



VMware View: Install, Configure, Manage 5.1

Pod Installation and Configuration Guide

This document provides detailed guidance on performing the installation and configuration of the **VMware View ICM Pod** on a NETLAB+ system. See the [NETLAB+ Documentation Library](#) for a list of all NETLAB+ guides.

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1 Introduction

This document provides detailed guidance on performing the installation and configuration of the VMware View ICM Pod on a NETLAB+ system.

1.1 About the VMware View: Install, Configure, Manage 5.1 Course

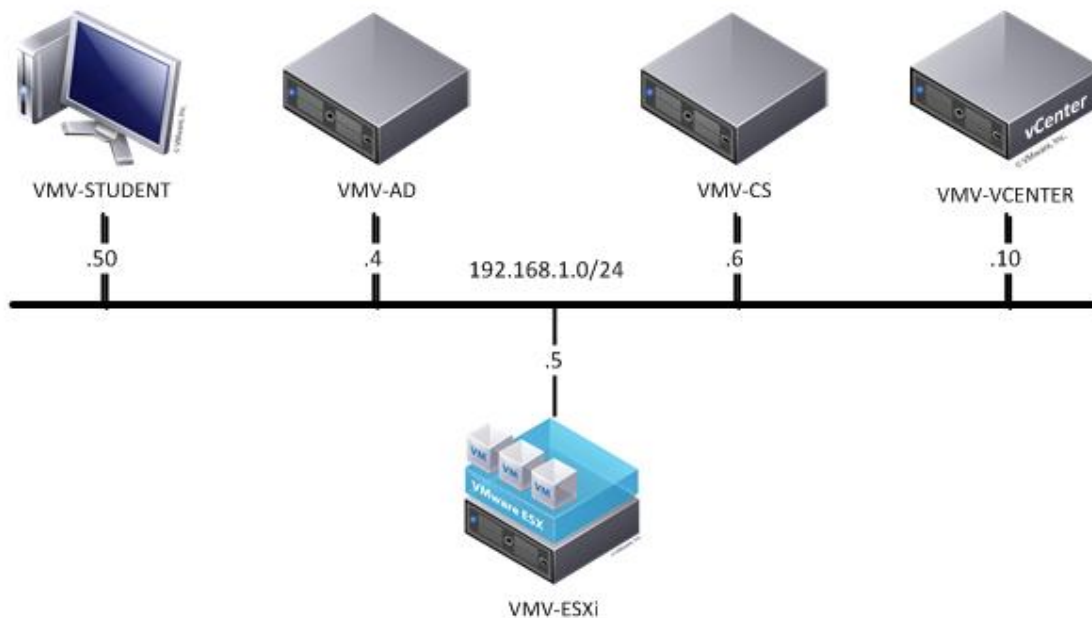
The VMware View: Install, Configure Manage (ICM) 5.1 course equips trainees with the knowledge, skills, and abilities to install and configure VMware View. The VMware View ICM 5.1 course discusses the installation and configuration of VMware View and the configuration of VMware vSphere products used for deploying the View solution.

1.2 Using NETLAB+ to Deliver VMware View ICM

NDG has partnered with the VMware IT Academy Program to enable NETLAB+ support of the VMware View ICM 5.1 course. The use of NETLAB+ provides an opportunity for educational organizations seeking a scalable, cost effective solution to offer access to the technology required to deliver the VMware View ICM 5.1 course.

1.3 Introducing the VMware View ICM Pod

The NDG VMware View ICM 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 team to perform the VMware View ICM labs.



Virtual Machine	Role
VMV-STUDENT	Virtual machine for the student to perform operations from.
VMV-AD	A virtualized Active Directory server for providing centralized authentication.
VMV-CS	A virtual machine for installing and operating a VMware View Connection Server.
VMV-VCENTER	A virtual machine for a windows-based vCenter server.
VMV-ESXi	A virtualized ESXi server for implementing and storing virtual machines used by View.

