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Install Cisco ISE on OCI

Create a Cisco ISE instance in OCI

Follow these steps to create a Cisco ISE instance in OCI.

- Create compartments, custom images, shapes, virtual cloud networks, subnets, and site-to-site VPNs before starting this task.

  Create the virtual cloud networks and subnets in the same compartment as your Cisco ISE instance.

- When you create a virtual cloud network for Cisco ISE, we recommend that you choose the **Create VCN with Internet Connectivity** VCN type.

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Navigate to the Cisco ISE option on the OCI console

Follow these steps to navigate to the Cisco Identity Services Engine (ISE) option on the OCI console.

Step 1 Log in to your OCI account.
Step 2 In the search field, enter **Marketplace**.
Step 3 In the **Search for listings** search field, enter **Cisco Identity Services Engine (ISE)**.

Configure instance details

Follow these steps to add and configure Cisco ISE instance details on the OCI console.

Step 1 Click the Cisco ISE option that is of **Image** type.
Step 2 Click **Launch Instance**.
Step 3 In the **List Scope** area, from the **Compartment** drop-down list, choose a compartment.
Step 4 Click **Create Instance**.
Step 5 In the **Create Compute Instance** window, enter a name for your Cisco ISE instance.
Step 6 From the **Create in compartment** drop-down list, choose the compartment for the Cisco ISE instance.

Choose the compartment where you created other resources, such as virtual cloud networks and subnets for Cisco ISE.

Step 7 In the **Placement** area, click an availability domain.

The domain determines the compute shapes that are available to you.

Step 8 In the **Image and Shape** area:

a) From the **Image and Shape** area, click **Change Shape**.
b) From the **Shape Series** area, click **Intel**.

A list of available shapes is displayed.

c) Check the check box next to the required shape name and click **Select Shape**.

Step 9 In the **Networking** area:

a) In the **Primary Network** area, click the **Select existing virtual cloud network** radio button.
b) Choose a virtual cloud network from the drop-down list.
c) In the **Subnet** area, click **Select existing subnet**.
d) Choose a subnet from the drop-down list.

The system displays the subnets that are created in the same compartment.

Step 10 In the **Add SSH Keys** area, you can either generate a key pair or use an existing public key by clicking the corresponding radio button.

Step 11 In the **Boot Volume** area, check the **Specify a custom boot volume size** check box and enter the required boot volume in GB.

The minimum volume required for a Cisco ISE production environment is 600 GB. The default volume assigned to an instance is 250 GB if a boot volume is not specified in this step.

Note Use a customer-managed key for encryption in the **Encrypt this volume with a key that you manage** field. By default, Oracle-managed key is used. For more information on key creation, refer to Key Management.

Configure advanced options for a Cisco ISE instance

To configure the advanced options, follow these steps.

Step 1 Click **Show advanced options**.

Step 2 In the **Management** tab, under the **Instance metadata service** section, disable the **Require an authorization header** toggle.

Note Cisco ISE on OCI does not support IMDSv2.

Step 3 In the **Initialization script** tab, choose the **Paste cloud-init script** option.

Step 4 In the **Cloud-init script** text box, enter the required user data.

Step 5 In the **User data** field, enter the parameters in the correct format.

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. If you use incorrect syntax, Cisco ISE services might not start when you launch the image.

Follow these guidelines for the configurations that you submit through the **User data** field:

Table 1: Configuration guidelines for User Data field

Field Name	Field Description	Compliance and Behavior Changes
hostname	Enter a hostname that contains only alphanumeric characters and hyphen (-). The length of the hostname must be less than 19 characters and must not contain underscores (_).	Syntax must meet recommendations.

