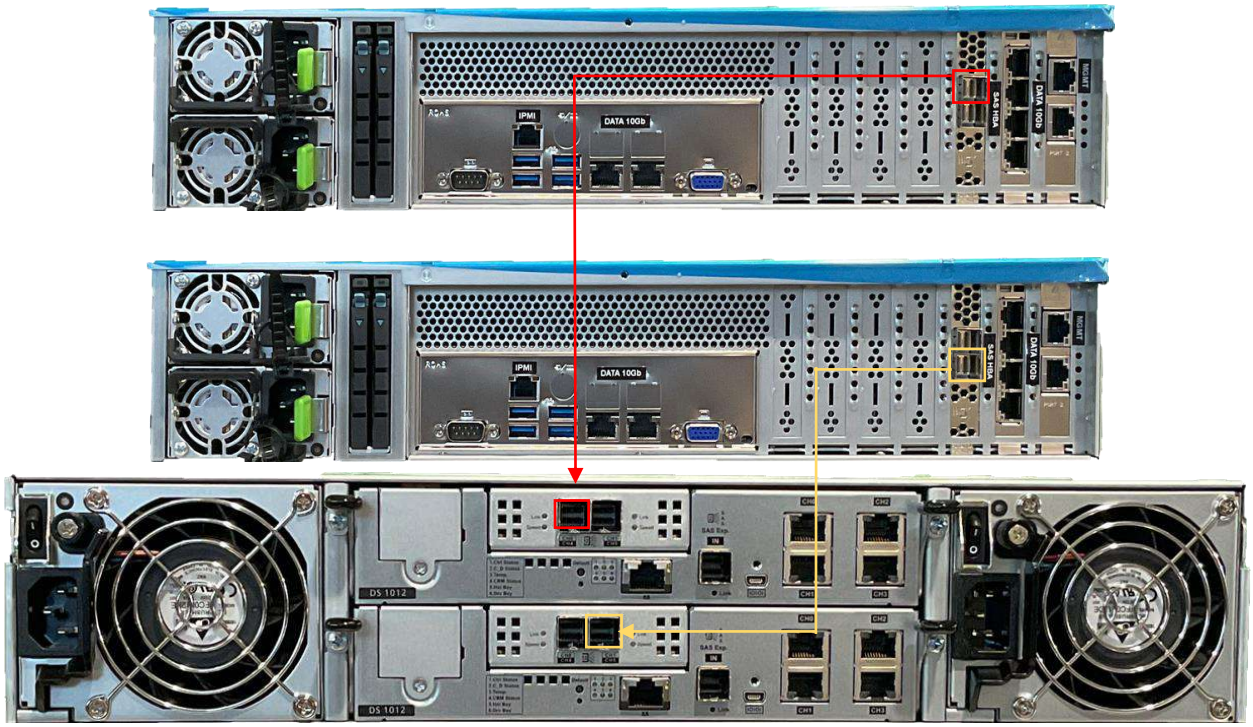
The following description shows the steps for two Storage Concentrators, and one HA RAID Storage Expansion Array. Please make sure that you've securely mounted the appliances in the rack/cabinet before beginning the cabling. It's also important to note that the power is connected AFTER all of the data/network connections have been made.

Spanning Tree Protocol (STP) must be disabled on your network switch when using bonded data ports on the StoneFly USS-HA appliance.

Note: Follow the labels for each port as marked on your appliance(s).

SAS Interconnects – Standard Configuration

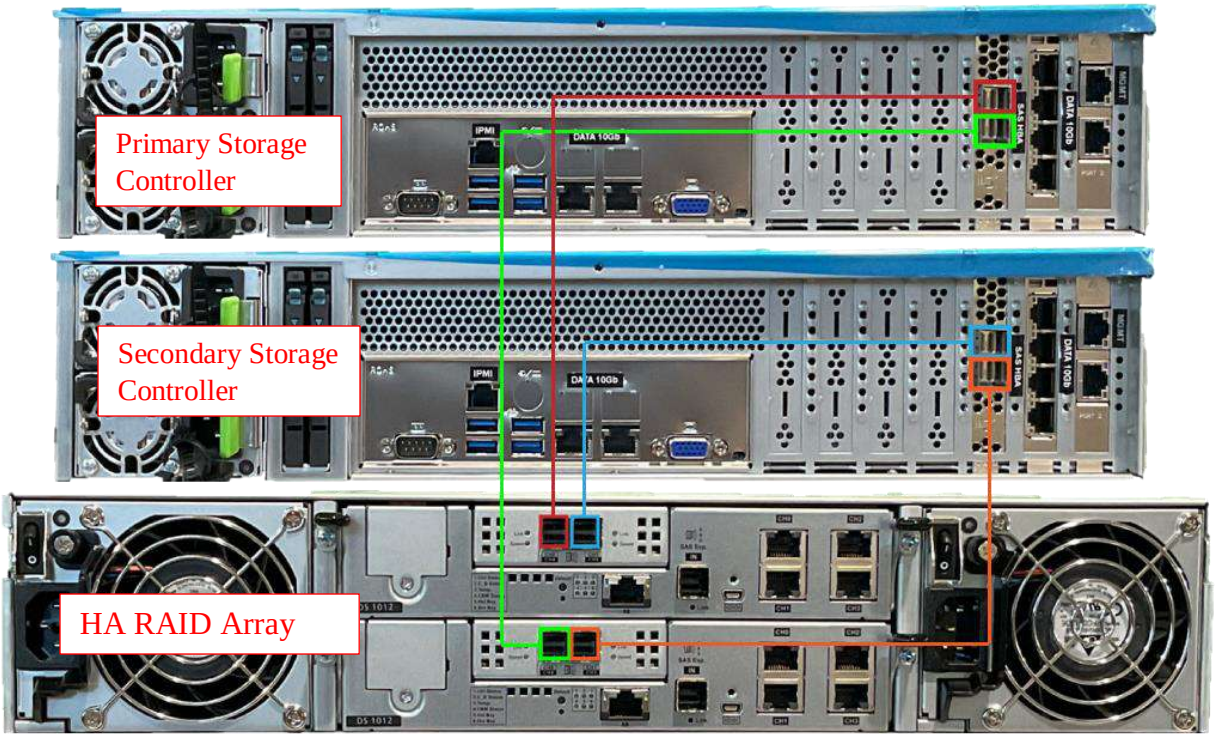
Connect the two included Mini-SAS HD cables between each SC and the HA RAID Storage Expansion Array, as shown below:



SAS Interconnects - Multipath Connections (Optional Upgrade)

If you have purchased the optional StoneFly Multipathing Kit, then you will be able to connect each SC to both RAID controllers on the HA RAID Storage Expansion Array.

The four Mini-SAS HD cables will be connected between each SC and the HA RAID Storage Expansion Array, as shown below (optional multipathing configuration):



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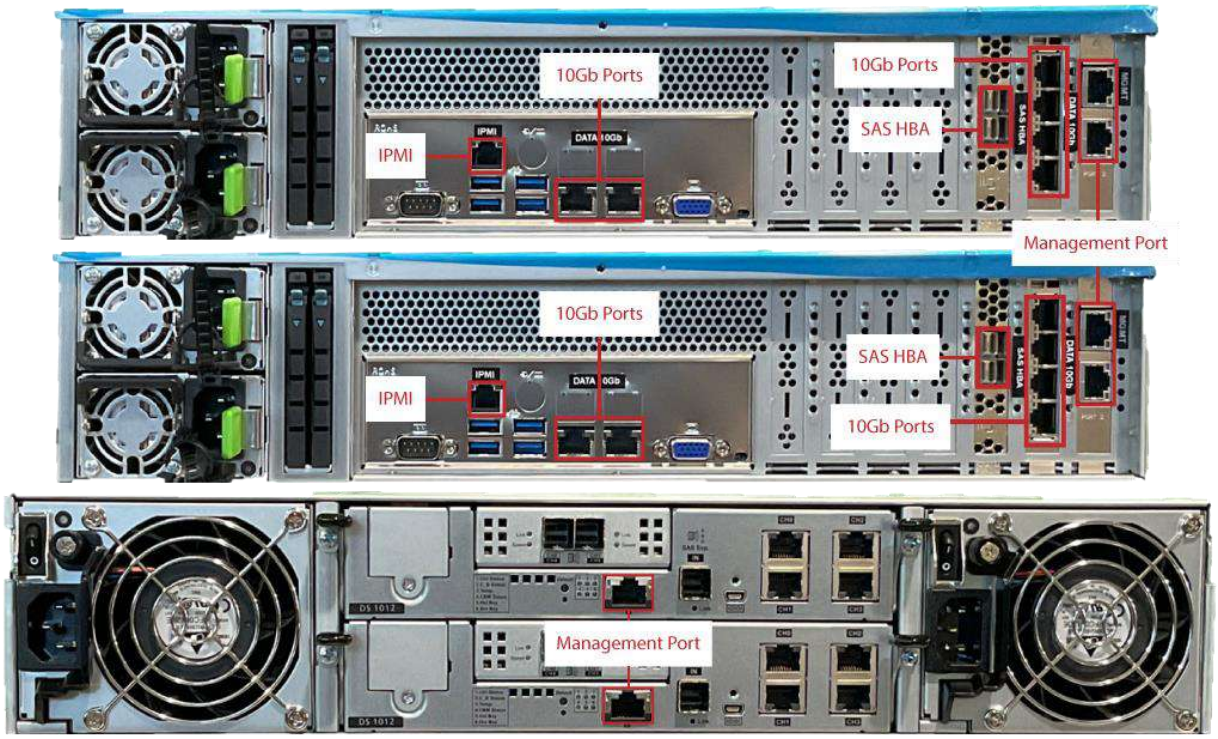
Network Connections

Connect SFP+ cables to the data ports on each SC, and Ethernet cables to each of the Management ports (MGMT) on all three units as shown below. For best practices, split the connections between at least two switches for each type of port.



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Power Connections

Note: Make sure to make all the connections for both SCs as described above before connecting the power cords to the system.

Once you've made all the connections and made sure that there are no loose cords, power on the HA RAID Storage Expansion Array and JBOD array first then power on the storage concentrators.

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3.1.1 Powering On Procedure

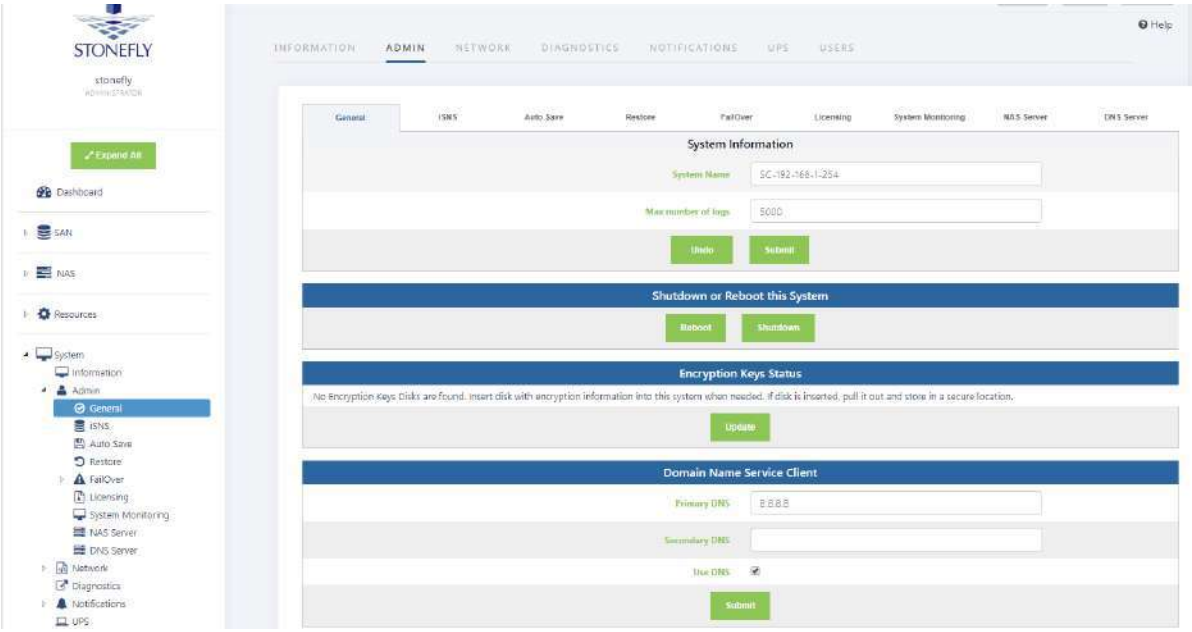
Be sure to adhere to the following instructions when turning on the USS-HA system:

1. Verify that all the power and SAS cables are properly connected.
2. Power on JBOD(s) if any.
3. Wait for the drives to finish initialization – this may take 10 to 20 minutes depending on the number of drives.
4. Power on the USS-HA appliance.

3.1.2 Powering Down the USS-HA Appliance

If the appliance needs to be powered down, refer to the steps below in order to properly shutdown the appliance. Note that prior to shutting down your appliance; make sure that all the current tasks are finished.

Login to the SCVM on the Primary Storage Concentrator.



Navigate to **Admin** > **General**.

Click Shutdown.

Perform the same steps for the secondary storage concentrator.

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Afterwards, shutdown both the HA RAID Storage Expansion Array.

To shut down the systems, access the HA RAID Storage Expansion array web GUI.

Once logged in, navigate to **SANWatch Home** > **Top menu bar** > **System** then select Shutdown Device from the dropdown menu.

When selected a list of devices should appear. Select the device you wish to shut down and click OK.

Once done, you can switch off the power and unplug your appliance (if necessary).

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Chapter-4: Software Configuration

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4.1 HA RAID Storage Expansion Array IP Address Configuration

You can configure the IP address for the HA RAID Storage Expansion Array via either the Serial port or Ethernet port on the rear of the unit.

Serial port: A Y-cable is provided in the package. (NOTE: null modem may be required if you are using a third-party cable).

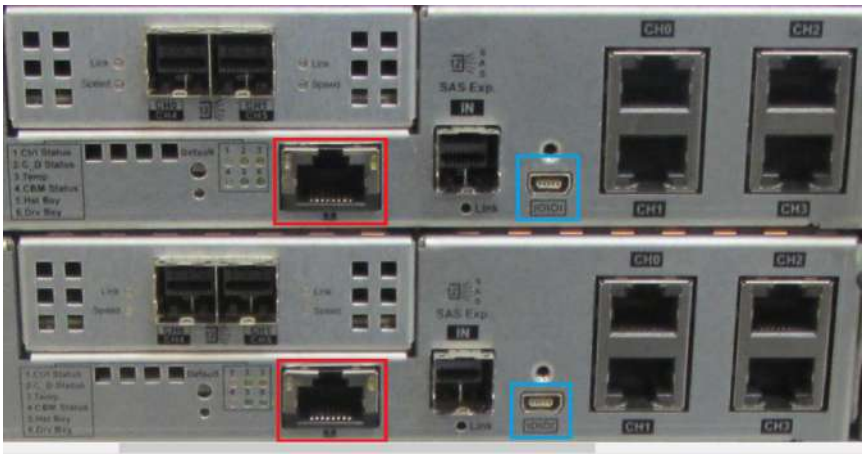
The serial port's defaults are:

Baud Rate	38400
Data Bit	8
Parity	None
Stop Bit	1
Flow Control	Hardware

For TCP/IP connection and firewall configuration with a management station running the storage array's web interface, please refer to storage array web interface online help or User's Manual. If your network environment is not running DHCP server protocols, a default IP address of <10.10.1.1> can be used to access the unit for the first time.

Use the Ethernet management port for management purposes only, i.e., storage array web interface or telnet console. This Ethernet management port is not used for I/O transactions.

Management network ports are boxed in red, serial ports are boxed in blue. This is an example controller, controllers do vary from configuration to configuration.



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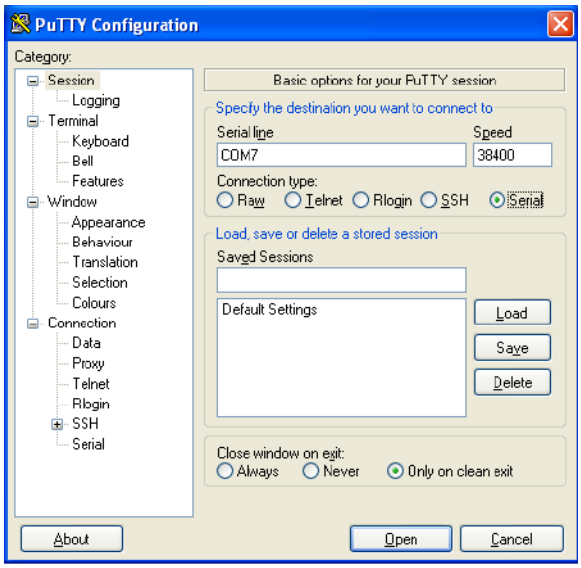
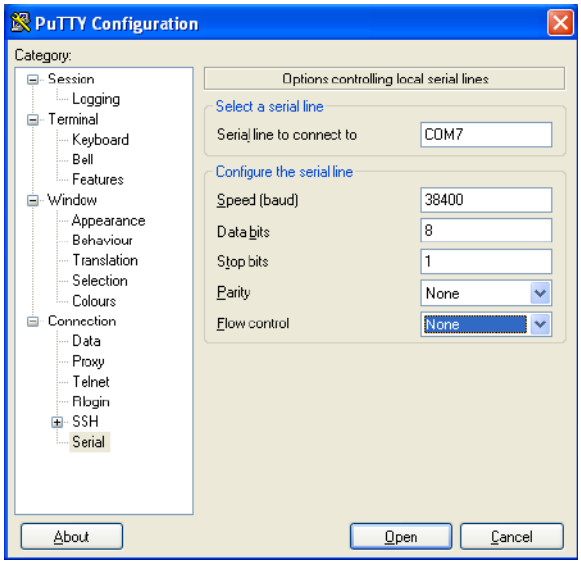
4.1.1 Serial port setup

When setting up via the serial port, enter the settings as shown below:





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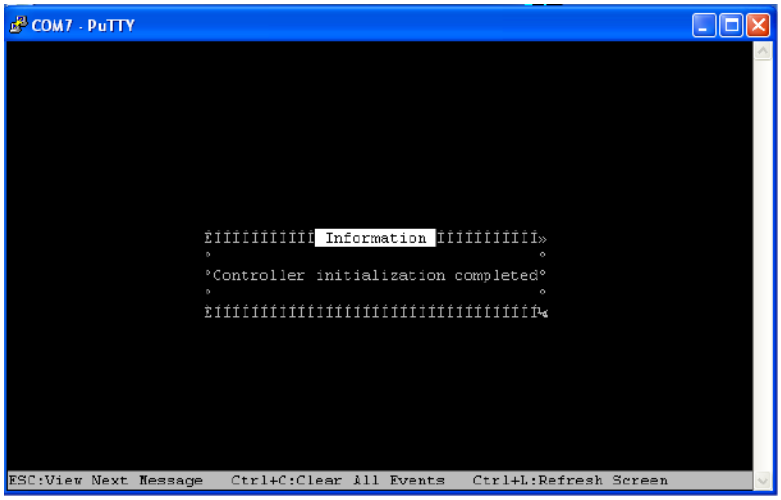
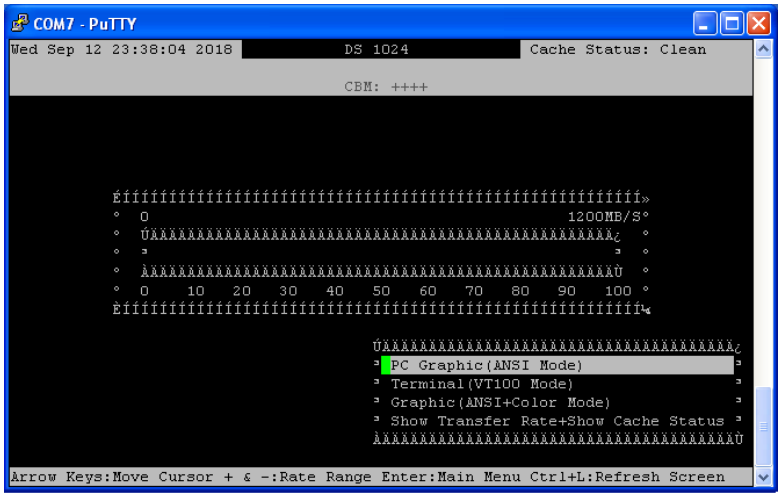


Hit **ESC** to view next screen.



Select **PC Graphic (ANSI Mode)** then hit enter.

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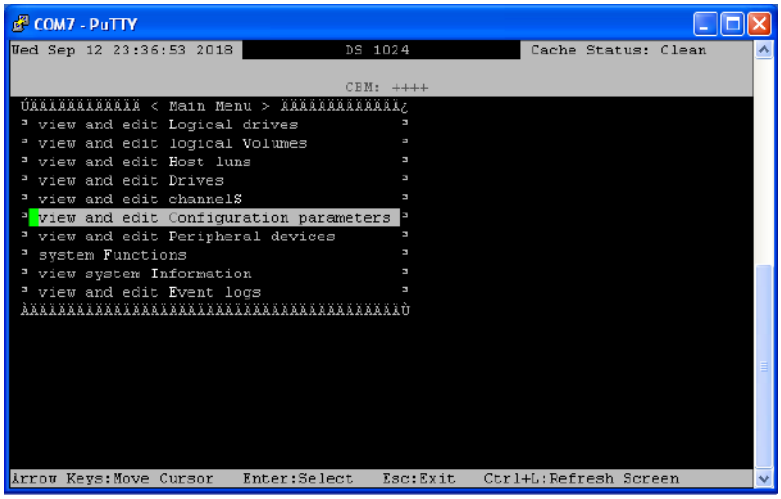
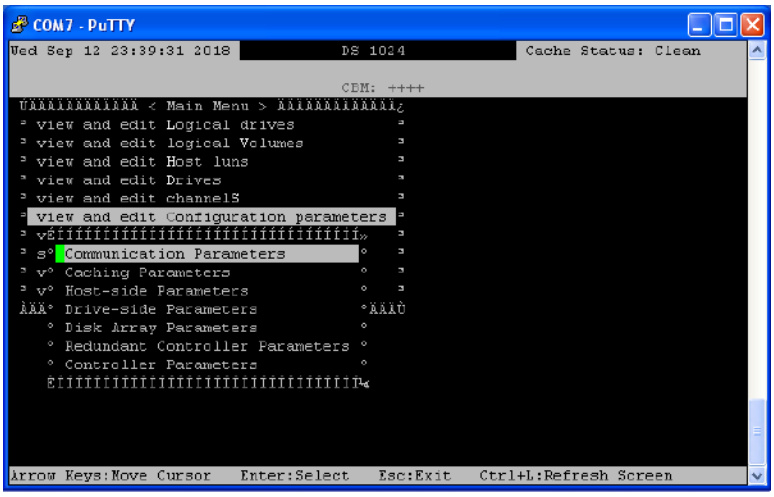


Select **view and edit Configuration parameters** then hit enter.



