Oracle® Cloud

Administering Oracle Visual Builder

Release 25.10.1
G45540-01
October 2025

Oracle Cloud Administering Oracle Visual Builder, Release 25.10.1

G45540-01

Primary Author: Oracle Corporation

Contents

4 View and Manage the Visual Builder Instance

5 Administrative Tasks

6 Reference

About This Content

Administering Visual Builder describes how to create a Visual Builder instance on Oracle Cloud Infrastructure and set it up for developing web and mobile applications.

Audience

This document is intended for Oracle Visual Builder administrators who administer and set up the service.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Resources

See these Oracle resources:

- Oracle Public Cloud

  `http://cloud.oracle.com`
- About Oracle Visual Builder in *Developing Applications with Oracle Visual Builder*
- Oracle Cloud Infrastructure Documentation

Conventions

The following text conventions are used in this document.

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Get Started with Oracle Visual Builder

Oracle Visual Builder is a cloud-based software development Platform as a Service (PaaS) and a hosted environment for your application development infrastructure. It provides an open-source standards-based solution to develop, collaborate on, and deploy applications within Oracle Cloud. To use Visual Builder you should be familiar with the tools available for building your applications.

What is Oracle Visual Builder?

Oracle Visual Builder is an intuitive development experience on top of a development and hosting platform that empowers you to create engaging responsive applications. Focusing on ease of use and a visual development approach, it provides an easy way for you to create applications that are hosted in Oracle's secure and scalable cloud platform.

Visual Development Experience

Visual Builder provides simple but powerful visual development tools to create responsive apps—all without the need to install any additional software. This rich set of visual tools help you quickly design your app by dragging and dropping UI components and customizing their attributes to define behavior. While these tools lend themselves to low-code developers, experienced developers can just as easily access the underlying source code, even extend it using standard HTML5, JavaScript, and CSS techniques for complex needs.

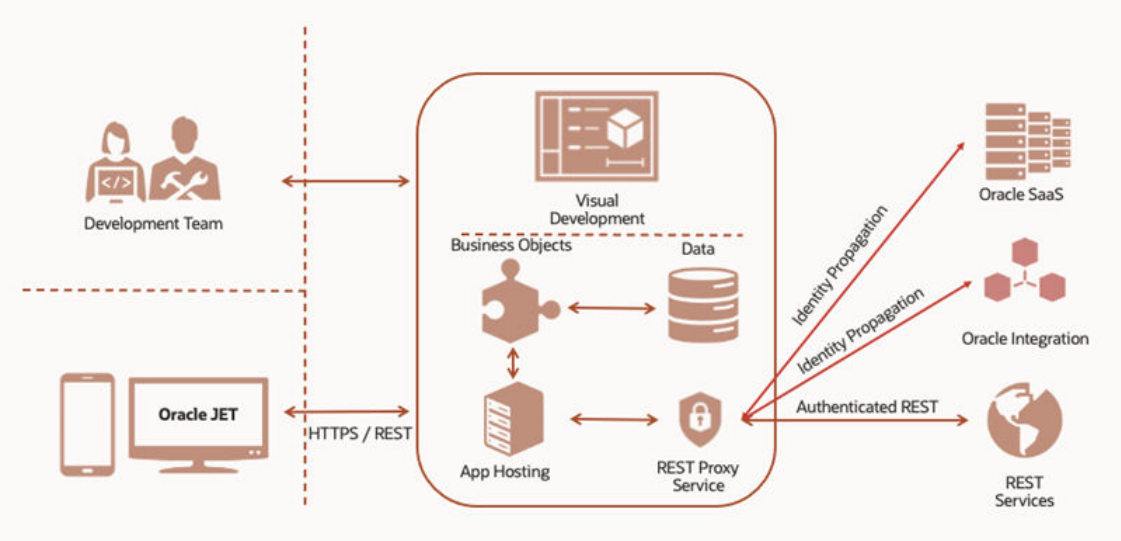
Easy Access to Data

Visual Builder makes it easy to access your app's data through REST-based services. So you can create reusable business objects to implement your app's business logic and store its data, which can then be managed through REST endpoints that Visual Builder generates for you. Or you can pick data objects exposed by Oracle SaaS or Oracle Integration applications in an integrated catalog of REST services. You can also access data from any external REST service with just a few clicks.

Development and Hosting Platform

Visual Builder is a complete development tool as well as a hosting platform, which means you can manage your application's lifecycle right from development to test and final publishing. Version management and data migration are built into an app's lifecycle, making it easy for you to stage and publish your app and manage its data in every phase.

What's more, Visual Builder is a managed service. This means that once you provision a Visual Builder instance, there's very little you need to do beyond developing and publishing your app. Everything the app needs to run successfully (including a web server to host your application and to secure data access) is taken care of. Thus, as a development team, you can take your app from development to stage and publish it in a very short time. Here's a high-level walkthrough of how you'd go about developing an app using Visual Builder:



Your Visual Builder instance (represented by the square in the middle of the image) provides capabilities for your visual application both as a *visual development* tool (at the top) as well as an *app hosting* platform with a built-in web server (indicated by server-side components at the bottom):

- As a visual development tool, Visual Builder provides access to UI components and WYSIWYG interfaces that leverage the open-source Oracle JavaScript Extension Toolkit (JET). This visual environment, known as the Designer, features several visual editors that a development team can use to collaboratively build rich UIs that span multiple devices. It also supports Redwood, the Oracle standard for user experience, that lets you develop apps that provide the same look and feel as apps delivered from Oracle.

  Within this environment, you can develop browser-based responsive apps, including progressive web apps, which combine the on-device mobile experience with a web app's ease of distribution—eliminating the need to download updates from app stores.

- As an app hosting platform, Visual Builder provides various capabilities to publish and run your app in the cloud, including an embedded database that stores your app's *business objects*—essentially Oracle tables with business logic exposed through REST APIs—and their *data*.

  It also includes a *REST proxy service* to manage access to external REST endpoints. When your app's data comes from REST APIs in Oracle catalogs such as Oracle SaaS or Oracle Integration, the proxy service uses server-side integration with the Oracle Identity Cloud Service (IDCS) to manage authentication and authorization (by default) through *identity propagation*. When your app's data comes from other REST endpoints, *authenticated REST* mechanisms are used to manage credentials.

  Together, these components provide the resources required to host your visual app and manage its data.

When your apps are published, they become available to your users in the cloud, from any desktop or mobile device, with communication to the app's underlying JET components secured over HTTPS and REST.

How to Begin with Visual Builder Subscriptions

Here's a summary of the key steps to help Oracle Cloud account administrators get started with Visual Builder:

1. Sign up for a free credit promotion or purchase a subscription. See Request and Manage Free Oracle Cloud Promotions or Buy an Oracle Cloud Subscription in *Oracle Cloud Infrastructure Documentation*.
2. Sign in to your Cloud Account. See Signing In to the OCI Console.
3. Create accounts for your users and assign them appropriate privileges and roles. See Managing Users, User Accounts, and Roles in *Managing and Monitoring Oracle Cloud*.

Availability

Visual Builder Generation 2 is currently available in the regions listed below.

Geography	Region Location	Region Key
APAC	Australia East (Sydney)	SYD
APAC	Australia Southeast (Melbourne)	MEL
APAC	South Korea North (Chuncheon)	YNY
APAC	South Korea Central (Seoul)	ICN
APAC	Japan Central (Osaka)	KIX
APAC	Japan East (Tokyo)	NRT
APAC	India West (Mumbai)	BOM
APAC	India South (Hyderabad)	HYD
APAC	Singapore (Singapore)	SIN
EMEA	Switzerland North (Zurich)	ZRH
EMEA	Germany Central (Frankfurt)	FRA
EMEA	Netherlands Northwest (Amsterdam)	AMS
EMEA	Saudi Arabia West (Jeddah)	JED
EMEA	UAE Central (Abu Dhabi)	AUH
EMEA	UAE East (Dubai)	DXB
EMEA	UK South (London)	LON
EMEA	UK West (Newport)	CWL
EMEA	Israel Central (Jerusalem)	MTZ
EMEA	France Central (Paris)	CDG
EMEA	France South (Marseille)	MRS
EMEA	South Africa Central (Johannesburg)	JNB
EMEA	Italy Northwest (Milan)	LIN
EMEA	Spain Central (Madrid)	MAD
EMEA	Serbia Central (Jovanovac)	BEG
EMEA	Sweden Central (Stockholm)	ARN
LAD	Brazil East (Sao Paulo)	GRU
LAD	Brazil Southeast (Vinhedo)	VCP
LAD	Chile Central (Santiago)	SCL
LAD	Mexico Central (Queretaro)	QRO
LAD	Mexico Northeast (Monterey)	MTY
North America	US East (Ashburn)	IAD
North America	US Midwest (Chicago)	ORD
North America	US West (San Jose)	SJC
North America	US West (Phoenix)	PHX
North America	Canada Southeast (Toronto)	YYZ

Geography	Region Location	Region Key
North America	Canada Southeast (Montreal)	YUL

Service Limits

When you sign up for Oracle Cloud Infrastructure, a set of service limits is configured for your tenancy. The service limit is the quota or allowance set on a resource. Review the following service limits for Visual Builder Generation 2 resources.

Resource	Service Limit
Visual Builder instance count	200 instances per region

To learn more about service limits, see Service Limits.

Visual Builder for SaaS

Visual Builder for Oracle SaaS, a streamlined version of Visual Builder, gives you the features and benefits of Visual Builder with a focus on SaaS.

You might see Visual Builder instances in your environment that were provisioned as part of an Oracle Cloud Application that your organization licensed. These specific Visual Builder for SaaS instances come with specific restrictions: Every Visual Builder application you create must use at least one business object or API call from an Oracle Cloud SaaS application, and every process application you create must include at least one business object or API call from an Oracle Cloud SaaS application.

2

Create and Set Up Your Visual Builder Instance

Like other Oracle Cloud services, you must create an instance of Oracle Visual Builder before you can start using it.

You can create Visual Builder instances in any Oracle data region listed in Availability. To create and set up an instance, you must be assigned specific roles.

Confirm You Have the Required Roles

If you are the user that initially signed up and purchased universal credits for Oracle Cloud, you automatically have the necessary service entitlement roles to manage Oracle Visual Builder instances. Otherwise, the correct roles must be explicitly assigned to your user account to manage Oracle Visual Builder instances.

To manage Oracle Visual Builder instances, ensure that your user account is assigned the required roles and to the required groups.

You must be assigned this role:	To ...
Cloud Account Administrator	Set up Oracle Cloud Infrastructure (OCI) compartments and buckets. If you're not an account administrator, contact the administrator to add you to the **OCI_Administrators** IDCS group.
Identity Domain Administrator or User Administrator	Add users and assign IDCS roles and groups. If you're not an administrator, make sure that your OCI group is assigned a policy like this: `Allow group MyGroup to inspect identity-providers in tenancy`
AUTONOMOUS_VISUALBUILDER_ENTITLEMENT_ADMINISTRATOR (Oracle Visual Builder entitlement administrator role in IDCS)	Manage the Visual Builder instance. If you're not the account administrator or the IDCS administrator, contact the IDCS admin to assign this IDCS role to you. If you're not assigned this role you won't see the user interface to provision a Visual Builder instance.

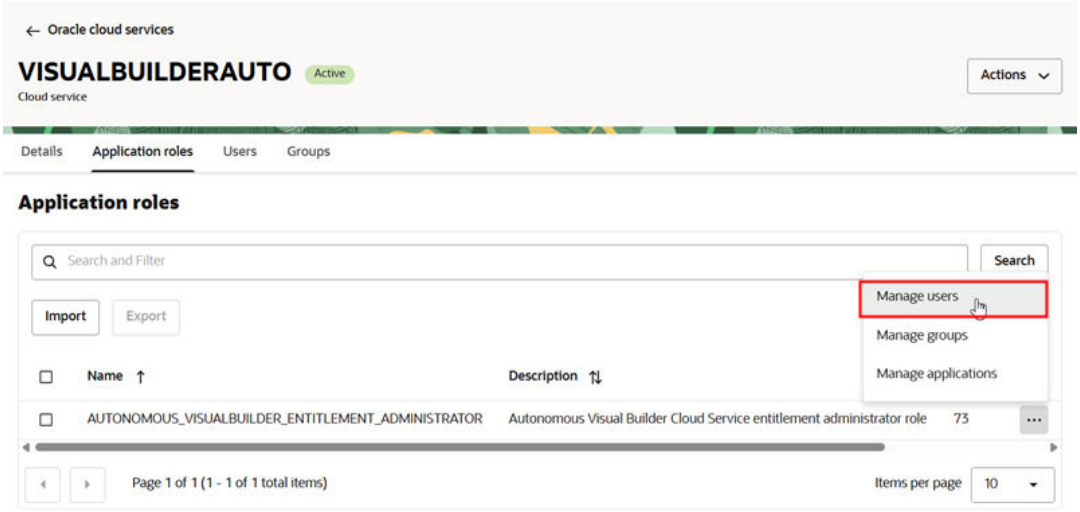
Assign the entitlement administrator role to a user

If you are not sure you have the correct administrator role, or if you want to assign the correct role to a user, log in to Oracle Identity Cloud Services to manage the service's roles. To do this, you'll need to have the Identity Domain Administrator or User Administrator role assigned to you.

To assign the `AUTONOMOUS_VISUALBUILDER_ENTITLEMENT_ADMINISTRATOR` role to a user.

1. Open the OCI Console.

2. In the upper-left corner, select ☰ to open the navigation menu, select **Identity & Security**, and then under **Identity**, select **Domains**.
3. On the Domains details page, select **OracleIdentityCloudService**.
4. Select the **Oracle cloud services** tab, and then select **VISUALBUILDERAUTO** in the list of services.
5. Select the **Application roles** tab, and then select **Manage users** from the **Actions** menu for the `AUTONOMOUS_VISUALBUILDER_ENTITLEMENT_ADMINISTRATOR` role.



6. Click **Assign users** in the Manage user assignments panel.
   The manage user assignments panels displays a list of users that have already been assigned the role.
7. Select the users you want to assign the role to. Click **Assign**.

Understand Your Responsibilities as an Administrator

This guide is directed to administrators provisioning, creating, and configuring Visual Builder instances and identities on Oracle Cloud Infrastructure.

Provisioning and administering Visual Builder typically involves the following responsibilities. Note that these tasks could be done by the same person (the tenant administrator) or by different people.

Responsibility	See
Create required OCI resources for the Visual Builder instance	Create Required OCI Resources
Create a Visual Builder instance in an OCI compartment	Create the Visual Builder Instance
Add users and groups	About Setting Up Users and Groups
Manage the Visual Builder instance, such as start or stop the instance, or configure a custom endpoint	View and Manage the Visual Builder Instance

Signing In to the OCI Console

Signing into the OCI Console differs depending on whether or not your cloud account uses identity domains.

> **Note**
>
> If you are not sure if your cloud account uses identity domains, see About Setting Up Users and Groups.

Signing In to the Console in Cloud Accounts That Use Identity Domains

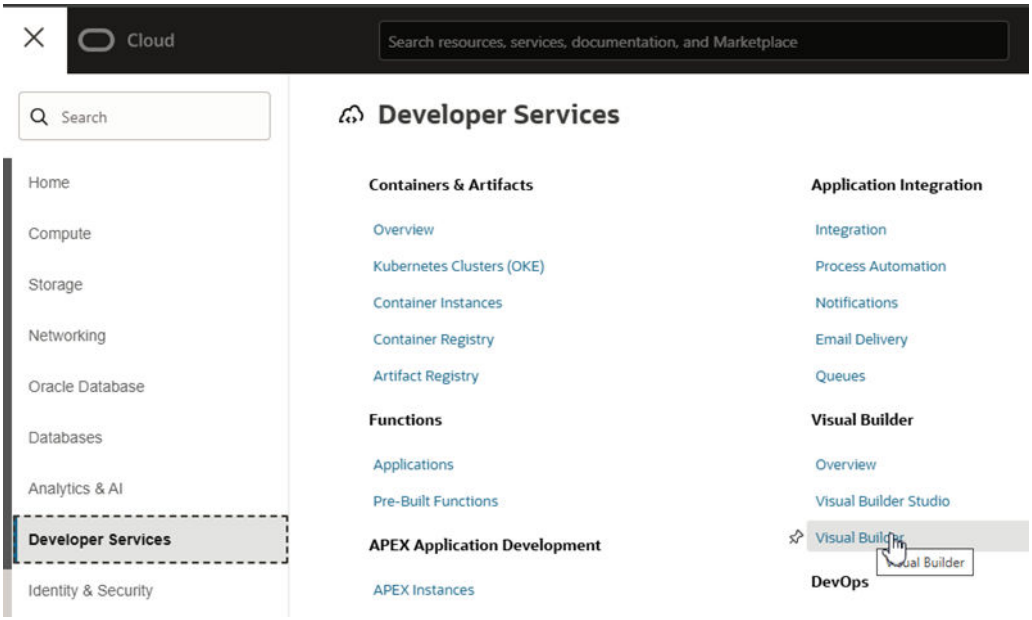
If your cloud account uses identity domains, you sign in to the OCI Console as a user configured in Oracle Cloud Infrastructure Identity and Access Management (IAM).

1. Go to http://cloud.oracle.com.
2. Enter your cloud account name and click **Next**.
3. Select the **default** domain.

4. Enter the user name and password provided in the welcome email, and click **Sign In**.

   The OCI Console is shown.

5. Explore categories and options in the navigation menu.
   - Open the navigation menu and click **Developer Services**. Under **Visual Builder**, click **Visual Builder**. Use this landing page to access, create, and manage Visual Builder instances.



Click **pin** to save the selection under the **Pinned** category on the Home page.

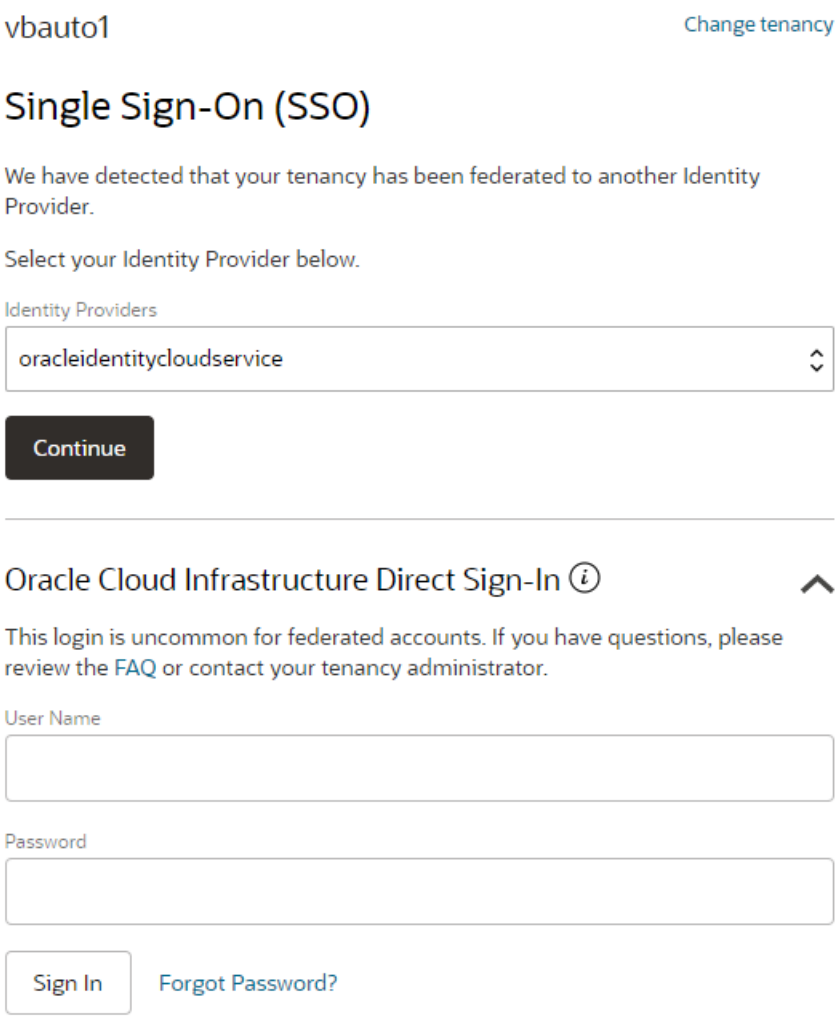
- Open the navigation menu and click **Identity & Security**. Under **Identity**, click identity links to to create compartments and domains if needed, and to perform tasks related to identity management. See Setting Up Users and Groups.

Signing In to the Console in Cloud Accounts That Do Not Use Identity Domains

If your cloud account does not use identity domains, you sign in to the OCI Console as a user federated through Oracle Identity Cloud Service. A federated environment enables business partners to integrate in the identity management realm by providing a mechanism for users to share identity information across respective security domains.

1. Go to http://cloud.oracle.com.
2. Enter your cloud account name and click **Next**.

   Identity options are displayed.



- The *upper* portion displays federated sign in (Visual Builder is federated with IDCS).
- The *lower* portion displays native Identity and Access Management (IAM) options standard to Oracle Cloud Infrastructure.

> **Note**
>
> If no federated sign in options are displayed in the upper portion, your tenancy requires manual federation. Sign in as an administrator using native IAM credentials and complete federation, including group mapping. See Understanding Federation and Manually Federating Your Tenancy.

Under Single Sign-On (SSO) options, note the identity provider selected in the **Identity Providers** field and click **Continue**.

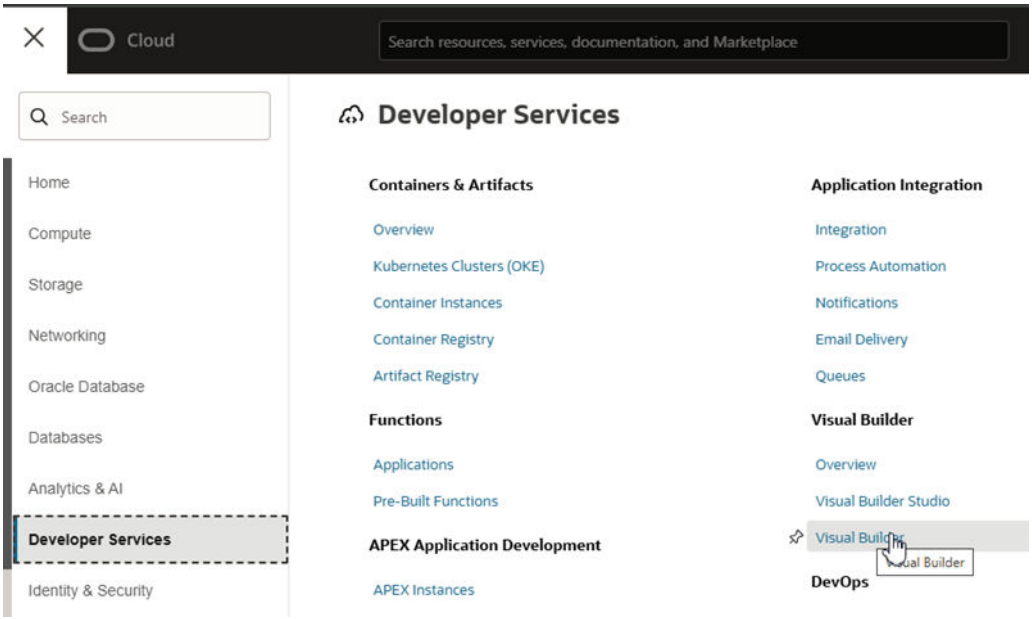
The IDCS sign in screen is shown.

3. Enter the user name and password provided in the welcome email, and click **Sign In**.

   The OCI Console is displayed.

4. Explore categories and options in the navigation menu.

- Open the navigation menu and click **Developer Services**. Under **Visual Builder**, click **Visual Builder**. Use this landing page to access, create, and manage Visual Builder instances.



  Click **pin** to save the selection under the **Pinned** category on the Home page.

- Open the navigation menu and click **Identity & Security**. Under **Identity**, click identity links to to create compartments if needed, and to perform tasks related to identity management. See Setting Up Users and Groups.

Create Required OCI Resources

Visual Builder instances use the Oracle Cloud Infrastructure (OCI) as their underlying infrastructure. If you're the tenant administrator, create the required OCI resources Visual Builder instances need.

Perform the following tasks to create the OCI resources typically required by a Visual Builder instance:

1. Create a compartment.
   To create an instance, you must first create a compartment. You can use the `root` compartment and the tenancy user that was created when the OCI account was created, but it's recommended to create a dedicated compartment to host the Visual Builder instance.

   For details, see Create a Compartment for Visual Builder.

   If you want someone else to create the compartment and other OCI resources, add the user to the `OCI_Administrators` group. See Add an Existing User to the OCI_Administrators IDCS Group.

2. Add users who can manage the Visual Builder instance.
   If you want other non-admin users to create and manage Visual Builder instances, assign them the required OCI policies. Skip this step if you plan to create and manage the instances yourself.

   For details, see Create Oracle Cloud Infrastructure Groups and Policies.

3. Map a custom endpoint to the Visual Builder instance use it to access the instance instead of the original URL generated in the OCI Console.
   For details, see Create and Configure a Custom Endpoint.
4. Set Visual Builder instance quotas.
   For details, see Set Instance Quotas for a Compartment.

Add an Existing User to the OCI_Administrators IDCS Group

If you're a tenant administrator and plan to create the OCI resources yourself, skip this procedure.

1. On the OCI console, in the upper-left corner, click **Navigation Menu** ☰.
2. Select **Identity & Security** and then under **Identity**, select **Federation**.
3. Select the **OracleIdentityCloudService** link to view the default Oracle Identity Cloud Service identity federation.
4. Select **Groups** from the **Resources** options.
5. Click the `OCI_Administrators` group.
6. Click **Add to IDCS Group**.
7. In the Add User to IDCS Group dialog box, select the user and click **Add**.

Create a Compartment for Visual Builder

To create a compartment, you must be either a tenant administrator or a user in the OCI_Administrators IDCS group.

1. On the OCI console, in the upper-left corner, click **Navigation Menu** ☰.
2. Select **Identity & Security** and then under **Identity**, select **Compartments**.
3. To create the compartment in the tenancy (root compartment), click **Create Compartment**.
4. In the Create Compartment dialog box, fill in the fields and click **Create Compartment**.

   To learn more about compartments, see Managing Compartments.

Set Instance Quotas for a Compartment

As you can create multiple Visual Builder instances in a compartment, you should set a limit on number of instances your users can create.

1. Sign in to the OCI Console.
2. Open the navigation menu and click **Governance & Administration**. Under Tenancy Management, click **Quota Policies**.
3. Click **Create Quota**.
4. In the Create Quota window, enter a name (for example, instanceCreationQuota) and a description.
5. Complete the **Policy Statements** field.

   The statement to create a quota follows the standard policy syntax. For details, see Quota Policy Syntax. As an example, to set a quota limit of 10 instances for the compartment named MyCompartment, enter the following statement:

```
Set visualbuilder quota instance-count to <number_of_instances> in compartment
<compartment-name>
```

Here's an example:

```
Set visualbuilder quota instance-count to 10 in compartment MyVBCompartment
```

Where:

- `visualbuilder`: Is the family name for Visual Builder.
- `instance-count`: Is the quota name.

6. Click **Create**.

   The policy statement is validated and any syntax errors are displayed.

Create the Visual Builder Instance

You can create multiple Visual Builder instances in an OCI compartment.

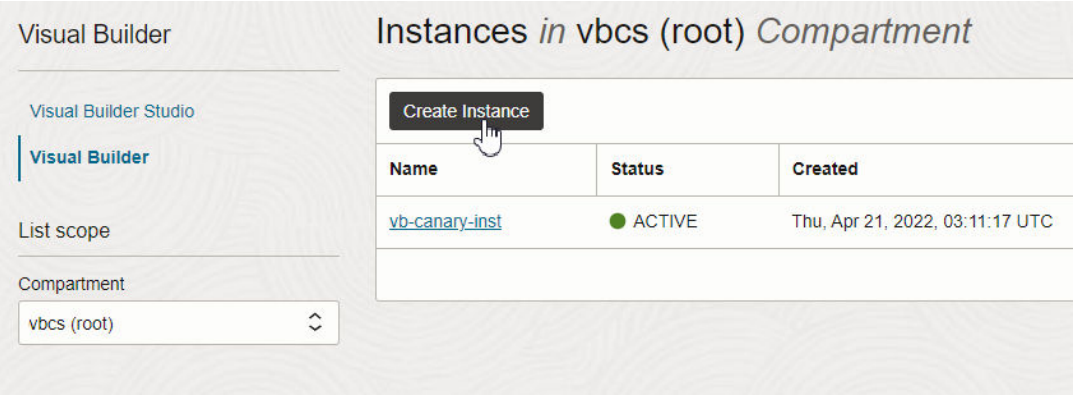
If you've registered a custom hostname for the Visual Builder instance and saved the SSL certificate in an OCI Vault, then get the vault's compartment name, vault's name, and the secret key. You'll need them while creating the instance. If you haven't configured a custom endpoint, you can map it with the Visual Builder instance later.

> **Note**
>
> If you want to create an instance that uses a private endpoint, see Prerequisite Steps for Configuring a Private Endpoint.

To create a Visual Builder instance:

1. On the Visual Builder Instances page, click **Create Instance**.

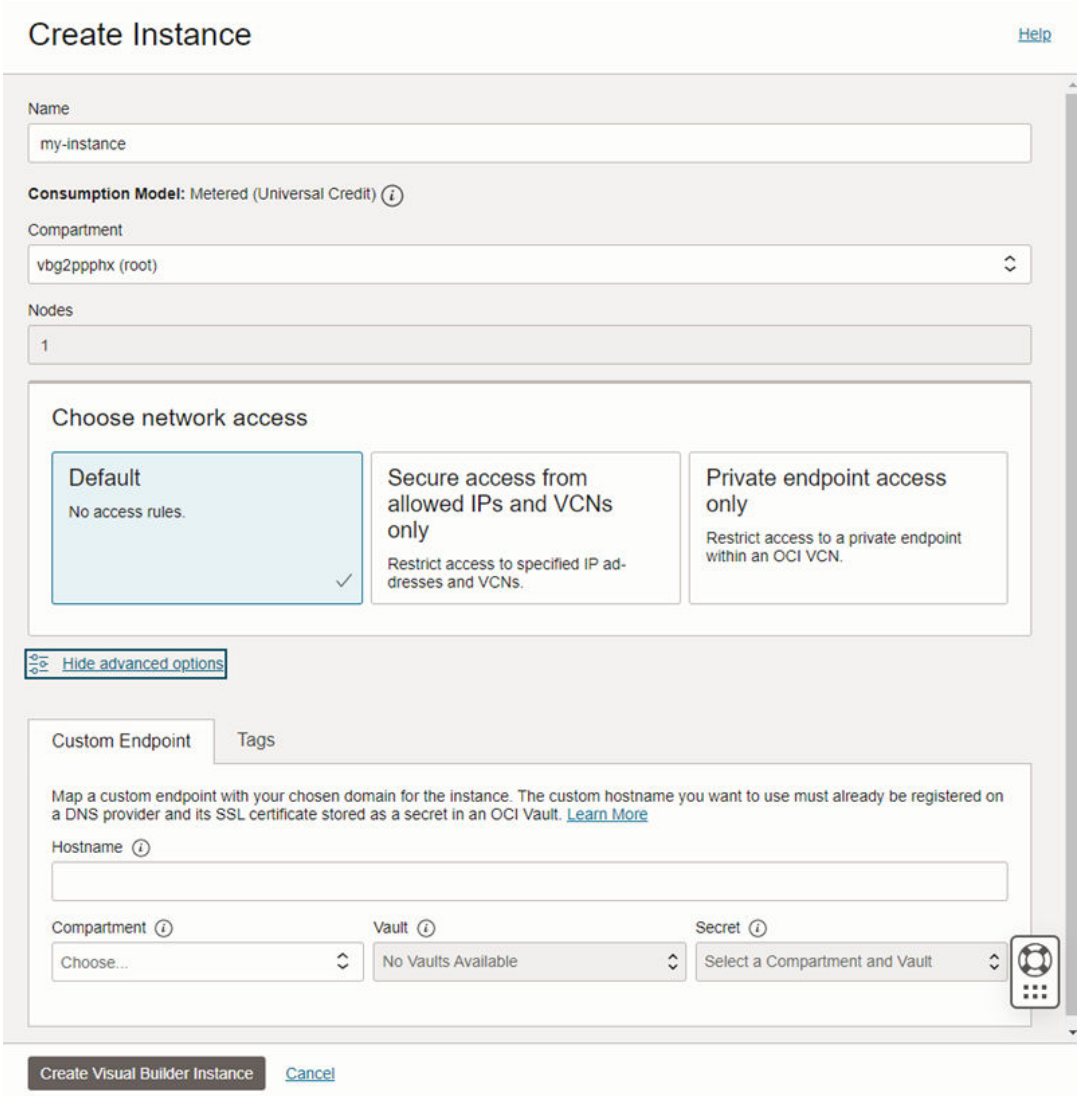
   If you need help finding the Instances page, see Signing In to the OCI Console.



> **Note**
>
> - Before you enter the new instance's details, check if you see the **Domain** field. If you do, it indicates that you are signed in as a non-federated user. Sign out and sign in again as a federated user, and restart the creating an instance process.
> - If you see an IDCS Access token field, you must provide the token to create the instance.
>
> An IDCS access token is required, and it is typically retrieved automatically when you log in. However, if the login credentials you used do not have sufficient privileges to retrieve the access token, you will need to enter the access token manually in the field.

2. In the Create Instance window, enter the Visual Builder instance's name in the **Name** field.
3. In the **Compartment** field, select the compartment you want to create the Visual Builder instance in.

   If you haven't yet created a compartment to host the instance, see Create a Compartment for Visual Builder.
4. Select the instance's network access.
   - Select **Default** to create an instance with unrestricted network access.
   - Select **Secure access from allowed IPs and VCNs only** to create an instance that uses allow lists to restrict access. You can modify the instance later to allow unrestricted access. See Restrict Access to the Instance With an Allowlist.
   - Select **Private endpoint access only** to create an instance with access restricted to a specific OCI VCN. See Set the Network Access For a Private Endpoint and Prerequisite Steps for Configuring a Private Endpoint.
5. (Optional) Map a custom endpoint to the instance in the Custom endpoint pane.



a. To map a custom endpoint to the Visual Builder instance, enter the hostname details in the **Custom endpoint** pane. If you haven't configured a hostname, you can configure it later and then map it to the instance later. See Create and Configure a Custom Endpoint.

   i. In **Hostname**, enter the custom hostname.
   The hostname must be registered on a DNS provider.

   ii. In **Compartment**, select the OCI compartment that contains your certificate vault.

   iii. In **Vault**, enter the OCI Vault's name.

   iv. In **Secret**, select the secret you used to save the SSL certificate.

> **Note**
>
> If you configured a hostname for the custom endpoint using WAF, you only need to provide the hostname. You do not need to supply the Compartment, Vault, or Secret.

After you've created the instance, update the custom endpoint DNS record to the original instance hostname. As a best practice, update the CNAME with the hostname, or update the A record using the IP address, which you can obtain by using dig on the hostname.

b. In **Tags**, enter a key and optional value. Tags enable you to track resources within your tenancy. See Resource Tags.

6. Click **Create visual builder instance**.

The instance's Consumption Model is set automatically, according to the model enabled for the tenancy:

- **Metered (Universal Credits)** is set for Visual Builder instances.
- **Subscription (VB4SaaS)** is set for Visual Builder for SaaS instances.
  For details, see Visual Builder for SaaS.

3

Setting Up Users and Groups

Setting up users and groups for access to Oracle Visual Builder differs depending on whether or not your region has been updated to use identity domains prior to creation of your cloud account.

Topics:

About Setting Up Users and Groups

Setting up users and groups for access to Oracle Visual Builder differs depending on whether or not your cloud account uses identity domains.

- For a cloud account in a region updated to use identity domains prior to the creation of the cloud account, users and groups are set up in only Oracle Cloud Infrastructure (OCI) Identity and Access Management (IAM). You do not use Oracle Identity Cloud Service (IDCS) or federation.
- For a cloud account in a region not yet updated to use identity domains prior to the creation of the cloud account, users and groups are set up in IDCS and Oracle Cloud Infrastructure IAM, linked using federation.

To determine whether or not your cloud account uses identity domains, open the Oracle Cloud Infrastructure navigation menu and click **Identity & Security**. Under **Identity**, check for **Domains**:

- If **Domains** is listed, then your cloud account uses identity domains. See Setting Up Users and Groups in Cloud Accounts That Use Identity Domains.
- If **Domains** is not listed, then your cloud account is still configured to link identities in IDCS and Oracle Cloud Infrastructure IAM using federation. In this case, refer to the topics in Setting Up Users and Groups in Cloud Accounts That Do Not Use Identity Domains.

You should understand the key differences between how users and groups are set up in OCI IAM and IDCS vs OCI IAM only.

If your cloud account *uses* identity domains:

- Users and groups are configured in Oracle Cloud Infrastructure IAM *only*.
- The Oracle Cloud Infrastructure IAM service provides a single unified console for managing users, groups, dynamic groups, and applications in *domains*.
- Provides Single Sign-On to more applications using a single set of credentials and a unified authentication process.
- The Federation page does not list any IDCS entries.

If your cloud account *does not use* identity domains:

- Users and groups are configured in Oracle Cloud Infrastructure IAM and IDCS, linked through federation. See Understanding Oracle Visual Builder Federation.

  Note: Read-only users can be assigned to an Oracle Cloud Infrastructure group only, and not to an IDCS group.
- Oracle Cloud Infrastructure IAM must be federated with IDCS for your tenancy.
- Requires separate federated credentials for IDCS.
- The Federation page lists the primordial IDCS type that is automatically federated as part of the cloud account creation.

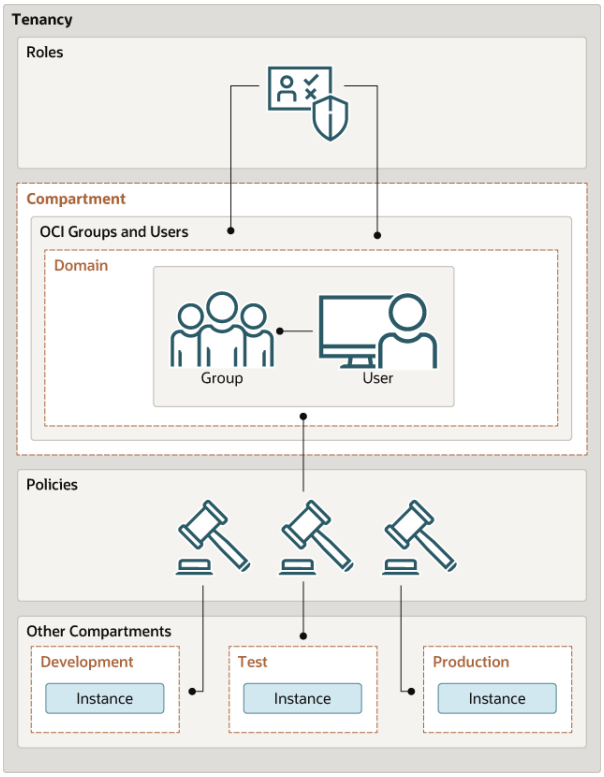
Setting Up Users and Groups in Cloud Accounts That Use Identity Domains

For a cloud account in a region updated to use identity domains prior to the creation of the cloud account, users and groups are set up in only Oracle Cloud Infrastructure (IAM).

> **Note**
>
> This section applies only to cloud accounts that use identity domains. If you are not sure if your cloud account uses identity domains, see About Setting Up Users and Groups.

For more information about Oracle Cloud Infrastructure IAM and the documentation that provides the information you need, see *Documentation to Use for Cloud Identity* in Overview of IAM in the Oracle Cloud Infrastructure documentation.

With identity domains, roles are assigned to Oracle Cloud Infrastructure IAM groups within a domain, as illustrated in the following diagram.



Creating an Identity Domain

Create an identity domain in which to configure users and groups.

In an Oracle Cloud Infrastructure tenancy (cloud account) your environment includes a root (default) compartment and possibly several other compartments, depending on how your environment is configured. To create compartments, see Create a Compartment for Visual Builder. Within each compartment, you can create users and groups. For example, as a best practice:

- In the root (default) compartment, create a default domain for administrators only.
- In another compartment (for example, named **Dev**), create a domain for users and groups in a development environment
- In another compartment (for example, named **Prod**), create a domain for users and groups in a production environment.

You can also create multiple domains in a single compartment.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Domains**.

   The Domains page is displayed.
2. If not already selected, select the **Compartment** where you want to create the domain.
3. Click **Create domain**.
4. Enter required information in the Create domain page. See Creating Identity Domains in the Oracle Cloud Infrastructure documentation.

Creating an Oracle Cloud Infrastructure Group in an Identity Domain

Create a group, such as an instance administrator or read only group, in an identity domain.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Domains**.

   The Domains page is displayed.
2. If not already selected, select the **Compartment** in which the domain where you want to create the group resides.
3. In the **Name** column, click the domain in which you want to create the group for creating and managing instances.

   The domain Overview page is displayed.
4. Click **Groups**.

   The Groups page for the domain is displayed.
5. Click **Create group**.
6. In the Create group screen, assign a name to the group (for example, `oci-visualbuilder-admins`), and enter a description.
7. Click **Create**.

Creating an Oracle Cloud Infrastructure Policy in an Identity Domain

Create a policy to grant permissions to users in a domain group to work with Oracle Cloud Infrastructure instances within a specified tenancy or compartment.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Policies**.
2. Click **Create Policy**.
3. In the Create Policy window, enter a name (for example, `VisualBuilderGroupPolicy`) and a description.
4. In the **Policy Builder**, select **Show manual editor** and enter the required policy statements.

   Syntax:

   - `allow group` *`domain-name/group_name`* `to` *`verb resource-type`* `in compartment` *`compartment-name`*
   - `allow group` *`domain-name/group_name`* `to` *`verb resource-type`* `in tenancy`

   Example: `allow group admin/oci-visualbuilder-admins to manage visualbuilder-instances in compartment VBCompartment`

   > **Note**
   >
   > If you omit the domain name, the default domain is assumed.

   This policy statement allows the `oci-visualbuilder-admins` group in the `admin` domain to `manage` instance `visualbuilder-instances` in compartment `VBCompartment`.

   You can create separate groups for different permissions, such as a group with `read` permission only.

Want to learn more about policies? See How Policies Work and Policy Reference, or click **Help** in the window.

- When defining policy statements, you can specify either verbs (as used in these steps) or permissions (typically used by power users).
- The `read` and `manage` verbs are most applicable to Visual Builder. The `manage` verb has the most permissions (`create`, `delete`, `edit`, `move`, and `view`).

Verb	Access
`read`	Includes permission to view Oracle Visual Builder instances and their details.
`manage`	Includes all permissions for Oracle Visual Builder instances.

5. If you intend to use custom endpoints, add one or more additional policy statements. Otherwise, skip this step.

   Add policies that specify the compartment in which vaults and secrets reside and allow the admin group to manage secrets in it. See Create and Configure a Custom Endpoint.

   Note that you should specify the resource to return in *`resource-type`*, as described in Details for the Vault Service. Also note that Oracle Visual Builder requires the `read` verb only but `manage` is recommended if the same group will also be administering the secrets (uploading/lifecycle operations).

   Examples::

   - `allow group admin/oci-visualbuilder-admins to manage secrets in compartment SecretsCompartment`
   - `allow group admin/oci-visualbuilder-admins to manage vaults in compartment SecretsCompartment`

6. Click **Create**.

   The policy statements are validated and syntax errors are displayed.

Creating a User in an Identity Domain

Create a user to assign to a group in an Oracle Cloud Infrastructure identity domain.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Domains**.

