# **Install ISE on Azure Cloud Services**

## Contents

Introduction
Prerequisites
Component Used
Azure VM Sizes that are Supported by Cisco ISE
Limitations of Cisco ISE in Microsoft Azure Cloud Services
Configure
Example of ISE deployment Connected to Azure Cloud
Configurations
What to do next
Post Installation Tasks
Password Recovery and Reset on Azure Cloud
1. Reset Cisco ISE GUI Password Through Serial Console
2. Create New Public Key Pairfor SSH Access

## Introduction

This document describes how to Install Cisco ISE IOS instance using Azure Virtual Machine. Cisco ISE IOS is available on Azure Cloud Services.

## Prerequisites

• Subscriptions and Resource Groups.

**Navigate** to **All Services > Subscriptions**. Make sure that Azure account with active subscription which has enterprise agreement with Microsoft is present. Using Microsoft PowerShell Azure module CLI execute commands to reserve space: (Refer to <<u>How to install Azure PowerShell</u> > for installing power shell and relevant packages).

Connect-AzAccount -TenantID <Tenant-ID> Register-AzResourceProvider -ProviderNamespace Microsoft.AVS | Register-AzResourceProvider -ProviderNamespace Microsoft.Batch



Note: Replace The Tenant-ID with your actual Tenant ID

Complete the prerequires at<u>Request host quota for Azure VMware Solution</u> for more details.

Create resource group after right subscription, navigating to **All Services > Resource groups.** Click **Add**. Enter the **Resource group** name.

#### Home > Resource groups >

Resource details Region \* ()

#### Create a resource group

Basics Tags Review + create		
Resource group - A container that hold resources for the solution, or only those allocate resources to resource groups b	s related resources for an Azure solution. The resource resources that you want to manage as a group. You d ased on what makes the most sense for your organizat	group can include all the ecide how you want to ion. Learn more 🗗
Project details		
Subscription * 🕕		~
Resource group * ①	recourse-group-name	

(US) East US

• Virtual Network and Security Groups.

The Subnet which requires internet reachability must have the route table configured with next hop as internet. See examples of public and private subnetwork. PAN with public IP Have both offline and online feed update working, PAN with private ip need to rely on offline feed updates.

 $\sim$ 

Note 1: 2000 models         Cost dividual network         Note 1: 2000 models         Note 1: 2000 mo	Microsoft Asure	23	isandy resources, services, and doors (S-J)		6 <b>9</b> 6 1	7 <i>1</i> 2			
	me 3 Virtual retrophs 3								
	reate virtual netwo	orik		Home > SST-Vnet > PublicRe	suteTable				
test entered table tabl	anta d'Addresses Securi	ty Taga Review - create		PublicRouteTa	able   Routes 🖉 –				
Interest (1)       Interest (1) <td< td=""><td>he virtual network's address space.</td><td>specified as one or more address prefixe</td><td>is in COR relationing. 182:168.13(24)</td><td>O fauch Cont. A</td><td>- + + + + + + + + + + + + + + + + + + +</td><td></td><td></td><td></td><td></td></td<>	he virtual network's address space.	specified as one or more address prefixe	is in COR relationing. 182:168.13(24)	O fauch Cont. A	- + + + + + + + + + + + + + + + + + + +				
1100000000000000000000000000000000000	Pv4 address space			President (Creat-V)	- + ×00				
Image: Image	112.42.8.016		V 🕿	Cven/ew	,P Bearch voutes				
Important       And states upper 10 CM states 100 pt 10 Mills 100 pt 100				Activity log	Name	1; Address prefix	7. Next hop type	1. Next hop IP address	
Table to regin (b)	All Pul all real space ()			Access control (AM)	DM2.1	10100010	VICE NEW CONTRACT		
Autor. Start S	The submet's address range in COV	Evolution in p. 152 168 1 (2016) it must b	a contained by the address space of the circuit	Tana	040.1		trias resort general		_
• Marcel : Marcel	setwork.				DM2-2	192.198.199.024	Virtual network gateway		
Note and	+ Alfadent Sherrowski	inet.		Diagnose and solve problem	Internet	0204/9	Internet		-
1 ************************************	Subnet name	Subnet address range	NAT galaxies	Settings	Local	100.00.000	Maked astrony		
1 Marcine Manage       1 1 1 4 3 4 5 8 200       -         1 1 2 5 4 3 4 5 8 200       -         1 2 5 4 3 4 5 8 200       -         1 2 5 4 3 4 5 8 200       -         1 2 5 4 3 4 5 8 200       -         1 2 5 4 3 4 5 8 200       -         1 2 5 4 3 4 5 8 200       -         1 2 5 4 3 4 5 8 2000       -         1 2 5 4 3 4 5 8 2000       -         1 2 5 4 5 4 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7	SST Subren Public	172.42.8.9;00							
In June Andre Andre Andre Interfactor Andre	SST-Subret Private	172.42.16.0.29							
100 Lot 10 Lots       100 Lot 10 Lots       100 Lot 10 Lots       100 Lot 10 Lots       100 Lot 10 Lot	Stit Submit Public	172.4232.0/09							
• The state of the state	SST Subret Privated	172.42.48.0/20		Marcold APP Marcold Research					_
Source         Description         Description         Description         Address prefix         To         Next hop type         To         Next hop type         To         Next hop type         To           Answer 1 and 1	Use of a NAT galency is economic 8 to a subset after you could the o	nded for autoand internet acress from a so inhad network, taan more 07	denek. You can depley a NAT galeney and assign	PrivateRouteTable	Routes &				
Known - ruws         The Meeting         Develout a bunglich for adventule         If         Address prefix         T_2         Nach hop type				Cvenview	, P Bearch routes				_
Control Labor         Control Labor         Number of Control Labor				Activity log	Name	12 Address prefix	To Next hop type	To Next hop IP address	74
		- Presente Manal Sala		Access control (AM)	DMZ-1	10.10.0.0/16	Virtual network gateway		
Tag5 04/2.3 193 143 193-0.04 Vibral antenna extension -				<ul> <li>Taps</li> </ul>	047.3	182 168 118-0-04	Votual option & optionary		
P Towney and take million: 200 taken of the second se				A Discourse and solve problems		100.000.000	in a second general		

- Create an SSH Key Pair.
- a. Use the search bar from the Azure Web Portal home page and search for SSH Keys.

