



NETLAB+[®]

vmware[®]

IT Academy
Program

VMware vSphere: Install, Configure, and Manage v6.7 Pod

Installation and Configuration Guide

Document Version: **2019-04-25**



Installation of *VMware vSphere: ICM v6.7* virtual pods as described in this guide requires that your *NETLAB+ VE* system is equipped with software version **18.0.0** or later.

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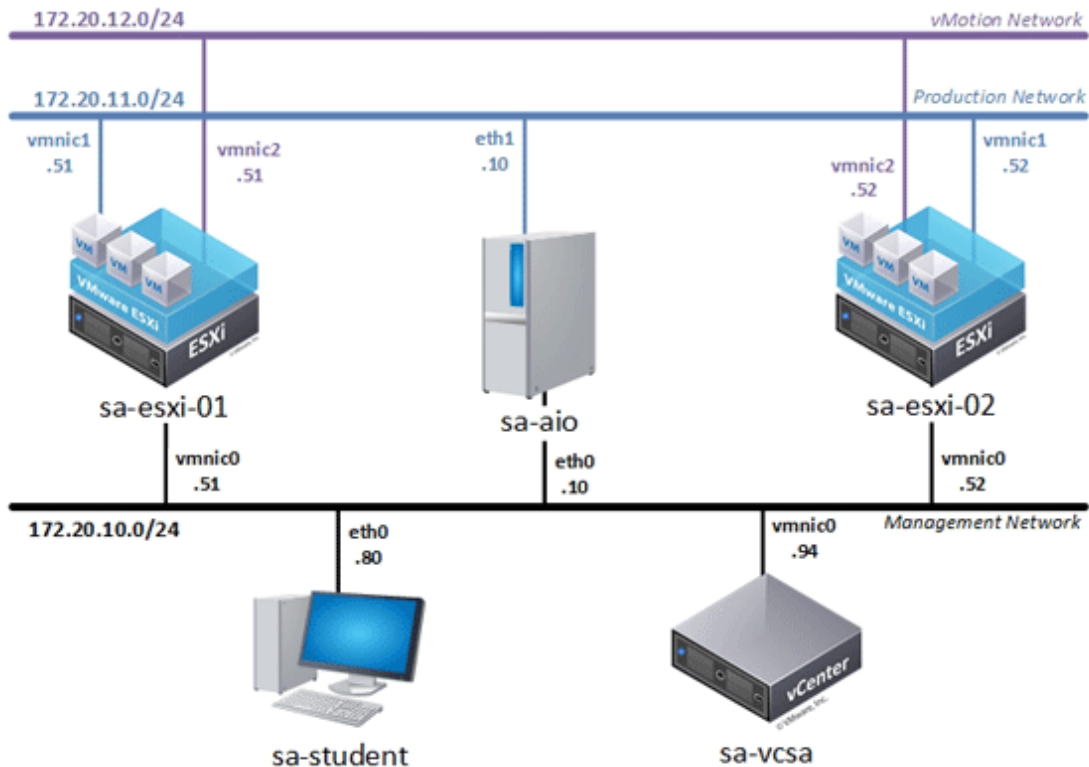
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1 Introduction

This document provides detailed guidance on performing the installation and configuration of the VMware vSphere: ICM v6.7 pod on the *NETLAB+ VE* system.

1.1 Introducing the VMware vSphere: ICM v6.7 Pod

The *VMware vSphere: ICM v6.7* pod is a 100% virtual machine pod consisting of 5 virtual machines. Linked together through virtual networking, these 5 virtual machines provide the environment for a student or a team to perform the *VMware vSphere: ICM v6.7* labs.



2 Planning

This guide provides specific information pertinent to delivering the *VMware vSphere ICM v6.7* pod. The [NETLAB+ Remote PC Guide Series](#) provides the prerequisite guidance for setting up your *VMware* infrastructure, including:

- An introduction to virtualization using *NETLAB+*.
- Detailed setup instructions for standing up *VMware vCenter* and *VMware ESXi*.
- Virtual machine and virtual pod management concepts using *NETLAB+*.

This document assumes that you have set up virtual machine infrastructure in accordance with the [NETLAB+ Remote PC Guide Series](#). The planning information below refers to specific sections in the *Remote PC Guide* when applicable.

2.1 Pod Creation Workflow

The following list is an overview of the pod setup process.

1. Obtain the master virtual machine images required for the master pod.
2. Deploy the master virtual machine images to your *VMware vCenter Appliance*.
 - a. Deploy virtual machines using **Thin Provisioning** to reduce storage consumption.
 - b. Make necessary adjustments to each virtual machine in the environment.
 - i. Insert manual **MAC** addresses.
 - ii. Change the default network to **SAFETY NET**.
 - iii. Any other configuration changes mentioned in this guide.
3. Import the deployed virtual machines to the *NETLAB+ Virtual Machine Inventory*.
4. Activate or license the required software on each virtual machine when prompted.
5. Take a snapshot of each virtual machine in the master pod labeled **GOLDEN_MASTER** after all configurations and licensing have taken effect. The *GOLDEN_MASTER* snapshot is used to clone virtual machine images for the user pods.
6. Use the *NETLAB+ Pod Cloning* feature to create student pods from the master pod.
7. If multiple hosts are used in the *NETLAB+* environment, make a **Full Clone** of the master pod on the initial host (Host A) to the subsequent host (Host B) and so on using the *NETLAB+ Pod Cloning* feature.

2.2 Pod Resource Requirements

The VMware vSphere: ICM v6.7 course will consume *94.4 GB* of storage per each master pod instance.

The following table provides details of the storage requirements for each of the virtual machines in the pod.

Virtual Machine	OVF/OVA	Initial Master Pod (Thin Provisioning)
sa-aio	21.6	45.2
sa-esxi-01	7.5	14.8
sa-esxi-02	2.6	5.4
sa-student	7.9	12.9
sa-vcasa	6.9	16.1
Total	46.5 GB	94.4 GB

2.3 ESXi Host Server Requirements



Before you try to deploy the *VMware vSphere ICM 6.7* pod, you'll need to check the [VMware Compatibility List](#) to verify that your CPU is compatible to support *vSphere 6.7* software. Reading *VMware's* official [release notes](#), notice that *VMware* has dropped support for many legacy CPUs.