   The Domains page is displayed.

2. If not already selected, select the **Compartment** in which the domain that contains the group to which you want to add a new user resides.
3. In the **Name** column, click the domain for the group in which you want to create the user.

   The domain Overview page is displayed.

4. Click **Users**.

   The Users page for the domain is displayed.

5. Click **Create user**.
6. In the Create user screen, enter the user's first and last name, and their username, then select the one or more groups to which the user should be assigned.
7. Click **Create**.

The new user is added to the selected group(s) and has permissions assigned to the group by its policy statement.

8. On the user details page that is displayed, you can edit user information as needed, and reset the user's password.
9. Provide new users with the credentials they need to sign in to their cloud account. Upon signing in, they will be prompted to enter a new password.

Assigning Visual Builder Service Roles to Groups in an Identity Domain

After a Visual Builder instance has been created, assign Oracle Visual Builder service roles to groups of users to allow them to work with the features of the instance.

> **Note**
>
> It's a best practice to assign Oracle Visual Builder service roles to selected groups rather than individual users.

Oracle Visual Builder provides a standard set of set of service roles, which govern access to features. Depending on the Oracle Visual Builder features your organization uses, you may choose to create groups named for the service role they are granted. For example, `VisualBuilderServiceAdministrators` for the Oracle Visual Builder ServiceAdministrator role.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Domains**.

   The Domains page is displayed.
2. If not already selected, select the **Compartment** in which the domain that contains the group to which you want to assign Oracle Visual Builder roles resides.
3. In the **Name** column, click the domain for the group to which you want to assign roles.

   The domain Overview page is displayed.
4. In the navigation pane, click **Oracle Cloud Services**.

   The Oracle Cloud Services page is displayed.
5. In the **Name** column, click the Oracle Visual Builder instance for which you want to assign group roles.

   The instance details page is displayed.
6. In the navigation pane, click **Application roles**.
7. In the **Application roles** list, locate the role(s) you want to assign to the group. At the far right, click ⋮, and select **Assign groups**.
8. On the Assign groups page, select the group to which to assign the service role, and click **Assign**.

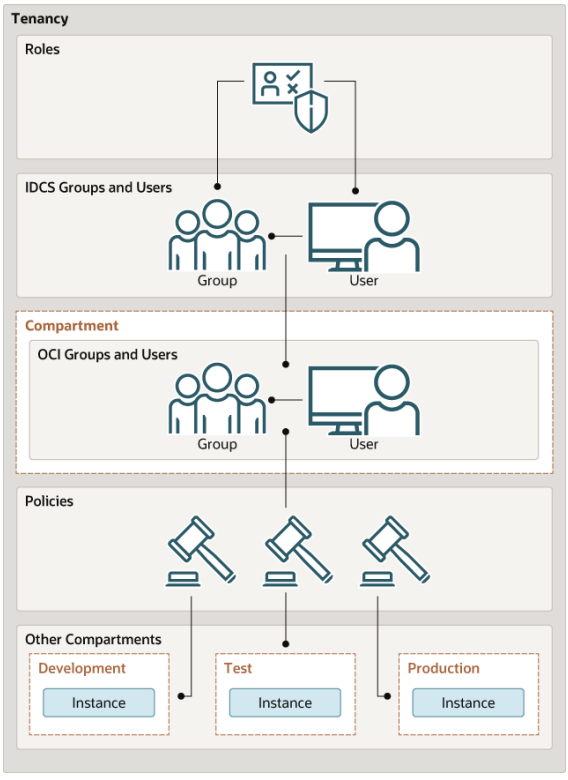
Setting Up Users and Groups in Cloud Accounts That Do Not Use Identity Domains

For a cloud account in a region not yet updated to use identity domains prior to the creation of the cloud account, users and groups are set up in Oracle Cloud Infrastructure Identity and Access Management (IAM) and Oracle Identity Cloud Service (IDCS).

> **Note**
>
> This section applies only to cloud accounts that do not use identity domains. If you are not sure if your cloud account uses identity domains, see About Setting Up Users and Groups.

For more information about Oracle Cloud Infrastructure IAM, IDCS, and the documentation that provides the information you need, see *Documentation to Use for Cloud Identity* in Overview of Identity and Access Management in the Oracle Cloud Infrastructure documentation.

Without identity domains, roles are assigned to IDCS groups, then linked to Oracle Cloud Infrastructure IAM groups using federation, as illustrated in the following diagram.



Understanding Oracle Visual Builder Federation

If your cloud account does not use identity domains, Oracle Cloud Infrastructure Identity and Access Management (IAM) must be federated with Oracle Identity Cloud Service (IDCS) for your tenancy.

User federation refers to linking a user's identity and attributes across multiple identity management systems. Oracle Visual Builder federation means that identities are linked in IDCS and Oracle Cloud Infrastructure Identity and Access Management (IAM).

Oracle Visual Builder uses both IDCS and IAM to manage users and groups:

- Create and manage users in IDCS. By default, most tenancies are federated with IDCS. For more information about Oracle Identity Cloud Service, see Understanding Administrator Roles in *Administering Oracle Identity Cloud Service*.
- Manage permissions using policies in Oracle Cloud Infrastructure's IAM service.

For background information on federation with IDCS, see Federating with Identity Providers and Federating with Oracle Identity Cloud Service.

Whether your tenancy needs federation depends on several factors, such as when your cloud account was created and the Oracle Visual Builder version you're provisioning. Your tenancy may be:

- **Already fully federated:** Nearly all accounts in regions that have not yet been updated to use identity domains fall into this category. You'll follow standard steps to set up users and groups, as described in the topics in this section.
- **Mostly federated:** If you have an older account that was created before 21 December 2018, you may need to complete a final federation step. You'll follow steps to set up users and groups, as described in the topics in this section. At the mapping step (Mapping the IDCS and OCI Groups), you'll be asked to enter information.
- **Needing federation:** If you're configuring Oracle Visual Builder with a government SKU in a commercial data center, you'll likely need to perform manual federation steps as part of setting up users and groups. See Manually Federating Your Tenancy.

Not sure about your federation? See Is My Tenancy Federated Between Oracle Cloud Infrastructure IAM and Oracle Cloud Identity Service?

Create IDCS Groups and Users

To grant access to Visual Builder instances, assign the users a Visual Builder role. You can grant the role individually to each IDCS user, or create an IDCS group of users and assign the role to the group. You can create Oracle Identity Cloud Service groups for later mapping them to Oracle Cloud Infrastructure Identity and Access Management identities.

Before you create users or groups, learn about available Oracle Visual Builder Roles and Privileges.

1. Sign in to the OCI Console.
2. In the upper-left corner, click **Navigation Menu** ☰.
3. Select **Identity & Security** and then under **Identity**, select **Federation**.

   The Federation screen is shown, and includes the identity provider, called OracleIdentityCloudService. This is the default federation between the Oracle Identity Cloud Service stripe and the OCI tenancy in a cloud account.

4. Click **OracleIdentityCloudService**.
5. Create IDCS users and groups, and add users to the groups.
6. Click the Oracle Identity Cloud Service Console link.
7. In the upper-left corner, click **Navigation Menu** and select **Oracle Cloud Services**.
8. Click the Visual Builder service name.
9. Click the **Application Roles** tab.
10. Click the menu options icon shown next the role, and select **Assign Users**. If you want to assign the role to a group, select **Assign Groups**.
11. Select the check box next to the name of each user or group that you want to add to the role, and then click **OK**.

Create Oracle Cloud Infrastructure Groups and Policies

To allow other non-admin users to create and manage Visual Builder instances, create an OCI group of non-admin users and assign them the correct OCI policies.

If you're a tenant administrator and plan to create Visual Builder instances yourself, skip this procedure.

1. Sign in to the OCI Console.
2. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Groups**.
3. Create an OCI group.

   In the Create Group screen, assign a name to the group that differentiates it from the IDCS group (for example, `oci-visualbuilder-admins`), and enter a description.
4. Create a policy with one or more of these statements:

Table 3-1 Syntax for policy statements for a group

Policy	Syntax

Allow the group to manage (create, delete, edit, move, and view) the Visual Builder instance in a compartment	`Allow group <group_name> to manage visualbuilder-instances in compartment <compartment-name>`
	Here's an example:
	`Allow group VBInstanceAdmins to manage visualbuilder-instances in compartment MyVBCompartment`

Allow the group to manage (create, delete, edit, move, and view) all Visual Builder instances of the tenancy	`Allow group <group_name> to manage visualbuilder-instances in tenancy`
	Here's an example:
	`Allow group VBInstanceAdmins to manage visualbuilder-instances in tenancy`

Table 3-1 (Cont.) Syntax for policy statements for a group

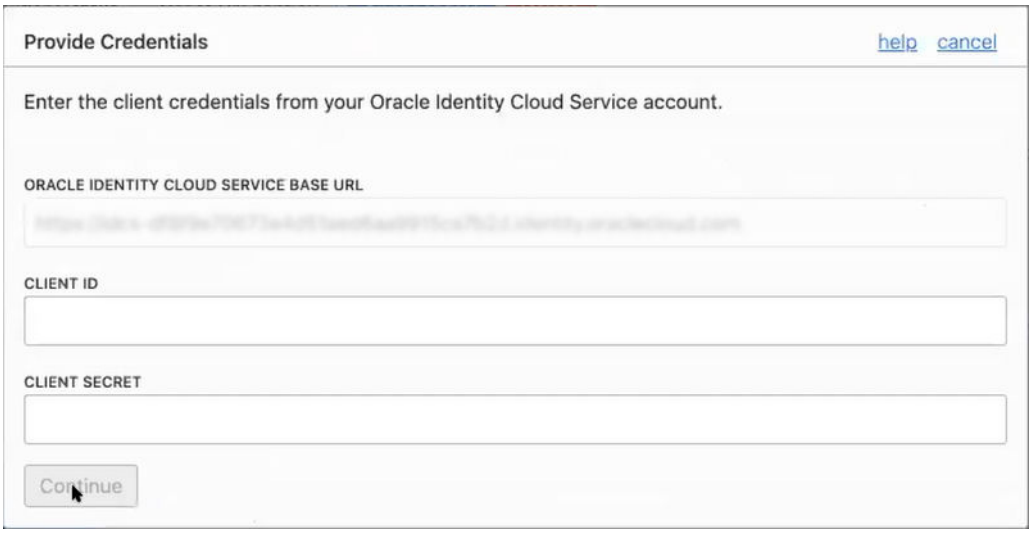
Policy	Syntax

If you intend to use custom endpoints, allow the group to access secrets and vaults of a compartment.	`allow group <group-name> to manage secrets in compartment <secrets-compartment>`
	`allow group <group-name> to manage vaults in compartment <secrets-compartment>`
	Here's an example:
	`Allow group VBInstanceAdmins to manage secrets in compartment MySecretCompartment`
	and
	`Allow group VBInstanceAdmins to manage vaults in compartment MySecretCompartment`

Mapping the IDCS and OCI Groups

You can now map your instance administrator group in IAM to your previously created IDCS group. For details, see Map the IDCS group with the OCI group.

1. Open the OCI navigation menu and click **Identity & Security**. Under **Identity**, click **Federation**.
2. On the Federation page, select the **OracleIdentityCloudService** link.
3. From the **Resources** options, choose **Group Mapping**.
4. Click **Edit Mapping**.
5. In the Edit Identity Provider dialog, click **Add Mapping** at the bottom.
   a. If the following dialog appears prompting you to provide credentials, enter this information from the COMPUTEBAREMETAL IDCS application in your IDCS account. This dialog indicates that your tenancy is mostly federated and requires only this final step. See Understanding Federation. (If you aren't able to locate this information, file a service request to get help from Oracle Support.)



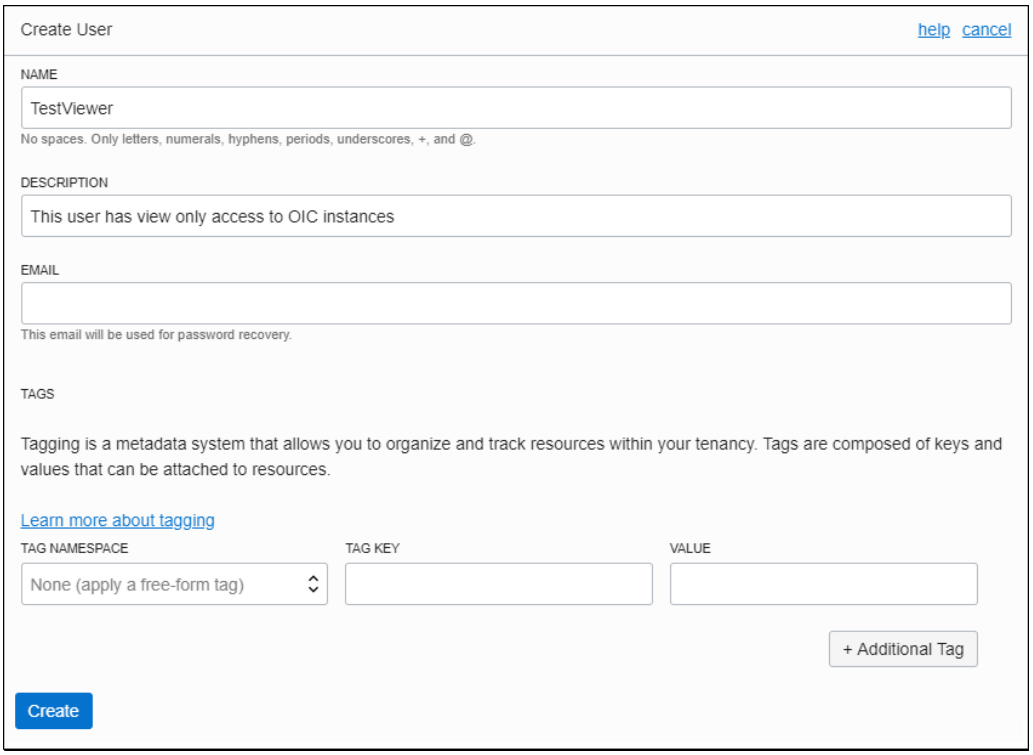
b. Click **Continue**.

6. Select your IDCS group in the **Identity Provider Group** field and your OCI group in the **OCI Group** field.
7. Click **Submit**.

Adding and Assigning Oracle Cloud Infrastructure Users for Read Only Access

After creating a view only group and adding its policy, add users for read only access to Oracle Visual Builder instances.

1. Add an OCI user.
   a. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Users**.
   b. Click **Create User**.
   c. Complete the fields to identify the user.



   d. Click **Create**.
2. Assign the user to the read only group.
   a. Select **Groups** from the **Identity** options.
   b. Select the read only group you created (for example, `oci-visualbuilder-viewers`).
   c. Click **Add User to Group**.
   d. In the Add User to Group dialog, select the user you created and click **Add**.
3. Create the user's password.

a. From the **Group Members** table on the Group Details screen, select the user you added.

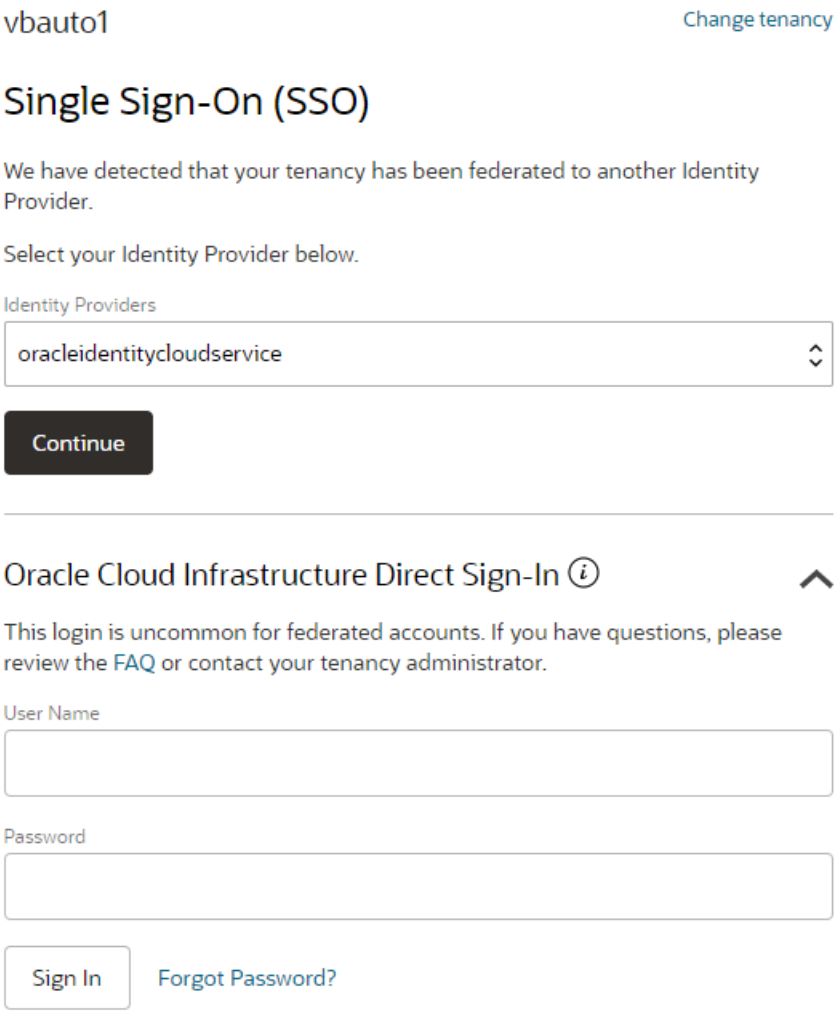
b. Click **Create/Reset Password**. The Create/Reset Password dialog is displayed with a one-time password listed.

c. Click **Copy**, then **Close**.

4. Provide read only users the information they need to sign in.

a. Copy the password in an email to the user.

b. Instruct the read only user to sign in using the **User Name** and **Password** fields.



c. Upon signing in, the user will be prompted to enter a new password.

d. View Visual Builder instances.

Read only users can view Visual Builder instances by selecting **Visual Builder** in the navigation pane.

Assigning Oracle Visual Builder Service Roles to Groups

After a Visual Builder instance has been created, assign Visual Builder roles to groups of users in Oracle Visual Builder to allow them to work with the features of the Visual Builder instance.

> **Note**
>
> It's a best practice to assign Visual Builder service roles to selected groups rather than individual users.

Oracle Visual Builder provides a standard set of set of service roles, which govern access to features. Depending on the Visual Builder features your organization uses, you may choose to create groups named for the service role they are granted. For example, `VBServiceAdministrators` for administration permissions.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Federation**.
2. On the Federation screen, select the **OracleIdentityCloudService** link to view the default Oracle Identity Cloud Service identity federation.
3. On the Identity Provider Details page, select **Groups** from the **Resources** options.
4. From the table, select an IDCS group to grant the users in the group access.
5. On the Group Details page, click **Manage Service Roles**.
6. On the Manage Service Roles page, locate your Visual Builder service (VISUALBUILDERAUTO). At the far right, click ⋮, and select **Manage instance access**.

   The Manage Access screen lists instances. Note that you must assign roles for each instance individually.

   - Instance names follow this format: *`displayname-tenancyid-regionid`*
   - Instance URLs follow this format: `https://`*`displayname-tenancyid-regionid`*`.visualbuilder.ocp.oraclecloud.com/ic/home/`
7. From the Manage Access options, select instance roles for the group under one or more specified instances.
8. Click **Save Instance Settings**, then **Apply Service Role Settings**.

Oracle Visual Builder Roles and Privileges

A role includes privileges that allow users to perform various tasks. All Oracle Cloud services have some predefined roles for performing tasks when setting up, administering, managing, and using a service. There are predefined roles for the application layer and for Oracle Visual Builder.

The application-layer predefined roles include ServiceAdministrator, ServiceMonitor, ServiceDeveloper, ServiceDeployer, and ServiceUser, but only some of these roles are used and mapped to the predefined roles used in Oracle Visual Builder. To perform tasks in Oracle Visual Builder, the user must be assigned to one of the Oracle Visual Builder predefined roles. Users can hold multiple roles depending on their responsibilities. For example, a user might be granted both the ServiceAdministrator and ServiceMonitor roles, but any privileges granted by the role of ServiceMonitor are ignored in Oracle Visual Builder.

Predefined Roles in the Application Layer

The following table describes the predefined roles available in the application layer.

Predefined Roles	Description
Application-Layer Predefined Roles	Govern access to the various Oracle Visual Builder features:
ServiceAdministrator	A user with the ServiceAdministrator role is a super user who can manage and administer the administrator settings of an Oracle Visual Builder instance.
ServiceMonitor	This role is not used in Oracle Visual Builder
ServiceDeveloper	A user with the ServiceDeveloper role can develop applications in an Oracle Visual Builder instance.
ServiceDeployer	This role is not used in Oracle Visual Builder.
ServiceUser	A user with the ServiceUser role has privileges to utilize only the basic functionality of a feature such as access to the staged and published applications.

Privileges Available to Roles in Oracle Visual Builder

There are three predefined roles in Oracle Visual Builder, and these roles are mapped to specific application-layer roles. The following table lists Oracle Visual Builder predefined roles and the tasks that users granted those roles can perform.

Oracle Visual Builder Predefined Role	Mapped Role	Tasks Users Can Perform in Oracle Visual Builder
Visual Builder Administrator	ServiceAdministrator	A user with this role can: • Use the visual design tool • Create, manage, and change the owners of applications • Create associations with other services • Configure security options for applications in an instance • Specify error messages for Access Denied pages
Visual Builder Developer	ServiceDeveloper	A user with this role can: • Use the visual design tool • Create, manage, secure, and publish visual applications • Design pages, work with business objects, build and test applications
Visual Builder User	ServiceUser	A user with this role can only access staged and published applications. The default permission is enforced only when the service administrator adjusts security settings for the entire service instance to restrict all access to runtime applications to the users granted this role.

Roles Required for Git Integration

Oracle Visual Builder can be integrated with Git repositories hosted in Oracle Visual Builder Studio projects. When configuring integration with a Git repository, to access the Git repository the user will need to supply the credentials of a user in IDCS with the DEVELOPER_USER role for authentication.

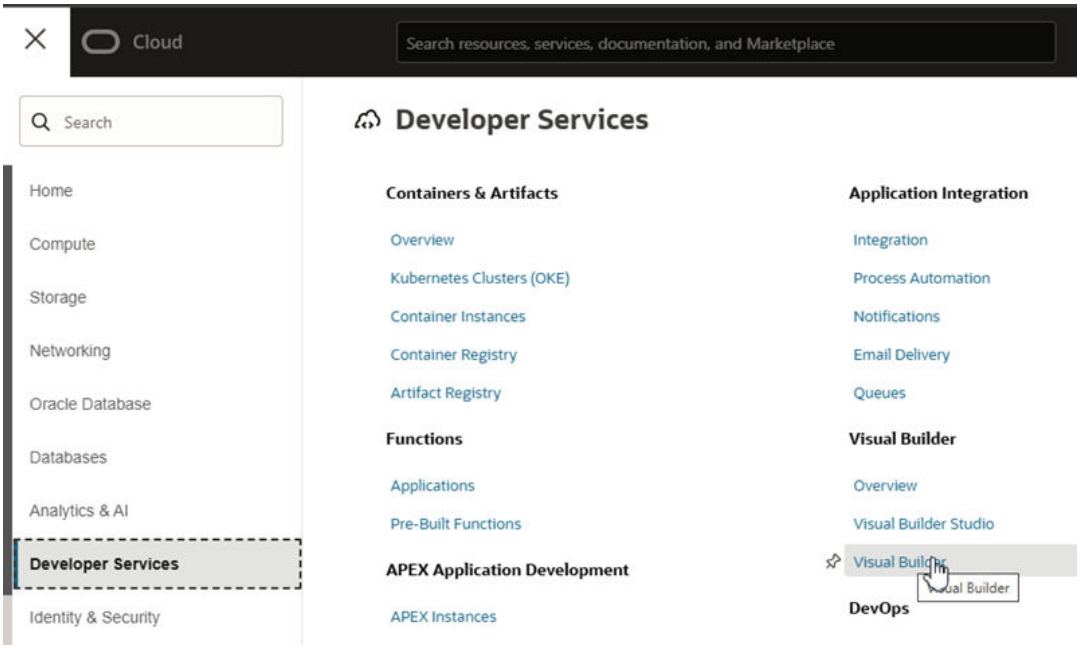
If you have configured Single Sign-On (SSO) so that IDCS federates to another identity provider (IdP), the SSO user credentials can't be used to access the Git repository. You'll need to define a new user in IDCS with the DEVELOPER_USER role and use the new user's credentials when configuring the Git integration.

4

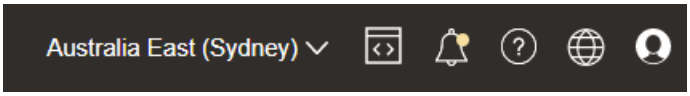
View and Manage the Visual Builder Instance

After creating the Visual Builder instance, you can view its details and manage it from the OCI Console.

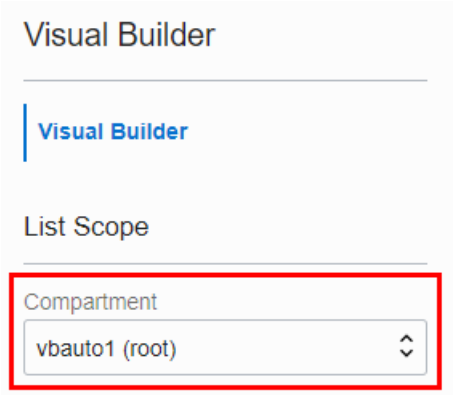
1. Open the OCI Console.
2. In the upper-left corner, click **Navigation Menu** ☰.
3. Select **Developer Services** in the menu, then select **Visual Builder** in the list of services.



If you want to change the region, you can use the dropdown list at the top of the page to select a different region.



4. From the **Compartment** drop-down list, select the Visual Builder instance's compartment.



5. Click the Visual Builder instance.

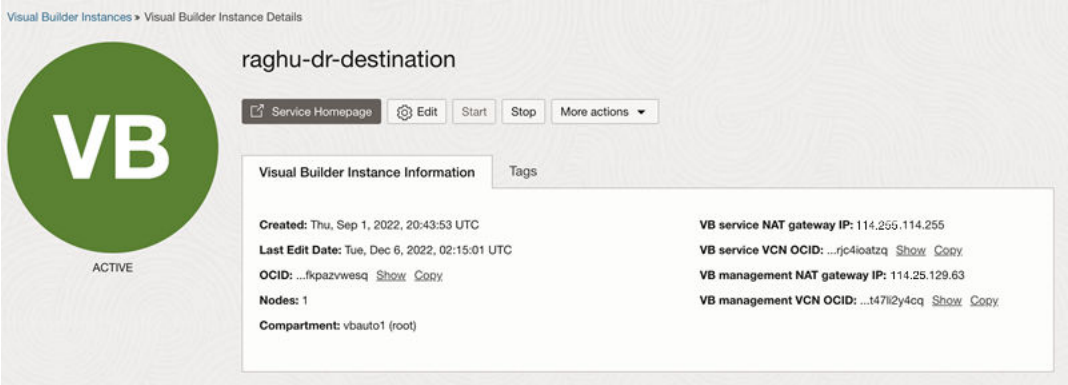
You can perform these actions from the instance page:

- Click **View service home page** to open the instance's homepage.
- Start or Stop a Visual Builder Instance
- Scale a Visual Builder Instance
- Create and Configure a Custom Endpoint
- Manage Visual Builder Tags
- Terminate a Visual Builder Instance

Access Visual Builder from the OCI Console

If you haven't bookmarked the Visual Builder home page in your browser, you can access it from the OCI Console.

1. Open the OCI Console.
2. In the upper-left corner, click **Navigation Menu** ☰.
3. Select **Developer Services** and then select **Visual Builder**.
4. From the **Compartment** drop-down list, select the compartment.
5. In the table, click the name of the Visual Builder instance to open its Visual Builder Instance Details page.



The Visual Builder Instance Details page contains buttons to:

- Open the Service Homepage,
- Edit the instance details,
- Start and stop the instance, and
- Display a menu to access more actions.

The Visual Builder Instance Information tab displays information about your instance, including:

- Instance creation and last edit date,
- Instance OCID,
- Number of nodes,
- Compartment,
- NAT gateway IP for the VB service (and VB management, if needed), and
- VCN OCID for the VB service (and VB management, if needed).

6. Click **Service Homepage**.

   If prompted, enter your user credentials and click **Sign In**.

You land on the Visual Builder home page. For quick access, bookmark the home page in your browser.

Start or Stop a Visual Builder Instance

To save your billing cost, you can stop a Visual Builder instance. Billing is stopped for the duration that the instance is stopped and resumes when you start it. In the duration an instance is stopped, your organization's members can't access its applications.

> **Note**
>
> If the instance has more than one node, you'll need to edit the instance's details to set the number of nodes to '1' before you can stop the instance.

1. Open the VB instance's details page.
2. Click **Start** or **Stop** to start or stop an instance.
3. Click **Yes** when prompted to confirm your selection.

Move a Visual Builder Instance to Another Compartment

You can move a Visual Builder instance to a different compartment. Before you move the instance, remember that moving an instance can potentially change who has access to the instance. Make sure that users who have access to the current Visual Builder instance's compartment can access the instance in the new compartment as well.

1. Open the VB instance's details page.
2. From the **More Actions** drop-down menu, select **Move Resource**.
3. In the Move Resource to a Different Compartment dialog box, select the compartment and click **Move Resource**.

Edit the Visual Builder Instance

You can edit your Visual Builder instance to scale the number of nodes in your instance, change the instance's network access, and to add (or update) a custom endpoint. You cannot rename an instance.

> **Note**
>
> You cannot split a single instance into two parts (for example, into test and development parts). Instead, you must create separate instances for each part.

1. Open the Visual Builder Instance Details page of the instance you want to edit, and then click **Edit**.

   In the Edit Visual Builder Instance panel you can:

   - Scale the instance using the Nodes field. See Scale a Visual Builder Instance.
   - Configure how the instance is accessible on the network in the Choose network access pane.
     The pane contains options for setting the network access:
     - **Default**
       Select this option to allow all networks access to your instance, without restrictions. If you convert a private endpoint to a publicly-accessible instance, after you convert the instance you should confirm that the instance is available publicly, and that the instance can connect to your database.

       If you used a bastion service to access a private endpoint-enabled instance, remove any entries you added in the `/etc/hosts` file.
     - **Secure access from allowed IPs and VCNs only**
       Select this option if you want to limit access to specific IP addresses and VCNs. See Restrict Access to the Instance With an Allowlist.
     - **Private endpoint access only**
       Select this option to limit access to a specific VCN. Before converting a publicly accessible instance to a private endpoint, you will need to create and configure the VCN that will contain the private endpoint. See Set the Network Access For a Private Endpoint and Prerequisite Steps for Configuring a Private Endpoint.

       > **Note**
       >
       > The following restrictions apply when converting a publicly-accessible instance to an instance that uses a private endpoint:
       >
       > * You cannot convert an instance if its node count is greater than one.
       > * You cannot convert a VB instance created in an IDCS domain if its home region is different from the currently selected region.
       >
       > You cannot combine changing an instance's network access with any other instance updates.

   - Click **Show Advanced Options** to display the Custom Endpoint pane to add or update a custom endpoint. The custom hostname you want to map to the instance must

already be registered on a DNS provider and its SSL certificate stored as a secret in an OCI Vault. See Create and Configure a Custom Endpoint.

2. Click **Save Changes** to update the instance.

Scale a Visual Builder Instance

To meet your changing workload requirements, increase performance or to reduce your costs, you can increase or decrease the Visual Builder instance's node count. By default, a Visual Builder has one node.

1. Open the Visual Builder instance's details page.
2. Click **Edit**.
3. In the Nodes field, enter the number of nodes. Click **Save Changes**.

Create and Configure a Custom Endpoint

You can map a custom endpoint to a Visual Builder instance and use it to access the instance instead of the original URL generated in the OCI Console.

Let's say you want to open your Visual Builder instance from a custom URL like `https://my-custom-endpoint.example.com/ic/builder` instead of the original URL generated by Oracle (which can look something like `https://<instance-display-name>-<tenancy-name>-<region-code>...oraclecloud.com`). To do this, you create a hostname for your chosen custom domain (for example, `my-custom-endpoint.example.org`), and then create a custom endpoint in your Visual Builder instance that is associated with the hostname. Creating a custom endpoint doesn't affect the original instance URL of your Visual Builder instance. You'll be able to access your instance using the custom endpoint URL as well as the original instance URL.

> **Note**
>
> If you are creating a custom endpoint for a private endpoint-enabled VB instance, and you want to make the custom endpoint public, you will need to use a public load balancer in your tenancy, and create a hostname, listener, and a backend that points to the private endpoint's IP address. This isn't needed if you don't intend to make the endpoint public.

After you have configured a custom endpoint, you can map an app in your instance to the endpoint by selecting the endpoint as the vanity URL in the settings of the visual application containing the app. After setting the app's vanity URL, users can and should open the app directly by entering the vanity URL root (`https://my-custom-endpoint.example.com`) in their browser. For more about using a vanity URL for an app, see Configure Support for a Custom Domain.

These instructions assume you have direct access to a Visual Builder instance and to the OCI Console.

To create and configure a custom endpoint for your Visual Builder instance:

1. Choose a custom hostname for your instance and register it at a DNS provider.
2. Obtain an SSL certificate from a certificate authority (CA) for your hostname.

3. Configure the hostname for your custom endpoint.

   To create and configure a hostname, do one of the following:

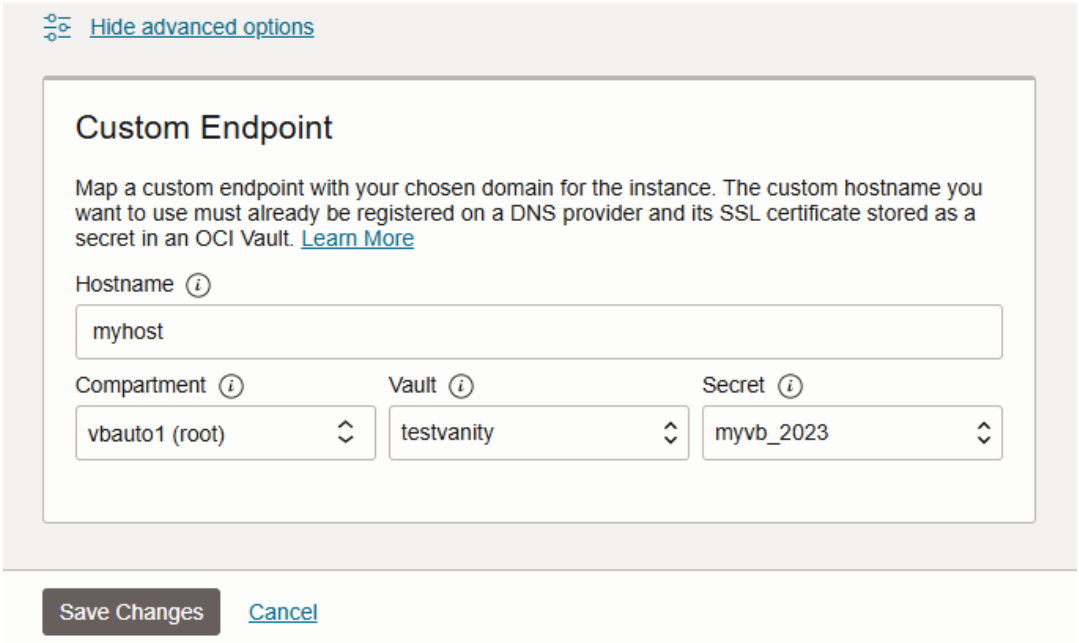
   - Configure a Vault for a Custom Endpoint
   - Configure a Custom URL Using Oracle Web Application Firewall Service V2

   Oracle recommends that you use the Oracle Web Application Firewall service, as this allows you to map your DNS name and upload your associated certificate and private key yourself, and you don't need to update the Visual Builder instance each time a new version of the secret is created.

   > **Note**
   >
   > The options above for creating and configuring a hostname are applicable only for your first (primary) custom endpoint. If your instance already has a custom endpoint and you want to add another, you need to use the command line. Similarly, if your instance already has multiple custom endpoints and you want to edit any of them, you need to do this using the command line. For details on how to do this, see Create and Update Alternate Endpoints.

4. On the Visual Builder Instances page, find the instance you want to work with and open its details page. If you need help finding the Instances page or the instance, see View and Manage the Visual Builder Instance.
5. Select **Edit** to open the Edit visual builder instance panel.

   If you don't have an instance, see Create the Visual Builder Instance.
6. Supply the custom endpoint details in the Custom endpoint pane.



> **Note**
>
> If you configured the hostname for the custom endpoint using WAF, you only need to provide the hostname. You do not need to supply the Compartment, Vault, or Secret.

Field	Description
Hostname	Required. Enter the custom hostname chosen for the instance. The custom hostname you want to map to the instance must already be registered on a DNS provider, If the hostname is configured using an OCI vault, its SSL certificate should be stored as a secret in the vault.
Certificate	Required when the hostname is configured using an OCI vault. Provide the location of the hostname's certificate in your OCI tenancy. • **Compartment:** Select the OCI compartment that contains your certificate vault. • **Vault:** Select the vault that contains the hostname's certificate. • **Secret:** Select the secret corresponding to the hostname's certificate.

> **Note**
>
> You can also update or replace a custom endpoint that was previously associated with the instance. You can modify the hostname as well as the certificate details. However, to update the certificate details, you must have access permissions to the vault containing the required certificate. For details, see Update a Secret in a Vault.

7. Finally, update the custom endpoint DNS record to the original instance hostname.

   As a best practice, update the CNAME with the hostname, or update the A record using the public IP address if you want the endpoint to be public. You can obtain the IP address by opening a terminal and using the `dig` command on the VB hostname, for example:

   ```
   dig vb-myinst-vb-adkj3-px.builder.ocp.oraclecloud.com
   ```

Restrict Access to the Instance With an Allowlist

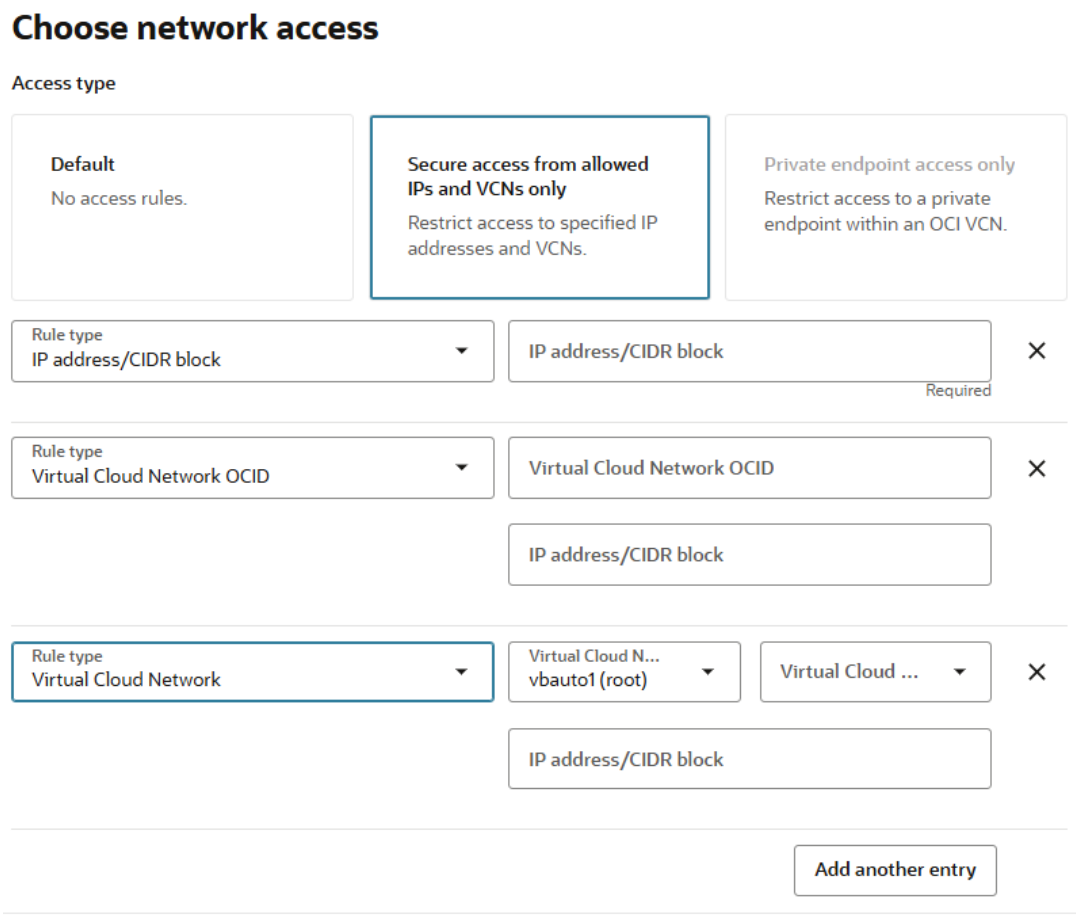
You can restrict access to your instance by configuring an allowlist when creating an instance, or by editing an existing instance. When the allowlist is enabled, only user Classless Inter-Domain Routing (CIDR) blocks and networks on the list can access the instance.

To add user CIDRs networks to the allow list:

1. Enable allow lists in your instance.

- If you are creating an instance, select **Secure access from allowed IPs and VCNs only** in the Choose network access pane in the Create Instance dialog.
- If you are editing an instance without access rules:
  a. Open the Visual Builder Instance Details page for the instance in the OCI Console.
  b. Click **Edit** to open the Edit Visual Builder Instance dialog.
  c. Select **Secure access from allowed IPs and VCNs only** in the Choose network access pane in the dialog.

If there are no rules listed in the pane, a new empty rule is created when you select the option. There are three types of rules you can define to restrict access. This image shows examples of each rule type:



If you want to disable all allow lists, to allow all networks access to the instance, click **Default** in the Choose network access pane.

2. Select a rule type based on the details you know for the instance, and then enter the details.

   You create a rule for each user/network you want in the allowlist.

   - **IP Address/CIDR Block**. Select this type if you only know the IP address or Classless Inter-Domain Routing (CIDR) block (an IP range) of the instance.
     In the **IP Address/CIDR Block** field, enter the public IP address or CIDR block that is visible on the public internet that you want to grant access.

- **Virtual Cloud Network**. Select this type if you know the Virtual Cloud Network of the instance and the network route is going through an Oracle Cloud Infrastructure Service Gateway. See Access to Oracle Services: Service Gateway for more information.
  - In the **VCN OCID** field, enter the OCID of the VCN you want to grant access from.
  - Optionally, in the **IP address/CIDR block** field, enter private IP addresses or private CIDR blocks as a comma separated list to allow specific clients in the VCN.
- **Virtual Cloud Network OCID**. Select this type if you know the Virtual Cloud Network of the instance and the network route is going through an Oracle Cloud Infrastructure Service Gateway. See Access to Oracle Services: Service Gateway for more information.
  - Select the VCN that you want to grant access from. If you do not have the privileges to see the VCNs in your tenancy, this list is empty. In this case, select the **Virtual Cloud Network (VCN) OCID** option to specify the OCID of the VCN.
  - Optionally, in the **IP address/CIDR block** field, enter private IP addresses or private CIDR blocks as a comma separated list to allow specific clients in the VCN.

3. Click **Add Another Entry** to create a new rule.
4. Click **x** to remove an entry.

   You can also clear the value in the **IP addresses** or **CIDR blocks** field to remove an entry.

Convert Your Public Instance to a Private Endpoint

If you already have a publicly-accessible VB instance, you can convert it to a private endpoint inside your VCN by editing the instance's network access settings.