Microsoft Azure	P SSH Keys X	E 6	Ø	© 0	
Use TheSearch Bar And Search For SSH Keys Create a resource	All Services (5) Marketplace (1) Documentation (99+) Resources (0) Resource Groups (0) Azure Active Directory (0) Services Services SSH keys Distocker Keys	<b>}</b> rvices			
Resources	🕐 Key vaults				
Recent Favori Name	e Marketplace				

b. From the Next Window click Create.

■ Microsoft Azure			
Home >			
SSH keys Click Create	en query 🗌 🕅 Accian taos		
Filter for any field Subscription equals all Resource group equ	als all X Location equals all X <sup>th</sup> ⊽ Add filter		
Showing 0 to 0 of 0 records.			
Name 🕆 🖉	Type ↑↓	Resource group ↑↓	Location $\uparrow_{\downarrow}$
	Or Use This Option No S SSH is an encrypted connection proceed that secure connection	SFH keys to display allows secure sign-ins over unsecured connection and machines, without having to use passwords. Create SSH key	ns. SSH keys allow

c. From the next window select the **Resource Group** and **Key Name**. Then click **Review** + **Create**.

Home > SSH keys >		
Create an SSH key		
Basics Tags Review + create Creating an SSH key resource allows you Learn more	to manage and use public keys stored in Azure with Linux virtual machines.	
Project details		
Select the subscription to manage deplo your resources.	yed resources and costs. Use resource groups like folders to organize and manage all	Select Resource group you created from D Drop Down List
Subscription * ③	cx-tac-rch-aaa-azure	
Resource group * 💿	(New) resource-group-name	
Instance details		Create Key Pair Name
Region * ①	(US) East US V	
Key pair name *	key-pair-name	
SSH public key source	Generate new key pair	
C	lick Review + Create	
Review + create < Pro	evious Next : Tags >	

d. From next window click Create and Download Private Key.

	P Search resources, services, and docs (G+/)
Home > SSH keys >	
Create an SSH key	
Validation passed	
Basics Tags Review + create	
Basics	
Subscription	
Resource group	
Region Key pair name	
	Generate new key pair
	An SSH key pair contains both a public key and a private key. Azure doesn't store the private key. After the SSH key resource is created, you won't be able to download the private key again. Learn more c?
	Download private key and create resource
	Keturn to create an SSH key resource
Click Create	
Create < Previous Next > Download a tr	emplate for automation

### **Component Used**

The content of this document is based on these software and cloud services.

- Cisco ISE version 3.2.
- Microsoft Azure Cloud Services

The information in this document was created in the device from specific lab environment. All 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.

### Azure VM Sizes that are Supported by Cisco ISE

Azure VM Sizes	vCPU	RAM (in GB)
Standard_D4s_v4	4	16
(This instance supports the Cisco ISE evaluation use case. 100 concurrent active endpoints are supported.)		
Standard_D8s_v4	8	32
Standard_F16s_v2	16	32
Standard_F32s_v2	32	64
Standard_D16s_v4	16	64
Standard_D32s_v4	32	128
Standard_D64s_v4	64	256

• The Fsv2-series Azure VM sizes are compute-optimized and are best suited for use as PSNs for

compute-intensive tasks and applications.

• The Dsv4-series are general purpose Azure VM sizes that are best suited for use as PAN or MnT nodes or both and are intended for data processing tasks and database operations.

If you use a general-purpose instance as a PSN, the performance numbers are lower than the performance of a compute-optimized instance as a PSN. The Standard\_D8s\_v4 VM size must be Used as an extra small PSN only.



**Note**: Do not clone an existing Azure Cloud image to create a Cisco ISE instance. Doing this can cause random and unexpected malfunctions in the created ISE machine.

### Limitations of Cisco ISE in Microsoft Azure Cloud Services

• If you create <u>Cisco ISE using the Azure Virtual Machine</u>, by default, Microsoft Azure assigns private IP addresses to VMs through DHCP servers. Before you create a Cisco ISE deployment on Microsoft Azure, you must update the forward and reverse DNS entries with the IP addresses assigned by Microsoft Azure.