Please refer to the *NDG* website for specific *ESXi* host requirements to support virtual machine delivery: <http://www.netdevgroup.com/content/vmita/requirements/>

The deployment of the *VMware vSphere* VMs from the *VMware vSphere: ICM v6.7* pod requires a *VMware vSphere* Version of **5.1** for the infrastructure at minimum due to the *Hardware Version* of select *VMware vSphere* VMs (*version 9*) in the pod.



The number of **active** pods that can be used simultaneously depends on the *NETLAB+* product edition, appliance version and the number of *VMware ESXi* host servers meeting the hardware requirements specifications.

For current *ESXi* server requirements and active pod count, refer to the following URL:

http://www.netdevgroup.com/support/remote_pc.html#vm_host_server_specifications.

2.4 NETLAB+ Requirements

Installation of *VMware vSphere: ICM v6.7* pods, as described in this guide, requires that your *NETLAB+* system is equipped with *NETLAB+ VE* version **17.3.15 or later**.

Previous versions of *NETLAB+* do not support requirements for the *VMware vSphere: ICM v6.7* course on the physical host servers.

Please refer to the [NETLAB+ Remote PC Guide Series](#).

2.5 Software Requirements

For the purpose of software licensing, each virtual machine is treated as an individual machine, PC or server. Please refer to the specific vendor license agreements (and educational discount programs, if applicable) to determine licensing requirements for your virtual machines' software, operating system, and applications.

The minimum virtual infrastructure software required for standing up this pod is in the following table.

Virtual Infrastructure Requirements	
Software	Version
vSphere ESXi	5.1
vCenter Server	5.1

2.6 Networking Requirements

To accommodate the movement of large *VMs*, *OVF/OVAs*, and *ISO* disk images from one host to another, Gigabit Ethernet or better connectivity is recommended to interconnect your *NETLAB+*, *vCenter Server* system and *ESXi* host systems.

The two standard networking models recommended to interconnect your servers are described in detail in the *Networking Models* section of the [Remote PC Guide Series, Volume 1 - Introduction and Planning](#).

3 Obtaining Software and Licenses

3.1 Downloading OVF Files

The virtual machines are made available as *Open Virtualization Format (OVF)* or *Open Virtualization Archive (OVA)* files. These files are available for download from *CSSIA*.

To request access to the preconfigured virtual machine templates from *CSSIA*:

1. Go to the *CSSIA Resources* page: <http://www.cssia.org/cssia-resources.cfm>.
2. Select **VM Image Sharing Agreement – Image Sharing Agreement**.
3. Select **VM Image Sharing Agreement** to open the request form.
4. Complete and submit your access request by following the instructions on the request form.
5. *CSSIA* will email a link, along with a username and password to access the download server. Access to the download server is provided only to customers who are current with their *NETLAB+* support contract and are participants in the appropriate partner programs (i.e., *Cisco Networking Academy*, *VMware IT Academy*, *Red Hat Academy*, *Palo Alto Academy*, and/or *EMC Academic Alliance*).
6. Once access to the download server has been established, the virtual machines can be deployed directly to the *vCenter Server* by clicking on **File > Deploy OVF Template** in the client window and copying the link into the location field.
7. The deployment will start after the username and password are entered.
8. Each virtual machine is deployed individually.

3.2 Obtaining Software Licenses

Licensing considerations will vary, depending on your school's participation in the [VMware IT Academy Program \(VITA\)](#) program and/or the [VMware Academic Subscription \(VMAS\)](#). Guidance on navigating licensing is available on the [VMware Product Licensing VMAS vs. VITA chart](#).

**Please
Note**

Based on the deployment of the pod, administrators may choose to update the licenses on their already deployed master pods or they may choose to download updated OVAs from CSSIA.org which will already include updated licensed virtual machines for the next licensing renewal cycle.

1. Follow the link provided to you by *VMware* when you registered in the *VMware Academic Subscription*. This will take you to the academic software store.
2. Sign in with your registered login.

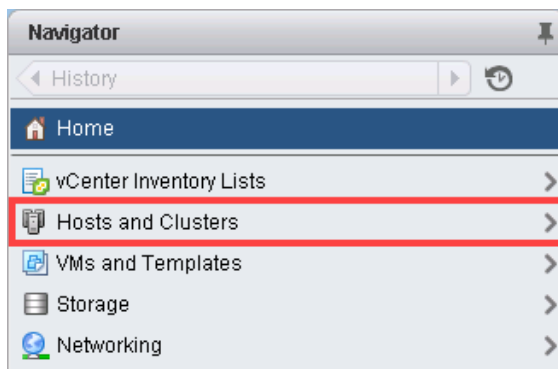
3. Click on **Faculty/Staff** at the top followed by **VMware** and then **Software** to see the available downloads. You must be an authorized Faculty/Staff user. For more information, contact the *VMware Academy* contact at your school.
4. Click on **VMware vSphere 6.5 Enterprise** or **VMware vSphere 6 Enterprise Plus** - both licenses will work with *VMware vSphere v6.7*. This is the first of two software items you will obtain from your school's webstore.
5. Click on **Add to Cart**.
6. Click on **Continue Shopping**.
7. Click on **VMware vCenter Server 6 Standard**.
8. Click on **Add to Cart**.
9. Click on **Check Out** to continue.
10. Read and accept the **EULA**.
11. On the confirmation page, click on **Proceed With Order**.
12. On the receipt page, record the serial numbers found under **Items**.