Before you can convert an instance to a private endpoint, you will need to complete the steps described in Prerequisite Steps for Configuring a Private Endpoint.

The following restrictions apply when converting a publicly-accessible instance to an instance that uses a private endpoint:

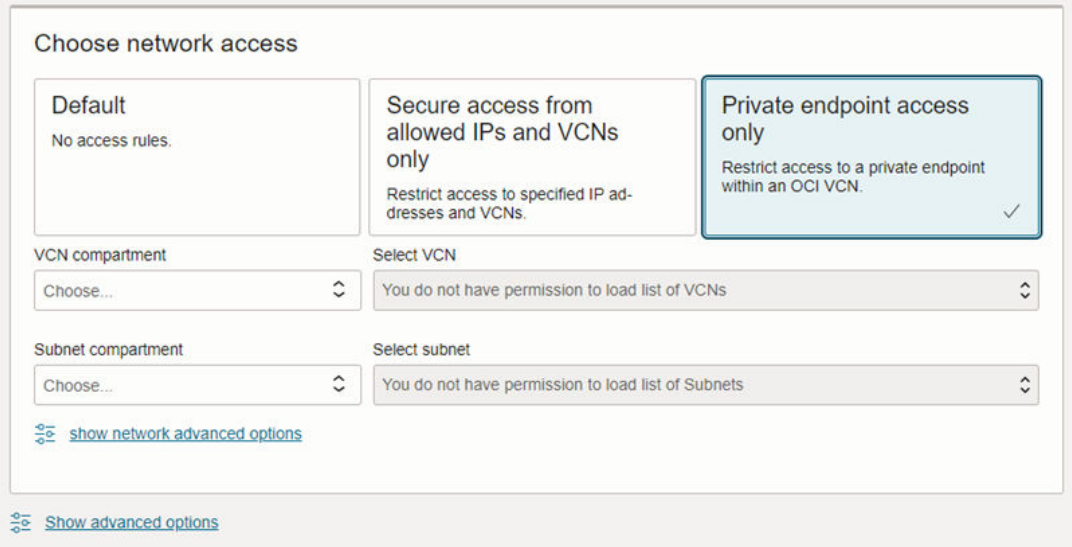
- You cannot convert an instance if its node count is greater than one.
- You cannot convert a VB instance created in an IDCS domain if its home region is different from the currently selected region.

For more details about instances configured as private endpoints, see Private Endpoints Notes.

To convert an instance to a private endpoint:

1. On the Visual Builder Instance Details page, click **Edit** to open the Edit Visual Builder Instance dialog.
2. In the **Choose network access** panel, select **Private endpoint access only**.

   This expands the pane where you configure the VNC details:



> **Note**
>
> You cannot combine changing an instance's network access with any other instance updates.

3. Select a VCN compartment, and a VCN in your compartment.

   See VCNs and Subnets for more information.

4. Select the Subnet compartment, and a private subnet in your compartment.

   See VCNs and Subnets for more information.

5. (Optional) Click **Advanced options** to add network security groups.

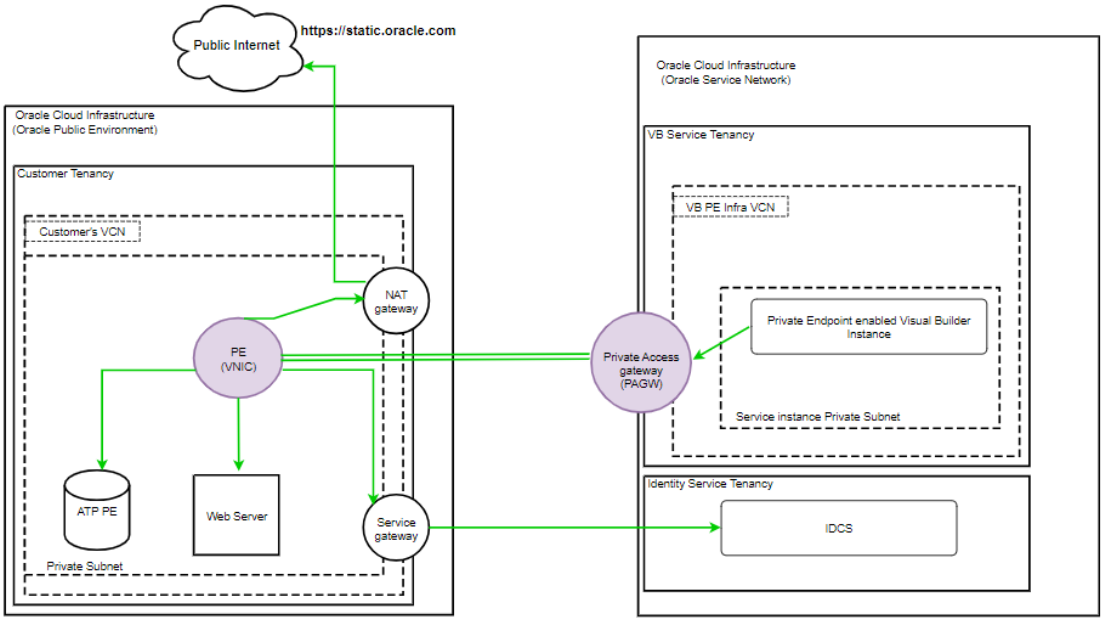
6. Click **Save changes**.

After you have converted the instance, you can update other instance settings, for example, to specify a private IP address or map a custom endpoint to the private endpoint. See Configure Private Endpoint Advanced Network Options and Create and Configure a Custom Endpoint.

Configure Your Instance as a Private Endpoint

Configuring your instance to use a private endpoint inside your Virtual Cloud Network (VCN) in your tenancy instead of a public endpoint allows you to keep all traffic to and from your instance off of the public internet. Specifying the VCN configuration allows traffic only from the VCN you specify, and blocks access to the instance from all public IPs or VCNs.

This diagram shows an example of a network setup for a Visual Builder instance on Oracle Cloud Infrastructure when the instance has a private endpoint enabled.



If you wish, you can allow access to a private endpoint from outside the VCN by using a load balancer in front of the endpoint. This way you can allow public access to the instance, while the instance is within a private VCN where it can access your ATP database.

Prerequisite Steps for Configuring a Private Endpoint

You need to perform some steps before you can configure a private endpoint for a Visual Builder instance.

> **Note**
>
> You can use the Oracle Cloud Infrastructure Resource Manager to help you create the VCN, private subnet and load balancer. See Create Visual Builder Resources Using Oracle Cloud Infrastructure Resource Manager.

Perform the following prerequisite steps before configuring a private endpoint:

- Set required policies for the resources you are working with. See IAM Policies Required to Manage Private Endpoints for more information.
- Create a VCN within the region that will contain your private endpoint instance. See VCNs and Subnets for more information. The VCN and the IDCS of the customer's Identity Domain must be in the same region.
- Configure a private subnet within your VCN configured with default DHCP options. See DNS in Your Virtual Cloud Network for more information.
- Configure your subnet to add a NAT Gateway to allow access from the subnet to the public internet. The minimum requirement is to allow access to the content delivery network (CDN) at `static.oracle.com` on the public internet. The CDN provides resources that are required by the Visual Builder runtime when you stage, publish or use your apps.
- Configure your subnet with a "Service Gateway" to allow connections from the subnet to your Oracle Services (IDCS) instance. For example, you might want to add a Service Gateway to the subnet route table, and set the "Destination" value of the Service Gateway

to "All SJC Services In Oracle Services Network". In this case, the subnet security list rules should also allow egress to IDCS using "All SJC Services In Oracle Services Network".

- (Optional) Specify a Network Security Group (NSG) within your VCN. The NSG specifies rules for connections to your instance. See Network Security Groups for more information.

IAM Policies Required to Manage Private Endpoints

In addition to the policies required to provision and manage your instance, some network policies are needed to use private endpoints.

The following table lists the IAM policies required for a cloud user to add a private endpoint. The listed policies are the minimum requirements to add a private endpoint. You can also use a policy rule that is broader. For example, you could set the policy rule like this:

```
Allow group MyGroupName to manage virtual-network-family in compartment
<compartmentName1>
Allow group MyGroupName to manage virtual-network-family in compartment
<compartmentName2>
```

In this policy, `<compartmentName1>` is the compartment where the VCN and subnet exist, and `<compartmentName2>` is the compartment where the Visual Builder instance will be created.

This rule also works because it is a superset that contains all the required policies.

Operation	Required IAM Policies
Configure a private endpoint	`use vcns` for the compartment which the VCN is in `use subnets` for the compartment which the VCN is in `use network-security-groups` for the compartment which the network security group is in `manage private-ips` for the compartment which the VCN is in `manage vnics` for the compartment which the VCN is in `manage vnics` for the compartment in which the visual builder instance is provisioned or is to be provisioned in

Visual Builder relies on the IAM (Identity and Access Management) service to authenticate and authorize cloud users to perform operations that use any of the Oracle Cloud Infrastructure interfaces (the Console, REST API, CLI, SDK, or others).

The IAM service uses **groups**, **compartments** and **policies** to control which cloud users can access which resources. In particular, a policy defines what kind of access a group of users has to a particular kind of resource in a particular compartment. For more information, see Getting Started with Policies.

Create Visual Builder Resources Using Oracle Cloud Infrastructure Resource Manager

You can use the Visual Builder Private Endpoint Quick Start on GitHub and the Oracle Cloud Infrastructure (OCI) Resource Manager to help you create the VCN, private subnet, and load balancer.

The Quick Start on GitHub hosts the zip archive used by the OCI Resource Manager to create the prerequisite infrastructure for a private endpoint-enabled Visual Builder instance. With a

single click you can create and deploy the infrastructure for your Visual Builder private endpoint that includes a VCN, private subnet, and load balancer.

To create the infrastructure using OCI Resource Manager:

1. Click this button to open the OCI Resource Manager:

   If the button doesn't work, click this link: Deploy to Oracle Cloud.

   When you click the button, a zip archive for creating the infrastructure is retrieved from the Visual Builder Private Endpoint Quick Start on GitHub, and the OCI Resource Manager opens in your browser.
2. If you aren't already signed in, enter the tenancy and user credentials.
3. Review and accept the terms and conditions.
4. Select the region where you want to deploy the stack.
5. Follow the on-screen prompts and instructions to create the stack.
6. After creating the stack, click Terraform Actions, and select Plan.
7. Wait for the job to be completed, and review the plan.
   To make any changes, return to the Stack Details page, click Edit Stack, and make the required changes. Then, run the Plan action again.
8. If no further changes are necessary, return to the Stack Details page, click Terraform Actions, and select Apply.

Set the Network Access For a Private Endpoint

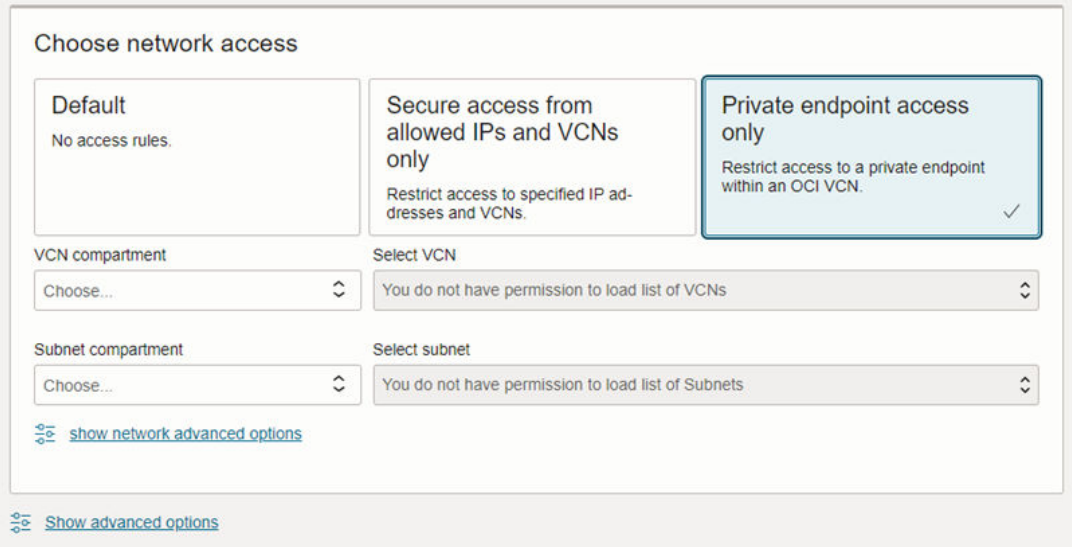
You use the Choose network access panel to configure an instance as a private endpoint. When setting the instance as a private endpoint, you will need to provide details about the VCN where you want the private endpoint.

When configured as a private endpoint, the instance only allows connections from the specified private network (VCN), from peered VCNs, and from on-prem networks connected to your VCN.

These steps assume you are provisioning an instance, or are converting an existing instance to a private endpoint, and you have completed the prerequisite steps:

1. In the **Choose network access** panel, select **Private endpoint access only**.

   This expands the pane where you configure the VNC details:



> **Note**
>
> The following restrictions apply when converting a publicly-accessible instance to an instance that uses a private endpoint:
>
> - You cannot convert an instance if its node count is greater than one.
> - You cannot convert a VB instance created in an IDCS domain if its home region is different from the currently selected region.
>
> You cannot combine changing an instance's network access with any other instance updates.

2. Select a VCN compartment, and a VCN in your compartment.

   See VCNs and Subnets for more information.

3. Select the Subnet compartment, and a private subnet in your compartment.

   See VCNs and Subnets for more information.

4. (Optional) Click **Advanced options** to configure advanced options, including adding network security groups, and specifying a private IP address.

   See Configure Private Endpoint Advanced Network Options.

Update the Private Endpoint Details

After an instance is configured as a private endpoint, you can update the instances VCN and subnet details and add network security groups.

1. On the Visual Builder Instance Details page, click **Edit** to open the Edit Visual Builder Instance dialog.
2. Make any changes to the instance's advanced network options.

   You can add the instance to network security groups (NSGs) in the advanced network options. See Configure Private Endpoint Advanced Network Options.

3. (Optional) Make any changes to the VCN compartment and subnet compartment settings.

> **Note**
>
> If you change the subnet, the private endpoint needs to be recreated, and a new IP is assigned to the private endpoint.

See VCNs and Subnets for more information.

4. Click **Save Changes**.

> **Note**
>
> In some cases you might need to reconfigure your private endpoint. This will delete the private endpoint, and then re-create the endpoint using the same subnet and private endpoint IP from your current settings. To reconfigure a private endpoint:
>
> - Click **More actions** on the Visual Builder Instance Details page, and then select **Reconfigure private endpoint** in the dropdown list. Click **Reconfigure** when asked to confirm.

See Private Endpoints Notes for more information.

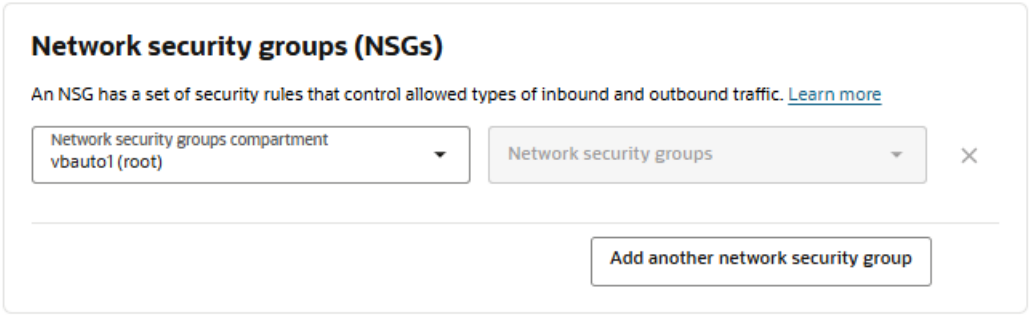
Configure Private Endpoint Advanced Network Options

The private endpoint access advanced options allow you to enter a user-specified private IP address and add one or more network security groups.

These steps assume you are provisioning or editing a Visual Builder instance and you are in the **Choose network access** pane.

1. Select **Private endpoint access only**, if not selected.
2. (Optional) Click **Show network advanced options**.

   The advanced network options enable you to provide a private IP address and specify a network security group (NSG).



   a. Optionally enter a **Private IP address**.

      Use this field to enter a custom private IP address. The private IP address you enter must be within the selected subnet's CIDR range.

If you do not provide a custom private IP address, the IP address is automatically assigned.

b. Optionally add **Network security groups (NSGs)**.

If you want more security over connections to the Visual Builder instance, you can define security rules in an NSG; this creates a virtual firewall for your instance.

- Select a Network Security Group in your compartment to attach the Visual Builder to. If the Network Security Group is in a different compartment, select a different compartment and then select a Network Security Group in that compartment.
- Click **+ Another Network Security Group** to add another Network Security Group.
- Click **x** to remove a Network Security Group entry.

> **Note**
>
> Incoming and outgoing connections are limited by the combination of ingress and egress rules defined in NSGs and the Security Lists defined with the VCN. When there are no NSGs, ingress and egress rules defined in the Security Lists for the VCN still apply. See Security Lists for more information on working with Security Lists.

See Network Security Groups for more information.

Restrict Outbound Traffic Using Network Firewall

You can make outbound traffic from your private endpoint-enabled VB instance more secure by configuring the NAT gateway to ensure that all traffic passing through the gateway is processed by your Network Firewall security rules.

The following are the basic steps for creating a network firewall, and a firewall policy to allow selected URLs to pass through the firewall. For more about using and creating firewalls, see Learn OCI Network Firewall in Oracle Cloud Infrastructure with Examples and Overview of Creating a Firewall.

> **Note**
>
> To create the firewall policy, you will need to know the reverse connection endpoint (RCE) IP addresses of your Visual Builder private endpoint. You will need to submit a Service Request (SR) to obtain the RCE IPs.

To create a network firewall and policy:

1. Create the network firewall policy.
   a. In the OCI Console navigation menu, click **Identity and Security**, and then select **Network firewall policies**.
   b. Click **Create network firewall policy**, then provide a name and select your compartment in the Create network firewall policy panel. Click **Create network firewall policy**.
   c. Select **Address lists** under Policy resources, then click **Create address list**.

d. In the Create address list panel, enter the instance's RCE IPs, as well as the private IP address of the VB instance, one on each line. Click **Create address list**.

e. Select **URL lists** under Policy resources, then click **Create URL list**.

f. In the Create URL list panel, enter the URLs you want to allow, one on each line. Click **Create URL list**.

   The list must included `static.oracle.com` to allow access to runtime libraries needed during staging and publishing.

g. Select **Security rules** under Policy resources, then click **Create security rule**.

h. In the Create security rule panel, enter a name and specify the following security rule details:

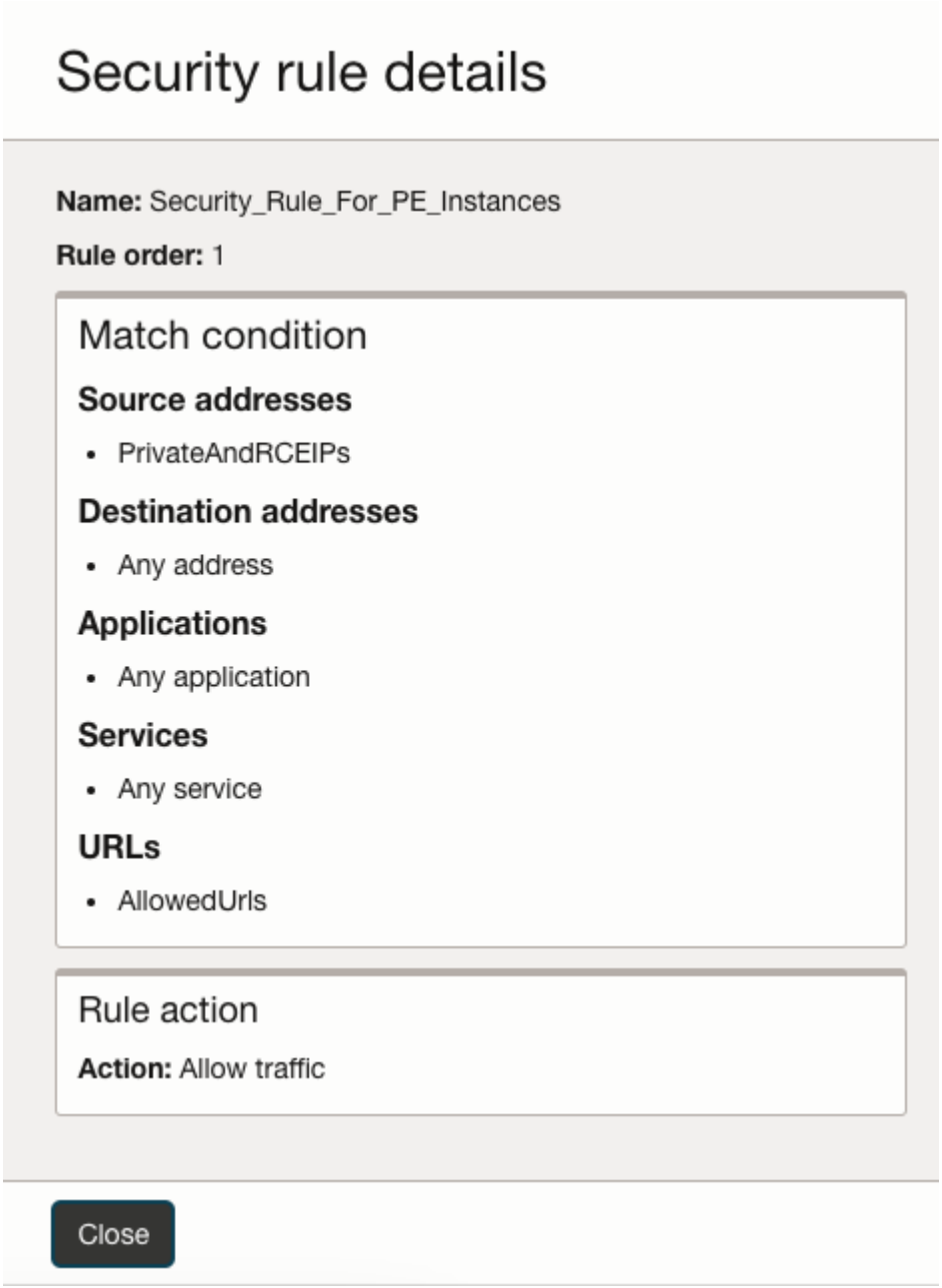
   i. In the Source addresses pane, select **Select address lists**, and then select the address list you created.

   ii. In the URLs pane, select **Select URL lists**, and then select the URL list you created.

   iii. In the Rule Action pane, select **Allow Traffic** in the drop-down list.

   Click **Create security rule**.

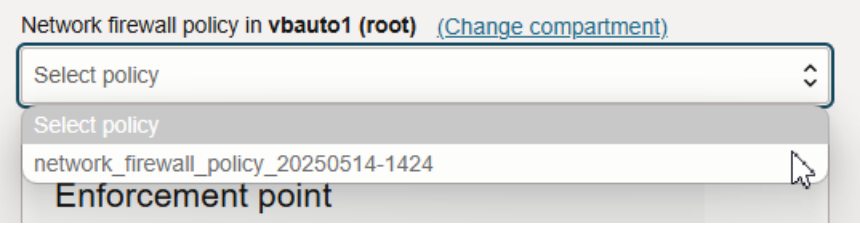
   The details of your security rule might look something like this:



2. Associate the network firewall policy you created with your network firewall.
   a. Select **Network Firewalls**, and then click **Create network firewall**.

      If you already have a firewall, select the firewall you want to use to open the Edit panel.

   b. In the Create network firewall panel (or the Edit panel), select the network firewall policy you created in the drop-down list.



c. Click **Create network firewall** (or **Save changes** if you are editing a firewall).

Access the Instance Locally Using the OCI Bastion Service

You can use the OCI Bastion service to access a private endpoint-enabled Visual Builder instance from your local system.

The Bastion service enables you to create and manage sessions that provide authenticated users temporary access to supported hosts that do not have a public IP address.

1. Create a bastion in the same private subnet as the Visual Builder instance.
   a. In the OCI Console navigation menu, click **Identity and Security**, and then select **Bastion**.
   b. Select **Create bastion**.
   c. Enter a name for the bastion, or use the generated name.
   d. In the Configure networking pane, confirm the target virtual cloud network compartment and target subnet compartment are correct.
   e. Enter the **Target virtual cloud network** for the compartment.
   f. Enter the **Target subnet** for the subnet compartment.
   g. Enter `0.0.0.0/0` in the **CIDR block allowlist**. Click **Create bastion**.
2. Create an SSH port forwarding session to create an SSH tunnel to a specific port on the target resource.
   a. Select the bastion you created.
   b. On the details page, select **Sessions**.
   c. Select **Create session**.
   d. Select **SSH port forwarding session** as the session type.
   e. Enter the **IP Address** of the VB instance, and specify port 443.
   f. Under **Add SSH key**, provide the public key file of the SSH key pair that you want to use for the session.

      You must provide the private key of the same SSH key pair when you connect to the session.
3. Connect to the SSH server.
   a. On the **Bastions** list page, select the bastion that contains the port forwarding session that you want to work with.
   b. On the details page, select **Sessions**, and locate the session that you want to use to connect to the intended target resource.
   c. From the **Actions** menu for the session, select **View SSH command**, and then, next to **SSH command**, select **Copy**. Select **Close**.

The copied SSH command might look something like this:

```
ssh -i <privateKey> -N -L <localPort>:10.4.0.22:443 -p 22
ocid1.bastionsession.oc1.us-sanjose-1.amaaaaaarnqxz5aa2vl
lvisdqikxdhsq@host.bastion.us-sanjose-1.oci.oraclecloud.com
```

d. In a text editor, edit the command to replace `<privateKey>` with the path to the private key for the public key used when you created the session, and change the `<localPort>` to port 443.

   The edited SSH command might look something like this (changed text in bold):

```
sudo ssh -i ~/Downloads/ssh-key-2025-02-10.key -N -L 443:10.4.0.22:443 -
p 22
ocid1.bastionsession.oc1.us-sanjose-1.amaaaaaarnqxz5aa2vl
lvisdqikxdhsq@host.bastion.us-sanjose-1.oci.oraclecloud.com
```

   You might need to use `sudo` to listen on port 443.

e. Open your command terminal and run the SSH command to start listening on port 443.

4. On your local system, add an entry in the `/etc/hosts` file for the service URL.

   The entry in the `hosts` might look something like this:

```
127.0.0.1 private-test-vb.builder.us-sanjose-1.ocp.oraclecloud.com
```

For as long as the bastion session is active, you can access the VB instance by opening the URL you specified in the hosts file (`private-test-vb.builder.us-sanjose-1.ocp.oraclecloud.com`) in your browser.

Private Endpoints Notes

Describes restrictions and notes for private endpoints on Visual Builder.

- After you update the network access to use a private endpoint, or after the provisioning completes where you configure a private endpoint, you can view the network configuration on the Visual Builder Details page under the **Network** section.

  The **Network** section shows the following information for a private endpoint:

  – **Subnet**: This includes a link for the subnet associated with the private endpoint.

  – **Private endpoint IP**: Shows the private endpoint IP for the private endpoint configuration.

  – **Network security groups**: This field includes links to the NSG(s) configured with the private endpoint.

- You can map a custom endpoint to a private endpoint during the provision process, or after provisioning completes.
- You can specify up to five NSGs to control access to your instance.
- You can change the private endpoint Network Security Group (NSG) for the instance.

  To change the NSG for a private endpoint, do the following:

  1. On the Visual Builder page, select the instance you want to edit.

2. On the **Visual Builder Details** page, click **Edit**. In the Edit instance, click **Show network advanced options** to open the pane and edit the details in the Network security groups (NSGs) pane.

- You can connect your private endpoint to an ATP database in the same VCN and subnet. See Access an ATP Database Configured as a Private Endpoint. To connect to a database in a different VCN, you need to configure private views using DNS in the VCNs.
- Modifying a private IP address is not allowed after you provision an instance, regardless of whether the IP address is automatically assigned or if you enter a value in the **Private IP address** field.
- You cannot change the node count for private endpoint-enabled Visual Builder instances. You will need to raise a service request to increase the node count for private-endpoint enabled Visual Builder instances.
- When using a load balancer in front of a private endpoint, use the private endpoint IP for the Load Balancer Backend, and forward traffic on port 443. You also need to share the IP address of the public load balancer with your DevOps/Networking team so they can update the DNS registration to make the instance URL publicly accessible.

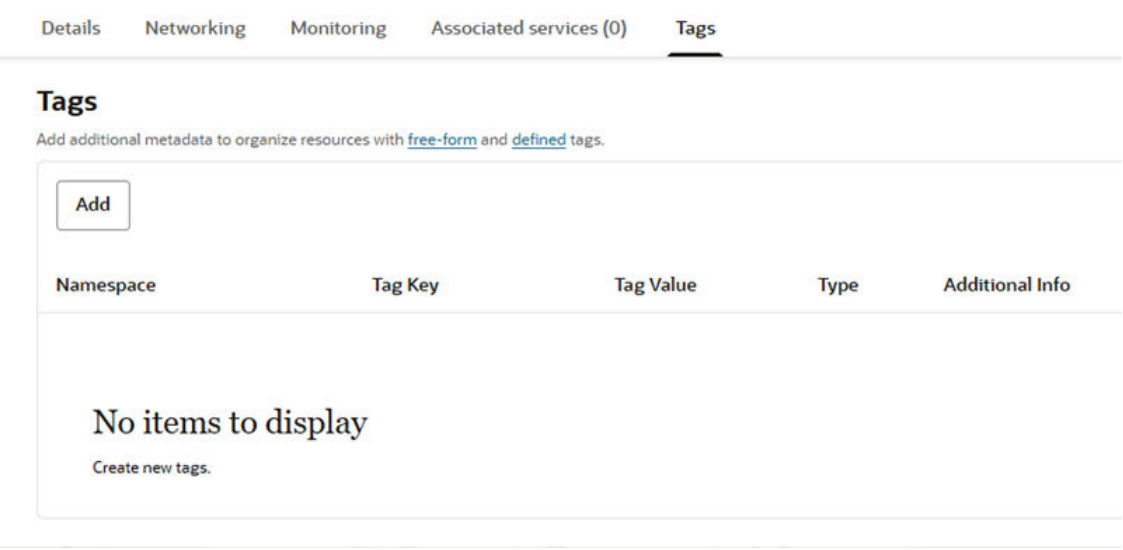
Manage Visual Builder Tags

OCI tags enable you to tag your OCI resources, such as your Visual Builder instance, and help you organize resources based on your business needs. You can manage tags from the Visual Builder Instance Details page.

If you're new to OCI tags, see Tagging Overview.

Action	How To
Add a tag	1. On the Visual Builder Instance Details page, click **Add Tags** in the **More Actions** menu. 2. In the Add One Or More Tags To This Resource dialog box, enter the tag's namespace, key, and value. 3. Click **Add Tags**.
Edit a tag	1. On the Visual Builder Instance Details page, click the **Tags** tab. 2. To edit a tag, click its **Edit** icon. 3. In the Edit Tag dialog box, edit the tag and click **Save**.
Remove a tag	1. On the Visual Builder Instance Details page, click the **Tags** tab. 2. To edit a tag, click its **Edit** icon. 3. In the Edit Tag dialog box, click **Remove Tag**.

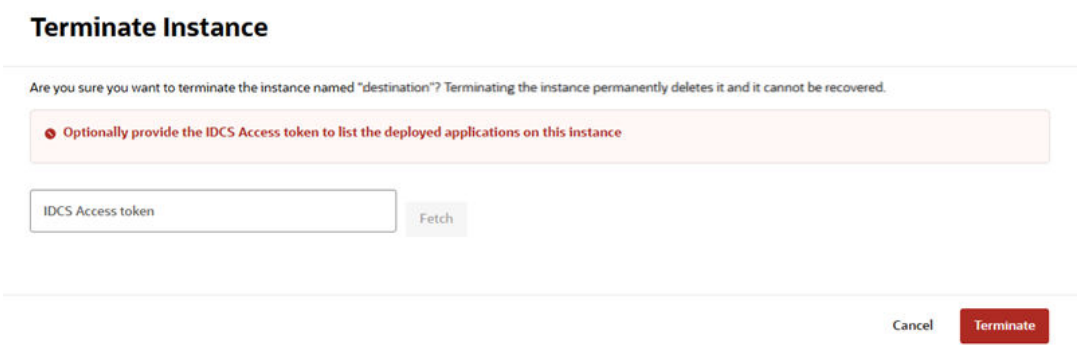
You can see the Add Tags item in the More Actions menu in this image.



Terminate a Visual Builder Instance

Terminating a Visual Builder instance removes its applications and data. You can't undo the terminate action.

1. Open the Visual Builder instance's details page.
2. From the **More Actions** drop-down menu, select **Terminate** to open the Terminate Instance dialog box.



3. Optional: In the Terminate Instance dialog box, review the instance's published applications.

   You'll need to provide an Oracle Identity Cloud Service (IDCS) Access token if you want to review the applications deployed to the instance. For details, see Generate Tokens for Confidential Applications in *Administering Oracle Identity Cloud Service*.

   a. In IDCS, open the details page for your instance and click **Generate Access Token**.
   b. In the Generate Token dialog box, select **Available Scope**, and then click **Download Token** to download a file containing the access token to your local system.
   c. On your local system, open the downloaded file and copy the access token.

d. In the Terminate Instance dialog box in the OCI Console, paste the access token into the IDCS Access token field, and then click **Fetch** to retrieve and display a list of applications deployed to the instance.

e. Confirm that you want to permanently delete all the listed applications.

   If there are any applications you don't want to permanently delete, click **Cancel** to close the Terminate Instance dialog box.

4. Click **Terminate** to permanently terminate the instance.

View Instance Activities

You can view a list of instance life cycle activities, such as when the instance was created or updated, in the Activities table. You can also download log files for each activity.

To view the instance's life cycle activities:

1. On the Visual Builder Instances page, find the instance you want to work with and open its details page. If you need help finding the Instances page or the instance, see View and Manage the Visual Builder Instance.
2. On the details page, select **Activities** under **Resources** in the left navigation pane to display the Activities table.

   The Activities table lists the different types of activities, the status of each action, and when the action was performed.
3. (Optional) In the Activities table, from the **Actions** menu in the row of the activity you are interested in, select **Download Logs** or **Download Errors**.

View Instance Metrics

You can use the Metrics pane in the OCI Console to view data about your instance's resource consumption and the number of logged-in users.

To view instance metrics during a specific period of time.

1. Open the Visual Builder Instance Details page of your instance.
2. Click **Metrics** under **Resources** in the left navigation pane.
3. In the Metrics pane, select the Start Time and End Time of the period you want to examine. You can also select a period in the Quick Selects dropdown list.

The Metrics pane contains charts displaying details about your instance:

- The OCPU Consumption chart displays the percentage of each of the instance's CPUs that is being used during a given period.
- The Concurrent Users chart displays the number of users that are logged in to the instance during a given period.
- The Database Usage chart displays how much data is stored in the database during a given period. To see the usage, you need to define a period of time, either by using the Start Time and End Time fields to select dates, or the Quick Select to select a period (for example, "Last 12 hours").
- The Memory Usage chart displays the space currently in use, measured in pages, and expressed as a percentage of used pages versus unused pages.

Each chart contains Interval and Statistic dropdown menus for modifying how the metrics are displayed. Each chart also has an actions menu with additional options. When you hover over a chart, a tooltip is displayed with more detailed metrics.

View Services Associated With Your Instance

You can use the Associated Services table in the OCI Console to see a list of the services that are attached to your VB instance.

When a VB instance is created by a service other than Visual Builder, for example, if an instance is created by enabling Visual Builder in Oracle Integration Cloud (OIC) service, the service and the VB instance are then "attached" to each other. If a VB instance is attached to a service, the attached service is listed in the Associated Services table in the OCI Console.

To open the Associated Services table:

- Open the Visual Builder Instance Details page, and then click **Associated services** under the Resources menu.

You can open the home page of the attached service using the Service console URL in the table.

In some cases, an attachment can be via another service. For example, an Oracle Cloud Application service might trigger an OIC service to create a Visual Builder instance. In this case, the Associated Services table would show this relationship using "parent" and "child" labels: the Oracle Cloud Application service's role would be "Parent", and the OIC service's role would be "Child".

5

Administrative Tasks

After an Oracle Visual Builder service instance is created, an identity domain administrator assigns one or more users the Visual Builder Administrator role for the service instance. A Visual Builder Administrator can manage and set general options for applications in the service instance.

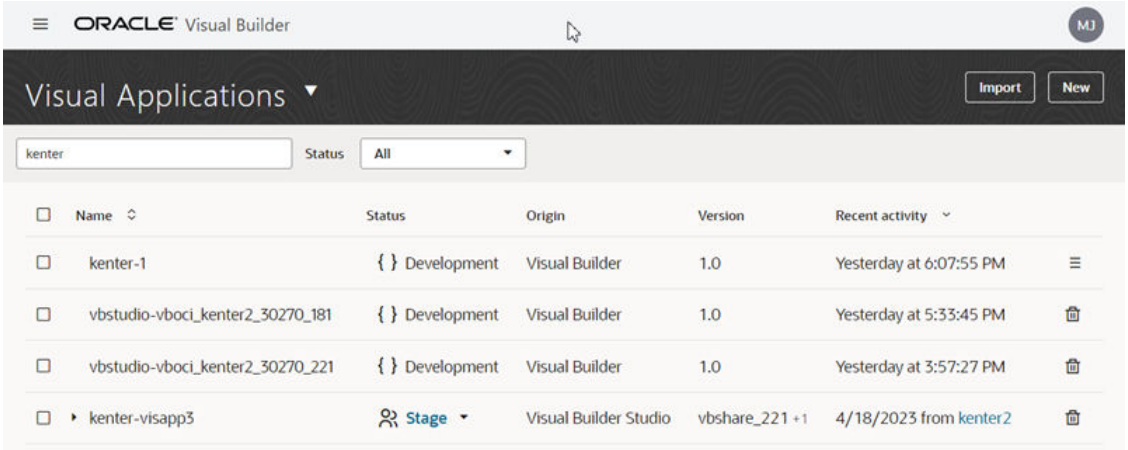
Topics

Manage Applications in the Service Instance

The Oracle Visual Builder Home page helps you manage visual applications created on the current Visual Builder service instance, as well as apps deployed to the instance from a different VB instance or Visual Builder Studio (VB Studio).

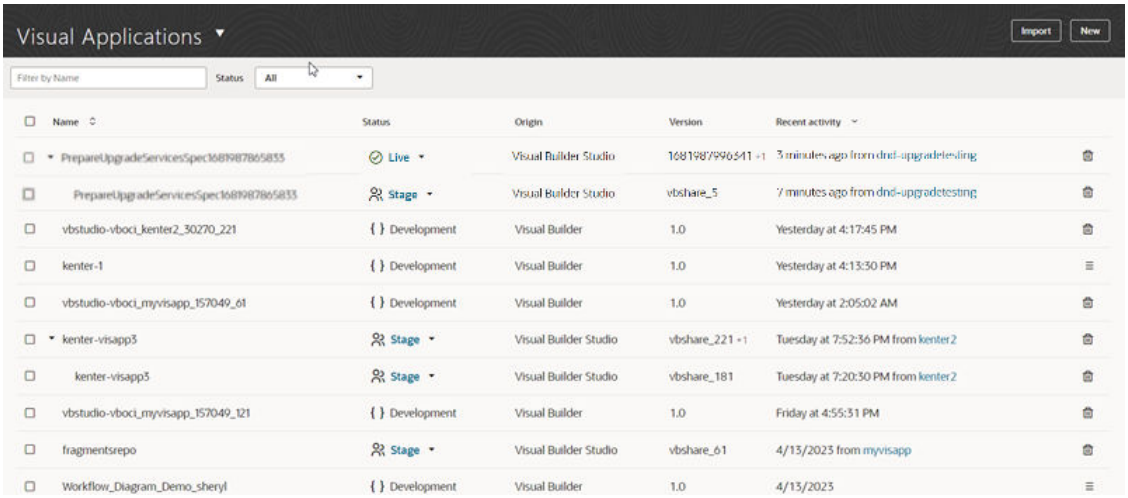
Each row on the Home page represents an application created either on a Visual Builder instance, or on a VB Studio instance that is associated with this Visual Builder instance. The

Origin column on the Home page contains "Visual Builder Studio" if the app was shared or published in Visual Builder Studio:



The first row in the image above represents an application created on this VB instance, which can be managed using the ☰ in the right column. The rows below represent applications created on a VB Studio instance, and the only option on the Home page for these is to click 🗑 in the right column to remove them from the VB instance. To manage an app created in VB Studio, you should open the app's VB Studio project. The VB Studio project provides tools for managing an application's lifecycle that are equivalent to those in the Options menu for applications created on the VB instance. For example, in the project's Builds tab you can configure a build job to set the app's version and then stage it. For more about managing an application's lifecycle in VB Studio, see Preview, Share, and Deploy Visual Applications in *Building Responsive Applications with Visual Builder Studio*.

If you're an administrator, you can manage (which includes deleting) any of the apps shown on the Home page. To see the full list of applications, select the **Administered by me** checkbox next to the Status dropdown list.



If you're a developer, you can manage the apps that you've created in this instance of Visual Builder, or if you're a team member of the app. You can also manage VB Studio apps from the

Home page, as long as you've created, shared or published it. You will not see the **Administered by me** checkbox unless you have the role of administrator.

IDCS Client Applications

Each time a visual application is created on a Visual Builder instance, a companion *client application* is automatically created in IDCS. When you stage or publish the app to a different server governed by the same IDCS instance, another client application is created. This means there may be several client applications for the same visual application running on IDCS for the lifespan of the app.

If you have IDCS administrator privileges, you can see these client apps on the IDCS console, but you should not need to *manage* them in any way. When a visual application is removed from the server, the associated client apps are removed from IDCS. You may need to *interact* with the client apps if you want to set login-related policies for a Visual Builder service instance —for example, to enable the **Keep me signed in** policy, or to assign the users and groups who can access the application.

When you want to view client applications in the IDCS console, make sure that you are looking at the correct IDCS app for the VB instance. For example, when a VB instance is provisioned with OIC, VB shares the IDCS app of the OIC instance, and the client apps will be listed in that IDCS app. You can look at the URL of the service host name to help determine the correct IDCS app for the instance:

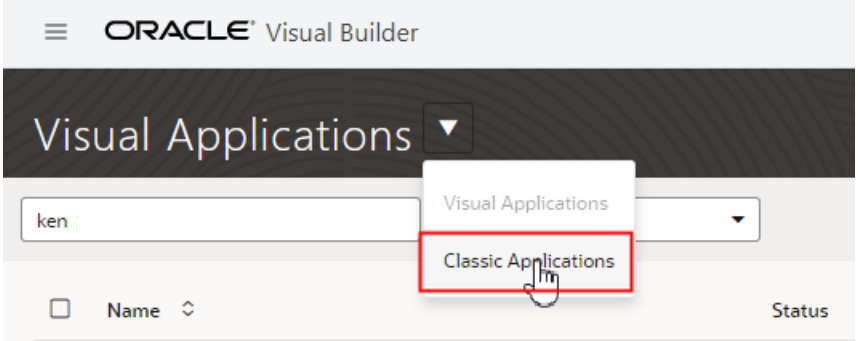
- When the URL contains `<SUB-DOMAIN>.builder.ocp.oraclecloud.com`, the VB instance will have its own IDCS app.
- When the URL contains `<SUB-DOMAIN>.integration.ocp.oraclecloud.com`, it is an OIC instance, and the VB instance will share the OIC instance's IDCS app.

