Deploy ISE Virtual Machine on Nutanix

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Introduction

This document describes how to deploy an ISE virtual machine on the Nutanix environment using the standard Cisco ISE .iso image.

Prerequisites

Requirements

Cisco recommends that you have a basic knowledge of these topics:

- Cisco Identity Services Engine (ISE)
- Nutanix AHV (Acropolis HyperVisor)

Components Used

The information in this document is based on these software and hardware versions:

Cisco UCS server C240-M5SX	**3 node cluster**
Nutanix Acropolis Operating System (AOS) version	7.0
Nutanix AHV Hypervisor version	10.0
Nutanix Cluster Check (NCC)Version	5.1.0
Life Cycle Manager (LCM) Version	3.1
Cisco ISE Version	3.4

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure

Prepare the Nutanix AHV for Cisco ISE Software Installation

1. Download the Cisco ISE 3.4 .iso image from Cisco.com ISE Software Download.

Note: A Cisco.com login and Cisco service contract are required.

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2. Check Nutanix and ISE version compatibility, using the compatibility check link.

3. Check the recommended resource reservations for different types of deployment on Nutanix AHV, Nutanix AHV Requirements.

Type	Number of CPUs	CPU Reservation (In GHz)	Memory (In GB)	Memory Reservation (In GB)	Hard Disks
Evaluation	4	No reservation	16	No reservation	300 GB
Extra Small	8	8	32	32	300 GB
Small	16	16	32	32	600 GB
Medium	24	24	96	96	1.2 TB
Large	24	24	256	256	2.4 TB (4*600 GB)

Nutanix AHV Requirements

Requirement Type	Minimum Requirements

CPU	• Evaluation
	  • Clock Speed: 2.0 GHz or faster
	  • Number of Cores: 2 CPU cores
	• Production
	  • Clock Speed: 2.0 GHz or faster
	  • Number of Cores
	
	Extra Small—8 processors (4 cores with hyperthreading enabled)

	Small—12 processors (6 cores with hyperthreading enabled) Large—16 processors (8 cores with hyperthreading enabled) Cisco ISE supports Hyperthreading. We recommend that you enable Hyperthreading, if it is available.  **Note**: Even though Hyperthreading can improve overall performance, it does not change the supported scaling limits per virtual machine appliance. Additionally, you must still allocate CPU resources based on the required number of physical cores, not the number of logical processors.

Memory	• Evaluation:
	  • Basic—4 GB (for evaluating guest access and basic access policy flows)
	  • Advanced—16 GB (for evaluating advanced features such as pxGrid, Internal CA, SXP, Device Administration, and Passive Identity Services)
	• Production:
	  • Small—16 GB
	  • Large—64 GB

Hard disks	• Evaluation: 300 GB • Production: 300 GB to 2 TB of disk storage (size depends on deployment and tasks). We recommend that your Virtual machine host server use hard disks with a minimum speed of 10,000 RPM.  **Note**: You must use 4*600 GB for 2.4 TB hard disk support.

KVM Disk Device	Disk bus - SCSI
NIC	1 GB NIC interface required (two or more NICs are recommended; six NICs are supported). Cisco ISE supports VirtIO drivers. We recommend VirtIO drivers for better performance.
Hypervisor	AOS - 6.8, Nutanix AHV - 20230302.100169

4. Upload the Cisco ISE .iso image file to Nutanix as shown here:

Step 1: Log in to the **Nutanix Prism Web Console**.

Step 2: Click the gear icon to open the **Settings** page.

Step 3: Click **Image Configuration** from the left pane.

Step 4: Click **Upload Image**.

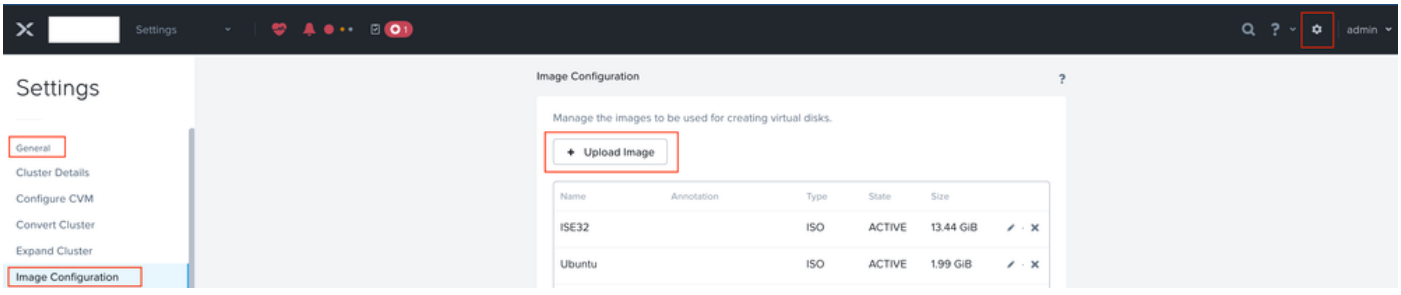
Step 5: Create the image:

1. Enter a name for the image.
2. From the **Image Type** drop-down list, choose **ISO**.
3. From the **Storage Container** drop-down list, choose the desired container.
4. Specify the location of the ISE ISO image:

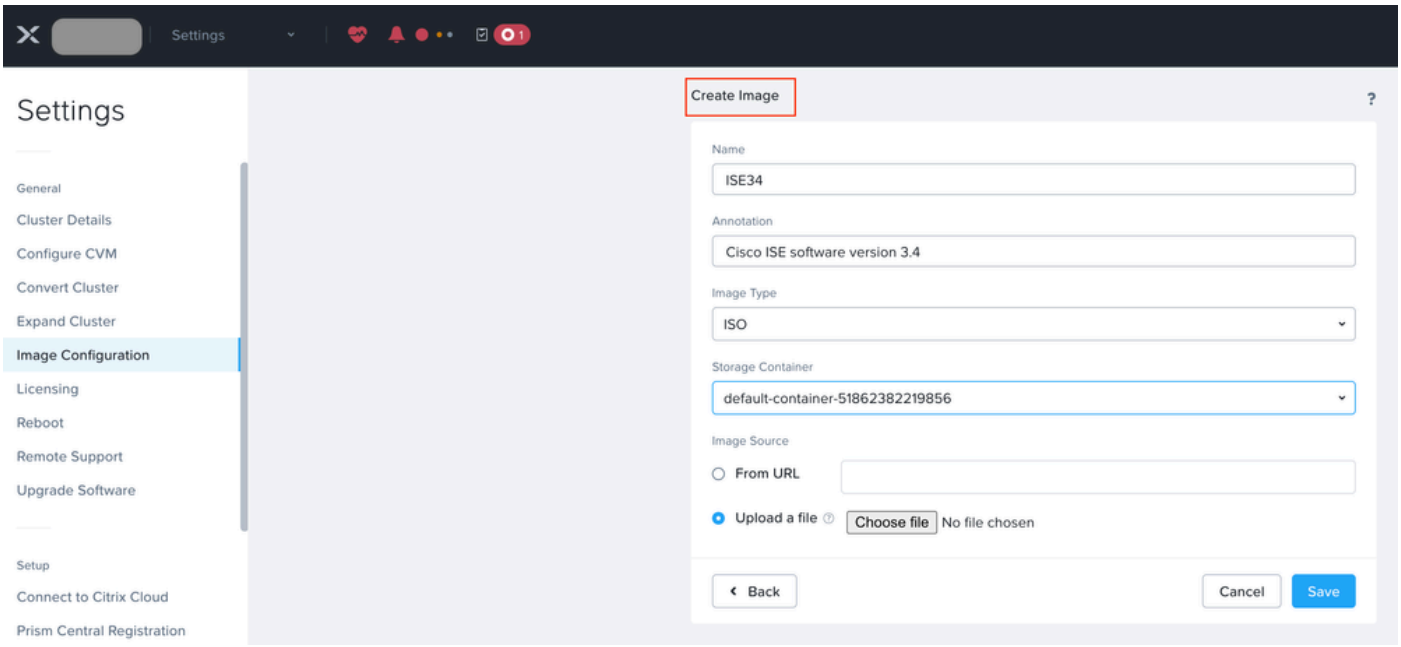
   You can either specify a URL (to import the file from a web server) or upload the file from your workstation.

5. Click **Save**.

Step 6: Wait until the new image appears in the **Image Configuration** page.



Upload Image Option



Create Image on Nutanix

Deploy Cisco ISE Virtual Machine (VM)

Ensure that the image of the Cisco ISE that you plan to deploy is appearing on the **Image Configuration** page.