4 Master Pod Configuration

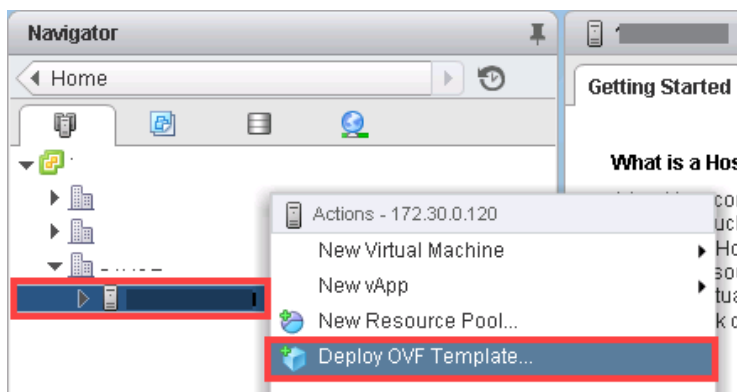
4.1 Deploying Virtual Machine OVF/OVA Files

Deploy the *OVF/OVA* files you have downloaded to your host server.

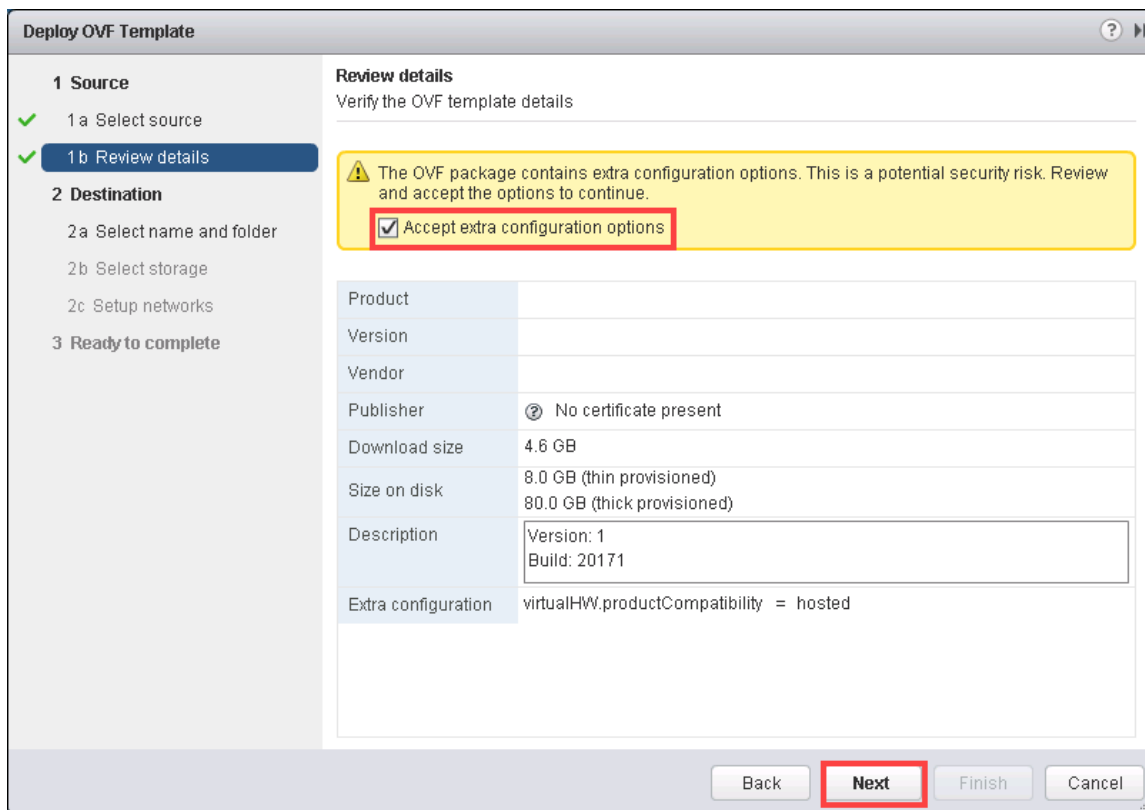
1. Navigate to your **vSphere Web Client** using your management workstation, ensure that your downloaded *OVA/OVF* files are accessible on this machine and then connect to your **vCenter Server**.
2. From the *vSphere Web Client* dashboard, select **Hosts and Clusters**.



3. Right-click on the target **ESXi Host Server** and select **Deploy OVF Template**.



- In the *Review details* section, make sure to fill the checkbox for **Accept extra configuration options (if present)** and click **Next**.



- In the *Select name and folder* section, change the name of the virtual machine to something that is easy to manage. You can use the names provided in the list below as names for the virtual machines if you do not have a set naming convention. Select the appropriate datastore and click **Next**.

Virtual Machine Topology Name	Virtual Machine Deployment Name
sa-aio	VMware_ICMv67_Master.saAIO
sa-esxi-01	VMware_ICMv67_Master.saESXi01
sa-esxi-02	VMware_ICMv67_Master.saESXi02
sa-student	VMware_ICMv67_Master.saStudent
sa-vcsa	VMware_ICMv67_Master.saVCSA

- In the *Select Storage* section, choose the appropriate storage device and make sure to select **Thin Provision**. Click **Next**.
- In the *Setup networks* section, select **SAFETY NET** as the destination and click **Next**.

If **SAFETY NET** is not available, refer to the *Create a Safe Staging Network* section in the [Remote PC Guide Series – Volume 2](#).

11. In the *Ready to complete* section, make sure **Power on after deployment** is **unchecked** and confirm the settings. Click **Finish**.
12. *vCenter* will begin deploying the virtual machine. This may take some time depending on the speed of your connection, HDDs, etc. Repeat the previous steps for each remaining virtual machine in the master pod.