For more, see Typical Workflow for Managing Oracle Identity Cloud Service Applications in *Administering Oracle Identity Cloud Service*.

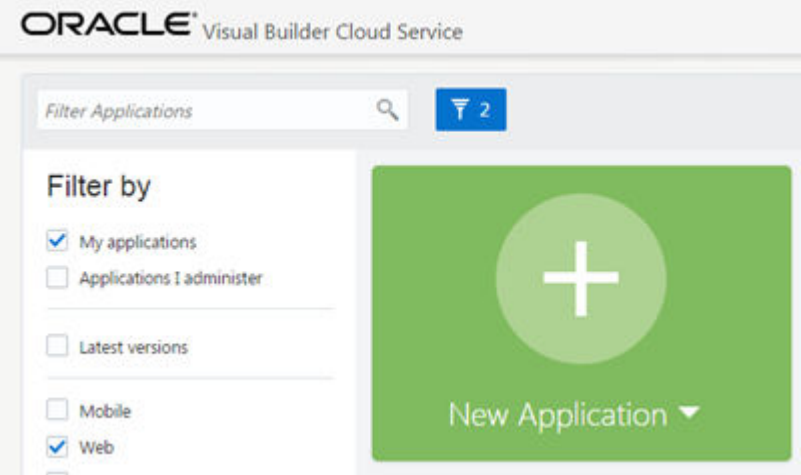
> **Tip**
>
> Developers can also view details of client apps created in IDCS for their visual applications and can provide details of the exact client app to help you troubleshoot issues more easily. See How Do I View Details of Client Apps in IDCS? in *Developing Applications with Oracle Visual Builder*.

Visual Builder Classic Applications

If you have any classic applications (apps that have the older Visual Builder project structure), open the Visual Applications dropdown list in the header and select **Classic Applications**.



On the Home page for classic applications, administrators can select the **Applications I administer** checkbox in the Filter by pane to display the applications where they are not a team member.



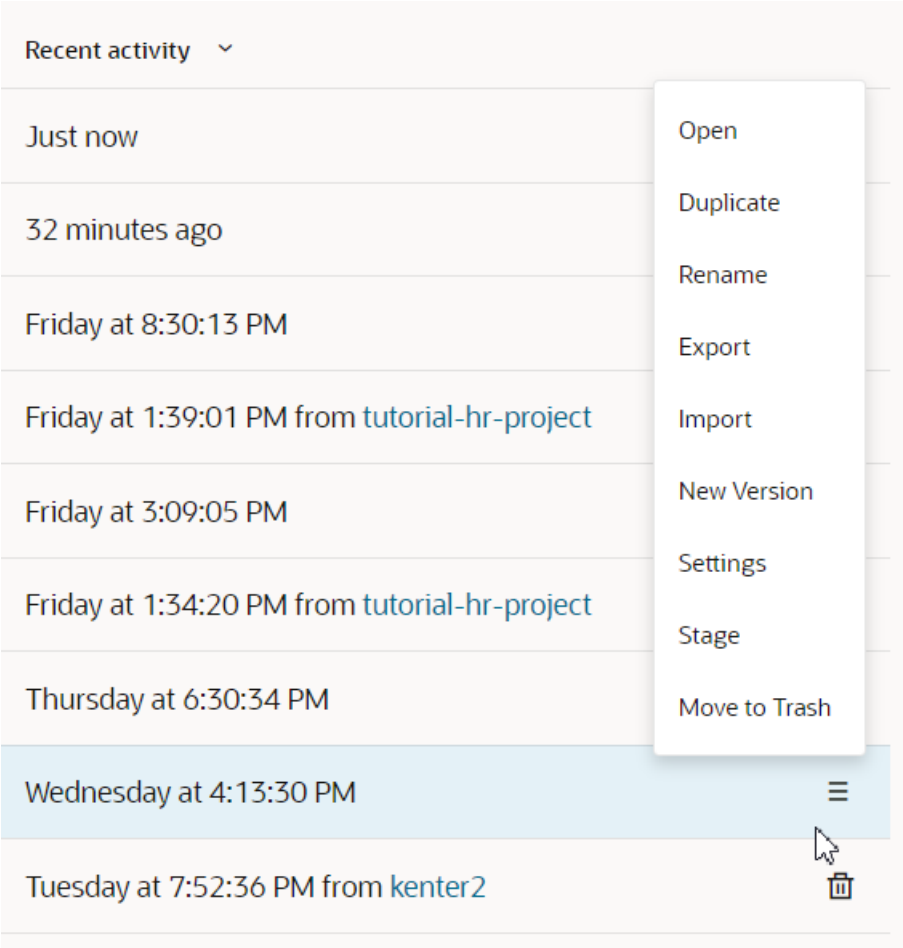
Manage Applications Created on the Instance

The table of applications on the Home page includes visual applications created on the Visual Builder instance. Each of these applications has an Options menu in the right column that developers and administrators can use to manage it, for example, to add and remove team members, and to open, stage and publish the application.

You can tell which applications were created on the instance by looking for ☰ in the right column. If you see a 🗑 button instead of ☰, the application was created on a different instance of Visual Builder or a VB Studio instance. If an application was created on a different instance, you'll need to open the application on the instance where it was created and manage it there.

To manage an application created on the current Visual Builder instance:

- Click ☰ in the right column of the application, and then select a task in the Options menu:



The Options menu displays commands for managing the application (based on the application's status, some commands might be hidden):

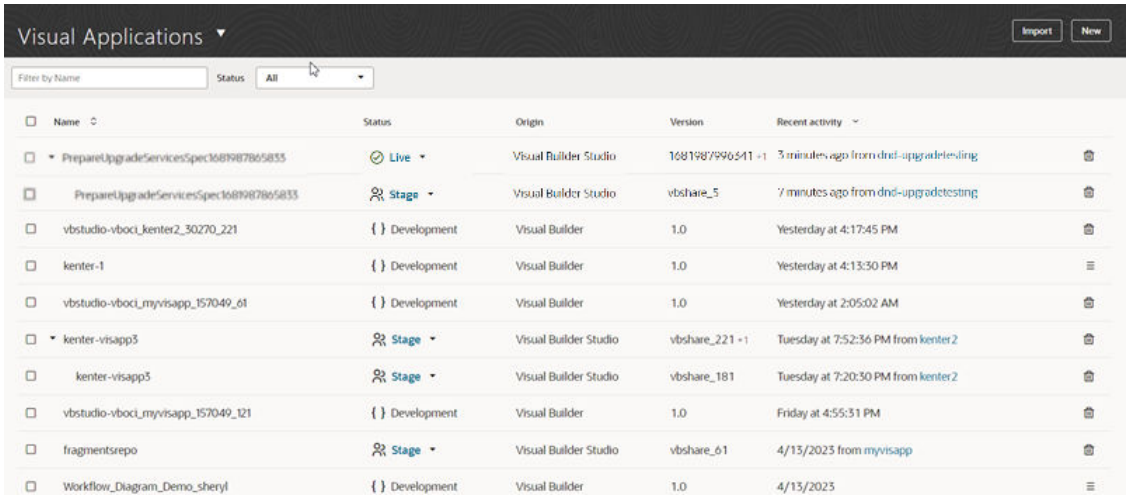
Menu Item	Description
Open	Opens the development version of the application
Duplicate	Creates a clone of this version of the application, including the content of the database.
Rename	Opens a dialog box where you can change the name of the application.
Export	Creates a ZIP archive of the application that can be imported as a new application. When exporting the application, you can choose if you want the exported archive to include the data stored in your business objects.
Import	Opens a dialog that you can use to create an application by uploading an application archive (ZIP or OVB) from your local system.
New Version	Creates a new version of the same application. By default the new version is a development version. Version numbers are automatically increased incrementally.
Settings	Opens an editor for configuring the application’s settings and viewing the application API URLs. Each application version has a dedicated Settings editor.

Menu Item	Description
Stage	Opens a dialog box where you can specify the database option for the staged application. When an application is staged, a link to the staged version is displayed in the tile.
Publish	Opens a dialog box where you can specify the database option and publish the staged version of your application.
Lock / Unlock	Enables you to lock a live application to prevent any users from using the application. You would usually use this command when you are going to update the live application with a newer version. The Unlock option is displayed only when the live application is locked.
Rollback	Rolls back the live version to the previous live version. This is only available for the current live version, and there must be an older live version of the app.
Move to trash	Deletes the application from the Identity Domain. You have 30 days to recover the application after deleting it. For more, see Delete a Visual Application in *Developing Applications with Oracle Visual Builder*.

Manage Applications Created on a VB Studio Instance

When a VB instance is associated with a VB Studio project, visual applications created, shared and published in the VB Studio project are included on the Home page. These applications are visible to administrators, and to the developers who created the applications.

When you create a visual application in VB Studio, you do so in the context of a *workspace*, a completely private area where your app and its assets are stored. While creating your workspace, you are asked to designate an instance of Visual Builder to serve as the target for deployment; you don't deploy visual apps to a VB Studio instance. In addition to serving as a deployment target, the Visual Builder instance you name is also used to support the creation of business objects, as well as the VB Studio Share and Publish actions. That is, if you create a business object in the context of your app, a new app representing the schema for that object is created in the VB instance associated with your workspace. In the image below, the third row shows such a schema-based app; the first row represents an app that was published in VB Studio, and the second row represents the app after the Share action is used in VB Studio.



You can tell if an application was created on a different VB instance or a VB Studio instance because there will be a button in the right column, and the only option on the Home page is to remove the application. To perform other tasks, for example, to add members to the team, you need to open the application in the instance where it was created. For apps created in VB Studio, you can use the link in the Recent activity column to open the app's VB Studio project.

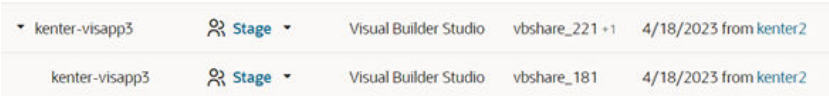
To remove an application from the current Visual Builder instance:

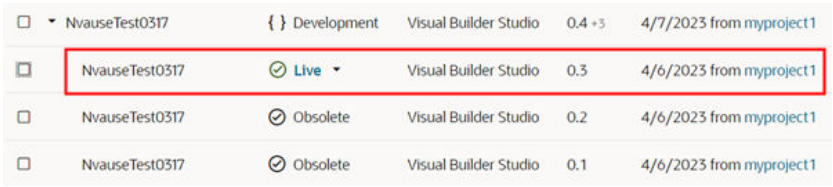
1. Locate the row in the table containing the application.
2. Do one of the following:
   a. Click the button in the right column.
   b. Select one or more applications, then click **Move to trash** in the header.
3. Confirm the applications you want to delete by clicking **Move to Trash** in the Move Application to Trash dialog box.

For details on deleting multiple versions of applications, and live or live locked versions, see Delete a Visual Application.

This table describes the types of applications that will appear on the Home page when developing a visual application in VB Studio.

When you ...	Description
Create a workspace for an application	A "container" application for the application's business objects is automatically created on the VB instance. This represents the schema for the business objects used in a visual app's workspace. On the Home page: • The name in the table will often contain the name of the VB Studio instance, the project name and a workspace id. • The application's Status column contains "{ } Development". • The application's Origin column contains "Visual Builder" or "Visual Builder Studio. This image shows two apps, each representing a workspace in a Visual Builder Studio project:  If the application for a workspace is removed on the Home page, it's automatically generated again the next time the workspace is opened. **Note** No client application is created in IDCS for these container applications created for workspaces.

When you ...	Description
Share a visual application	The application is staged on the VB instance, and a client application is created for the app's 'development' app profile and added to the list of applications in the IDCS environment. An application representing the client application is also added to the VB instance Home page table. Though sharing the application might create multiple client apps, the table will only list one application for the shared app. The application name on the Home page is usually the name of the visual application. On the Home page: • The application's Status column contains "Stage". • The application's Origin column contains "Visual Builder Studio". • The application's Version column contains "vbshare_". • The application's Recent column contains a link to the application's Project Home page where you can manage the application. This image shows what two visual application shared from two VB Studio workspaces in a project might look like when viewed on the Home page:  **Note** If the client application is removed on the Home page or in IDCS, the shared application will not work correctly. If the shared application is no longer needed, you can remove the application.

When you ...	Description
Publish an application	The application is deployed to the VB instance, and a client application for the app's 'stage' (or 'publish') app profile is created and added to the list of applications in the IDCS environment. An application representing the client app is also added to the VB instance Home page table. In the table, the application name will usually be the name of the visual application. This name can be changed in the application's `visual-application.json` file. On the Home page: • The application's Status column contains "Stage" or "Live". Older versions will be marked as "Obsolete". • The application's Origin column contains "Visual Builder Studio". • The application's Recent column contains a link to the application's Project Home page where you can manage the application. This image shows what an application published from Visual Builder Studio might look like when viewed on the Home page:  **Note** If the client application of a live or staged app is removed, on the Home page or in IDCS, the application will not work correctly. If the application is no longer needed, you can remove the application.

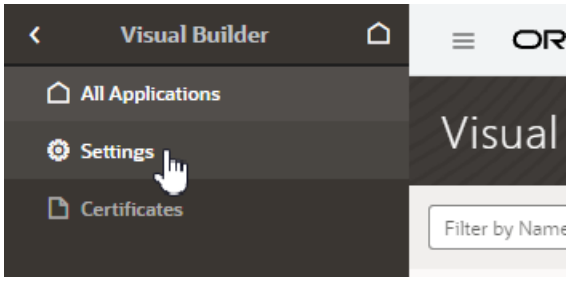
Access Instance Settings

An instance administrator can access the Tenant Settings page for managing the instance's global settings from any Visual Builder page.

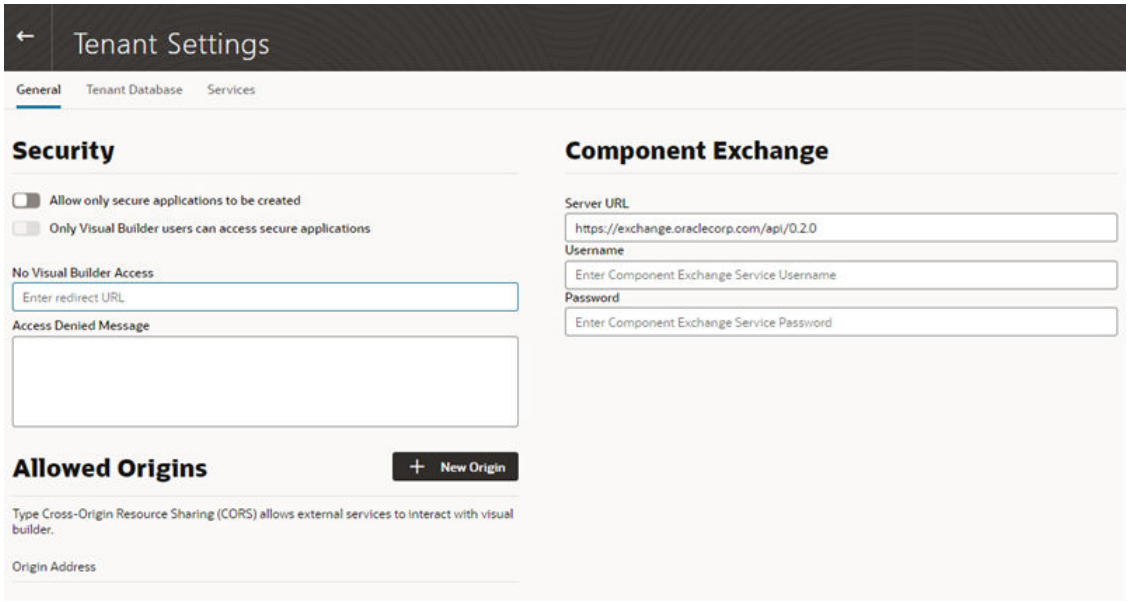
The Tenant Settings page contains three tabs: General, Tenant Database and Services. The General tab has panels for configuring security settings, specifying Access Denied messages, and configuring the Component Exchange details. You use the Tenant Database tab to switch to an Oracle database and to see how much database space your applications are using. You use the Services tab to add and edit the backend services that are accessible to apps in the tenant.

To open the Tenant Settings page:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Settings** in the navigation menu to open Tenant Settings.



The settings available for the instance are grouped in the General, Tenant Database and Services tabs on the page.



Choose Your Instance's Update Window

Functional updates for Visual Builder are provided in two windows, which are typically two weeks apart. You can select when you want an instance updated by selecting either `Window 1` or `Window 2`. We recommend that non-production instances be updated in the first window (`Window 1`) and production instances in the second window (`Window 2`). This allows you to test your applications in your test and development environments before the update is applied to your production environment.

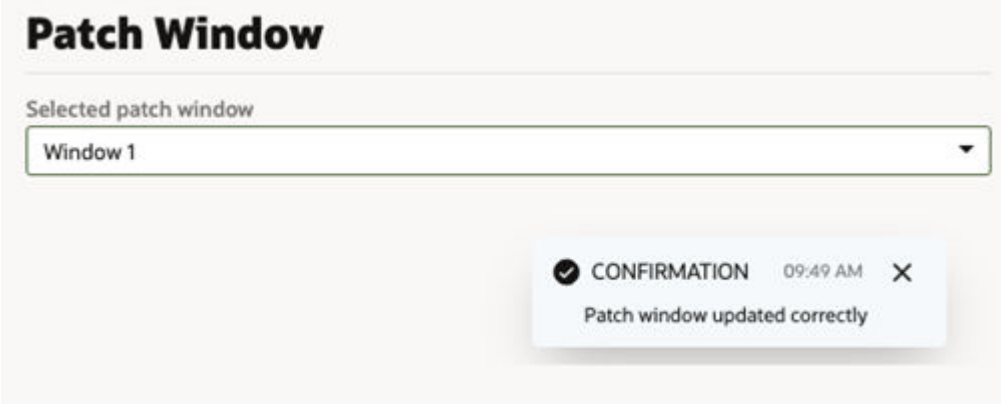
> **Note**
>
> Oracle automatically sends notifications to the instance's account administrator each time it will be updated, confirming the instance's next update window. Once we send out the notification, it's too late to change your window for that update. If you do make a change, it won't be applied until the following update.

To set the update window option:

1. Open the Visual Builder instance's **Tenant Settings** editor.

2. In the General tab, select the window option in the Patch Window dropdown list.

   There are only two options: `Window 1` and `Window 2`. The default update window is `Window 1`.



Configure Security Options for Applications

Administrators can use the Security panel in the Tenant Settings page to require authentication for all applications in the instance.

When an administrator enables the **Allow only secure applications to be created** option, all published and staged applications in the instance will require user authentication. When the option is enabled, users must log in to access the applications in the instance, even if anonymous access is allowed in the application's settings. When the option is not enabled, applications can be created that allow access to anonymous users.

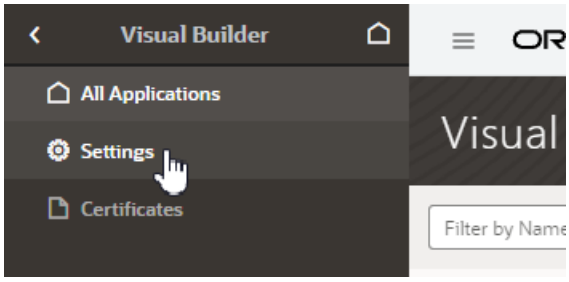
When an application has the default security settings, any user with a valid login can access the pages in an application. A developer can modify the default security settings to define the roles that can access applications, pages and components.

When the secure application option is enabled, an administrator can enable the **Only Visual Builder Users can access secure applications** option so that only Visual Builder users (those assigned the default Service User role) can access the staged and published applications in the instance. For example, this allows you to configure security so that users assigned the Visual Builder Developer role can access the designer, but can't access the published application and data because they are not assigned the Visual Builder Service User role.

An administrator can also use IDCS roles when configuring the instance's security so that a user's access is limited to just the secure applications. Users assigned the selected IDCS role would be able to access the applications, but would be prevented from accessing Visual Builder or Oracle Integration resources external to the application, such as other Oracle Integration integrations.

To configure the security options for all applications in the instance:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Settings** in the navigation menu to open Tenant Settings.

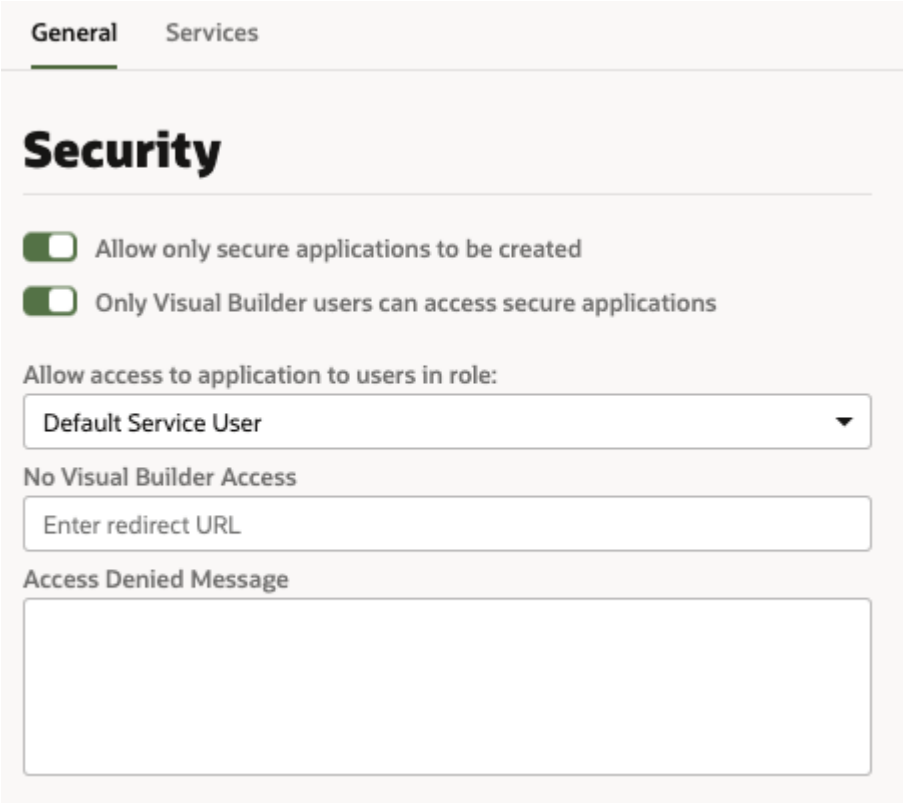


3. In the **Security** panel, enable **Allow only secure applications to be created**.

   Anonymous users can't access the applications when this secure applications option is enabled.

4. Select the **Only Visual Builder Users can access secure applications** option if you want to allow only Visual Builder users (users assigned the Service User role) access to the applications.

   To change the users allowed to access the application to those assigned a specific IDCS role *instead of* those assigned the default Service User role, select the IDCS role in the dropdown list under **Allow access to application to users in role**. This option is only available when both of the other security options are enabled.



5. Specify what users denied access to the secure application will see:
   a. Enter the URL you want the users redirected to when they can't access the app.
   b. Enter an Access Denied message that they will see when denied access to a page in the app.

Assign Roles for Users to Access an Application

Administrators must assign roles to users, so they have the permissions required to access Visual Builder applications.

Privileges associated with a user role determine what tasks users assigned those roles can perform. See Privileges Available to Roles in Oracle Visual Builder.

To assign roles to users:	See this:
For Visual Builder	About Setting Up Users and Groups

If your Visual Builder instance is part of Oracle Integration, Generation 2 or Oracle Integration 3:

To assign roles to users:	See this:
For Oracle Integration, Generation 2	About Setting Up Users, Groups and Policies in *Provisioning and Administering Oracle Integration Generation 2*
For Oracle Integration 3	Manage Access and Assign Roles in *Provisioning and Administering Oracle Integration 3*

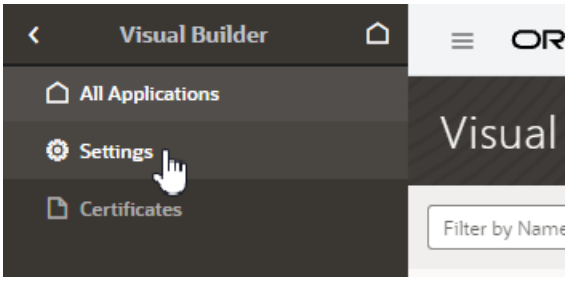
Set Page Messages for Access Denied Errors

Administrators can use the instance's settings page to specify a URL that users are navigated to when they are denied access to an application or page.

Authenticated users might see an Access Denied page or message when they attempt to access an application or page in an application that their user role is not permitted to access. Administrators can set the default page or message that users see when they are denied access to an application or page. Access Denied messages that are set at the application level in the General Settings of an application will override messages set in the instance's settings page. The default Access Denied page and message is used if the message options in this panel are not set.

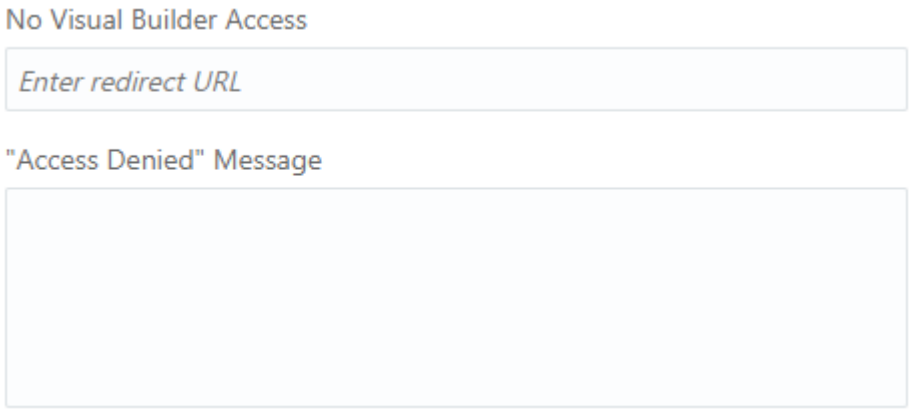
To specify an Access Denied page or message for applications in the instance:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Settings** in the navigation menu to open Tenant Settings.



3. In the **Security** panel, type a URL that users are directed to when denied access to an application.

The URL that you specify is used as the Access Denied page for all applications in the instance and should be accessible to users who are not logged in.



> **Note**
>
> If you are configuring settings for classic applications, the Access Denied settings are set in the **Messages** panel.

4. Type the message that you want users to see when they are denied access to a page.

   The message that you enter will be displayed in the Access Denied page for all applications in the instance except for those where a message was set at the application level in the application's General Settings page.

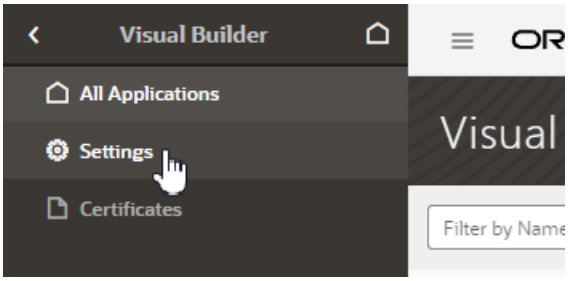
Allow Other Domains Access to Services

Use the Global Settings page to specify the domains that are permitted to interact with services in your instance.

Cross-Origin Resource Sharing (CORS) is a mechanism that enables you to specify the domains that are allowed to exchange data with applications in your instance. By default, incoming requests from domains not on your instance's list of allowed origins are blocked from accessing application resources.

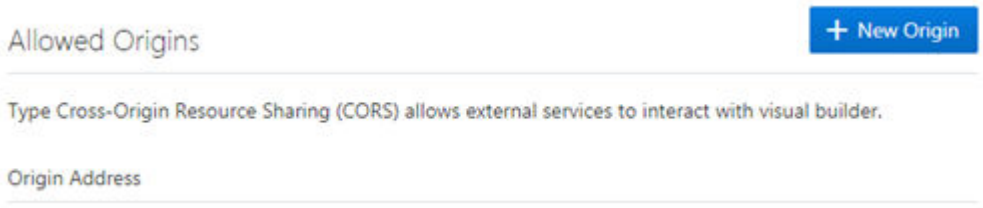
To add a domain to the list of allowed origins:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Settings** in the navigation menu to open Tenant Settings.



3. In the **Allowed Origins** panel, click **New Origin** and type the URL of the domain that you want to allow. Click **Submit**.

   The URL must be a fully-qualified domain, meaning it must contain `http://` or `https://`, for example, `https://myoracle.cloud.service`. You must explicitly enter each fully-qualified domain that you want to allow. To allow both `http://` and `https://` connections from a domain, you would need to add both domains (`https://myoracle.cloud.service` and `http://myoracle.cloud.service`).



The Allowed Origins panel lists all origins that are permitted to retrieve information from the instance.

Allow Your Instance to Access Services

If your Visual Builder instance needs to access an external service, your instance needs to be included in the service's allowlist (formerly a whitelist).

A service typically uses an Access Control List (ACL), called an allowlist, to restrict the networks and services that are allowed to access it. Only users from an IP address or Virtual Cloud Network (VCN) on the allowlist are allowed access to the service. The allowlist restrictions are in addition to the standard authorization mechanisms, such as user credentials, which are always in place.

Any Visual Builder instance that requires access to an external service, such as a REST web service, must be on the external service's allowlist. To get on a web service's allowlist, you'll need to work with the web service's administrator to add an ACL access rule for your VB instance. This may require filing a Service Request with the web service's administrator. You'll typically only need to do this when creating a new VB instance that will require access to a service, or when you plan to start using a new service in a VB instance. A VB instance can be added to an allowlist at any time, even before the instance has been created.

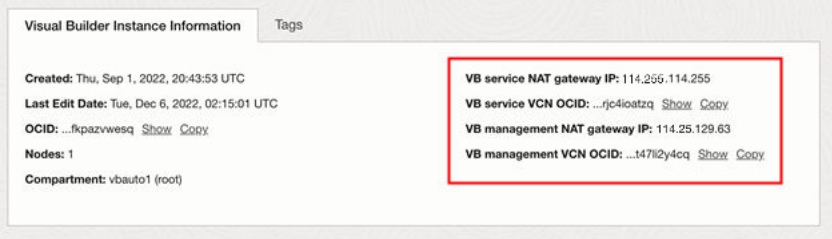
Depending on the location and type of the service your VB instance needs to access, you'll need to provide the service's administrator with:

- the Visual Builder *service* VCN,
- the Oracle Cloud ID (OCID) of the Visual Builder service VCN, or
- the NAT gateway IP address of the Visual Builder service VCN.

A VB instance's service VCN, OCID and NAT gateway IP address are determined by the instance's *region*. For example, `iad-vb-isovcn` is the VB service VCN for instances in the Ashburn region. For details on what these are, see Overview of VCNs and Subnets and NAT Gateway in the *OCI Documentation*.

> **Note**
>
> Visual Builder instances that use an Oracle DB service (ATP, DBaaS) will **also** have a VB *management* VCN. The VB management VCN OCID or NAT IP **must also** be added to the service's allowlist. Access from the VB management VCN is required so that schemas related to the VB service can be updated, for example, when patches or updates are applied to the instance.

You can view an instance's VB service NAT gateway IP and VCN OCID in the instance's Networking tab in the OCI Console. If the instance also has a VB management NAT gateway IP and VCN OCID, they will also be displayed in the tab:



The instance details you need to provide in the Service Request will depend upon the location and type of the service your instance needs to access:

- For a REST web service located in Oracle Service Network (OSN) (such as ORDS), provide:
  - the VB *service* VCN OCID

  The service administrator needs to configure one access rule, to allow access from the VB runtime service VCN.
- For an autonomous database located in OSN, like ATP, provide:
  - the VB *service* VCN OCID, and
  - the VB *management* VCN OCID

  The service administrator needs to configure two access rules, to allow access from the VB runtime service VCN and the VB management VCN.
- For an external REST web service, provide:
  - the NAT gateway IP address for the VB *service* VCN

  The service administrator needs to configure one access rule, to allow access from the IP address of the NAT gateway of the VB runtime service.

  An access rule configured for the NAT gateway is used when the service is not in the same region and OSN as your instance.
- For an external DBaaS database, provide:
  - the NAT gateway IP address for the VB *service* VCN
  - the NAT gateway IP address for the VB *management* VCN

  The service administrator needs to configure two access rules, to allow access from the VB runtime service VCN NAT gateway and the VB management VCN NAT gateway.

Access rules configured for the NAT gateways are used when the service is not in the same region and OSN as your instance.

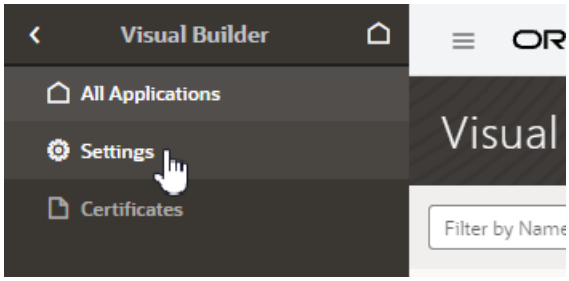
Inspect Database Usage

An administrator can view how much space in the tenant's database is being consumed by each of the tenant's applications.

The capacity of the tenant's database is 5GB, so by viewing the database usage you can see how much of the database's capacity remains. If you require more than 5GB of storage, you can Switch to Your Own Oracle DB Instance.

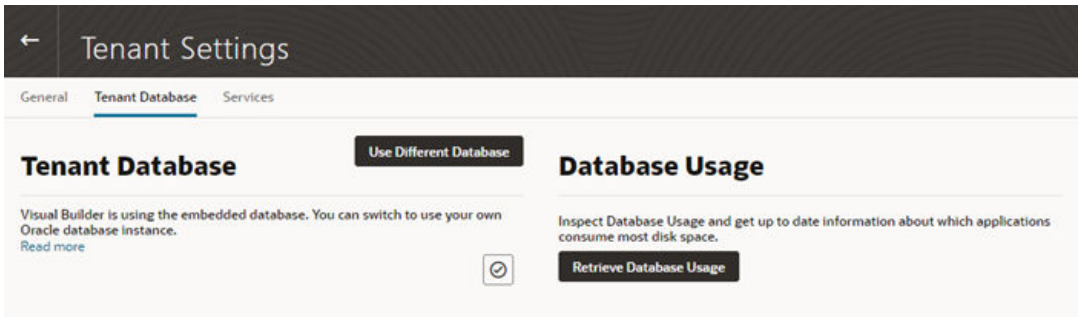
To inspect your instance's database usage:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Settings** in the navigation menu to open Tenant Settings.

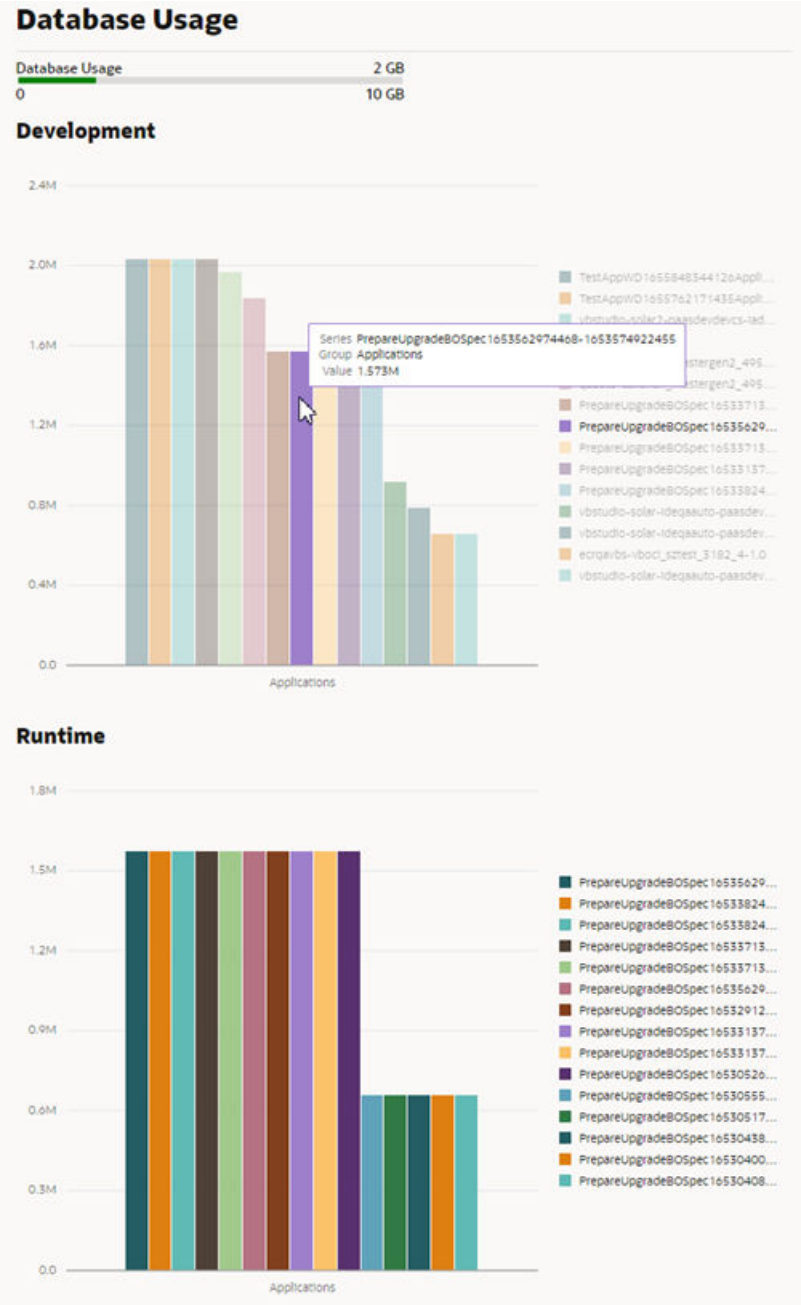


3. Open the Tenant Database tab.

   The Tenant Database has two panels: Tenant Database and Database Usage.



4. Click **Retrieve Database Usage** in the Database Usage pane.



The Database Usage meter in the panel shows how much of the database's capacity is currently used. The data usage is rendered in two charts:

- The Development chart shows the space used for storing the business objects in each application in the design-time.
- The Runtime chart shows the space used for each of the staged and published apps.

Switch to Your Own Oracle DB Instance

The database provisioned with your Visual Builder instance is used to store data for your business objects and your app's metadata, but this database has a 5GB limit and you can't access the data in the objects using regular SQL.

If the 5GB limit is insufficient for your tenant schema, you can configure your instance to use an Oracle DB instance that has more space instead of the default database. You can connect to an Oracle DBaaS or Autonomous Transaction Processing (ATP) database instance. Using an ATP database will give you more space and direct SQL access to the objects VB creates. You can also use a Free Forever Oracle ATP, which provides 20GB of storage for free.

To use a different Oracle DB instance, you use a wizard in the Tenant Settings to create a connection to the database instance and export the applications stored in the tenant's current database.

If you decide to use JDBC to connect to your DBaaS instance, you must include the privileges required to enable the ADMIN user to create a tenant schema. The following SQL shows the grants that are needed:

```
CREATE USER [adminuser] IDENTIFIED BY [password];
GRANT CONNECT, RESOURCE, DBA TO [adminuser];

GRANT SELECT ON SYS.DBA_PROFILES TO [adminuser] WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_USERS TO [adminuser] WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_DATA_FILES TO [adminuser] WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_SEGMENTS TO [adminuser] WITH GRANT OPTION;
```

If you decide to use ATP, you'll need to include the `wallet.zip` file in the wizard in addition to the connection info. You might want to create a new ATP ADMIN user with the correct admin privileges. The following SQL statement shows how to create a second ATP ADMIN user in SQL*Plus or SQL Developer.

```
DROP USER [adminuser] CASCADE;
CREATE USER [adminuser] IDENTIFIED BY [password];
GRANT CREATE USER, ALTER USER, DROP USER, CREATE PROFILE TO [adminuser] WITH
ADMIN OPTION;
GRANT CONNECT TO [adminuser] WITH ADMIN OPTION;
GRANT RESOURCE TO [adminuser] WITH ADMIN OPTION;
GRANT CREATE SEQUENCE, CREATE OPERATOR, CREATE SESSION,ALTER SESSION, CREATE
PROCEDURE, CREATE VIEW, CREATE JOB,CREATE DIMENSION,CREATE INDEXTYPE,CREATE
TYPE,CREATE TRIGGER,CREATE TABLE,CREATE PROFILE TO [adminuser] WITH ADMIN
OPTION;
GRANT UNLIMITED TABLESPACE TO [adminuser] WITH ADMIN OPTION;
GRANT SELECT ON SYS.DBA_PROFILES TO [adminuser] WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_USERS TO [adminuser] WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_DATA_FILES TO [adminuser] WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_SEGMENTS TO [adminuser] WITH GRANT OPTION;
```

> **Note**
>
> If you get an error `Failed to verify the target database` in the Change Tenant Database dialog when switching the database, it might be because you don't have the required privileges, or because the database is not reachable. (Visual Builder cannot reach databases in private subnets, except when Visual Builder is provisioned as a private endpoint in the same private subnet as the database.)
>
> If you see the error, confirm that the ADMIN user (`adminuser`) has the required privileges. You might also need to assign the SYSOPER and SYSDBA roles to the ADMIN user:
>
> ```
> GRANT SYSOPER, SYSDBA TO [adminuser];
> ```
>
> You can run the following query to confirm the ADMIN user has the necessary privileges:
>
> ```
> select * from v$pwfile_users;
> ```

In the wizard you need to select and export all the applications in your instance that you want to keep. After confirming that your instance is using the new database instance, you must import the exported applications into Visual Builder to save them in the new database instance.

> **Note**
>
> If you have live applications already on the instance:
>
> - Before switching to a new database, make sure to backup the data in their business objects using the export options in the Visual Builder data manager. You'll then be able to import that data back into the new apps you'll create from the application archives you export in the wizard.
> - Lock the live applications before changing the settings of your instance's database to prevent users from using them during the migration process. You can unlock the applications when the migration process is finished. You lock and unlock live applications in the Application Options menu on the Visual Builder Home page. See Manage an Application in *Developing Applications with Oracle Visual Builder*.

To switch to a different Oracle DB instance:

1. Open the Tenant Database tab.

   You can open your instance's Tenant Database tab from the instance Home Page, or by entering the URL directly in the browser window. It might be quicker to enter the URL directly if there is a problem loading the Home Page, for example, if the wallet is expired.

   - To open the Tenant Database tab using a URL, type the following in the browser's URL field:

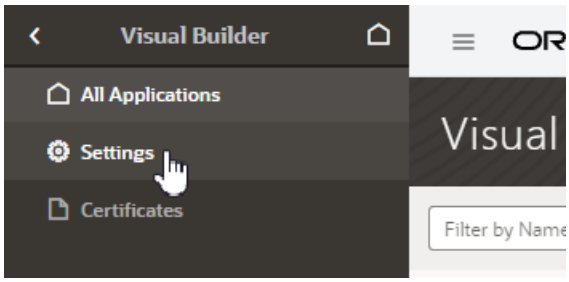
     ```
     https://<instance-url>/ic/builder?root=settings&settingsSection=tenant-database
     ```

In the URL above, replace <*instance-url*> with your instance's URL.

- To open the Tenant Database tab from the Home Page:

  a. On the Visual Builder Home Page, click **Navigation Menu** in the upper-left corner of the Visual Builder title bar.