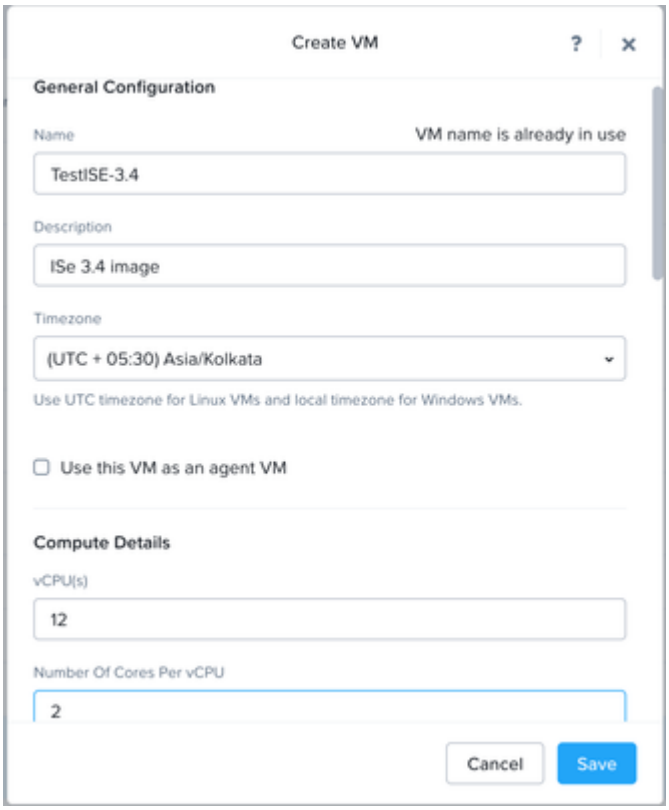
Procedure

Step 1: Log in to the **Nutanix Prism Web Console**.

Step 2: From the main menu bar, click the view drop-down list, and choose VM.

Step 3: If not already displayed, select the **Table** tab.

Step 4: On the **VM Dashboard**, click **Create VM**.



Create an ISE VM

Step 5: In the **Create VM** pane enter:

1. Name for the Cisco ISE virtual instance.
2. Optionally enter a description for the Cisco ISE virtual instance.
3. Select the **Timezone** that you want the Cisco ISE to use.

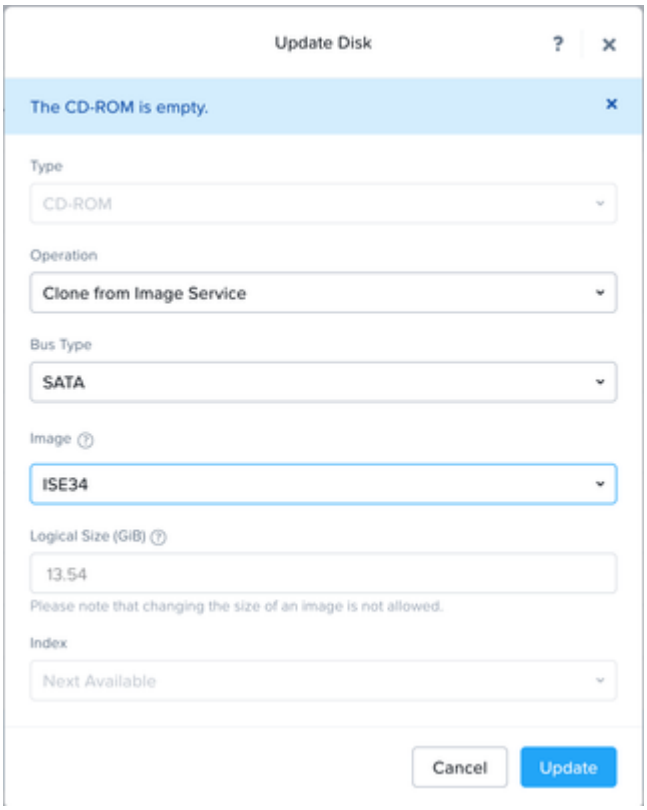
Step 6: Enter the compute details:

1. Enter the number of virtual CPUs to allocate to the Cisco ISE virtual instance.
2. Enter the number of cores that must be assigned to each virtual CPU.
3. Enter the amount of memory (in GB) to allocate to Cisco ISE virtual instance.

Step 7: In the **Boot Configuration**, select **Legacy BIOS**.