2 Planning

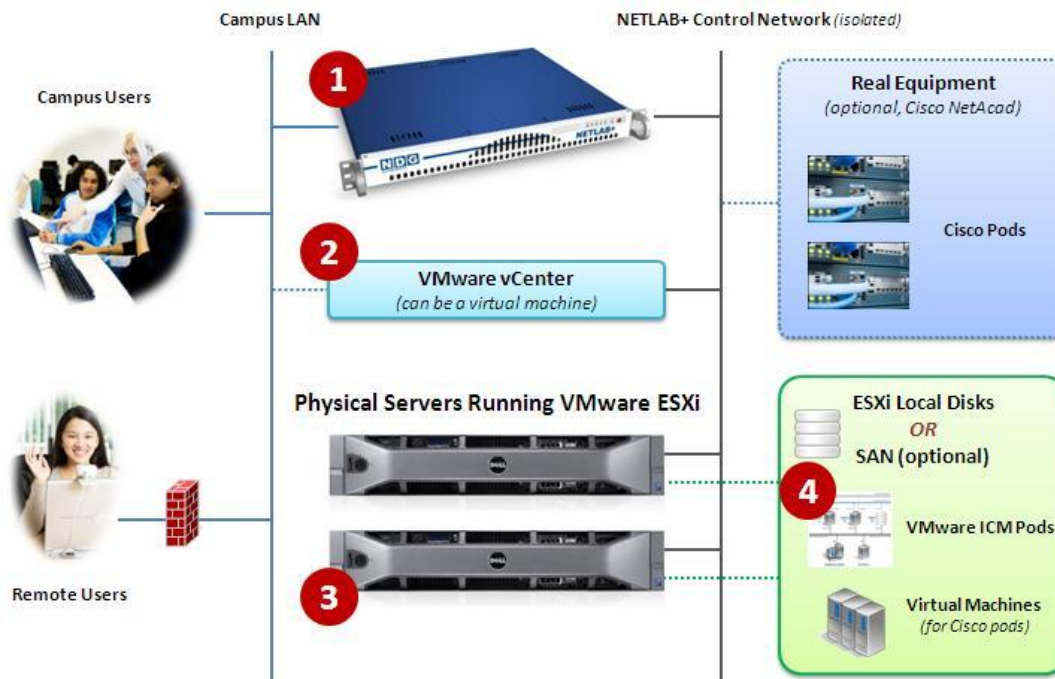
This guide provides specific information pertinent to delivering the VMware View ICM 5.1 course. The [NETLAB+ Remote PC Guide Series](#) provides the prerequisite guidance for setting up your VMware infrastructure, including:

- 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 VMware View ICM Environment

The following diagram depicts four major components that make up the VMware View ICM training environment.



1. The NETLAB+ server provides the user interface for student and instructor access, an interface to manage virtual machines, and software features to automate VMware View ICM pod creation. This document assumes you have already setup your NETLAB+ server.
2. VMware vCenter is used to manage your physical VMware ESXi servers, to create virtual machines, and to take snapshots of virtual machines.

- NETLAB+ communicates with vCenter to perform automated tasks and virtual machine management.
3. Physical VMware ESXi servers host the virtual machines in your VMware View ICM Pods. The host servers' capabilities are identified in section 2.5.
 4. The VMware View ICM Pod consists of 5 virtual machines that reside on your ESXi host(s).

2.2 Setup Tasks

The following is a summary of the setup tasks in this document.

1. Obtain virtual machine packages (OVF/OVA).
2. Deploy virtual machines for the Master pod.
3. Attach virtual machines to NETLAB+.
4. Replicate VMware View ICM Pods using the pod cloning feature.
5. Assign VMware View ICM Pods to students or instructors.

2.3 VMware View ICM Pod Creation Workflow

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

1. The VMware View ICM virtual machine packages are distributed by CSSIA.
2. Master VMs are created from the deployed virtual machines. The master VMs are added to a Master pod. A *Golden_Snapshot* of the Master pod is taken, which becomes the foundation to clone VMware View ICM user pods.
3. The NETLAB+ pod cloning feature is used to quickly create copies from the VMware View ICM Master Pod on the first VMware host.
4. A full replica of the VMware View ICM Master Pod on Host A is made on Host B, using the NETLAB+ pod cloning feature.
5. The cloning feature is used to quickly create vSphere View ICM pods from the VMware View ICM Master Pod on Host B.

2.4 Pod Resource Requirements

The VMware View: Install, Configure, Manage 5.1 course will consume 132 GB of storage per each user pod instance.

Details of the storage requirements for each of the lab virtual machines are provided in the tables below.