Field Name	Field Description	Compliance and Behavior Changes
primarynameserver	Enter the IP address of the primary name server. Only IPv4 addresses are supported.	From Cisco ISE release 3.4: • You can configure secondary and tertiary name servers during installation by using the **secondarynameserver** and **tertiarynameserver** fields.
secondarynameserver (From Cisco ISE release 3.4)	Enter the IP address of the secondary name server. Only IPv4 addresses are supported.	• If you leave the **secondarynameserver** field blank and use only the **tertiarynameserver** field, the Cisco ISE services will not start.
tertiarynameserver (From Cisco ISE release 3.4)	Enter the IP address of the tertiary name server. Only IPv4 addresses are supported.	Use only after secondarynameserver value is set.
dnsdomain	Enter the FQDN of the DNS domain. The entry can contain ASCII characters, numerals, hyphens (-), and periods (.).	Syntax must meet recommendations.
ntpserver (renamed as **primaryntpserver** from Cisco ISE release 3.4)	Enter the IPv4 address or FQDN of the NTP server that must be used for synchronization, for example, time.nist.gov.	From Cisco ISE release 3.4: • The **ntpserver** field name is changed to **primaryntpserver**. If you use **ntpserver**, Cisco ISE services will not start.
secondaryntpserver (From Cisco ISE release 3.4)	Enter the IPv4 address or FQDN of the secondary NTP server.	• If you leave the **secondaryntpserver** field blank and use only the **tertiaryntpserver** field, the Cisco ISE services will not start.
tertiaryntpserver (From Cisco ISE release 3.4)	Enter the IPv4 address or FQDN of the tertiary NTP server.	Use only after secondaryntpserver value is set.
timezone	Enter a timezone, for example, Etc/UTC. We recommend that you set all the Cisco ISE nodes to the Coordinated Universal Time (UTC) timezone, especially if your Cisco ISE nodes are installed in a distributed deployment. This procedure ensures that the timestamps of the reports and logs from the various nodes in your deployment are always synchronized.	Syntax must meet recommendations.

Field Name	Field Description	Compliance and Behavior Changes
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 contain or be the same as the username or its reverse (iseadmin or nimdaesi), cisco, or ocsic. The allowed special characters are @~*!,+=_-. .	Refer to "User Password Policy" section in the chapter "Basic Setup" of the Cisco ISE Administrator Guide for your release.
ersapi	Enter **yes** to enable ERS, or **no** to disallow ERS.	Syntax must meet recommendations.
openapi	Enter **yes** to enable OpenAPI, or **no** to disallow OpenAPI.	From Cisco ISE release 3.4, OpenAPI services are enabled by default. You don't have to specify OpenAPI-related options when launching an instance.
pxGrid	Enter **yes** to enable pxGrid, or **no** to disallow pxGrid.	Syntax must meet recommendations.
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 at launch. From Cisco ISE release 3.5, pxGrid Cloud can be enabled only from Cisco ISE Cisco ISE GUI. Therefore, this field is not included in the user data.

Step 6 Click **Create**.

It takes about 30 minutes for the instance to be created and available for use. The Cisco ISE instance is listed in the **Instances** page.

User data parameters

Field	Format	Cisco ISE release 3.1	Cisco ISE release 3.2	Cisco ISE release 3.3	Cisco ISE release 3.4	Cisco ISE release 3.5
hostname	hostname=<hostname of Cisco ISE>	Supported	Supported	Supported	Supported	Supported

Field	Format	Cisco ISE release 3.1	Cisco ISE release 3.2	Cisco ISE release 3.3	Cisco ISE release 3.4	Cisco ISE release 3.5
primarynameserver	primarynameserver=<IPv4 address> (primarynameserver=<IPv6 address> supported for AWS from Cisco ISE release 3.5)	Supported	Supported	Supported	Supported	Supported Cisco ISE release 3.5 and later support IPv6 addresses in AWS deployments.
secondarynameserver	secondarynameserver=<IPv4 address> (secondarynameserver=<IPv6 address> supported for AWS from Cisco ISE release 3.5)	Not supported	Not supported	Not supported	Supported. You must enter a value in this field if you want to use the tertiarynameserver field.	Supported. You must enter a value in this field if you want to use the tertiarynameserver field. Cisco ISE release 3.5 and later support IPv6 addresses in AWS deployments.
tertiarynameserver	tertiarynameserver=<IPv4 address> (tertiarynameserver=<IPv6 address> supported for AWS from Cisco ISE release 3.5)	Not supported	Not supported	Not supported	Supported. You must first enter a value in the secondarynameserver field if you want to use this field.	Supported. You must first enter a value in the secondarynameserver field if you want to use this field. Cisco ISE release 3.5 and later support IPv6 addresses in AWS deployments.
dnsdomain	dnsdomain=<example.com>	Supported	Supported	Supported	Supported	Supported