Select **Communication Parameters** and hit enter.

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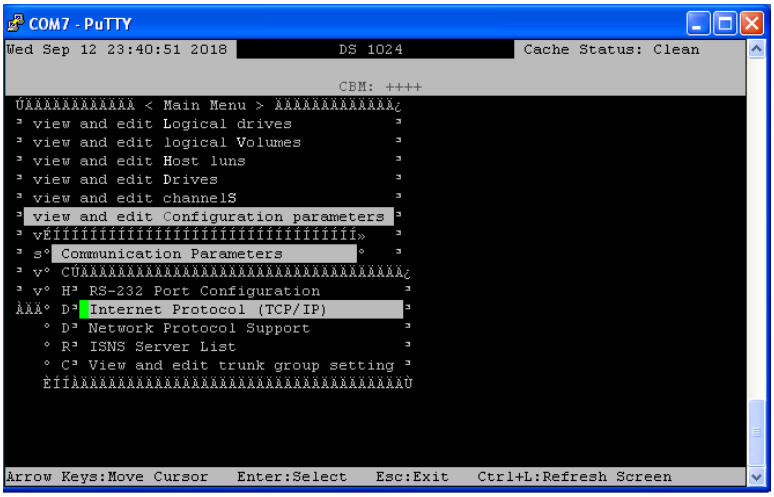
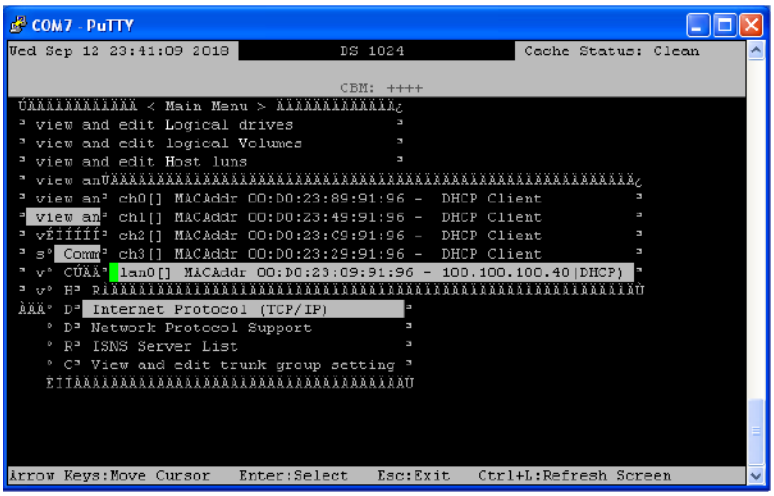


Select **Internet Protocol (TCP/IP)** and hit enter.



Select **lan0** and hit enter, then select **static** and enter the IP address as needed.

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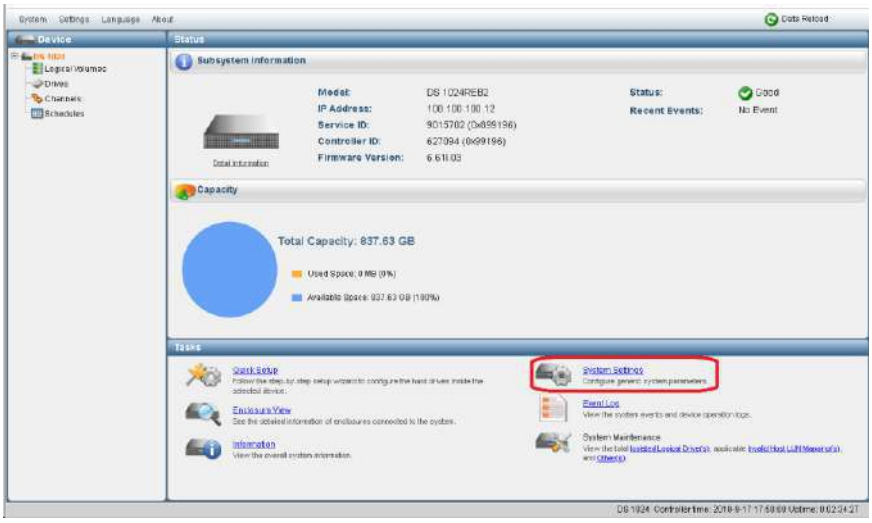
4.1.2 Web GUI IP Address setup

When setting up via the Ethernet port/web GUI, follow the instructions as shown below:

The default Password is blank. Just click on the **Login** button.



Click on **System Settings**.

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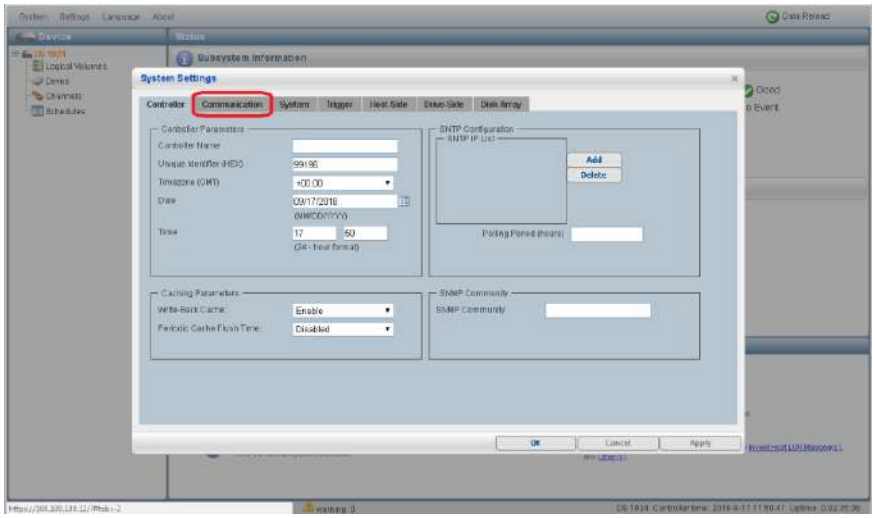
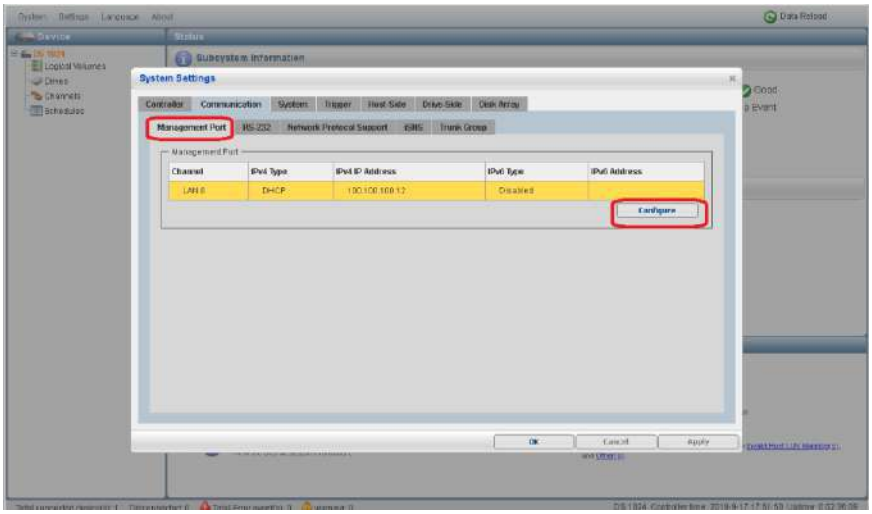


Select **Communication**.



Select **Management Port** then click on the **Configure** button.

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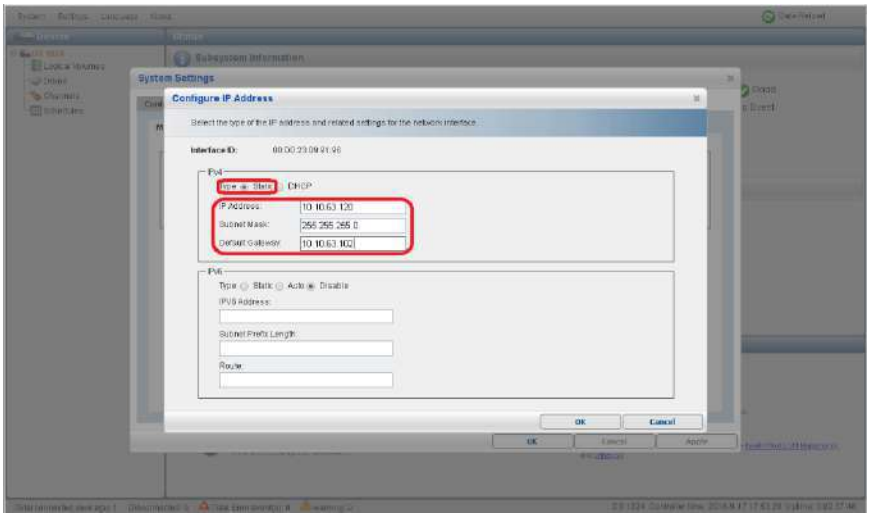

Select **Static** then enter your network information. Click **OK** when completed.

4.2 Configuring IPMI KVM

The Intelligent Platform Management Interface (IPMI) KVM configuration allows for **Remote Management** and **Power Control** of the StoneFly USS-HA system. This configuration is optional to perform, but recommended.

To configure the IPMI module, connect a keyboard and monitor to the system. Power on the system and press the **Del** key to enter the BIOS setup.

Navigate to **IPMI** tab and go to **BMC Network Configurations**:

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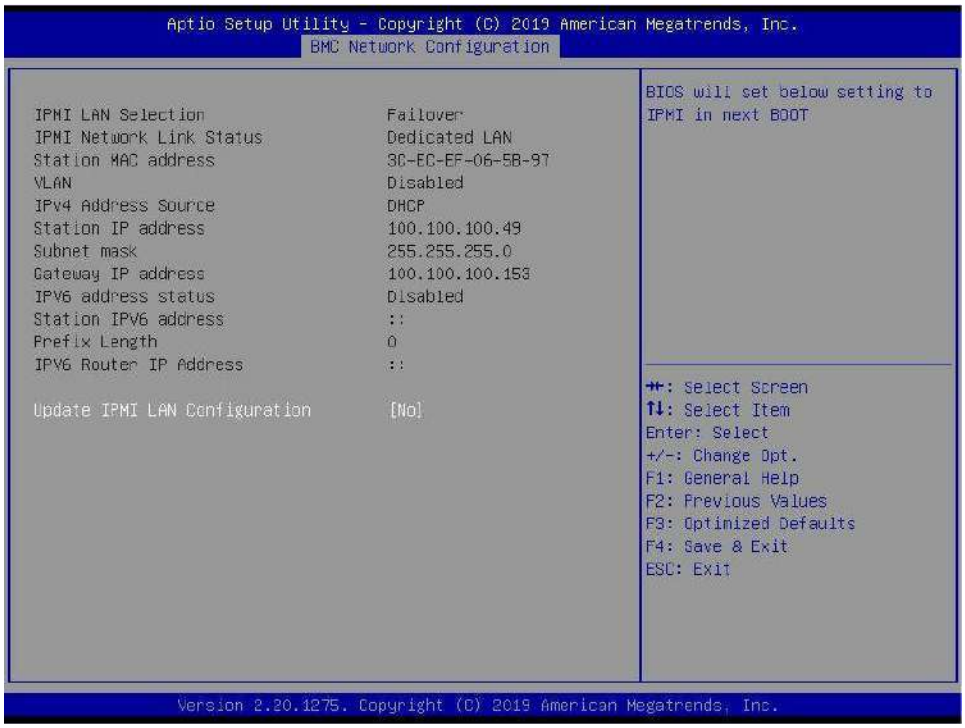
In the **BMC Network Configuration** tab, select **Update IPMI LAN Configuration** and press **Enter**:



When prompted, select **Yes** and press **Enter**.

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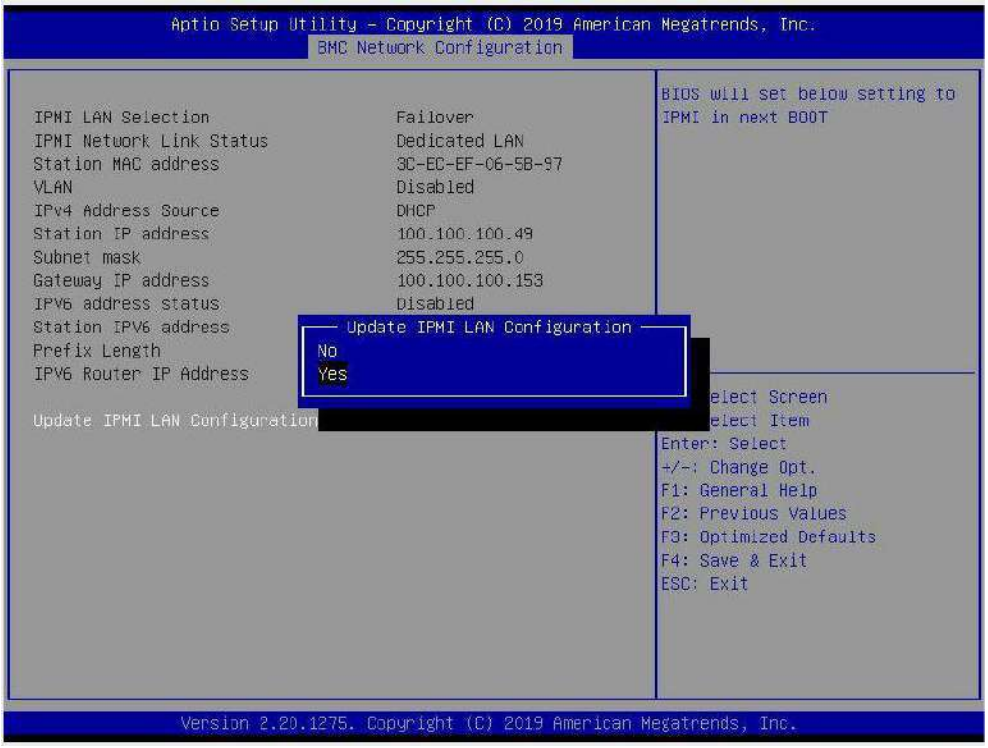
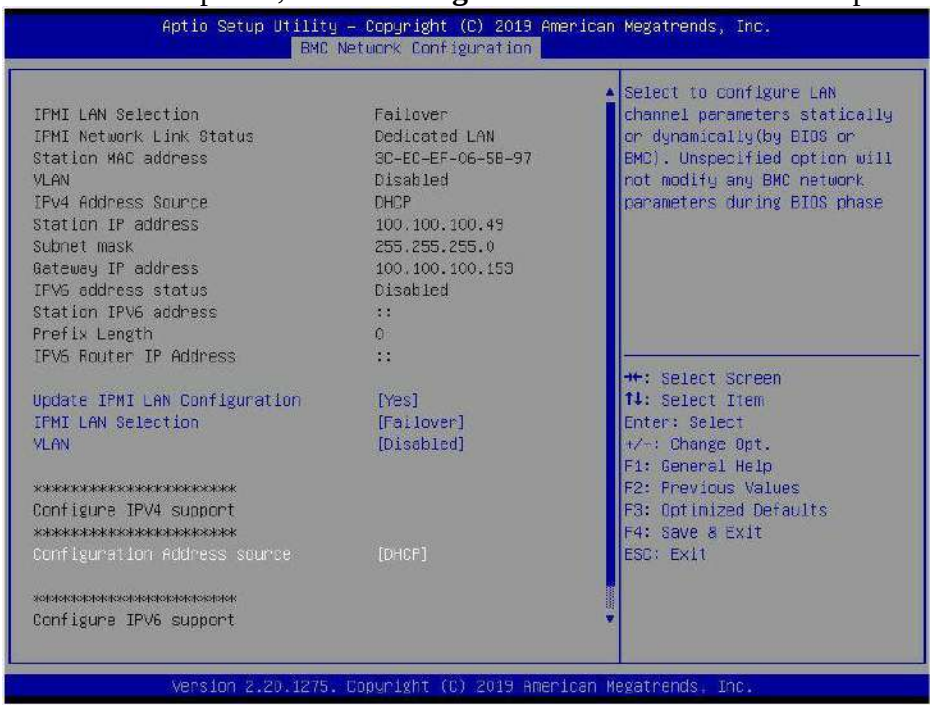
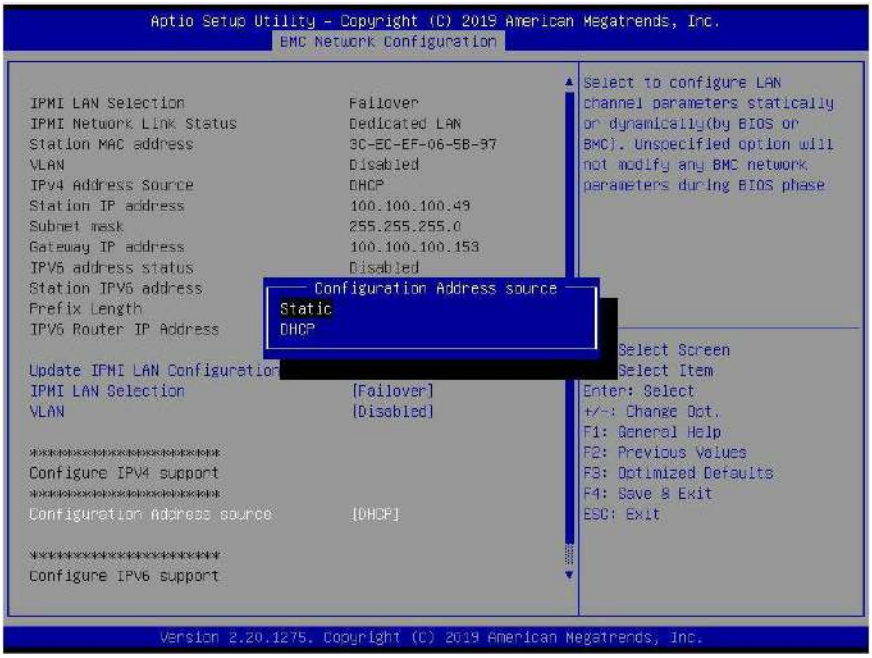


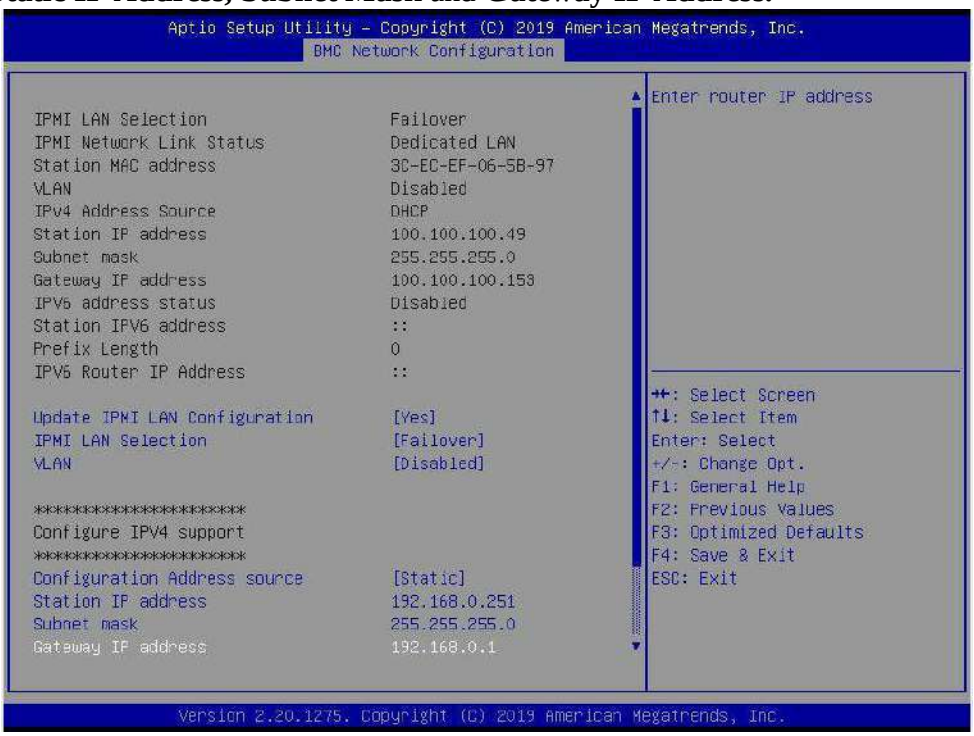
From the additional list of options, select **Configuration Address Source** and press **Enter**:



From the prompt, select **Static** and press **Enter:**



Enter the **Static IP Address, Subnet Mask** and **Gateway IP Address.**



When entering addresses, please note:

1. IP Address — Must be on the same subnet as USS-HA's Management port
2. IP Subnet Mask — Same as USS-HA's Management port
3. Default Gateway — Same as USS-HA's Management port

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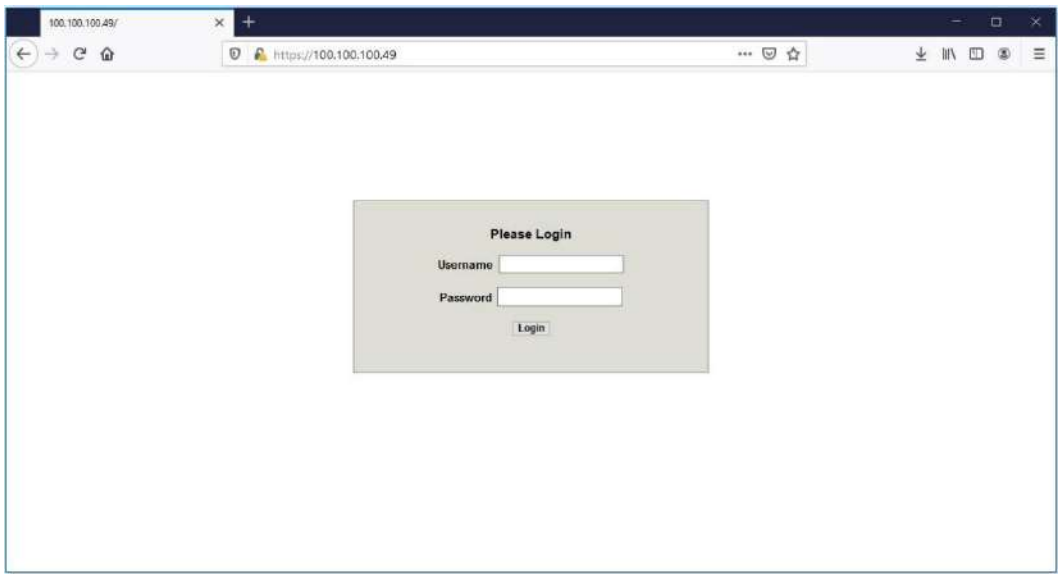
Press the “ESC” key to exit. Navigate to the **Exit** tab and select **Save Changes and Exit**.
Note: The system will require power to be removed before IPMI IP Address will take effect.