Virtual Machine	Initial Master Pod (using full clones) GB	User Pod after Last Lab (using linked clones) GB
VMV-STUDENT	6.5	6.5
VMV-AD	9	9
VMV-CS	7	8
VMV-VCENTER	16.5	22
VMV-ESXi	23	86
Total Recommended	62	132

2.5 ESXi Host Server Requirements

The number of active pods that can be used simultaneously depends on the NETLAB+ product edition and the number of VMware ESXi host servers meeting the hardware requirements specifications (see link below).

For current ESXi server requirements refer to the following URL:

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

2.6 NETLAB+ Requirements

Installation of VMware View ICM pods as described in this guide requires that your NETLAB+ system is equipped with NETLAB+ version 2011.R5 or later.

Previous versions of NETLAB+ do not support the use of VMware ESXi 5.1 on the physical host servers, which is required to support the installation and use of VMware View ICM Pods on NETLAB+.

For additional information regarding NETLAB+ requirements, please refer to the [Remote PC Guides for NETLAB+](#).

Please verify that your NETLAB+ system is running NETLAB+ version **2011.R5** or later, prior to upgrading your VMware ESXi servers to version 5.1.

2.7 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 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

The pod software requirements as shown in the following table lists the licensed software that is required for virtual machines inside the VMware View ICM pod. Your organization needs to be a member of the vendor programs listed in the source column to obtain and use the licenses appropriately.

Pod Software Requirements		
Software	Version	Source
vSphere ESXi	5.0	vITA
vCenter Server	5.0	vITA
View Connection Server	5.1	vITA
View Composer	3.0	
Windows Server	2008 R2	Dreamspark
Windows XP	SP3	Dreamspark
Windows 7	Professional x86	Dreamspark
MSSQL Express	2008 x64	

2.8 Networking Requirements

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

Two standard networking models are used to interconnect your servers, which 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

NDG has built the virtual machines, 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:

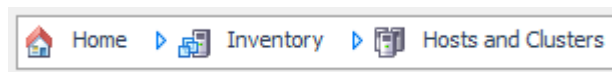
1. Go to the CSSIA Resources page: <http://www.cssia.org/cssia-resources.cfm>.
2. Select **VM Image Sharing Agreement – Image Sharing Agreement**.
3. Select **VM Image Sharing Agreement** to open the request form.
4. Complete and submit your access request by following the instructions on the request 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, 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 vClient 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.

4 VMware View Master Pod Configuration

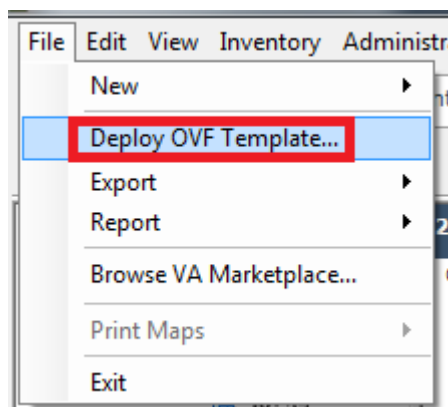
4.1 Deploying Virtual Machine OVF/OVA Files

The OVF/OVA files that you downloaded from CSSIA must be deployed to your host server.

1. Open the vClient on your administration machine where you downloaded the files from NDG. Connect to your vCenter Server.
2. Select **Hosts and Clusters** in the address bar.



3. Click on the first ESXi Host Server.
4. Click on **File** -> **Deploy OVF Template**.



5. Click on **Browse** and locate the OVF/OVA file you downloaded from CSSIA. Click **Next** to continue.
6. On the OVF Template Details window, click **Next**.
7. On the Name and Location window, change the name to **VMView_ICM_5.1_Master_X** (change **X** to reflect the virtual machine that you are importing, refer to section 2.4 for a list of virtual machines). Click **Next**.
8. On the Datastore window, select the appropriate datastore and click **Next**.
9. On the Disk Format window, select **Thin provisioned format** and click **Next**.
10. On the Network Mapping window, leave the default networks. Click **Next**.

If SAFETY NET is not available, please refer to the [NETLAB+ Remote PC Guide - Volume 3](#) for the installation and configuration of the virtual network.

Network mapping is handled automatically by the NETLAB+ system during pod creation.

11. On the Ready to Complete window, confirm the information and click **Finish**.

12. vCenter will begin deploying the virtual machine. This may take some time depending on the speed of your connection, HDDs, etc. When completed, click on **Close**.
13. Repeat steps 4 – 12 for each of the downloaded files, then continue to the next section.