Alternatively, after you install Cisco ISE, assign a static IP address to your VM by updating the

Network Interface object in Microsoft Azure:

- 1. Stop the VM.
- 2. In the Private IP address settings area of the VM, in the Assignment area, click Static.
- 3. Restart the VM.
- 4. In the Cisco ISE serial console, assign the IP address as Gi0.
- 5. Restart the Cisco ISE application server.
- Dual NIC is supported with only two NICs—Gigabit Ethernet 0 and Gigabit Ethernet 1. To configure a secondary NIC in your Cisco ISE instance, you must first create a network interface object in Azure, power off your Cisco ISE instance, and then attach this network interface object to Cisco ISE. After you install and launch Cisco ISE on Azure, use the Cisco ISE CLI to manually configure the IP address of the network interface object as the secondary NIC.
- The Cisco ISE upgrade workflow is not available in Cisco ISE on Microsoft Azure. Only fresh installs are supported. However, you can carry out backup and restore of configuration data.
- The public cloud supports Layer 3 features only. Cisco ISE nodes on Microsoft Azure do not support Cisco ISE functions that depend on Layer 2 capabilities. For example, working with DHCP SPAN profiler probes and CDP protocol functions through the Cisco ISE CLI are functions that are currently not supported.
- When you carry out the restore and backup function of configuration data, after the backup operation is complete, first restart Cisco ISE through the CLI. Then, initiate the restore operation from the Cisco ISE GUI.
- SSH access to Cisco ISE CLI using password-based authentication is not supported in Azure. You can only access the Cisco ISE CLI through a key pair, and this key pair must be stored securely. If you are using a Private Key (or PEM) file and you lose the file, you would not be able to access the Cisco ISE CLI.

Any integration that uses a password-based authentication method to access Cisco ISE CLI is not supported, for example, Cisco DNA Center Release 2.1.2 and earlier.

• Cisco ISE IOS deployments on Azure typically leverage VPN solutions like Dynamic Multipoint Virtual Private Networks (DMVPN) and Software-Defined Wide Area Networks (SD-WAN), where the IPSec tunnel overheads can cause MTU and fragmentation issues. In such scenarios, Cisco ISE IOS would not receive complete RADIUS packets and an authentication failure occurs without triggering a failure error log.

A possible workaround is to seek Microsoft technical support to explore any solutions in Azure that can allow out-of-order fragments to pass to the destination instead of being dropped.

• CLI Admin user must be "iseadmin".

## Configure

### Example of ISE deployment Connected to Azure Cloud



## Configurations

• Step (1): Go to <u>Azure portal</u> and log in to your Microsoft Azure account.

=	Microsoft Azure		P Search resources	s, servio	es, and docs (G+/)						Ð	8	Φ	۲	0	R
		Azure services														
		+	<b>(</b>		💉 📮		۲		SQL	8	$\rightarrow$					
		Create a resource	SSH keys Reso gro	ource rups	Quickstart Virtual Center machine	Aç	p Services	Storage accounts	SQL database	es Azure Cosmo DB	s More service	15				
		Resources Recent Favorite														
		Name			τ <sub>3</sub>	pe				Last Viewed						
						Þ										
					No resources h	ave been	viewed recently	y								
					Vie	w all resou	irces									
		Navigate														
		Subscriptions		()	Resource groups		All resources		₫h	Dashboard						
		Tools														
		Learn Azure w	n (5° ith free online Microsoft	3	Azure Monitor Monitor your apps and infrastructure	0	Microsoft Defe Secure your ap infrastructure	nder for Cloud ps and	\$	Cost Management Analyze and optim cloud spend for fm	ize your te					

• Step (2): Use the search field at the top of the window to search for Marketplace.

Microsoft Azure	₽ marketplace	×	5 6 0 Ø Ø Ø
Azure services	All Services (8) Marketplace (31) Documentation Resource Groups (0) Services	n (99+) Azure Active Directory (6) Resources (0)	
Resources Recent Favorite	<ul> <li>Budgets</li> <li>Cost alerts</li> <li>Cost analysis</li> </ul>	Cost Management     Cost Management + Billing     Managed applications center	
Name	Marketplace Striim VM Subscription Contoso MPPO SaaS - Seat 1 WeTranset	See all	
	Tackle Cloud GTM Platform	Cabra Cloud Commerce Management Platform	

• Step (3): Use the **Search the Marketplace** search field to search for **Cisco Identity Services Engine** (ISE).

= Microsoft Azure	,P Search resources, services, and docs (G+/)		8	٥	۲	۲	R
Home > Marketplace	D						
Get Started Service Providers	Cisco Identity service engine         Pricing : All ×         Operating System : All ×         Publisher Type : All ×         Product Type : All ×         Publisher Type : All ×         Product Type : All ×         Publisher Type : All × <th>ublisher name : All</th> <th>×</th> <th></th> <th></th> <th></th> <th></th>	ublisher name : All	×				
Management	cisco identity services engine						
Private Marketplace Private Offer Management	> Search resources, services, and docs (G+ /)          P Cisco Identity service engine         Cisco Identity service sengine         Cisco Identity services engine         Recommended for you						

• Step (4): Click Virtual Machine.

		₽ Search resources, set	vices, and docs (G+/)			2	8	φ (	) (	)
Home >										
Marketplace										
Get Started	O fine Markh for instants of			Database Bass and M	Bandard Room All V	Publicher and a Million	~			
Service Providers	- Cisco identity services engine (is		ritiong : All 🔨 Operating system : All 🔨	Poulisier type: All	Product type : Mar A	Popularier name : All	~			
Management	Showing 1 to 3 of 3 results for 'Cisco	Azure services only Select Visu Identity Services angine (ISE): Clear s	al Machine carch							
Private Marketplace	You have 1 results customized for a	our businession in private plans. View priv	vate plans							
Private Offer Management		1								
My Marketplace	-ideade. cisco	aduadu. Crisco	cisco							
Favorites	Cisco Identity Services Engine (ISE)	Cisco Identity Services Engine (ISE)	Cisco ISE							
Recently created	Cisco Systems, Inc.	Cisco Systems, Inc.	Microsoft Sentinel, Microsoft Co							
Private plans	Virtual Machine Cisco Identity Services Engine (ISE)	Azure Application Cisco Identity Services Engine (SE)	Azure Application Streamline security policy							
Categories			management, and reduce operating costs.							
Security (3)		Price varies	Price varies							
Networking (2)	Create 🗸 🗢	Create 🗸 🗢	Create 🗸 🗢							
Al + Machine Learning (0)										

• Step (5): In the new window that is displayed, click **Create**.