Accessing the IPMI Interface

Start a browser and navigate to the configured IP address.



Enter the following information in the login screen:

- Username: stonefly
- Password: Stonefly1

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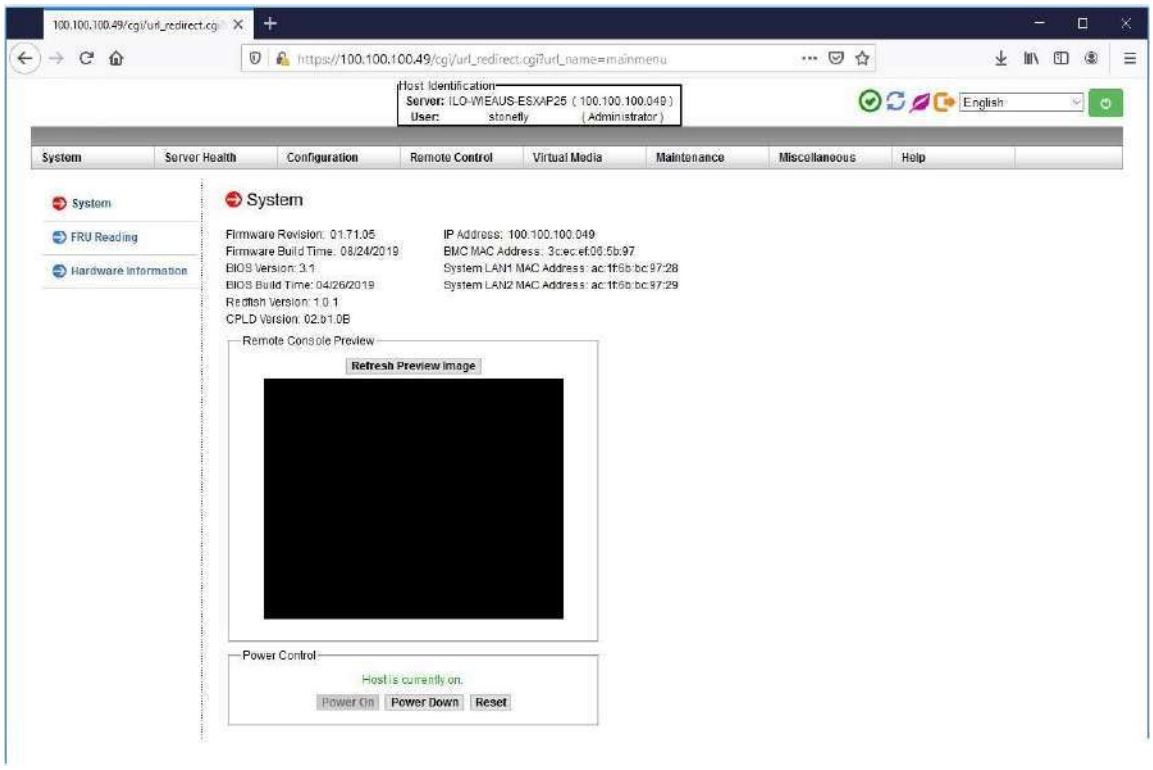
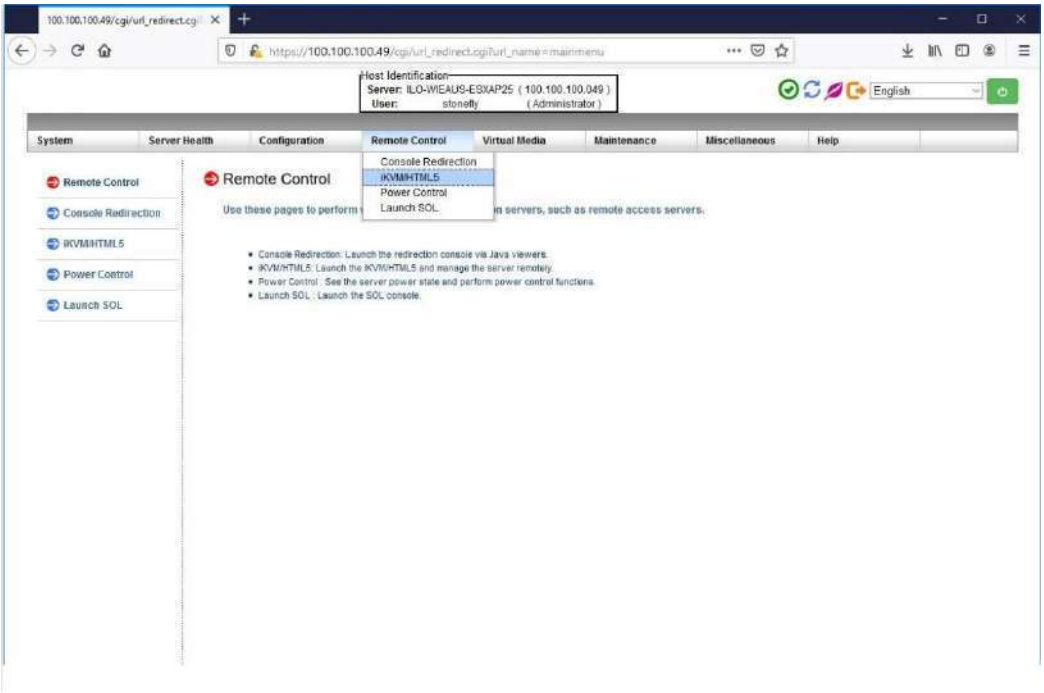


Navigate to **Remote Control** tab and select **iKVM/HTML5**:



Click on **iKVM/HTML5** to launch remote console:

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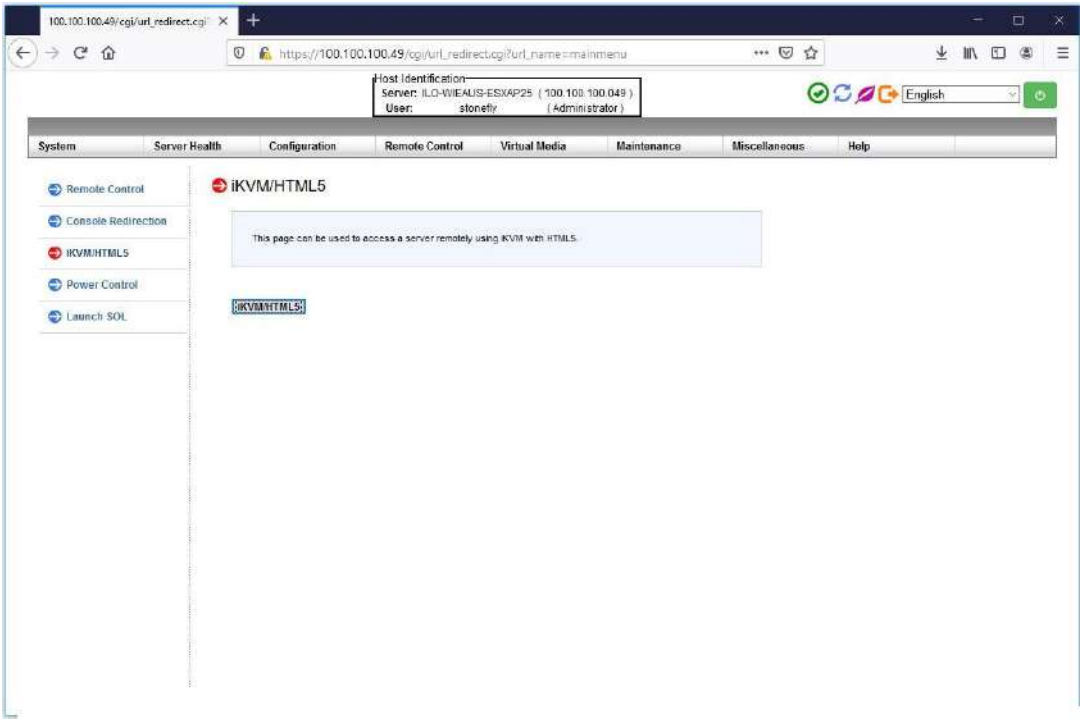

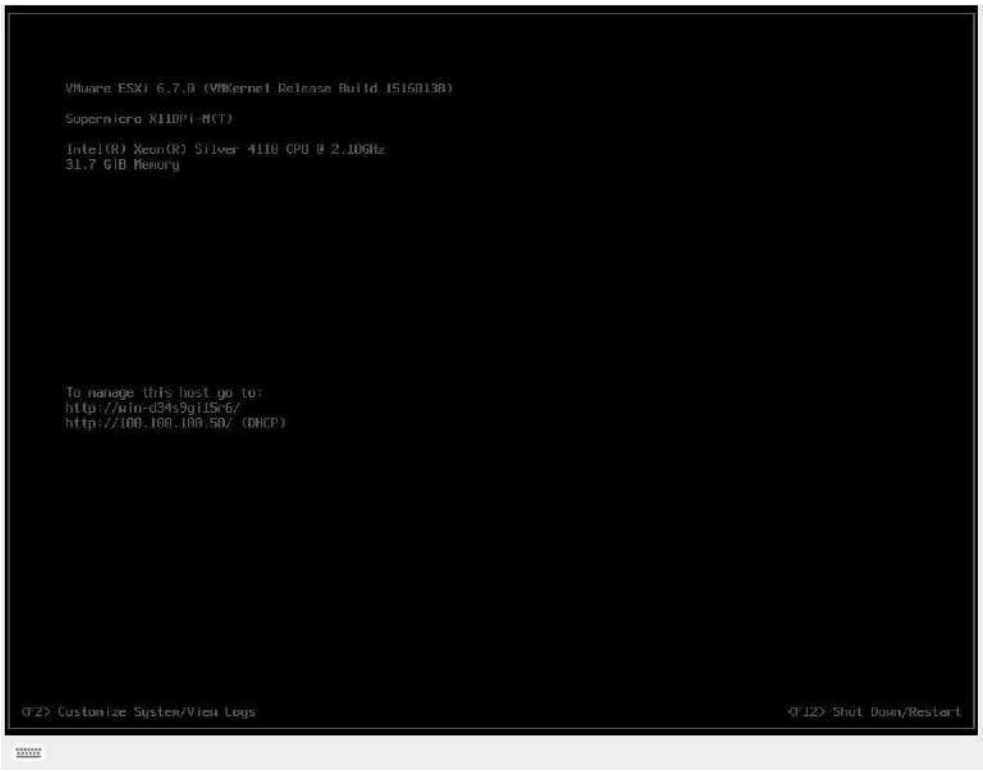

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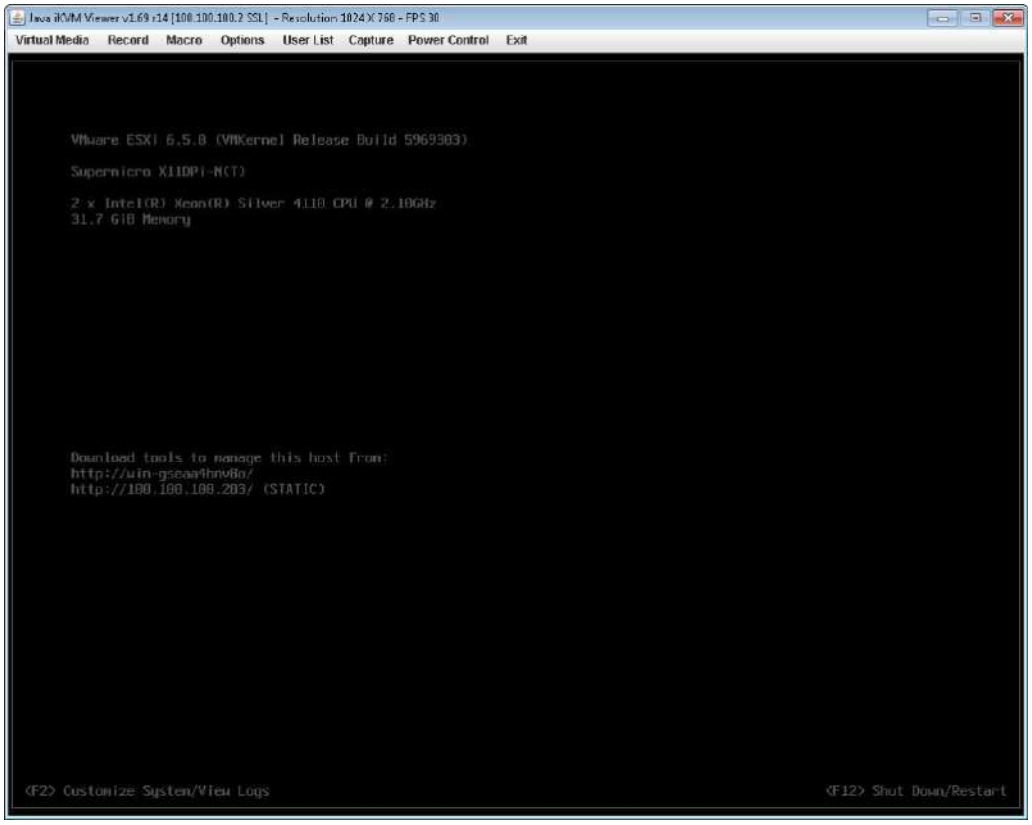
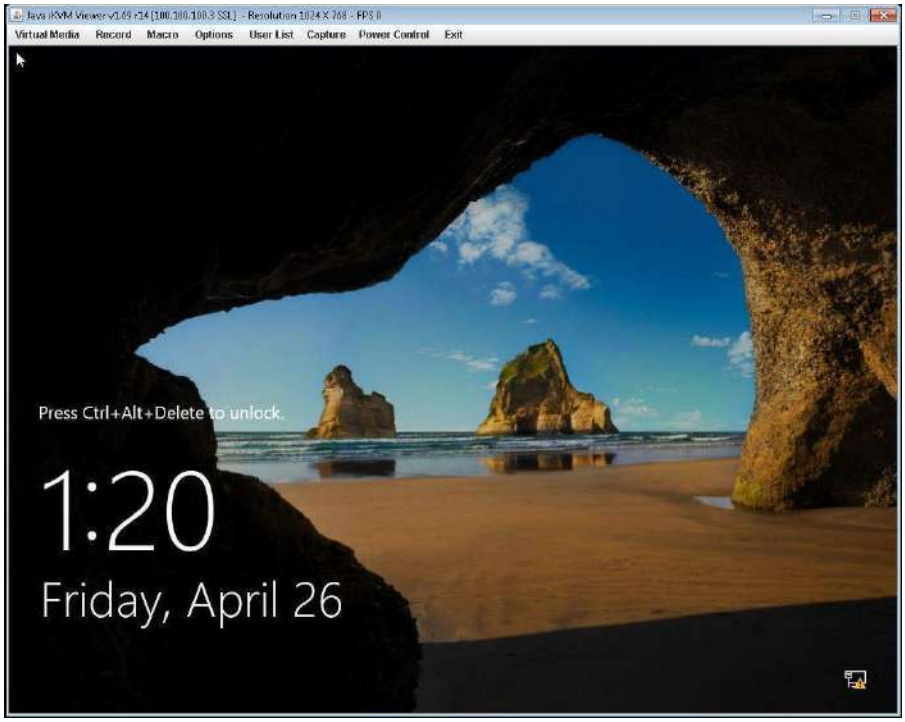


(For VMware Hypervisor)



(For Hyper-V Hypervisor)

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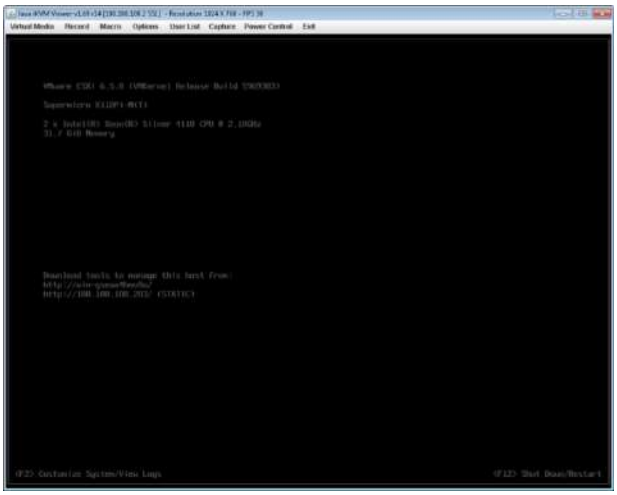
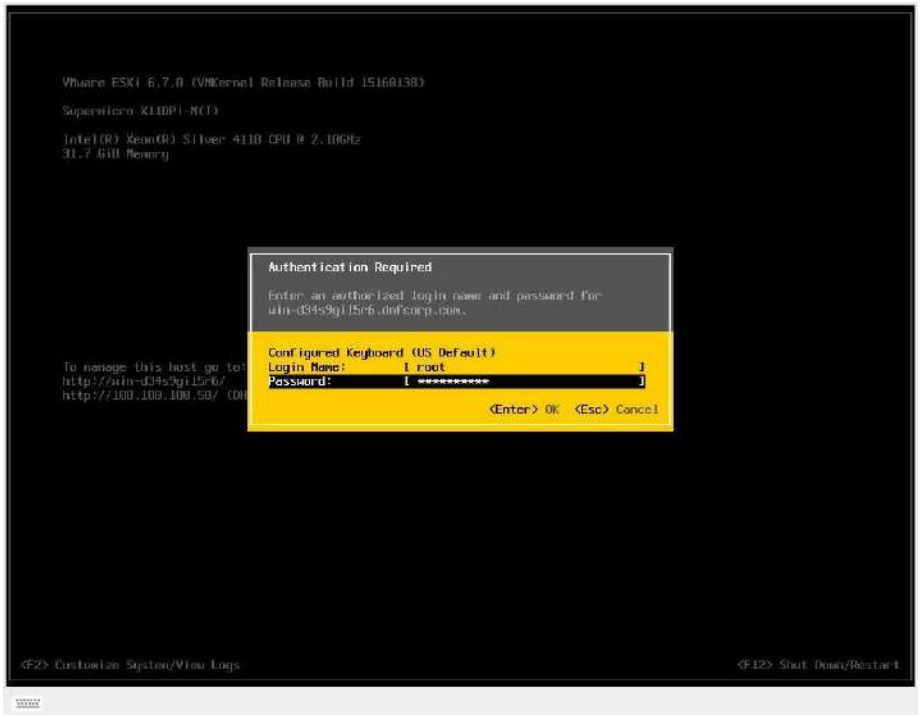
The system user console screen will appear.

4.3 VMware Management Network Configuration

This section describes configuration of the ESXi Management Network. *IP Addresses* and *Hostnames* used in this section are for example only. Refer to Section 2.6 for Hyper-V Management Network Configuration.

Connect to System console. Attach a keyboard and monitor or use system IPMI KVM.





Press the **F2** key to customize system. Then enter **Login Name** and **Password** and hit the **Enter** key to continue. The default Login information is as follows:

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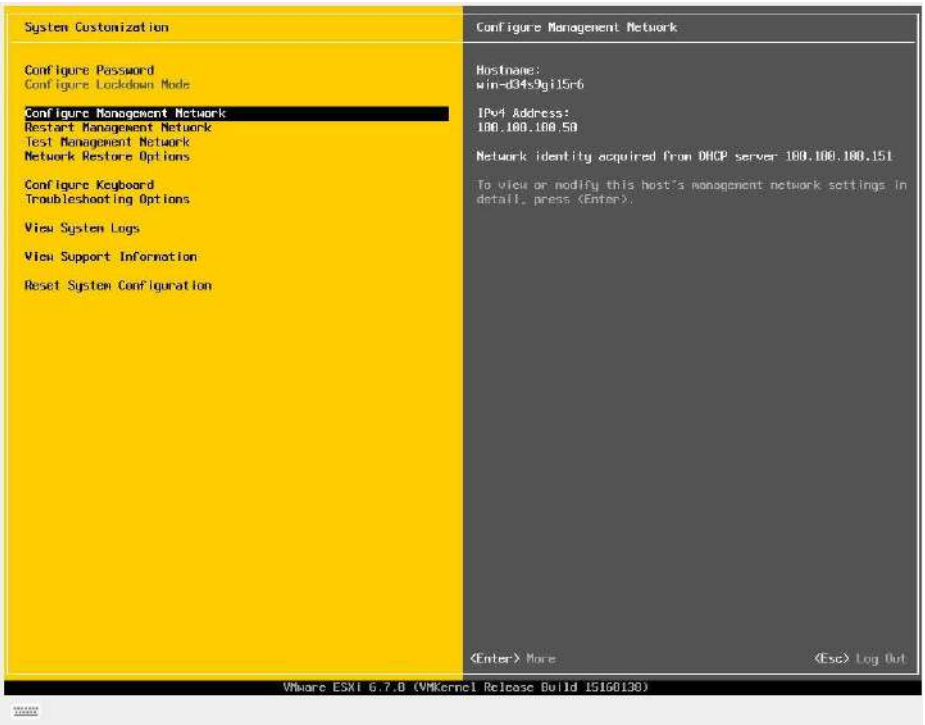
- Login: root
- Password: Stonefly1!