4.2 Modify and Activate Virtual Machines

Once the virtual machines are imported onto the host, you will need to activate Microsoft Windows on each virtual machine. This needs to be done prior to snapshot, pod assignment and cloning.

For each of the Windows machines you will need to turn them on. Accessing them via remote console, you can follow the steps offered in the Microsoft KB articles listed below:

- Windows XP: <http://support.microsoft.com/kb/307890>
- Windows 2008: <http://technet.microsoft.com/en-us/library/ee355153.aspx>

Listed below are the images that may require activation once the OVF is deployed.

- VMV-AD
- VMV-CS
- VMV-VCENTER
- VMV-STUDENT

VMV-AD (Domain Administrator)	
FQDN	vmv-ad.train.local
Active Directory Domain	TRAIN.LOCAL
User Name	Administrator
Password	Train1ng\$
VMV-STUDENT	
FQDN	vmv-student.train.local
User Name	trainee
Password	Train1ng\$

4.3 NETLAB+ Virtual Machine Infrastructure Setup

The NETLAB+ Virtual Machine Infrastructure setup is described in the following sections of the [Remote PC Guide Series - Volume 3, Configuring the NETLAB+ Virtual Machine Infrastructure](#):

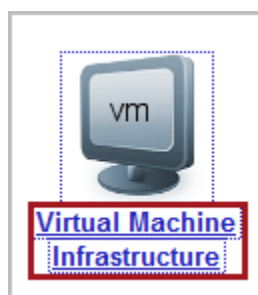
- *Registering a Virtual Datacenter in NETLAB+*
- *Adding ESXi hosts in NETLAB+*
- *Proactive Resource Awareness*

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

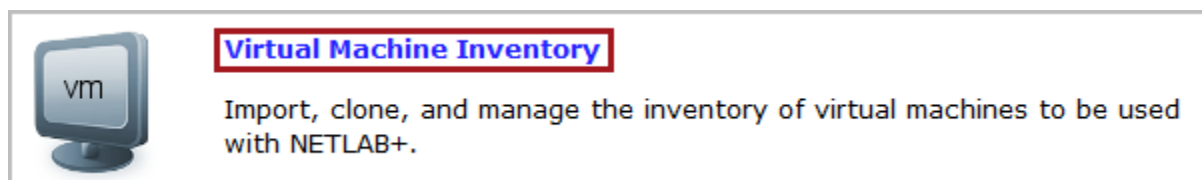
4.4 NETLAB+ Virtual Machine Inventory Setup

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

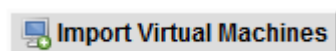
1. Login into your NETLAB+ system using the administrator account.
2. Click the **Virtual Machine Infrastructure** link.



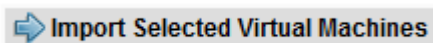
3. Click the **Virtual Machine Inventory** link.



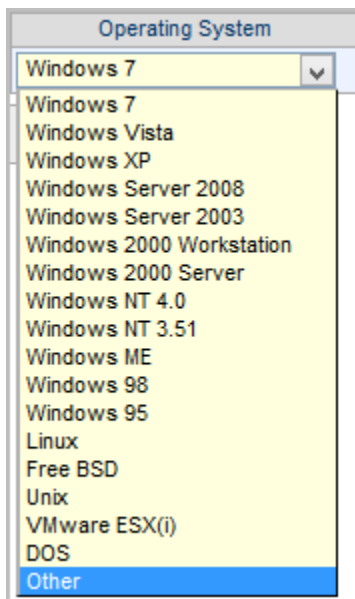
4. At the bottom of the page, click the **Import Virtual Machines** button.



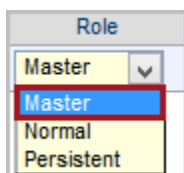
5. Check the **Select** check box next to the virtual machines to be imported and then click the **Import Selected Virtual Machines** button.



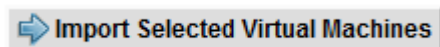
6. When the **Configure Virtual Machines** window loads, you can set your virtual machine parameters.
 - a. In the Operating System drop box, select the correct operating system for each imported virtual machine.



- b. In the Role drop box, select **Master** for each imported virtual machine.