=	Microsoft Azure	P Search resources, services, and docs (G+/)							
Home	Home > Marketplace >								
Cisco S	:o Identity Services Engine (ISE) 🛷 … ystems, Inc.								
ab	Cisco Identity Services Engine (ISE	Add to Favorites							
CIS	Cisco Systems, Inc.   Virtual Machine								
	Plan								
	Cisco Identity Services Engine (ISE) B V Create	Start with a pre-set configuration							
	Want to deploy programmatically? Get started								
Ove	rview Plans + Pricing Usage Information + Support Ratings	+ Reviews							

• Step (6): In the Basics tab:

a. In the **Project details** area, choose the required values from the **Subscription** and Resource **group drop**-down lists.

- b. In the Instance details area, enter a value in the Virtual Machine name field.
- c. From the **Image** drop-down list, choose the Cisco ISE image.

d. From the **Size** drop-down list, choose the instance size that you want to install Cisco ISE with. Choose an instance that is supported by Cisco ISE, as listed in the table titled **Azure Cloud** 

Instances that are supported by Cisco ISE, in the section Cisco ISE on Azure Cloud.

e. In the **Administrator account > Authentication type** area, click the **SSH Public Key** radio button.

f. In the Username field, enter iseadmin.

g. From the SSH public key source drop-down list, choose Use existing key stored in Azure.

h. From the **Stored keys** drop-down list, choose the key pair that you created as a prerequisite for this task.

j. In the Inbound port rules area, click the Allow selected ports radio button.

k. In the **Licensing** area, from the **Licensing type** drop-down list, choose Other.



Resource group *	Resource Group You Created	~
	Create new	
Instance details		
Virtual machine name * 💿	ise-vm-name	~
Region * 🛈	(US) East US	$\sim$
Availability options	Availability zone	$\sim$
Availability zone * 💿	Zones 1	$\sim$
	You can now select multiple zones. Selecting multiple zones will create per zone. Learn more o?	e one VM
Security type ③	Standard	$\sim$
Image * 💿	Cisco Identity Services Engine (ISE) BYOL 3.2 - x64 Gen1	~
VM architecture	See al images   Configure VM generation	
/	• x64	
Click Here To Select ISE Image	x64     Arm64 is not supported with the selected image.	
Click Here To Select ISE Image	x64     Arm64 is not supported with the selected image.	
Click Here To Select ISE Image Run with Azure Spot discount ③ Size * ③	x64     Arm64 is not supported with the selected image.     Standard_D32s_v4 - 32 vcpus, 128 GiB memory (\$863.59/month)     See all sizes	~
Click Here To Select ISE Image Run with Azure Spot discount ③ Size * ③	<ul> <li>x64</li> <li>Arm64 is not supported with the selected image.</li> </ul> Standard_D32s_v4 - 32 vcpus, 128 GiB memory (\$863.59/month) See all sizes	~
Click Here To Select ISE Image Run with Azure Spot discount  Size  Administrator account Authentication type	<ul> <li>x64</li> <li>Arm64 is not supported with the selected image.</li> <li>Standard_D32s_v4 - 32 vcpus, 128 GiB memory (\$863.59/month)</li> <li>See all sizes</li> <li>SSH public key</li> </ul>	~



**Note**: For The Disk Type, there is more options from the Drop Down List to select. You can select the one that Meets your Need. Premium SSD is the Recommended Type for Production and Performance Sensitive Workloads.

• Step (9): In the **Network Interface** area, from the **Virtual network, Subnet** and **Configure network security group** drop-down lists, choose the virtual network and subnet that you have created.



**Note**: The subnet with a public IP address receives online and offline posture feed updates, while a subnet with a private IP address only receives offline posture feed updates.

Home > Virtual machines >

Create	e a vi	rtual mad	hine				
						ħ	
Basics	Disks	Networking	Management	Monitoring	Advanced	Tags	Review + create
Define net inbound a Learn mor	twork con and outbo re 🖻	nectivity for you und connectivity	r virtual machine b with security grou	by configuring ne up rules, or place	twork interface behind an exist	card (NIC) ing load b	) settings You can control ports. Dalancing Virtual Network You created Or Click Create New
Network	interface	e					
When crea	ating a vir	tual machine, a r	network interface v	will be created for	r you.		
Virtual net	twork *(	D	Create nev	~			$\sim$
Subnet *	0		Select	The Subnet Yo	ur created		
Public IP	0		Create and				
NIC netwo	ork securit	ty group 🕕	O None				Select Security Group You Created Or Click Create New
			Advar	nced			
Configure	network	security group *	Create new	N - T			
Delete put deleted (	blic IP and	d NIC when VM i	s 🗌				
Enable acc	celerated	networking 🕕		The	selected image	does not	support accelerated networking.
Load bala	ancing						
You can pl	lace this v	virtual machine ir	n the backend poo	l of an existing A	zure load balan	cing soluti	ion. Learn more 🖻
Review	+ create		< Previous	Next : Managen	nent >		
• Ste	p (10)	: Click <b>Ne</b> y	xt: Manager	ment.			
Delete p deleted	i) i	and NIC wher	NVM is				
Enable a	accelerat	ted networking	, ©		The se	lected in	nage does not support accelerated networking.
Revie	w + crea	ate	< Previou	s Next	: Manageme	nt >	

• Step (11): In the **Management** tab, retain the default values for the mandatory fields and click **Next:** Advanced.