Select **Network Adapters** and press the **Enter** key.

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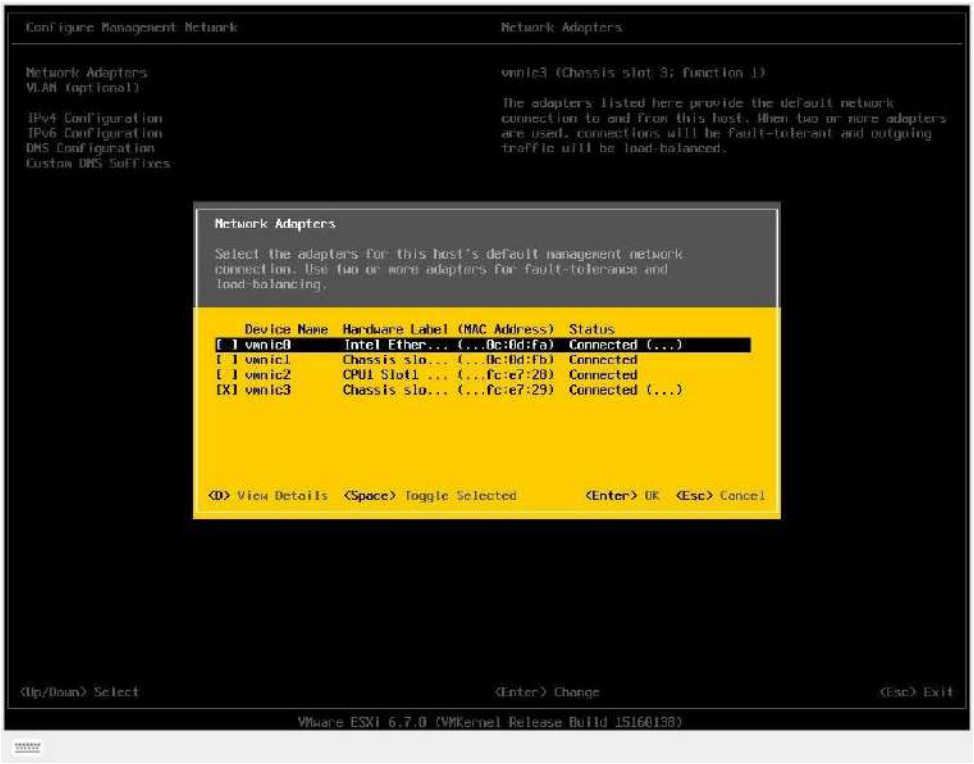
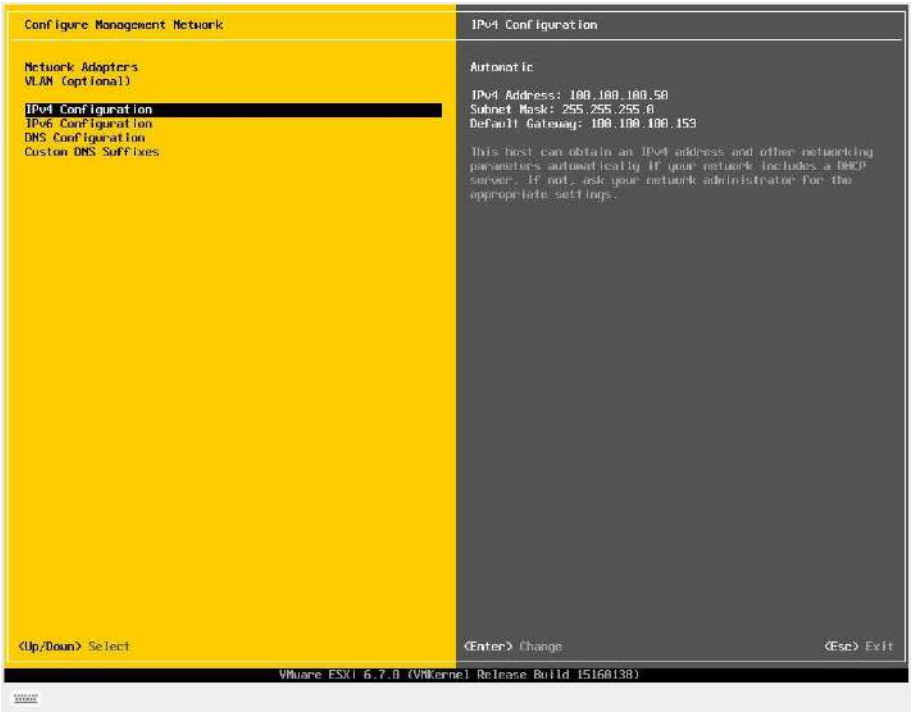
Select the **vmnic** to use for the management network for ESXi and press the **Enter** key. Press the **Esc** key when changes are complete.



Select **IPv4 Configuration**, then hit the **Enter** key.



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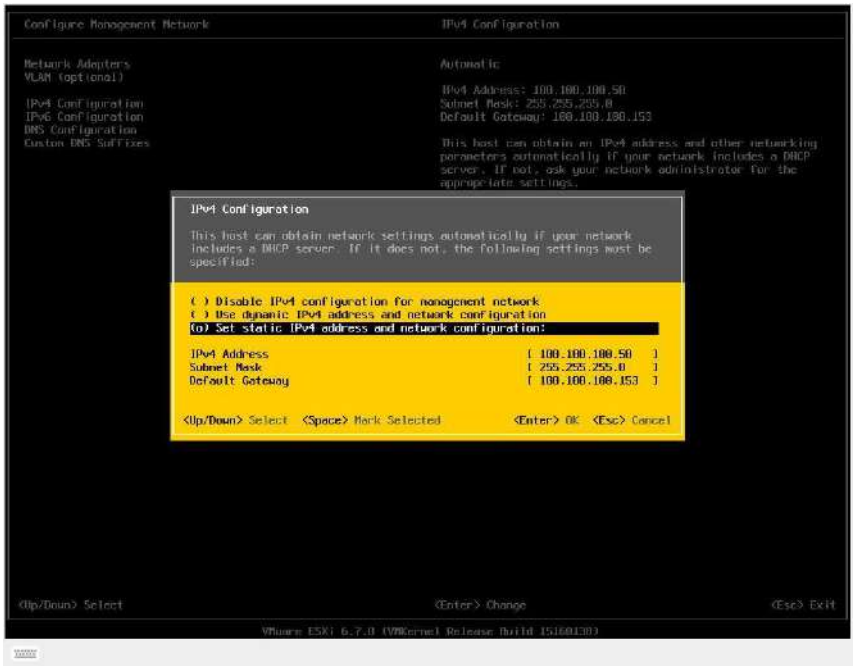
Select **Set static IPV4 address and network configuration**. Enter the IP Addresses as needed, then hit the **Esc** key to return.



Select **IPv6 Configuration**, then hit the **Enter** key.

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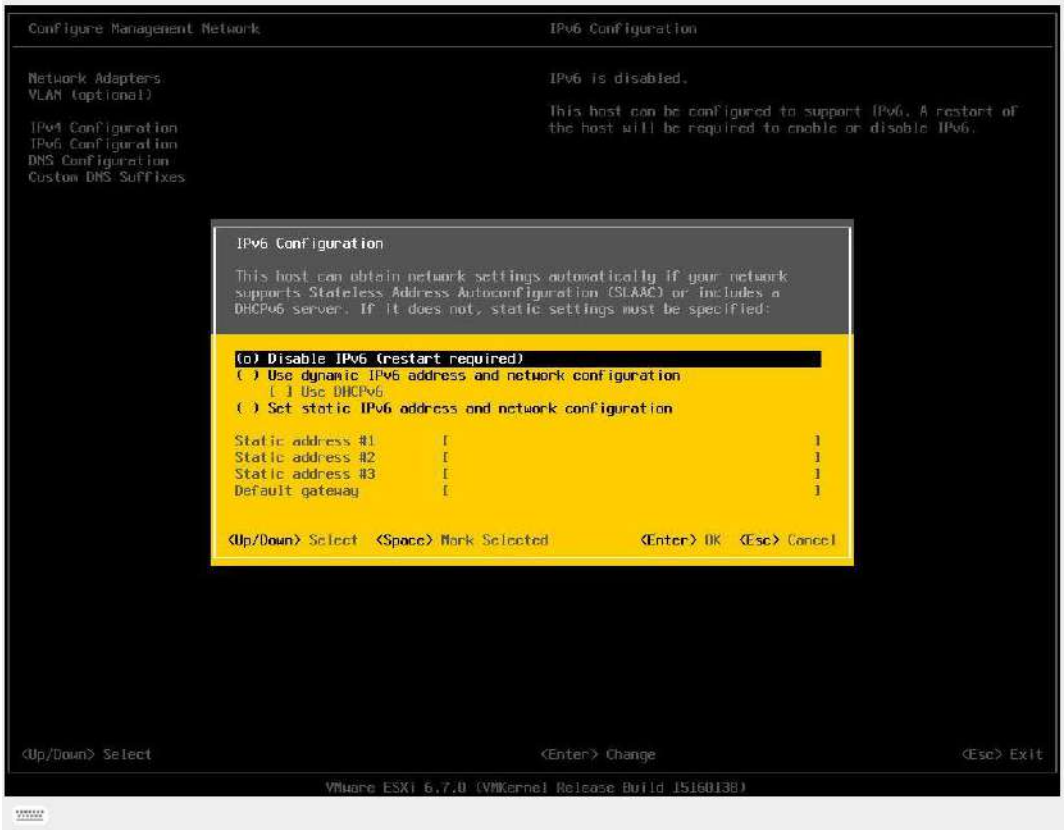
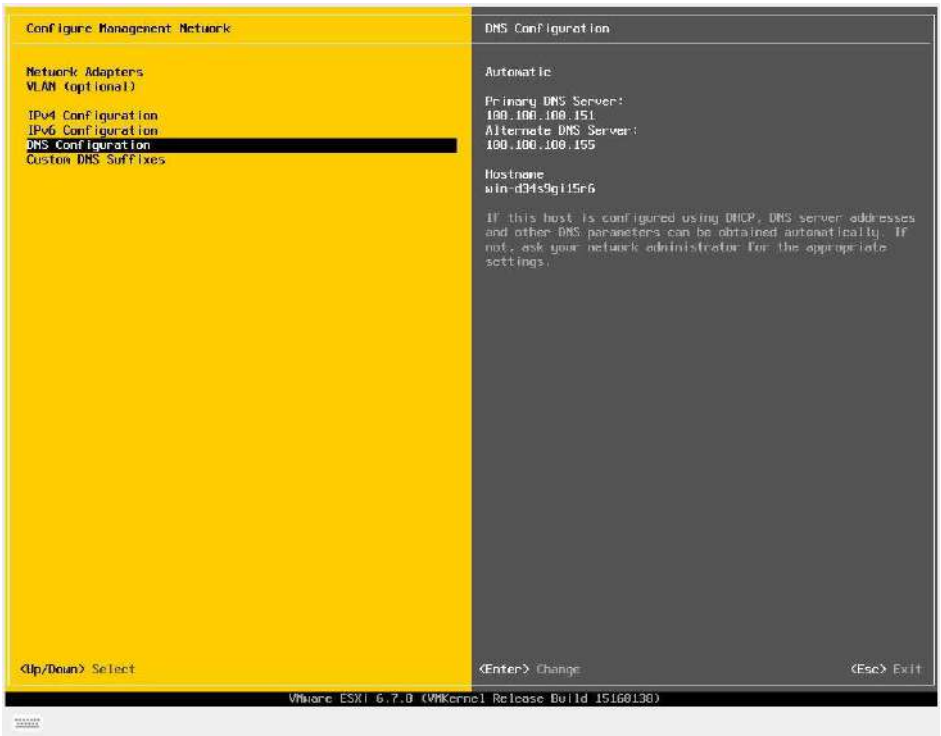
On the following screen, select **Disable IPv6 (restart required)**, then press the **Esc** key.



Select **DNS Configuration**, then press the **Enter** key.



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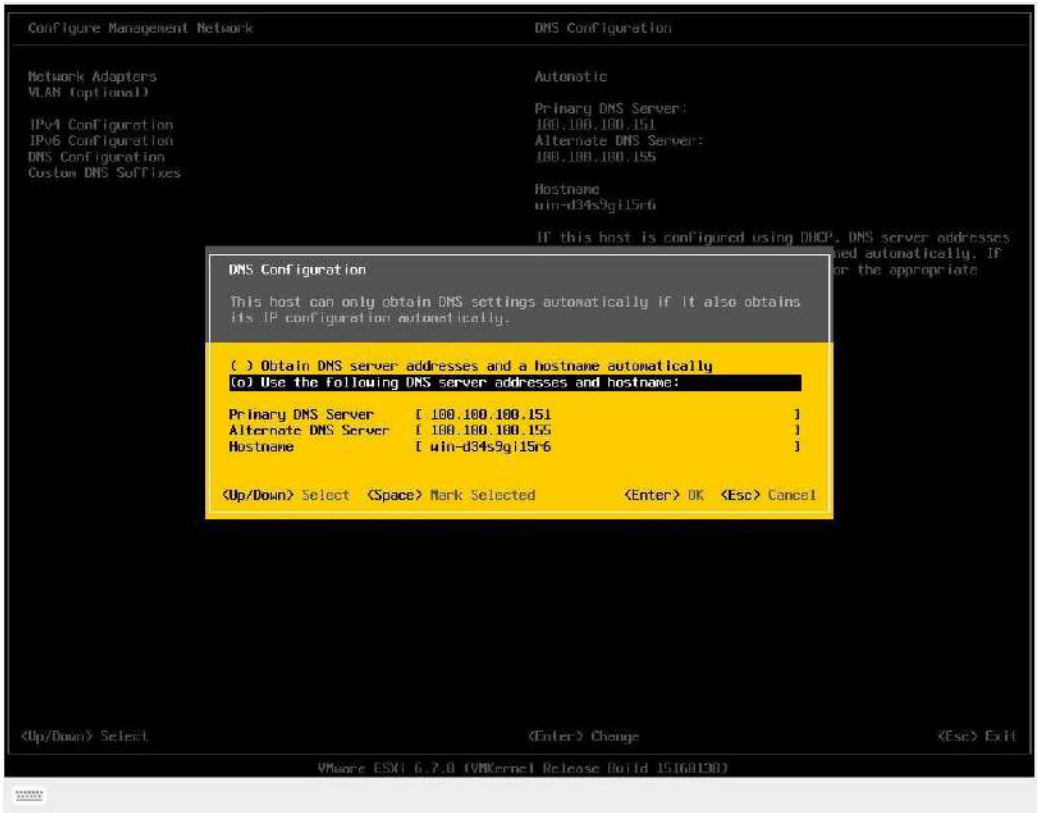
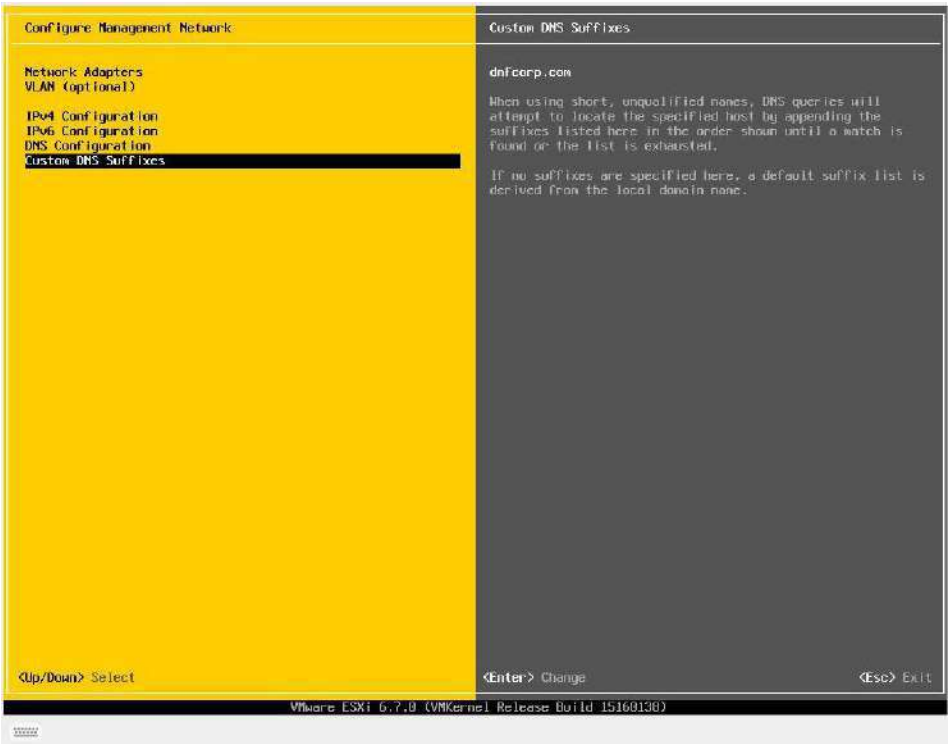
Enter information for **DNS server** and **hostname** as needed then hit the **ESC** key to return.



Select **Custom DNS Suffixes**, then hit the **Enter** key.



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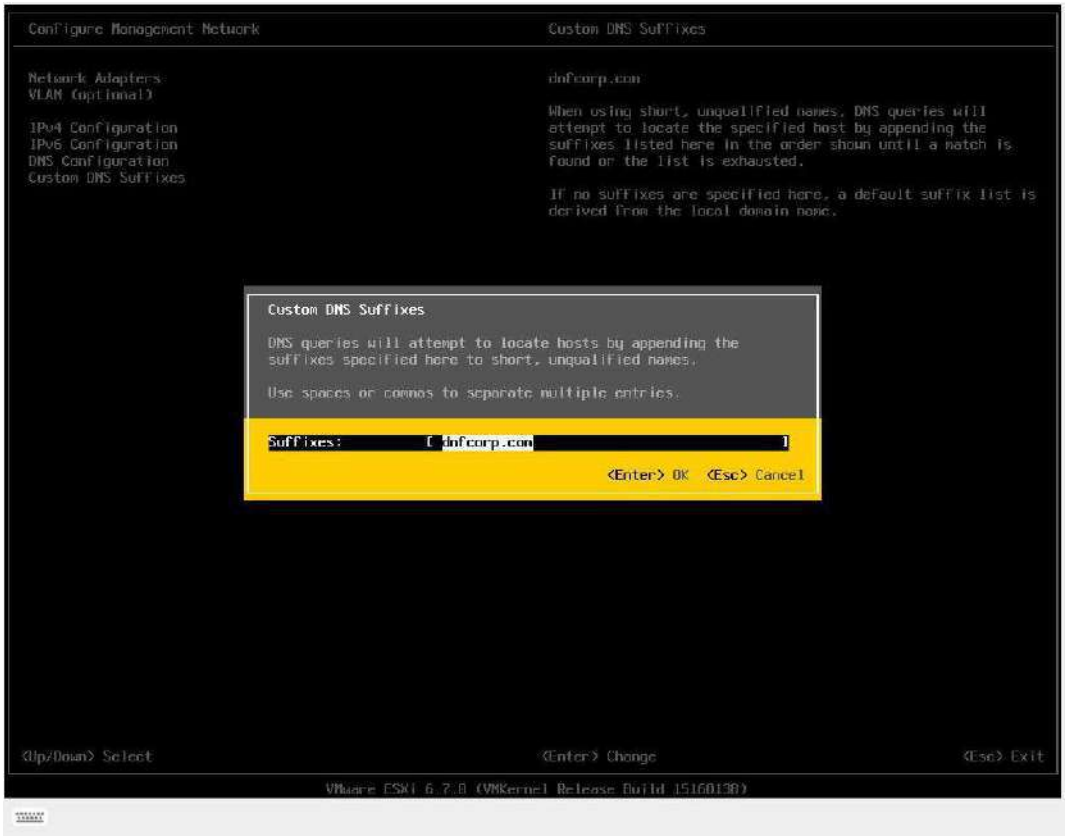
Enter **DNS Suffixes** as needed, then hit the **ESC** key to return.



Select **Restart Management Network** to complete configuration of settings. Hit the **ESC** key to log out.