- c. In the Comments text field, add any comments or notes about the virtual machines.
- d. Verify your settings and click the **Import Selected Virtual Machines** button.



- e. Click OK when the virtual machines have finished loading.
- f. Verify that your virtual machines show up in the inventory.

For additional information, please refer to [Remote PC Guide Series - Volume 3, Configuring the NETLAB+ Virtual Machine Infrastructure](#)

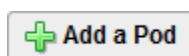
4.5 Install the Master VMware View ICM Pod

This section will assist you in adding the VMware View ICM Pod to your NETLAB+ system.

1. Login into NETLAB+ with the administrator account.
2. Select the **Equipment Pods** link.



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



4. On the New Pod Wizard page click **Next**.
5. Then select the **VMware View ICM** pod radio button and click **Next**.



6. Select a Pod ID and click **Next**.

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

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

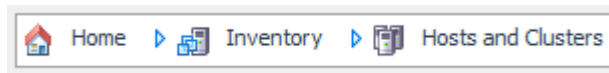
For additional information please refer to the [NETLAB+ Administrator Guide](#).

4.6 Create Snapshots for the VMware View ICM Master Virtual Machines

In order to proceed with pod cloning, snapshots must be created for the VMware View ICM Master virtual machines.

Verify that all VMs are powered off before taking snapshots.

1. Open the vClient on your management workstation. Connect to your vCenter Server.
2. Select **Hosts and Clusters** in the address bar.



3. Right-click on each virtual machine and select **Snapshot > Take Snapshot**.
4. Enter **Golden_Master** as the Snapshot Name.
5. Enter a description. It is a good idea to include the date in the description for later reference.
6. Click **OK**.
7. Repeat Steps 3-6 for the remaining virtual machines in the pod.
8. When all tasks have completed, log out of the vClient software.

4.7 Update the VMware View ICM Master Pod

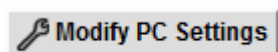
1. Update the VMware View ICM Master Pod on your NETLAB+ system.
 - a. Login into NETLAB+ with the administrator account.
 - b. Select the **Equipment Pods** link.



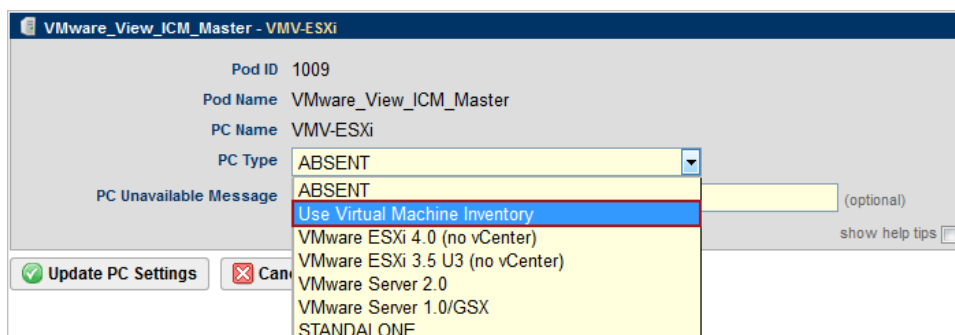
- Click on the Magnifying Glass icon next to VMV-ESXi. Please note that your PC IDs will not match the graphic below.

POD 1009 - PCs AND SERVERS (click the GO buttons to reconfigure)						
GO	NAME	PC ID	STATUS	TYPE / VM	OPERATING SYSTEM	
	VMV-ESXi	4698	ONLINE	ABSENT		
	VMV-AD	4699	ONLINE	ABSENT		
	VMV-CS	4700	ONLINE	ABSENT		
	VMV-VCENTER	4701	ONLINE	ABSENT		
	VMV-STUDENT	4702	ONLINE	ABSENT		

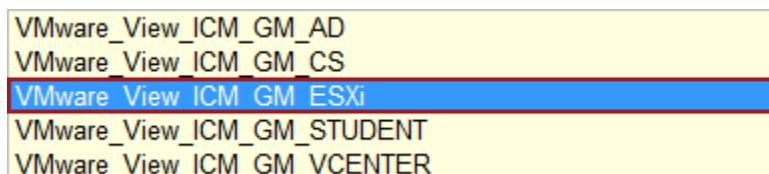
- Click on Modify PC Settings.



- Change the PC Type drop down box to **Use Virtual Machine Inventory**.