Field	Format	Cisco ISE release 3.1	Cisco ISE release 3.2	Cisco ISE release 3.3	Cisco ISE release 3.4	Cisco ISE release 3.5
ntpserver	ntpserver=<IPv4 address or FQDN of the NTP server> (ntpserver=<IPv6 address or FQDN of the NTP server> supported for AWS from Cisco ISE release 3.5)	Supported	Supported	Supported	Not supported. This field is replaced by primaryntpserver in Cisco ISE release 3.4 and later. Using ntpserver may prevent Cisco ISE services from starting.	Not supported. Use primaryntpserver instead.
primaryntpserver	primaryntpserver=<IPv4 address or FQDN> (primaryntpserver=<IPv6 address or FQDN of the NTP server> supported for AWS from Cisco ISE release 3.5)	Not supported	Not supported	Not supported	Supported. This field replaces ntpserver in Cisco ISE release 3.4 and later.	Supported. Cisco ISE release 3.5 and later support IPv6 addresses in AWS deployments.
secondaryntpserver	secondaryntpserver=<IPv4 address or FQDN> (secondaryntpserver=<IPv6 address or FQDN of the NTP server> supported for AWS from Cisco ISE release 3.5)	Not supported	Not supported	Not supported	Supported. You must enter a value in this field if you want to use the tertiaryntpserver field.	Supported. You must enter a value in this field if you want to use the tertiaryntpserver field. Cisco ISE release 3.5 and later support IPv6 addresses in AWS deployments.

Field	Format	Cisco ISE release 3.1	Cisco ISE release 3.2	Cisco ISE release 3.3	Cisco ISE release 3.4	Cisco ISE release 3.5
tertiaryntpserver	tertiaryntpserver=<IPv4 address or FQDN> (tertiaryntpserver=<IPv6 address or FQDN of the NTP server> supported for AWS from Cisco ISE release 3.5)	Not supported	Not supported	Not supported	Supported. You must first enter a value in the secondaryntpserver field if you want to use this field.	Supported. You must first enter a value in the secondaryntpserver field if you want to use this field. Cisco ISE release 3.5 and later support IPv6 addresses in AWS deployments.
timezone	timezone=<timezone>	Supported	Supported	Supported	Supported	Supported
username	username=<admin>	Supported (example: <admin>) Supported from Cisco ISE release 3.1 patch 1.	Not supported. iseadmin is the default user.	Not supported. iseadmin is the default user.	Not supported. iseadmin is the default user.	Not supported. iseadmin is the default user.
username	username=iseadmin	Not mandatory	Mandatory	Mandatory	Mandatory	Mandatory
password	password=<password>	Supported	Supported	Supported	Supported	Supported
ersapi	ersapi=<yes/no>	Supported	Supported	Supported	Supported	Supported
openapi	openapi=<yes/no>	Supported	Supported	Supported	OpenAPI is enabled by default.	OpenAPI is enabled by default.
pxGrid	pxGrid=<yes/no>	Supported	Supported	Supported	Supported	Supported
pxgrid_cloud	pxgrid_cloud=<yes/no>	Not supported	Not supported	Supported. This is only supported for Cisco ISE releases 3.3 and 3.4.	Supported. This is only supported for Cisco ISE releases 3.3 and 3.4.	Not supported. From Cisco ISE release 3.5, pxGrid Cloud can be enabled only from the Cisco ISE GUI.

Parameter syntax requirements

When specifying user data parameters for Cisco ISE on Cloud, do not enclose any attribute or value in single or double quotes. You must enter all values in plain text, without quotes.

Invalid entry	Valid entry
hostname="i34a"	hostname=i34a
primarynameserver="9.9.9.9"	primarynameserver=9.9.9.9
dnsdomain="example.com"	dnsdomain=example.com
primaryntpserver="north-america.pool.ntp.org"	primaryntpserver=north-america.pool.ntp.org

From Cisco ISE release 3.3, validation output messages are displayed in the serial console. These messages are visible only if the serial console is open at the time the output is generated.

Create a Cisco ISE instance in OCI using a Terraform Stack file

Follow these steps to create a Cisco ISE instance in OCI using a Terraform Stack file.

Create the resources needed for your Cisco ISE instance, such as SSH keys, Virtual Cloud Network (VCN), subnets, network security groups, and other required components in OCI. For information about using Terraform in OCI, refer to the Oracle documentation.

Step 1 Create a Cisco ISE stack in OCI, on page 8.

Step 2 Configure variables for Cisco ISE instance, on page 8.

Step 3 Review configurations and create a Cisco ISE instance in OCI, on page 10.

Create a Cisco ISE stack in OCI

Follow these steps to create a Cisco ISE stack in OCI.

Step 1 Log in to your OCI account.

Step 2 Use the search field to search for **Marketplace**.

Step 3 In the **Search for listings** field, enter **Cisco Identity Services Engine (ISE)**.

Step 4 Click **Cisco Identity Services Engine (ISE) Stack**.