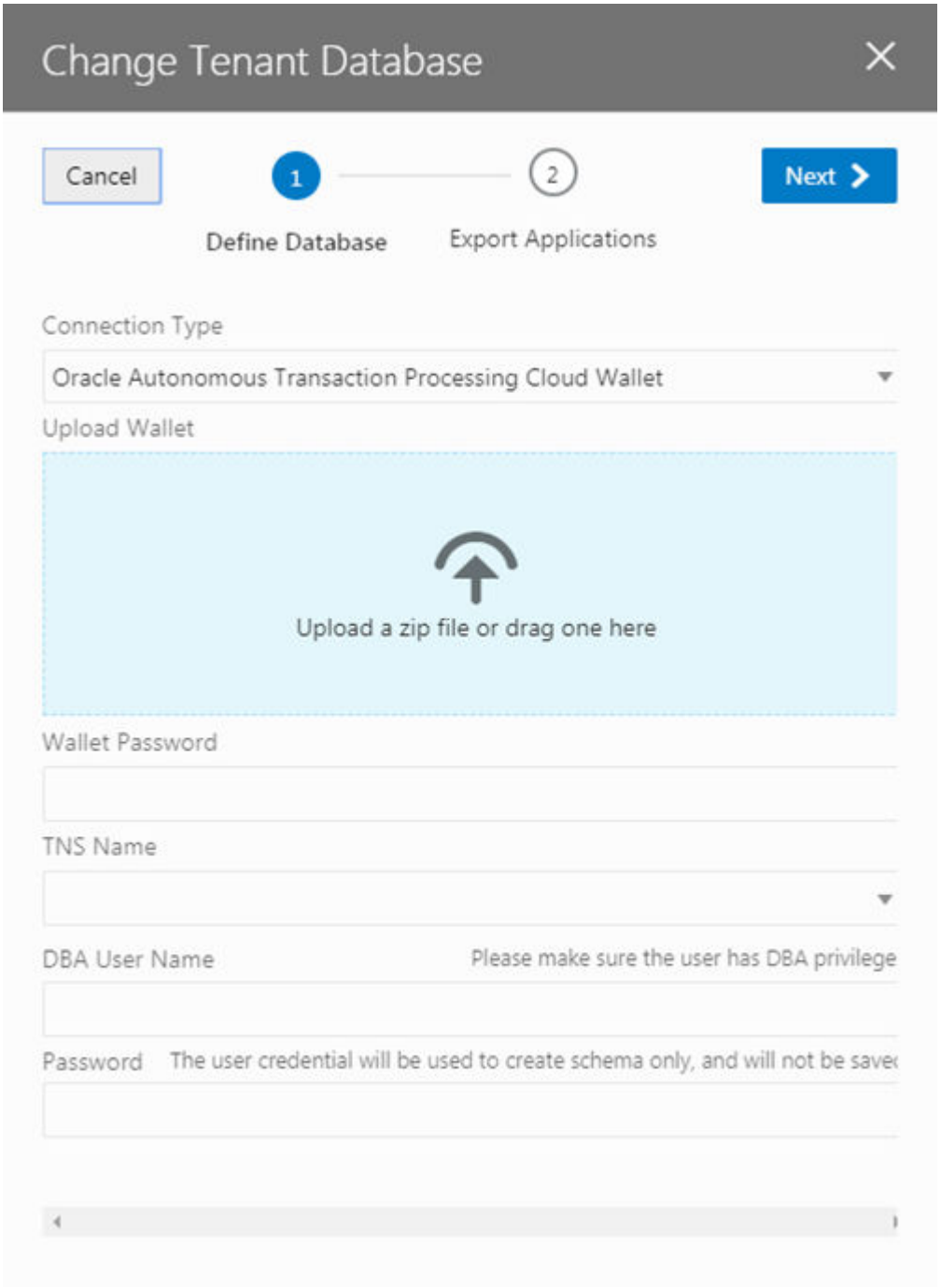
  b. Click **Settings** in the navigation menu to open Tenant Settings.



  c. Open the Tenant Database tab.

2. In the Tenant Database tab, click **Use Different Database** in the Tenant Database panel to open the Change Tenant Database wizard.

   In the Change Tenant Database wizard you supply the details for the connection to your Oracle DB instance.



3. Select a Connection Type in the drop-down list.

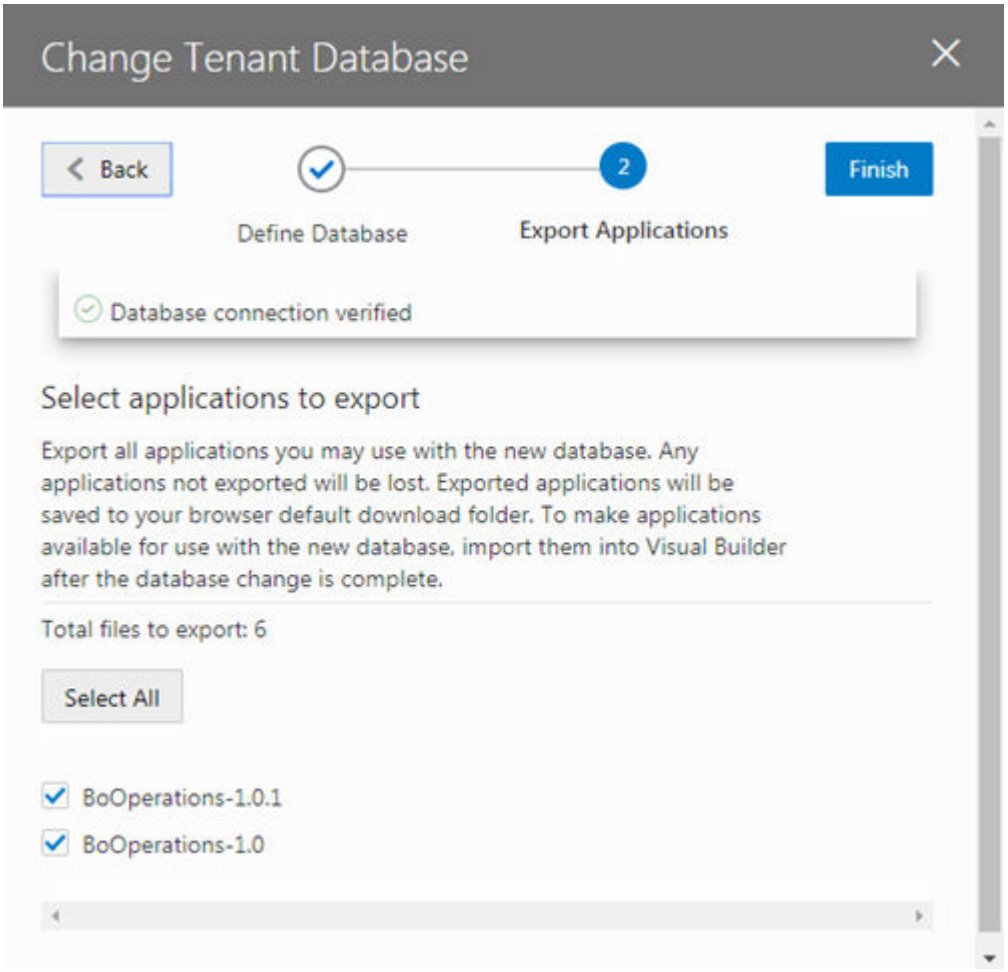
   You can connect to your Oracle DB instance using either JDBC or an ATP wallet.

4. Provide the details for connecting to your database. Click **Next**.

   The details you need to provide will depend upon the type of connection you selected.

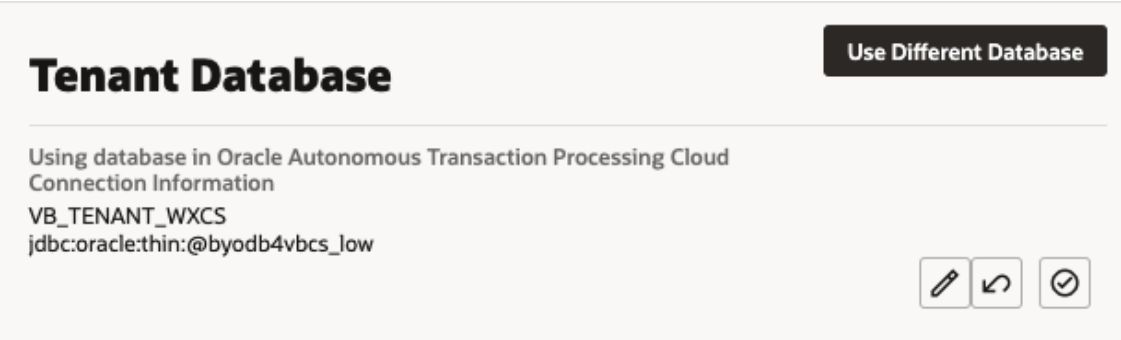
5. Select all the applications that you want to export. Click **Finish**.

   You must select and export all the applications that you want to keep. Any applications that are not exported will be lost.



When you click Finish, the applications that you selected are downloaded to your local file system. Exported application archives include the details about the application's user roles, and they will be available when you re-import your app into the new database.

After switching the database, the Tenant Database pane displays the connection information for your tenant's database. In the following image you can see that the instance is now using an Autonomous Transaction Processing (ATP) database instance.



> **Note**
>
> If you decide to revert back to using the embedded database, you can click  in the Tenant Database pane. You'll be prompted to confirm that you want to switch to using the instance's embedded database instead of the current one.
>
> When you revert to using the embedded database, the visual applications in your current database are not transferred automatically. You need to export the apps you want to keep before switching the database, and then import them into the embedded database.

Visual Builder automatically manages the schemas and tables it uses for apps and business objects in your new DB, so you don't need to do anything further.

If you would like to access the business objects using SQL, you'll find that VB creates users/schemas with names that start with `VB_` followed by randomly generated strings. By examining the data dictionary you'll be able to find the users that represent specific apps. Note that you'll see separate schemas for dev, stage, and published instances of an app. The schemas for the dev and test instances will be re-created with different names with every new version of the app that you create. If you want to prevent the schema name for a published app from changing, when you publish new versions of the app you should choose the option to not replace the data.

> **Note**
>
> Instead of having Visual Builder create and manage schemas, you can make a schema that already exists in your database available to applications, so developers can create business objects based on existing DB tables and views. If you choose to use your own schema, make sure you understand the requirements and limitations when using your own schema. For details, see Switch to Your Own Database Schema for Business Objects in *Developing Applications with Oracle Visual Builder*.
>
> If you use your own schema, only one schema is used for the app's dev, staged, and published instances. See Make Schemas in an Oracle DB Instance Available to Applications.

Switch From One ATP Database to Another

It's not possible to switch from one ATP database to another directly, so you'll first need to switch from your ATP database back to the embedded database. You can then use the Change Tenant Database wizard to switch from the embedded database to the new ATP database.

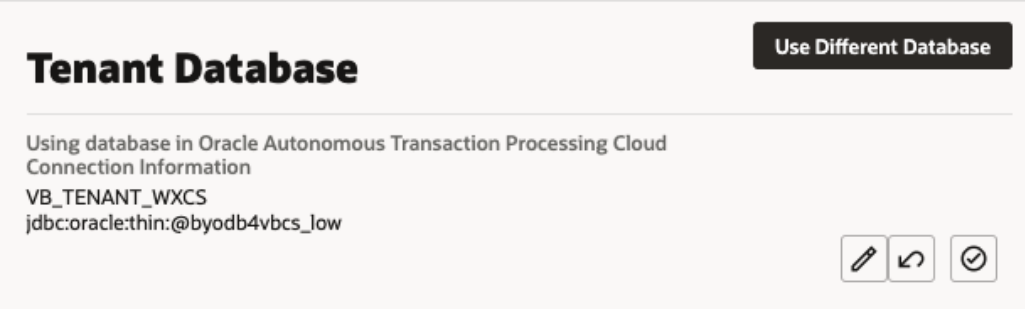
1. In Visual Builder, export each of your visual applications and save them to your local system.

   For details, see Export a Visual Application.

2. Revert to the embedded database.

   a. Open the instance's Tenant Settings page, and then open the Tenant Database tab.

   b. Click  in the Tenant Database pane to revert to the embedded database.



c. When prompted, confirm that you want to switch to the embedded database.

3. Switch to the new ATP database.

   Follow the steps in Switch to Your Own Oracle DB Instance above to switch from the embedded database to your new ATP database.

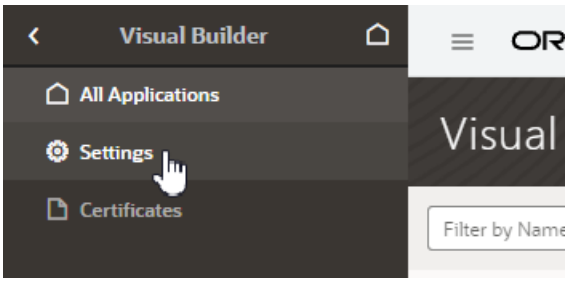
4. Import the applications you saved to your local system into the new ATP database.

Make Schemas in an Oracle DB Instance Available to Applications

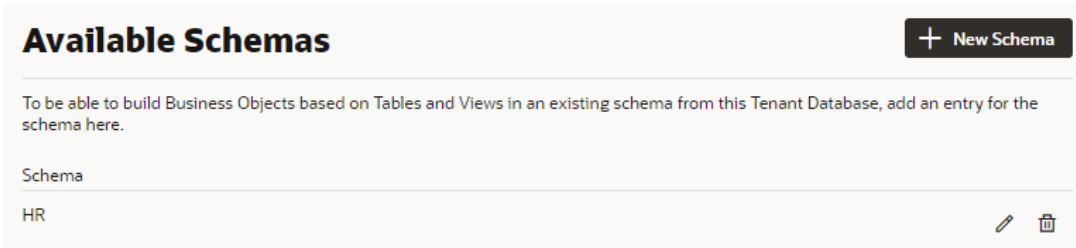
When you connect an Oracle database instance with your Visual Builder instance, application developers can use schemas predefined in the tenant database to create business objects based on existing tables and views for an application. But for developers to access these schemas, you'll first need to make them available to applications.

To make a tenant database's existing schema available to applications:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Settings** in the navigation menu to open Tenant Settings.



3. Click **+ New Schema** in the Available Schemas panel.



4. Enter a name for the schema and click the check mark icon.

After the schema is added, you can edit its name or delete it entirely, but remember any changes you make might break applications that use the schema.

Schema that exists in the tenant database and has been added to the list of available schemas will become available for selection in an application's Settings editor (under Schema Selection in the Business Objects tab).

Update Your ATP Wallet and Reset an Expired Password

If you switch to your own Oracle DB instance and the credentials you use to access the instance expire, you can use the Update Tenant Database Connection dialog box to update your ATP wallet and renew expired credentials.

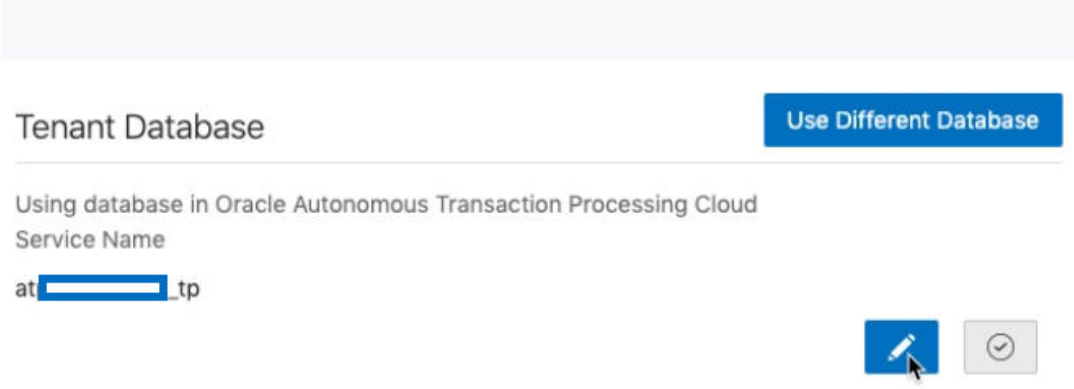
To regenerate the expired values, you need to provide the ADMIN user credentials that you provided when you first switched to your own Oracle DB instance. Visual Builder uses the ADMIN user credentials to generate new Visual Builder tenant credentials to replace the expired credentials. Visual Builder does not store the ADMIN user credentials that you supply.

1. Open the General tab of the instance's Tenant Settings page.

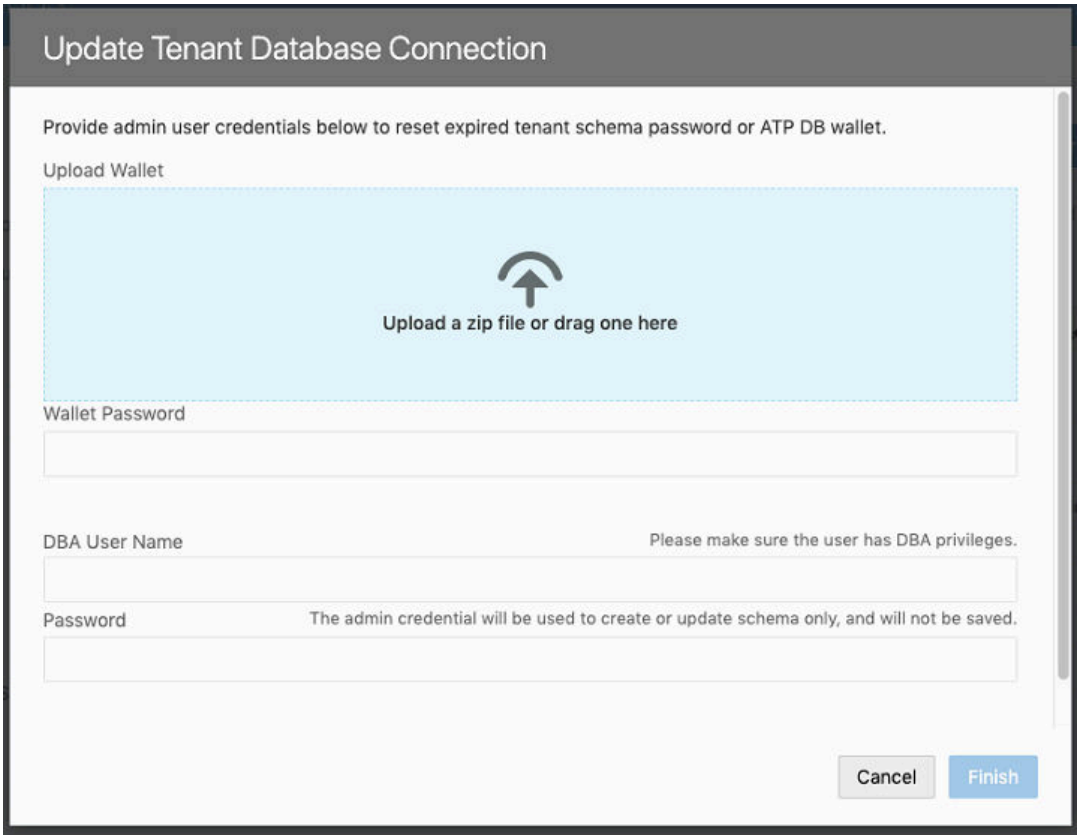
   If you cannot navigate to the Tenant Settings page from the navigation menu, you can open the page directly by entering the page's URL in the browser. The URL will be similar to

   `https://<Instance-URL>/ic/builder/?root=settings&settingsSection=tenant-database`.

2. In the Tenant Database field, click the Edit icon to open the Update Tenant Database Connection wizard.



3. In the Update Tenant Database Connection wizard:
   - Reset expired credentials by supplying the ADMIN user credentials and ATP wallet that Visual Builder will use, or
   - Update the wallet for your Oracle DB instance by uploading the new ATP wallet.



4. Click **Finish**.

Use ATP Database with Cross-Region Autonomous Data Guard for Disaster Recovery

The Cross-Region Autonomous Data Guard feature of Oracle Autonomous Database provides data protection and disaster recovery for your database.

If you enable Autonomous Data Guard with a cross-region standby database on your ATP, you can manually construct a new ATP wallet with single connection string containing both the primary and the standby database hostnames. This way, when you failover to a standby ATP database, Visual Builder will be automatically retry and connect to the ATP in the standby region, which then becomes the active database.

For details on how to manually construct a wallet that contains both the primary and the remote database connection strings, see Cross-Region Autonomous Data Guard Notes.

A database connection string in the wallet identifying the primary and standby hostnames might look something like this:

```
atpsample_tp = (description_list=
 (failover=on) (load_balance=off)
 (description= (retry_count=5)(retry_delay=3)(address=(protocol=tcps)
(port=1522)(host=adb.us-ashburn-1.oraclecloud.com))
(connect_data=(service_name=g0de0f6e24ce255_atpsample_tp_tp.adb.oraclecloud.co
m))(security=(ssl_server_dn_match=yes)))
 (description= (retry_count=5)(retry_delay=3)(address=(protocol=tcps)
(port=1522)(host=adb.ca-montreal-1.oraclecloud.com))
```

```
(connect_data=(service_name=g0de0f6e24ce255_atpsample_tp_tp.adb.oraclecloud.co
m))(security=(ssl_server_dn_match=yes))))
```

> **Note**
>
> When constructing the connection string, change the `retry_count` to "5", instead of the default "20".

Access an ATP Database Configured as a Private Endpoint

If you want to use an ATP database that is protected using a private endpoint (ATP-PE), you can configure the database instance to allow a public Visual Builder instance to connect to the database directly, without requiring a public load balancer.

Similarly, if you are already using an ATP database configured to use a public endpoint, and you want to switch to ATP-PE, you need to update the allowlists in the ATP-PE settings and the VB instance settings to allow connections to the database. For more on adding a VB instance to allowlists, see Allow Your Instance to Access Services.

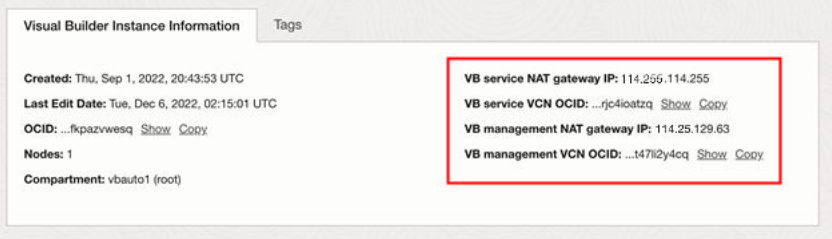
To connect your public VB instance to an ATP-PE instance:

1. On the Visual Builder Instances page, find the instance you want to work with and open its details page.
2. Collect the required details about your Visual Builder instance.

   To configure the access list in ATP-PE, you'll need to provide Visual Builder network gateway details:

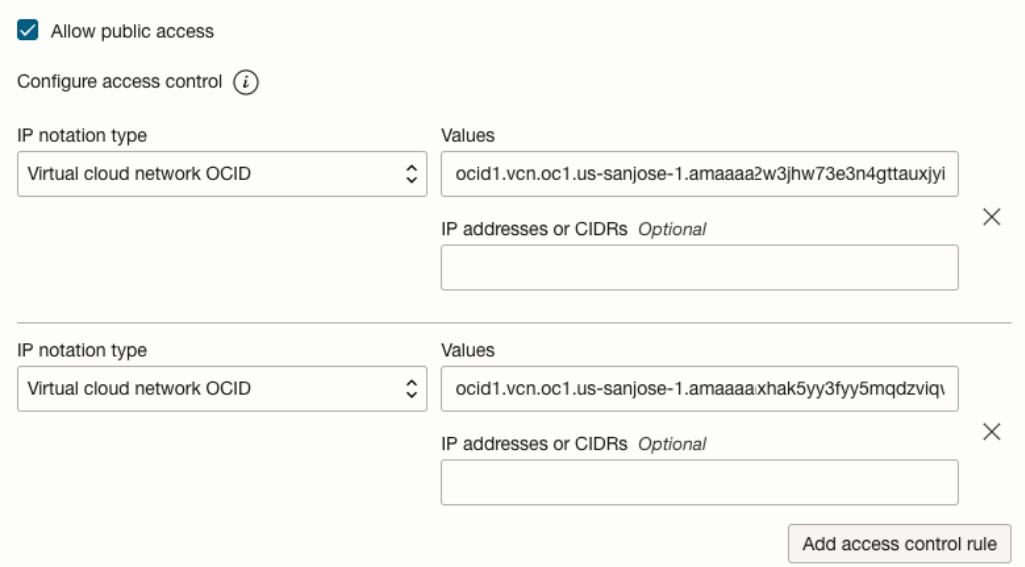
   - If VB and ATP-PE are in the same OCI region, you need theVB *service* VCN OCID and the VB *management* VCN OCID.
   - If VB and ATP-PE are in different OCI regions, you need the *service* outbound IP and the *management* outbound IP

   You can view an instance's VB service NAT gateway IP and VCN OCID in the instance's Visual Builder Instance Information tab in the OCI console. If the instance also has a VB management NAT gateway IP and VCN OCID, they will also be displayed in the tab:



3. Configure the ATP-PE instance's access control rule.
   a. Open the ATP-PE instance's details page.
   b. Select **More actions**, then select **Update network access**.
   c. In the Update network access panel, select **Allow public access** in the Private endpoint access pane.
   d. Enter the required VB VCN OCIDs or IP addresses. Click **Add access control rule**.

For example, if the VB and ATP-PE instances are in the same OCI region, you should select Virtual cloud network OCID in the two IP notation type drop-down lists, and enter the two required VCN OCIDs in the Values fields:



For details on the ATP access control settings, see Use a Private Endpoint with Public Access Allowed and Configure Private Endpoint Advanced Options in the Oracle Autonomous Database documentation.

4. Download the ATP wallet.

   If you are switching from an ATP database to ATP-PE, you will need to download the updated ATP wallet.

5. File a Service Request to update the ATP connection string and wallet in the Visual Builder backend.

Connect to a Database From a Private Endpoint-Enabled Instance

If your Visual Builder instance was provisioned as a private endpoint, you might need to do some additional configuration when switching to an Oracle database instance.

> **Note**
>
> If the private endpoint-enabled VB instance and the database service are in different virtual cloud networks (VCNs), you will need to create private views inside the VCN private resolver so that both VCNs can resolve hosts and endpoints in the other VCN. For more information, see About the DNS Domains and Hostnames.

To use an Oracle database with your private endpoint-enabled VB instance:

1. Get the connection details for the database instance.

   If you are not using an ATP wallet, you need to use JDBC to connect to your Oracle DB instance, and you will need to use the quick URL connection string, which contains only the database's host name, as the URL. You cannot use the service's long URL connection string, which contains both the private IP address and host name.

2. Add the appropriate database port to your private endpoint-enabled VB instance's security list or NSG rules.

   Typically the port is 1521, but you need to confirm the correct port for your database instance.

   For more on configuring rules, see Configure Private Endpoint Advanced Network Options.

3. Switch to the Oracle DB instance.

   See Switch to Your Own Oracle DB Instance for the steps.

If you have problems connecting to the database, you can try to debug the problem by creating a compute instance in the private subnet, and then connecting to the database from the compute instance using the database's host name. If you can successfully connect to the database from a compute instance residing in the same private subnet, then connecting to the database from the Visual Builder instance will also work.

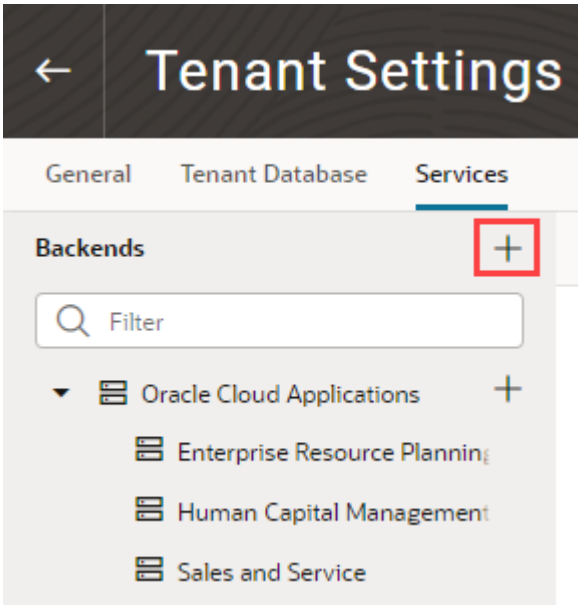
Add a Connection to Integration Applications

Administrators can use the Services tab in the Tenant Settings page to add a connection to an instance of Oracle Integration as a backend service.

If you are using multiple Visual Builder instances, for example, development and production instances, you might need to add connections to Oracle Integration in more than one instance.

To add a connection to an Oracle Integration instance:

1. Open the instance's Tenant Settings page.
2. In the Services tab, click **Create Backend** and choose **Integrations** in the Create Backend dialog.



3. In the dialog, type the Server URL of the backend service, configure other settings such as security as needed, and click **Create**.

See About Authentication and Connection Type in *Developing Applications with Oracle Visual Builder*.

Add a Connection to Oracle Cloud Applications

The list of REST services in the service catalog of a visual application is retrieved from an Oracle Cloud Applications backend service. Specify the instance URL of the Oracle Cloud Applications backend service in the Tenant Settings page.

All visual applications in the tenant will use the Oracle Cloud Applications instance URL specified in Tenant Settings, but a visual application can be configured to use a different Oracle Cloud Applications backend service by specifying a different instance URL in the Backends tab (which you access from the Navigator's Services tab). The tenant-level backend configuration is ignored if you or a visual application developer configures a different Oracle Cloud Applications backend service in a visual application's Backends tab.

The authentication choices available to configure a tenant-level Oracle Cloud Applications backend are:

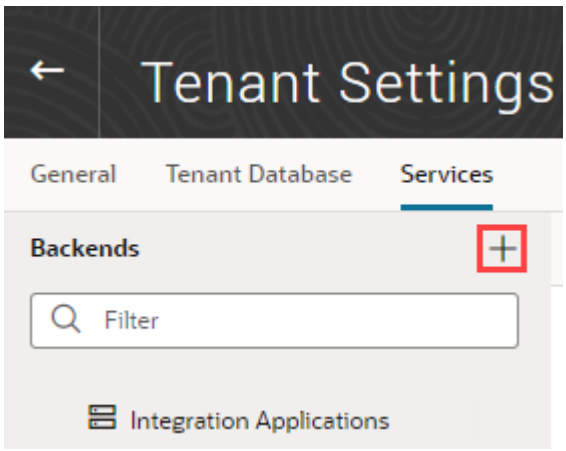
- Basic Auth: Uses a fixed username and password for authentication.
- Oracle Cloud Account: Needs federation between Oracle Cloud Applications and Visual Builder.
- Delegate Authentication (previously called Propagate Current User Identity): Same as Oracle Cloud Applications. That is, it needs federation between Oracle Cloud Applications and Visual Builder.
- None: This assumes your Oracle Cloud Applications REST API can be called without any authentication, which is not usually the case.

See About Authentication and Connection Type in *Developing Applications with Oracle Visual Builder*.

If the necessary prerequisites for setting a tenant-level Oracle Cloud Applications backend service are not available, then a visual application developer can set up a backend service at the visual application level where more options are available. Another option is for you (the service administrator) to configure the Oracle Cloud Applications backend with `None` and let the visual application developer override the authentication setting at the visual application level.

To specify an Oracle Cloud Applications service for the tenant:

1. Open the instance's Tenant Settings page.
2. In the Services tab, click **Create Backend**, then choose **Oracle Cloud Applications** in the Create Backend dialog.



When specifying the URL in the Tenant Settings, you (the service administrator) only need to provide the instance URL of the Oracle Cloud Applications backend service to retrieve the list of services.

3. In the dialog, type the Server URL of the backend service, and configure other settings, such as security, as needed.
4. (Optional) After you configure settings for the backend, add headers to the backend.

   Backend headers that you add will be applicable for any service connection to this backend, irrespective of the server or application profile that is used.
5. Click **Create**.

   Visual Builder automatically discovers the interfaceCatalogs endpoint of the Oracle Cloud Applications backend, which retrieves the list of services and their metadata. This endpoint is typically in the form:

   ```
   https://<My Oracle Cloud Applications Instance URL >/helpPortalApi/
   otherResources/latest/interfaceCatalogs
   ```

   This endpoint is publicly accessible without any authentication.

   If there is a problem creating the connection, verify the instance URL of the Oracle Cloud Applications instance.

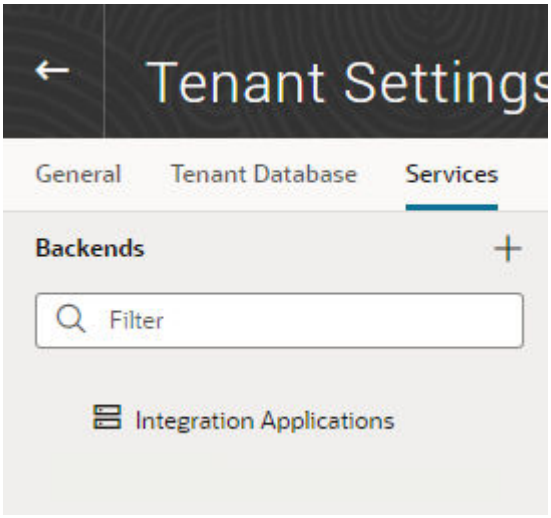
Add a Connection to Process Automation

Administrators can use the instance's Tenant Settings page to add a connection to an instance of Oracle Cloud Infrastructure Process Automation as a backend service.

If you are using multiple Visual Builder instances, for example, development and production instances, you might need to add connections to OCI Process Automation in more than one instance.

To add a connection to an OCI Process Automation instance:

1. Open the instance's Tenant Settings page.
2. In the Services tab, click **Create Backend** and choose **Process Automation** in the Create Backend dialog.



3. Enter the URL of the instance, configure other settings, such as security, as needed, and click **Create**.

Add a Connection to Process Cloud Service

Administrators can use the instance's Tenant Settings page to add a connection to an instance of Oracle Process Cloud Service as a backend service.

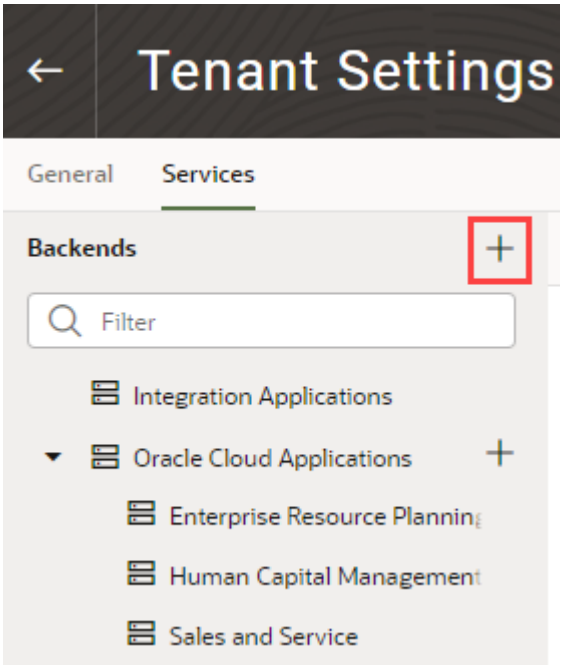
> **Note**
>
> Oracle Process Cloud Service, which is included in the Enterprise edition of Oracle Integration Gen 2, is now deprecated; for details, see Deprecated Features.

To add a connection to an instance of Oracle Process Cloud Service as a backend service, the instance of Oracle Process Cloud Service should be co-hosted with Visual Builder because the authentication types that Visual Builder supports for this configuration is Oracle Cloud Account or Propagate Current User Identity. In most cases, this backend service (Oracle Process Cloud Service) will be preconfigured for your Visual Builder instance.

If you are using multiple Visual Builder instances, for example, development and production instances, you might need to add connections to Oracle Process Cloud Service in more than one instance.

To add a connection to an Oracle Process Cloud Service instance:

1. Open the instance's Tenant Settings page.
2. In the Services tab, click **Create Backend** and choose **Process** in the Create Backend dialog.



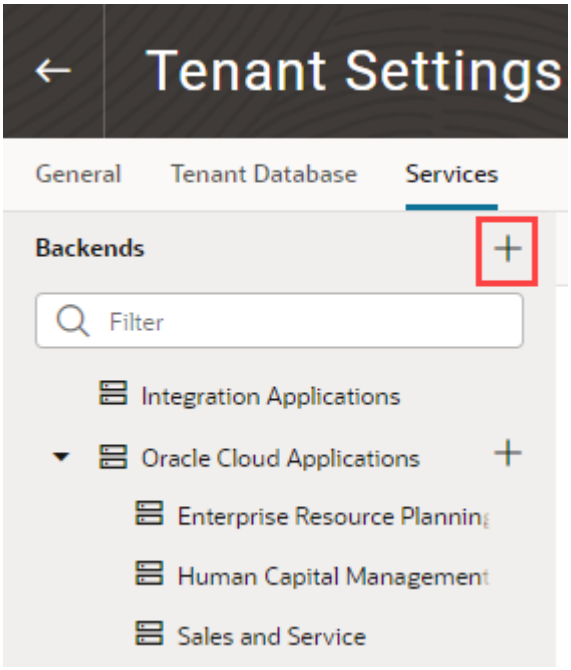
3. In the dialog, type the Server URL of the backend service, configure other settings, such as security, as needed, and click **Create**.

Add a Connection to a Custom Backend

You can create your own backend to map to a custom server other than the Oracle Integration, Process, and Oracle Cloud Applications backend services. You can create a custom backend with a free-form URL, or create a custom ADF backend when you know the Describe URL that points to an ADF Describe service.

To add a connection to a custom backend:

1. Open the instance's Tenant Settings page.
2. In the Services tab, click **Create Backend**.



3. In the Create Backend wizard, select the type of backend you want to create:
   - To create a backend with a free-form URL, click **Custom**.
   - To create a backend with the Describe URL of an ADF service, click **Custom ADF Describe**. Use this option only when your custom ADF Describe endpoint does not have any child backends.
4. In the Name field, enter a name and description for the custom backend.
5. Add headers to the backend. Backend headers that you add will be applicable for any service connection to this backend, irrespective of the server or application profile that is used.
6. Click **Next**.
7. Enter the instance URL for the custom backend, configure other settings, such as security, and click **Create**.

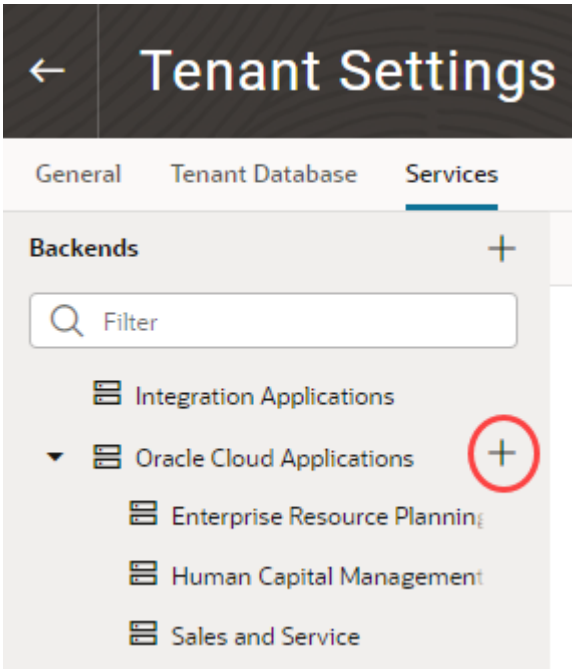
Create a Child Backend

You can create child backends to extend the functionality provided by the top-level Oracle Cloud Applications or custom backend registered to your Visual Builder instance.

Let's say your instance's Oracle Cloud Applications backend connects to an Oracle Cloud Applications instance that provides access to these service catalogs: Enterprise Resource Planning Supply Chain, Sales and Service, and Human Capital Management. Now if you want to access another catalog (say, Search), you can create a child backend to access the search service.
A child backend inherits the parent backend's definition, which you can override as required. Its server URL is derived from the top-level backend, with `vb-catalog://backends/` as the base URL. Continuing the Oracle Cloud Applications example, the Sales and Service child backend adds to the top-level Oracle Cloud Applications backend and has `vb-catalog://backends/fa/crmRestApi/resources` as its server URL.

Child backends can be created only for the Oracle Cloud Applications backend and custom backends that use a OpenAPI/Swagger service specification.

- To create a child backend for the Oracle Cloud Applications backend:
  1. Open the instance's Tenant Settings page.
  2. In the Services tab, click the **+** sign for the top-level Oracle Cloud Applications backend:

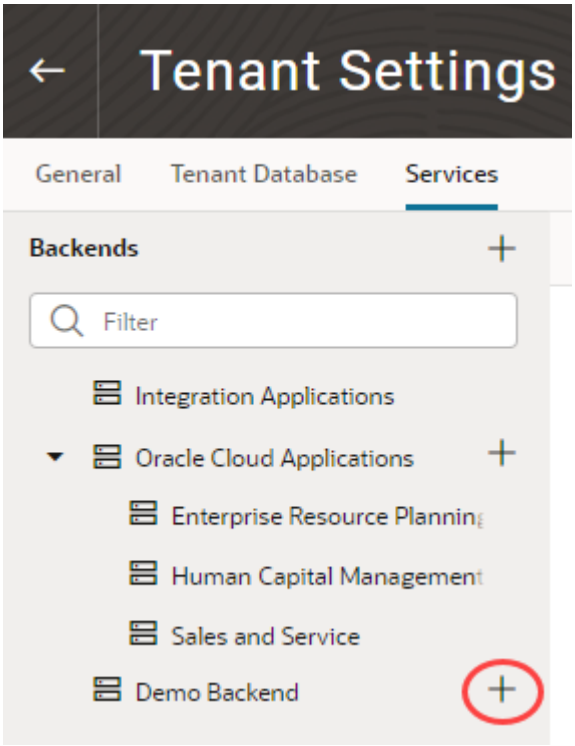


  3. Select **Custom ADF Describe** to create a backend with an ADF Describe URL. For backends not having a Describe URL, select **Custom**.
  4. Enter a name and description for the child backend. Optionally, add static headers.
  5. Click **Next**.
  6. Enter the instance URL for the child backend (for example, `vb-catalog://backends/fa/applcoreApi/search/`). The child backend's URL will usually start with `vb-catalog://backends/`*`oracle-cloud-app-BackendId`*.

     Tip

     To see the complete URL that the backend resolves to, click the **Detach** icon ( ).

  7. Enter other settings, such as security and headers.
  8. Click **Create**.
- To create a child backend for a top-level custom backend:
  1. Open the instance's Tenant Settings page.
  2. In the Services tab, click the **+** sign for a top-level custom backend:



3. Enter a name and description for the child backend. Optionally, add static headers.
4. Click **Next**.
5. Enter the instance URL for the child backend (for example, `vb-catalog://backends/demo/newdemo`). You can click the **Detach** icon to see the complete URL that the backend resolves to.
6. Enter other settings, such as security and headers.
7. Click **Create**.

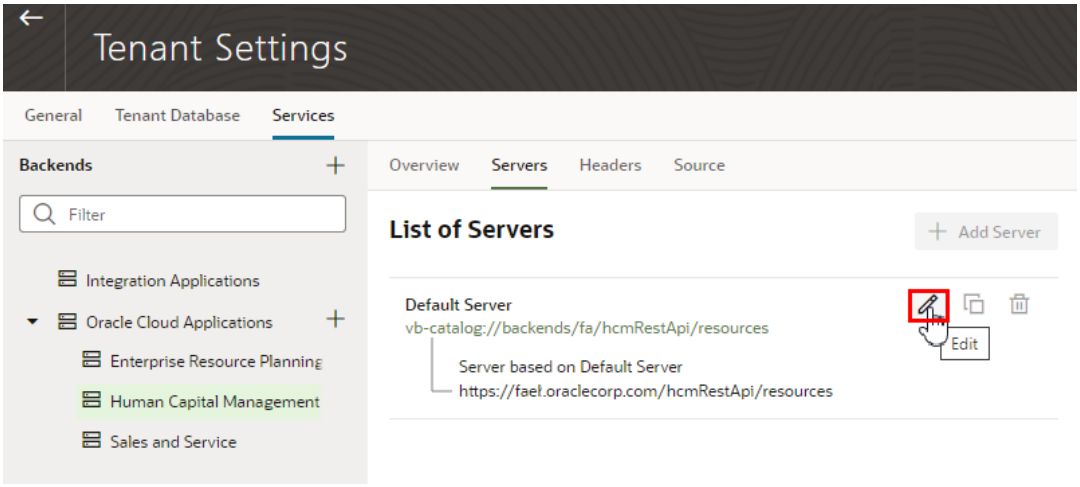
Edit Authentication for a Backend Service

Administrators can use the Services tab in the Tenant Settings page to edit the authentication and connection settings for the backend services available in the tenancy. Once a backend service is added, you can edit its details. In the case of child backends, you can also override the settings inherited from the backend service, for example, to allow connections to the child HCM backend to use basic authentication instead of using the Oracle Cloud Account authentication for logged-in users set at its parent backend.