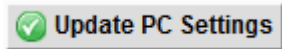
- In the Base Virtual Machine window, select your **VMware View ICM** virtual machine to associate with the spot held for it in the pod.



- Update **Base Snapshot** to your *Golden_Master* snapshot.
- Change **Shutdown Preference** to the associative entry from the table below:

Virtual Machine	Shutdown Preference
VMV-ESXi	Suspend Virtual Machine
VMV-AD	Graceful Shutdown from Operating System
VMV-CS	Graceful Shutdown from Operating System
VMV-VCENTER	Graceful Shutdown from Operating System
VMV-STUDENT	Graceful Shutdown from Operating System

8. Review the information on the screen and click **Update PC Settings**.



9. Click on **Show Pod**.
10. Repeat steps 2-8 for all of the VMware View ICM virtual machines.

Make sure the pod status is **Offline** prior to continuing. The cloning process requires the pod be offline, and since this is our master pod used for cloning other pods, we will keep it offline so that we may use it to create the instructor and student pods.

5 Pod Cloning

This section will help you create multiple VMware View ICM 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.

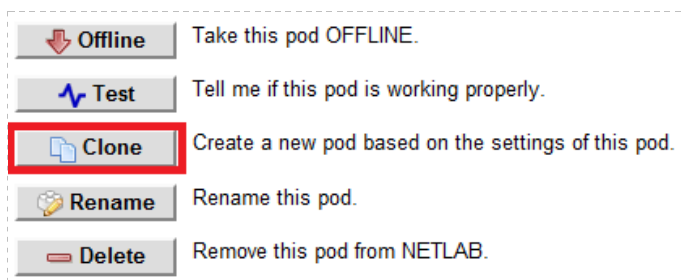
5.2 Creating User Pods on the First Host

The following section describes how to create VMware View ICM 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.

1. Login into NETLAB+ with the administrator account.
2. Select the **Equipment Pods** link.



3. Click on your VMware View ICM Master Pod.
4. Click the Clone button to create a new pod based on the settings of this pod.



5. Select the New Pod ID. 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.
6. Click **Next**.
7. Enter a New Pod Name. For example, **VMware_View_ICM_Pod_1**. Click **Next**.
8. When the action has finished processing, you are presented with a settings screen.

PC Name	Source Virtual Machine	Source Snapshot	Clone Name	Clone Type	Clone Role	Runtime Host or Group	Clone Datastore	Storage Allocation
VMV-ESXI	VMView_ICM_GM_ESXI	Golden_Master	VMware View ICM Pod 1 VMV	Linked	Persistent	Host 209.114.126.6	LocalSATA	On Demand
VMV-AD	VMView_ICM_GM_AD	Golden_Master	VMware View ICM Pod 1 VMV	Linked	Persistent	Host 209.114.126.6	LocalSATA	On Demand
VMV-CS	VMView_ICM_GM_CS	Golden_Master	VMware View ICM Pod 1 VMV	Linked	Normal	Host 209.114.126.6	LocalSATA	On Demand
VMV-VCENTER	VMView_ICM_GM_VCenter	Golden_Master	VMware View ICM Pod 1 VMV	Linked	Master	Host 209.114.126.6	LocalSATA	On Demand
VMV-STUDENT	VMView_ICM_GM_Student	Golden_Master	VMware View ICM Pod 1 VMV	Linked	Persistent	Host 209.114.126.6	LocalSATA	On Demand

9. The three key columns for this Master Pod clone are Source Snapshot, Clone Type and Clone Role. The following settings should be applied to all 3 virtual machines:
 - a. Source Snapshot should be set to the **Golden_Master** snapshot you created previously.
 - b. Under Clone Type, click the dropdown menu and verify that **Linked** is selected.
 - c. Under Clone Role, click the dropdown menu and select **Master**. A persistent VM does not reset to a snapshot after each lab reservation. Since each VMware View ICM lab builds on the next, we want the state of each VM to persist from one lab reservation to the next.
10. When you are done changing settings, Click **Clone Pod**. This should complete within a minute as we are creating linked virtual machines.
11. When the pod clone process is finished, click **OK**.
12. If you want to dedicate this pod to a particular class, team, or student, use the Pod Assignment feature. For details, see the [Pod Assignment Guide](#).
13. 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 your new VMware View ICM pod.