Step 5 In the new window that is displayed, click **Create Stack**.

Step 6 In the **Stack Information** window:

a) Click **My Configuration**.

b) From the **Create in Compartment** drop-down list, select the compartment in which you want to create the Cisco ISE instance.

Configure variables for Cisco ISE instance

Follow these steps to configure the variables for your Cisco ISE instance.

Step 1 In the **Configure Variables** page:

a) In the **Hostname** field, enter the hostname.

b) From the **Shape** drop-down list, choose the OCI shape you want to use.

If you select **VM.Optimized3.Flex**, choose the required value from the **Flex OCPUs** drop-down list. The **Flex Memory in GB** field displays the corresponding value. For the other shapes, these values are preconfigured and are not displayed in the stack form.

c) The **Boot Volume Size** field automatically displays the required value based on the shape chosen in the previous step.

   1. In the **Vault** field, choose the vault for boot volume encryption keys.
   2. In the **Volume Encryption Key** field, choose the key to encrypt the boot volume.

   From Cisco ISE release 3.3, we recommend you to use Customer Managed Key for encryption under **Volume Encryption Key** and **Vault** fields. By default, **Oracle Managed Key** is used. For more information on key creation, refer to Key Management.

d) In the **SSH Key** area, upload an SSH key file or paste an SSH key code.
e) From the **Time zone** drop-down list, choose the time zone.
f) From the **Availability Domain** drop-down list, choose an option from the list of domains in your region.
g) From the **Virtual Cloud Network** drop-down list, choose an option from the list of VCNs in the compartment that you selected earlier.
h) From the **Subnet** drop-down list, choose an option from the list of subnets associated with the selected VCN.
i) (Optional) From the **Network Security Group** drop-down list, select the security group associated with the component you selected earlier.

   The **Assign Public IP Address** check box is checked by default. You can uncheck the check box if you want to assign only private IP addresses to your Cisco ISE instance.

j) In the **Private IP Address** field, enter an IP address within the range defined for the selected subnet.

   If this field is left blank, the OCI DHCP server assigns an IP address to Cisco ISE.

k) In the **DNS Name** field, enter the domain name.
l) In the **Name Server** field, enter the IP address of the name server.

   From Cisco ISE release 3.4,

   - the **Name Server** field name is changed to **Primary Name Server**.
   - the IP address of the secondary name server can be entered in the **Secondary Name Server** field.
   - the IP address of the tertiary name server can be entered in the **Tertiary Name Server** field. To use this field and to launch the application successfully, you must not leave the **Secondary Name Server** field blank.

m) In the **NTP Server** field, enter the IP address or hostname of the NTP server. Your entry is not validated on input.

   From Cisco ISE release 3.4,

   - the **NTP Server** field name is changed to **Primary NTP Server**.
   - the IP address or hostname of the secondary NTP server can be entered in the **Secondary NTP Server** field. Your entry is not validated upon input.
   - the IP address or hostname of the tertiary NTP server can be entered in the **Tertiary NTP Server** field. Your entry is not validated upon input. To use this field and to launch the application successfully, you must not leave the **Secondary NTP Server** field blank.

n) From the **ERS** drop-down list, choose **Yes** or **No**.

o) From the **Open API** drop-down list, choose **Yes** or **No**.

p) From the **pxGrid** drop-down list, choose **Yes** or **No**.

q) From the **pxGrid Cloud** drop-down list, choose **Yes** or **No**. From Cisco ISE release 3.5, pxGrid Cloud can be enabled only from UI. Therefore, this field is unavailable.

r) In the **Password** and **Re-enter the Password** fields, enter a password for Cisco ISE. The password must comply with the Cisco ISE password policy and contain a maximum of 25 characters.

Step 2 Click **Next**.

In the **Review** window, a summary of all the configurations defined in the stack is displayed.

Review configurations and create a Cisco ISE instance in OCI

Follow these steps to review the configurations you have created so far and to create the Cisco ISE instance.

Step 1 Review the information and click **Previous** to make changes, if any.

Step 2 In the **Run Apply on the created stack?** area, check the **Run Apply** check box to build the stack when you click **Create**.

If you do not select **Run Apply**, the stack information is saved when you click **Create**. You can choose the stack from the **Stacks** window later and click **Apply** to execute the build.

Step 3 Click **Create**.

Step 4 Navigate to the **Instances** window in OCI.

The instance is listed with the hostname that you provided in the stack form. Click the hostname to view the configuration details.

The Cisco ISE instance will be ready for launch in OCI in about 30 minutes.