■ Microsoft Azure		${\cal P}$ Search resources, services, and docs (G+/)						
Home > Virtual machines >								
Create a virtual machine								
"Click Next on This Page > Monitoring > Advanced"								
Basics Disks Networking Manage	ement Monitoring Advance	ed Tags Review + create						
Configure management options for your VM.								
Microsoft Defender for Cloud								
Microsoft Defender for Cloud provides unified workloads. Learn more 🖻	security management and advanced	I threat protection across hybrid cloud						
<ul> <li>Your subscription is protected by Microso</li> </ul>	ft Defender for Cloud basic plan.							
Identity								
Enable system assigned managed identity ①	]							
Azure AD								
Login with Azure AD 🕠	]							
▲ This image does not support Login with Azure AD.								
Auto-shutdown								
Enable auto-shutdown ①	]							

Home > Virtual machines >

### Create a virtual machine

Basics Disks Networking Ma Configure monitoring options for your V	anagement Monitoring	Advanced Tags Review Premium S	v + create SD "Recommended Type or Production "
Alerts Enable recommended alert rules ①			
Diagnostics			
Boot diagnostics (i)	• Enable with managed s	torage account (recommended)	
	Enable with custom sto	rage account	
	<ul> <li>Disable</li> </ul>		
Enable OS guest diagnostics 🕠			



• Step (12): In the User data area, check the Enable user data check box.

In the User data field, complete information:

```
hostname=<hostname of Cisco ISE>
```

```
primarynameserver=<IPv4 address>
```

```
dnsdomain=<domain name>
```

```
ntpserver=<IPv4 address or FQDN of the NTP server>
```

```
timezone=<timezone>
```

```
password=<password>
```

```
ersapi=<yes/no>
```

```
openapi=<yes/no>
```

pxgrid\_cloud=<yes/no>



**Note**: You must use the correct syntax for each of the fields that you configure through the user data entry. The information you enter in the User data field is not validated when it is entered. If you use the wrong syntax, Cisco ISE services would not come up when you launch the image.

See the **Guidelines** for the Configurations That You must Submit Through the User Data Field:

a. hostname: Enter a hostname that contains only alphanumeric characters and hyphens (-). The length of the hostname must not exceed 19 characters and cannot contain underscores (\_).

b. primary nameserver: Enter the IP address of the primary name server. Only IPv4 addresses are supported.

You can add only one DNS server in this step. You can add additional DNS servers through the Cisco ISE CLI after installation.

c. dnsdomain: Enter the FQDN of the DNS domain. The entry can contain ASCII characters, numerals, hyphens (-), and periods (.).

d. ntpserver: Enter the IPv4 address or FQDN of the NTP server that must be used for synchronization.

You can add only one NTP server in this step. You can add additional NTP servers through the Cisco ISE CLI after installation. **Use a valid and reachable NTP Server** since this needed for ISE Operations.

e. time zone: Enter a time zone, for example, Etc/UTC. We recommend that you set all the Cisco ISE nodes to the Coordinated Universal Time (UTC) time zone, especially if your Cisco ISE nodes are installed in a distributed deployment. This procedure ensures that the time stamps of the reports and logs from the various nodes in your deployment are always synchronized.

f. password: Configure a password for GUI-based login to Cisco ISE. The password that you enter must comply with the Cisco ISE password policy. The password must contain 6 to 25 characters and include at least one numeral, one uppercase letter, and one lowercase letter. The password cannot be the same as the username or its reverse (iseadmin or nimdaesi), cisco, or ocsic. The allowed special characters are  $@\sim*!,+=\_$ -. See the "User Password Policy" section in the Chapter "Basic Setup" of the <u>Cisco ISE</u> Administrator Guide for your release.

g. ersapi: Enter **yes** to enable ERS, or **no** to disallow ERS.

h. openapi: Enter yes to enable OpenAPI, or no to disallow OpenAPI.

i. pxGrid: Enter **yes** to enable pxGrid, or **no** to disallow pxGrid.

j. pxgrid\_cloud: Enter **yes** to enable pxGrid Cloud or **no** to disallow pxGrid Cloud. To enable pxGrid Cloud, you must enable pxGrid. If you disallow pxGrid, but enable pxGrid Cloud, pxGrid Cloud services are not enabled on launch.

Create a virtual n	nachine Selec	ct This
Enable user data		
User data *	hostname=isehostname primarynameserver=primary sever ip aaddress dnsdomain=domain fqdn ntpserver=ntp server ip address timezone=America/Chicago username= iseadmin password=passwored ersapi=yes openapi=yes	
	pxGrid=no pxgrid_cloud=no	

Enable capabilities to enhance the performance of your resources.

Higher remote disk storage performance with NVMe ①

The selected image and size are not supported for NVMe. <u>See supported VM images and sizes</u> of

#### Host

Azure Dedicated Hosts allow you to provision and manage a physical server within our data centers that are dedicated to your Azure subscription. A dedicated host gives you assurance that only VMs from your subscription are on the host, flexibility to choose VMs from your subscription that will be provisioned on the host, and the control of platform maintenance at the level of the host. Learn more

Host group (i)	No host groups found	$\sim$

#### **Capacity reservations**

Capacity reservations allow you to reserve capacity for your virtual machine needs. You get the same SLA as normal virtual machines with the security of reserving the capacity ahead of time. Learn more 3

C		-	
Review + create	< Previous	Next : Tags >	

User Data Section

• Step (13): Click Next: Tags.