Step 8: Attach a disk to the Cisco ISE virtual instance:

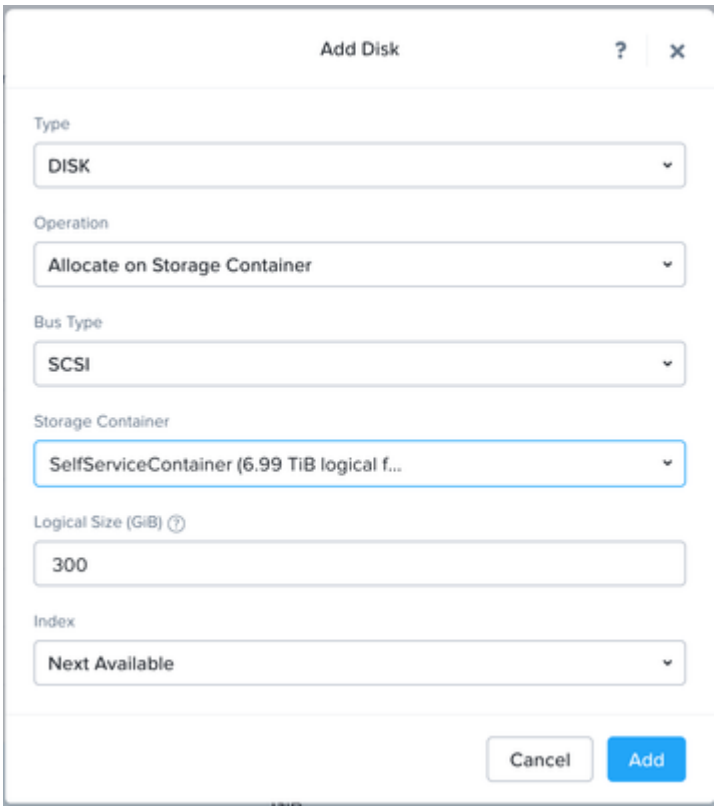
1. Under Disks, click **Edit for CD-ROM**.
2. From the **Operation** drop-down list, choose **Clone from Image Service**.
3. From the **Bus Type** drop-down list, choose **SATA**.
4. From the **Image** drop-down list, choose the image that you want to use.



Mapping ISE Image to Disk

Step 9: Attach an additional disk to the Cisco ISE virtual instance:

1. Click **Add**.
2. Add an additional disk **Under Disks**, click **Add New Disk**.
3. From the **Operation** drop-down list, choose **Allocate on Storage Container**.
4. From the drop-down l**Bus Type** ist, choose **SCSI**.
5. Choose the **Storage Container** drop-down list, choose the desired container.
6. Allocate the **Logical Size** of disk in GB.
7. Click **Add**.



Adding additional Disk in VM

Step 10: Configure virtual network interface.

Under **Network Adapters (NIC**), click **Add New NIC**, select a network, and click **Add**.

Step 11: Click **Save** to deploy the Cisco ISE VM. The ISE virtual instance appears in the VM table view and it is **Power off by default**. (image to be added).

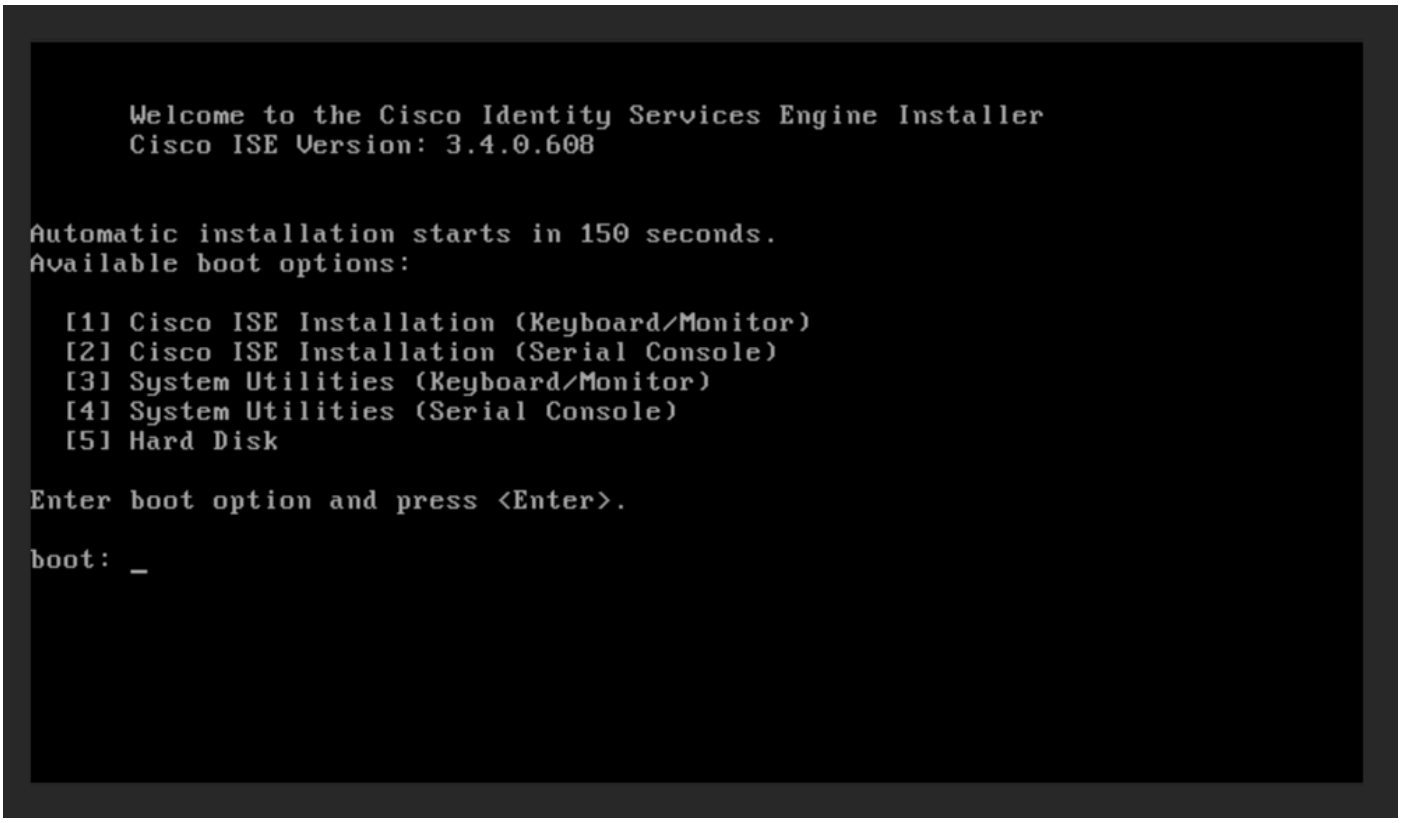
Step 12: Access the NutanixController Virtual Machine (CVM) via ssh login and run the commands shown:

$acli <acropolis> vm.serial_port_create <Cisco ISE VM Name> type=kServer index=0<acropolis> vm.update <Cisco ISE VM Name> disable_branding=true <acropolis> vm.update <Cisco ISE VM Name> disable_hyperv=true

nutanix@NTNX-WZP2429001T-A-CVM:x.x.x.x:~$ acli
<acropolis> vm.serial_port_create TestISE-3.4 type=kServer index=0
VmUpdate: complete
<acropolis> vm.update TestISE-3.4 disable_branding=true
TestISE-3.4: complete
<acropolis> vm.update TestISE-3.4 disable_hyperv=true
TestISE-3.4: complete

Step 13: Exit Acropolis CLI and Power **ON t**he VM to proceed with the installation using Cisco ISE ISO.

Step 14: When the VM boots, the console displays:



ISE image bootup prompt

Under the boot option, type **1** to select **Cisco ISE Installation (Keyboard/Monitor)** and press **Enter**.

The installer starts the installation of the Cisco ISE software. Allow 20 minutes for the installation process to complete. When the installation process finishes, the virtual machine reboots automatically. When the VM reboots, the console displays:

Type **setup** to configure your appliance localhost:

Step 15: At the system prompt, type **setup** and press **Enter**. The Setup Wizard appears and guides you through the initial configuration.

Limitations

- Deploying Cisco ISE using OVA templates is not supported on Nutanix AHV.

Note: Cisco ISE does not support VM snapshots for backing up ISE data on any of the virtual environments (VMware, Linux KVM, Microsoft Hyper-V, and Nutanix AHV) because a VM snapshot saves the status of a VM at a given point in time. In a multi-node Cisco ISE deployment, data in all the nodes are continuously synchronized with current database information. Restoring a snapshot can cause database replication and synchronization issues. We recommend that you use the backup functionality included in Cisco ISE for archival and restoration of data. Using snapshots to back up ISE data results in stopping Cisco ISE services. A reboot is required to bring up the ISE node.

⚠ **Caution**: If the Snapshot feature is enabled on the VM, it can corrupt the VM configuration. If this issue occurs, you have to re-image the VM and disable VM snapshot.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Frequently Asked Questions (FAQs)

1. What is the compatibility between Cisco ISE and Nutanix versions?

Please check the Compatibility and Interoperability Matrix.

2. ISE Installation halted after booting the VM with ISE iso image?

After saving the VM configuration, before powering ON the VM, make sure to access the Nutanix CVM using your **ssh** login and run the commands listed in STEP 12.

3. How to migrate an ISE-VM-K9 from VMware to a Nutanix environment?

Use the backup and restore process of ISE upgrade guide (install ISE VM on Nutanix and restore the configuration backup taken from the ISE VM deployed on VMware). For more information, see Cisco Identity Services Engine Upgrade Journey, Release 3.4.