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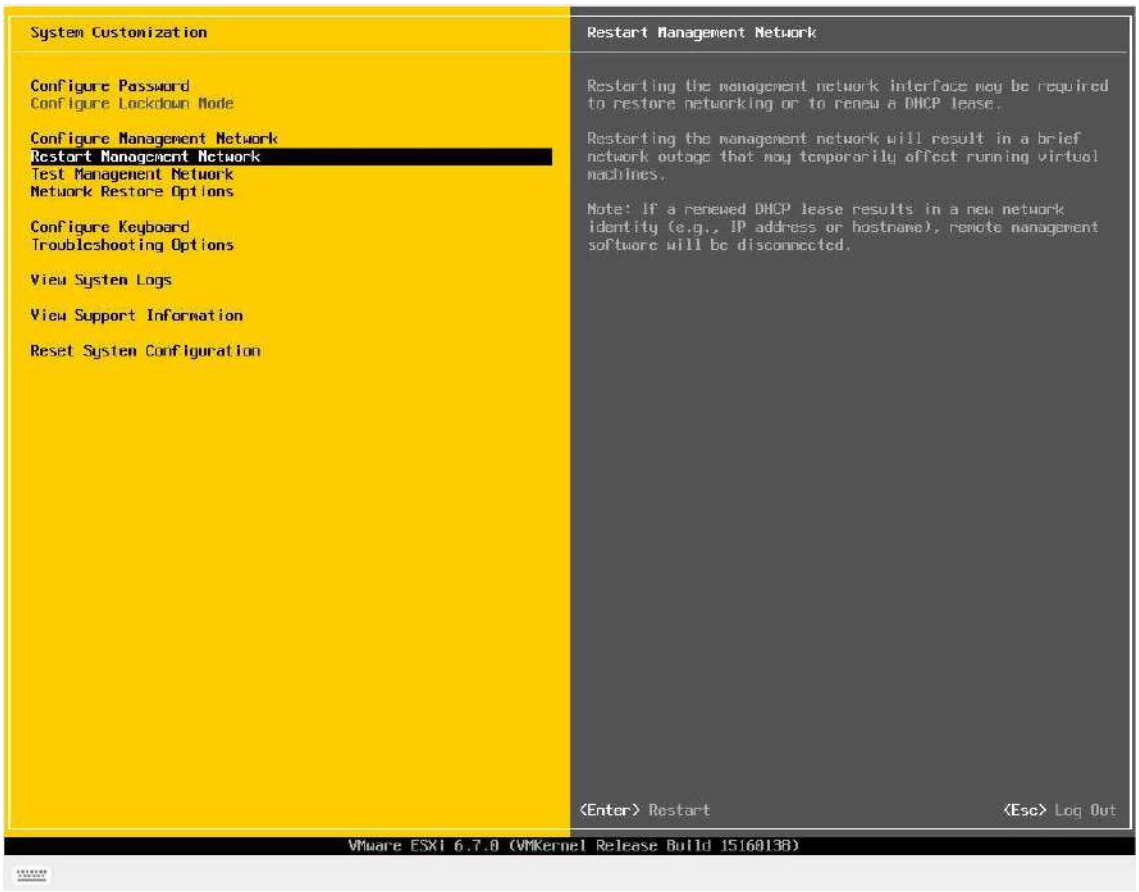
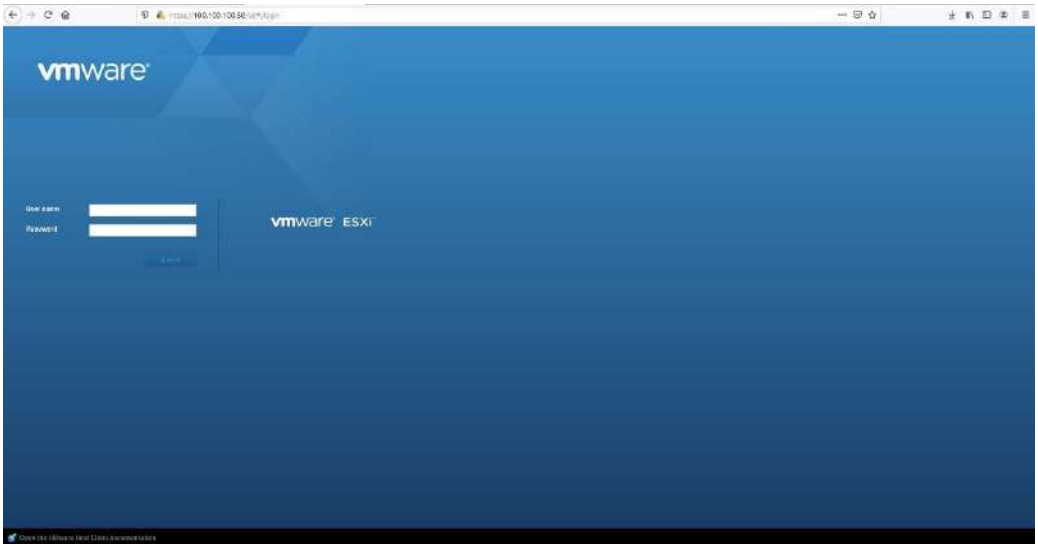

System Customization
Configure Password
Configure Lockdown Mode
Configure Management Network
Restart Management Network
Test Management Network
Network Restore Options
Configure Keyboard
Troubleshooting Options
View System Logs
View Support Information
Reset System Configuration
Restart Management Network
Restarting the management network interface may be required to restore networking or to renew a DHCP lease.
Restarting the management network will result in a brief network outage that may temporarily affect running virtual machines.
Note: If a renewed DHCP lease results in a new network identity (e.g., IP address or hostname), remote management software will be disconnected.
<Enter> Restart
<Esc> Log Out
VMware ESXi 6.7.0 (VMKernel Release Build 15160138)

4.3.1 Steps to Configure SCVM Management Port (VMware)

Launch a browser and navigate to https://<Configured IP address>. Enter **Username** and **Password**, then click on the **Log in** button.

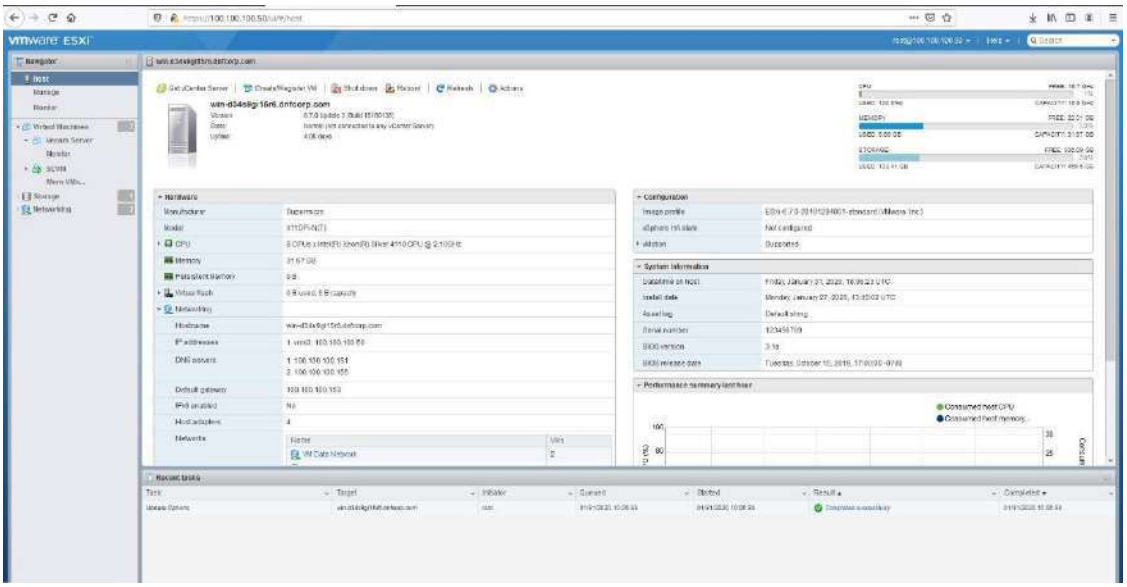


The default login information is as follows:

Username: root

Password: Stonefly1!

1. You will see a screen like the one shown below:



The screenshot above shows one SCVM is already installed. If you want to access the user interface for that particular SCVM, click on that SCVM first and then click on the **Console** Tab. You will see a screen like the one shown below:

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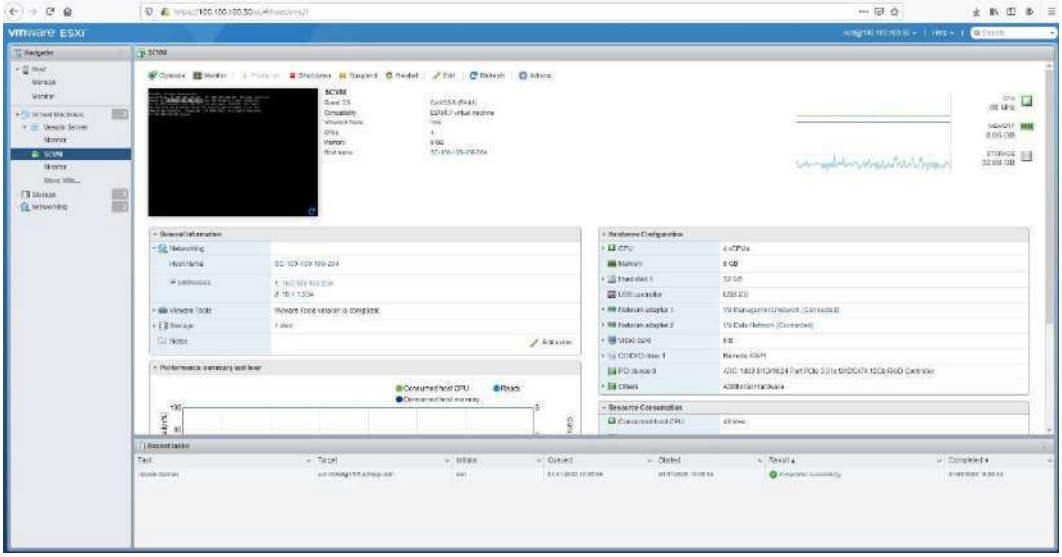


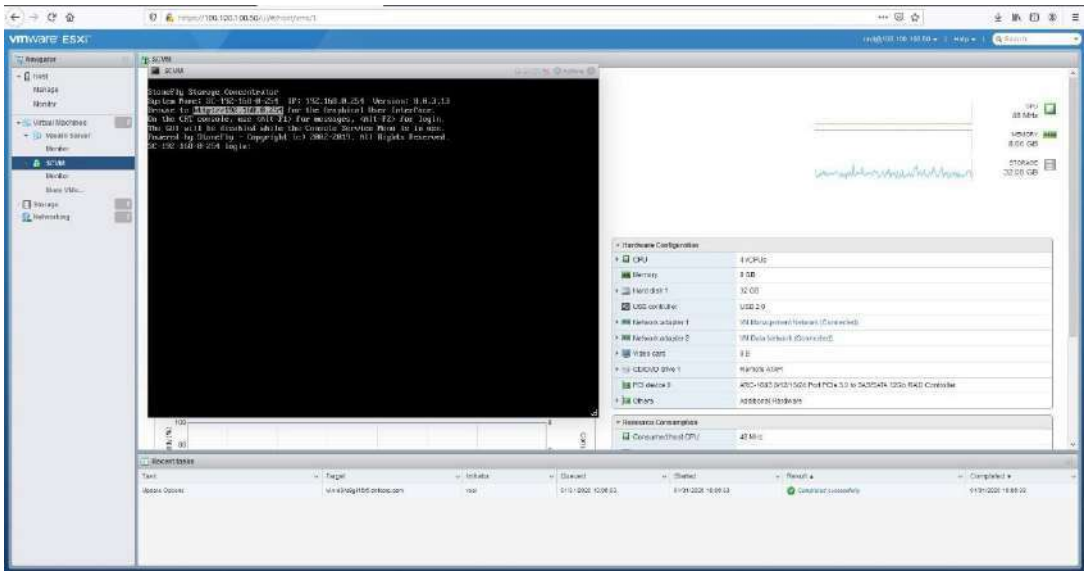
Steps to use the pre-installed SCVM:

1. The SCVM management network interface is preconfigured with the default IP address of 192.168.0.254. This must be changed to a valid address for your LAN network. Login to the **SC Service** console using the VMware **Virtual Console** for the SCVM by doing the following:

   a. Press **Enter** to display the login prompt.

   b. At the User ID prompt type **console** and hit **Enter**.

   c. At the password prompt type **coni100o** and hit **Enter**. Note that the User ID and password are case sensitive.



2. Using the **SC Service** menu, configure the management network by selecting option **2**, for **2 – Network**.

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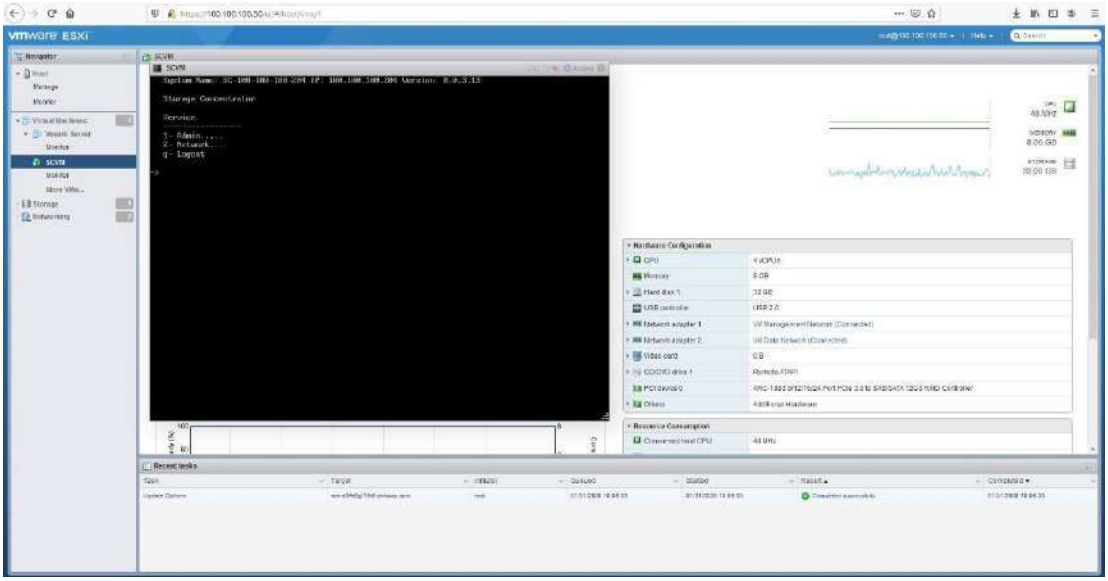
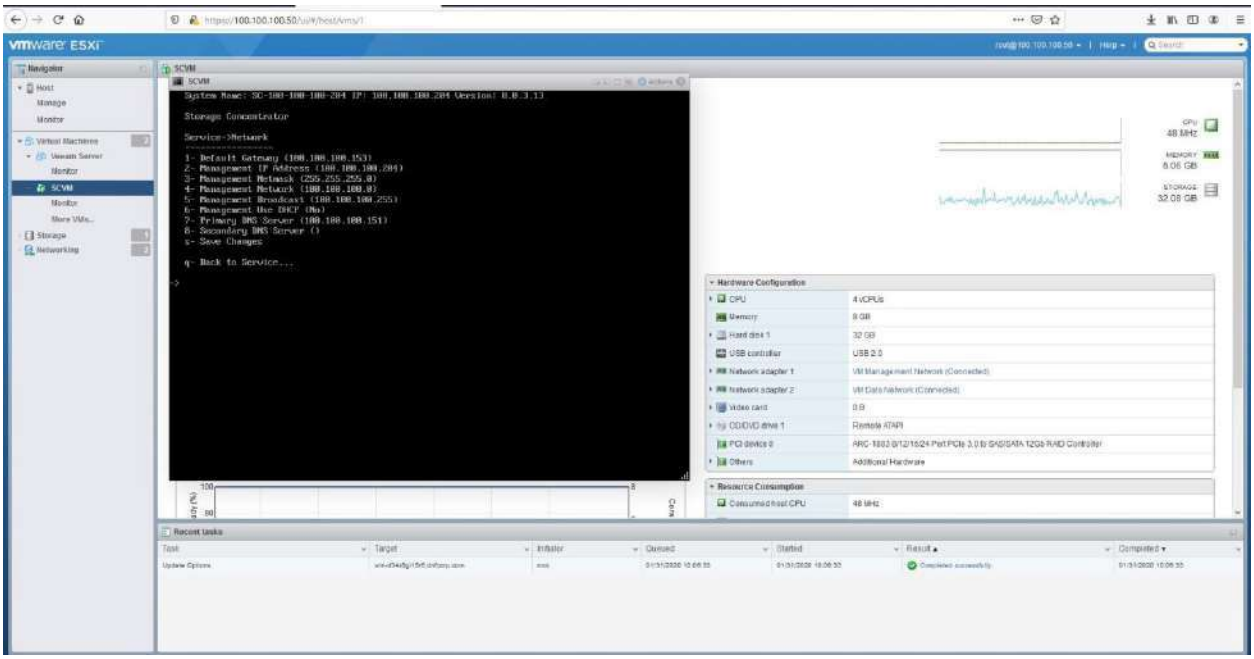


The default settings are shown below. Adjust settings as needed then **save** the changes.



Adjusted settings are shown below. Enter **q** at the command prompt to exit back to the service menu. Enter **q** again to exit out of the user console service.

Note: the browser access to the SCVM Management GUI is blocked while the **SC Service** menu is active. Also note that there can be a short delay before the SCVM GUI becomes available.

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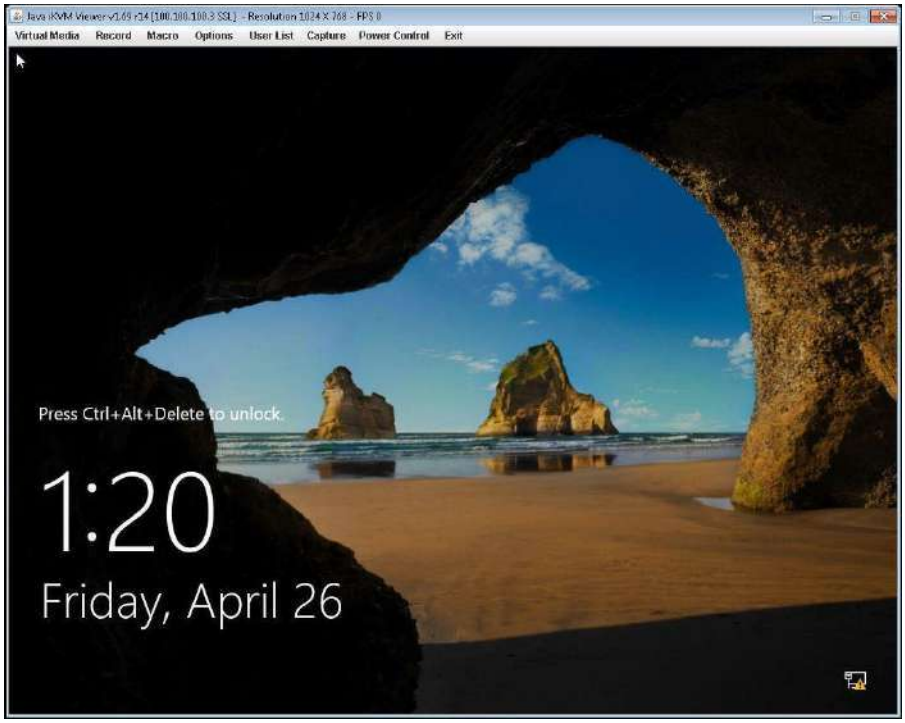
4.4 Hyper-V Management Network Configuration

This section describes configuration of the Hyper-V Management Network. *IP Addresses* and *Hostnames* used in this section are for example only. Refer to Section 2.4 for VMware Management Network Configuration.

Connect to System console. Attach a keyboard and monitor or use system IPMI KVM.



Launch the console, press **CTRL + ALT + DELETE** and enter the following credentials:

Username: **administrator**

Password: **Stonefly1**

Go to the **Control Panel** and select **Network and Internet** and then **Network and Sharing Center**.

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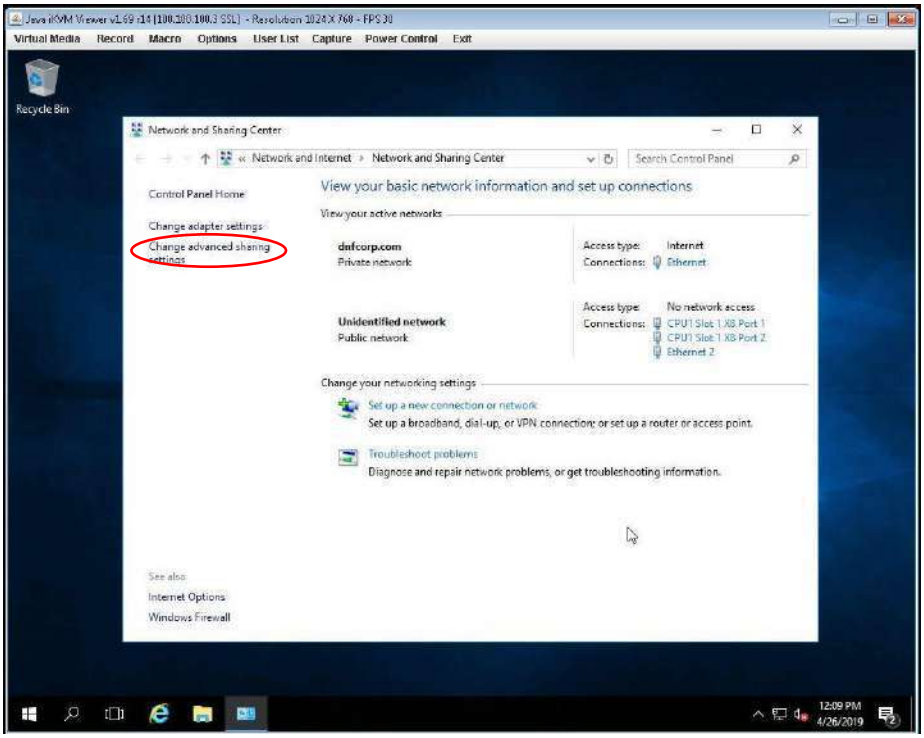
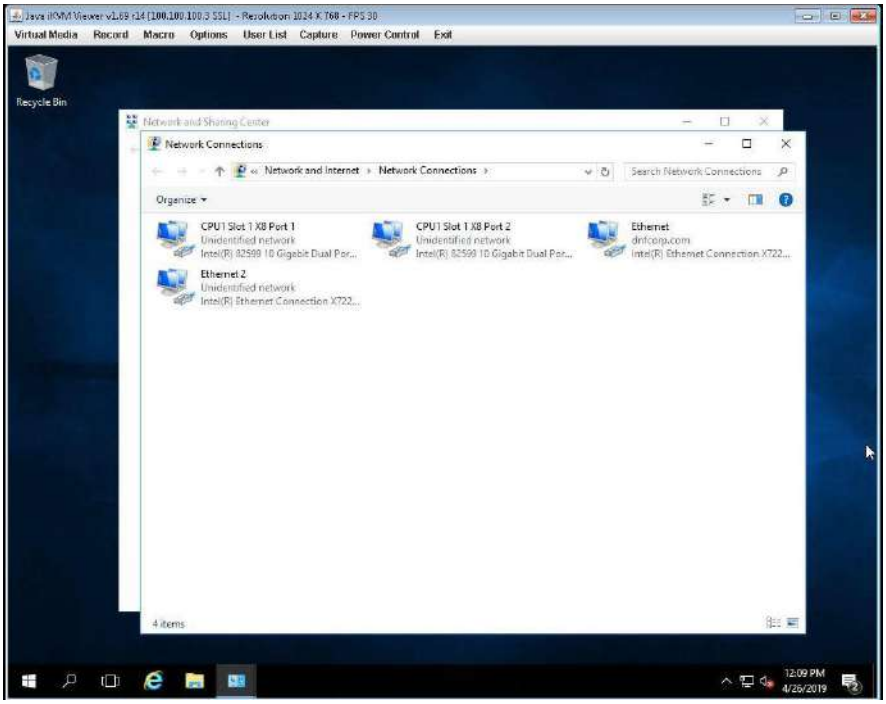


Click on **Change adapter settings** from the left menu.