#### Performance (NVMe)

Enable capabilities to enhance the performance of your resources.

Higher remote disk storage performance with NVMe (i)	The selected image and size are not supported for NVMe. <u>See supported VM images and sizes</u> <sup>(2)</sup>
Review + create < Prev	rious Next : Tags >

• Step (14): To create name-value pairs that allow you to categorize resources, and consolidate multiple resources and resource groups, enter values in the **Name** and **Value** fields.

۴

Home > Virtual machines >									
Create a virtual machine									
Basics Disks	Networking M	lanagement	Monitoring	Advanced	Tags	Review + create			
Tags are name/value	nairs that enable v	you to categorize	resources and y	view consolidated	d billing k	anniving the same tag to			
multiple resources ar	nd resource groups	Learn more abo	out tags 🖻	iew consonauter	u billing t	y uppying the same tag to			
Note that if you creat	te tags and then ch	nange resource se	ttings on other	tabs, your tags v	will be au	tomatically updated.			
New O Person									
Name () Value () Resource									
Tag N	lame	:	Value Name	1	3 selecte	d V			

• Step (15): Click Next: Review + Create.

Review + create	< Previous	Next : Review + create >

• Step (16): Review the information that you have provided so far and click Create.

The **Deployment is in progress** window is displayed. It takes about 30 minutes for the Cisco ISE instance to be created and available for use. The Cisco ISE VM instance is displayed in the

Virtual Machines window (use the main search field to find the window).

#### Home > Virtual machines >

#### Create a virtual machine

<ul> <li>Validation passed</li> </ul>				
Preferred e-mail address				
Preferred phone number				
Preferred priorie number				
Basics				
Subscription				
Resource group				
Virtual machine name				
Region				
Availability options	Availability zone			
Availability zone	1			
Security type	Standard			
Image	Cisco Identity Services Eng	ine (ISE) BYOL 3.2 - Gen1		
VM architecture	x64			
Size	Standard D16s v4 (16 vcpu	s, 64 GiB memory)		
Authentication type	SSH public key			
Username	iseuser			
Key pair name				
Azure Spot	No			
Disks				
Crusto	C Previour	voload a template for automation		
Create	< Previous Next >			
C		2 20220020145056   0		
CreateVm-cisco.ci	sco-ise-virtual-cisco-ise_3_	2-20230926145056   Overview >	g	
O Casech	III Dalata 🚫 Cancel (1) Redaploy	Download C) Pefreth		
- Search	E belete 🕓 Cancer 🖂 Receptoy			
Overview	Deployment is in pro	gress		
linputs	Deployment name: CreateVm-cisco	.cisco-ise-virtual-cisco-ise_3_2-2 Start time: 9/26/2023, 4:0	06:05 PM	
Outputs	Subscription: Besource group:	Correlation ID:		6
Template	responde Brank			
	<ul> <li>Deployment details</li> </ul>			
	Resource	Туре	Status	Operation details
	Θ	Microsoft.Compute/virtualMachines	Created	Operation details
	0	Microsoft.Network/networkInterfaces	Created	Operation details
	0	Microsoft.Network/virtualNetworks	ок	Operation details
	0	Microsoft Network/publicIpAddresses	ОК	Operation details
	0	Microsoft Network/networkSecurityGroups	ОК	Operation details
	-	, and the second s	-col"	- protection is seened
	Give feedback			
	${\mathcal R}$ Tell us about your experience with deplo	yment		

## What to do next

Because of a Microsoft Azure default setting, the Cisco ISE VM you have created is configured with only 300 GB disk size. Cisco ISE nodes typically require more than 300 GB disk size. You can see the **Insufficient Virtual Memory** alarm when you first launch Cisco ISE from Microsoft Azure.

After the Cisco ISE VM creation is complete, log in to the Cisco ISE administration portal to verify that Cisco ISE is set up. Then, in the Microsoft Azure portal, carry out and complete steps in the **Virtual** 

Machines window to edit the disk size:

1. Stop the Cisco ISE instance.

Home >								
isedemo-cybersec	x 🛧 …							
₽ Search «	💋 Connect 🕞 Start	Restar	Stop 🔀 Capture	📋 Delete	🕐 Refresh	🛄 Open in mobile	Reedback	c 🛃 CLI / PS
Overview	A Frantisla							
Activity log	Constantials							
Access control (IAM)	Resource group (move)	):						Operating system
There	Status	: Running						Size
<ul> <li>Tags</li> </ul>	Location	:						Public IP address
X Diagnose and solve problems	Subscription (move)	1						Virtual network/subnet
Settings	Subscription ID	:						DNS name
2 Networking	Availability zone	:1						Health state
Ø Connect	Tags ( <u>edit</u> )	4						
Disks								
💶 Size	Properties Monito	oring Ca	pabilities (7) Recomm	nendations	Tutorials			

2. Click **Disk** in the left pane and click the disk that you are using with Cisco ISE.

Home > isedemo-cybersec								
sedemo-cybersec   Disks * ··· 2								
₽ Search «.	🗟 Save 🗙 Discard 🜔 Refresh 🖉 🕲 Additio	onal settings 🔗 Feedback 🤞	P Troubleshoot					
Cverview	OS disk							
<ul> <li>Activity log</li> </ul>	≓ Swap OS disk							
Access control (IAM)	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (	Encryption ①		
Tags	isedemo-cybersec_OsDisk_1_d144bfa962e94fd6a24d3	Premium SSD LRS	300	2300	150	SSE with PMK		
X Diagnose and some problems								
Settings	Data disks							
2 Networking	P Filter by name							
Ø Comect	Showing 0 of 0 attached data disks							
Disks	+ Create and attach a new disk 💋 Attach existing	) disks						
📮 Size	LUN ③ Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (	Encryption ①		
Microsoft Defender for Cloud		- 77						