4.2 Modify and Activate Virtual Machines

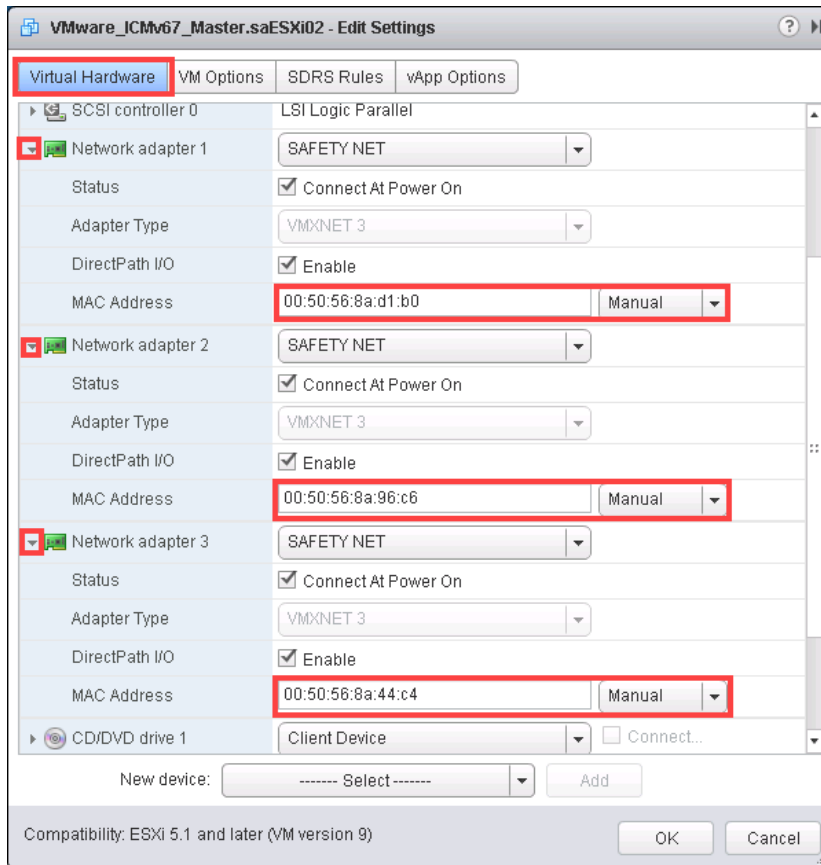
The following tasks must be performed prior to taking snapshots or assigning the virtual machines to pods.

4.2.1 Modify Virtual Machines

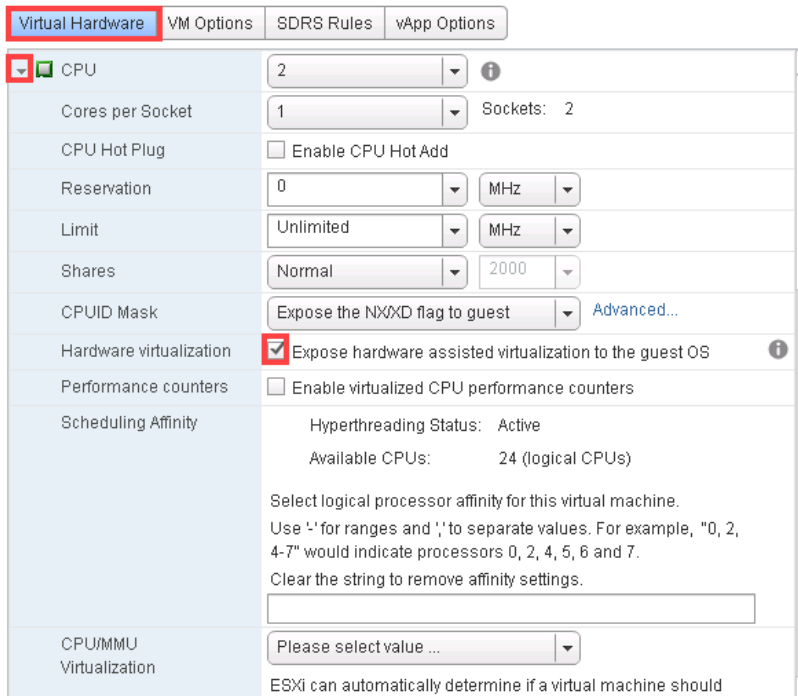
Once the virtual machines are imported onto the host, verify the configurations. The following steps will guide you through the process.

1. In the *vSphere Web Client* interface, right-click on the imported virtual machine and select **Edit Settings**.
2. For all of the virtual machines manually assign the *MAC* addresses for each *NIC*. The table below identifies the *MAC* addresses per *NIC*.

Virtual Machine	NIC	MAC
sa-aio	1	00:50:56:82:b3:26
	2	00:50:56:82:ab:1d
sa-esxi-01	1	00:50:56:82:f4:08
	2	00:50:56:8a:46:26
	3	00:50:56:8a:5d:23
sa-esxi-02	1	00:50:56:8a:d1:b0
	2	00:50:56:8a:96:c6
	3	00:50:56:8a:44:c4
sa-student	1	00:50:56:82:1b:5f
sa-vcsa	1	00:50:56:82:00:ab



3. Repeat the previous steps for each of the remaining virtual machines in the master pod.
4. Verify that *hardware virtualization* is exposed to the **sa-esxi-01** and **sa-esxi02** virtual machines by using the **Edit Settings** tool.





The hardware virtualization configuration setting can only be modified using the *vSphere Web Client* and not the traditional thick client (C#).

4.2.2 VM Credentials

For your reference, the following table provides a list of the credentials for the systems in the pod:

Machine	User name	Password
sa-aio	sysadmin	vmware123
sa-esxi-01	root	Train1ng\$
sa-esxi-02	root	Train1ng\$
sa-student	sysadmin	vmware123
sa-vcasa	administrator@vclass.local	s3cretP@\$

4.2.3 Activate Licenses

This pod is designed to use the *VMware IT Academy (vITA)* infrastructure license keys for both *vSphere ESXi Host Servers (sa-esxi-01 and sa-esxi-02)* and for the *vCenter Server Appliance (sa-vcasa)* virtual machines.



The *vITA* infrastructure license keys are to be used for licensing the master pods using the *administrator@vclass.local* account only.

The virtual machine *OVA/OVF* files obtained from *CSSIA* for this pod should already be licensed. If you wish to license the virtual machines using your own license keys, you may choose to do so and follow the instructions below.