Right click on the appropriate management port and select properties. This will open the **Management Network Properties** window:

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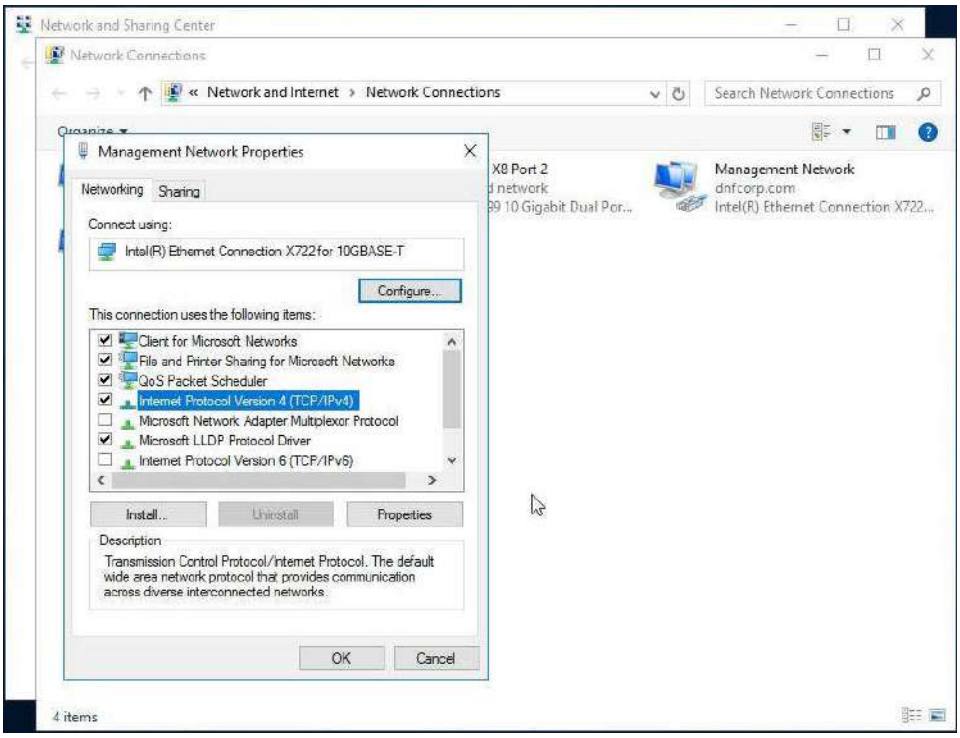
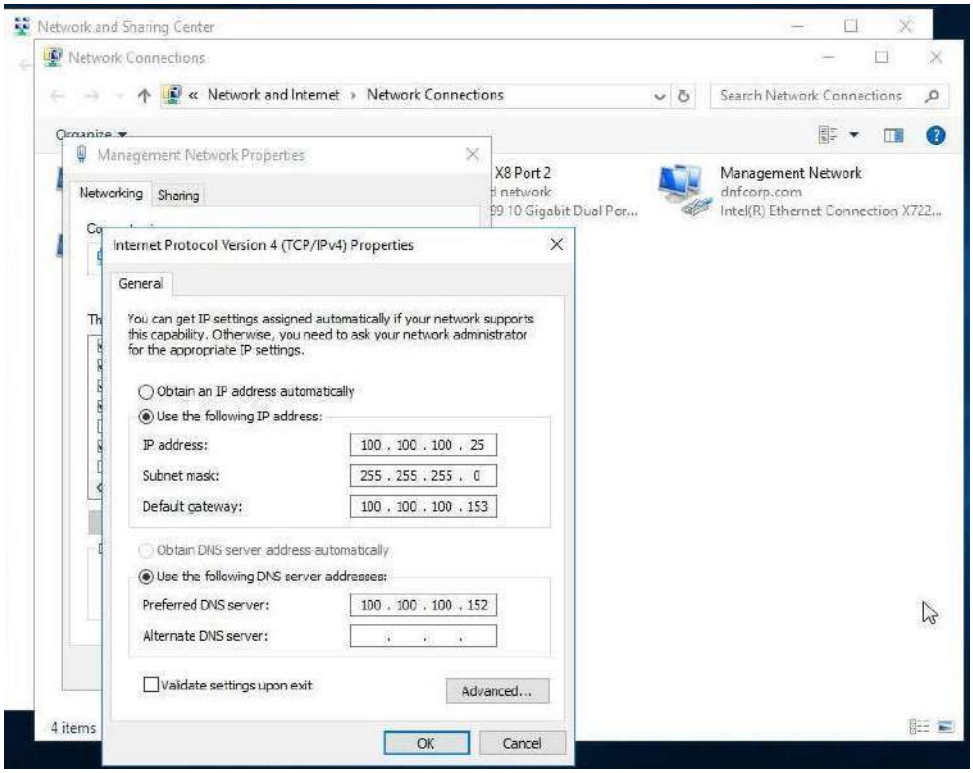


Left click on **Internet Protocol Version 4 (TCP/IPv4)** and then click **Properties:**



Assign **static IP and DNS server addresses**. Once you've assigned the values, click on **OK.**

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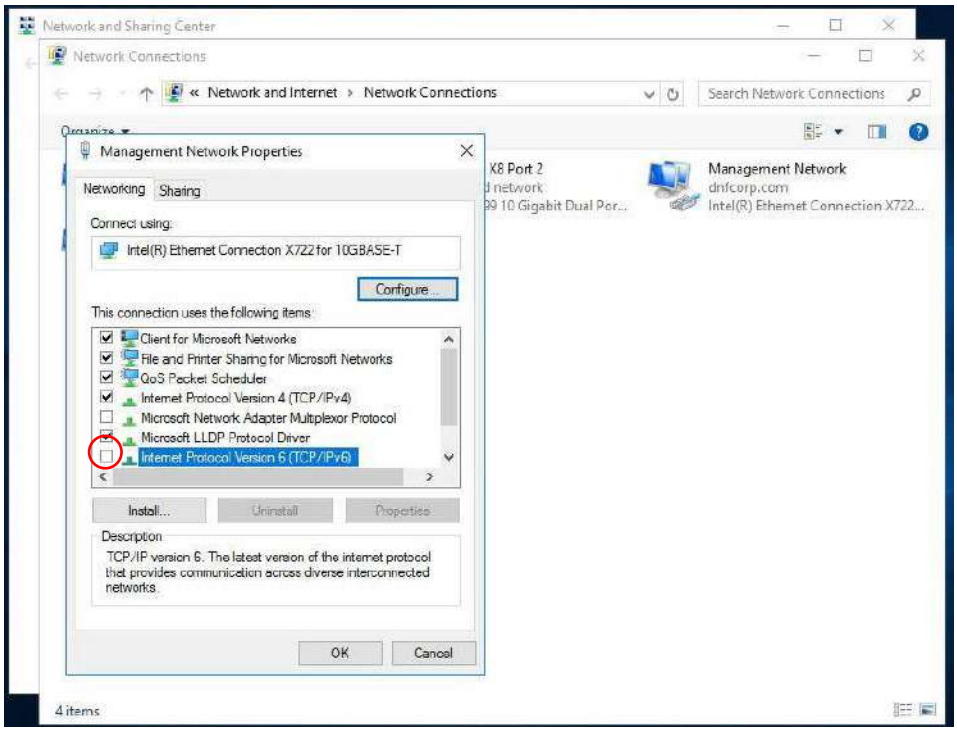
Make sure to disable **Internet Protocol Version 6** from the **Management Network Properties** window by unchecking the box next to it.



After disabling **IPv6**, click **OK.** This completes the network configuration process.

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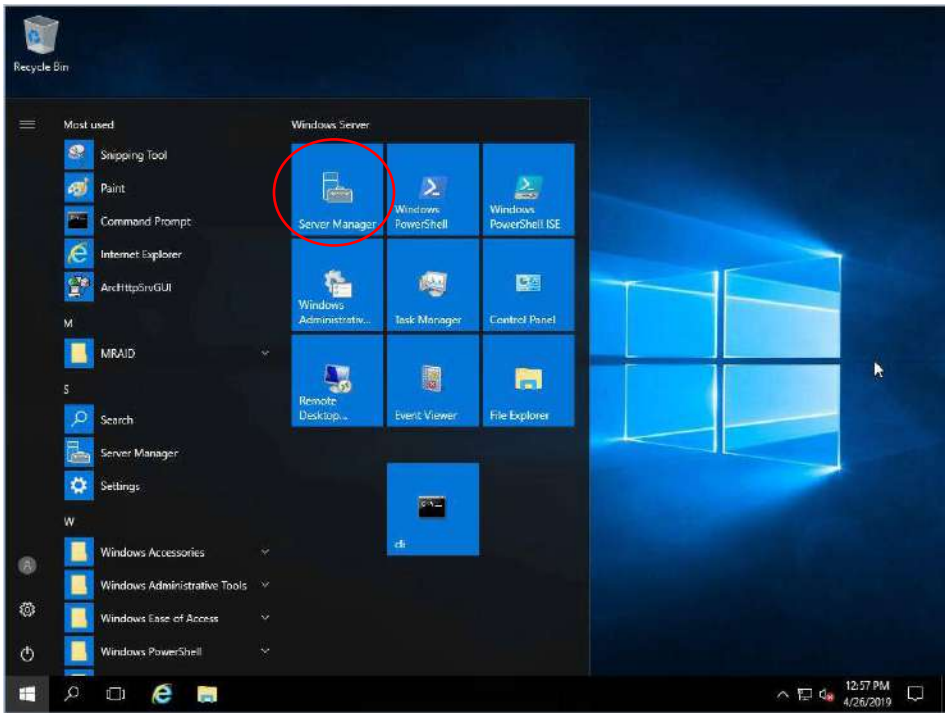
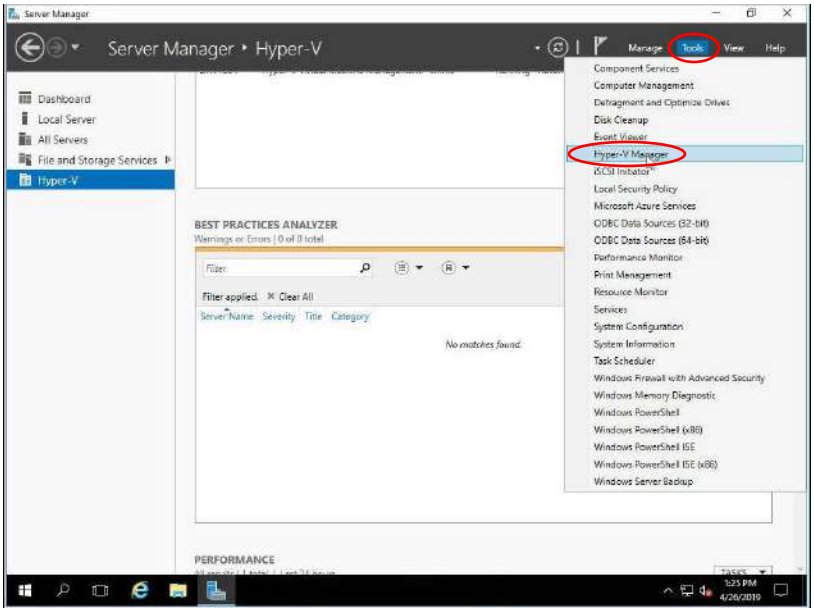
4.4.1 Steps to Configure SCVM Management Port (Hyper-V)

In order to configure the SCVM Management port for Hyper-V, you need to access Hyper-V manager, you can do that from the **Server Manager** window. To access the **Server Manager** on your Hyper-V, click on the Windows Tab and then click on **Server Manager,** as shown below:



In the **Server Manager** dashboard, click on **Tools** and select **Hyper-V Manager.**



This will open the **Hyper-V Manager** with SCVM on it.

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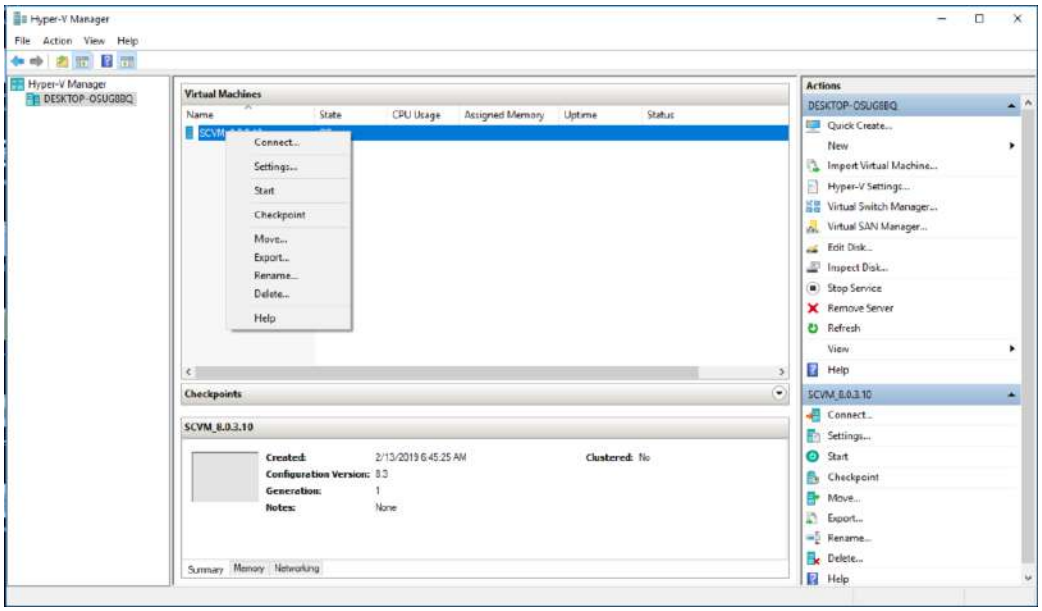
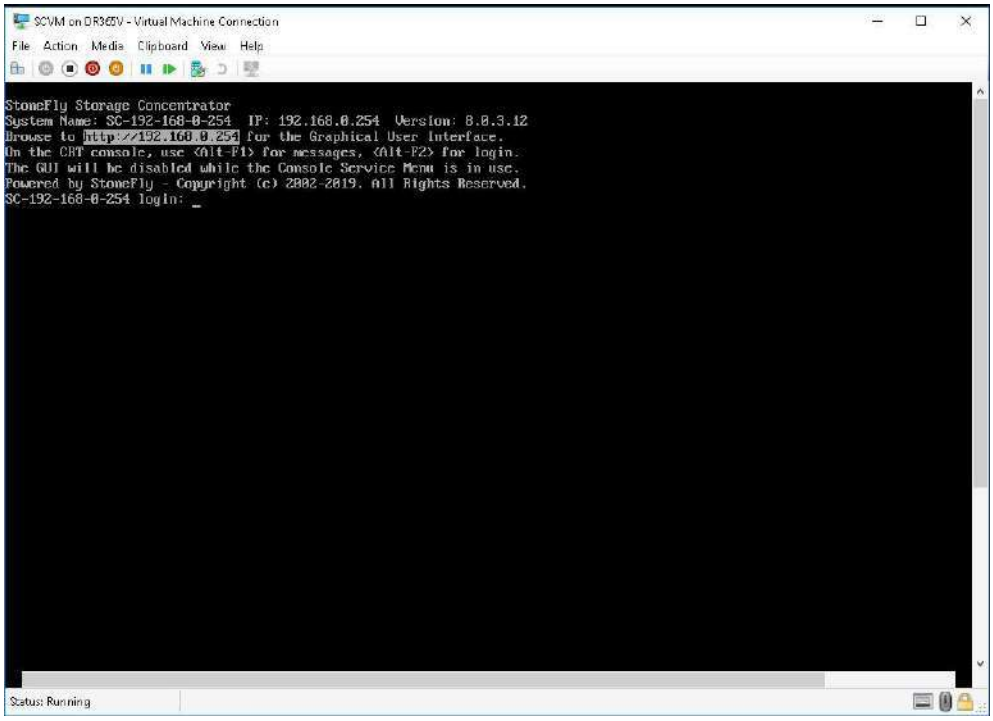


Right click on **SCVM,** and select **Connect** to access the user interface of the Virtual Machine. This will show a window like this:



Steps to use the pre-installed SCVM:

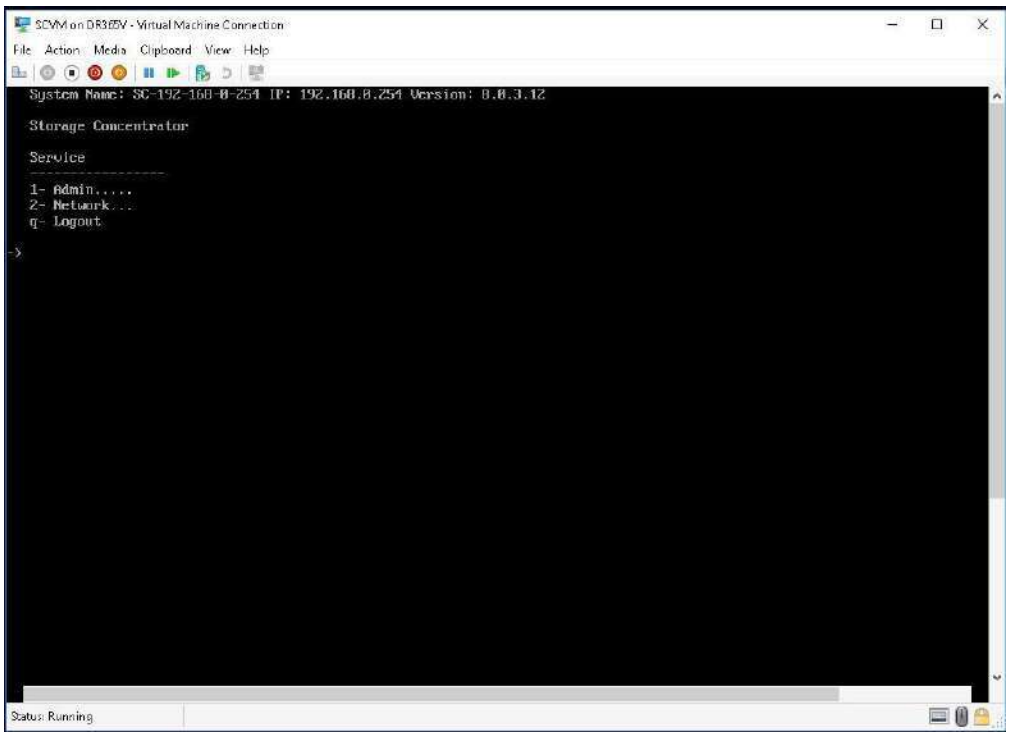
1. The SCVM management network interface is preconfigured with the default IP address of 192.168.0.254. This must be changed to a valid address for your LAN network. Login to the **SC Service** console using the Hyper-V "Virtual Console" for the SCVM by doing the following:

   a. Press **Enter** to display the login prompt.

   b. At the User ID prompt type **console** and hit **Enter**.

   c. At the password prompt type **coni100o** and hit **Enter**. Note that the User ID and password are case sensitive.

2. Using the **SC Service** menu, configure the management network by selecting option **2**, for **2 – Network**.



The default settings are shown below. Adjust settings as needed then **save** the changes.

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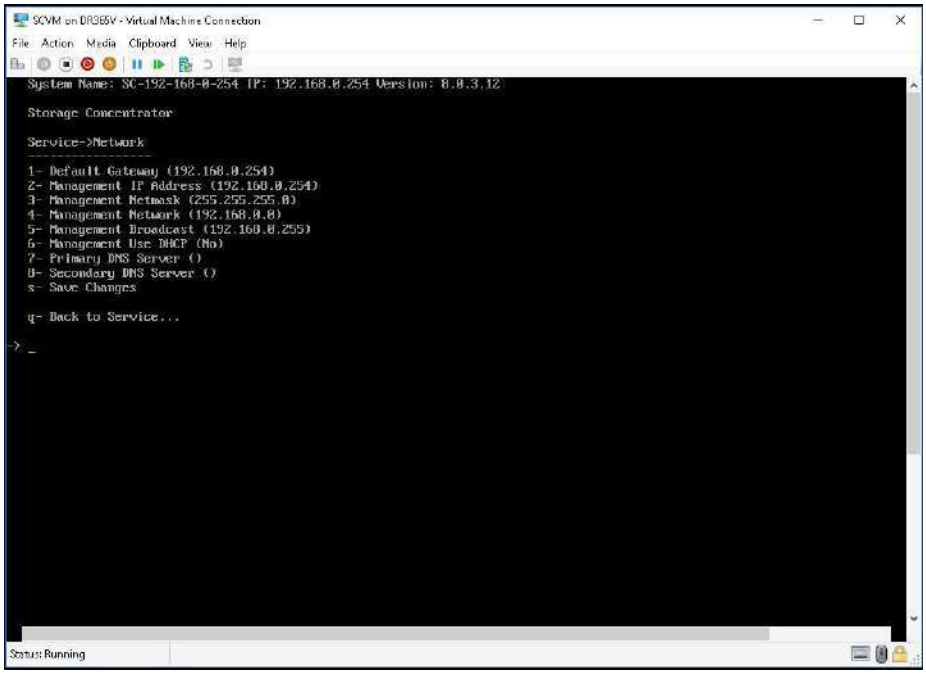

Adjusted settings are shown below. Enter **q** at the command prompt to exit back to the service menu. Enter **q** again to exit out of the user console service.

Note: the browser access to the SCVM Management GUI is blocked while the **SC Service** menu is active. Also note that there can be a short delay before the SCVM GUI becomes available.