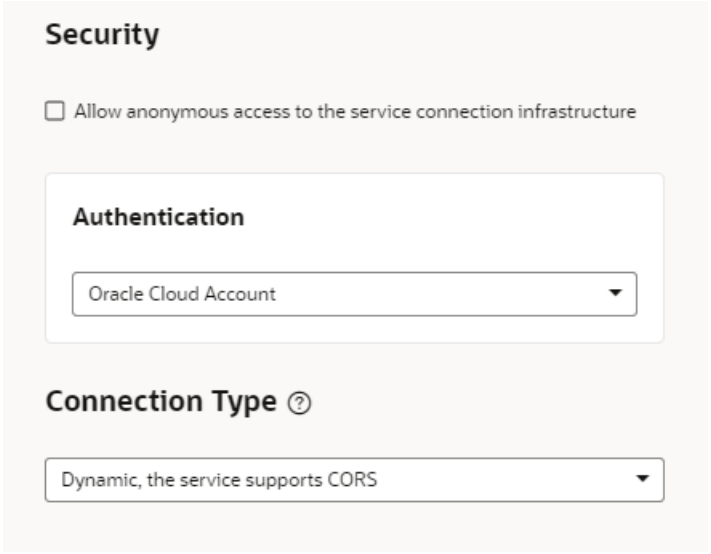
For a description of the authentication options, see About Authentication and Connection Type in *Developing Applications with Oracle Visual Builder*.

To edit the connection details for a backend service:

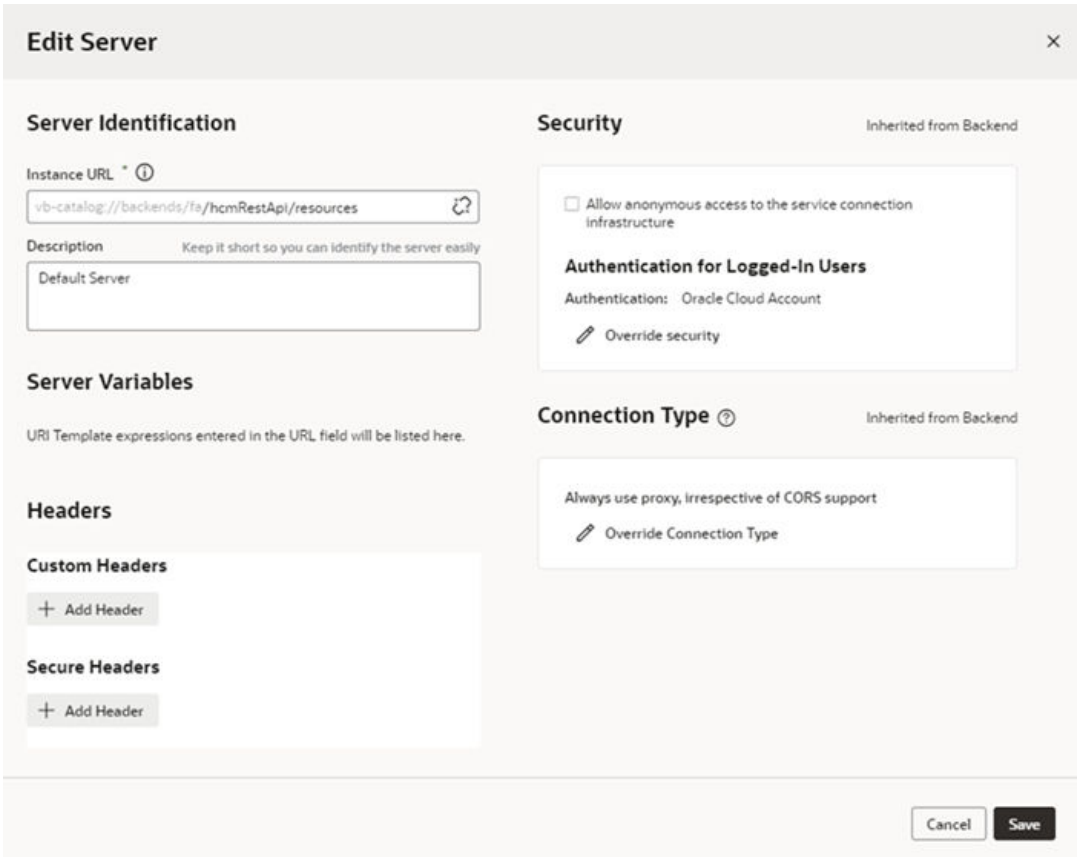
1. Open the instance's Tenant Settings page.
2. In the Services tab, select the backend you want to edit.
3. Open the Servers tab of your backend, and then click **Edit**.



4. In the Edit Server dialog box, edit the settings in the Security and Connection Type panes.

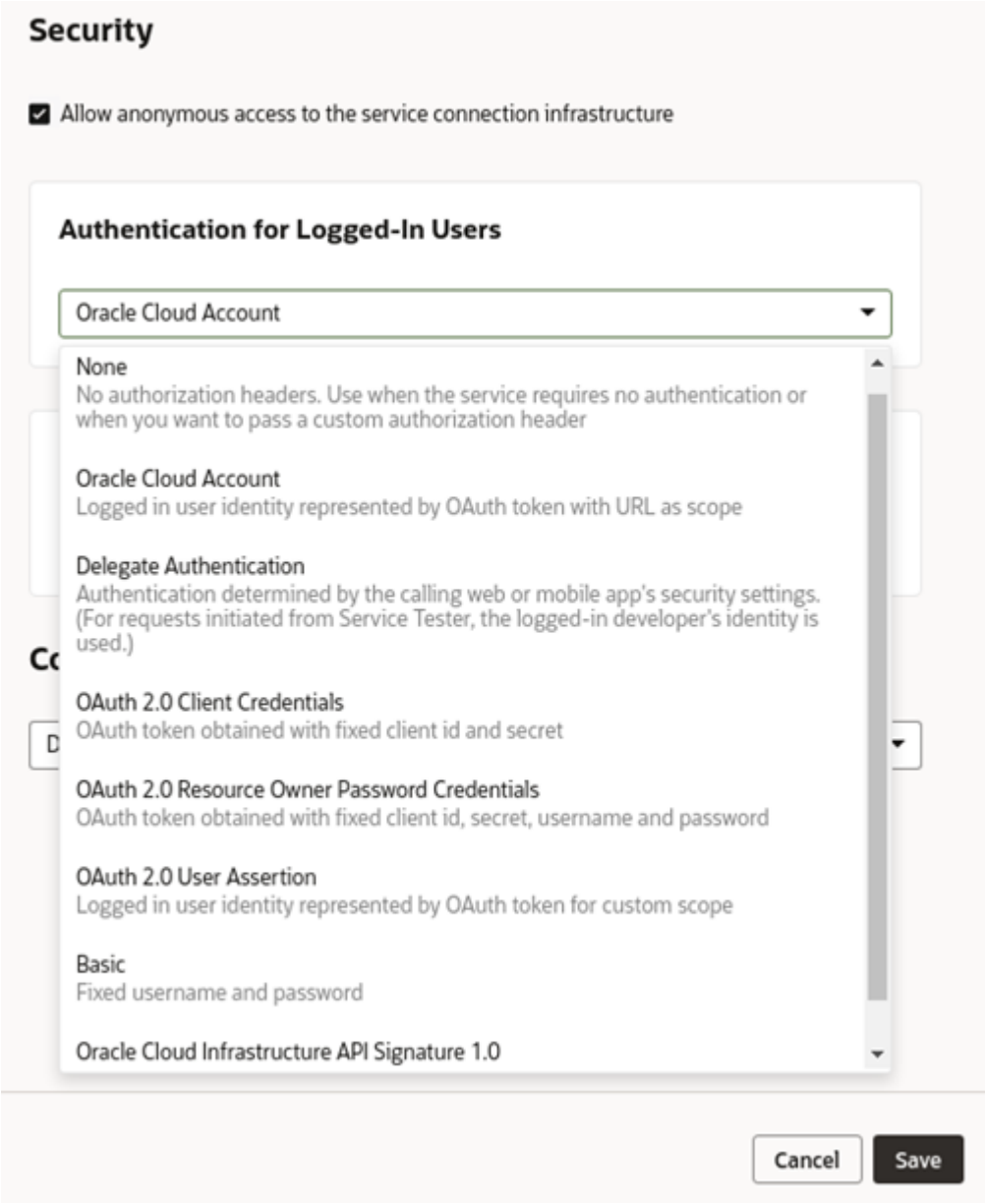


In the case of a child backend, the authentication and connection type details for your backend service are inherited from the parent service, so you'll need to override the settings. If you want to revert your changes for a child backend, you can click **Return to inherited** to restore the default inherited setting.



5. In the Security pane, select an authentication type in the dropdown list.

   If you are editing a child backend, you'll click **Override security** in the Security pane, and then select an authentication type in the dropdown list.



6. In the Connection Type pane, select a connection type in the dropdown list.

   In the case of a child backend, click **Override Connection Type** and then select the connection type.

7. Click **Save**.

Manage Self-signed Certificates

Administrators can use the Certificates page to upload and manage the self-signed certificates used by the instance to enable inbound and outbound SSL communications to a service's REST APIs

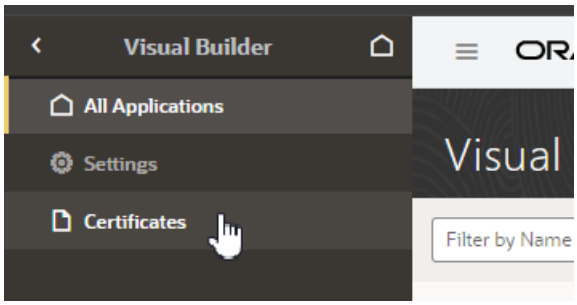
When creating connections to REST services that use self-signed certificates, you might need to add an API's certificate to your Visual Builder instance to validate SSL connections to that service. You can use the Certificates page to upload and remove certificate files (`.pem`) for

services. Uploading a service's certificate file to the keystore will allow all applications in the instance to communicate with that service. The Certificates page displays a list of certificates that have been added. You can click the Delete button in a row to remove the certificate.

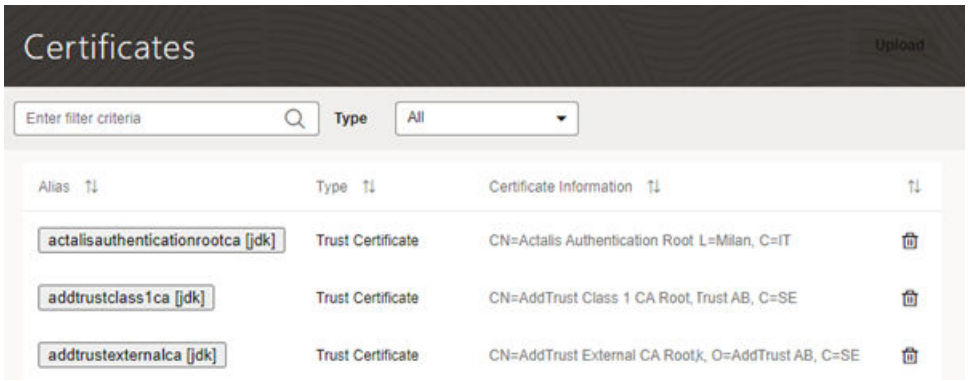
> **Note**
>
> Your staged or published apps might stop working if they use service connections with self-signed certificates and the certificates have expired. Any certificates issued after 2020-09-01T00:00:00.00Z will automatically expire 398 days after they have been issued. If your apps use certificates issued before 2020-09-01T00:00:00.00Z, the certificates will not expire, but you should update them with a newer certificate.
>
> To avoid disruptions, you should plan regular updates to refresh the self-signed certificates before they expire (for example, every 6 months). It's not recommended to use self-signed certificates in production apps.

To upload a self-signed certificate:

1. In the upper-left corner of the Visual Builder title bar, click **Navigation Menu** ☰.
2. Click **Certificates** in the navigation menu to open the Certificates page.

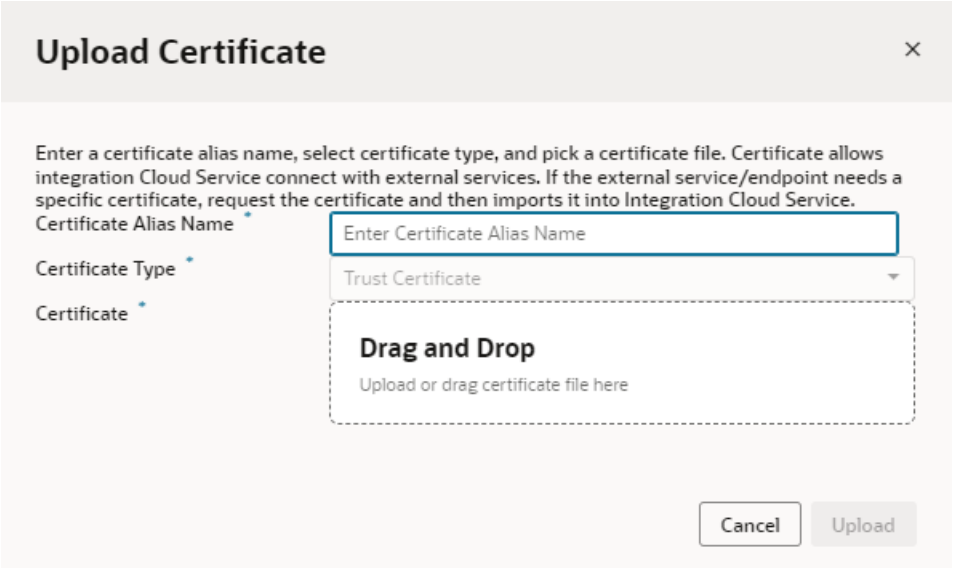


The Certificates page displays a list of the certificates already uploaded to the instance.



3. Click **Upload** to open the Upload Certificate dialog box.

   You use the Upload Certificate dialog box to create an alias for the certificate and upload the service's certificate file from your local system.



4. Type the alias in the Certificate Alias Name field.

   The alias is used to identify the certificate in the table in the Certificates page. The Certificate Type dropdown list is read-only because only Trust Certificates are supported.

5. Drag the certificate file from your local system into the upload target area, or click the upload target area to browse your local system.

6. Click **Upload** to add the certificate to the service keystore.

Manage Your Component Exchange

If your team develops custom components for visual applications and want the components to be available to all users in the Visual Builder Components tab, you'll need to first set up a component exchange. This chapter tells you how to set up the Component Exchange in Visual Builder.

What is a Component Exchange?

A component exchange is a repository of custom components available in VB Studio. You can use these components in your visual applications, such as web components and application templates. Many of the components provided by Oracle can be installed from a component exchange.

To integrate a component exchange with a instance, you provide the exchange's URL and credentials in the Tenant Settings. The exchange can be a private exchange in a VB Studio project or one of the exchanges maintained by Oracle.

If your organization develops or uses proprietary components, these components can be published to a private exchange hosted by a VB Studio project. For example, if you have a web component designed to be used in applications in your tenant, you can set up your own exchange and use it to distribute the component to developers in the tenant. Additionally, components provided by Oracle are automatically available from all private component exchanges.

Oracle maintains two component exchanges containing components validated by Oracle that are publicly available to all developers. If you don't have a private exchange but you want to

give developers access to these Oracle components, you can add one of the following exchanges maintained by Oracle. If your instance is in the US, use the following details.

Field	Value
Service URL	`https://component-exchange-soctesting2-phx.developer.ocp.oraclecloud.com/component-exchange-soctesting2-phx/s/component-exchange-soctesting2-phx_compcatalog_30314/compcatalog/0.2.0`
Username	compcatalog.user
Password	k9fz-0Pw4x-q

If your instance is in Europe, use the following details.

Field	Value
Service URL	`https://component-exchange-soctesting4-fra.developer.ocp.oraclecloud.com/component-exchange-soctesting4-fra/s/component-exchange-soctesting4-fra_compcatalog_11494/compcatalog/0.2.0`
Username	compcatalog.user
Password	k9fz-0Pw4x-q

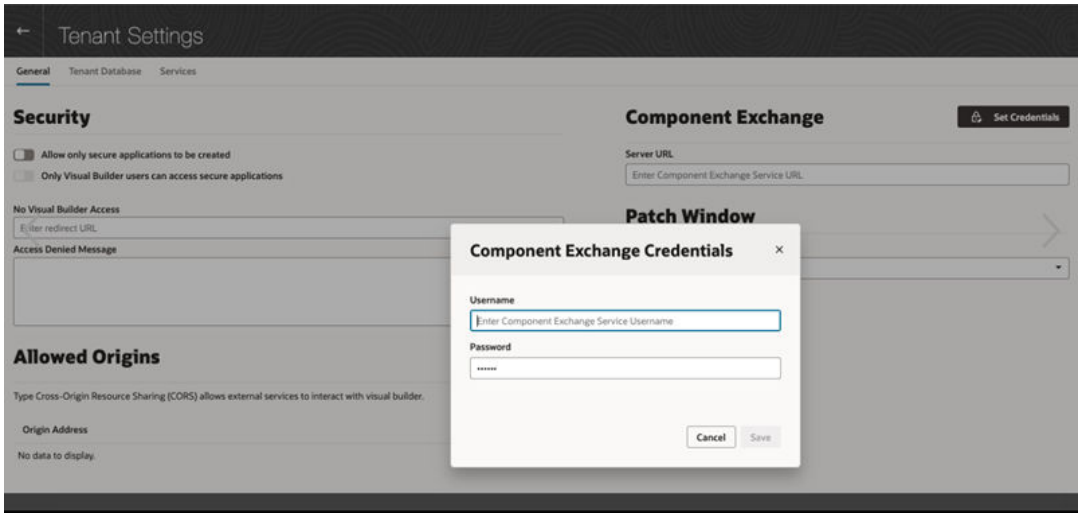
Add a Connection to a Component Exchange

When an instance is integrated with a component exchange, all developers using the instance can access and install components stored there.

After an exchange is added to the instance, all developers can use the Components tab in the Navigator to install and manage the components from the exchange that they want to use in their applications. When creating an application in the Create Application wizard, developers can also select any of the application templates that have been published to the exchange.

To add a connection to the Component Exchange:

1. Open the instance's Tenant Settings page.
2. In the Component Exchange panel, enter the URL for the component exchange, then click **Set Credentials**.
3. In the Component Exchange Credentials dialog box, enter the username and password for the user whose credentials will be used to authenticate access to the Component Exchange. Click **Save**.



If you are adding a connection to a private component exchange, it is recommended that the credentials you provide are for an administrator who is a member of the VB Studio project hosting the exchange or the project owner.

Configure Support for a Custom Domain

If you want your customers to see a different URL than the one generated by Visual Builder, you can map a custom domain, also called a vanity URL, to an app in your instance. A custom domain is a customer-provided hostname and domain (FQDN) created by adding a subdomain to your domain. After configuring an app to use a custom domain, app users accessing the app using the custom domain will not see the typical Oracle domain (for example, `myvbinstance-accountname.builder.ocp.oraclecloud.com`) in the URL, but instead would see something like `mycustom.example.org`.

To use a custom domain:

- Configure a custom endpoint in your Visual Builder instance, using the instructions in Create and Configure a Custom Endpoint.
- Select the custom endpoint in the visual application's Settings editor and publish the app. See Specify a Custom App URL in *Developing Applications with Oracle Visual Builder*.

> **Note**
>
> Custom URLs are supported on Oracle Visual Builder instances, as well as on Oracle Integration instances. Depending on whether you're on Oracle Integration, Visual Builder, or a Visual Builder instance that was provisioned as part of a SaaS order, the process for enabling custom URLs varies. To enable a custom domain:
>
> - For a Visual Builder Generation 2 instance, use the instructions in Create and Configure a Custom Endpoint.
> - For a Visual Builder instance, where you have access to the OCI Console, you'll need to use the instructions in Configure Support for a Custom Domain in *Administering Oracle Visual Builder in Oracle Integration 3*.
> - For a Visual Builder instance provisioned as part of a SaaS order, you might not have access to the OCI Console for configuring WAF. In this case, you'll need to use the instructions in Create Custom Domain for Visual Builder Instance Provisioned as Part of a SaaS Order in *Administering Oracle Visual Builder in Oracle Integration 3*.
> - For a Visual Builder in Oracle Integration Generation 2 instance, use the instructions in Configure a Custom Endpoint for an Instance in *Provisioning and Administering Oracle Integration and Oracle Integration for SaaS, Generation 2*.

After configuring a custom domain:

- Users can access a single web app by typing just the custom domain URL in the browser, for example, `mycustom.example.org`. The app is loaded from the custom domain root ("/"), and no additional path information or query parameters are required in the URL.
- `http` can be redirected to `https`, so if a user types "mycustom.example.com", this will resolve to `https://mycustom.example.com`, and load the default web app.
- For applications that contain business objects, the Business Object REST API can also use the custom domain configuration.
- Developers can access the Designer in Visual Builder using a custom domain.
- If you create and stage an application from a custom domain (`https://mycustom.example.com/ic/builder/designer`), you'll be automatically redirected to the custom domain (`https://mycustom.example.com/ic/builder/rt/appid/version/...`) when you open the app using a URL that isn't the application's custom domain (for example, your instance's URL `https://servicename.oraclecloud.com/ic/builder/rt/appid/version/...`).

Custom domains are also subject to some limitations:

- If the custom endpoint is selected as the Vanity URL in the application's Settings editor, after the app is published it can only be accessed from the custom domain root (for example, `https://mycustom.example.com`).
- If you publish a different web app in the same visual application, it immediately becomes the default app for the custom domain, and the previous web app will no longer be available at the custom domain.
- A custom domain can only be used to access one live app (in the visual application configured for the root URL). You can access other live apps in the same instance only by using the full Oracle Cloud URL, or by creating a different visual application and mapping it to a different custom domain.

- If a visual application contains more than one web app, only one of them can be accessed using the custom domain. It's not possible to specify which app in a visual application will be available at the custom domain because the domain is configured in the Settings for the visual application, not for individual web apps. If you are going to use a custom domain, it is recommended that the visual application only contain one web app to ensure that the correct app is loaded.

6

Reference

Reference topics for Oracle Visual Builder.

Topics:

IAM Policy Details for Visual Builder

This topic covers details for writing policies to control access to Visual Builder.

> **Note**
>
> Use the following resources for more information on how IAM policies work and how to create them. To make sure you're using the correct resources, you'll need to know if you're using IAM with an Identity Domain or without an Identity Domain. If you're not sure if you're using an Identity Domain, see About Setting Up Users and Groups.
>
> If you're using IAM with an Identity Domain:
>
> - Setting Up Users and Groups in Cloud Accounts That Use Identity Domains
> - Getting Started with Policies
> - How Policies Work
>
> If you're using IAM without an Identity Domain:
>
> - Setting Up Users and Groups in Cloud Accounts That Do Not Use Identity Domains
> - Getting Started with Policies
> - How Policies Work

Resource Types

These are the resources available for Visual Builder:

- `visualbuilder-instance`

Supported Variables

The `visualbuilder-instance` resource type can use the following variables.

Supported Variables	Variable	Variable Type	Description
Required Variables Supplied by the Service for Every Request	`target.compartment.id`	ENTITY	The OCID of the primary resource for the request.
	`request.operation`	STRING	The operation id (for example 'GetUser') for the request.
	`target.resource.kind`	STRING	The resource kind name of the primary resource for the request.
Automatic Variables Supplied by the SDK for Every Request	`request.user.id`	ENTITY	For user-initiated requests. The OCID of the calling user.
	`request.groups.id`	LIST(ENTITY)	For user-initiated requests. The OCIDs of the groups of `request.user.id`.
	`target.compartment.name`	STRING	The name of the compartment specified in `target.compartment.id`.
	`target.tenant.id`	ENTITY	The OCID of the target tenant id.
Additional Variables for Visual Builder	`target.visualbuilderinstance.id`	ENTITY	The OCID of the Visual Builder instance that was created.

Details for Verb + Resource-Type Combinations

The following table shows the permissions and API operations covered by each verb. The level of access is cumulative as you go from inspect > read > use > manage.

Verb	Permissions	APIs Fully Covered	APIs Partially Covered
INSPECT	• VISUALBUILDER_INSTANCE_INSPECT	• ListVbInstances • ListWorkRequests	None
READ	• Inherits from INSPECT: – VISUALBUILDER_INSTANCE_INSPECT • VISUALBUILDER_INSTANCE_READ	• GetVbInstance • GetWorkRequest	None
USE	• Inherits from READ: – VISUALBUILDER_INSTANCE_INSPECT – VISUALBUILDER_INSTANCE_READ • VISUALBUILDER_INSTANCE_UPDATE	• UpdateVbInstance • StartVbInstance • StopVbInstance	None

Verb	Permissions	APIs Fully Covered	APIs Partially Covered
MANAGE	• Inherits from USE: – VISUALBUILDER_INSTANCE_INSPECT – VISUALBUILDER_INSTANCE_READ – VISUALBUILDER_INSTANCE_UPDATE • VISUALBUILDER_INSTANCE_CREATE • VISUALBUILDER_INSTANCE_DELETE • VISUALBUILDER_INSTANCE_MOVE	• CreateVbInstance • DeleteVbInstance • ChangeVbInstanceCompartment	None

Permissions Required for Each API Operation

API Operation	Permissions Required to Use the Operation
ListVbInstances	`VISUALBUILDER_INSTANCE_INSPECT`
GetVbInstance	`VISUALBUILDER_INSTANCE_READ`
CreateVbInstance	`VISUALBUILDER_INSTANCE_CREATE`
DeleteVbInstance	`VISUALBUILDER_INSTANCE_DELETE`
UpdateVbInstance	`VISUALBUILDER_INSTANCE_UPDATE`
StartVbInstance	`VISUALBUILDER_INSTANCE_UPDATE`
StopVbInstance	`VISUALBUILDER_INSTANCE_UPDATE`
ListWorkRequests	`VISUALBUILDER_INSTANCE_INSPECT`
GetWorkRequest	`VISUALBUILDER_INSTANCE_READ`
ChangeVbInstanceCompartment	`VISUALBUILDER_INSTANCE_MOVE`

Manually Federating Your Tenancy

In certain cases, your tenancy may need user federation between Oracle Cloud Infrastructure's IAM and Oracle Identity Cloud Service (IDCS).

This section applies only to cloud accounts that do not use identity domains. See About Setting Up Users and Groups

> **Note**
>
> Follow the steps in this section ONLY if your tenancy is not manually federated. See Is My Tenancy Federated Between Oracle Cloud Infrastructure IAM and Oracle Cloud Identity Service?

The following section also provides For additional instructions for manually federating with IDCS, see Federating with Oracle Identity Cloud Service in the Oracle Cloud Infrastructure documentation. The *Instructions for Federating with Oracle Identity Cloud Service* section lists four main steps. However, step 1 differs for Visual Builder: Instead of accessing client ID/secret

information from a COMPUTEBAREMETAL IDCS application, you'll create an IDCS application to generate this information for federation, as described here.

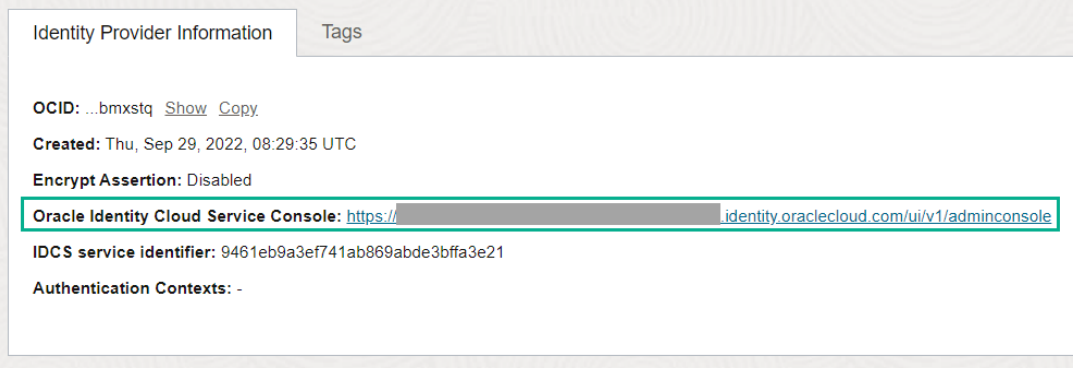
Is My Tenancy Federated Between Oracle Cloud Infrastructure IAM and Oracle Cloud Identity Service?

Oracle Visual Builder requires that Oracle Cloud Infrastructure Identity and Access Management (IAM) be federated with Oracle Identity Cloud Service (IDCS) for your tenancy.

1. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Federation**.
2. On the Federation page, look for an **Oracle Identity Cloud Service** link.

   The Federation screen is shown. Its **Identity Provider Information** tab identifies the default federation configured between the Oracle Identity Cloud Service stripe and the Oracle Cloud Infrastructure tenancy in a cloud account. Note that this screen may show more than the default identity provider.

   If you see a console link, your instance is federated. If it's not, perform the steps in Manually Federating Your Tenancy.



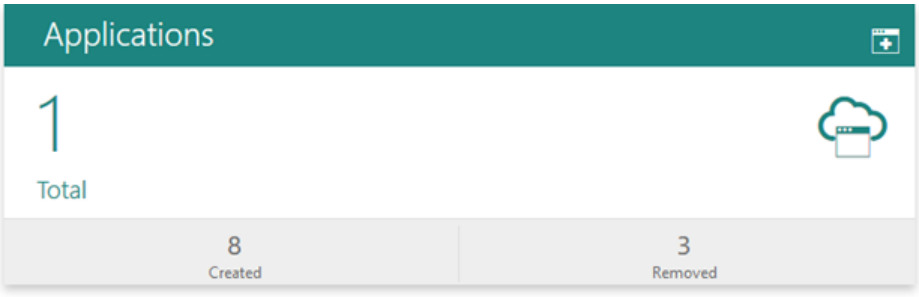
Getting Required Information from Oracle Identity Cloud Service

Follow these steps to create and configure an Oracle Identity Cloud Service application, activate the application, and create an IDCS administrator group.

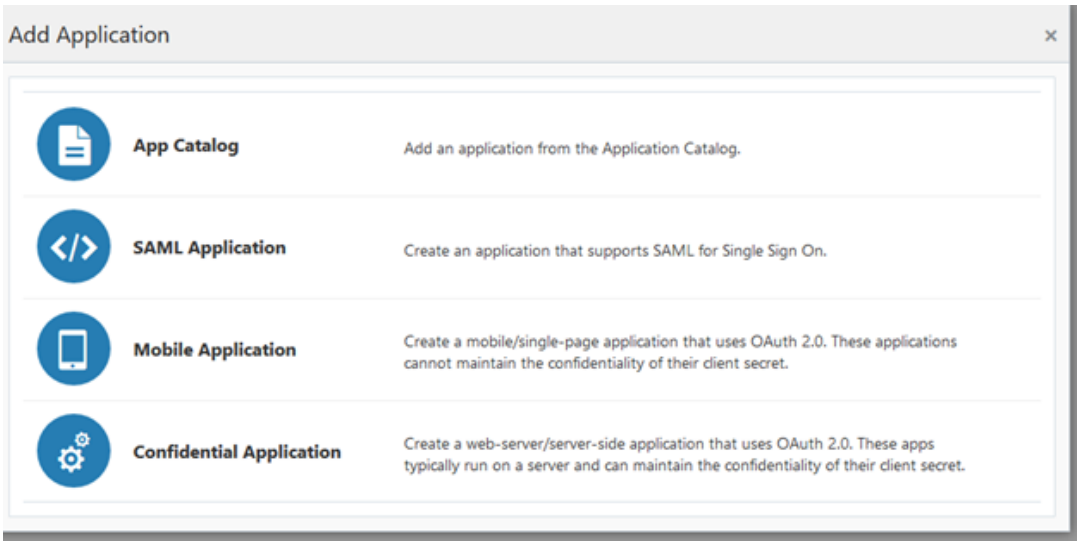
> **Note**
>
> Follow the steps in this section only if manual federation is needed.

1. Sign in to Oracle Identity Cloud Service with admin privileges. You must be viewing the admin console.

   Use the link, username, and password provided in your account welcome email.
2. Select **Applications**.



3. Click **Add**.
4. Select **Confidential Application**.

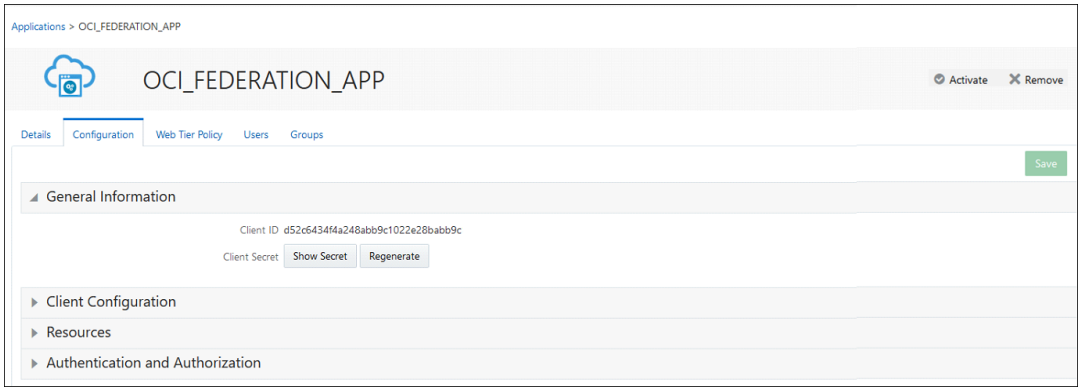


The Add Confidential Application page is displayed.

5. In the **Name** field under **App Details**, enter a name (such as `Oracle Cloud Infrastructure Federation`). Click **Next**.

   Client options are displayed.

6. Under **Authorization**, select **Client Credentials**.
7. Under **Token Issuance Policy**, click **+Add** by App Roles. Select **Identity Domain Administrator**. Click **Next**.
8. Click **Next** to skip the **Resources** options.
9. Click **Next** to skip the **Web Tier Policy** options.
10. Click **Finish**.



The application's **Client Id** and **Secret** are displayed.

11. Copy the **Client Id** and **Secret** for use later (in Adding Oracle Identity Cloud Service as an Identity Provider). Close the window.
12. Activate the app by selecting **Activate** in the upper right corner.
13. Create an IDCS group for administrators. Make sure the federated user you plan to test federation with is part of that group.
    a. Select **Groups** from the **Resources** options.
    b. Click **Create IDCS Group**.
    c. Enter a name (for example, `idcs-visualbuilder-admins`).
    d. Click **Create**.
14. Copy the IDCS base url (`https://<account>.identity.oraclecloud.com`) for use next in Adding Oracle Identity Cloud Service as an Identity Provider.

Adding Oracle Identity Cloud Service as an Identity Provider

If your tenancy needs user federation between Oracle Cloud Infrastructure's IAM and Oracle Identity Cloud Service (IDCS), complete steps in the console by adding Oracle Identity Cloud Service as an identity provider.

> **Note**
>
> Follow the steps in this section only if manual federation is needed. You'll need the information you generated in the steps in Getting Required Information from Oracle Identity Cloud Service.

1. Sign in to the Oracle Cloud Infrastructure Console as an IAM user (use the options on the right side).
2. Open the navigation menu and click **Identity & Security**. Under **Identity**, click **Federation**.
3. Click **Add Identity Provider** and enter data as below. Click **Continue**.
    a. **Name:** Enter a name, such as `oracleidentitycloudservice`.
    b. **Description:** Enter a description, such as `Federated IDCS stripe`.
    c. **Oracle Identity Cloud Service Base URL:** Enter the URL you noted earlier.
    d. **Client ID:** Enter the application's ID you noted earlier.

e. **Client Secret:** Enter the client secret you noted earlier.

f. Click **Continue**.

4. When prompted, map your IDCS group to the OCI administrators group.

   Select your IDCS group in the **Identity Provider Group** field and your Oracle Cloud Infrastructure group in the **OCI Group** field.

5. Sign out and sign back in as one of your federated users. On the Federation page, verify that the Oracle Identity Cloud Service link is now shown. See Is My Tenancy Federated Between Oracle Cloud Infrastructure IAM and Oracle Cloud Identity Service?

Configure a Custom URL Using Oracle Web Application Firewall Service V2

You can use Oracle's Load Balancer and Web Application Firewall Service V2 (WAF V2) to help you configure support for a custom URL for a Visual Builder instance.

When you configure a custom URL for a Visual Builder instance, (for example, `https://<my-custom-url.com>/ic/builder/`), you can access your instance directly using the custom URL. When you publish an application from the custom URL, the application will use the custom URL (for example, `https://<my-custom-url.com>/ic/builder/rt/`).

You can also configure a Visual Builder app to use a custom URL, also called a vanity URL, so that customers can access the app using just the base custom URL (`https://<my-custom-url.com>`).

The WAF V2 service allows you to define a policy that will map a custom domain name to the WAF service as the front end for your VB service as the origin server. To do this you'll use a public load balancer for managing the certificates in your tenancy. You can set up the load balancer in Oracle's Load Balancer service.

By using WAF to map your chosen DNS name to a VB service, you can manage the mapping of your DNS name and uploading your associated certificate and private key yourself instead of configuring the VB instance to manage them.

These instructions assume you have direct access to a Visual Builder instance and to the Oracle Cloud Infrastructure (OCI) Console. For more details on using your instance behind a WAF or an API Gateway, see:

- Certificates for Web Application Firewall
- Setting Up Custom Domains and TLS Certificates for API Gateways

Before You Configure the Custom URL

Before you start configuring the custom URL, you'll need to know some details about your instance, and you should also be aware of the limitations of using a custom URL for a Visual Builder instance.

What you'll need to configure the custom URL:

- **Visual Builder instance**: You'll need to have already provisioned a Visual Builder (or Integration) instance on Oracle Cloud. The instance must be a PSM/OCI based Oracle-managed instance.
- **VB instance public loadbalancer IP**: You can obtain the load balancer IP address by performing a dig on the hostname using the URL. For example, for the URL:

```
https://vbmyinst-vb-axdkj3wttbhm.builder.us-ashburn-1.ocp.oraclecloud.com/ic/builder/
```

Run the following command from the terminal to obtain the IP address required to configure backends:

```
dig https://vbmyinst-vb-axdkj3wttbhm.builder.us-ashburn-1.ocp.oraclecloud.com
```

- **DNS name**: You must decide what DNS name will be used to access the system, and that name must be in a DNS domain that you own.
- **SSL certificate**: You must have a CA signed SSL certificate with a private key for the DNS name.

Known Limitations

Custom URLs are subject to the following limitations:

- Only one web application at a time can be accessed using the root context ('/') of the custom URL.

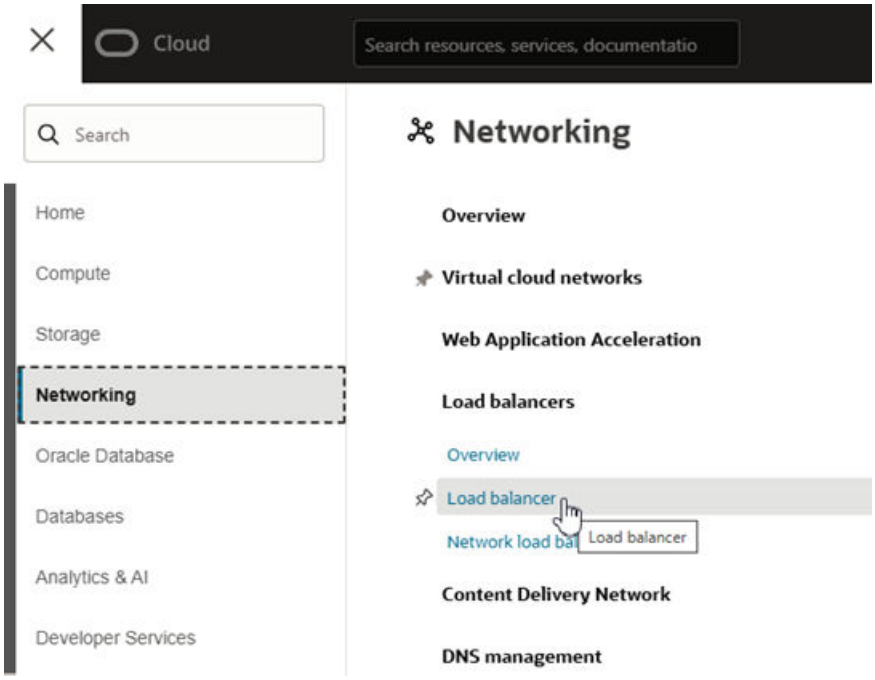
Create a Load Balancer and Configure a Hostname

You can use the Oracle Load Balancer service to create a public load balancer for managing the certificates in your tenancy.

A load balancer provides automated traffic distribution from one entry point to servers reachable from your virtual cloud network. For more about Oracle Load Balancer, see Overview of Oracle Load Balancer and Creating a Load Balancer.

To create a load balancer:

1. In the OCI Console, click **Navigation Menu** ☰, select **Networking**, and then select **Load Balancer**.



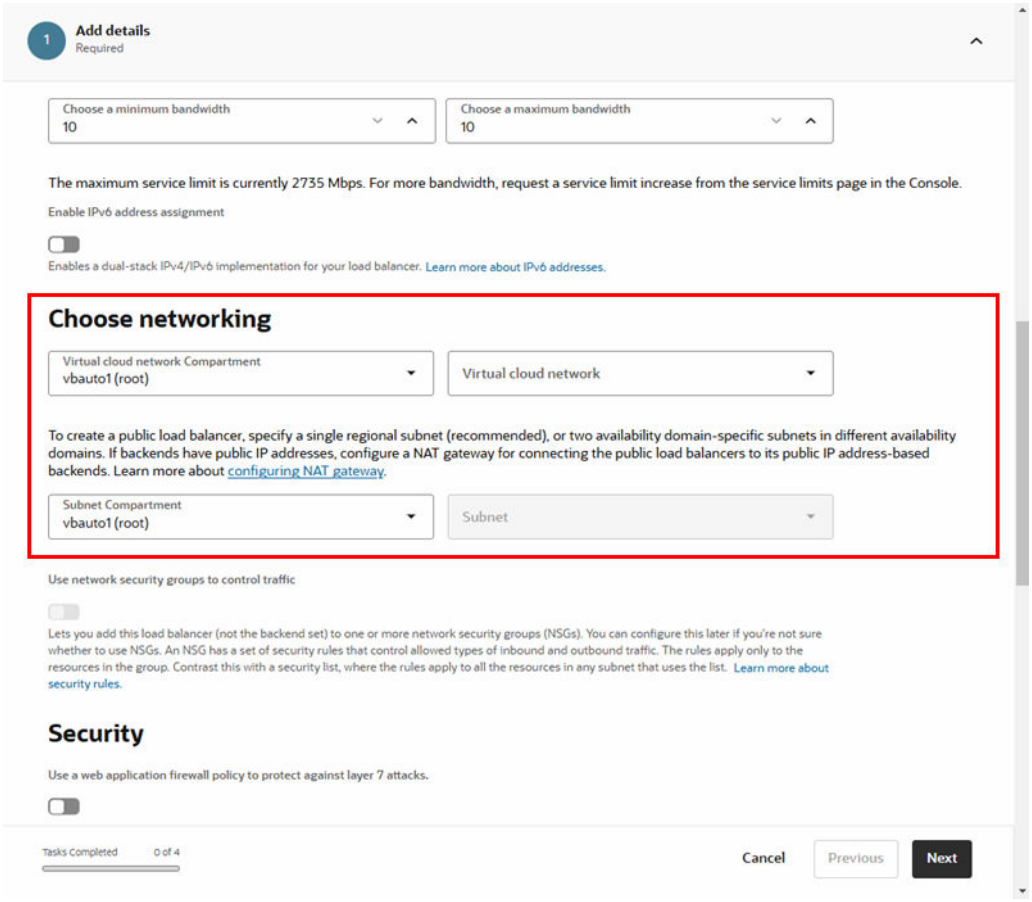
2. Create a new load balancer:

a. On the Load Balancers page, click **Create load balancer**.

b. Select `Load Balancer` as the type, then click **Create Load Balancer** to open the Create Load Balancer page to define the load balancer's details.