Follow these steps to set up licenses on the master pod:

1. Power on all virtual machines in the master pod, either through *vSphere Web Client* or by making a reservation through *NETLAB+*.



It is recommended to have a master pod already configured with virtual machines attached before going through the instructions below on how to activate licenses. It is much easier to schedule a reservation on the master pod and then follow the steps for activating licenses.

2. Log in to the **sa-student** machine with the username **sysadmin** and the password **vmware123**.

3. Open the **Mozilla Firefox** web browser and access the **VMware vSphere Web Client** by navigating to the following *URL*: `https://sa-vcsa.vclass.local`. Use the administrator credentials to log in.



If you cannot successfully load the *VMware Getting Started* webpage, then please **wait an additional 3-4 minutes** and refresh the page to continue. During this time, the vCSA is still booting up and requires extra time to initialize.

Please
Note

You may ignore the “*browser-OS combination*” warning message presented on the *VMware vCenter Single Sign-On* page and continue moving forward.

4. Once you are logged into the *VMware vSphere Web Client*, click on the **Home** icon then click on **Administration** in the navigator pane.



5. Under *Administration* in the navigator pane, click on **Licenses** and then click on the **Licenses** tab in the content pane.
6. Click the **plus** sign to open the *Add License Keys* window.
7. Enter the vITA infrastructure license keys in the text area box provided and then click **Finish**.
8. To assign the *VMware vCenter Server* key, click on the **Assets** tab followed by ensuring that the **vCenter Server systems** button is selected.
9. Right-click on the **sa-vcsa.vclass.local** entry and select **Assign License**.
10. In the *Assign License* window, select the appropriate license and click **OK**.
11. To assign the *VMware ESXi* key, click on the **Hosts** button and right-click on the **sa-esxi-01.vclass.local** entry, select **Assign License**.
12. In the *Assign License* window, select the appropriate license key and click **OK**.
13. Repeat steps 11-12 for the remaining *VMware ESXi Host*.

14. Once the *vCenter* and hosts are licensed, gracefully power down the virtual machines.

Please Note

Gracefully shutdown the virtual machines for snapshot in the following order:

- sa-vcsa (Wait for the virtual machine to be completely powered down before continuing)
- sa-esxi-01
- sa-esxi-02
- sa-aio
- sa-student

Failure to follow the power down sequence prior to snapshots can cause problems with the vCenter/host environment.

4.3 NETLAB+ Virtual Machine Infrastructure Setup

The *NETLAB+ Virtual Machine Infrastructure* setup is described in the following sections of the [NETLAB+ Remote PC Guide Series](#):

- *Registering a Virtual Datacenter in NETLAB+*
- *Adding ESXi hosts in NETLAB+*
- *Proactive Resource Awareness*



It is important to configure *Proactive Resource Awareness* to maximize the number of active pods per physical *ESXi* host.

4.4 NETLAB+ Virtual Machine Inventory Setup

This section will guide you in adding your templates to the *Virtual Machine Inventory* of your *NETLAB+* system.

1. Log in to your **NETLAB+ VE** system with the *administrator* account.

2. Select the **Virtual Machine Infrastructure** icon.




3. Click the **Virtual Machine Inventory** icon.



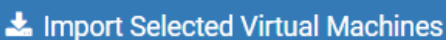
Virtual Machine Inventory

Import, clone, and manage the inventory of virtual machines to be used with NETLAB+.

4. Click the **Import Virtual Machines** button located at the bottom of the list.

 Import Virtual Machines

5. Select the appropriate datacenter from the list where your master VMs reside.
6. Select the check box next to the virtual machines you had just deployed and click **Import Selected Virtual Machines**.

 Import Selected Virtual Machines

7. When the *Configure VMs* page loads, you can set your virtual machine parameters.
 - a. Check the drop-down box for the correct operating system for each imported virtual machine.
 - b. Change *Role* to **Master** for each VM.
 - c. Add any comments for each virtual machine in the last column.



It is advised to leave the *Version* and *Build* numbers in the *Comments* section for reference when requesting *NDG* support.

- d. Verify your settings and click **Import (X) Virtual Machines** (notice the number in parenthesis is dynamic, depending on the amount of VMs selected).

 Import (4) Virtual Machines

- e. Verify all *Import Statuses* report back with **OK** and then click on the **Dismiss** button.
- f. Verify that your virtual machines show up in the inventory.

For additional information, please refer to the [NETLAB+ VE Administrator Guide](#).

4.5 Create the Master VMware vSphere: ICM v6.7 Pod

This section will assist you in adding the *VMware vSphere: ICM v6.7* pod to your *NETLAB+* system.

1. Log in to **NETLAB+ VE** using the *administrator* account.
2. Select the **Pods** icon.



3. Create a new pod by scrolling to the bottom and clicking the **Create New Pod** button.



4. On the *New Pod Wizard*, page click **Next**.
5. Then click on the **VMware vSphere ICM 6.7** pod type.

	<p>VMware vSphere ICM 6.7</p> <p>The VMware vSphere Install, Configure, Manage 6.7 training provides candidates the skills to implement, manage, and troubleshoot a vSphere 6.7 infrastructure.</p> <p>2019</p> <p>https://www.netdevgroup.com/support/tech_support.html</p>
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6. On the *New Pod* window, input a value into the **Pod ID** field.



It is best practice to use a block of sequential ID numbers for the number of pods you are going to install. The *Pod ID* number determines the order in which the pods will appear in the scheduler.

7. Type in **vmware_ICMv6.7_Master** for the *Pod Name* and click **Next**.
8. To finalize the wizard, click **OK**.

For additional information, please refer to the [NETLAB+ VE Administrator Guide](#).

4.6 Attach VMs to the Master Pod

Update the master pod to associate the virtual machines with the newly created pod.











1. Attach VMs to the master pod on your *NETLAB+* system.
 - a. Log in to **NETLAB+ VE** using the *administrator* account.
 - b. Select the **Pods** link.