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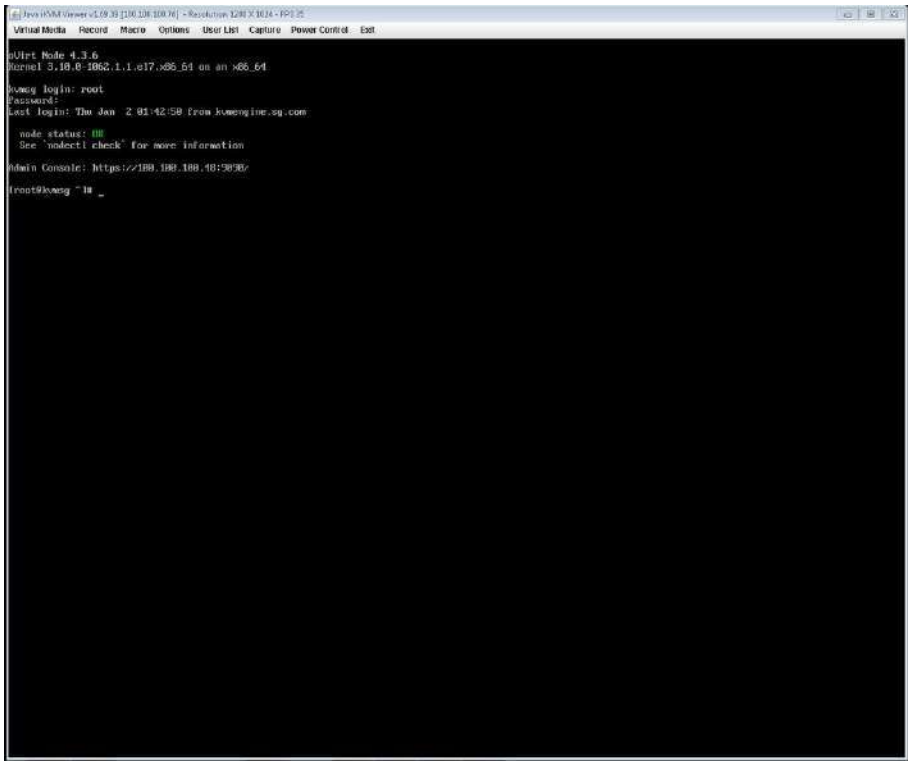
4.5 KVM Management Network Configuration

This section describes the configuration of the KVM management network. *IP Addresses and Hostnames* used in this section are for example only.

Connect to the system console and attach a keyboard and monitor or use system IPMI KVM (if supported).

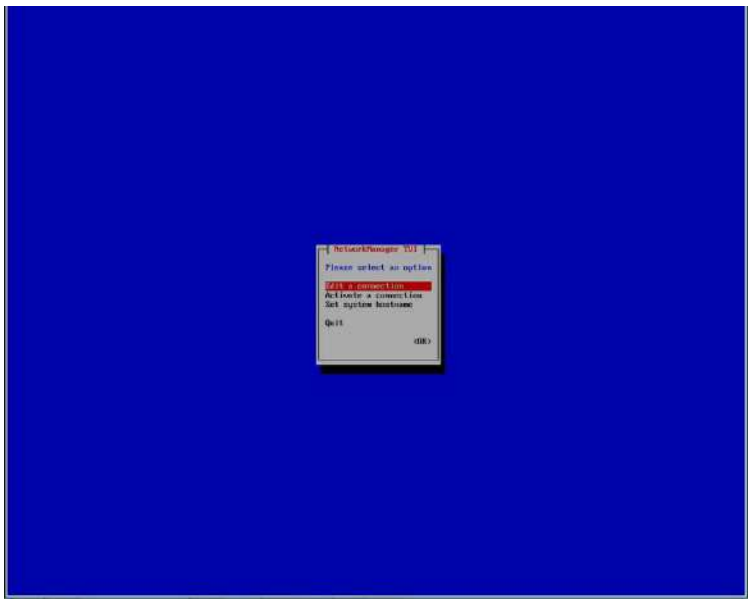
To access the settings, enter the following credentials:

Login: root
Password: Stonefly1!



Once connected, type **nmtui** and press **Enter.**

This will open the **NetworkManager TUI** window with three options. Select **Edit a Connection** from the three and press **Enter.**



From the list of Ethernet connections, select the respective management NIC port from the list, then select **Edit** from the right hand pane and press **Enter.**

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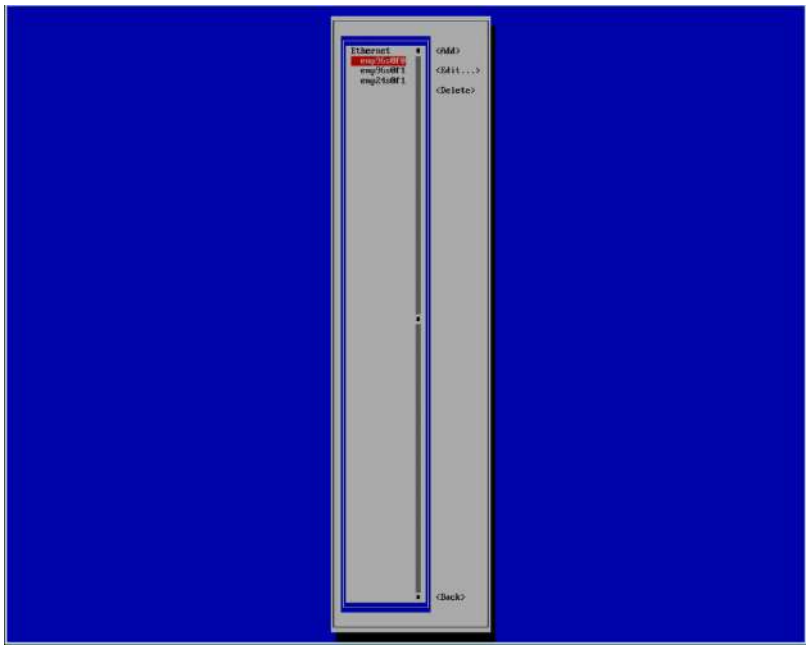
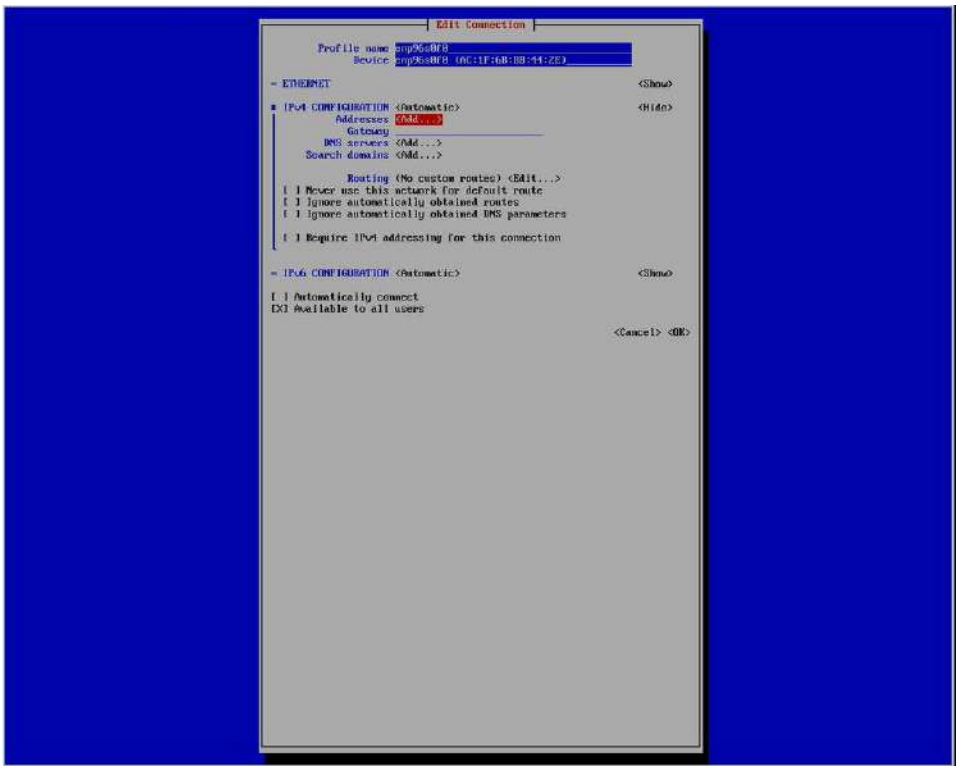


In the **Edit Connection** window, go to the **Addressess** option, select **Add** and press **Enter** to type in the pre-configured IP address.



After adding the IP address, select **Ok** and press **Enter** to close the **Edit connection** window.

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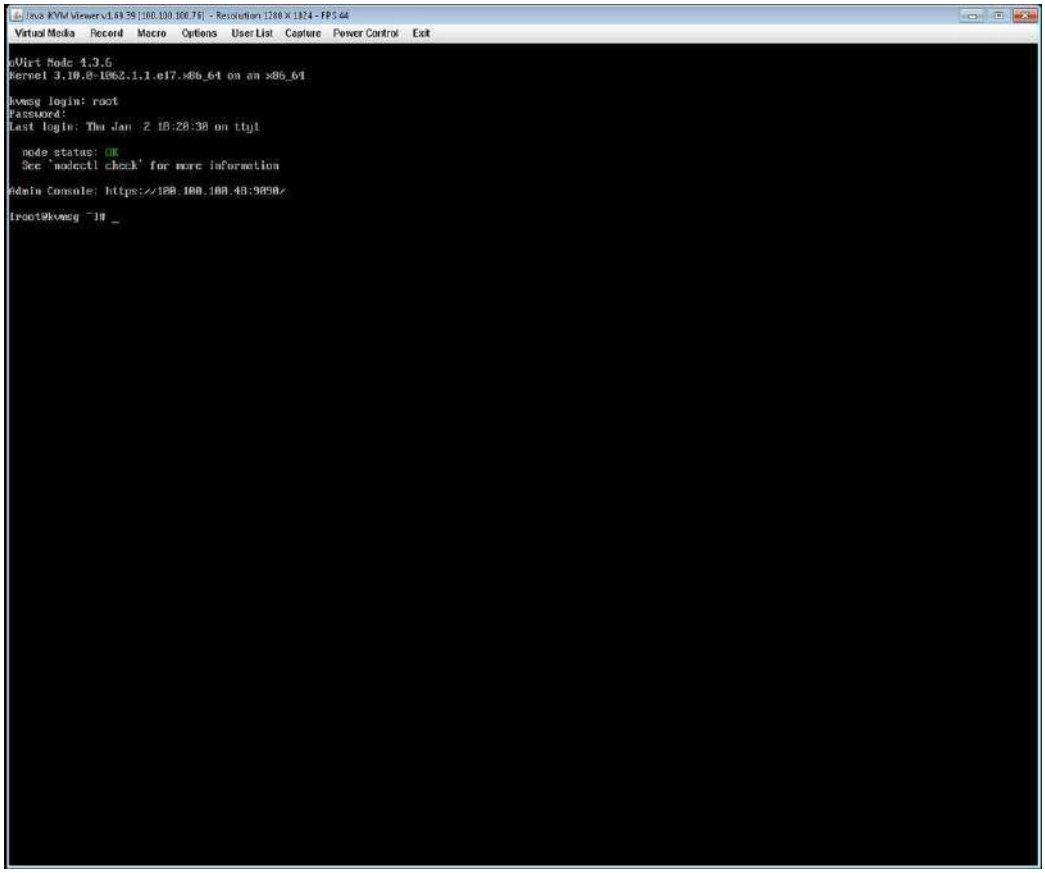
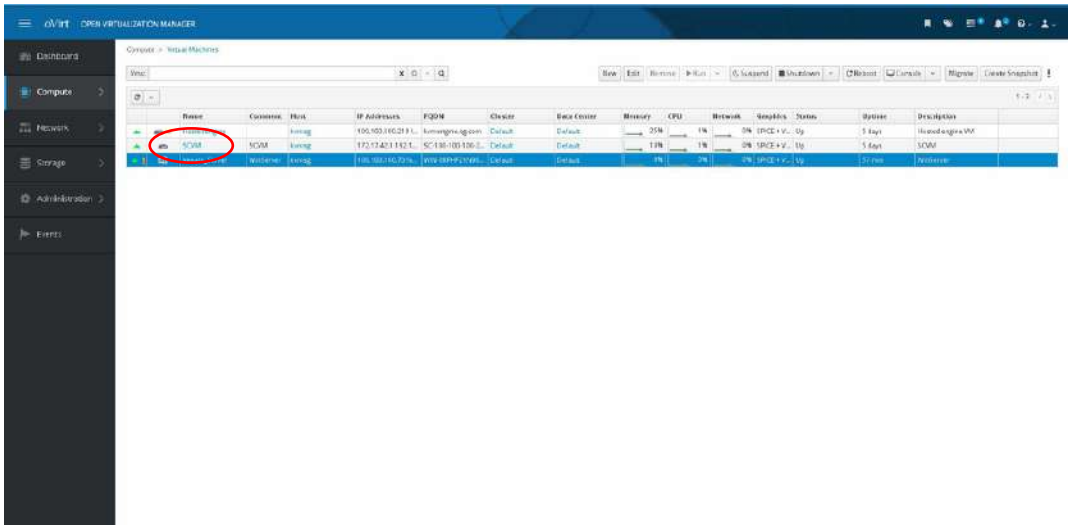
This will complete the KVM management network configuration.



4.6 Steps to Configure SCVM Management Port (KVM)

To configure the SCVM management port, use the **Open Virtualization Manager** (oVirt) access the SCVM console by clicking on **SCVM** from the list.



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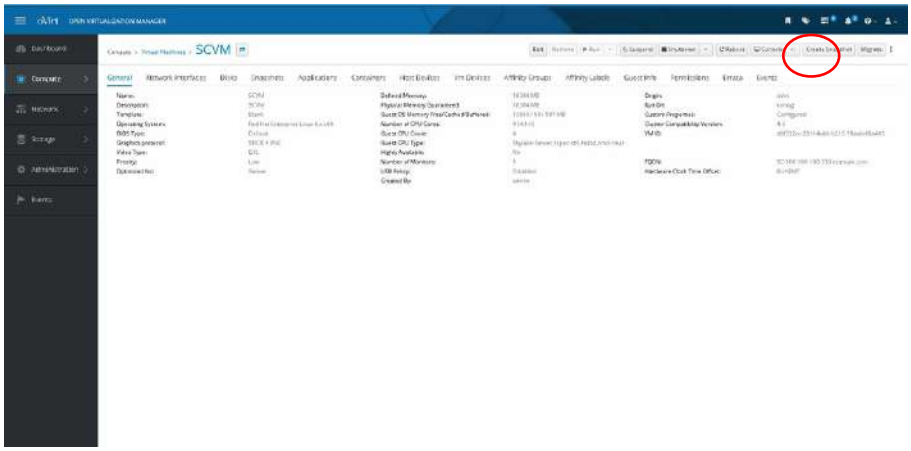
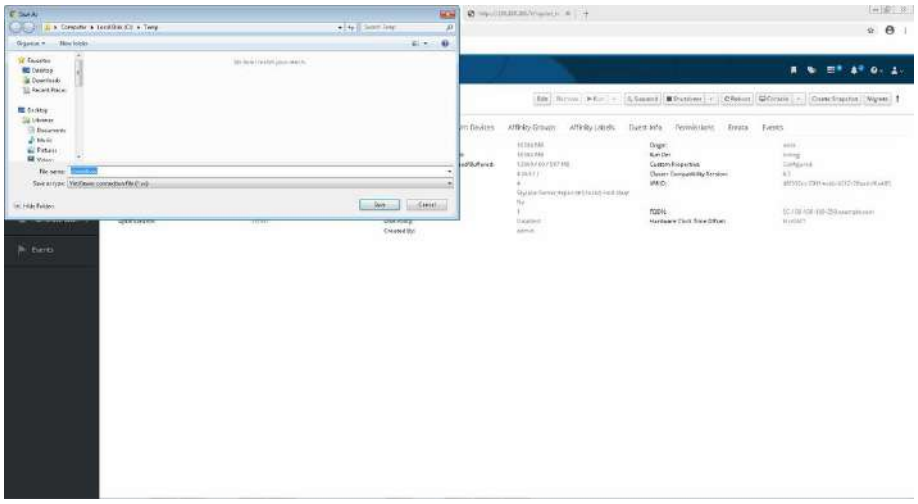
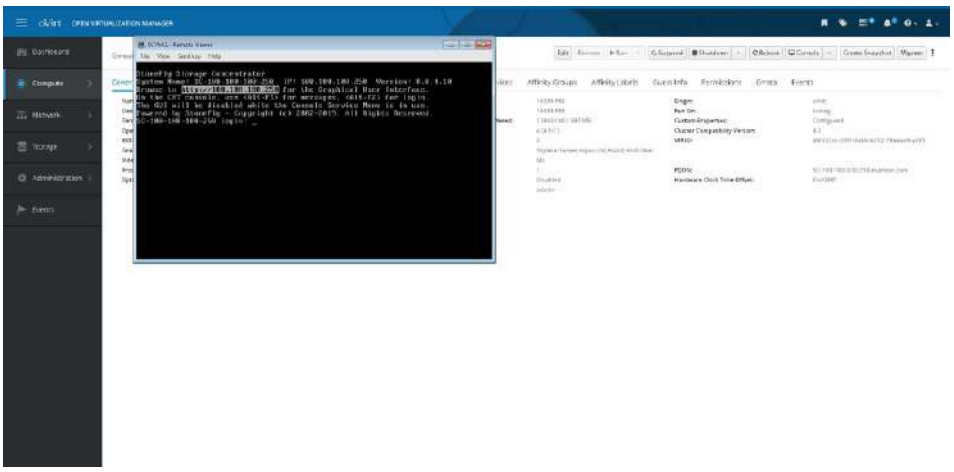


Click on the **Console** button in the top right corner; this will open a **Save As** window.



Type in a filename and download the SCVM **SC Service Menu** utility. Note: this process repeats each time you need to access the SCVM **SC Service Menu**.

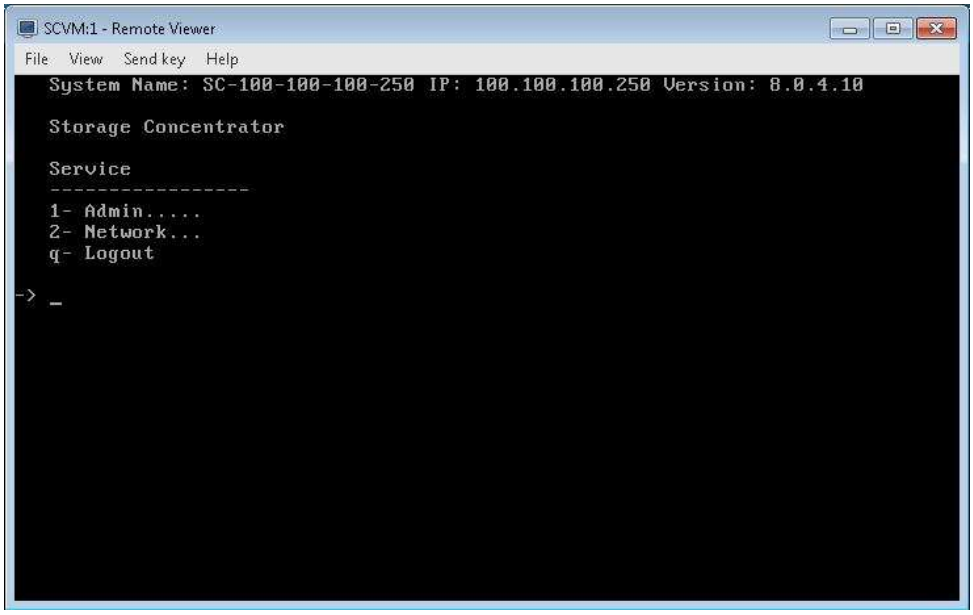


Login to the **SC Service** console:

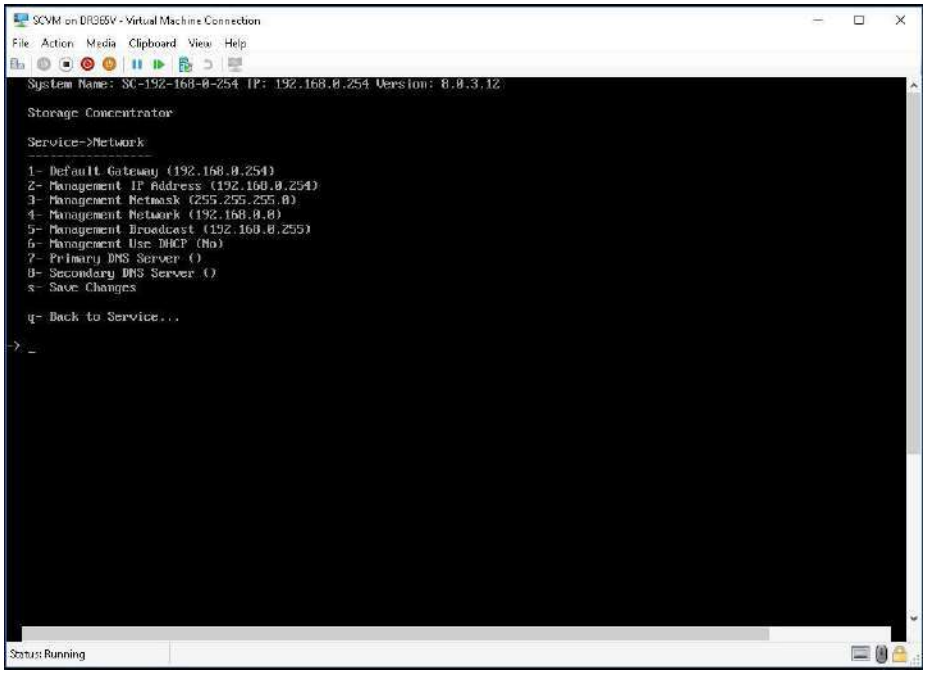
a. At the login prompt type **console** and hit **Enter**.

b. At the password prompt type **coni100o** and hit **Enter**. Note that the User ID and password are case sensitive.

2. Using the **SC Service** menu, configure the management network by selecting option **2**, for **2 – Network**.



The default settings are shown below. Adjust settings as needed then **save** the changes.