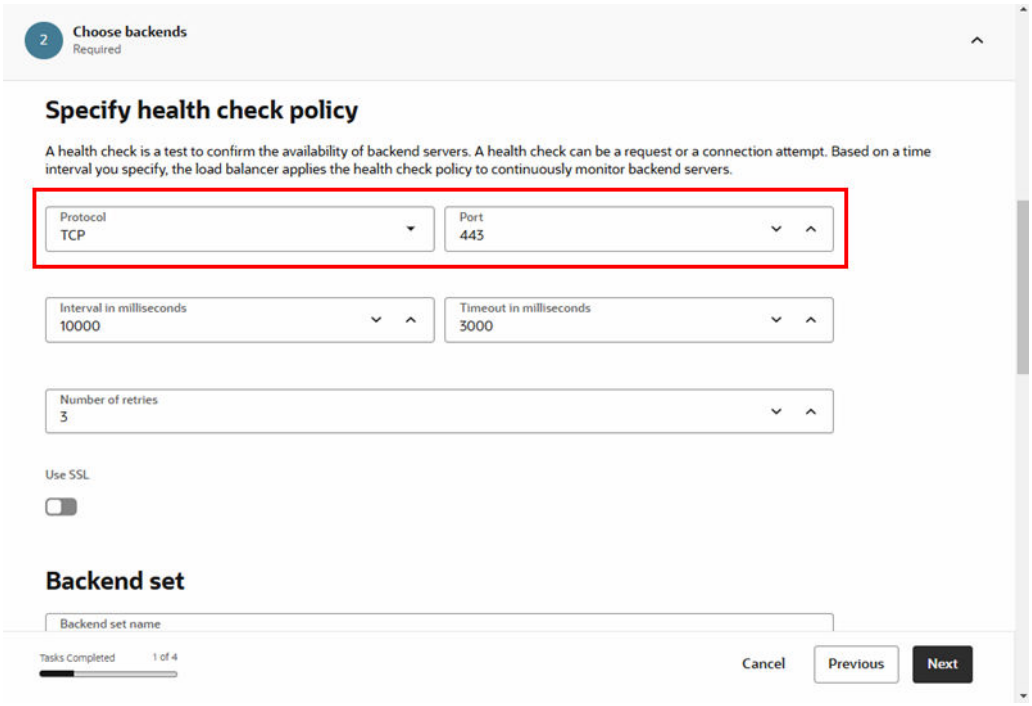
c. On the Add Details page, select the defaults for the shapes and networking options.

In the Choose networking section, you need to select a Virtual cloud network and Subnet, if they are not already selected.



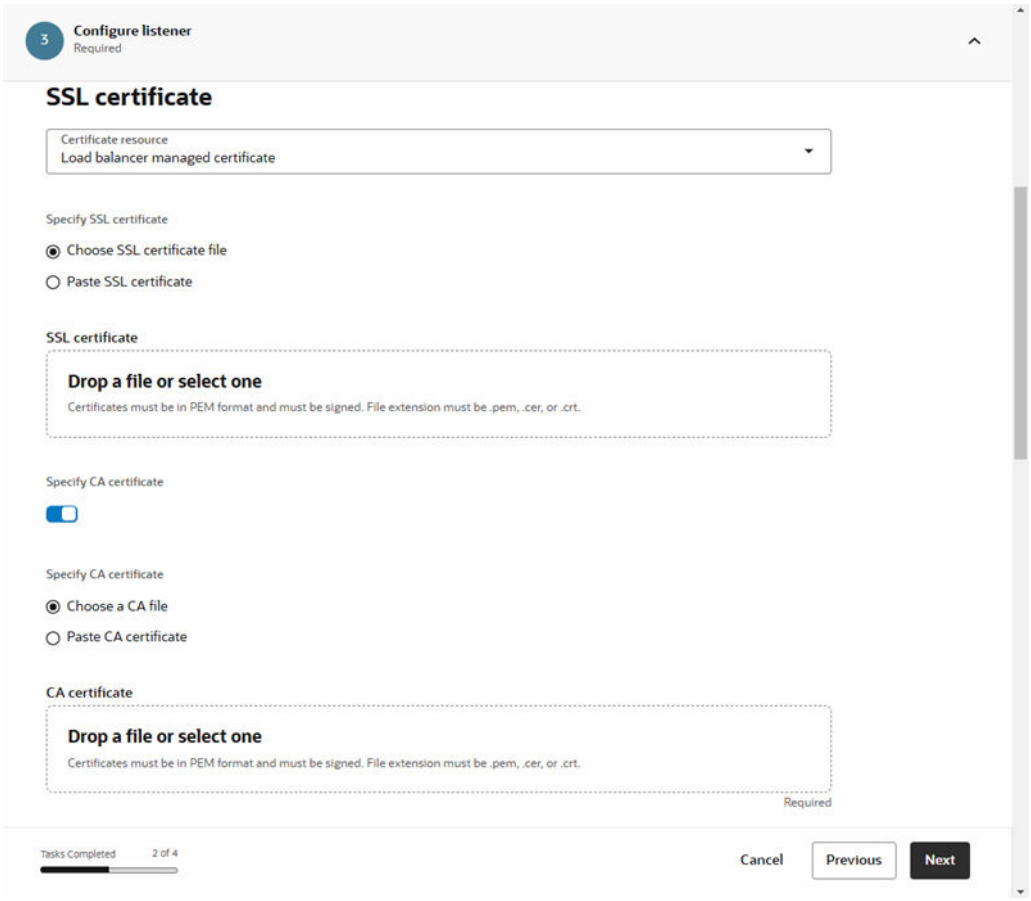
Click **Next**.

d. In the Specify Health Check Policy pane on the Choose Backends page, select **TCP** as the Protocol and set the port to **443**. Click **Next**.



e. In the SSL Certificate pane on the Configure Listener page, select **Load Balancer Managed Certificate** in the Certificate Resource dropdown list.

f. Provide your certificate chain and private key. Click **Next**.

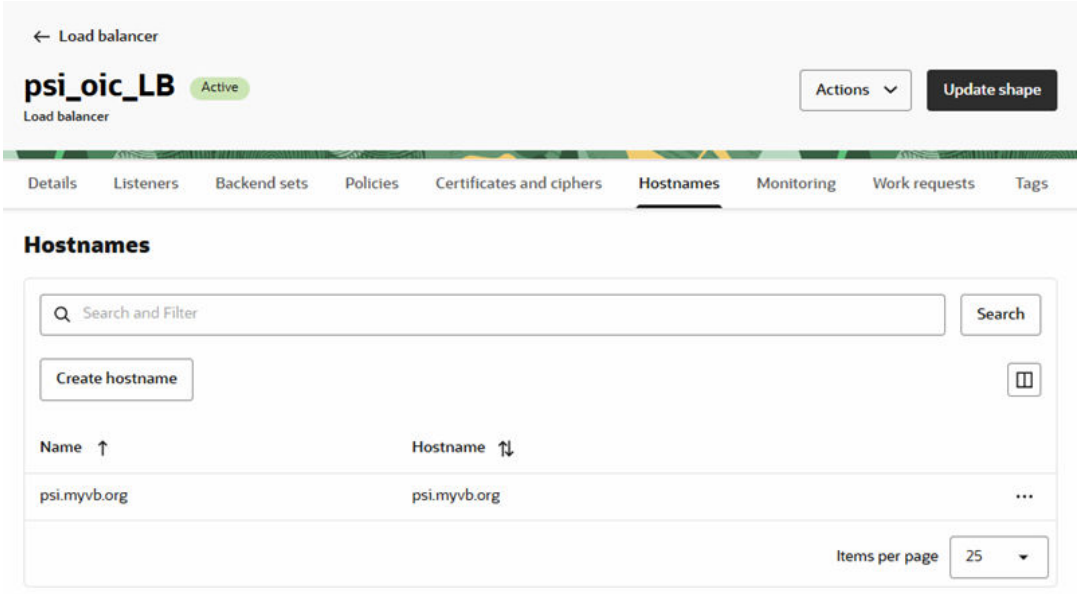


g. On the Manage Logging page, accept the default settings. Click **Submit** to create the load balancer.

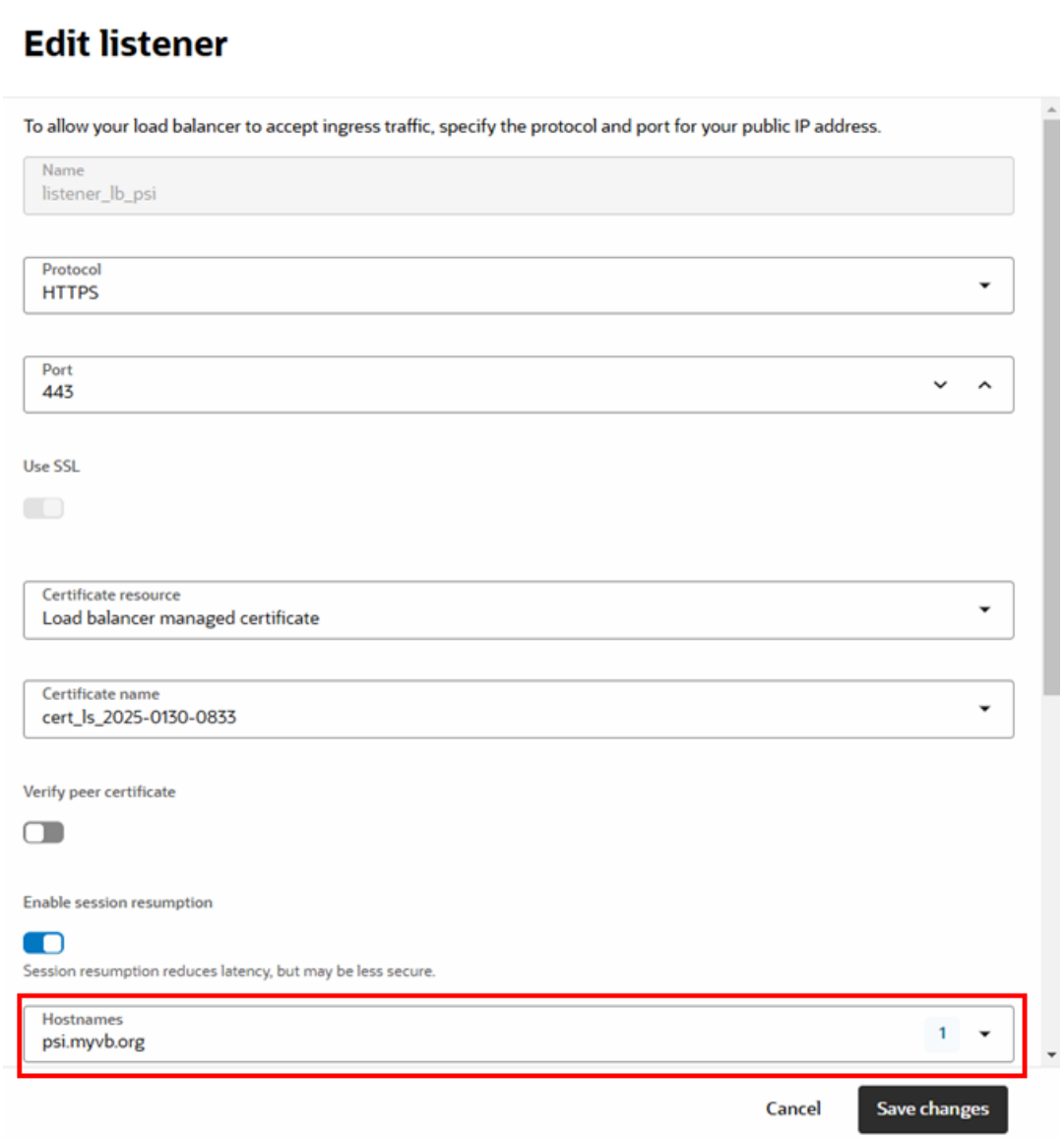
> **Note**
>
> It will take a few minutes to provision the load balancer

3. After the load balancer is provisioned, click the name of the new load balancer on the Load Balancers page to open its Details tab.
4. Open the **Hostnames** tab, and then click **Create hostname**.
5. Enter a Name and Hostname in the Create hostname page. Click **Create**.

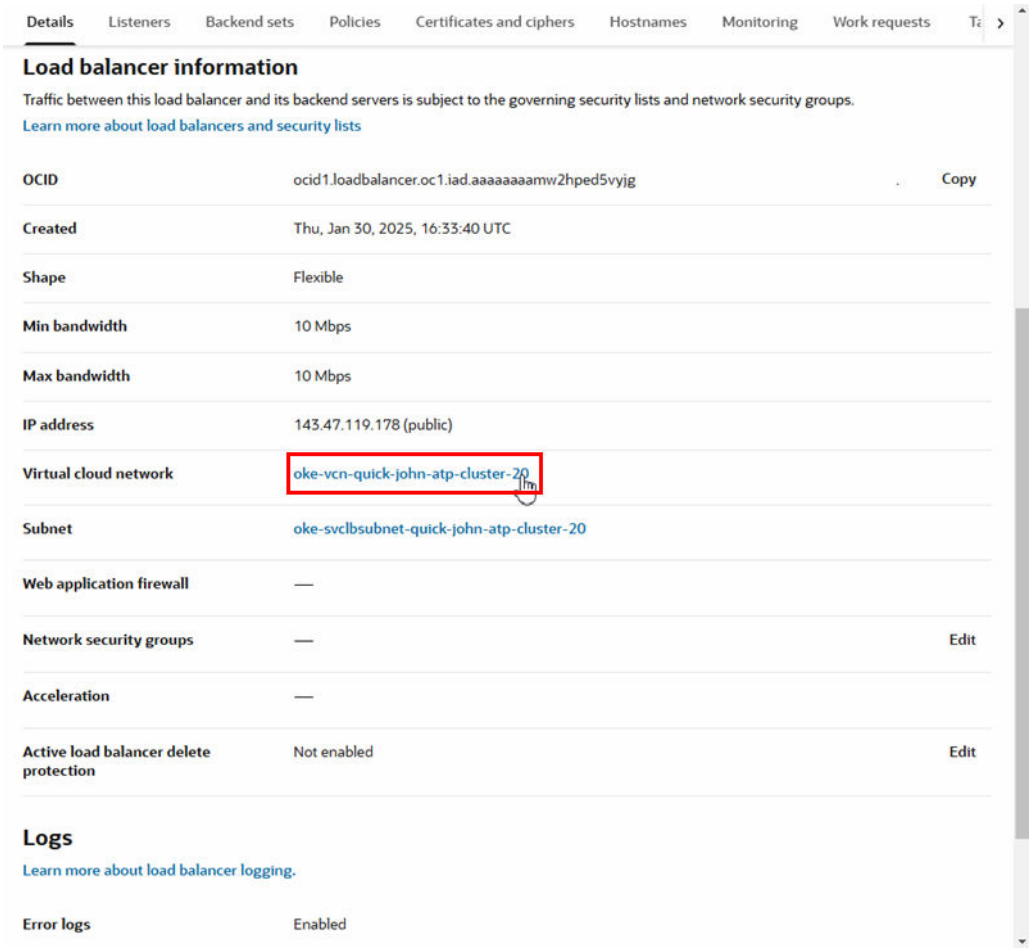
   The hostname will be your custom endpoint.



6. Open the **Listeners** tab, and edit your listener to add the hostname. Click **Save changes**.



7. Configure the load balancer Virtual Cloud Network (VCN):
   a. Open the load balancer's Details tab, and then click the Virtual Cloud Network (VCN) link to open the VCN's Details tab:

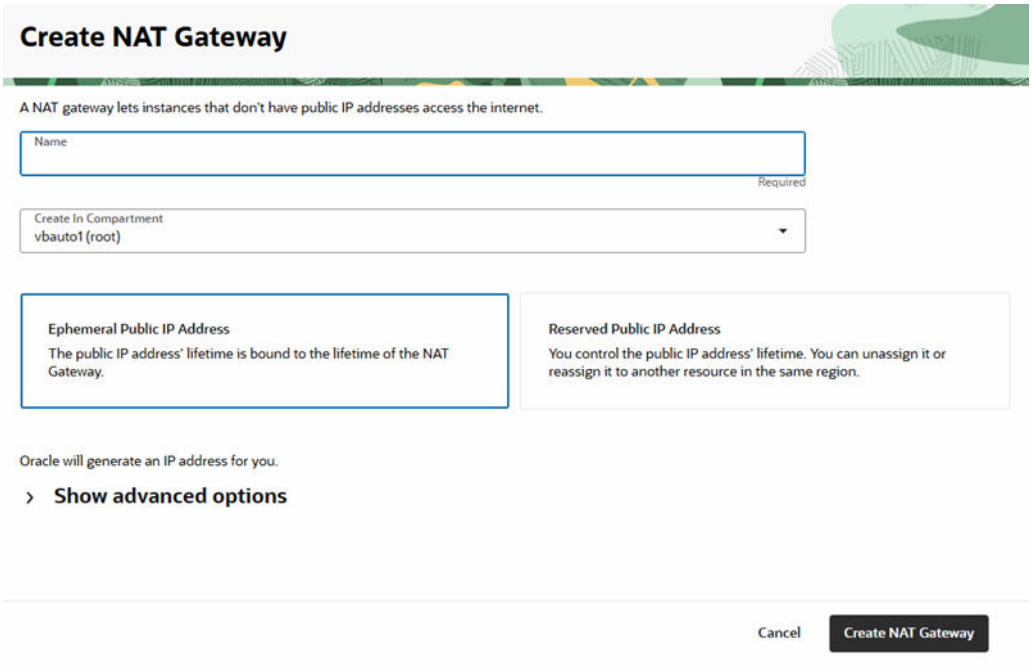


b. Open the VCN's **Gateways** tab, and then click **Create Internet Gateway**.

c. In the Create Internet Gateway page, enter a name, and then click **Create Internet Gateway** to return to the Gateways tab.

d. In the Gateways tab, click **Create NAT Gateway**.

e. In the Create NAT Gateway page, enter a name for the gateway and select **Ephemeral Public IP Address**. Click **Create NAT Gateway**.



f. Open the **Routing** tab, and then click **Create Route Table**.

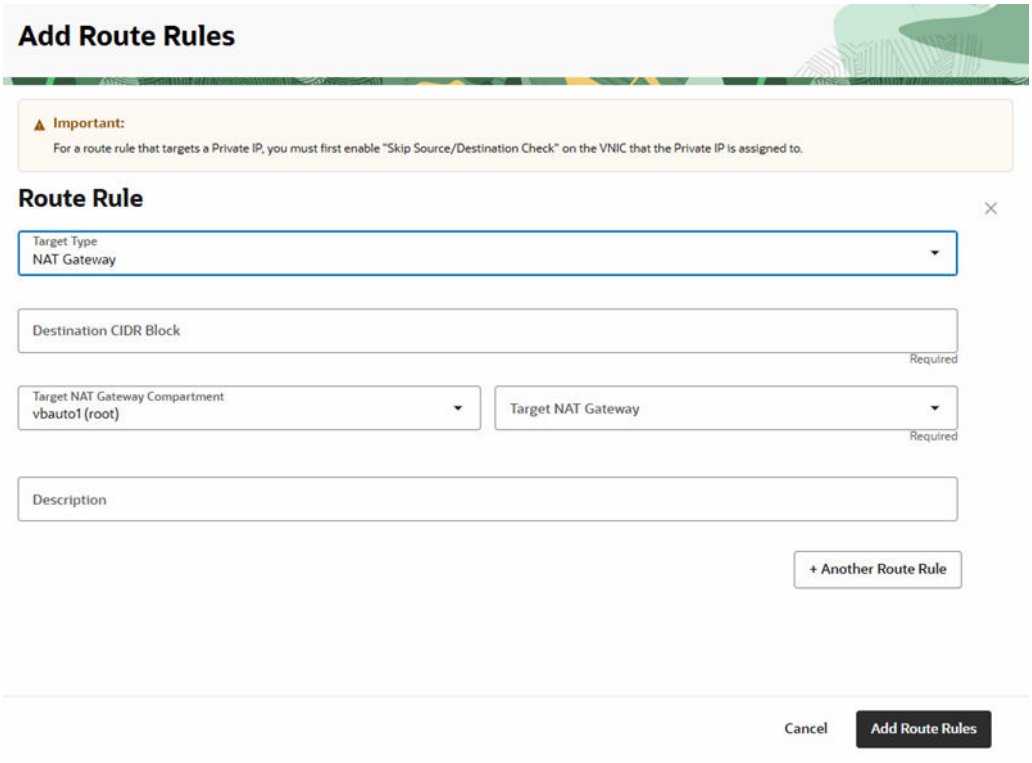
g. In the Create Route Table page, enter a name, and then click **Create Route Table** to return to the Routing tab.

h. Click the new route table to open its details page.

i. Open the **Route Rules** tab, and then click **Add Route Rules**.

j. In the Add Route Rules page, enter these details for the NAT gateway route rule:

- **Target Type:** NAT Gateway.
- **Destination CIDR Block:** Provide the Visual Builder instance public load balancer IP (see Setup above on how to obtain it). If it is a single IP, append /32 to it to form a single IP CIDR Block.
- **Compartment:** Leave as is.
- **Target:** Select the NAT gateway you created.
- **Description:** An optional description of the rule.



You need to create a NAT gateway route rule for each of your Visual Builder instance public load balancer IPs. To add a route rule, click **+ Another Route Rule**.

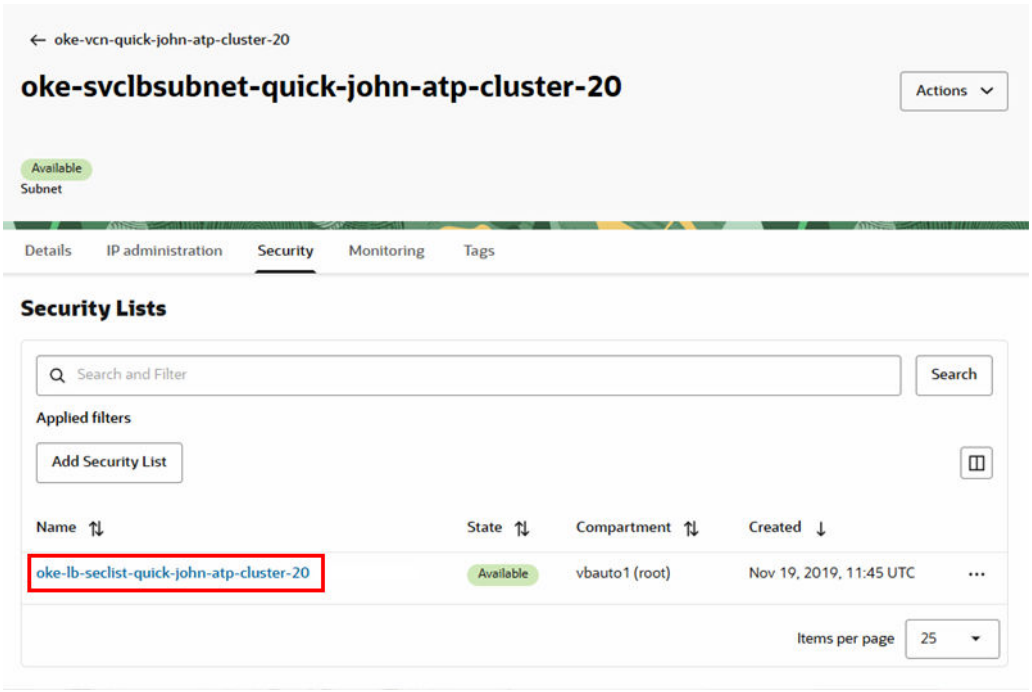
k. Click **+ Another Route Rule**, and enter these details for the internet gateway route rule:

- **Target Type:** Internet Gateway.
- **Destination CIDR Block:** 0.0.0.0/0
- **Compartment:** Leave as is.
- **Target Internet Gateway:** Select the internet gateway you created.
- **Description:** An optional description of the rule.

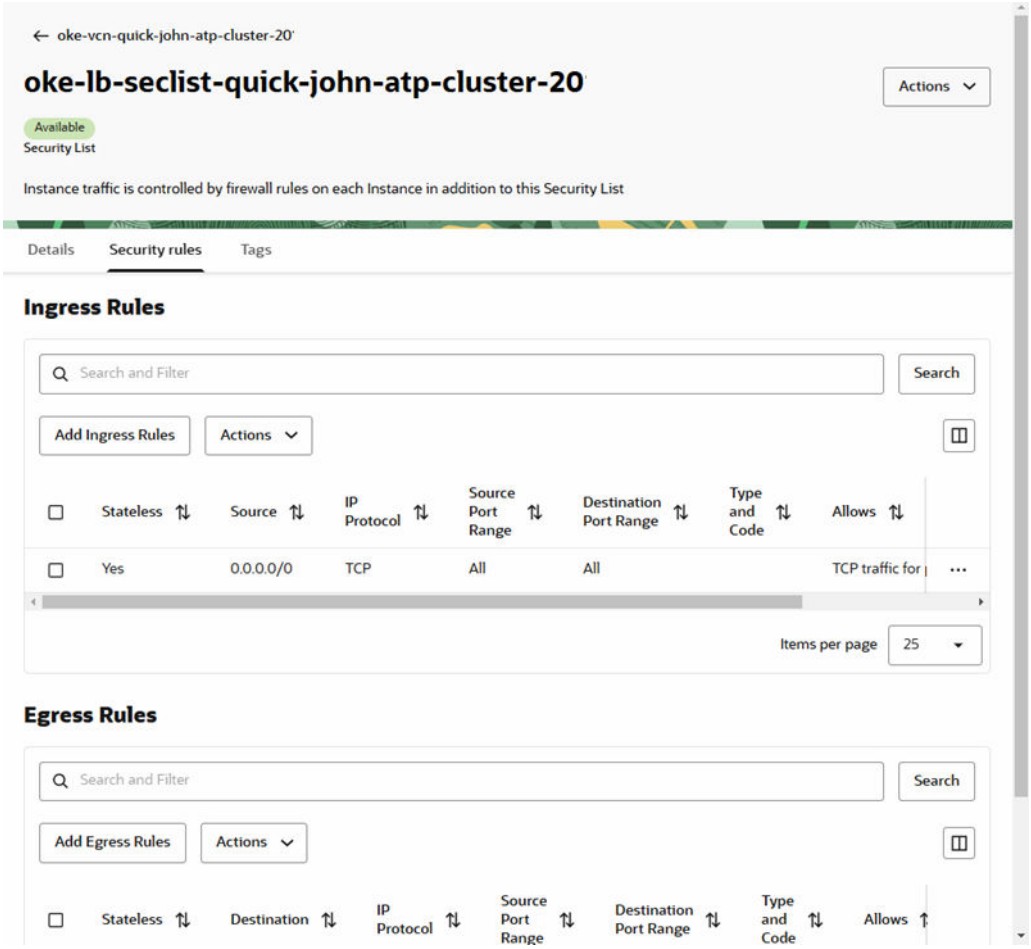
Click **Add Route Rules**.

l. Confirm that the health check status for your Backend Set is OK.

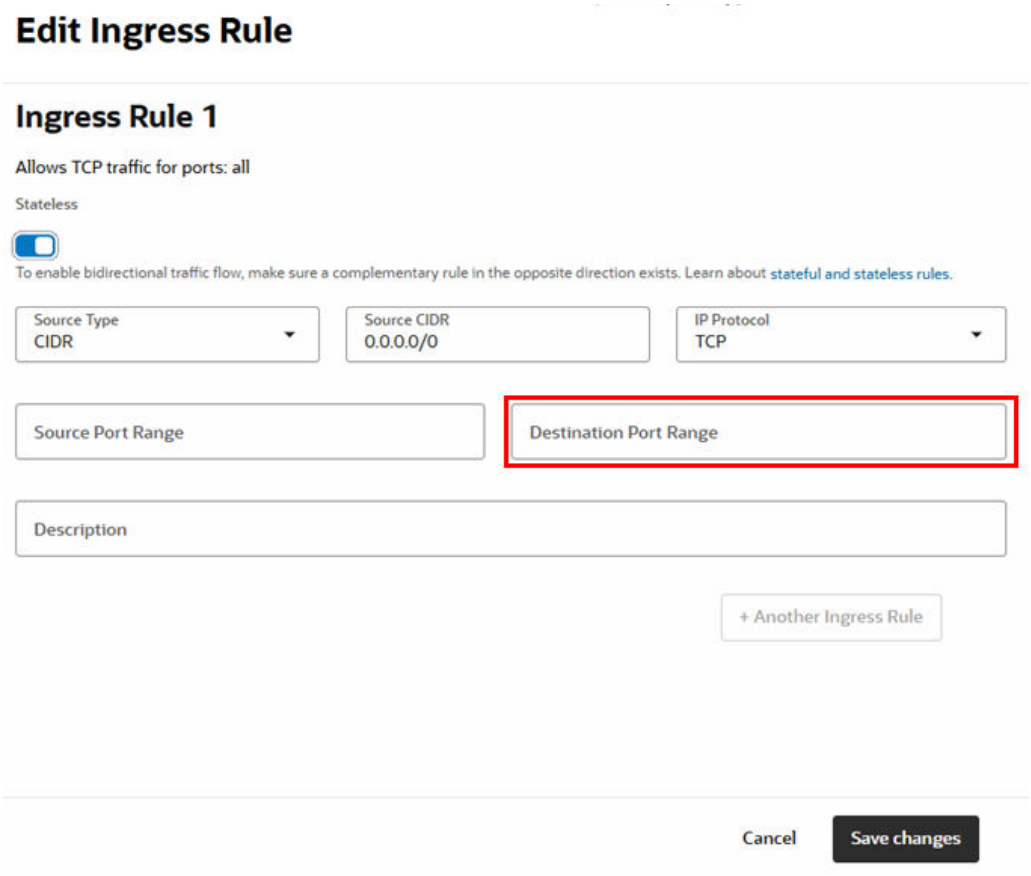
8. Return to the load balancer's Details tab.
9. Configure the load balancer subnet:
   a. On the load balancer's Details tab, click the Subnet link to open its details page.
   b. Open the subnet's **Security** tab, and then click the default security list in the table to open its Details pane.



c. Open the **Security rules** tab.



d. Edit the rule for entry `0.0.0.0/0` in the Ingress Rules table to change the Destination Port Range to **443**. Click **Save changes**.

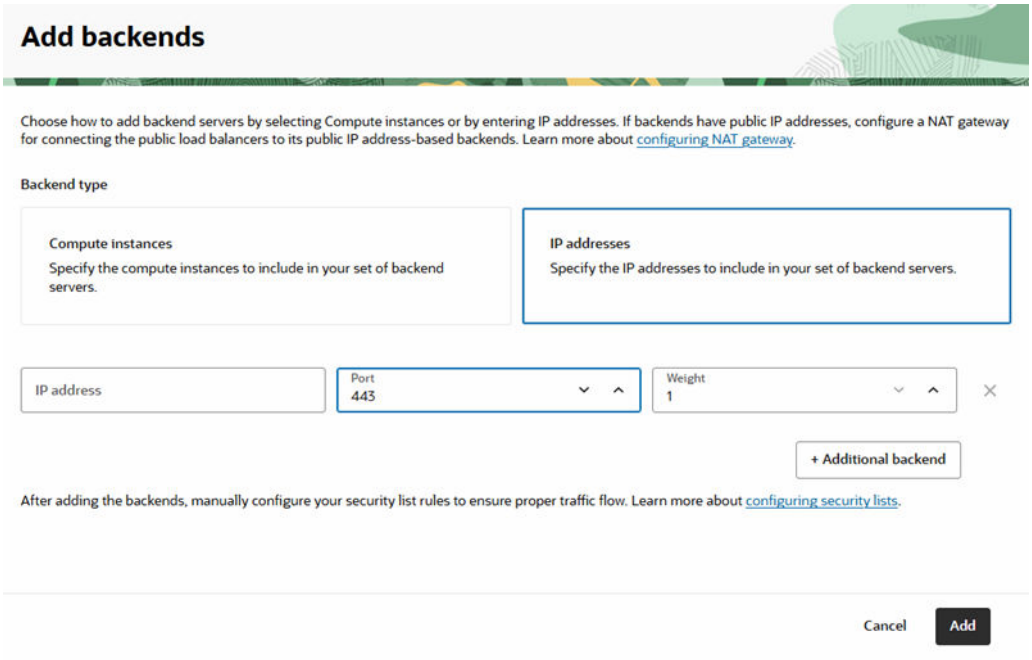


10. Set the SSL option for the backend:
    a. On the Backends page, select the **SSL** option.
    b. Select the **Load Balancer Managed Certificate** option.
    c. Select **Load Balancer managed certificate** and select the certificate from the dropdown list.

> **Note**
>
> If you get an error that a CA certificate is missing, create a new Load Balancer Managed Certificate and provide the server cert and intermediate cert separately instead of a combined chain.

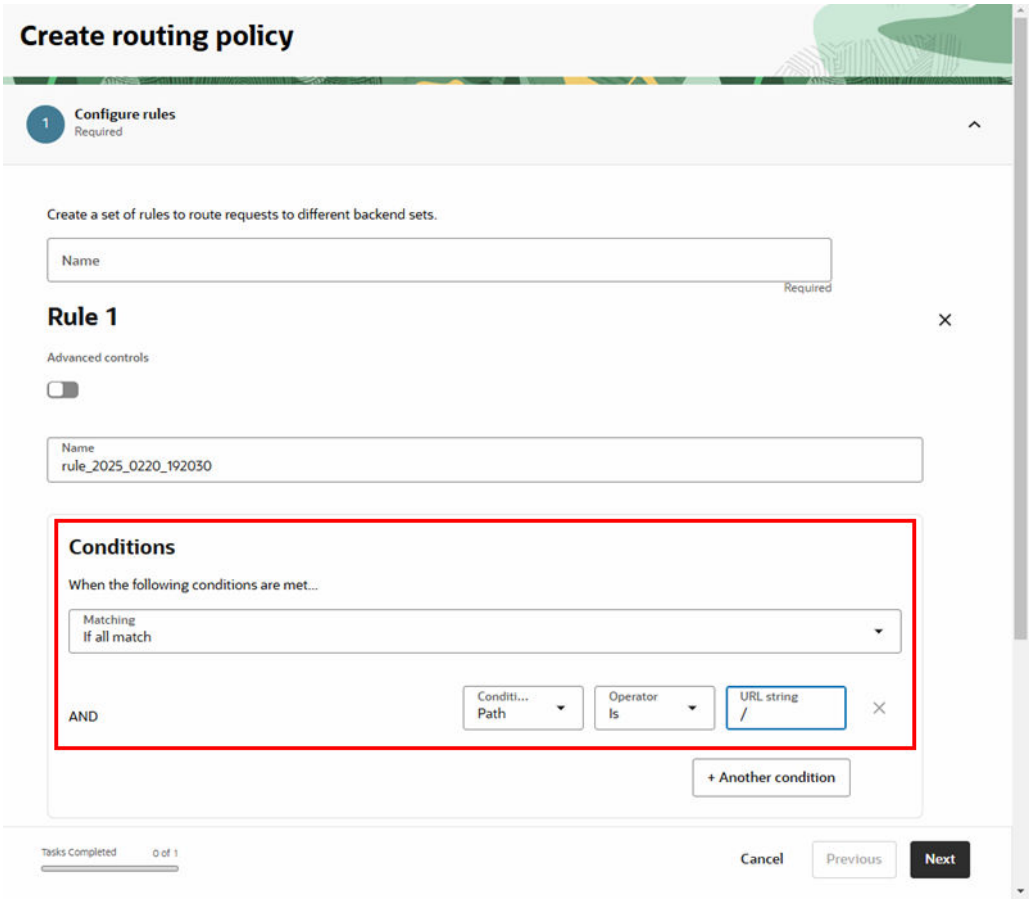
11. Add a new backend:
    a. Open the **Backend Sets** tab, and then click the backend set link in the table to open its Details tab.
    b. Open the **Backends** tab, and then click **Add Backend**.
    c. Select the **IP Addresses** option, and set the following backend details:
        - IP Address: Provide the IP address for the load balancer. This is the IP address you obtained when you used the `dig` command on the Visual Builder hostname.

- Port: Set the port to 443.



Click **Add**.

12. (Optional) If you want to restrict access:
    a. Open the **Policies** tab, and then click **Create routing policy**.
    b. In the Create routing policy page, enter a name for the routing policy.
    c. In the Conditions pane, configure the policy by setting the following:
        - When the following conditions are met: Set to `If All Match`
        - Condition Type: Set to `Path`
        - Operator: Set to `Is`
        - URL String: Set to `/` .



d. In the Action pane, define the "Route to backend" action by selecting the backend set from the dropdown list. Click **Next**.

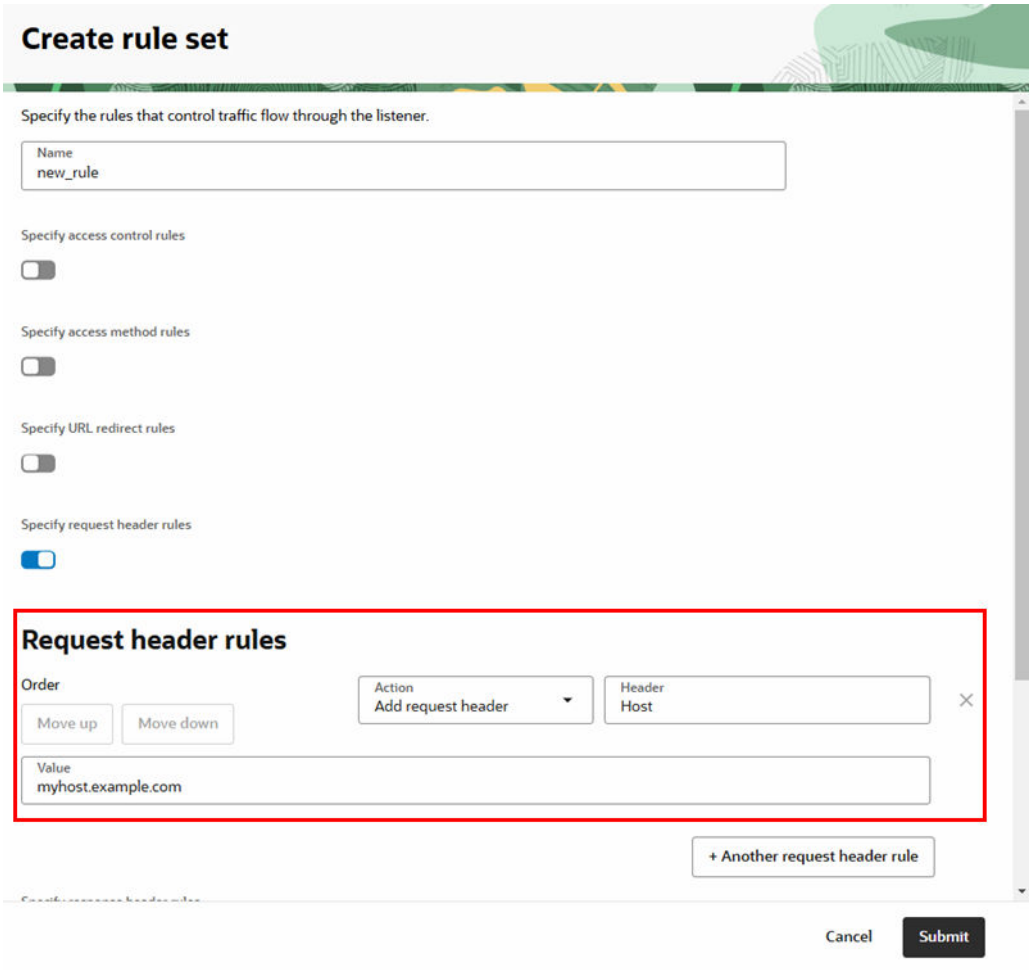
e. Set the order that policies should be performed, if needed. Click **Create routing policy** to return to the Policies tab.

f. In the Policies tab, click **Create rule set**.

g. In the Create rule set page, enter a name for the rule set.

h. Select **Specify request header rules**, and then enter the details:

- Action: `Add Request Header`
- Header: `Host`
- Value: Add your custom URL (for example: `myhost.example.com`)



Click **Submit** to return to the Policies tab.

Create a WAF Policy

You use a WAF policy to configure the access rules, rate limiting rules, and protection rules for your Web Application Firewall service.

When creating and configuring a WAF policy for your custom URL, you'll need to specify the load balancer used for your Visual Builder instance.

To create a WAF policy and specify the load balancer:

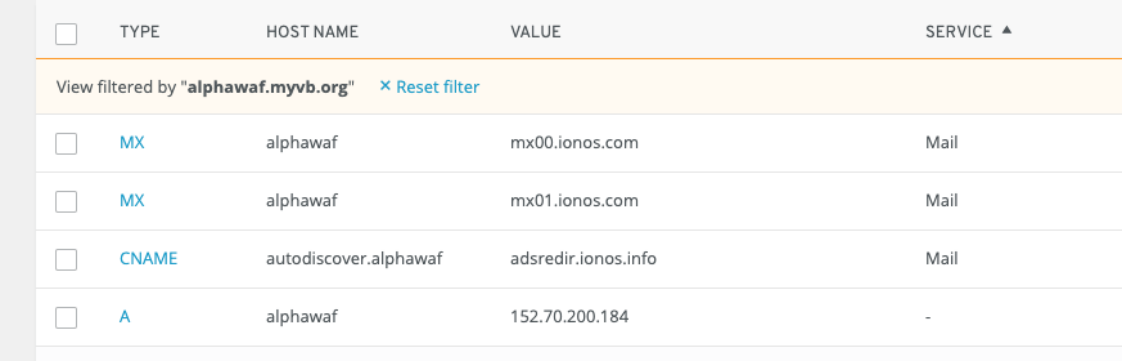
1. Sign in to the Oracle Cloud Infrastructure Console and open **WAF Policies** under **Security**.
2. Select the compartment you want the WAF policy to be created in and click **Create WAF Policy**.
3. Enter the policy name in the Create WAF Policy dialog box.
4. Accept all other defaults, and then click **Next** until you reach the **Select Enforcement Point** step.
5. In the **Select Enforcement Point** step, select the load balancer you created and complete the WAF configuration.
6. Click **Create WAF Policy**.

Now that the policy is created and you've configured it to use your load balancer, you can configure the policy rules. You can edit the policy configuration at any time. When configuring the policy, you can use the pre-defined actions, or create your own customized actions. For more about WAF policies, see Getting Started with Web Application Firewall Policies.