3. Click **Size + performance** in the left pane.

Но	ome > Disks >							
e		OsDisk_1_d144b	fa962e94fd6a	24d3a2847	/2c55fb ☆	ġ ····		
	Disk							
۶	Search «	+ Create VM + Cre	eate VM image version	Create snapshot	🗐 Delete 💍 Refr	resh 🛛 Rive feedback		
	Overview							
	Activity log	Resource group (move) :					Disk size	: 300 GIB
80	Access control (IAM)	Disk state	Reserved				Storage type	Premium SSD LRS
	Tags	Location					Managed by	isedemo-cybersec
Ĵ,	Noncore and color exchiner	Subscription (move)					Operating system	Linux
^	Diagnose and solve problems	Subscription ID					Completion percent	: 100
Se	ttings	Time created	: 9/26/2023, 4:06:17 PM				Max shares	: 0
	Configuration						Availability zone	:1
1	Size + performance						Performance tier	: P20 - 2300 IOPS, 150 MB/s
Ę	Encryption						Security type	Standard
ф	Networking	Tags ( <u>edit</u> )						
ų.	Disk Export							
11	Properties	Show data for last:	(1	hour 6 hours	12 hours 1 day	7 days		
	Locks							

4. In the **Custom disk size** field, enter the disk size you want, in GiB.

Home >	_OsDisk_1_d	144bfa962e94fd6a24d3a28472c55	Sfb		
2.0	sDisk_1_d144bf	a962e94fd6a24d3a	28472c55fb   Size + p	performance 🛪 ···	
Disk					
₽ Search «	Storage type ③				
S Overview	Premium SSD (locally-redu	indant storage)	$\sim$		
Activity log	Size	Disk tier	Provisioned IOPS	Provisioned throughput	Max Shares 🛈
Access control (IAM)	4 GiB	P1	120	25	3
🔷 Tags	8 GiB	P2	120	25	3
× Diagnose and solve problems	16 GiB	P3	120	25	3
Settings	32 GiB	P4	120	25	3
Configuration	64 GiB	P6	240	50	3
Size + performance	128 GiB	P10	500	100	3
% Encryption	256 GiB	P15	1100	125	3
A Networking	512 GiB	P20	2300	150	3
Disk Export	1024 GiB	P30	5000	200	5
Properties	2048 GiB	P40	7500	250	5
Locks	4096 GiB	P50	7500	250	5
	8192 GiB	P60	16000	500	10
Monitoring	16384 GiB	P70	18000	750	10
Metrics	32767 GiB	P80	20000	900	10
Automation	Outtom dick cize (GiR) *				
🖧 Tasks (preview)	300				
😨 Export template					
Help	Save Discard				

## **Post Installation Tasks**

For information about the post installation tasks that you must carry out after successfully creating a Cisco ISE instance, see the Chapter "Installation Verification and Post Installation Tasks" in the <u>Cisco ISE</u> <u>Installation Guide</u> for your Cisco ISE release.

## **Password Recovery and Reset on Azure Cloud**

Complete the tasks that help your reset or recover your Cisco ISE virtual machine password. Choose the tasks that you need and carry out the steps detailed.

### 1. Reset Cisco ISE GUI Password Through Serial Console

- Step (1): Log in to Azure Cloud and choose the resource group that contains your Cisco ISE virtual machine.
- Step (2): From the list of resources, click the Cisco ISE instance for which you want to reset the password.
- Step (3): From the left-side menu, from the **Support** + **Troubleshooting** section, click **Serial console**.

Home > Virtual machines >				
Virtual machines «	✓ ☆ ☆ Virtual machine			
+ Create $\lor$ $\rightleftarrows$ Switch to classic $\cdots$	₽ Search «	🖋 Connect 🗁 Start 🦿 Restart 🔲 Stop 🔯 Capture 📋 Delete 💍 Refresh 🔋 Ope		
Filter for any field Name ↑↓	<ul> <li>Insights</li> <li>Alerts</li> <li>Metrics</li> </ul>	▲ Essentials Resource group (move) : Status : Running		
	<ul> <li>Diagnostic settings</li> <li>Logs</li> <li>Connection monitor (classic)</li> <li>Workbooks</li> <li>Automation</li> </ul>	Location       : East US (Zone 1)         Subscription (move)       :         Subscription ID       :         Availability zone       : 1         Tags (edit)       : Add tags		
Click Serial Console	<ul> <li>Tasks (preview)</li> <li>Export template</li> <li>Help</li> <li>Resource health</li> </ul>	Properties         Monitoring         Capabilities (7)         Recommendations         Tutorials           Virtual machine         Computer name         Derating system         Linux (redhat 8.4)		
	Boot diagnostics	Image publisher cisco		
	Reformance diagnostics	Image offer cisco-ise-virtual		
	VM Inspector (Preview)	Image plan cisco-ise_3_2 VM generation V1		
	📍 Reset password	VM architecture x64		
¥.	> Redeploy + reapply	Agent status Ready		
	Serial console	Agent version 2.10.0.3		
	Connection troubleshoot	Host group None		

• Step (4): If you view an error message here, you would have to enable boot diagnostics by carrying out and complete steps:

a. From the left-side menu, click Boot diagnostics.