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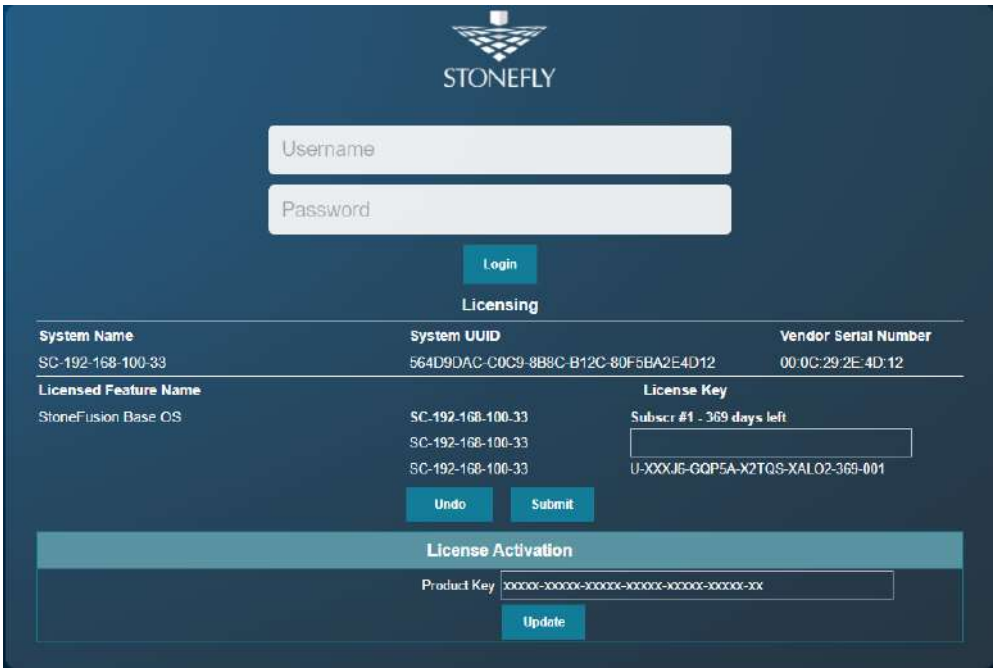
Adjusted settings are shown below. Enter **q** at the command prompt to exit back to the service menu. Enter **q** again to exit out of the user console service.

Note: the browser access to the SCVM Management GUI is blocked while the **SC Service** menu is active. Also note that there can be a short delay before the SCVM GUI becomes available.

4.7 Configuring the SCVM

Note: The process of SCVM configuration is the same for Hyper-V and VMware hypervisors.

Launch a browser then navigate to https://<configured IP address>.



USS Login Screen

1. In the User ID field type: **admin**
2. In the Password field type: **M@n4g1ng**
3. Click **Submit**. The Home Page screen will appear.
4. Click **System**.
5. Click **Admin**.
6. Click **Auto Save**. The Auto Save screen will appear.

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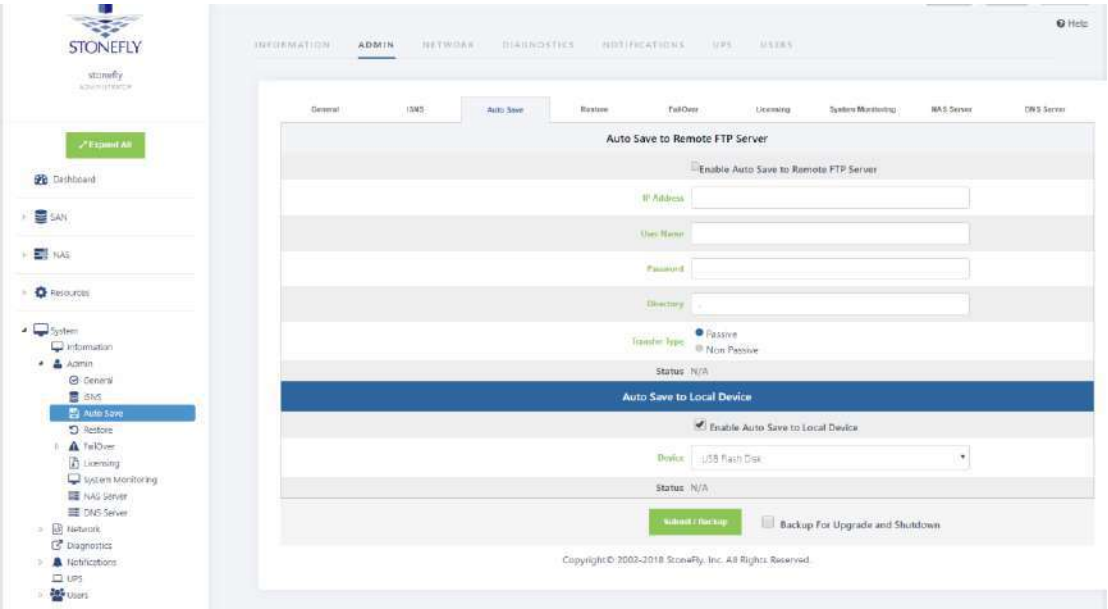
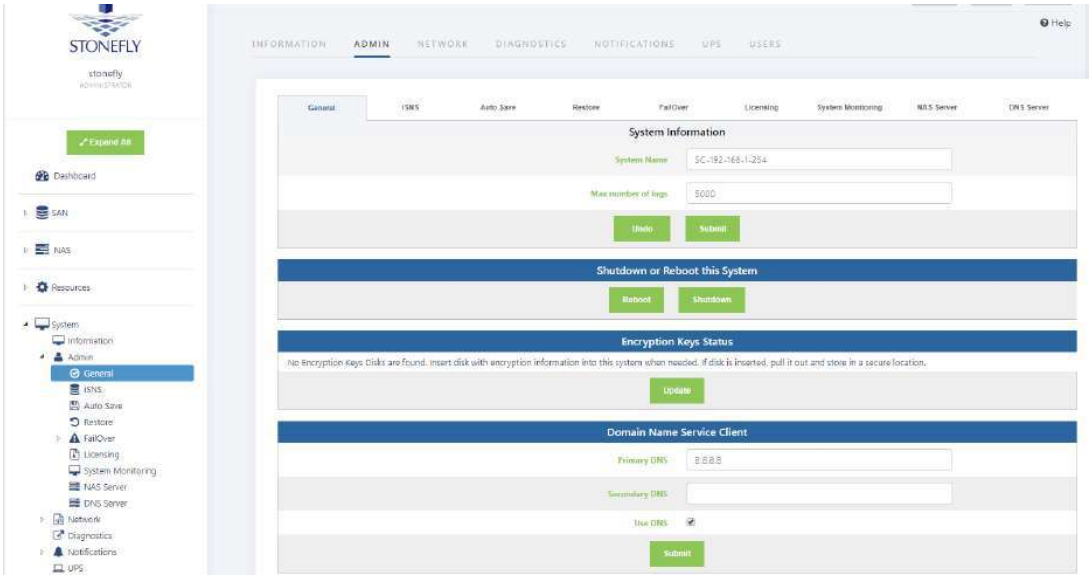


USS System Auto Save Screen

7. Select method(s) of saving the database. A USB Flash drive must be inserted into the USB port prior to Enabling. Checkmark **Enable Auto Save to Local Device** and select **USB Flash Disk** from the dropdown menu. Click **Submit**. For **Auto Save to Remote FTP Server** create a directory for each Storage Concentrator. Fill in the IP Address, User Name, Password and directory. Select **Passive** or **Non Passive** and click **Submit**. Both methods can be used, but at least one should be configured to ensure recovery if needed.

8. Navigate to **Admin > General**. The system admin screen will appear.

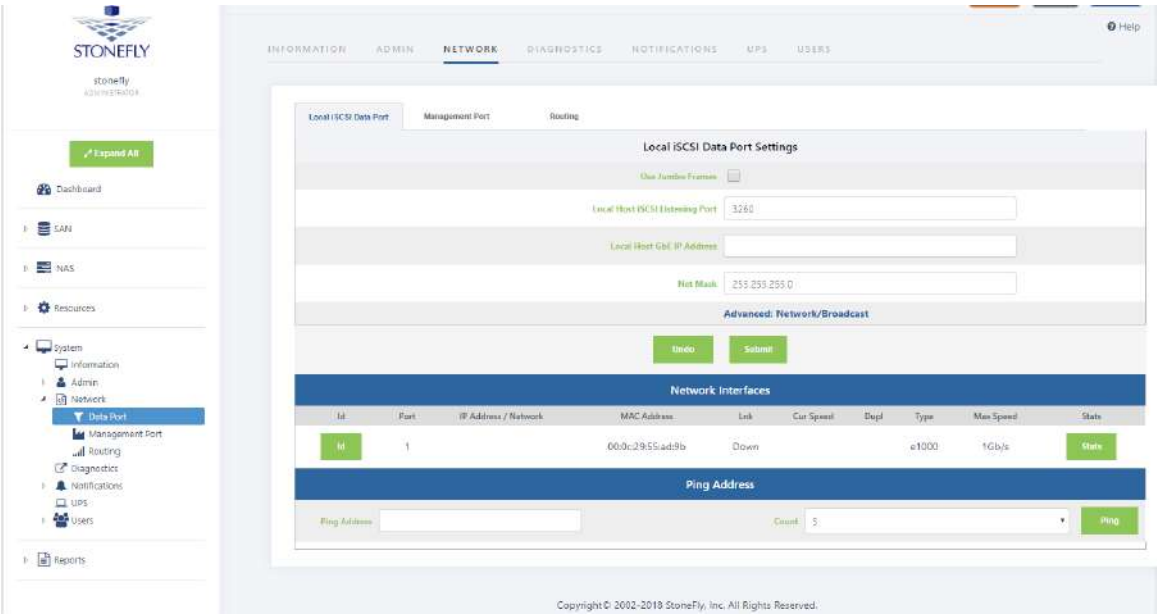


USS System Admin Screen

9. Enter a system name for the *USS*.
10. Enter the number of log records for the database in the **Max number of logs** field.

The default number of log records is 2000, which is sufficient for most installations.

11. Click **Submit**.
12. Navigate to **Network > Data Port**. The Local iSCSI Data Port Settings screen will appear with the current system (factory) settings. Most fields are blank.

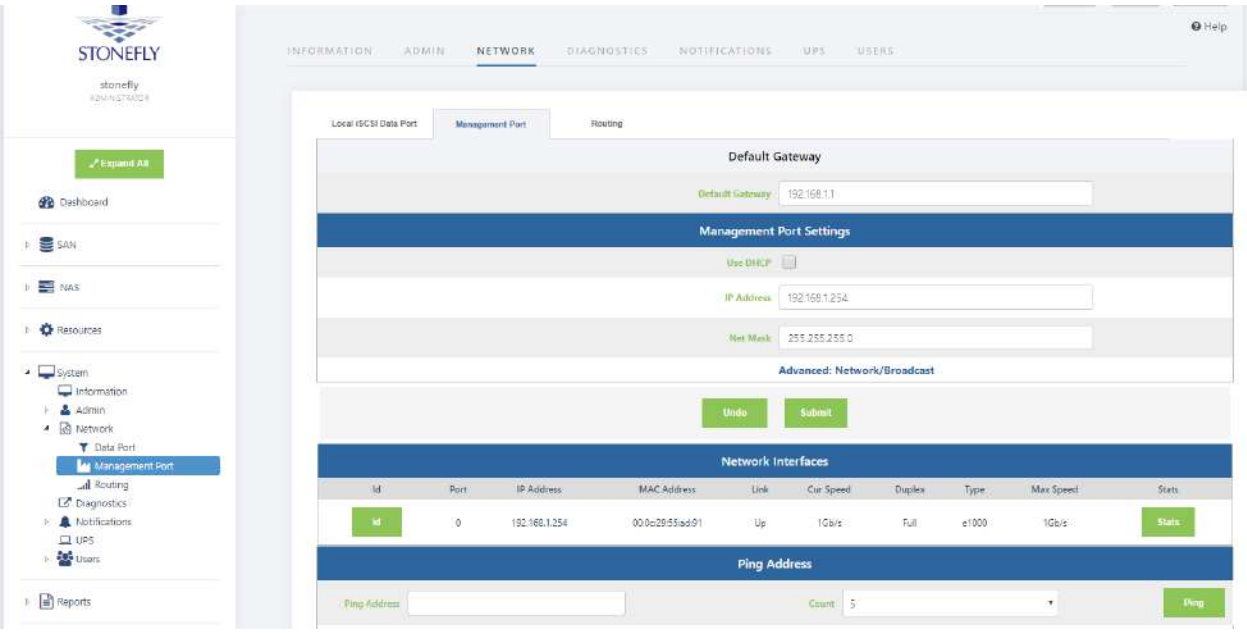


USS Local iSCSI Data Port Settings Screen

13. Enter the **IP Address** for the Local iSCSI Data Port.
14. Enter the **NetMask** setting for the Local iSCSI Data Port.
15. Click **Submit**.
16. Click **OK** to continue when the confirmation dialog box appears. The *USS* automatically configures the Network and Broadcast settings based on the IP address and Netmask settings. Click on the **Advanced: Network/Broadcast** link to view or modify the Network and Broadcast settings. For more information, see "Chapter 2: Administrative Interface" in the Storage Concentrator User's Guide.
17. Review the status of all SAN Network Interfaces to select which ports will be used. It is not necessary to select all available ports. All ports selected must have cables attached to them to maintain the proper cluster configuration and operation. The **Id** button is used to flash the link light on a specific port. Select a port by clicking on the box in the **Bond** column. Changes are not enforced until the next reboot. At first power up a default configuration is presented. Changing the default settings requires a reboot of the Storage

Concentrator. Navigate to the **System > Admin > General** screen and click on **Reboot**. If no changes are desired continue to the next step to configure the Management Port.

18. Click on **Management Port**. The Management Port Settings screen will appear.



USS Management Port Settings Screen

19. Enter the **Default Gateway** setting.
20. Enter the **IP Address** for the Management port.
21. Enter the **NetMask** setting for the Management port. It is not necessary to select a Management Port as on the Local iSCSI Port screen. There is only one port assigned for this purpose.

The *USS* automatically configures the Network and Broadcast settings based on the IP address and Netmask settings. Click on the **Advanced: Network/Broadcast** link to view or modify the Network and Broadcast settings. For more information refer to "Chapter 2: Administrative Interface" in the Storage Concentrator User's Guide.

Changing the IP address of the Management port will cause your browser to lose its connection to the *USS*. To access the *USS*, set your browser's URL to point to the new IP address.

22. Click **Submit**. The following popups will appear.

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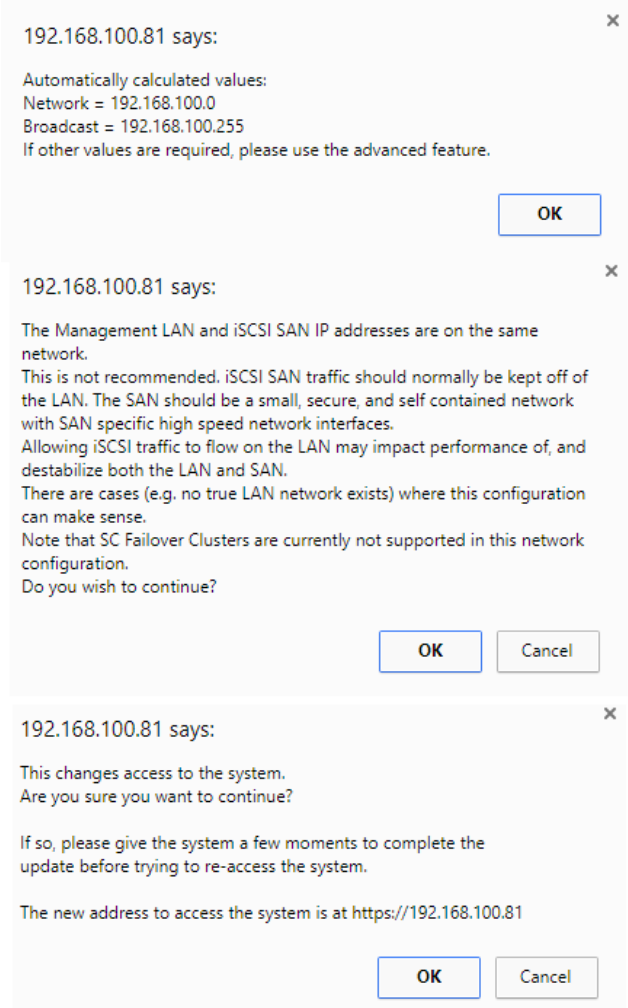
Depending on the speed of your browser connection, you may not see this screen. Your changes will still take effect, however you will need to manually set your browser's URL to point to the new IP address.



System Management LAN Port Change Screen

23. Click on **OK** on each popup screen to continue.
24. Click on the new IP address to confirm the change to the Management Port setting.

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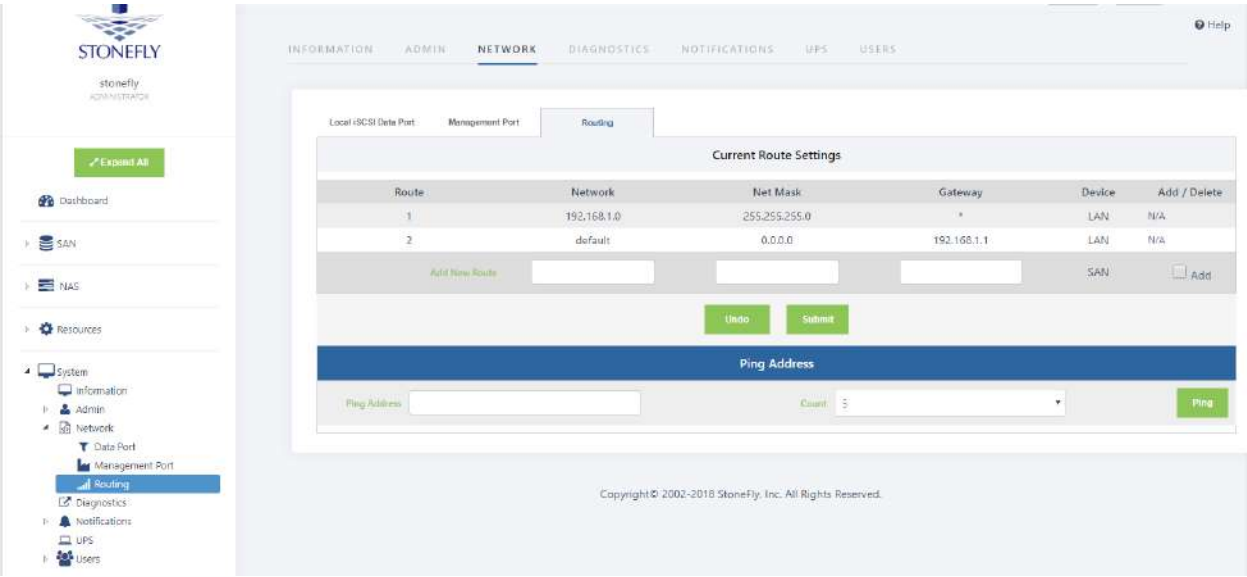
Setting up Routing

To access a host on other networks, routing information to those networks must be configured in the System Management Network Routing screen. A route must be added if the host has a network setting that is different from the one listed in the iSCSI Host LAN Port Settings screen.

For example, if the *USS* network setting is 26.34.128.50 and the host network setting is 106.39.212.6, a route to the host must be configured.

To configure the routing information, use the steps that follow:

1. Navigate to **System > Network > Routing**. The Routing screen will appear.



USS System Management Network Routing Screen

2. In the **Add New Route** fields, enter the **Network**, **Netmask**, and **Gateway** settings for the new route.
3. Click the **Add** check box.
4. Click **Submit**.
5. Navigate to **Admin > General**. The System Admin screen will appear. The *USS* must be rebooted for the new routing settings to be recognized.
6. Click **Reboot**.

Confirming Setup

To confirm that the *USS* is configured properly, do the following:

1. Launch your web browser. In the URL address field, type the IP address you set up for the Management LAN port during the configuration process. Be sure to include **https://** in the address.

The browser will display an alert regarding the security certificate for the site. This occurs because the IP address for the *USS* was changed from the factory default to one appropriate for your network.

2. Follow the screen prompts to accept the certificate. The number of screens will vary depending on which browser you are using. When the security certificate is accepted, the *USS* administrative interface login screen will appear.

3. Click on **System** and then **Network** to confirm the network settings.
4. Click on **Data Port** and confirm the settings.
5. Click on **Management Port** and confirm the settings.
6. Click on **Routing** and confirm the settings.

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Chapter-5: Troubleshooting

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Refer to the following table for helpful hints on solving some of the most common problems. If you cannot find a resolution to your problem here, contact StoneFly. Call (510) 265 1616 and select support from the menu.

Problem	Possible cause	Solution
The USS administrative interface is not accessible from the computer.	The computer is not on the network.	Ensure that the computer is running a supported browser and is on the same network or subnet as the USS.
	An incorrect IP address was typed in the address line of the browser.	Try the following: • Verify and retype the IP address in the browser. • Make sure the IP address begins with https. The IP address does not begin with http.
	Incorrect network settings were entered during installation.	For the correct settings, see "VMware Management Network Configuration".
	The network cable is not properly connected to the computer or the USS.	Try the following: • Check all network cable connections. • Make sure the network cable is not damaged.

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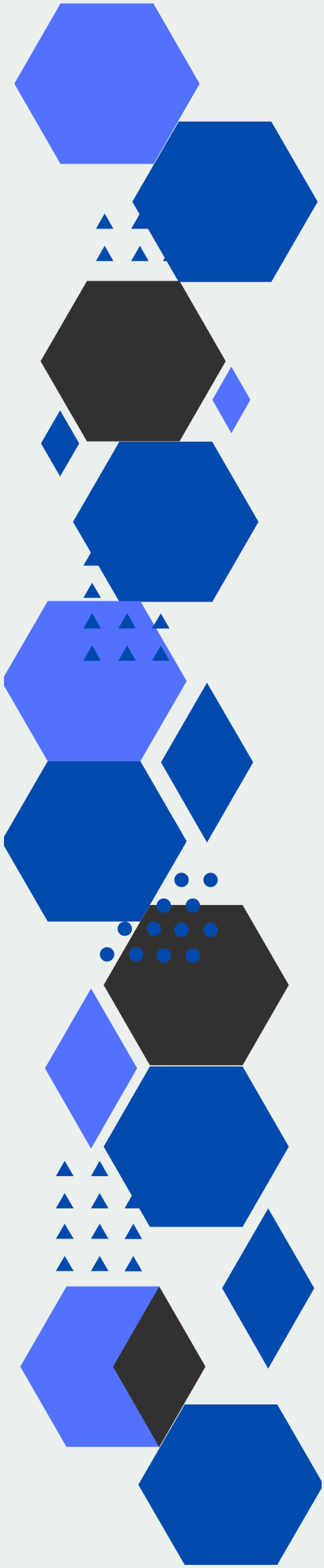

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