Configure the DNS

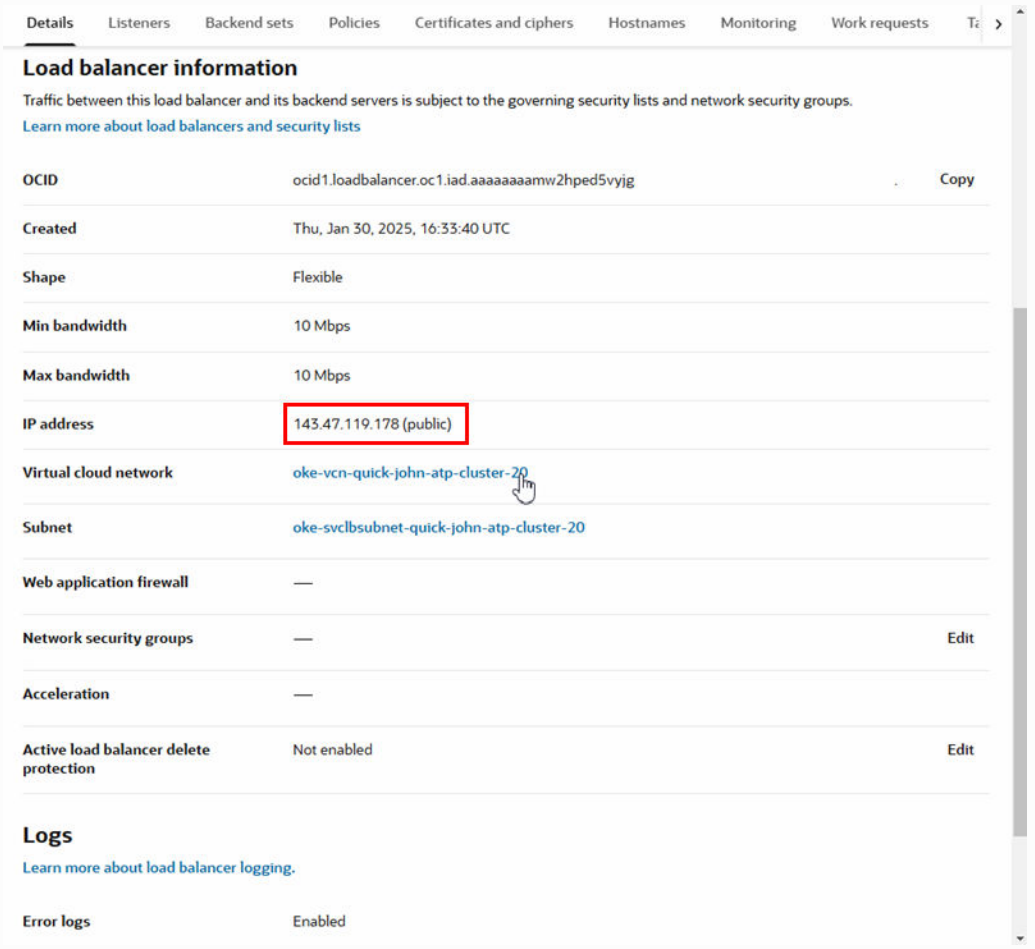
Register or update the custom DNS name with the load balancer public IP address.

In the DNS configuration for the name you've chosen to access the VB service instance, edit the A record to point to the public IP address of the load balancer. In the following image, the value of the A record is set to the public load balancer IP address `152.70.200.184`:



TYPE	HOST NAME	VALUE	SERVICE
View filtered by "**alphawaf.myvb.org**" × Reset filter			
MX	alphawaf	mx00.ionos.com	Mail
MX	alphawaf	mx01.ionos.com	Mail
CNAME	autodiscover.alphawaf	adsredir.ionos.info	Mail
A	alphawaf	152.70.200.184	-

> **Note**
>
> You can find your load balancer's public IP address in the Load Balancer Information tab on the Load Balancer page:



Configure a Vault for a Custom Endpoint

To create a custom endpoint for your Visual Builder instance, you can use the Key Management Service in OCI to create a vault to store the master encryption keys and secrets used to protect access to your custom endpoint.

In the OCI Console, you create an OCI vault in the compartment where you want to create your custom endpoint. For more details on working with vaults, see Working with Compartments, Overview of Vault, and Create a New Vault.

> **Note**
>
> If you are using a WAF and load balancer to protect your custom endpoint, you don't need to create a vault.

After you create and configure a vault in the OCI Console, you can configure your instance's first (primary) custom endpoint in the Visual Builder Instance details page. If your instance already has a primary endpoint and you want to add another, you need to create an alternate endpoint from the command line. Similarly, if your instance already has multiple custom endpoints and you want to edit any of them, you also need to do that from the command line. For details, see Create and Update Alternate Endpoints.

When creating the secret in your vault, you'll need to provide a secret certificate that contains:

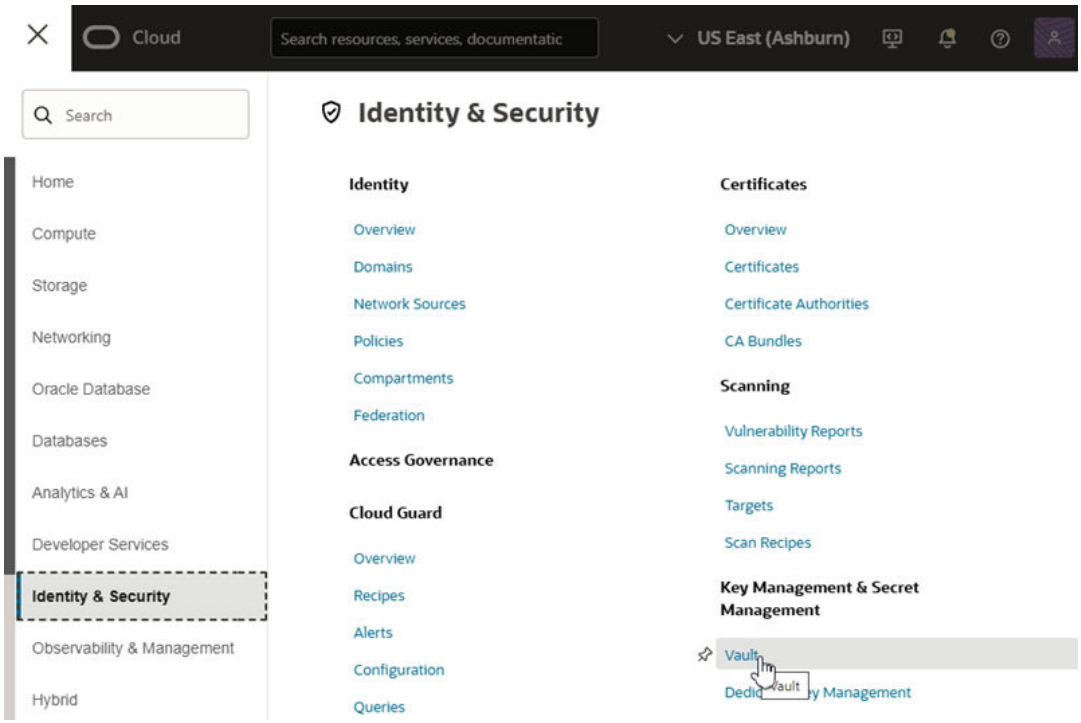
- the hostname's SSL certificate,
- the matching private key, and
- all intermediate certificates in the SSL chain.

You'll also need to provide a passphrase if the SSL certificate requires one. You can obtain these from your SSL certificate provider.

> **Note**
>
> You can use openssl to validate the SSL certificate and private key.

To create and configure an OCI vault in the OCI Console:

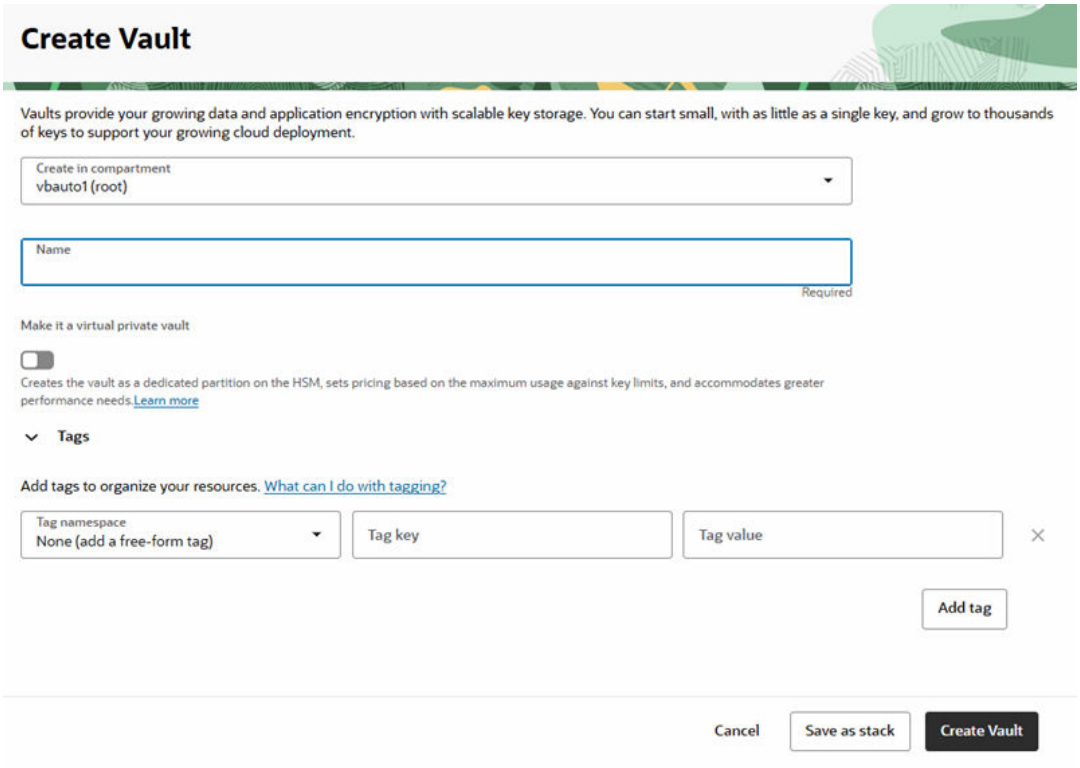
1. In the OCI Console, click **Navigation Menu** ☰, select **Identity & Security**, and then select **Vault** to open the Vaults page.



2. On the Vaults page, click **Create Vault** to open the Create Vault panel.

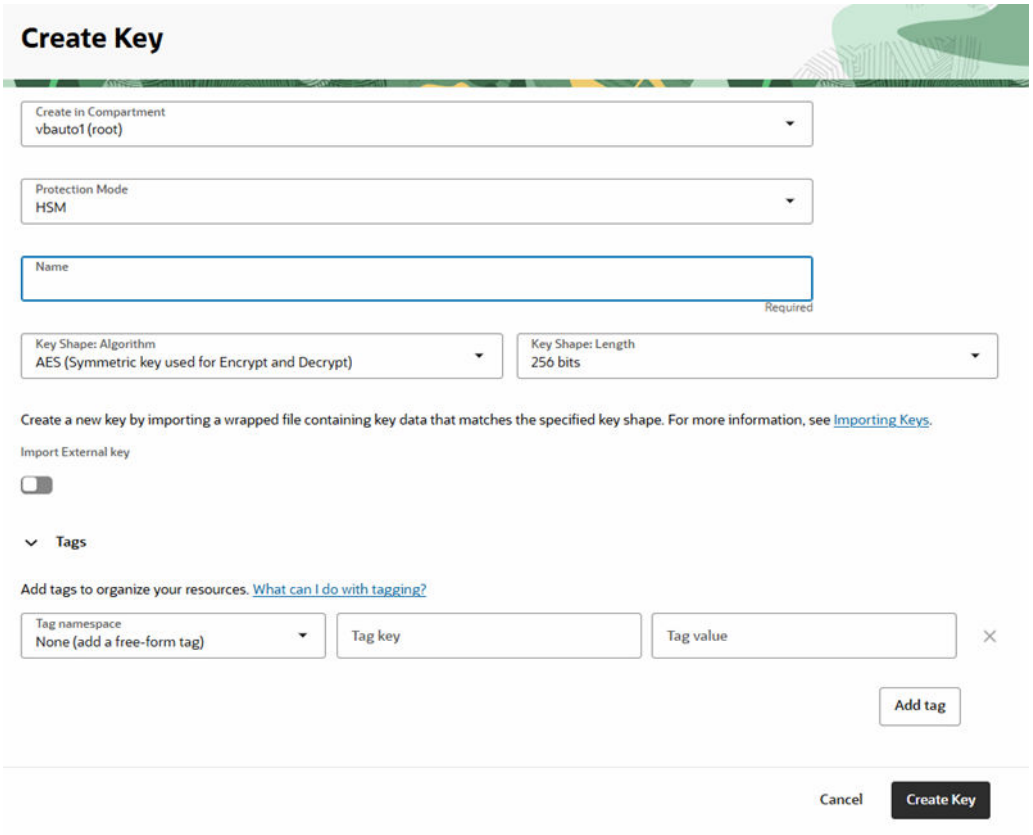
   In the Create Vault panel, confirm you are creating the vault in the correct compartment. If you are not in the correct compartment, select the compartment in the Create in Compartment dropdown list.

3. Enter a name for the vault. Click **Create Vault** to return to the Vaults page.



After you click Create Vault, it can take a few minutes for the new vault to appear in the table on the Vaults page.

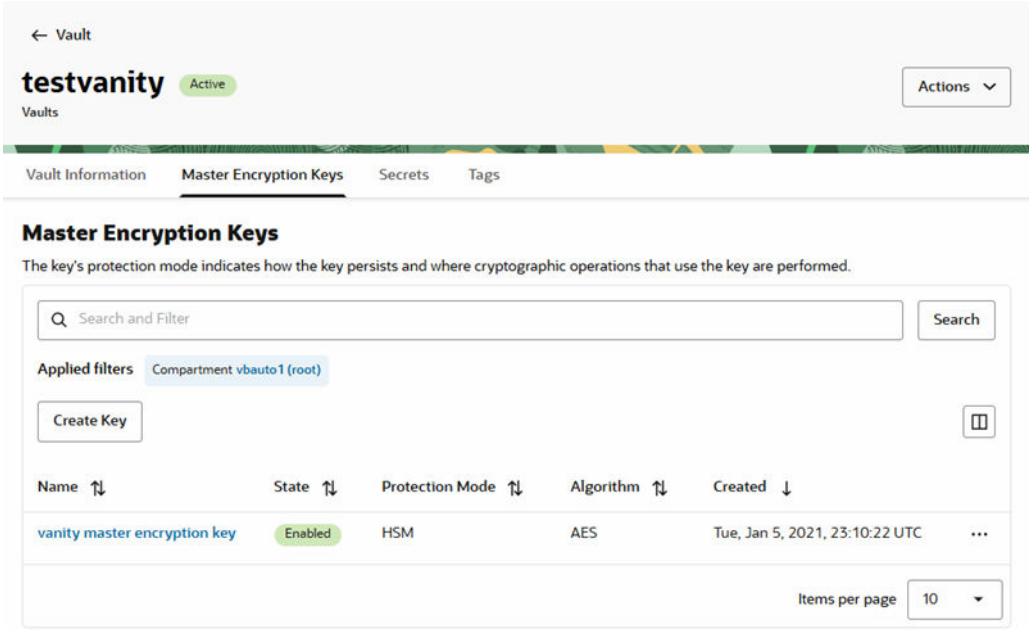
4. In the table on the Vaults page, click the name of the vault you created to open the vault's details page.
5. Create a master encryption key for the vault.
   a. Open the vault's **Master Encryption Keys** tab.
   b. Click **Create Key** to open the Create Key panel.



c. Enter a name for the key in the Name field.

   To create the key, you only need to enter a name. Use the default settings for the other options.

d. Click **Create Key** to return to the Master Encryption Keys tab.



6. Create the secret.

   Store the certificate as a secret in the OCI Vault. For more about secrets, see Create a New Secret.

   a. Open the vault's **Secrets** tab.

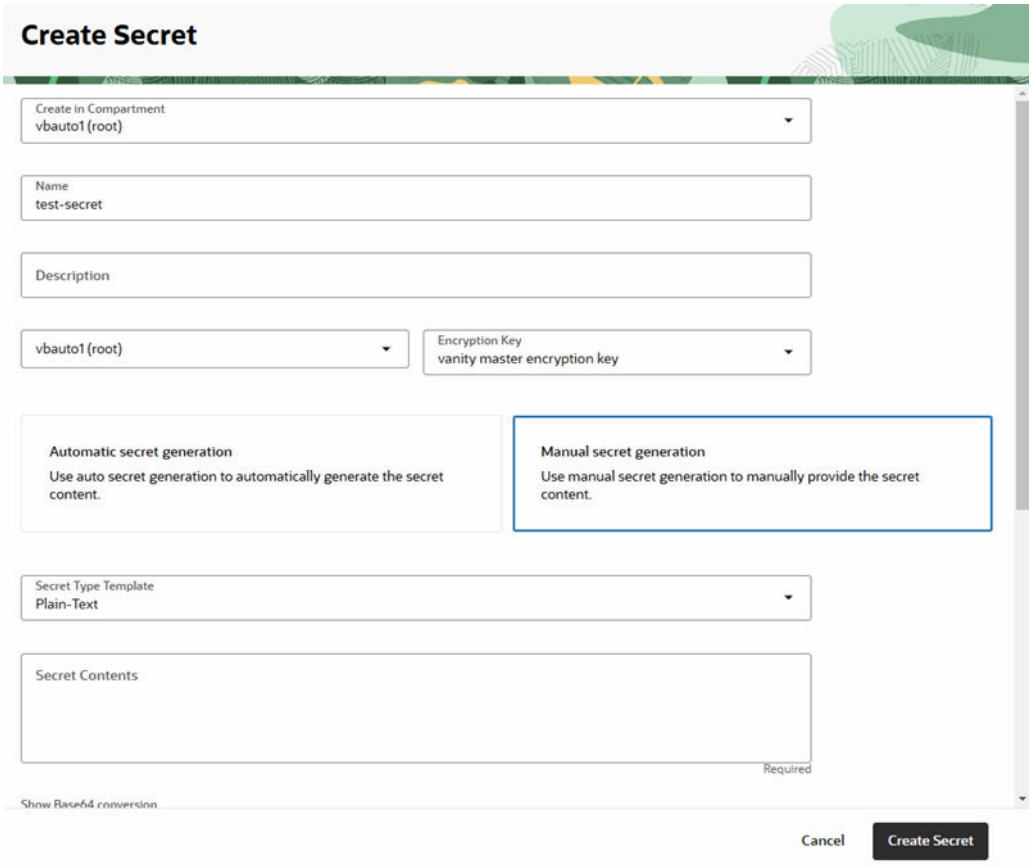
   b. Click **Create Secret** to open the Create Secret panel.

   c. Enter a name and description for the secret.

   d. In the **Encryption Key** dropdown list, select the key you created in the Master Encryption Keys tab.

   e. Select **Manual secret generation**.

      Make sure you explicitly select Manual secret generation. The default is Automatic secret generation.



   f. Generate the secret certificate and paste it into the Secret Contents field.

      Use the following format for the certificate:

```
{
  "key": "-----BEGIN PRIVATE KEY-----\n….-----END PRIVATE KEY-----\n",
  "cert": "-----BEGIN CERTIFICATE-----\n….-----END CERTIFICATE-----\n",
  "intermediates": [
    "-----BEGIN CERTIFICATE-----\n….-----END CERTIFICATE-----\n",
    "-----BEGIN CERTIFICATE-----\n….-----END CERTIFICATE-----\n"
  ],
  "passphrase": "<private key password if encrypted key is provided>"
}
```

When generating the certificate, note the following certificate requirements:

- The `key` and `cert` elements are required.
- Each intermediate certificate must be specified as a separate element in an `intermediates` array. In most cases there will only be one intermediate. The intermediate is provided by the SSL provider.
- Always ensure that the final root CA is specified as the last element in the array. For example, if there are three intermediate certificates for the leaf certificate, the certificate that issued the leaf certificate should go as the `intermediates[0]` element, the certificate that issued the `intermediates[0]` certificate should go in the `intermediates[1]` element, and the certificate that issued the `intermediates[1]` certificate should go in the `intermediates[2]` element.
- The `passphrase` attribute is only required if the private key is encrypted with a passphrase. Do not include the attribute if it's not required.
- If using an encrypted private key, the following format is required (`PKCS1` is supported):

  ```
  -----BEGIN RSA PRIVATE KEY-----
  Proc-Type: 4,ENCRYPTED
  -----END RSA PRIVATE KEY-----
  ```

  A JSON file with an encrypted private key looks as follows:

  ```
  {
    "key": "-----BEGIN RSA PRIVATE KEY-----\nProc-Type:
  4,ENCRYPTED\n....\n-----END RSA PRIVATE KEY-----",
  ..
  ..
    "passphrase": "<passphrase to decrypt the key>"
  }
  ```

  A JSON file with an unencrypted private key looks as follows:

  ```
  {
    "key": "-----BEGIN RSA PRIVATE KEY-----
  \nvRXUK08v31bw2rnDLw+vjuX2i8ujHWs\n....\n-----END RSA PRIVATE
  KEY-----",
  ..
  ..
  }
  ```

- If your private key is in PKCS8 format, you must convert it to `PKCS1` format:

  ```
  openssl rsa -in <input_pkcs8_encrypted_private_key> -out
  <converted_encrypted_private_key_file_name> -aes256
  ```

> **Note**
>
> It is strongly recommended that you generate the certificate JSON from the Linux/Unix command line, or Unix utilities, to ensure that the line endings are encoded correctly. Incorrect line endings will result in an error.
>
> - To avoid manual errors, you can also convert your PEM certificate into a single line containing `"\n"`, as expected, with the following `awk` commands.
>   For the leaf certificate:
>
>   ```
>   awk -v RS= '{gsub(/\n+/, "\\n")}1' <cert_pem_file>
>   ```
>
>   For each intermediate/root certificate:
>
>   ```
>   awk -v RS= '{gsub(/\n+/, "\\n")}1'
>   <each_intermediate_cert_pem_file>
>   ```
>
>   For the private key:
>
>   ```
>   awk -v RS= '{gsub(/\n+/, "\\n")}1' <private_key_pem_file>
>   ```
> - The **latest** version of the secret is used when you associate a custom endpoint with your instance either through the create instance or edit instance operation. For information on secret versions, see Secret Versions and Rotation States.
> - If you use a hostname certificate whose certificate authority (CA) is not in the Visual Builder trust store, you must also upload the certificate to your Visual Builder instance; otherwise, an exception is thrown in the scenarios the instance calls itself.

Use the default settings for the other options in the Create Secret page.

g. Click **Create Secret** to return to the Secrets tab.

7. Create an Identity and Access Management (IAM) policy to:

   a. Allow the Visual Builder service to read the version and contents of the secret.

   Here's the policy syntax for a Visual Builder service:

   ```
   allow group <group-name> to read secret-bundle in compartment <secrets-compartment>
   ```

   Here's an example:

   ```
   allow group VBInstanceAdmins to read secret-bundle in compartment MySecretCompartment
   ```

   If the VB instance is NOT in a default domain, then you need to include the domain prefix in front of the group name.

   Here's an example:

   ```
   Allow group mydomain/VBInstanceAdmins to read secret-bundle in compartment MySecretCompartment
   ```

b. Allow the admin group to access the secret, key, and vault (or create a new secret, key, and vault), while creating or updating a Visual Builder instance with a custom endpoint.

   Here's the policy syntax:

   ```
   allow group <group-name> to manage secrets in compartment <secrets-compartment>
   ```

   ```
   allow group <group-name> to manage keys in compartment <secrets-compartment>
   ```

   ```
   allow group <group-name> to manage vaults in compartment <secrets-compartment>
   ```

   and here are examples:

   ```
   Allow group VBInstanceAdmins to manage secrets in compartment MySecretCompartment
   ```

   ```
   Allow group VBInstanceAdmins to manage keys in compartment MySecretCompartment
   ```

   ```
   Allow group VBInstanceAdmins to manage vaults in compartment MySecretCompartment
   ```

   If the VB instance is NOT in a default domain, then you need to include the domain prefix in front of the group name.

   Here are examples:

   ```
   Allow group mydomain/VBInstanceAdmins to manage secrets in compartment MySecretCompartment
   ```

   ```
   Allow group mydomain/VBInstanceAdmins to manage keys in compartment MySecretCompartment
   ```

   ```
   Allow group mydomain/VBInstanceAdmins to manage vaults in compartment MySecretCompartment
   ```

Note that you should specify the resource to return in `<resource-type>`, as described in Details for the Vault Service.

For the policy statement syntax, see Add Users to Create and Manage Visual Builder Instances above, and CreatePolicy API Request.

Update a Secret in a Vault

When updating SSL certificates in a vault, you will need to create a new version of your secret. After updating the secret, you update your instance to start using the new secret.

> **Note**
>
> - You must use the command line to update the instance after you update the endpoint's secret. See Create and Update Alternate Endpoints.
> - If you are using WAF to manage your certificates, you update the certificates in the load balancer. See Create a Load Balancer and Configure a Hostname.

To update a custom endpoint's SSL certificate:

1. Open the OCI Console.
2. Update the SSL certificate.

   The steps for updating a certificate will depend upon if you have already created a vault in your tenancy.

   - If you are already managing the SSL certificates in a vault yourself, meaning you have already created a vault, perform the following steps to create a new version of the secret in your vault and update the certificate:

     a. Open the vault containing the certificate you want to update, then select the **Secrets** tab.

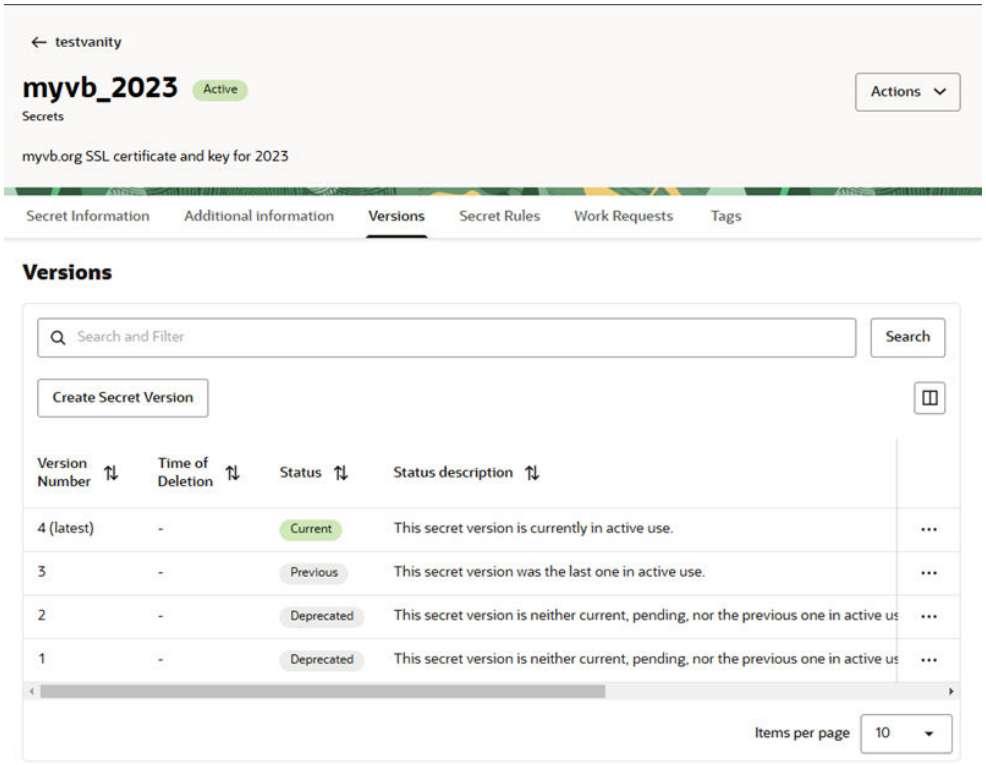
     b. In the Secrets tab, select the **Versions** tab, and then select **Create Secret Version**.

     c. In the Create Secret Version page, paste in the secret certificate JSON in the Secret Contents field.

     > **Note**
     >
     > When creating the secret certificate JSON, make sure the key and certificate are correct, and the JSON is correctly formated.
     >
     > It is strongly recommended that you generate the certificate JSON from the Linux/Unix command line, or Unix utilities, to ensure that the line endings are encoded correctly. Incorrect line endings will result in an error. For details on the correct certificate formatting, see Configure a Vault for a Custom Endpoint.

     Click **Create Secret Version**.

     After you create the new version, the Versions table is updated, and the new version is labeled "Current" in the Status column.



- If you have not been managing the SSL certificates in a vault yourself, meaning you have been using a vault created and managed by Oracle, you need to create a new vault in your tenancy before you can update your certificates.
  For example, Oracle Digital Cloud Service customers, after they have been migrated to their own tenancy, are responsible for managing their certificates, and might need to create a vault in their tenancy before they can update their certificates.

  Perform the following steps to create a vault and update the certificates:

  a. Create a vault and secret for the hostname used for your primary endpoint.
  You can see the details of your instance's primary endpoint in the Custom endpoint pane in the Visual Builder Instance details page.

  For the steps to create a vault and secret, see Configure a Vault for a Custom Endpoint.

3. Update your instance.

   You need to update your instance to start using the updated secret.

   - If you created a new version of the secret in your vault for a primary endpoint:

     a. Open the Visual Builder Instance details page.
     You will see a notification that a new secret has been created, and that you need to update your instance.

     b. From the **Actions** menu, select **Edit** to open the Edit visual builder instance panel.

     c. In the Edit visual builder instance panel, click **Save Changes** to update the instance with the new version of the secret.
     You do not need to change any of the custom endpoint settings.

   - If you created a new vault *and* secret for a primary endpoint:

     a. Open the Visual Builder Instance details page.

b. From the **Actions** menu, select **Edit** to open the Edit visual builder instance panel.

c. In the Custom endpoint pane, select the new vault and secret from the dropdown lists.
Do not change the hostname or compartment.

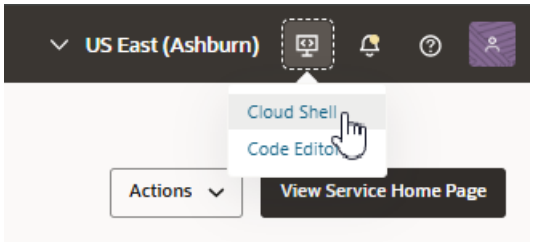
d. Click **Save Changes** to update the instance with the new vault and secret.

- If you created a new version of the secret in the vault for an alternate endpoint:
After creating a new version of the secret, you need to update the alternate endpoint for the new version. For alternate endpoints, you need to use the `update` command from the command line. You can run the command in the OCI Console's Cloud Shell editor.

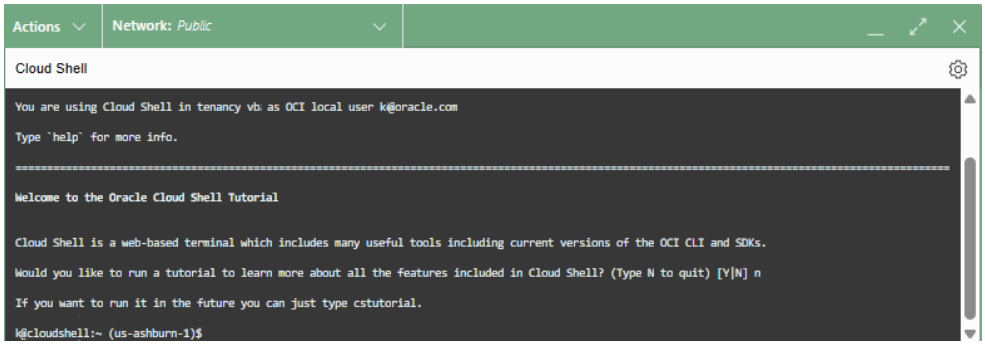
  When you run the `update` command, you don't need to explicitly specify the secret version because it is automatically updated to the most recent version.

  a. Open the Visual Builder Instance details page.

  b. Select the **Developer tools** menu in the header, and then select **Cloud Shell** to open the Cloud Shell editor.



The Cloud Shell editor opens in the bottom of your browser window:



It might take a minute for the editor to initialize.

  c. In the shell editor, check if the shell is working correctly by entering the following command at the prompt:

```
oci visual-builder vb-instance get --id <OCID>
```

For the `id` parameter, you need to provide the instance's OCID, which is listed in the Details tab. To copy the instance's <*OCID*>, click **Copy** next to the OCID.

The shell editor is context-sensitive, so the command should return details about the instance open in the details page.

  d. Run the `update` command with the `--alternate-custom-endpoints` parameter to update the alternate endpoints in the instance.

> **Note**
>
> When you run the command, confirm you have included the details of every alternate endpoint in the instance in the payload. **If you omit an alternate endpoint in the payload, that endpoint is deleted.**

In the `update` command, you need to provide the instance's OCID for the `id` parameter, and include a JSON array containing the details of **every** alternate endpoint in the instance as the payload of the `alternate-custom-endpoints` parameter:

- If you have any alternate endpoints using a vault to store certificates, you need to include in the payload the hostname and the certificate secret OCID of each endpoint:

  ```
  --alternate-custom-endpoints
  '[{"hostname":"hostname.com","certificateSecretId":"<SECRET_ID>"}
  ]'
  ```

- If you have any alternate endpoints using WAF for certificates, you only need to include the hostname of the alternate endpoints in the payload:

  ```
  --alternate-custom-endpoints '[{"hostname":"hostname.com"}]'
  ```

For example, if you have two alternate endpoints in your instance, and you want to update one of them, the `update` command might look something like this:

```
oci visual-builder vb-instance update --id <VB_INSTANCE_OCID>
--alternate-custom-endpoints
'[{"hostname":"hostname.com","certificateSecretId":"<SECRET_ID>"},
{"hostname":"hostname1.com","certificateSecretId":"<SECRET_ID>"}]'
```

Notice that although in this case you are only updating one endpoint, the `alternate-custom-endpoints` parameter payload contains the details for the instance's two alternate endpoints (`hostname.com` and `hostname1.com`).

Create and Update Alternate Endpoints

After adding the first custom endpoint (primary endpoint) to your instance, you need to use the command line in a shell when you want to update the instance to add more endpoints (alternate endpoints). The OCI Console provides a shell editor you can use to add and update alternate endpoints.

Additionally, when it comes time to update the SSL certificate in a secret, you need to use the command line to trigger an instance update after updating the secret in the associated vault. For details, see Update a Secret in a Vault.

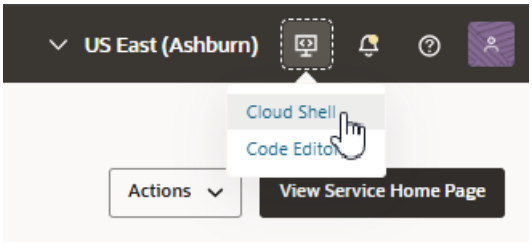
> **Note**
>
> If you have not been managing your instance yourself, meaning your instance was managed by Oracle, after you are migrated to your own tenancy you are responsible for managing your instance's alternate endpoints and associated vaults. This includes updating the SSL certificates for alternate endpoints.

To create and update alternate endpoints in a Visual Builder instance, you use the command line to send a JSON payload via the`vb-instance update` command. In the command, the payload is included as `alternate-custom-endpoints` parameters. For details on the `vb-instance update` command, see vb-instance update in the OCI CLI Command Reference, and UpdateCustomEndpointDetails Reference in the Visual Builder API.

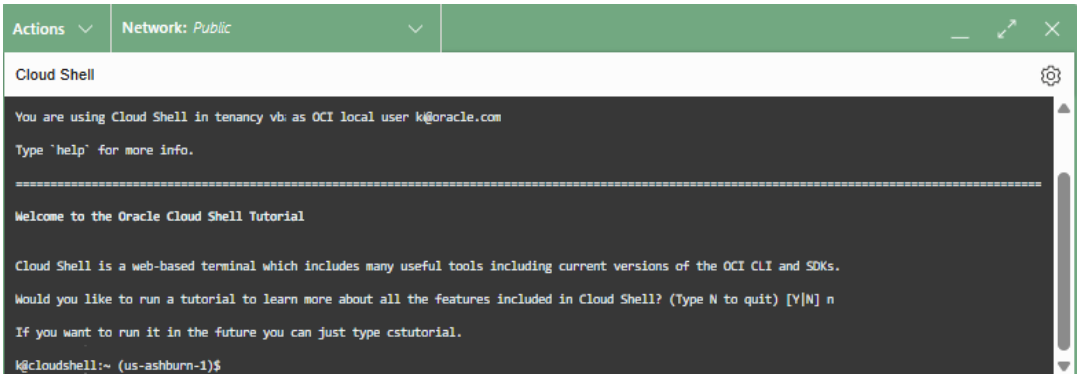
> **Warning**
>
> When updating alternate endpoint details using the command line, your payload must include the details of every alternate endpoint in your instance, including the details for endpoints not being updated. For example, if your instance has two alternate endpoints, and you want to update the secret in the vault for one of the alternate endpoints, the payload must still contain the details for both alternate endpoints.

To create or update an alternate endpoint:

1. On the Visual Builder Instances page, find the instance you want to work with and open its details page. If you need help finding the Instances page or the instance, see View and Manage the Visual Builder Instance.
2. Select the **Developer tools** menu in the header, and then select **Cloud Shell** to open the Cloud Shell editor.



The Cloud shell editor opens in the bottom of your browser window:



It might take a minute for the editor to initialize.

3. In the shell editor, check that the shell is working correctly.

   The shell editor is context-sensitive, so the command returns details about the instance open in the details page.

   Enter the following `get` command at the prompt:

   ```
   oci visual-builder vb-instance get --id <OCID>
   ```

   For the `id` parameter, you need to provide the instance's OCID, which is listed in the Details tab. To copy the instance's <*OCID*>, click **Copy** next to the OCID.

   When you run the command, you should see details about the instance in the shell editor.

4. Run the `update` command in the shell editor.

   You use the `update` command to update existing alternate endpoints and to create new alternate endpoints.

> **Note**
>
> In the `update` command, you need to provide the instance's OCID for the `id` parameter, and include a JSON array containing the details of every alternate endpoint in the instance as the payload of the `alternate-custom-endpoints` parameter:
>
> - If you are using a vault to store a certificate for an alternate endpoint, you need to include in the payload the hostname and the certificate secret OCID of each endpoint:
>
>   ```
>   --alternate-custom-endpoints
>   '[{"hostname":"hostname.com","certificateSecretId":"<SECRET_ID>"}
>   ]'
>   ```
>
> - If you are using WAF for an alternate endpoint's certificate, you only need to include the hostname in the payload:
>
>   ```
>   --alternate-custom-endpoints '[{"hostname":"hostname.com"}]'
>   ```
>
> - If you fail to include an endpoint in the payload when you run the `update` command, the endpoint is deleted.

- To update the details of an alternate endpoint:
  Run the `update` command. When you run the command, confirm you have included the details of every alternate endpoint in the instance. For example, if you have two alternate endpoints in your instance, and you want to update one of them, the `update` command might look something like this:

  ```
  oci visual-builder vb-instance update --id <VB_INSTANCE_OCID>
  --alternate-custom-endpoints
  '[{"hostname":"hostname.com","certificateSecretId":"<SECRET_ID>"},
  {"hostname":"hostname1.com","certificateSecretId":"<SECRET_ID>"}]'
  ```

  Notice that although in this case you are only updating one endpoint, the `alternate-custom-endpoints` parameter payload contains the details for the two alternate endpoints (`hostname.com` and `hostname1.com`).

- To create a new alternate endpoint:
  By default, you can create up to three alternate endpoints in your instance. If you need more than this, contact VB Dev Ops to increase the limit.

  a. Confirm you have configured the hostname for the new alternate endpoint using WAF or a vault and secret.
     For details, see Create a Load Balancer and Configure a Hostname and Configure a Vault for a Custom Endpoint.

  b. Run the `update` command. When you run the command, in addition to the details of the new endpoint, confirm you have included the details of every existing alternate endpoint in the instance, just as you would when updating alternate endpoint details. For example, if you have one alternate endpoints in your instance (`hostname.com`), and you want to create a new one (`hostname1.com`), the `update` command might look something like this:

     ```
     oci visual-builder vb-instance update --id <VB_INSTANCE_OCID>
     --alternate-custom-endpoints
     '[{"hostname":"hostname.com","certificateSecretId":"<SECRET_ID>"},
     {"hostname":"hostname1.com","certificateSecretId":"<SECRET_ID>"}]'
     ```

     Notice that the details you need to provide in the `update` command when updating alternate endpoint details is the same as when creating a new alternate endpoint.

  c. Configure the DNS record for the new endpoint.
     After creating an alternate endpoint, to configure the DNS record for the new endpoint you need to provide either the CNAME (the hostname) or the IP address of the load balancer.

     > **Note**
     >
     > The load balancer for an alternate endpoint can be different from the load balancer for the instance. You'll need to file a ticket with VB Dev Ops to verify the details. Note that this is a one-time action, so once configured, the load balancer details will not change.

How Much Load Capacity Should You Provision for Your Instance?

Depending on the load your applications are placing on your server, you might want to resize your instance to ease the server load and improve the response time. You can use the instance metrics to help you calculate how much of the server's capacity your applications are using.

Oracle uses Oracle Compute Units (OCPU) to measure the compute capacity of your instance, and for billing puposes. Each OCPU is equivalent to one virtual machine (VM). When provisioning and sizing a Visual Builder instance, each VM is represented by a node. By default, your Visual Builder instance is provisioned with two VMs, however, you are only billed for one node (one OCPU). If you increase the compute capacity of your instance by adding nodes, you will be billed for an additional OCPU for each node you add. You can see the number of nodes in the instance on the instance's details page.

The number of nodes to provision will depend on the architecture of your applications, as well as the load placed on the server by users. When thinking about how many VMs you need, and when to increase the size of your instance, it's helpful to think about how many transactions per second the server needs to handle. For example, if you have 100 users in an hour, each making 60 REST calls during that hour, then the server will need to handle 6000 transactions per hour. This translates to roughly 1.7 transactions per second (6000 transactions/3600 seconds per hour).

The type of transactions will affect the load placed on the server. The default Visual Builder configuration of two VMs can handle a load of roughly 4.5 read transactions per second, and 1.3 write transactions per second. This means a VB instance can easily serve 16,000 read transactions and 5000 write requests per hour.

The design of your applications will also affect the load placed on the server. An application that is using the business object layer in Visual Builder, and the built-in database, places a heavier load on a server than an application that uses external REST services, with the VB server acting as a middle-tier used to access external data.

How can I view the metrics for my instance?

To help you calculate how much of your instance's capacity you are using, and if you might need to add capacity, you can get a good idea by running your application and using the charts in the Monitoring tab to view your instance's current OCPU consumption, database usage, and the number of users. See View Instance Metrics.

For each chart, you can choose the function used for rendering the data, and in most cases you will want to use either the mean or the max function. For example, when view the data on the number of users and database usage in a given period, you would typically want to use the max function to see the highest values; for the OCPU consumption, you would want to use the mean function. The OCPU consumption chart displays separate lines for each of your instance's VMs. By default, the chart will have two lines, one for each of the two VMs provisioned by default with Visual Builder.

If you see that you are using most of the OCPU capacity, you might want to consider adding a node to scale up the server capacity.

How do I scale up server capacity?

By default, your instance is provisioned with two VMs. If you need to scale up the size of your instance, you can add VMs by adding nodes. Adding one node adds one VM, and one OCPU to the billing. See Scale a Visual Builder Instance.