2. Select the **VMware vSphere: ICM v6.7** master pod from the pod list.

1	 vmware vSphere ICM 6.7	VMware_ICMv6.7_Master
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3. Click on the **Action** dropdown next to the virtual machine you are about to assign and select **Attach VM**.

Remote PC 5						
	PC Name	VM	Operating System	VM Role	Runtime Host	Action
	sa-student	ABSENT				▼
	sa-vcasa	ABSENT				<div style="border: 1px solid #ccc; padding: 5px;"> <ul style="list-style-type: none">  View  Settings <li style="border: 2px solid red;"> Attach VM  Remove VM From...  Snapshots </div>
	sa-esxi-01	ABSENT				
	sa-esxi-02	ABSENT				
	sa-aio	ABSENT				

4. Select the corresponding virtual machine from the inventory list.

sa-student (select virtual machine)

Virtual Machine Name	Operating System	Role	Datacenter	Runtime Host/Group
VMware_ICMv67_Master.saAIO	Linux	Master		
VMware_ICMv67_Master.saESXi01	VMware ESX(i)	Master		
VMware_ICMv67_Master.saESXi02	VMware ESX(i)	Master		
VMware_ICMv67_Master.saStudent	Linux	Master		
VMware_ICMv67_Master.saVCSA	Linux	Master		

5. Once redirected back to the master pod view, repeat the previous steps for the remaining virtual machines.

4.7 Create Snapshots for the Master Virtual Machines

In order to proceed with pod cloning, snapshots must be created on each of the pod's virtual machines.

Verify that all VMs are still powered off before taking snapshots.








1. Log in to **NETLAB+ VE** using the *administrator* account.
2. Select the **Pods** link.



3. Select the **VMware vSphere: ICM v6.7** master pod from the pod list.

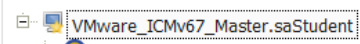
1	 vSphere ICM 6.7	VMware_ICMv6.7_Master
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- Click on the **Action** dropdown next to the virtual machine you are about to assign and select **Snapshots**.

Remote PC 5					
PC Name	VM	Operating System	VM Role	Runtime Host	Action
 sa-student	VMware_ICMv67_Master.saStudent	Linux	MASTER	172.30.10.80	
 sa-vcsa	VMware_ICMv67_Master.saVCSA	Linux	MASTER		<ul style="list-style-type: none">  View  Settings  Attach VM  Remove VM From...  Snapshots
 sa-esxi-01	VMware_ICMv67_Master.saESXi01	VMware ESX(i)	MASTER		
 sa-esxi-02	VMware_ICMv67_Master.saESXi02	VMware ESX(i)	MASTER		
 sa-ai0	VMware_ICMv67_Master.saAI0	Linux	MASTER	172.30.10.80	

- In the *Snapshot Manager* window, click on **Take**.






Snapshot Manager




-  You Are Here!

Name:

Description:

 Take
 Delete All
 Go To
 Edit
 Delete

 Dismiss



- In the *Take Snapshot* window, type **GOLDEN_MASTER** into the *Name* text field, or you may choose another naming convention as long as it is consistent. Click **OK**.

Take Snapshot

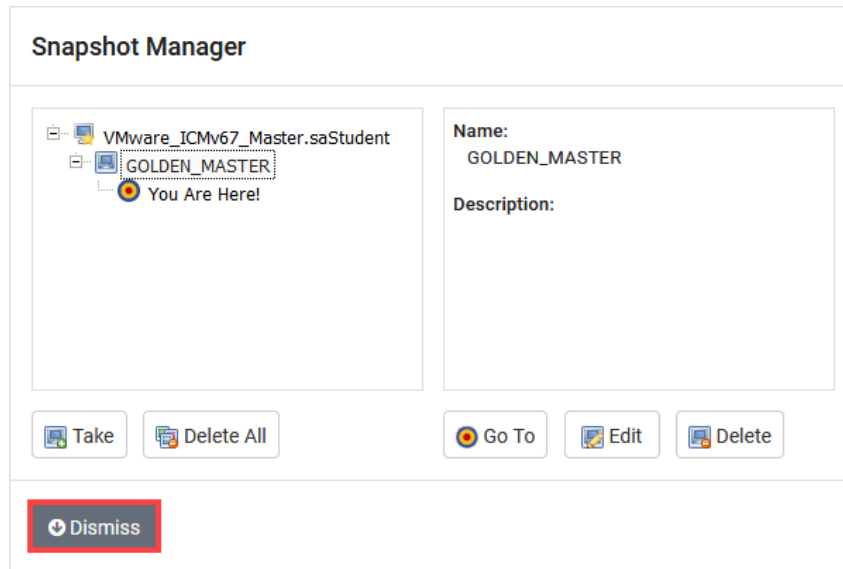
Name:

GOLDEN_MASTER

Description:

 OK
 Cancel

- Notice the new snapshot appear in the *Snapshot Manager*. Click **Dismiss**.



- Repeat the previous steps for the remaining VMs in the master pod.


4.8 Update the Master Pod

Update the master pod to associate the newly created snapshots in the VM settings.

- Update the master pod on your *NETLAB+* system.
 - Log in to **NETLAB+ VE** using the *administrator* account.
 - Select the **Pods** link.



- Select the **VMware vSphere: ICM v6.7** master pod from the pod list.

1		VMware_ICMv6.7_Master
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- Click on the **Action** dropdown next to the virtual machine you are about to configure and select **Settings**.

Remote PC 5					
PC Name	VM	Operating System	VM Role	Runtime Host	Action
 sa-student	VMware_ICMv67_Master.saStudent	Linux	MASTER	172.30.10.80	
 sa-vcsa	VMware_ICMv67_Master.saVCSA	Linux	MASTER		<ul style="list-style-type: none">  View  Settings  Attach VM  Remove VM From...  Snapshots
 sa-esxi-01	VMware_ICMv67_Master.saESXi01	VMware ESX(i)	MASTER		
 sa-esxi-02	VMware_ICMv67_Master.saESXi02	VMware ESX(i)	MASTER		
 sa-aio	VMware_ICMv67_Master.saAIO	Linux	MASTER	172.30.10.80	

- On the virtual machine's settings page, verify the information and make sure that the *Base Snapshot/Revert to Snapshot* is set to **GOLDEN_MASTER**. Once finished modifying the settings for the virtual machine, click **Submit**.