The Golden Snapshot is the starting point for all VMware View ICM pods. We recommend that you reserve the 1st VMware View ICM pod and conduct some VMware View ICM labs to make sure the Golden Snapshot is correct. You should correct any defects on the Master VMware View ICM Pod and Golden Snapshot before creating additional pods.

You may repeat the pod cloning process to create up to 15 more VMware View ICM user pods on this host.

Time Saver: If you clone the 1st VMware View ICM user pod instead of the Master pod, the defaults will all be set correctly, and you will not have to change the Clone Type and Clone Role each time. NETLAB+ will still assume you want to link to the Master VMs as Masters are ranked higher than Normal or Persistent VMs in the default pod cloning selections.

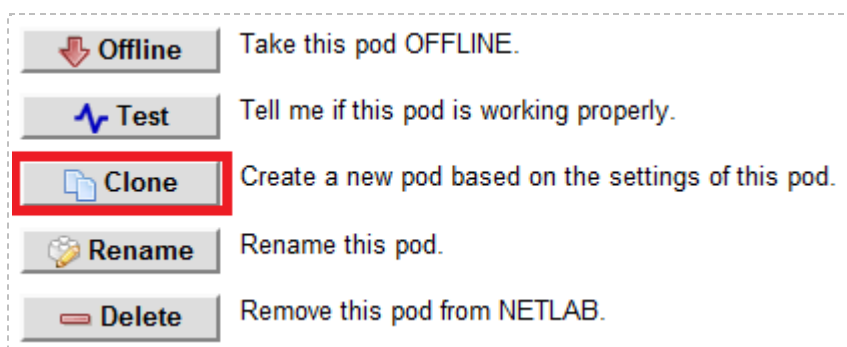
5.3 Copying Your Master Pod to the Second Host

For this task, we will use the pod cloning utility to copy our Master Pod to the 2nd host.

1. Login into NETLAB+ with the administrator account.
2. Select the **Equipment Pods** link.



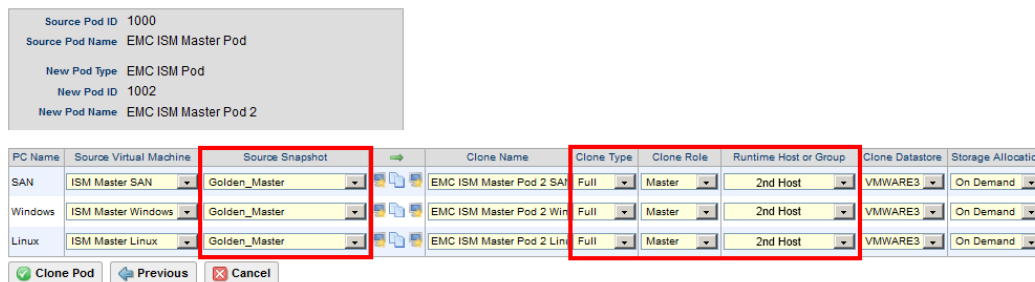
3. Click on your VMware View ICM Master Pod that was created on the 1st VMware host server.
4. Click the Clone button to create a new pod based on the settings of this pod.



5. Select the New Pod ID.

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.

6. Click **Next**.
7. Enter a New Pod Name. For example, **VMware_View_ICM_Master_Pod_2**. Click **Next**.
8. When the action has finished processing, you are presented with a settings screen.



9. The four key columns for this Master Pod clone are Source Snapshot, Clone Type and Clone Role, and Runtime Host.
 - a. Source Snapshot should be set to the **Golden_Master** snapshot you created previously.
 - b. Under Clone Type, click the dropdown menu and verify that **Full** is selected.
 - c. Under Clone Role, click the dropdown menu and select **Master**.
 - d. Under Runtime Host, select the 2nd host system (which should be different than the system you are cloning from).
10. 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.

The NETLAB+ software does not clone the snapshots of the VMware View ICM Master VMs. It is necessary to login into your Management Workstation and create the snapshots manually.

11. When the cloning process is complete, you should create a Golden_Snapshot on each virtual machine in the 2nd Master pod.

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, substituting the 2nd Master pod (created in the previous section) as the cloning source.

6 Assigning Pods to Students, Teams or Classes

Please refer to the [Pod Assignment Guide](#) for details on using the Pod Assignment feature: