## VMware Adapter for SAP Landscape Management Administration Guide for LaMa Administrators

VMware Adapter for SAP Landscape Management 1.8



You can find the most up-to-date technical documentation on the VMware website at:

https://docs.vmware.com/

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## **About This Guide**

This chapter includes the following topics:

- Introduction
- Target Audience
- Prerequisites

## Introduction

VMware Adapter for SAP Landscape Management, part of the VMware private cloud solution for SAP, is a virtual appliance that integrates SAP Landscape Management with VMware management software (VMware vCenter Server and VMware vRealize Automation). This integration of SAP Landscapes with VMware's market leading SDDC solutions lead to delivering unique automation capabilities, high scalability, improved performance and advanced storage and network management. All this helps to radically simplify the provisioning and management of SAP landscapes.

This procedural guide describes the user functions of SAP LaMa as it pertains to VMware Adapter for SAP Landscape Management. It discusses several features, how they work, what each feature does and the steps to execute the respective feature.

## **Target Audience**

The user guide is written for administrators who deploy *SAP LaMa* in a VMware virtualized environment and use the VMware adapter for SAP Landscape Management to provide better integration and faster / easier management operations. Such administrators are either *SAP BASIS* administrators or VMware vSphere administrators (typically VMware Certified Professionals -VCPs).

## Prerequisites

To use this guide effectively, readers must have experience as a *SAP BASIS* administrator using *SAP LaMa*. For documentation related to *SAP LaMa* and / or training on *SAP LaMa*, please contact your SAP representative.

# Introduction to VMware Adapter for SAP Landscape Management

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This chapter includes the following topics:

- Product Overview
- Features and Benefits
- Reference Architecture

## **Product Overview**

SAP Landscape Management is a solution to centrally manage and provision SAP landscapes running in physical, virtual and cloud infrastructures. It provides a central dashboard for monitoring the hosts (physical servers or virtual machines) and SAP application services in even very complex infrastructures. Additionally, administrators can use the SAP Landscape Management console for performing centralized operations like starting or stopping instances of an SAP service or apply operations simultaneously to complex groups of systems on the entire landscape through predefined single and mass operations. Another aspect of SAP Landscape Management is the ability to support Enterprise Edition SAP System Clone, System Copy or Refresh and System Rename operations. This highly automated and unified IT landscape management capabilities apply not only to SAP Netweaver based applications but also to SAP HANA and SAP S/4HANA systems. All the described features of SAP Landscape Management are based on a communication with the SAP Host Agent of the respective SAP system in the landscape as shown in the following figure:





With virtualized SAP Systems on VMware vSphere, the list of use cases can be extended and enhanced with even more features. By using the VMware Adapter for SAP Landscape Management, SAP Landscape Management can now monitor and manage all the virtual machines used for the SAP Systems running on virtualized and non-virtualized infrastructure from a single pane. The Basis admin can now start or stop VMs, deploy VMs from templates and perform online or offline SAP System Clone, System Copy or Refresh and System Rename operations on VMs without changing tools. Additionally, live migrations of VMs or datastores for workload balancing, creating a snapshot of an SAP system before a critical change takes place are possible out of one interface. Thus, combining SAP Landscape Management with the advanced use cases of virtualized infrastructures give SAP customers the highest degree of convenience in terms of automation and control and also significantly saves operational costs. The following figure depicts the SAP Landscape Management along with the components of VMware Adapter for SAP Landscape Management installed:





As depicted in the preceding figure, VMware Adapter for SAP Landscape Management is a virtual appliance that integrates SAP Landscape Management (LaMa) with VMware's Software Defined Data Center (SDDC) technologies, delivering unique automation capabilities that radically simplify how SAP basis admins and end users provision and manage SAP Landscapes. The results are faster time to market, and reduction in both TCO and operational errors while managing SAP Landscapes.

VMware Adapter for SAP Landscape Management appliance accepts application calls from SAP Landscape Management (LaMa), then uses vRealize Automation or VMware vRealize Orchestrator workflows to execute commands to VMware vCenter Server for VMware related operations, such as starting and stopping a virtual machine.

## **Features and Benefits**

#### **Note** Key Features:

VMware Adapter for SAP Landscape Management dramatically simplifies and automates the lifecycle management of SAP landscapes on VMware virtualized infrastructure:

- Provisioning System Cloning, Copying and System Refresh
  - Automate key SAP Basis provisioning tasks such as system cloning, copying, and system refresh directly in VMware vCenter Server with SAP Landscape Management

- Leverage SA-API to provision SAP systems from templates in vRealize Automation
- Operations SAP Hosts, Storage, and Network Migration
  - Migrate VM, switch its data set and network to stand up SAP hosts, move environments, and deploy disaster recovery solutions - all through the SAP Landscape Management interface
- Delivery Self-Service Through vRealize Automation
  - Enable end users to self-provision SAP Landscapes in vRealize Automation through blueprints created by SA-API

#### **Note** Key Benefits:

Following are the key benefits of deploying VMware Adapter for SAP Landscape Management:

- Greater operational continuity through centralized management, visibility and control of your entire SAP landscape using a single console
- Increased operational agility by accelerating application life-cycle management operations and faster response to workload fluctuations
- Reduced time, effort and cost to manage and operate your SAP systems through automation of SAP BASIS tasks and leveraging adapter's functions such as VMware vSphere Storage vMotion, network migration and linked online clone and copy
- Increases SAP BASIS and IT admin productivity by automating manual operational tasks and enabling self-service capability
- Lowers total cost of ownership since reduced OpEx leads to increased cost savings

## **Reference Architecture**

The following diagram illustrates the components of a VLA execution environment and their relationship to one another:





The key components in this diagram are:

- SAP Systems (Managed SAP Systems) Each of these systems consist of software running on one or more machines that perform some business function, such as order processing, accounts payable, general ledger, inventory management, etc. Each SAP System consists of one or more components like a database service, SAP instance or SAP Host Agent service. When all of the components are up and running, the SAP System is running. When all of the components are stopped, the SAP system is stopped. If some systems are running and some are not, the SAP system is in an intermediate state.
- The SAP Landscape Management (LaMa) The SAP Landscape Management (LaMa) application runs on ABAP or Java stack in a Linux based guest OS. It provides a web-based user interface for SAP BASIS administrators to create / destroy / configure / and otherwise operate on and provision SAP Systems and their underlying machinery (bare metal or virtualized).

The SAP Landscape Management (LaMa) has an extensible architecture that allows SAP and third-party vendors, for example VMware, to create plugins in order to extend certain features.

The VMware Adapter for SAP Landscape Management uses Key Storage service of SAP NetWeaver to store trusted certificates. During installation VMware Adapter for SAP Landscape Management creates an unsecure custom keystore view **VMware-VASL**. If some error with the mentioned view occurs during installation, the public view **DEFAULT** is used.

- The VMware Adapter for SAP Landscape Management This is a plugin to LaMa that extends how LaMa integrates with the underlying systems virtualized with VMware vSphere (see next bullet), optimizing and extending the functionality for certain operations, such as activating (powering on) and deactivating (powering off), copying and cloning systems, and automation of these copying and cloning operations.
- ESXi and vCenter Server (collectively called vSphere) ESXi is VMware's premier hypervisor product. VI administrators typically install it on server-class computers, with VMs running guest operating systems (OSes) with SAP Systems as applications within the guests. vCenter Server is VMware's premier product for managing environments virtualized with ESXi. Collectively called vSphere, these products provide an enterprise-class environment with features for creating clusters, load balancing VMs between host systems (ESXi instances), fault tolerance, virtual networking, virtual storage, and more. In VLA environments, the VLA appliance (next bullet) runs in a VM on this infrastructure.
- VMware vRealize Orchestrator<sup>™</sup> This VMware product helps VI administrators automate their environments by creating workflows (essentially scripts) that perform VI administrative actions, including complex actions that may take multiple steps, involve loops, conditions, etc.
   VMware vRealize Orchestrator workflows can handle exceptions automatically or can pause waiting for a VI administrator to mitigate an issue. See the next bullet for how VLA uses VMware vRealize Orchestrator.
- VMware Landscape Management Appliance (VLA) This part of the VLA product is a virtual appliance. It maintains connection with one or more vCenters, contains a repository of inventory data and user credentials and executes operations at VMs, ESX hosts, datastores or networks by utilizing VMware vRealize Orchestrator (vRO). Collectively, it consists of one or more web services that accepts commands from (previously discussed) *LaMa* VLA Adapter and take appropriate actions to implement the commands, typically with the help of the (previously discussed) VMware vRealize Orchestrator. For example:
  - When a SAP BASIS administrator activates (powers on) a SAP System via LaMa, the VLA Adapter sends commands to the vla-service (discussed later in this topic) to power on the underlying VMs. The vla-service in turn invokes a VLA-specific workflow on the VMware vRealize Orchestrator to turn on the VMs in the underlying vSphere infrastructure. An analogous action occurs when a SAP BASIS administrator deactivates (powers off) a SAP System.
  - When a SAP BASIS administrator copies a SAP System, the VLA Adapter sends commands to the vla-service which in turn invokes a VLA-specific VMware vRealize Orchestrator workflow to create vSphere copies of the VMs on which the SAP Systems reside, configuring the VMs according to the parameters provided by the SAP BASIS administrator in the LaMa web user interface.

The VLA Appliance contains several components, including:

• A purpose-configured and hardened operating system (OS)

- A minimalist set of OS utilities and VLA-specific programs and configuration files required to provide the functionality described here. These include:
  - The vla-service A web service running in tomcat that receives and processes commands from the VLA Adapter. It also serves out the VLA dashboard web UI. By default, this server listens on port 8443.
  - Tomcat user database Database with usernames / passwords used to authenticate access to that instance's services. VI Administrators create an entry in the database for the VLA instance during deployment of the VLA environment using the vla\_user command as detailed later in this document.
  - A credentials store to securely store credentials and certificated needed for the communication with infrastructure components in the environment. The credentials store is managed using the vla\_credentials command as detailed later in this document.

## **Environment Setup**

In this chapter we discuss various environment setup that you should have in place in order for you to be able to perform various operations in your existing SAP system infrastructure. The operations themselves are discussed in chapter Chapter 5 Operations Overview. From this chapter you will learn how to configure the VMware adapter for SAP Landscape Management to be able to connect to the VLA server. You know that the SAP LaMa manages the hosts and instances on the SDDC. The VMware Adapter for SAP Landscape Management receives LaMa commands and forwards them to the VLA for execution.

This chapter includes the following topics:

- The VMware Adapter for SAP Landscape Management installation
- Configure LaMa to use the VMware Adapter for SAP Landscape Management

## The VMware Adapter for SAP Landscape Management installation

The VMware Adapter for SAP LaMa installation is done in 2 phases:

- 1 Downloading the VMware Adapter for SAP LaMa file from the dashboard to a server which runs application server instance of SAP Netweaver AS Java with installed LaMa add-on. This server will be referred to as SAP Server.
- 2 The VMware Adapter for SAP LaMa deployment.

### Download the VMware Adapter for SAP Landscape Management

#### Procedure

- 1 Launch a browser window.
- 2 Enter the URL for the VLA Dashboard, for example:

*https://<vla\_hostname\_or\_IP>:8443/vla/dashboard*, where <vla\_hostname> is the FQDN or IP address of the VLA.

**3** If you are prompted with a certificate warning, just accept the warning and proceed to the dashboard landing page.

- 4 The dashboard should be displayed after you enter the username and password.
- 5 Click on the **Downloads** section in the **NAVIGATION** pane.
- 6 Click on the download button opposite VMware Adapter for SAP Landscape Management

#### Figure 3-1. Download VMware Adapter for SAP Landscape Management

w VI A dashboard	Welcome on VLA dashboard	
	Dashboard Product vestor: (TIGI) Build (2022/88) VLA Best API vestor) () System Lotime (Claves Dismittative) Local time (West Alloy 115/1056/110/2009)	△ ۞
Summary	VMware Adapter for SAP Landscape Management	*
E Backup and Restore		
() Downloads	Orchestrator workflow package	*
L'Information	VLA Report bundle  C descent to the second s	UNDLE

- 7 Copy VMwareLVM.ear to the scripts directory in the SAP Server.
  - for Windows: C:\usr\sap\<SID>\J<Instance>\j2ee\deployment\scripts
  - for Linux: /usr/sap/<SID>/J<instance>/j2ee/deployment/scripts/

### Deploy the VMware Adapter for SAP Landscape Management

**Note** SAP Note 2462712 contains detailed information on how to deploy applications to SAP NetWeaver Application Server.

#### Prerequisites

The SAP NetWeaver AS Java is running.

#### Procedure

- 1 Log into the SAP Server and run terminal.
- 2 Change the directory to:
  - for Windows: C:\usr\sap\<SID>\J<Instance>\j2ee\deployment\scripts
  - for Linux: /usr/sap/<SID>/J<instance>/j2ee/deployment/scripts/
- **3** Run the following command:
  - for Windows: make\_SDA.bat VMwareLVM.ear
  - for Linux: ./make\_SDA.csh VMwareLVM.ear
- **4** Connect to SAP NetWeaver Application Server for Java using the Telnet to port 5<NN>08 where <NN> is a SAP NetWeaver Application Server instance number. For example:
  - # telnet localhost 50008
- **5** Enter the SAP J2EE administrator user and password.
- 6 Run the following command to deploy the VMware Adapter for SAP LaMa:
  - for Windows:

- > deploy C:\usr\sap\<SID>\J<instance>\j2ee\deployment\SDA\VMwareLVM.ear
- for Linux:
  - > deploy /usr/sap/<SID>/J<instance>/j2ee/deployment/SDA/VMwareLVM.ear
- 7 Exit from Telnet session by executing the quit command.

#### Results

You successfully deployed the VMware Adapter for SAP Landscape Management.

## Configure LaMa to use the VMware Adapter for SAP Landscape Management

The VMware Adapter for SAP Landscape Management receives LaMa commands and forwards them to the VLA for execution. Therefore an adapter instance must be connected to the VLA server. Once the connection is established, the LaMa manages the hosts and instances that reside on the SDDC.

#### Procedure

- 1 Login to LaMa web user interface with credentials that have administrator rights.
- 2 Click Infrastructure, and click Virtualization managers.

The browser displays a page similar to the following:

Figure 3-2	2. LaMa-\	/irtualization	managers
------------	-----------	----------------	----------

Landscape Management		Working Set:	<alb search:<="" td="" v=""><td>i Go</td><td>ф ф I</td><td>.21 on vn</td></alb>	i Go	ф ф I	.21 on vn
Automation Studio Monitoring Configurati	, Entrance for the second seco					
Network Components Virtualization managers	Storage Managers Cloud Managers Repositories Java PCA					
Overview						
Add Remove   Export Import   Supported Virtualization	Integration				(	B.
1 Label	Vendor	Product	Version			
8						
Rows: 0 total, 0 shown, 0 selected						
			₽			

3 Click Add.

The browser displays a wizard to configure a new Virtualization Manager, starting with the **Virtualization Manager Types** page similar to the following:

#### Figure 3-3. LaMa-Add-Virtualization Manager Types



4 Select the entry (highlighted above for emphasis) with VMware Adapter for SAP Landscape Management in the Product column and version of the VLA Adapter you deployed in the version column and then click **Next**.

The browser displays the Virtualization Manager Properties page similar to the following:

Figure 3-4. LaMa-VMware Adapter for SAP Landscape Management

Landscape Virt	ualization Management		Search: [		Go 💠 💠	L21 on vmlvml21(09:55)	Related Links & Help,	Administrator
Overview Operation	Provisioning Automation Mo	eltoring Configuration	on Infrastructure					Setup
· Previous Next . Save	Carcel Supported Virtualization Integration							
Virtualization Manager 1	2 Virtualization Manager Properties	3						
Basic Properties Labet * User Name: * Password: * URL * Montoring Interval (Seconds): * Additional Properties	adminukator							
Name	Value	1	Туре	Mandatory	Description			
Connection Pool Size		20 kr	teger	12	The maximum nur range 10 and 100	mber of connections to VLA	server. Value must be wit	this the
Tameout		30 k	leger	×	Timeout of LVM re there are many to range 20 and 80	equests to VLA server in sec meout errors during Mass op	onds. The value can be i erations. Value must be i	ncreased if within the
Certificate Authority Selection	2	8	oolean	2	This property sho if the vLA is using	uid be true(checked) if the v a certificate generated by a	LA uses a self signed ce corporate certificate auth	rtificale or ority
Originator ID	Avm0001	5	tring	2	Oviginator ID valu	*		
Test Configuration								

- 5 Enter a name for this instance of the VLA Adapter in the Label field.
- 6 Enter the User Name and Password of the VLA user.
- 7 Enter the URL for the VLA. This should be *https://<vla\_hostname\_or\_IP>:8443/vla*, where <hostname\_or\_IP\_address> is the FQDN or IP address of VLA.
- 8 Enter a Monitoring Interval between 30 and 60 seconds. This is, how often the adapter gathers inventory updates from the VLA.
- 9 There are four Additional Properties:
  - a **Connection pool size** sets the maximum connection between the adapter and the VLA.
  - b Timeout sets the timeout duration (in seconds) between the adapter and the VLA
  - c A checkbox for **Certificate Authority Selection**. Select this if the VLA contains a selfsigned certificate or a certificate that is generated by a corporate certificate authority.
  - d Originator ID Unique Id used for transaction logging. This ID is a string and will identify this instance of the adapter in the system logs. We recommend you use LaMa-001 for the first instance in your enterprise, LaMa-002 for your second, etc.

**10** After all properties are entered, click **Test Configuration**. If the test succeeds, the configuration is correct (the VLA Adapter was able to communicate with the VLA Appliance)

The browser displays Connection Successful in the status bar.

11 Click Next.

The browser displays the Summary step of the wizard, similar to the following:



#### Figure 3-5. LaMa-Test Configuration

#### 12 Click Save.

This saves the configuration of the adapter.

#### Results

The VMware Adapter for SAP Landscape Management should now appear as configured in the LaMa web user interface.

**Note** The VMware Adapter for SAP Landscape Management uses the SAP NetWeaver Key Store Service. During registration, it creates its own key store view, *VMware-VASL*. To manage this key store view manually, open SAP Landscape Manager and navigate to SAP NetWeaver Administrator > Certificates and Key > Key Storage.

# Undeploy the VMware Adapter for SAP Landscape Management

**Note** SAP Note 2462712 contains detailed information on how to undeploy applications from SAP NetWeaver Application Server.

#### Prerequisites

The SAP NetWeaver AS Java is running.

#### Procedure

- 1 Log into the SAP Server and run terminal.
- **2** Connect to SAP NetWeaver Application Server for Java using the Telnet to port 5<NN>08 where <NN> is a SAP NetWeaver Application Server instance number. For example:
  - # telnet localhost 50008
- 3 Enter the SAP J2EE administrator user and password.
- 4 Run the following command to see if the VMware Adapter for SAP LaMa is deployed:
  - > list\_app | grep VMwareLVM

If the VMware Adapter for SAP LaMa appears in the list, then it has been deployed.

- 5 Run the following command to uninstall the VMware Adapter for SAP LaMa:
  - > undeploy name=VMwareLVM vendor=JavaEE on\_undeploy\_error=stop
- 6 Run the following command to verify that the VMware Adapter for SAP LaMa is undeployed:
  - > list\_app | grep VMwareLVM

If the VMware Adapter for SAP LaMa does not appear in the list, then it has been undeployed.

7 Exit from Telnet session by executing the quit command.

#### Results

You successfully udeployed the VMware Adapter for SAP Landscape Management.

## **Operations Overview**

VMware Adapter for SAP Landscape Management extends the basic operations available in SAP LaMa and integrates VMware vSphere infrastructures into the available workflows. SAP LaMa provides the following basic features:

- Dashboards and Pods— Get a quick high level overview of your current landscape state
- Single/Mass Operations— Centralize operations for your entire landscape using a single console
- Landscape Visualization— Visualize systems and underlying infrastructure and identity relationships
- Provisioning Systems— Automate complex provisioning activities such as system copy/ refresh
- Post-Copy Automation— Automate post copy and refresh processing tasks and customize the task lists
- Managing SAP HANA— Managing and provisioning your SAP systems powered by SAP HANA
- Custom Provisioning— Integrate and use your own replication technology for system provisioning
- Custom Operations/Hooks— Integrate your own procedures and tailor it to your specific needs
- Task Scheduling— Schedule and execute mass or sequential tasks during planned maintenance

This chapter includes the following topics:

- Operations
- Forced Operations
- Non-Forced Operations
- Migrate
- Provisioning

## Operations

Operations in *SAP LaMa* execute features to existing SAP systems and infrastructure. Some examples of these operations are activating and deactivating SAP systems. With the VMware Adapter for SAP Landscape Management there are three types of operations that you can perform —

- Forced Operations Forced operations ignore system services and daemons on the target SAP system and are generally non-graceful operations. The three forced operations that are supported are
  - a Forced Deactivate (Shutdown OS)
  - b Forced Deactivation (Power Off)
  - c Forced Suspend
- 2 Non-Forced Operations Non-Forced operations execute on the target SAP system and generally get executed in a graceful manner. The four Non-Forced operations that are supported are
  - a Activate
  - b Deactivation
  - c Deactivate
  - d Suspend
- 3 **Migrate Operation** The migrate operation allows you to migrate a SAP virtual machine onto another host / network / datastore.

## **Forced Operations**

There are three forced operations that are supported -

- 1 Forced Deactivate (Shutdown OS) used to shut down the operating system.
- 2 Forced Deactivation (Power Off) used to power off the operating system.
- 3 Forced Suspend used to suspend the SAP system virtual machine.

**Note** When a virtual machine(VM) is suspended, the current system memory of the VM is written to the disk. Then the VM is powered off. When the VM is restarted from vCenter Server Appliance, the VM continues from exactly the same state as it was when it was suspended, including executing any running transactions.

To access these features login to the LaMa web user interface and navigate to the **Operations** view and choose the **Virtualization** view. Click on VLA Adapter instance name and further in its hierarchy.

#### Figure 5-1. Navigation to Operations

≡	< > SAP SA	.P Landscap	pe Management			۹	Refresh V Working S	Set: All L21 on vmlvml21 (	04:15) ⑦ Administrator
	Overview	>		3 Systems	Hosts	Cloud	冒 Virtualization	torage	
٠	Operations		\ /internation						
略	Provisioning		Virtualization				Ь		
°c	Automation Studio	>	a Croup By History Dofault				-	Mass Operations	
慾	UI Customizations	>	Group by Hierarchy - Delautt V			01-1	la fa su alla s	Mass Operations	Y [2] (□ (□)
Б	Monitoring	>	Name			Status	Information	Summary	Operations
٩	Configuration	>	ER VLA3			Available		圓1庫4圖9回1	
<b>%</b>	Configuration Extensions	>	VLA33						
ቆ	Infrastructure	>	С						
4	Setup	>							
			Virtualization Managers: 1, Virtual Ho	st Provider Clusters: 1,	Virtual Host Pro	viders: 4, Virtual Host	Is: 9, Other Virtual Element	s: 1	
D	supportBundletar.gz	~							Show all

To execute a forced operation follow instruction below

#### Procedure

- 1 Find the SAP system virtual machine and click on the **Operations** for the selected SAP system virtual machine.
- 2 Select **Forced** from the dropdown list.

**3** Select the option that you intend to execute from the list.

#### Figure 5-2. Forced operations

Group Hierarchy - Default / VLA33 / vc1.saplab.vmw.c	:om /				Virtual	Host Provider Cluste	r Operations
Cluster Virtual Host Provider Cluster							
		Nur	mber of CPL	: 16	,	Memory: 256.0 GB	
Logs:					200.0 OD		
Visual	lization: 븅븅	CIO	CK Rale. 33.0	GHZ			
ENTITIES GENERAL ADDITIONAL PROPE	ERTIES MONIT	ORING VISUALIZ	ATION				
						mass Operations V	
Name	Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations
esx1-1.saplab.vmw.com	Available		4	64.0			Operations
esx1-2.saplab.vmw.com	Available		4	64.0			Operations
esx1-3.saplab.vmw.com	Available		4	64.0		1	Operations
esx1-4.saplab.vmw.com	Available		4	64.0			Operations
a QAAF-JH	Active		4	8.0	Linux	vmware	Operations
SLES12-LVM3-L21	Active		2	16.0	Linux	vmlvml21	Operations
SLES12.2-ORA12-NW7.5-ABAP-014	Active		4	8.0	Linux	🖄 Deactivate (OS	Shutdown)
SLES12.3-HANA12-DIS1-NW7.5-CS-	Active		2	4.0		② Deactivate (Potential)	wer Off)
BLES12.3-HANA12-DIS2-NW7.5-DB- H08	Active	3	1	32.0	Linux	② Destroy	
SLES12.3-HANA12-DIS3-NW7.5-CI-H08	Active		2	4.0	Linux	🖄 Migrate	
Virtual Host Providers: 4. Virtual Hosts: 9				1 2 >		Suspend	
			Force	d Deactivate (OS S	hutdown)	Forced	
			_	14P		7	
			Force	d Deactivate (Powe	r Off)	Other	

4 In the pop-up window set **True** for the **Ignore Dependencies** parameter if you want to ignore any instances that might be running on the virtual host. Then click on the **Execute** button.

Figure 5-3. Execution setup dialog

Forced Deactivate (OS Shutdown)				
SLES12.2-ORA12-NW7.5-ABAP-O14				
✓ Parameters				
*Ignore Dependencies	🔿 True 💿 False			
✓ Settings				
Set Note				
				_
		Execute	Save as Template	Cancel

**5** The host will be marked as locked until the end of the operation.

#### Figure 5-4. Locked host

ENTITIES GENERAL ADDITIONAL PROPERTIES MONITORING VISUALIZATION							
						Mass Operations	× ⊖ ■ ©
Name	Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations
esx1-1.saplab.vmw.com	Available		4	64.0			Operations 🗸
esx1-2.saplab.vmw.com	Available		4	64.0			Operations 🗸
esx1-3.saplab.vmw.com	Available		4	64.0			Operations 🗸
esx1-4 saplab.vmw.com	Available		4	64.0			Operations 🗸
E clone14	Active		4	8.0	Linux	saptest-40	Operations 🗸
CAAF-JH	♦ Defined		4	8.0	Linux	vmware	Operations 🗸
E SLES12-LVM3-L21	Active	Host locked	2	16.0	Linux	vmlvml21	Executing:
SLES12.2-ORA12-NW7.5-ABAP-014	Active		4	8.0	Linux	vm-s12o12-a5	Operations 🗸
SLES12.3-HANA12-DIS1-NW7.5-CS-H08	Defined		2	4.0	Linux		Operations 🗸
SLES12.3-HANA12-DIS2-NW7.5-DB-H08	♦ Defined		1	32.0	Linux		Operations 🗸
Virtual Host Providers: 4, Virtual Hosts: 10		< 1 2 >					

## **Non-Forced Operations**

There are four Non-Forced operation features that you can execute -

- 1 **Activate** You use this feature to power on the virtual machine, operating system and then the SAP system.
- 2 **Deactivation** You use this feature to gracefully shut down the SAP system and then the operating system.
- 3 **Deactivate** You use this feature to gracefully shut down the SAP system, operating system and then the virtual machine too.
- 4 **Suspend** You use this feature to gracefully shutdown the SAP system and then suspend the virtual machine.

To access these features login to the LaMa web user interface and navigate to the **Operations** view and choose the **Virtualization** view.

#### Figure 5-5. Navigation to Operations

	Overview >			Systems	🖬 Hosi	s 🛆 Clo	oud 🗄 Virtualizati	on 隋 Storage	
•	Operations						-		
曝	Provisioning		Virtualizatio	٦		b			
°o	Automation Studio	a	Oraya Day Alian	Default		-			
්සි	UI Customizations		Group ву ніег	archy - Delauit 🗸			M		? ⊞ \$?
Бţ	Monitoring		Name		S	tatus	Information	Summary	Operations
Ą	Configuration >		Eo VLA31		C	Available		圓1壘4圖9目	

### Activate

**Activate** is a Non-Forced operation feature. You use it to gracefully power on the virtual machine, the operating system and the SAP system.

#### Prerequisites

#### Procedure

- 1 Find the SAP system virtual machine by clicking on VLA Adapter instance name and further in its hierarchy.
- 2 Click on the **Operations** for the selected SAP system virtual machine.
- 3 Select **Activate** from the dropdown list.

#### Figure 5-6. Activate operation

Group Hierarchy - Default / VLA31 / vc1.saplab.vmw.com / Virtual Host Provider Cluster Operations ~								
Status: Available Available Clock Rate: 3				er of CPUs Rate: 33.5	: 16 GHz			
Memory: 256.0 GB								
					Ma	ss Operations	· C # ©	
Name	Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations	
章 esx1-1.saplab.vmw.com	Available		4	64.0			Operations 🗸	
章 esx1-2.saplab.vmw.com	Available		4	64.0			Operations 🗸	
寧 esx1-3.saplab.vmw.com	Available		4	64.0			Operations 🗸	
寧 esx1-4.saplab.vmw.com	Available		4	64.0		2	Operations 🗸	
🗃 QAAF-JH	Defined		4	8.0	Linux	vmware	Operations 🗸	
SLES12-LVM3-L21	Active		2	16.0	Linux	vmlvml21	Operations 🗸	
SLES12.2-ORA12-NW7.5-ABAP-014	Defined		4	8.0	Linux	vm-s12o12- a5	Operations 🗸	
SLES12.3-HANA12-DIS1-NW7.5-CS-H08	Defined		2	4.0	Line @	Activate		
SLES12.3-HANA12-DIS2-NW7.5-DB-H08	Defined		1	32.0	Linux @	Destroy		
SLES12.3-HANA12-DIS3-NW7.5-CI-H08	Defined		2	4.0	Linux @	Migrate		
Virtual Host Providers: 4, Virtual Hosts: 9			< 1	2 >		Other	>	
					1	Non-Executab	le Operations	

4 In the pop-up window click on the **Execute** button.

**5** The host will be marked as locked until the end of the operation.

Group Hierarchy - Default / VLA31 / vc1.saplab.vmw.com	Group Hierarchy - Default / VLA31 / vc1.saplab.vmw.com / Virtual Host Provider Cluster Operations 🗸									
Cluster Virtual Host Provider Cluster										
Status: D Available	Logs: 🚛			Numbe	er of CPUs	16				
	Visualization:	\$		Clock	Rate: 33.5	GHz				
Memory: 256.0 GB ENTITIES GENERAL ADDITIONAL PROPERTIES MONITORING VISUALIZATION										
					Mas	ss Operations 🥆	∕ ⊖ ⊞ ©			
Name	Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations			
o esx1-1.saplab.vmw.com	Available		4	64.0			Operations V			
章 esx1-2.saplab.vmw.com	Available		4	64.0			Operations V			
o esx1-3.saplab.vmw.com	Available		4	64.0			Operations 🗸			
o esx1-4.saplab.vmw.com	Available		4	64.0			Operations 🗸			
🗏 QAAF-JH	Defined		4	8.0	Linux	vmware	Operations 🗸			
SLES12-LVM3-L21	Active		2	16.0	Linux	vmlvml21	Operations V			
SLES12.2-ORA12-NW7.5-ABAP-O14	Defined	Host locked	4	8.0	Linux	vm-s12o12- a5	Executing: 📑			

### Deactivation / Deactivate

**Deactivate (OS shutdown)** is a Non-Forced operation that causes a graceful shut down of the SAP system and also the operating system, and deactivates the virtual host. **Deactivate (Power Off)** is a Non-Forced operation that causes a graceful shut down of the SAP system, and disconnects the virtual systems from the power supply.

#### Prerequisites

#### Procedure

- 1 Find the SAP system virtual machine by clicking on VLA Adapter instance name and further in its hierarchy.
- 2 Click on the **Operations** for the selected SAP system virtual machine.

3 Select Deactivate (OS Shutdown) or Deactivate (Power Off) from the dropdown list.

Cluster Virtual Host Provider Cluster	and the second s						
Status: D Available	Logs: 🗐 🚺			Nun	nber of CPU	s: 16	
	Visualization:			Cloc	k Rate: 33.	5 GHz	
Memory: 256.0 GB							
ENTITIES GENERAL ADDITIONAL PROPERT	TIES MONITORI	NG VISUA	LIZATION				
						O	. 6
Name	Status	Information	CDUs	Mamany (CP)	08	Hast Name	
esv1-1 saplab ymw com		Information	4	64.0	03	TIUSLINAITIE	Operations
esx1-2 saplab vmw.com			4	64.0			Operations
esx1-3 saplab vmw.com	Available		4	64.0			Operations
esx1-4.saplab.vmw.com	Available		4	64.0		2	Operations
🚍 QAAF-JH	Defined		4	8.0	Linux	vmware	Operations
SLES12-LVM3-L21	Active		2	16.0	Linux	vmlvml21	Operations
	Active		4	8.0	Linux	vm-s12o12- a5	Operations
SLES12.2-ORA12-NW7.5-ABAP-014	▲ Defined		2	4.0	Linux @	Deactivate (OS	Shutdown)
SLES12.2-ORA12-NW7.5-ABAP-014         SLES12.3-HANA12-DIS1-NW7.5-CS-H08	♦ Delified				Linux	Deactivate (Po	wer Off)
Image: SLES12.2-ORA12-NW7.5-ABAP-014           Image: SLES12.3-HANA12-DIS1-NW7.5-CS-H08           Image: SLES12.3-HANA12-DIS2-NW7.5-DB-H08	<ul> <li>Defined</li> <li>Defined</li> </ul>		1	32.0	LINU		
Image: SLES12.2-ORA12-NW7.5-ABAP-014           Image: SLES12.3-HANA12-DIS1-NW7.5-CS-H08           Image: SLES12.3-HANA12-DIS2-NW7.5-DB-H08           Image: SLES12.3-HANA12-DIS3-NW7.5-CI-H08	Defined     Defined     Defined		1 2	32.0 4.0	Linux @	] Destroy	
E         SLES12.2-ORA12-NW7.5-ABAP-014           E         SLES12.3-HANA12-DIS1-NW7.5-CS-H08           E         SLES12.3-HANA12-DIS2-NW7.5-DB-H08           E         SLES12.3-HANA12-DIS3-NW7.5-CI-H08           Virtual Host Providers: 4, Virtual Hosts: 9	<ul> <li>Defined</li> <li>Defined</li> </ul>		1 2 <	32.0 4.0	Unux @	g Destroy Migrate	
Image: SLES12 2-ORA12-NW7.5-ABAP-014         Image: SLES12 3-HANA12-DIS1-NW7.5-CS-H08         Image: SLES12 3-HANA12-DIS2-NW7.5-DB-H08         Image: SLES12 3-HANA12-DIS3-NW7.5-CI-H08         Virtual Host Providers: 4, Virtual Hosts: 9	<ul> <li>Defined</li> <li>Defined</li> <li>Defined</li> </ul>		1 2 <	32.0 4.0 1 2 >	Linux @	Destroy Migrate Suspend	

#### Figure 5-8. Deactivate operations

- 4 In the pop-up window click on the **Execute** button.
- 5 The host will be marked as locked until the end of the operation.

#### Suspend

**Suspend** is a Non-Forced operation that causes a graceful shutdown of the SAP system and then the suspension of the virtual machine.

#### Prerequisites

#### Procedure

- 1 Find the SAP system virtual machine by clicking on VLA Adapter instance name and further in its hierarchy.
- 2 Click on the **Operations** for the selected SAP system virtual machine.

3 Select **Suspend** from the dropdown list.

Cluster Virtual Heat Bravidar Cluster	1						
Status: C Available	Logs: 🛃			Nun	nber of C	PUs: 16	
	Visualization:	è.		Cloc	k Rate:	33.5 GHz	
Mamanu 255 0 CP							
Memory. 250.0 GD							
ENTITIES GENERAL ADDITIONAL PROPER	RTIES MONITOR	ING VISUA	LIZATION				
						Mass Operations	✓ ⊖ #
Name	Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations
esx1-1.saplab.vmw.com	Available		4	64.0			Operations
esx1-2.saplab.vmw.com	Available		4	64.0			Operations
esx1-3.saplab.vmw.com	Available		4	64.0		6	Operations
esx1-4.saplab.vmw.com	Available		4	64.0			Operations
🚍 QAAF-JH	♦ Defined		4	8.0	Linux	vmware	Operations
SLES12-LVM3-L21	Active		2	16.0	Linux	vmlvml21	Operations
SLES12.2-ORA12-NW7.5-ABAP-014	Active		4	8.0	Linux	vm-s12o12- a5	Operations
SLES12.3-HANA12-DIS1-NW7.5-CS-H08	Defined		2	4.0	Linux	@ Deactivate (OS)	Shutdown)
SLES12.3-HANA12-DIS2-NW7.5-DB-H08	Defined		1	32.0	Linux	《 Deactivate (Po	wer Off)
SLES12.3-HANA12-DIS3-NW7.5-CI-H08	Defined		2	4.0	Linux	@ Destroy	
Virtual Host Providers: 4, Virtual Hosts: 9			<	1 2 >		<li>Migrate</li>	
					-	Suspend	
						E a sea a d	

Figure 5-9. Suspend operation

- 4 In the pop-up window click on the **Execute** button.
- 5 The host will be marked as locked until the end of the operation.

### Migrate

Migrate operation feature enables you to migrate a SAP system virtual machine -

- 1 From one host onto another host
- 2 From one datastore onto another datastore
- 3 From one resource pool onto another resource pool

Note You can choose any combination of the above options to do the migration

Migration is a powerful tool that can be used to move a system or isolate a system thereby making it easy to support project, patching, development or IT objectives.

#### Procedure

 Login to LaMa web user interface and navigate to the **Operations** view and choose the Virtualization view.

Figure 5-10. Navigation to Operations

84 1.2	Overview >		3 Systems	Hosts	Cloud	E Virtualization	n 周 Storage	
•	Operations				-			
畷	Provisioning	Virtualizatio	n		b			
°b	Automation Studio		Defent		-			
නි	UI Customizations	Group By Hiel	rarchy - Default V			Mas	ss Operations V	⊞ ©
Ъ	Monitoring	Name		Status	Infor	mation	Summary	Operations
2	Configuration >	🗟 VLA31	1	Availat	ble		[閏 1 閏 4 🗃 9 🗏	

- **2** Find the SAP system virtual machine by clicking on the VLA Adapter instance name and further in its hierarchy.
- 3 Click on the **Operations** for the selected SAP system virtual machine.
- 4 Select Migrate from the dropdown list.

#### Figure 5-11. Migrate operation

Group Hierarchy - Default / VLA31 / vc1.saplab.vmw.com / Virtual Host Provider Cluster Operations ~											
Status:     Available       Visualization:     Status:											
Memory: 256.0 GB ENTITIES GENERAL ADDITIONAL PROPERTIES MONITORING VISUALIZATION											
						Mass	Operations 🗸	6 ∰	0		
Name	Status	Information	CPUs	Memory (GB)	OS		Host Name	Operations			
scalar escalar	Available		4	64.0				Operations ·	~		
esx1-2.saplab.vmw.com	Available		4	64.0				Operations •	~		
寧 esx1-3.saplab.vmw.com	Available		4	64.0				Operations	~		
章 esx1-4.saplab.vmw.com	Available		4	64.0				Operations	~		
🚍 QAAF-JH	Defined		4	8.0	Linux	¢	vmware	Operations	~		
SLES12-LVM3-L21	Active		2	16.0	Linux	¢	vmlvml21	Operations	~		
SLES12.2-ORA12-NW7.5-ABAP-014	Active		4	8.0	Linux	¢	vm-s12o12- a5	Operations	~		
SLES12.3-HANA12-DIS1-NW7.5-CS-H08	Defined		2	4.0	Linux	{B	Deactivate (OS	Shutdown)			
SLES12.3-HANA12-DIS2-NW7.5-DB-H08	Defined		1	32.0	Linux	偬	Deactivate (Pov	ver Off)			
SLES12.3-HANA12-DIS3-NW7.5-CI-H08	Defined		2	4.0	Linux	:82	Destroy				
						®	Migrate				
Virtual Host Providers: 4, Virtual Hosts: 9			< 1	2 >		8 <u>8</u>	Suspend				
				4			Forced		>		
							Other		>		
						1	Non-Executable	Operations			

**5** In the pop-up window click on the pencil icon to enter required parameters.

#### Figure 5-12. Execution setup

Migrate					23
Executing setup SLES12.2-ORA12-NW7.5-ABAP-01	4				
ACTIVE					
Parameters					
Parameters Required					
✓ Settings					
Set Note					
			Execute	Save as Template	Cancel

- 6 In the pop-up window select the target resource pool:
  - a Click on the **Target Element** field.

Figure !	5-13.	Parameters	setting -	Step '	1
----------	-------	------------	-----------	--------	---

1 Step 1 »	Advanced >> Constant	
*Target Element	Resources - Cluster	ð
	Previous Next > Set	Cancel

b Go down through the inventory objects hierarchy and click on a resource pool. Click **Confirm**.

Figure 5-14. Resource pool setting

Target Element								
Name	Selectable	Status	CPU(s)	Memory (GB)				
✓ VLA31		Available						
<ul> <li>vc1.saplab.vmw.com</li> </ul>		Available						
✓ Cluster	🗹 Selectable	Available	16	256.0				
✓ Resources - Cluster	🗹 Selectable	Available						
DEV	🗹 Selectable	Available						
QA QA	🗹 Selectable	Available						
a								
-								
General								
Vi	OS Resource Po rtualization Manag	ol: DEV er: VLA31						
	Stat	us: Available	b					
	Locke	ed: Off		<u> </u>				
				Confirm Cancel				

7 Click Next.

- 8 Select the target host where you want to migrate the SAP system virtual machine:
  - a Click on the **Host Provider** field.

1 Step 1 >>> 2	Step 2 » (Advanced » (Constraints Summary	
*Host Provider	esx1-3.saplab.vmw.com	
	A Previous Next      Set Cance     Can	I

Figure 5-15. Parameters setting - Step 2

b Go down through the inventory objects hierarchy and click on a host. Click **Confirm**.

#### Figure 5-16. Host setting

	Host F	rovider					
Name	Selectable	Status	CPU(s)	Memory (GB)			
VLA31		Available					
<ul> <li>vc1.saplab.vmw.com</li> </ul>		Available					
✓ Cluster		Available	16	256.0			
esx1-1.saplab.vmw.com	🗹 Selectable	Available	4	64.0			
esx1-2.saplab.vmw.com	🗹 Selectable	Available	4	64.0			
esx1-3.saplab.vmw.com	🗹 Selectable	Available	4	64.0			
esx1-4.saplab.vmw.com	🗹 Selectable	Available	4	64.0			
esx1-1.saplab.vmw.com	ctable						
Virtual Host Provider: esx1-1.saplab.vmw.com							
$\vee$	irtualization Manag	ger: VLA31	b				
	Lock	ed: Off					
				0			

9 Click Next.

#### **10** Select the target Data Storage:

a Click on the **Data Storage** field.

Figure 5-17	Parameters	setting -	Step 3
-------------	------------	-----------	--------

1 <sub>Step 1</sub> » 2	Step 2 »	3 Step	3 » 🔊	Advanced ≫	( <b>b</b> ) <sub>s</sub> >
*Data Storage	share10	1			Ð
		/	Previous	Next 🔰 📑	Set Cancel

b Go down through the inventory objects hierarchy and click on a datastore. Click **Confirm**.

#### Figure 5-18. Datastore setting

		Data S	torage		
	Name	Selectable	Status	CPU(s)	Memory (GB)
	VLA31		Available		
	<ul> <li>vc1.saplab.vmw.com</li> </ul>		Available		
	> Cluster		Available	16	256.0
	share10	🗹 Selectable	Available		
	share11	🗹 Selectable	Available		
a	share12	🗹 Selectable	Available		
•					
sh	nare10 🗹 Selectable General				
		Data Sto	re: share10		-
	Vi	rtualization Manag	er: VLA31		
		Stat	us: Available		
		Lock	ea: Off		
					Confirm Cancel

11 Click Next.

The **Summary** step is displayed and selected changes can be reviewed now.

Figure	5-19	Summary
riguic	5 15.	Summary

1 Step 1 >> 2	Step 2 » 3 Step 3 » C Summary
*Target Element	DEV
*Host Provider	esx1-1.saplab.vmw.com
*Data Storage	share10
	🕻 Previous Next 🕻 Set Cancel

- 12 Click on the Set button.
- 13 Click on the **Execute** button to start the migration operation.
- **14** The host will be locked until the operation completes.

#### Figure 5-20. Lock

Group Hierarchy - Default / VLA31 / vc1.saplab.vmw.com / Virtual Host Provider Cluster Operations ~ Cluster Virtual Host Provider Cluster												
Status: 🗖 Available	Logs: 🗐 Numb Visualization: 🕸 Clock			Number Clock R	ber of CPUs: 16 < Rate: 33.5 GHz							
Memory: 256.0 GB												
					Mas	s Operations 🗸	6 # @					
Name	Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations					
esx1-1.saplab.vmw.com	Available		4	64.0			Operations V					
寧 esx1-2.saplab.vmw.com	Available		4	64.0			Operations V					
o esx1-3.saplab.vmw.com	Available		4	64.0			Operations V					
nesx1-4.saplab.vmw.com	Available		4	64.0			Operations 🗸					
🗃 QAAF-JH	Defined		4	8.0	Linux	vmware	Operations V					
SLES12-LVM3-L21	Active		2	16.0	Linux	vmlvml21	Operations V					
SLES12.2-ORA12-NW7.5-ABAP-014	C Active	A Host locked	4	8.0	Linux	vm-s12o12- a5	Executing: Relocate (Not Running)					

#### Results

You have successfully migrated the SAP system virtual machine

## Provisioning

**Provisioning** with the VMware Adapter for SAP Landscape Management allows the user to take source SAP systems and either **clone** or **copy** the system to create new target SAP systems.

**Note** During SAP workload provisioning operations, copy or clone, the classic naming scheme for network interfaces can cause target clone system being unavailable for LaMa and as result failed provisioning operation. This can happen in a multi network interfaces setup if LaMa is not connected to all networks of the source system. Due to changed MAC addresses the target clone system may have different mapping of network interface names to networks compared to source system. In order to keep the same network interface names on the target clone system it is necessary to enable Consistent Network Device Naming in the source system. For more information see Consistent Network Device Naming (CNDN).

## **Clone System**

Clone operation creates an exact duplicate of the source system into a new target system. The most common use case is to take a source development system and create a clone of that system for separate development work. Other use cases may apply.

To clone a system follow the instruction below.

#### Procedure

1 Login to LaMa web user interface and navigate to the **Provisioning** view and choose **Systems** view.

	< > 👥 sa	P Landscap	ape Manage	ment					Refresh 🗸	Working Set: All	L21 on vmlvml21 (		Administrato
	Overview	>				🖞 Systems 🛛 🔚 V	irtualization						
	Operations				~								
	Provisioning		Syste	ms	Ь								
	Automation Studio	> a			-								
	UI Customizations	>	ν									1	
	Monitoring	>	No fill	ers selected									5
	Configuration	>	Name			Status	Pool	Description			Assigned Host	Provisionin	9
	Configuration Extensions	>	> 6	H02: Standalone SAP HANA database 2.00.030.00.1522209842, saps12h2		<ul> <li>Not running w</li> </ul>	Development					Provisionia	ng 🗸
	Infrastructure	>	> 6	H03: Standalone SAP HANA database 2.00.040.00.1553674765, saps15h2		Not running w	Development					Provisioni	ng 🗸
a	Setup	>	> ಥ	H08: NetWeaver ABAP 7.50, sap3s12h12db		Not running w	Development					Provisioni	ng 🗸
			> 5	M05: NetWeaver ABAP 7.50, sapw16s16a5		Not running w	Development					Provisionia	ng 🗸
			> 6	O14: NetWeaver ABAP 7.50, saps12o12a5		Running	Development					Provisioni	ng 🗸

Figure 5-21. Navigation to Provisioning

2 Click on the **Provisioning** button for the selected SAP system virtual machine.

3 Select Clone System from the dropdown list.

#### Figure 5-22. Clone operation

	< > SAP SAP	PLandscape I	tanagement				L21 on vmlvml21 (0	6:10) ⑦ Admi	inistrator
	Overview	>		g3 Systems 🛛 🗮 V	irtualization				
٠	Operations		vetome						
	Provisioning		ystems						
°o	Automation Studio	>	$\overline{\nabla}$					<i>m</i> 6	
	UI Customizations	>	Monte enlanded						
	Monitoring	>		Clature	Deel	Description	Assigned Liest	Deminianian	-
	Configuration	>	vane	Status	POOI	Description	Assigned Host	Provisioning	
	Configuration Extensions	>	DP H02: Standalone SAP HANA database 2.00.030.00.1522209842, saps12h2	<ul> <li>Not running w</li> </ul>	Development			Provisioning V	
	Infrastructure	>	B <sup>3</sup> H03: Standalone SAP HANA database 2.00.040.00.1553674765, saps15h2	<ul> <li>Not running w</li> </ul>	Development			Provisioning V	
	Setup	>	B <sup>3</sup> H08: NetWeaver ABAP 7.50, sap3s12h12db	<ul> <li>Not running w</li> </ul>	Development		0	Provisioning V	
			b3 M05: NetWeaver ABAP 7.50, sapw16s16a5	Not running w	Development	8	4	Provisioning 🗸	
			> g3 O14: NetWeaver ABAP 7.50, saps12o12a5	Running	Development			Provisioning 🗸	
							Clone System		
							Manage Syste	m Snapshots	
							Copy System		
			Systems: 5. Instances: 11						

- 4 In the pop-up window do the following:
  - a Select the **Pool** where the target system will be provisioned.
  - b Specify the **Short Name** for the new target host (the clone that you are creating).
  - c Provide an optional **Description** of the new Clone System that you are about to create.
  - d Click on the **Next** button.

#### Figure 5-23. Basic Data

Clone System I 014: NetWeaver ABAP 7.50, saps12012a5	000
Basic >>> Hosts >>> Host Names >>> Consistency >>> Isolation >>> Summary	
Provide Basic Data for Target System	
*Pool QA *Short Name clone Description Clone of System 'O14' d	
O Ignore Warnings for This Step Validate Step Reset Step < Previous Next > Finish Execut	te Cancel

**5** Click on the pencil icon to enter required parameters.

#### Figure 5-24. Host Selection

Clone System II 014: NetWeaver ABAP 7.50, saps12012a5			Show Source Data	Create Provisioning Blueprint	Remote Execution
Basic >>> Hosts >>> Host Names >>> Consistency >>> Isolation >>> Summary					
Host Selection of Target System					
Instance		Туре		Target Host/Virtual Host	
AS instance: 00		Clone Source Virtual Host			
Central services: 01		Clone Source Virtual Host			
System database: Oracle		Clone Source Virtual Host			
Provisioned/Cloned Virtual Hosts					
Target Virtual Host	Source Virtual Host				Operations
	SLES12.2-ORA12-NW7.5-ABAP-O14				0
					-
O Ignore Warnings for This Step Validate Step Reset Step				< Previous Next > Finis	h Execute Cancel

- 6 In the pop-up window do the following:
  - a Provide the **Target Name** for the clone SAP system virtual machine.
  - b Click on the Target Element field.

#### Figure 5-25. Target Selection

1 Step 1 » (b) Advanced »	Summary		
*Target Element	Resources - Cluster		đ
*Target Name	clone14		
	✓ Previous Next >	Set	Cancel

c In the **Target Element** window select the target resource pool or ESXi host. The dialog window presents useful information like current utilization levels for either the resource pool or host. This should enable you to take informed decision with regards to the resource pool / ESXi host to be used for placing the target clone system.

d Click on the **Confirm** button to close the **Target Element** window.

Figure 5-26. Resource Pool Information

Name	Selectable	Status	CPU(s)	Memory (0
✓ VLA30		Available		
<ul> <li>vc1.saplab.vmw.com</li> </ul>		Available		
✓ Cluster	🗹 Selectable	Available	16	25
> Resources - Cluster	🗹 Selectable	Available		
C				
-				
sources - Cluster 🗹 selectable				
sources - Cluster 🗹 Selectable				
sources - Cluster 🗹 selectable				
sources - Cluster 🗹 selectable General OS Resource Pool: Resources - Cluster				
Seneral OS Resource Pool: Resources - Cluster Virtualization Manager: VLA30				
sources - Cluster ⊠ selectable General OS Resource Pool: Resources - Cluster Virtualization Manager: VLA30 Status: □ Available				
sources - Cluster ⊠ selectable General OS Resource Pool: Resources - Cluster Virtualization Manager: VLA30 Status: ☐ Available Locked: Off				d
sources - Cluster ⊠ selectable General OS Resource Poot: Resources - Cluster Virtualization Manager: VLA30 Status: ☐ Available Locked: Off				d

e Click on the **Next** button.

- 7 Specify a Data Storage:
  - a Click on the Data Storage field.

#### Figure 5-27. Data Storage



b In the **Data Storage** window select a Data Storage to store the new clone system. The dialog provides useful information like the size and current utilization levels for various available datastores. This allows you to take an informed decision on the appropriate Data Storage to use for the new clone system. Click on the **Confirm** button.

#### Figure 5-28. Data Storage Information

						_
		Data Storage				
Name		Selectable	Status	CPU(s)	Memory (	GB
VLA30			Available			
<ul> <li>vc1.saplab.vmw.com</li> </ul>			Available			
> Cluster			Available	16	2	56.
share10		☑ Selectable	Available			
share11		☑ Selectable	Available			
a share12		☑ Selectable	Available			
-						
hare10 🗹 Selectable General Data Store:	share10	c	Capabilities Memory: 1511.8 Gi	3		
Virtualization Manager: Status: Locked:	VLA30 Available Off	L	Memory Utilization:	35%	6	
					1	
					Confirm	

c Click on the **Next** button.

- 8 For the next step do the following:
  - a Select Customization specification for guest OS.
    - Guest Customization Specifications are created in the VMware vCenter Server and are made available via the VMware Adapter for SAP Landscape Management. You will need a Guest Customization Specification in order to copy a system.
    - Work with your VMware Administrator to create a Guest Customization Specification if none is present in the SAP LaMa.

**Note** DHCP customization specifications may cause an inconsistent /etc/hosts file contents in the target system. PROMPT customization specifications is a more reliable option.

- b Choose whether you want to create either a linked clone or a full clone.
  - A Linked Clone creates a target system that has a file link to the original source system. This reduces the utilized storage for the target system. It is most commonly used in development and sandbox systems. Linked Clones creation completes substantially faster than Full Clones.
  - A Full Clone creates a target system that has the same disk structure and size as the source system. There is no link between the source and target systems. Full clones are most often used to create production systems and /or systems that can be exported to be used in other datacenters.
- c Click on the **Next** button.

#### Figure 5-29. Customization Specification

1 Step 1 » 2 Step 2 » 3 Step 3 » Advanced » Constraints			
*Customization specification for guest OS		С	ß
*Create a linked clone b false		<u> </u>	Ð
	Previous	Next > Set	Cancel

**9** Review the various settings that you have chosen so far. Use the **Previous** button to go back and make appropriate changes, if required. When you are satisfied with the settings and are ready to proceed further, click on the **Set** button.

10 Click on the Next button.

#### Figure 5-30. Hosts

Clone System II 014: NetWeaver ABAP 7.50, saps12012a5		Show Source Data C	reate Provisioning Blueprint Remote Execution
Basic >>> Hosts >>> Host Names >>> Consistency >>> Isolation >>> Summary			
Host Selection of Target System			
Instance		Туре	Target Host/Virtual Host
AS instance: 00		Clone Source Virtual Host	clone14
Central services: 01		Clone Source Virtual Host	clone14
System database: Oracle		Clone Source Virtual Host	clone14
Provisioned/Cloned Virtual Hosts			
Target Virtual Host	Source Virtual Host		Operations
clone14	SLES12.2-ORA12-NW7.5-ABAP-014		1
			N
O Ignore Warnings for This Step Validate Step Reset Step		<	Previous Next > Finish Execute Cancel

11 Choose a different network for each component of the target SAP system and click on the **Next** button.

**Note** If the host is not configured as adaptive instance you will see warnings that you need to ignore by pressing **Ignore Warnings for This Step** button, and clicking on the **Next** button again.

Clone System II 014: NetWeaver ABAP 7.50, sap	is12o12a5				Show Source Data Create Provisioning Blueprin	t Remote Execution
Basic >>> Hosts >>> Hos	st Names >>>> Consistency	>>>> Isolation >>>> Summary				
Virtual Host Names and N	letworks					Ad
Host Name	Auto IP Address	IP Address	Target Network	Instance/Virtual Host	Host Name Usage	
saptest-41.saplab.vmw.com		192.168.10.41	dvPG-APP10-SAPLAB <	AS instance: 00	Communication Host Name	8
saptest-41.saplab.vmw.com		192.168.10.41	dvPG-APP10-SAPLAB 🗸	Central services: 01	Communication Host Name	8
saptest-41.saplab.vmw.com		192.168.10.41	dvPG-APP10-SAPLAB 🗸	System database: Oracle	Communication Host Name	8
saptest-40.saplab.vmw.com		192.168.10.40	dvPG-APP10-SAPLAB 🗸	clone14	Physical Host Name	8
saptest1-40.saplab1.vmw.com		192.168.11.40	dvPG-APP11-SAPLAB V	clone14	Additional physical IP address	8
N					Δ.	
1 3 Ignore Warnings for This S	Step Validate Step Reset S	Step			< Previous Next > Fi	nish Execute Car

Figure 5-31. Host Names and Networks

- **12** Select the appropriate database consistency method, depending on what state the database is in. Click on the radio button against one of the following options:
  - Online: Backup/Suspend IO Mode with a timeout value Use this option typically for cloning production systems to prevent system outages. A **Timeout** value in seconds is provided to ensure that consistency is done in a timely manner.

- Offline: Stop and Restart System When you select this option the SAP LaMa will stop the system, make a clone of the system and then restart the system.
- Offline: Database already stopped Use this option when the database is already stopped.
- Database was stopped during system snapshot Use this option when the database has already been snapshotted prior to this process starting.
- Scheduled Execution of Cloning Step Use this option to schedule the cloning operation at a specific date/time of your choice. Need to input the date and time when you want to schedule the cloning operation. This option is useful, for example if you want to ensure that the current ongoing system activity is not impacted.

Click on the **Next** button.

#### Figure 5-32. Consistency

Clone System O14. NetWeaver ABAP 7.50, saps12012a5	Show Source Data	Create Provisioning Blueprint	Remote Execution
Basic XX Hosts XX Host Names XX Consistency XX Isolation XX Summary			
Database Consistency 🕡			
Online: Backup/Skipend I/O Mode     Orline: Backup/Skipend I/O Mode     Orline: Standarse intensity stopped     Orline: Catabase was stopped during system snapshot			
Scheduled Execution of Cloning Step 1			
Schedule execution of cloning step			
[1] 0 grace Wannegs for This Step Validate Step Reset Step		< Previous Next > Finis	h Execute Cancel

**13** Choose to isolate the new target system. By doing so the new target system will not be able to even accidentally communicate as the source system. Click on the **Next** button.

Figure 5-3	33. Iso	lation
------------	---------	--------

Clone System 🗊 Skow Source Data Create Provisioning Blueprint Remote Execution 014. NetWeaver ABAP 7.50, saps12012a5								
Basic >>> Hosts >>> Host Names >>> Consistency	y >>> Isolation >>> Summary							
Define Allowed Outgoing Connections for System	n Isolation		Read Connections Of: Source Host	V Host Name: vm-s12o12-a5 V Get Connections	Add			
Rule Type	Target Host	Target Port	Predefined	Explanation				
Host 🗸	localhost	Any port	$\checkmark$	<ul> <li>Allow communication to host (localhost) on all ports</li> </ul>	8			
Host 🗸	bcaa-wdc-nas.eng.vmware.com	Any port	V	Allow communication to host (bcaa-wdc- nas.eng.vmware.com) on all ports	8			
Host 🗸	vm/vml21.saplab.vmw.com	Any port	V	Allow communication to host (vmlvml21.saplab.vmw.com) on all ports	8			
Port 🗸	Any host name	nfs	V	<ul> <li>Allow communication to all hosts on port/service (nfs)</li> </ul>	8			
Port 🗸	Any host name	Idap	V	<ul> <li>Allow communication to all hosts on port/service (Idap)</li> </ul>	8			
Port 🗸	Any host name	Idaps	V	<ul> <li>Allow communication to all hosts on port/service (Idaps)</li> </ul>	8			
Port 🗸	Any host name	cifs	V	<ul> <li>Allow communication to all hosts on port/service (cifs)</li> </ul>	8			
Port 🗸	Any host name	microsoft-ds	V	<ul> <li>Allow communication to all hosts on port/service (microsoft-ds)</li> </ul>	$\otimes$			
				× 1				
O Ignore Warnings for This Step Validate Step Rese	et Step			< Previous Next > Finish Execute	Cancel			

**14** Review all settings you have made so far. When you are done reviewing the settings, click on the **Execute** button.

Figure 5-34. Summary

Clone System II	Show Source Da	ta Create Provisioning Blueprint Remote Execution
O14: NetWeaver ABAP 7.50, saps12o12a5		
Barle W. Hada W. Haddhara W. Analdana W. Indalan W. Ananan		
Basic <i>xw</i> Hosts <i>xw</i> Host names <i>xw</i> Consistency <i>xw</i> isolation <i>xw</i> Summary		
SAP advises that it is the customer's responsibility to ensure that it has all necessary third party license rights required to clone and/or copy an enviro to use the functionality described herein including without limitation, the license right to operate the target system induces a discriming and/or copy	nment using this software, and the customer has obt	ained and will maintain all such license rights necessary
to dae the functionality described receil, including, window initiation, the locate right to operate the target system randscape and coming and/or operate target system randscape and coming and/or	ynig.	
V Basic		
Provide Basic Data for Target System		
*Pool		
Development		
*Short Name		
clone		
Description		
Clone of System '014'		
and the second se		
✓ Hosts		
Used Only then of Tarrest Outlease		
Host Selection of Target System		
Instance	Туре	Target Host/Virtual Host
AS instance: 00	Clone Source Virtual Host	clone14
		Previous Next > Finish Execute Cancel

**15** You will be redirected to the **Activity** view under **Monitoring** view where you can monitor the system cloning progress.

#### Figure 5-35. Monitoring

≡	< > 💁 s	AP Lai	ndscape Management												rking Set All L21			
28	Overview	>	Latest Server Time: 2019-08-26 06:15 F	Pacific Daylight Tim	ne													
٠	Operations		⊕ ∷	î↓	Syste	m Clone									Cancel Hold	Release Continu	e Retry	
	Provisioning		Filtered by Period (All)	\$	0,000													
°o	Automation Studio		4983	⊗ Q	ID:4983		Start	tion: 0:03 Time: 2019-0	3-26 07:16:01	Retry Of: 0	istrator							
	UI Customizations	>	1 Activities		2%	9	End t	ime:		Note:								
Е	Monitoring	~	4983															
	Activities		System Clone	ystem Clone 0:02 STEPS SYSTEMS INVOLVED														
	Logs		Administrator Executing Search Q III Search Q									11						
	Performance				No filt	ers selected											\$	11
	Reports				ID	Succes	Predec	Hook fo	Status	Dur	Ste	Operation	Instance/Virt	ual Element		Host/Parent	Virtual El	12
3	Configuration	>			1	2.3			Completed	0:01	0:00	Create Target	O14: NetWe	aver ABAP 7.50	), saptest-41,saplab.vi	n		
*	Configuration Extension	s >			2	4	1		Executing	0:02	0:01	DNS Update	O14: NetWe	4: NetWeaver ABAP 7 50 santest-41 sanlab vm				
<u>æ</u>	Infrastructure	>			3	4	1		Executing	0:02	0:01	DNS Update	O14: NetWe	NetWeaver ABAP 7.50, saptest-41 saplab.vm				
dh.	Setup	>			4	5,7,9	2,3		Scheduled			Prepare VM CL	SLES12.2-O	RA12-NW7.5-A	BAP-014	Resources - Cluster		
				-														
					Log D	letails												11
																		11
																		11
					Sear	ch	۹									🕮 🎯 Supp	ort Information	11
					No fille	ers selected											5	11
					ID	Message								Entry Time	Time	Message Code	Severity	11
					4	Import of targ	et system cor	figuration pas	sed successfully					0:01	2019-08-26 07:	LVM	Information	
			R		3	ImportedCon	figContainer S	size of Instanc	es: 4 Size of Ho:	ts: 0 Size of P	pols: 0 Si	ze of Network	View More	0:01	2019-08-26 07:	CONF	Debug	
					2	Run as user	Administrator							0:00	2019-08-26 07:	LVM	Debug	
					1	The target ho	ist does not e:	kists and its co	nfiguration will b	e imported in L	VM			0:00	2019-08-26 07:	LVM	Information	
					2 1	Run as user. The target ho	Administrator ist does not e:	kists and its co	infiguration will b	e imported in L	VMI			0:00	2019-08-26 07: 2019-08-26 07:	LVM LVM	Debug Information	

Each activity in the cloning process has a corresponding line item and a respective log entry. Click on the particular operation line item to read its corresponding log entry for more details.

#### Results

At the end of these tasks you should be able to successfully create a clone of an existing SAP system.

#### Copy System

When you copy a system, you create a copy of the source system as a new target system. The most common use of copy function is to take a source production system and create a copy of that system for quality assurance or project work. Other use cases may also apply.

To copy a system follow the instruction below.

#### Procedure

1 Login to LaMa web user interface and navigate to the **Provisioning** view and choose the **Systems** view.

≡ < > SAP Landsc	ape Management				Refresh ~ Worki	ing Set: All L21 on vm	lvml21 (02:45)	⑦ Adminis
🗄 Overview >		ය් Systems 📇 V	intualization					
Operations		-						
B Provisioning	Systems							
2 Automation Studio								
④ UI Customizations >	V							
E Monitoring >	No filters selected							5
Configuration >	Name	Status	Pool	Description		Assigned	Host Provis	sioning
3 Configuration Extensions >	B <sup>2</sup> H02: Standalone SAP HANA database 2.00.030.00.1522209842, saps12h2	Not running w	Development				Prov	/isioning 🗸
옯 Infrastructure >	> 03 H03: Standalone SAP HANA database 2.00.040.00.1553674765, saps15h2	Not running w	Development				Prov	/isioning 🗸
🛃 Setup 🔰 🖒	> g3 H08: NetWeaver ABAP 7.50, sap3s12h12db	Not running w	Development				Prov	/isioning 🗸
	> ©3 M05: NetWeaver ABAP 7.50, sapw16s16a5	Not running w	Development				Prov	/isioning 🗸
	> D3 O14: NetWeaver ABAP 7.50, saps12o12a5	Running	Development				Prov	/isioning 🗸

#### Figure 5-36. Navigation to Provisioning

- 2 Click on the **Provisioning** button for the selected SAP system virtual machine.
- 3 Select Copy System from the dropdown list.

#### Figure 5-37. Copy operation

≡	< > <b>SAP</b>	SAP La	indscape Mi	Managem	ent				Refresh ~ Working \$			Admini	
28	Overview					🛱 Systems 🚍	Virtualization						
٠	Operations		0.										
畷	Provisioning		5	system	15								
°c	Automation Studio												
6	UI Customizations			V Alla fillion	n releated							· ·	
Б	Monitoring			NO Meen	s selected							<u> </u>	•
26	Configuration		N	Name		Status	POOL	Description		Assigned Host	Provisionin	19	
*	Configuration Extens	ions >		> 53	H02: Standalone SAP HANA database 2.00.030.00.1522209842, saps12h2	<ul> <li>Not running w.</li> </ul>	Development				Provision	ing 🗸	
옯	Infrastructure			> 03	H03: Standalone SAP HANA database 2.00.040.00.1553674765, saps15h2	<ul> <li>Not running w.</li> </ul>	Development				Provision	ing 🗸	
a.	Setup			> 83	H08: NetWeaver ABAP 7.50, sap3s12h12db	<ul> <li>Not running w.</li> </ul>	Development			2	Provision	ing 🗸	
				> 53	M05: NetWeaver ABAP 7.50, sapw16s16a5	<ul> <li>Not running w.</li> </ul>	Development			-	Provision	ing 🗸	
				> g3	O14: NetWeaver ABAP 7.50, saps12012a5	Running	Development				Provision	ing 🗸	
										Clone System			
										Manage Syste	m Snapshot	ts⇒	
										Copy System			
									3				
				Syster	ns: 5, Instances: 11				-				

- 4 In the pop-up window do the following:
  - a Provide the new System ID in the corresponding field.
  - b Provide a password for the new system that you are going to create as a result of Copy operation. Re-enter the password to confirm the same.
  - c Click on the **Next** button.

#### Figure 5-38. Basic Data

Copy System		Show Source Data Create Provisioning Blueprint Remote Execution
O H. Netweaver ADAP 7.00, Saps 12012a0		
Basic III Hosts III Host Names III Instance Number III Consistency III Users III Rename IIII Rename III Rename II	Isolation >>> ABAP PCA >>> Summary	
Provide Basic Data for Target System		
*System ID	*Pool	
R14	Development 5	
Use different Database Name	Description	
*Database Name	Copy of System 'O14'	
Set Master Password for OS and DB Users []		
*Dassword		
b b		
*Confirm Password		
		U Contraction of the second se
1 0 Janore Warnings for This Sileo Validate Step Reset Step		< Previous Next > Finish Execute Cancel

**5** Click on the pencil icon to enter required parameters.

#### Figure 5-39. Host Selection

Copy System II O14: NetWeaver ABAP 7.50, saps12o12a5		Show Source Data Cr	reate Provisioning Blueprint Remote Execution
Basic >>> Hosts >>> Host Names >>> Instance Number >>> Consistency >>> Users	>>> Rename >>> Isolation >>> ABAP PCA	>>> Summary	
Host Selection of Target System			
Instance		Туре	Target Host/Virtual Host
AS instance: 00		Clone Source Virtual Host	SLES12.2-ORA12-NW7.5-ABAP-R14
Central services: 01		Clone Source Virtual Host	SLES12.2-ORA12-NW7.5-ABAP-R14
System database: Oracle		Clone Source Virtual Host	SLES12.2-ORA12-NW7.5-ABAP-R14
Provisioned/Cloned Virtual Hosts			
Target Virtual Host	Source Virtual Host		Operations
SLES12.2-ORA12-NW7.5-ABAP-R14	SLES12.2-ORA12-NW7.5-ABAP-014		-
1 0 Impre Wamine for This Sten Validate Sten Deset Sten		( 1	Zrevious Next S Finish Everyite Cancel
eg o ignore trainings to this step validate step Reset Step			revious reaction rimsh Execute Cancer

- 6 In the pop-up window do the following:
  - a Provide the **Target Name** for the new SAP system virtual machine.
  - b Click on the Target Element field.

Figure 5-40. Target Selection

1 Step 1 >> Advanced >>	Summary b		
*Target Element	Resources - Cluster		5
*Target Name	О14сору		
	< Previous Next >	Set	Cancel

c In the **Target Element** window select the target resource pool or ESXi Host on which to place the new copied system. The dialog presents useful information like the current utilization levels for either the resource pool or host. This will help you to take informed decision on where to place the new copied system.

d Click on the **Confirm** button to close the **Target Element** window.

Figure 5-41. Resource Pool Information



e Click on the **Next** button.

- 7 Specify a Data Storage:
  - a Click on the Data Storage field.

#### Figure 5-42. Data Storage



b In the **Data Storage** window select a Data Storage to store the new copied system. The dialog provides useful information like the size and current utilization levels for various available datastores. This allows you to take an informed decision of choosing the right Data Storage. Click on the **Confirm** button.

#### Figure 5-43. Data Storage Information

Name	Selectable	Status	CPU(s)	Memory (GB			
✓ VLA30		Available					
<ul> <li>vc1.saplab.vmw.com</li> </ul>		Available					
> Cluster		Available	16	256.			
share10	🗹 Selectable	Available					
share11	🗹 Selectable	Available					
a share12	🗹 Selectable	Available					
-							
are10 ⊻ selectable General Capabilities Data Store: share10 Memory: 1511.8 GB Virtualization Manager: VLA30 Status: Available							
are10 ⊻ selectable Seneral Data Store: share10 Virtualization Manager: VLA30 Status: □ Available	Сара	Memory: 1511.8 GB Memory Utilization:	35%				

**Note** Linked copies can only use the same Data Storage as the source system.

c Click on the **Next** button.

- 8 For the next step do the following:
  - a Select Customization specification for guest OS.
    - Guest Customization Specifications are created in the VMware vCenter Server and are made available via the VMware Adapter for SAP Landscape Management. You will need a Guest Customization Specification in order to copy a system.
    - Work with your VMware Administrator to create a Guest Customization Specification if none is present in the SAP LaMa.

**Note** DHCP customization specifications may cause an inconsistent /etc/hosts file contents in the target system. PROMPT customization specifications is a more reliable option.

- b Choose whether you want to create either a linked copy or a full copy.
  - A linked copy creates a target system that has a file link to the original source system. This reduces the utilized storage for the target system. Linked copy is most commonly used in development or sandbox systems. Linked copy operation completes substantially faster than full copy
  - A full copy creates a target system that has exactly the same disk structure and size as the source system. There is no link between the source and target systems here. For example, you can use Full copies to create production systems and/or systems that can be exported to be used in other datacenters.
- c Click on the **Next** button.

#### Figure 5-44. Customization Specification

1 Step 1 » 2 Step 2 »	3 Step 3 » 🔊 Advanced » 🕞 Summary			
*Customization specification for guest OS	Linux_2NIC		С	Ð
*Create a linked clone	false		<u>_</u>	ß
		Previous	Next > Se	t Cancel

**9** Review the various settings that you have chosen so far. Use the **Previous** button to go back and make appropriate changes, if required. When you are satisfied with the settings and are ready to proceed further, click on the **Set** button.

#### 10 Click on the **Next** button.

#### Figure 5-45. Host Selection

Copy System II 014. NetWeaver ABAP 7.50, saps12012a5	Show Source Data Create Provisioning Blueprint Remote Execution
Basic >>> Hosts >>> Host Names >>> Instance Number >>> Consistency >>>> Users >>> Rename >>>> Isolation >>> ABAP PC	CA >>> Summary
Host Selection of Target System	
Instance	Type Target Host/Virtual Host
AS instance: 00	Clone Source Virtual Host SLES12.2-ORA12-NW7.5-ABAP-R14
Central services: 01	Clone Source Virtual Host SLES12.2-ORA12-NW7.5-ABAP-R14
System database: Oracle	Clone Source Virtual Host SLES12.2-ORA12-NW7.5-ABAP-R14
Provisioned/Cloned Virtual Hosts	
Target Virtual Host Source Virtual Host	Operations
SLES12.2-ORA12-NW7.5-ABAP-R14 SLES12.2-ORA12-NW7.5-ABAP-O14	
O ignore Warnings for This Step Validate Step Reset Step	Yrevious Next      Finish Execute Cancel

11 Choose a different network for each component of the target SAP system and clicking on the **Next** button.

**Note** If the host is not configured as adaptive instance you will see warnings that you need to ignore by pressing **Ignore Warnings for This Step** button, and clicking on the **Next** button again.

asic »» Hosts »» Host	t Names >>> Instance Numb	ber >>> Consistency >>> Users >>	>>> Rename >>> Isolation >>> ABAP PCA >>>	3 Summary
irtual Host Names and Ne	etworks			
ost Name	Auto IP Address	IP Address	Target Network Instance/V	Virtual Host Host Name Usage
aptest-41.saplab.vmw.com		String	dvPG-APP10-SAPLAB ~ System c	database: Oracle Installation Host Name
aptest-41.saplab.vmw.com		String	dvPG-APP10-SAPLAB V AS Instan	ance: 00 Installation Host Name
aptest-41.saplab.vmw.com		String	dvPG-APP10-SAPLAB V Central s	services: 01 Installation Host Name
aptest-40.saplab.vmw.com		String	dvPG-APP10-SAPLAB ~ 014_cop	ppy Physical Host Name
			duDC ADD11 SADLAR	
aptest1-40.saplab1.vmw.com		string		ppy Additional physical IP address
ptest1-40 saplab1 vmw.com	]	sang	Unovernovedu v Un <sub>e</sub> ov	py Additional physical IP address

Figure 5-46. Host Names and Networks

**12** Specify the instance number for the SAP instances and click on the **Next** button.

#### Figure 5-47. Instance Number

Copy System 1 Shi O14. NetWeaver ABAP 7 50, saps12012a5	w Source Data Create Provisioning Blueprint	Remote Execution
Basic XX Hosts XX Host Names XX Instance Number XX Consistency XX Users XX Rename XX Isolation XX ABAP PCA XX Summary		
SAP Instance Numbers		
*AS instance: 00		
00		
*Central services: 01		
01		
	\	
O Ignore Warnings for This Step Validate Step Reset Step	< Previous Next > Finish	Execute Cancel

- **13** Select the appropriate database consistency method, depending on what state the database is in. Click on the radio button against one of the following options:
  - Online: Backup/Suspend IO Mode with a timeout value Use this option typically for copying production systems to prevent system outages. A timeout value is provided to ensure database consistency is done in a timely manner
  - Offline: Stop and Restart System When you select this option, the SAP LaMa will stop the system, take the copy and then restart the system after the copy completes.
  - Offline: Database already stopped Use this option when the database is already stopped.
  - Database was stopped during system snapshot Use this option when the database has already been snapshotted prior to initiating the copy process.
  - Scheduled Execution of Cloning Step Use this option to schedule the cloning operation at a specific date/time of your choice. Need to input the date and time when you want to schedule the cloning operation. This option is useful, for example if you want to ensure that the current ongoing system activity is not impacted.

Click on the **Next** button.

**Note** Offline linked copy of SAP HANA on SLES must be performed with closed hbdstudio on source machine.

#### Figure 5-48. Consistency

Copy System II 014. NetWeaver ABAP 7.50, saps12012a5	Show Source Data Create Provisioning Blueprint Remote Execution
Basic XXX Hosts XXX Host Names XXX Instance Number XXX Consistency XXX Users XXX Rename XXX Isolation XXX ABAP PCA XXX Summary	
Database Consistency 🕕	
Cottine: Backup/Suspend IO Mode     Othine: Stabase aiready stopped     Database was stopped during system snapshot	
Scheduled Execution of Cloning Step	
Schedule execution of doning step	
	Δ
O Ignore Warnings for This Step Validate Step Reset Step	Previous Next      Finish Execute Cancel

14 Review the new users that will be created on the target system and click on the **Next** button.

**Note** For the Copy process the SAP LaMa copies the users from the source system over to the target system changing them to match with the new System ID.

Copy System п			Show Source Data Cr	eate Provisioning Blueprint R	emote Execution
O14: NetWeaver ABAP 7.50, saps12o12a5					
Basic >>> Hosts >>> Host Names >>> Instance Number >>> C	consistency I Users I Rename	>>>> Isolation >>>> ABAP PCA >>>> Summary	(		
Users (3)			User Details		×
Target User ID	Target User Name	Exists	Target		
r14adm	r14adm		۲۱4adm		
orar14	orar14		Licer Name	Liser ID Number	
oracle	oracle	<b>v</b>	r14adm	Integer	
			Password	Confirm Password	
			Home Directory	Login Shell	
			/home/r14adm	/bin/csh	_
			Assigned Groups		Ŧ
			dba		8
			<ul> <li>Primary</li> </ul>		
			Create		
			sapsys		$\otimes$
			O Primary		
			Create		
			asmoper		$\otimes$
			O Primary		
O Ignore Warnings for This Step Validate Step Reset Step			< 1	Previous Next > Finish	Execute Cancel

Figure 5-49. Users

**15** Review the target system naming convention and click on the **Next** button.

**Note** Observe that the SAP LaMa takes the source system ID and swaps it out for the new target system ID.

#### Figure 5-50. Rename

Copy System  CO14: NetWeaver ABAP 7.50, saps12012a5		Show Source Data Create Provisioning Blueprint Remote Execution
Basic >>> Hosts >>> Host Names >>> Instance Number >>> Consistent	ency >>> Users >>> Rename >>>	Isolation >>> ABAP PCA >>> Summary
Release Configuration		
Host	Release Configuration	Release Version
saptest-40	1.0SP25P5 (7.X - Linux) 🗸	Product release version not yet retrieved
Additional Parameters 1		
Target		Source
*ABAP Database Schema		*ABAP Database Schema
SAPSR3		SAPSR3
Database Instance		Database Instance
R14		014
*Sapmnt Path		
/sapmnt		
Listener Name		
String		I
Listener Domain		
String		
Listener Port		
-1		
Generated NEWID		
O Ignore Warnings for This Step Validate Step Reset Step		Previous Next > Finish Execute Cance

16 You can choose to isolate the new target system from the source system. You do this by selecting the appropriate radio button under section Unfence Target System After System Copy/Refresh. This will prevent it from accidentally communicating as the source system.

Click on the **Next** button.

#### Figure 5-51. Isolation

Сору	System 1			Show So	urce Data Create Provisioning Blueprint Remote Exe	ecution
014: Ne	tWeaver ABAP 7.50, saps12o12a5					
Basic	>>> Hosts >>> Host Names >>> Instance Numbr	er >>> Consistency >>> Users >>> Rena	me >>> Isolation >>> ABAP PCA >>> Su	mmary		
Defi	ne Allowed Outgoing Connections for System	Isolation	Read Connection	s Of: Source Host 🗸	Host Name: vm-s12o12-a5 V Get Connections	Add
Rule	Гуре	Target Host	Target Port	Predefined	Explanation	
Hos		localhost	Any port	V	Allow communication to host (localhost) on all ports	8
Hos		bcaa-wdc-nas.eng.vmware.com	Any port	$\checkmark$	Allow communication to host (bcaa-wdc- nas.eng.vmware.com) on all ports	$\otimes$
Hos		vmlvml21.saplab.vmw.com	Any port	V	Allow communication to host (vmlvml21.saplab.vmw.com) on all ports	8
Hos	Host $\checkmark$ vmlvml21		Any port		Allow communication to host (vmlvml21) on all ports	$\otimes$
Hos	~	bcaa-wdc-nas.eng.vmware.com	Any port		Allow communication to host (bcaa-wdc- nas.eng.vmware.com) on all ports	8
Port		Any host name	nfs	$\checkmark$	<ul> <li>Allow communication to all hosts on port/service (nfs)</li> </ul>	8
Port		Any host name	ldap	$\checkmark$	<ul> <li>Allow communication to all hosts on port/service (Idap)</li> </ul>	8
Port		Any host name	ldaps	$\checkmark$	<ul> <li>Allow communication to all hosts on port/service (Idaps)</li> </ul>	8
Port		Any host name	cifs	$\checkmark$	Allow communication to all hosts on port/service (cifs)	8
Port	×	Any host name	microsoft-ds	V	<ul> <li>Allow communication to all hosts on port/service (microsoft-ds)</li> </ul>	8
Unfe	nce Target System After System Copy/Refres	h 🗊				
•	Do not unfence target system					
0	Infence target system with confirmation					
	nore Warnings for This Step Validate Step Reset St	ср		k	Previous Next > Finish Execute	Cancel

**17** Choose to either enact ABAP PCA or by-pass it. If you indeed plan to use PCA, choose the appropriate parameters to apply. If no PCA will be used, then you must uncheck that option and further click the **Ignore Warnings for This Step** to proceed. Click on the **Next** button.

#### Figure 5-52. ABAP PCA

Copy 014: N	y System 👔 NetWeaver ABAP 7.50, sap	os12o12a5				Show Source Data	Create Provisioning Blueprint	Remote Exect	ution
Basic	>>> Hosts >>> Ho	st Names 🚿 Insta	nce Number 🐝 Consistency 🐝 User	rs » Rename » Isolation	ABAP PCA      Summary				
Post-	Copy Automation	i							
Apply	master password to all cor	figured RFC destination	ns						
Client		Client Name	Client Role	Task List	Task List Variant	Parameters Modified			Add
000	ð			SAP_BASIS_COPY_IN	Unknown 🗗		Task Manager 🗸	~ /	$\otimes$
001	ð			SAP_BASIS_COPY_B	Unknown 🗗		Task Manager 🖌	~ /	$\otimes$
							1		
Q 0	Ignore Warnings for This	Step Validate Step	Reset Step	N			< Previous Next > Finis	h Execute	Cancel

**18** Review all settings you have made so far. When you are done reviewing the settings, click on the **Execute** button.

#### Figure 5-53. Summary

Copy System I	Show Source Data Create Provisioning Blueprint Remote Execution
O14: NetWeaver ABAP 7.50, saps12o12a5	
Basic >>> Hosts >>> Host Names >>> Instance Number >>> Consistency >>> Users >>> Rename >>> Iso	lation >>> ABAP PCA >>> Summary
G SAD advises that it is the customer's responsibility to ensure that it has all necessary third party license rights required to clone	and/or convian environment using this software, and the customer has obtained and will maintain all such license rights peressand
to use the functionality described herein, including, without limitation, the license right to operate the target system landscape at	ter cloning and/or copying.
✓ Basic	
Provide Basic Data for Target System	
*System ID	*Pool
R14	Development
Use different Database Name	Description
*Database Name	Copy of System 'O14'
Ont Manter Deserved for CO and DB Users .	
*Password	
*Confirm Password	
✓ Hosts	<u> </u>

**19** You will be redirected to the **Activity** view under **Monitoring** view where you can monitor the system copy progress.

#### Figure 5-54. Monitoring

≡	< > SAP	SAP La	ndscape Management											irking Set: All L21 o			Administrator
28	Overview		Latest Server Time: 2019-08-23 03:57 Pacific Daylight Tim	ne													
٠	Operations		⊕ # ^↓	Syste	m Conv									Cancel Hold F	elease Continu	e Retry	
暍	Provisioning		Filtered by Period (All)	0,010													
°o	Automation Studio		4943 🛞 🔍	ID:4943		Durat	tion: 1:00 Time: 2019-01	8-23-03:56:16	User: Admini Retry Of 0	strator							
8	UI Customizations		1 Activities	Executin	g	End t	ime:		Note:								
œ.	Monitoring		4943	137													
	Activities		System Copy 1:00	STEPS	SYSTEM	S INVOLVED											
	Logs		Administrator Executing	Sea	rch	Q											6
	Performance			No fill	ers selected	~											6
	Reports			ID	Succes	Predec	Hook fo	Status	Dur	Ste	Operation	Instance/Virt	ual Element		Host/Parent	Virtual EL.	
٩	Configuration			4	2.4			Completed	0.02		Create Comput	D14: Mathan	NUME A DAD 7 50	context 41 contab um	contect 40		10.00
*	Configuration Extension			2	2.4			Completed	0.02		Create Comput	D14: Notivos	WORADAD 7.50	contest 41 contab vir	aaproaceio		
2	Infrastructure			-	5,4	1.2		Completed	0.02	0.02	Create rarger	D14: Notive	WORADAD 7.50	contest 41 contablem			
đĥ	Setup			-	5,6	1,2		Completed	0.10	0.02	DNS Update	PLT4: NetWee	IVELADAP 7.00	saplest 41 saplab vir			
				4	0,0	1,2		Completed	0.16	0.02	DNS Optiale	PCT4. INCLINES	IVELABAP 7.00	, sapiesi-4 r.sapiab.vii			
				Log E	Details												
				Sear	rch	Q									a 🛞 Supp	ort Informa	tion
				No fill	ers selected												5
				ID	Message								Entry Time	Time	Message Code	Severity	
				4	Import of targ	et system cor	nfiguration pas	sed successfully					0:01	2019-08-23 03:	LVM	Informati	on
				3	ImportedCon	figContainer S	Size of Instanc	es: 0 Size of Ho:	its: 1 Size of Po	ols: 0 Si	ze of Network	View More	0:01	2019-08-23 03:	CONF	Debug	
				2	Run as user A	Administrator							0:00	2019-08-23 03:	LVM	Debug	
				1	The target ho	st does not e	kists and its co	onfiguration will b	e imported in L	VMI			0:00	2019-08-23 03:	LVM	Informati	on

Each activity in the copy process has a corresponding line item and a respective log entry. Click on the particular operation line item to read its corresponding log entry for more details.

#### Results

Successful completion of these tasks enables you to copy a source system into a new target system.

**Note** Consider a system with two network interfaces, wherein one network interface is an actual vNIC and the second is an IP alias on the said vNIC. If you successfully clone or copy this system via LaMa, after you reboot or restart the network you will see that the target system has only one network interface. The alias disappears. For systems that are not adaptively installed or those that cannot be relocated, it is not possible to change the host name. SAP Landscape Management (LaMa) activates Internet Protocol (IP) addresses only in a transient way. When the host is rebooted, the IP addresses are no longer active.

## Troubleshooting

This chapter includes the following topics:

- Log Files and Traces
- Log Configurations in SAP LaMa
- **Existing Limitations**
- Possible Misconfigurations / Issues
- Protocol version mismatch
- Consistent Network Device Naming (CNDN)

## Log Files and Traces

The most important log and trace files for the operation of the VMware Adapter for SAP Landscape Management are located on the VLA appliance. The following table shows these log

and trace files:	
Table 6-1. Log Locations	
Log File Name	Log File Location
VLA server access log file	/var/log/vmware/vla-server/access.vla-server.log
VLA server Java log files	/var/log/vmware/vla-server/catalina.vla-server.log /var/log/vmware/vla-server/localhost.vla-server.log
VLA server manager log file	/var/log/vmware/vla-server/manager.vla-server.log
VLA server application console log files	/var/log/vmware/vla-server/catalina.vla-server.out /var/log/vmware/vla-server/vla-server.log
SA server access log file	/var/log/vmware/sa-server/access.sa-server.log
SA server Java log files	/var/log/vmware/sa-server/catalina.sa-server.log /var/log/vmware/sa-server/localhost.sa-server.log
SA server manager log file	/var/log/vmware/sa-server/manager.sa-server.log

/var/log/vmware/sa-server/catalina.sa-server.out

/var/log/vmware/sa-server/sa-server.log

## Log Configurations in SAP LaMa

Log configuration menu is available in SAP NetWeaver Administrator — **Troubleshooting -> Logs** and **Traces -> Log Configuration** 

You can also navigate to — **Related Links & Help -> SAP NetWeaver Administrator Tools ->Log** Viewer

#### Figure 6-1. LaMa - Log Viewer

≡	< > 👥 s	VP Lands	cape Management				Q, Refresh ~ Wor	king Set: All L21 on vm/vml21 (02:46)	② Administrator
28	Overview	>				2		⑦ Open Online Help	ard 🥒 🗑
٠	Operations							More Help & Documentation	
暍	Provisioning		Overview					SAP NetWeaver Administrator	•
°o	Automation Studio	>					Log Viewer	SAP NetWeaver Administrator Tools	>
@	UI Customizations	>					Java Instances		
æ.	Monitoring	>					Identity Management		
۹	Configuration	>		Systems	 9 21 🖿 🔇	Instances	Configuration Wizard	E ()	2
25	Configuration Extension	>		Total 6		To	Java Scheduler		
<b>æ</b>	Infrastructure	>			- Durates		Web Service Consumer Proxies	Duration	
a.	Setup	>		2	Running with is		Key Storage	Not running	
					Not running Not running with		8	Error Intermediate	

In the log configuration menu there are two configurations — **Logging catagories** and **Tracing location** 

- Log level is configured at Logging categories
- Trace level is configured at Tracing location

In Logging categories there is a configuration for the whole adapter -

Located in Applications/LVM/InfrastructPlugins

In Tracing location, trace level is configured for each package separately —

For VMware Adapter for SAP Landscape Management it is com.vmware.vlvma.\*

VMware Adapter for SAP Landscape Management log and trace messages begin with prefix VLVMA, hence they can be easily filtered in LaMa Log Viewer.

## **Existing Limitations**

#### Provisioning —

- A linked clone of a SAP system can be performed to the same data storage only
- A SAP system can be cloned to a DRS cluster only
- Customization Specifications having the same Guest Operating System type and number of network adapters as the Source Virtual Host are available for SAP system cloning
- For provisioning from virtual host template, a cloned system hostname must be resolvable to an IP address before executing the operation

Network interfaces bonding is not supported by vCenter Server Customization Specifications. Currently, if the source system has a bond interface (2+ interfaces bonded to 1), it will also be present on the destination system after the vCenter Server Clone operation. In order to apply a vCenter Server Customization Specification a user should choose the specification which contains the same number of network adapters and not the same number of bond interfaces. That is the reason the destination system contains the same bond interface with the same IP address as the source system. vCenter Server applies the provided Customization Specification on the secondary interfaces which are not being used outside the bond as far as they are connected to it. So the resulting configuration on the destination system is not changed as intended.

#### Migrate —

- Virtual host can be migrated between DRS clusters only
- Virtual host can be migrated inside one vCenter Server only

## Possible Misconfigurations / Issues

Following are some of the Errors that you may encounter along with the possible reasons -

- 1 Error peer not authenticated [SSLPeerUnverifiedException], this could occur during a connection test or infrastructure retrieval
  - Possible reasons are invalid vLA server certificate, disabled Trusted Server option or a certificate that was changed after the adapter configuration.

#### Figure 6-2. Error — Failed to connect to manager

Еггог	
A	
Could not connect to manager.	
Cause:	
Failed to connect to the VLA server. Reason: Failed to establish a secure connection to	
vla30.saplab.vmw.com:8443. Solution: Please make sure that VLA server certificate is imported to a custom trust store or 'Certificate Authority Selection' is enabled in the adapter instance	
configuration. If the NetWeaver AS uses SSL protocol and ciphers that are considered insecure	
and weak, then please enable them on the VLA server using the script 'vla_tomcat_cipher'.	
Close Details >> Support Information >>	
	_///

- 2 Error Could not execute operation \*\*\*
  - Possible reasons are
    - VMware vRealize Orchestrator is unavailable
      - Check the state of the VMware vRealize Orchestrator server.

- An overloaded VMware vRealize Orchestrator
  - Check the CPU and Memory utilization for the VMware vRealize Orchestrator server.
- 3 Error Could not execute operation \*\*\*. Workflow not found

#### Figure 6-3. Error — Workflow not found

STEPS	SYSTEM	S INVOLVED										
Sea	arch	Q										# ⊚
No fil	iters selected											5
ID	Success	Predece	Hook for	Status	Dur	Ste	Operation	Instance/Vi	irtual Element		Host/P	arent Virtual El
1				Failed	0:17	0:00	Start	SLES12.3-	HANA12-DIS1-	NW7.5-CS-H08	Resour	ces - Cluster
	Deteile											
Logi	Details											
	h	0										
No fi		ų									⊞ છુ ડા	pport information
	Magazza								Entry Time	Time	Magaga Code	Cavarity
ID	Message								Enay nine	nine	wessage cour	seventy
5	Operation fail	ed!							0:17	2019-08-26 02:	LVM	Error
4	Could not exe	ecute operation	n START. Una	ble to retrieve the	activate workfl	ow from 1	he orchestra	View More	0:01	2019-08-26 02:	VLVMA	Error
3	Operation [ S	TART ]. Origin	atorID = [ lvm	0001 ], Transactio			N	lessage Detai	ils		Δ,	Information
2	Using the foll	owing argume	nts. Virtualizat	tion Adapter ID: 'd	Could not ex	ecute ope	eration START. Unab	le to retrieve	the activate wo	rkflow from the orche	strator	Information
1	Executing the	operation pro	cess step with	n ID 'process-60b	no additional	details to	n a user are availabl	e			_	Information
											Close	

Possible reasons for the error — Workflow unavailable on VMware vRealize Orchestrator

- Check the workflow status in the vLA dashboard https://<vla\_hostname>:8443/vla/ dashboard
- Check the workflow availability on the VMware vRealize Orchestrator
- Reinstall the VMware vRealize Orchestrator package or corred the vLA config file
- 4 All actions are unavailable for Virtual Host in Operations / Virtualization. The **Details** property field shows up the virtual host status as **disconnected** under the Virtual Host tab.

	< > <b>SAP</b>	SAP Landsca	ipe Management									inistrato
	Overview	>		g3 Systems	Hosts 🔿 Cloud	目 Virtualization	聞 Storage					
	Operations											
	Provisioning		Group Hierarchy - Default / VLA30 / vc1.saplab.vmw.com /					Virtual Ho	st Provider Clu	ster Operations V	Monitoring Data	000
	Automation Studio	>	Cluster Virtual Host Provider Cluster									
	UI Customizations	>	Status: Available	Logs: 😭	Numl	ber of CPUs: 16		N	temory: 256.0 G	iВ		
	Monitoring	>		Visualization: 38	Clock	k Rate: 33.5 GHz						
	Configuration	>										
	Configuration Extensi	ions >	ENTITIES GENERAL ADDITIONAL PROPERTIES	MONITORING VISUALIZATION								
	Infrastructure	>										
	Setup	>								Mass Operations	✓ ①	2
			Name		Status	Information	CPUs	Memory (GB)	OS	Host Name	Operations	
			esx1+1.saplab.vmw.com		⑦ Unknown		4	64.0			Operations $\checkmark$	
			esx1-2.saplab.vmw.com		Available		4	64.0			Operations 🗸	
			esx1-3.saplab.vmw.com		Available		4	64.0			Operations 🗸	
			esx1-4.saplab.vmw.com		Available		4	64.0			Operations 🗸	
			CAAF-JH		♦ Defined		4	8.0	Linux	vmware	Operations 🗸	
			SLES12-LVM3-L21		Active		2	16.0	Linux	Other	>	
			SLES12.2-ORA12-NW7.5-ABAP-014		Active		4	8.0	Linux	Non-Executable	e Operations	
			SLES12.3-HANA12-DIS1-NW7.5-CS-H08		♦ Defined		2	4.0	Linux		Operations 🗸	
			SLES12.3-HANA12-DIS2-NW7.5-DB-H08		♦ Defined		1	32.0	Linux		Operations 🗸	
			SLES12.3-HANA12-DIS3-NW7.5-CI-H08		♦ Defined		2	4.0	Linux	vm3-s12h12-ci	Operations 🗸	
			Virtual Host Providers: 4. Virtual Hosts: 9			< 1 2 >						
_												_

Figure 6-4. Virtual Host - Disconnected

Possible reason — ESXi host unavailable

- Check the ESXi host status on the VMware vCenter Server. Make it available to the VMware vCenter Server.
- 5 VMware vCenter Server is not displaying in the LaMa Adapter
  - Possible reason for the error VMware vCenter Server unavailable to the vLA
    - Check the status of the VMware vCenter Server in the vLA dashboard. Make the VMware vCenter Server available to the vLA.
      - Connected / Not ready means that the vLA is unable to fetch the inventory data from the VMware vCenter Server or the inventory data retrieval is in progress.

Figure 6-5. Errors – Not ready/Configuration missing

VCENTERS		/						
vc1	Hostname: vc1.saplab.vmw.com	State: 	vCenter Server Inventory Objects: 28	Connection uptime: 00:06:52	Hostname verification:	Inventory requests: 0	Associated Orchestrator: vro1.saplab.vmw.com	INVENTORY

 Not Connected / Not ready — means that the vLA is unable to connect to the VMware vCenter Server.

#### Figure 6-6. Errors –Not connected/Not ready

		/						
vc1	Hostname: vc1.saplab.vmw.com	State: • Not connected/Not ready	vCenter Server Inventory Objects: O	Connection uptime: 00:00:00	Hostname verification:	Inventory requests: 0	Associated Orchestrator: vro1.sapiab.vmw.com	INVENTORY

- 6 Error HTTP Status Code 401
  - Figure 6-7. Error Could not authenticate

Еггог	
Could not connect to manager. Cause: Failed to connect to the VLA server. Reason: Could not authenticate to the VLA server. Solution: Please ensure that the provided username and password are correct [InfrastructAdapterException]	
Close Details >> Support Information >>	111

Possible reasons — The adapter was configured with the wrong credentials (username or password) or hostname. Password on the vLA Server was changed after adapter configuration.

- Correct the password to the application server, or reset it to a known password on the vLA with the vla\_user command.
- 7 Alert Unsupported network is configured on one of the network adapters.
  - Figure 6-8. Unsupported Network Alert

< > <b>SAP</b>	SAP Land	scape Management											
Overview	>			gi sy	rstems	Hosts 🛆 Cloud	Virtualization	隋 Storage					
Operations													
Provisioning		Group Hierarchy - Derault / VLAGO / VCI.sapiab.Vmw.com	1/						Virtual H	lost Provider Ciu	ister Operations	<ul> <li>Monitoring Date</li> </ul>	ca
Automation Studio	>	Cluster Virtual Host Provider Cluster											
UI Customizations	>	Status: 🗖 Available	Logs: 🔂			Nurr	ber of CPUs: 16			Memory: 256.0 (	GB		
Monitoring	>		Visualizatio	n:		Cloc	k Rate: 33.5 GHz						
Configuration	>												
Configuration Extensi	ons >	ENTITIES GENERAL ADDITIONAL PROPER	TIES MONITORI	NG V	ISUALIZATION								
Infrastructure	>												
Setup	>										Mass Operat	ions 🗸 🕒 🌐	۲
		Name	Status	CPUs	Memory (GB)	Information				OS	Host Name	Operations	
		esx1-1.saplab.vmw.com	Available	4	64.0							Operations 🗸	
		esx1-2.saplab.vmw.com	Available	4	64.0							Operations 🗸	
		esx1-3.saplab.vmw.com	Available	4	64.0							Operations 🗸	
		esx1-4.saplab.vmw.com	Available	4	64.0							Operations 🗸	
		clone14	Active	4	8.0	① An unsupported netv	ork is configured on or	e of the network a	dapters	Linux	saptest-40	Operations 🗸	
		CAAF-JH	♦ Defined	4	8.0					Linux	vmware	Operations 🗸	
		SLES12-LVM3-L21	Active	2	16.0					Linux	vmlvml21	Operations $\checkmark$	
		SLES12.2-ORA12-NW7.5-ABAP-014	🗆 Active	4	8.0					Linux	vm-s12o12- a5	Operations $\checkmark$	
		SLES12.3-HANA12-DIS1-NW7.5-CS-H08	Defined	2	4.0					Linux		Operations $\checkmark$	
		SLES12.3-HANA12-DIS2-NW7.5-DB-H08	Defined	1	32.0					Linux		Operations $\checkmark$	
		Virtual Host Providers: 4, Virtual Hosts: 10					< 1 2 >						

Possible reasons — vSphere Distributed Switch Uplink is assigned as a network to VM or assigned network is related to unsupported third party switch (neither vSS nor vDS switch)

- Re-assign networks for network adapters on VM. Assign only networks related to vSphere Standard Switch or vSphere Distributed Switch Portgroup
- 8 Monitoring Error in LaMa Virtualization pane -

#### Figure 6-9. Monitoring Error



≡	< > 💁 sv	AP Lands	ccape Management					Q, Refresh v	Working Set: All L21 on vm	vml21 (03:03)	) Administrator
먨	Overview	>		8 Systems	Hosts	Cloud	E Virtualization	Storage			
٠	Operations		Virtualization								
賬	Provisioning		Virtualization								
°	Automation Studio	>	Group By Hierarchy - Default ~						Mass Ope	rations 🗸 🕒	# ⊘
88	UI Customizations	~	Name				Status	Information	Summary	Operations	
3	Continuation	÷	₩ VLA30				Unavailable	Monitoring error			
24	Configuration Extensions							/			
몳	Infrastructure	>									
4	Setup	>									
			Management of American American American								
			virtualization Managers. 1								

Possible reason — You are using an older version of the LaMa adapter (1.3.x or older). VLA and LaMa communication protocol version mismatch occurs.

• Update to the latest version of the LaMa adapter (1.4.0 or higher).

## Protocol version mismatch

Error message: Could not connect to manager. Cause: Protocol version mismatch.

Figure 6-10. Protocol version mismatci	Figure 6-10.	Protocol	version	mismatch
--	--------------	----------	---------	----------

Error	
Could not connect to manager. Cause: Failed to connect to the VLA server. Reason: The virtualization adapter failed to negotiate with the VLA server since the protocol version v2 used by the adapter has not been found among protocol versions [v1] supported by the VLA server. Solution: Please ensure the deployed adapter has been taken from the VLA appliance specified in the adapter instance configuration and the endpoint URL is correct [InfrastructAdapterException]	•
Close Details >> Support Information >>	• //

This error occurs when the LaMa adapter is incompatible with the VLA server. This may happen either after deploying a new VLA appliance and installing the adapter from the appliance, whereas IP address of an old appliance is mistakenly specified instead of the new one. Another reason could be that after deploying a new VLA appliance the installation of new adapter from the appliance had been forgotten. To fix this issue you need to upgrade /deploy the VLA server correspondingly.

## **Consistent Network Device Naming (CNDN)**

Modern server platforms support an increasing number of network interface ports on the motherboard (Lan-on-Motherboard or LOM) in addition to numerous add-in (single and multiport) adapters. Traditionally, network interfaces are enumerated as eth0, eth1, eth2, etc, but these names do not necessarily correspond to the actual labels as seen on the chassis. This new naming convention assigns names to network interfaces based on their physical location, whether embedded or in PCI slots. By converting to this naming convention, system administrators will no longer have to guess at the physical location of a network port, or modify each system to rename them into some consistent order.

In this classic naming scheme for network interfaces, the kernel simply assigns the names beginning with "eth0, "eth1", ... to all the interfaces as they are probed by the device drivers during the system boot process. As the driver probing is generally not predictable, in a multi network interfaces setup, a given network interface that for example, got a name assignment "eth0" in the first boot may end up with a different name on the next boot. This is undesirable and can have serious security implications, for example in firewall rules which are coded for certain naming schemes and which are hence very sensitive to unpredictable changing names. Also, this naming scheme gives no clue whatsoever of the interface's physical location on the system (for example, whether it is on the system's motherboard or if it is on an add-in card or if it is on an add-in card with multiple ports and which port on the card it is located). Hence you need a consistent device naming scheme that can provide the following benefits:

- Stable network interface names across reboots
- Stable network interface names when you add or remove hardware
- Stable network interface names when you update/change the kernel or device drivers
- Stable network interface names when you replace a broken/defective ethernet card for example, with a new one
- The network interface names automatically get determined without user configuration and they just work
- The network interface names are predictable

During SAP workload provisioning operations, like cloning a VM, it is essential to keep the same network interface names on the target clone system as is available on the source system. In order to do this, you need to enable Consistent Network Device Naming in the source operating system. The next 3 sub-sections describe the specific steps to enable Consistent Network Device Naming on SLES, RHEL and Windows operating systems respectively.

### SLES 11 and SLES 12 - Consistent Network Device Naming

On SLES based systems you can use the biosdevname program that inturn uses information from the system's BIOS to enable Consistent Network Device Naming on the target system as is on the source system. Execute the following steps to enable Consistent Network Device Naming on the source operating system.

#### Procedure

1 SSH to the source system as **root**.

Figure 6-11. SSH as root



2 Install the biosdevname utility. You can use any available package manager. The following figure depicts installing biosdevname using rpm:

#### Figure 6-12. Install biosdevname



**3** Verify your biosdevname installation done in the previous step and also list out information about the current system network adapters.

Figure 6-13.	List all	available	network	adapter	information
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- **4** Remove the 70-persistent-net-rules file from the /etc/udev/rules.d directory, if it already in there.
- **5** Reboot the operating system as depicted in the following figure:

#### Figure 6-14. Reboot the OS



#### Results

After rebooting the operating system all the current network interfaces on the system will be renamed according to the Consistent Network Device Naming scheme.

#### RHEL 7 and RHEL 6 - Consistent Network Device Naming

RHEL based systems receive new network device interfaces with new IP settings applied along with incremented indexes in the interface names. For example, if the source system has two network interfaces eth0 and eth1, then the target system will obtain the network interface names as eth2 and eth3 respectively.

**RHEL 7** — In RHEL 7, Consistent Network Device Naming is enabled by default. Thus no additional actions are required from a user/administrator perspective.

**RHEL 6** — The biosdevname utility does not work in operating system hosted on virtual machine. Hence you are required to execute the following workaround:

**Note** This option requires that the system is not using NetworkManager (i.e NM\_CONTROLLED=no in ifcfg-\* files) (Source: https://access.redhat.com/solutions/112643)

#### Procedure

- 1 SSH to the source system as **root**.
- 2 Identify the PCI address of your Ethernet interfaces with lspci command as depicted in the following figure:

#### Figure 6-15. Login as root and execute lspci



3 Create the /etc/udev/rules.d/60-persistent-net.rules file and fill it with the following type of network device NAME mapping, highlighted for reference as depicted in the following figure:

#### Figure 6-16. Create 60-persistent-net.rules file

[root@vm-r65o11-a4 ~]# cd /etc/udev/rules.d								
[root@vm-r65o11-a4 rules.d]# ls -l								
cotal 52								
-rw-rr 1 root root 1652 Aug 25 2010 60-fprint-autosuspend.rules								
-rw-rr 1 root root 153 Feb 1 2013 60-ipath.rules								
-rw-rr 1 root root 1060 Jun 29 2010 <u>60-pcmcia.rules</u>								
-rw-rr 1 root root 318 Apr 6 2016 60-persistent-net.rules								
-rw-rr 1 root root 316 Aug 6 2013 60-raw.rules								
-rw-rr 1 root root 789 Apr 1 2016 70-persistent-cd.rules								
-rw-rr 1 root root 256 Jun 28 2016 70-persistent-net.rules								
-rw-rr 1 root root 320 Sep 12 2012 90-alsa.rules								
-rw-rr 1 root root 83 Apr 1 2011 90-hal.rules								
-rw-rr 1 root root 2486 Jun 30 2010 97-bluetooth-serial.rules								
-rw-rr 1 root root 308 Oct 21 2013 98-kexec.rules								
-rw-rr 1 root root 54 Nov 3 2011 99-fuse.rules								
-rw-rr 1 root root 341 Apr 4 2016 99-vmware-scsi-udev.rules								
[root@vm-r65o11-a4 rules.d]# cat 60-persistent-net.rules								
# 0000:0b:00.0 Ethernet controller: VMware VMXNET3 Ethernet Controller (rev 01) was eth0								
ACTION=="add", SUBSYSTEM=="net", KERNELS=="0000:0b:00.0", NAME:="primary"								
0000:13:00.0 Ethernet controller: VMware VMXNET3 Ethernet Controller (rev 01)								
ACTION=="add", SUBSYSTEM=="net", KERNELS=="0000:13:00.0", NAME:="app1"								
[root@vm-r65o11-a4 rules.d]#								

4 Rename and modify (using any editor of your choice), /etc/sysconfig/network-scripts/ ifcfg-\* files to use the new names in the DEVICE=value fields. The following figure depicts the DEVICE values after modifying the corresponding ifcfg-\* files (highlighted for reference).

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Figure 6-17.
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[root@vm-r65o11-a4		~]# cd /etc/sysconfig/network-scripts/							
[root@vm-r65o11-a4		netwo	ork-sci	ripts	s]#	ls -l			
total 212									
-rw-rr 4	root	root	291	Jun	8	23:47	ifcfg-app1		
-rw-rr 1	root	root	254	Oct	10	2013	ifcfg-lo		
-rw-rr 4	root	root	348	Jul	13	2016	ifcfg-primary		
-rw-rr 3	root	root	278	Jul	26	2016	ifcfg-primary:0		
lrwxrwxrwx. 1	root	root	20	Apr	1	2016	ifdown ->///sbin/ifdown		
-rwxr-xr-x. 1	root	root	627	Oct	10	2013	ifdown-bnep		
-rwxr-xr-x. 1	root	root	5430	Oct	10	2013	ifdown-eth		
-rwxr-xr-x. 1	root	root	781	Oct	10	2013	ifdown-ippp		
-rwxr-xr-x. 1	root	root	4168	Oct	10	2013	ifdown-ipv6		
lrwxrwxrwx. 1	root	root	11	Apr	1	2016	ifdown-isdn -> ifdown-ippp		
-rwxr-xr-x. 1	root	root	1481	Oct	10	2013	ifdown-post		
-rwxr-xr-x. 1	root	root	1064	Oct	10	2013	ifdown-ppp		
-rwxr-xr-x. 1	root	root	835	Oct	10	2013	ifdown-routes		
-rwxr-xr-x. 1	root	root	1465	Oct	10	2013	ifdown-sit		
-rwxr-xr-x. 1	root	root	1434	Oct	10	2013	ifdown-tunnel		
lrwxrwxrwx. 1	root	root	18	Apr	1	2016	ifup ->//sbin/ifup		
-rwxr-xr-x. 1	root	root	12444	Oct	10	2013	ifup-aliases		
-rwxr-xr-x. 1	root	root	859	Oct	10	2013	ifup-bnep		
-rwxr-xr-x. 1	root	root	10556	Oct	10	2013	ifup-eth		
-rwxr-xr-x. 1	root	root	11971	Oct	10	2013	ifup-ippp		
-rwxr-xr-x. 1	root	root	10490	Oct	10	2013	ifup-ipv6		
lrwxrwxrwx. 1	root	root	9	Apr	1	2016	ifup-isdn -> ifup-ippp		
-rwxr-xr-x. 1	root	root	727	Oct	10	2013	ifup-plip		
-rwxr-xr-x. 1	root	root	954	Oct	10	2013	ifup-plusb		
-rwxr-xr-x. 1	root	root	2364	Oct	10	2013	ifup-post		
-rwxr-xr-x. 1	root	root	4154	Oct	10	2013	ifup-ppp		
-rwxr-xr-x. 1	root	root	1925	Oct	10	2013	ifup-routes		
-rwxr-xr-x. 1	root	root	3289	Oct	10	2013	ifup-sit		
-rwxr-xr-x. 1	root	root	2488	Oct	10	2013	ifup-tunnel		
-rwxr-xr-x. 1	root	root	3770	Oct	10	2013	ifup-wireless		
-rwxr-xr-x. 1	root	root	4623	Oct	10	2013	init.ipv6-global		
-rwxr-xr-x. 1	root	root	1125	Oct	10	2013	net.hotplug		
-rw-rr 1	root	root	13386	Oct	10	2013	network-functions		
-rw-rr 1	root	root	29853	Oct	10	2013	network-functions-ipv6		
[root@vm-r65o	11-a4	netwo	ork-sci	ripts	s]#	grep '	`DEVICE= ifcfg-*		
ifcfg-app1:DEVICE=app1									
ifcfg-lo:DEVICE=lo									
ifcfg-primary:DEVICE=primary									
ifcfg-primary:0:DEVICE=primary:0									
[root@vm-r65011-a4 network-scripts]#									

Ensure that you have console access in case there are some network connectivity issues.
 Reboot the system by executing the reboot command.

#### Results

After rebooting the operating system all the current network interfaces on the system will be renamed according to the Consistent Network Device Naming scheme.

#### Windows - Consistent Network Device Naming

Windows based systems running either Windows 2008 R2 or Windows 7 guest operating system configured with the VMXNET3 virtual network device in vCenter Server have one known issue. When a provisioning operation is done like cloning a VM, the target system gets new device and interface names (this name is the original name as is on the source system but with an incremented index suffix, like Local Area Connection #2 instead of just Local Area Connection). In order to prevent such issues and keep the original device and interface names as is, following the provisioning operation, you need to apply the Microsoft hot fixes for the specific operating system type that you are using.

- 1 For Windows 2008 R2 or Windows 7 versions prior to Service Pack 1, install the hot fix described in the Microsoft Knowledge Base article 2344941 (https://support.microsoft.com/en-us/help/2344941/-0x000007b-stop-error-when-you-replace-an-iscsi-or-pci-express-network-adapter-or-a-motherboard-with-an-identical-device-on-a-windows-server-2008-r2-based-or-windows-7-based-computer), before deploying the template.
- 2 For Windows 2008 R2 or Windows 7 versions post Service Pack 1, install the hot fix described in the Microsoft Knowledge Base article 2550978 (https://support.microsoft.com/en-in/help/ 2550978/-0x000007b-stop-error-after-you-replace-an-identical-iscsi-network-adapter-inwindows-server-2008-r2-sp1-or-in-windows-7-sp1) before deploying the template.