Role Master


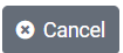

Revert to Snapshot GOLDEN_MASTER

Shutdown Preference Graceful Shutdown

Guest Operating System Linux

Options

- enable remote display auto-configuration
- enable network auto-configuration
- enable advanced setting auto-configuration
- enable minimum requirements verification

 Submit
 Cancel
 Help

- Once redirected back to the master pod view, repeat the previous steps for the remaining virtual machines.

5 Pod Cloning

This section will help you create multiple student pods. The following sections describe the *NETLAB+* pod cloning feature used to create student pods on one or two host systems.

5.1 Linked Clones and Full Clones

NETLAB+ can create *linked clones* or *full clones*.

A **linked clone** (or linked virtual machine) is a virtual machine that shares virtual disks with the parent (or master) virtual machine in an ongoing manner. This conserves disk space and allows multiple virtual machines to use the same software installation. Linked clones can be created very quickly because most of the disk is shared with the parent VM.

A **full clone** is an independent copy of a virtual machine that shares nothing with the parent virtual machine after the cloning operation. Ongoing operation of a full clone is entirely separate from the parent virtual machine.

5.2 Creating User Pods

The following section describes how to create user pods on the same *VMware Host* system that holds your master pod's virtual machines. In this scenario, we will create linked virtual machines using the *NETLAB+* pod cloning utility.



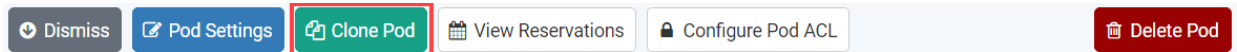
Make sure the pod status is **Offline** prior to continuing. The cloning process requires the pod be offline. Since this is a master pod, which is used for cloning other pods, we will keep it offline to create the instructor and student pods from.

1. Log in to **NETLAB+ VE** using the *administrator* account.
2. Select the **Pods** icon.



3. Click on the master pod.

- Click the **Clone Pod** button to create a new pod based on the settings and snapshots of this pod.



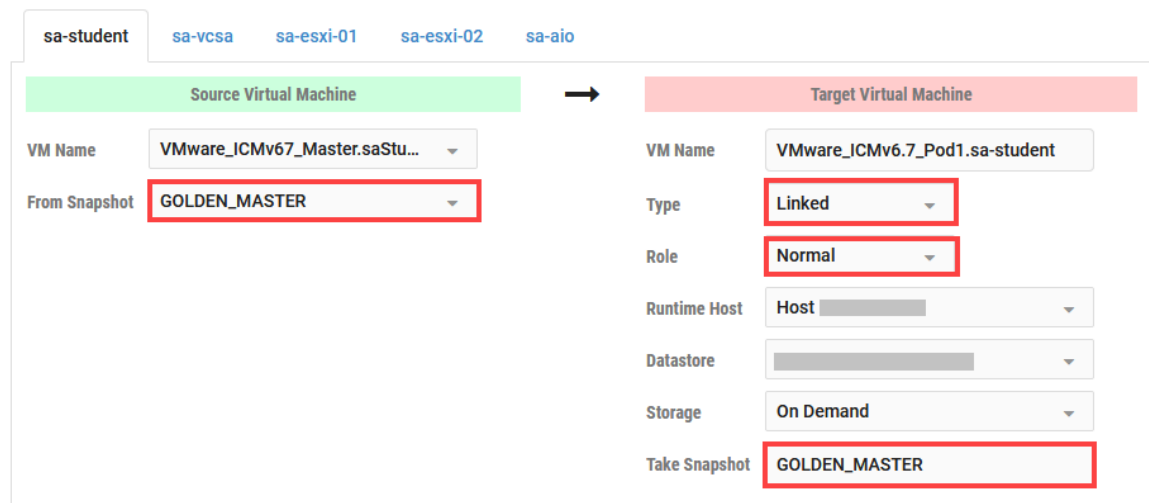
- Input a new ID value into the **New Pod ID** field. It is advised to keep the pods in numerical order. If the *pod IDs* are not in numerical order, they will not show up in the scheduler in numerical order. Click **Next**.
- Enter a name for the cloned pod into the **New Pod Name** text field. For example, **VMware_ICMv6.7_Pod1**. Click **Next**.
- When the action has finished processing, you are presented with a *Clone Pod* configuration wizard. Notice each VM has its own tab. Go through each tab and verify the following:

Source Virtual Machine:

- From Snapshot* should be set to the **GOLDEN_MASTER** snapshot you created previously.

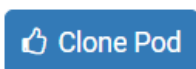
Target Virtual Machine:

- For *Type*, verify that **Linked** is selected.
- For *Role*, verify that **Normal** role is selected.
- For *Take Snapshot*, verify that **GOLDEN_MASTER** is input.



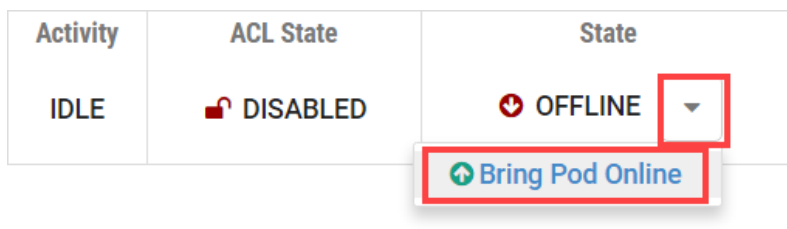
The screenshot shows the 'Clone Pod' configuration wizard with two main sections: 'Source Virtual Machine' and 'Target Virtual Machine'. The 'Source Virtual Machine' section has 'VM Name' set to 'VMware_ICMv67_Master.saStu...' and 'From Snapshot' set to 'GOLDEN_MASTER'. The 'Target Virtual Machine' section has 'VM Name' set to 'VMware_ICMv6.7_Pod1.sa-student', 'Type' set to 'Linked', 'Role' set to 'Normal', 'Runtime Host' set to 'Host', 'Datastore' set to a default value, 'Storage' set to 'On Demand', and 'Take Snapshot' set to 'GOLDEN_MASTER'. Red boxes highlight the 'From Snapshot', 'Type', 'Role', and 'Take Snapshot' fields in the target section.