### b. Click Enable with custom storage account. Then click Save.



• Step (5): From the left-side menu, from the **Support** + **Troubleshooting** section, click **Serial console**. The Azure Cloud Shell is displayed in a new window. If the screen is black, press Enter to view the login prompt.

Microsoft Azure	🔎 Search resources, services, and docs (G+/) 🛛 💀 📀 🔿 🔗
Home > Virtual machines > Virtual machines • + Create > 2 Switch to classic •••	Serial console → Vitual machine P Search © ? Feedback (↗ ◎ ♡ ##
Filter for any field	2023-09-27T03:35:07.7316922       INFO ExtHandler ExtHandler Distro: redhat-8.4; 0SUtil: Redhat0SUtil; AgentService: 0         Insights       8         2023-09-27T03:35:07.7358392       INFO ExtHandler ExtHandler Start env monitor service.         2023-09-27T03:35:07.7359002       INFO ExtHandler ExtHandler WireServer endpoint         Alefti       2023-09-27T03:35:07.7359002
	Metrics       2023-09-27703135107.7369242 INFO ExtRandler ExtRandler Configure routes         Diagnotic settings       2023-09-27703135107.73709712 INFO ExtRandler ExtRandler ExtRandler Gutessy:None         Diagnotic settings       2023-09-27703135107.73709712 INFO ExtRandler ExtRandler ExtRandler Gutessy:None         Diagnotic settings       2023-09-27703135107.73709712 INFO ExtRandler ExtRandler ExtRandler Gutessy:None         Compaction monitor (dissic)       2023-09-27703135107.7379712 INFO ExtRandler Gyroup monitoring is not supported on ['redhat', '8.4', erprise Linux']         Workbooks       eprise Linux']         2023-09-27703135107.7552922 INFO ExtRandler ExtRandler Corpup monitoring is not supported on ['redhat', '8.4', erprise Linux']         Voorbooks       erprise Linux']         2023-09-27703135107.7552927 INFO ExtRandler ExtRandler Corpup monitoring is not supported on ['redhat', '8.4', 'erprise Linux']         2023-09-27703135107.7565217 INFO ExtRandler ExtRandler Corpup monitoring is not supported on ['redhat', '8.4', 'erprise Linux']         2023-09-27703135107.77654172 INFO ExtRandler ExtRandler Corpup monitoring is not supported on ['redhat', '8.4', 'erprise Linux']         2023-09-27703135107.77654172 INFO ExtRandler ExtRandler Corpup monitoring is not supported on ['redhat', '8.4', 'erprise Linux']         2023-09-27703135107.77654172 INFO ExtRandler ExtRandler Corput terplate         4 Tasks (preview)       k': r252.255.255.'rFlags': '0x0007', 'Me
	Persource health       2023-09-27T03:35:07.8524192 INFO EnvHandler ExtHandler ExtHandler Successfully added Azure fabric firewall rules         Boot diagnostics       Chain INPUT (policy ACCEPT 0 packets, 0 bytes)       Freesonter (Deview)         Performance diagnostics       Chain FORMARD (policy ACCEPT 0 packets, 0 bytes)       Freesonter (Deview)         Reset password       Chain OUTPUT (policy ACCEPT 0 packets, 0 bytes)       Freesonter (Deview)         Reset password       Chain OUTPUT (policy ACCEPT 0 packets, 0 bytes)       source         Marks bytes target       prot opt in out       source         0       0 ACCEPT tcp * *       owner UID match         0       0 DROP tcp * *       ovner UID match         2023-09-27703:35:07.8598531 INFO EnvHandler ExtHandler Set block dev timeout: sda with timeout: 300       2023-09-27703:35:07.8598531 INFO EnvHandler ExtHandler ExtHandler Set block dev timeout: sda with timeout: 300         Red Hat Customer Portal       2023-09-27703:35:07.8598531 INFO EnvHandler ExtHandler Configure routes       2000

- Step (8): Log in to the serial console. To log in to the serial console, you must use the original password that was configured at the installation of the instance.
- Step (9): Use the **application reset-passwd ise iseadmin** command to configure a new GUI password for the iseadmin account.

### 2. Create New Public Key Pair for SSH Access

Through this task, you add additional key pairs to a repository. The existing key pair that was created at the time of Cisco ISE instance configuration is not replaced by the new public key that you create.

• Step (1): Create a new public key in Azure Cloud.

Home > SSH keys >		
Create an SSH key		
Basics Tags Review + create		
Creating an SSH key resource allows you to Learn more	manage and use public keys stored in Azure with Linux virtual machines.	
Project details		
Select the subscription to manage deployee your resources.	d resources and costs. Use resource groups like folders to organize and manage all	Select Resource group you created from D Drop Down List
Subscription * 💿	▼	
Resource group * 🛈	(New) resource-group-name	
Instance details		Create Key Pair Name
Region * 🕕	(US) East US	
Key pair name *	key-pair-name	
SSH public key source	Generate new key pair	
Clic	k Review + Create	
Review + create < Previe	Next : Tags >	

You get a pop-up window to select **Download private key and create resource** that downloads the SSH key as a .pem file.

# Generate new key pair

An SSH key pair contains both a public key and a private key. Azure doesn't store the private key. After the SSH key resource is created, you won't be able to download the private key again. Learn more of

## Download private key and create resource

Return to create an SSH key resource

• Step (2): To create a new repository to save the public key to, see <u>Azure Repos documentation</u>.

If you already have a repository that is accessible through the CLI, skip to step 3.

- Step (3): To import the new Public Key, use the command **crypto key import <public key filename>** repository <repository name>.
- Step (4): When the import is complete, you can log in to Cisco ISE via SSH using the new public key.