- When you are done changing settings, click **Clone Pod**. This should complete within a minute as we are creating linked virtual machines.




- When the pod clone process is finished, click **OK**.
- If you want to dedicate this pod to a particular class, team, or student, use the *Pod ACLs* feature. For details, see the [NETLAB+ VE Instructor Guide](#).

11. Click the **Online** Button in the *Pod Management* page to activate the pod.



The user pod can now be reserved. When the reservation becomes active, *NETLAB+* will automatically configure virtual machines and virtual networking for the active reservation.



The *GOLDEN_MASTER* snapshot is the starting point for all pods. We recommend that you reserve the 1st pod and conduct some labs to make sure the snapshot images work correctly. If there are defects, make corrections to the images to the master pod and retake the *GOLDEN_MASTER* snapshot before creating additional pods.

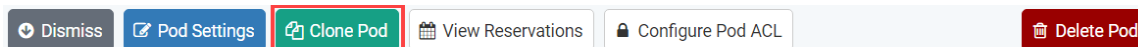
5.3 Cloning Your Master Pod to a Second Host

For this task, we will use the pod cloning utility to copy our master pod to a second host.

1. Log in to **NETLAB+ VE** with the administrator account.
2. Select the **Pods** icon.



3. Click on the master pod.
4. Click the **Clone** button to create a new pod based on the settings of this pod.

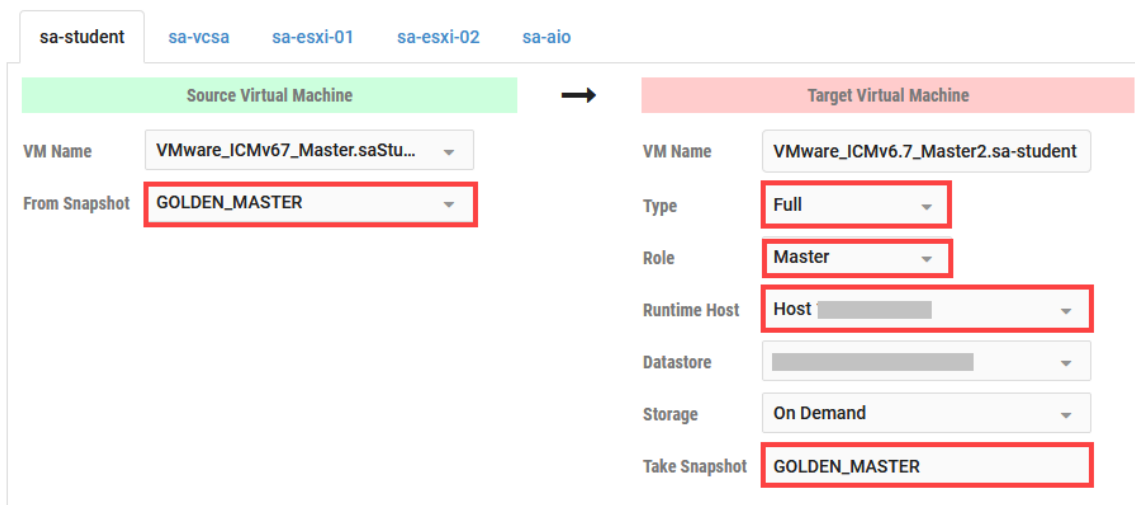


5. Input a new ID value into the **New Pod ID** field. It is advised to keep the pods in numerical order. If the pod IDs are not in numerical order, they will not show up in the scheduler in numerical order. Click **Next**.
6. Enter a name for the cloned pod into the **New Pod Name** field. For example, **VMware_vSphere_ICMv6.7_Master2**. Click **Next**.
7. When the action has finished processing, you are presented with a *Clone Pod* configuration wizard. Notice each VM has its own tab. Go through each tab and verify the following:
Source Virtual Machine:

- a. *From Snapshot* should be set to the **GOLDEN_MASTER** snapshot you created previously.

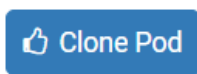
Target Virtual Machine:

- a. For *Type*, verify that **Full** is selected.
- b. For *Role*, verify that **Master** role is selected.
- c. For *Take Snapshot*, verify that **GOLDEN_MASTER** is input.
- d. For *Runtime Host*, select the second host system (which should be different than the system you are cloning from).



The screenshot shows the cloning configuration interface in VMware vSphere. It is divided into two main sections: 'Source Virtual Machine' (highlighted in green) and 'Target Virtual Machine' (highlighted in red). An arrow points from the source to the target. In the 'Source Virtual Machine' section, the 'From Snapshot' dropdown is set to 'GOLDEN_MASTER'. In the 'Target Virtual Machine' section, the 'Type' dropdown is set to 'Full', the 'Role' dropdown is set to 'Master', the 'Runtime Host' dropdown is set to 'Host', and the 'Take Snapshot' dropdown is set to 'GOLDEN_MASTER'. Other fields like 'VM Name', 'Datastore', and 'Storage' are also visible but not highlighted.

8. When you are done changing settings, click **Clone Pod**. This may take up to 30 minutes as full copies are being made. You may navigate away from the cloning progress screen, and then later return to the pod to check progress.



9. When the pod clone process is finished, click **OK**.

5.4 Creating User Pods on the Second Host

To create user pods on the second host, repeat the steps to create user pods on the first host (*Section 5.2 Creating User Pods*), substituting the second master pod (created in the previous section) as the cloning source.

5.5 Assigning Pods to Students, Teams, or Classes

Please refer to the [NETLAB+ VE Instructor Guide](#) for details on using the *Pod ACLs* feature.