Oracle® Cloud

Administering Oracle Blockchain Platform on Oracle Cloud Infrastructure (Gen 2)

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Oracle Cloud Administering Oracle Blockchain Platform on Oracle Cloud Infrastructure (Gen 2),

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Contents

1   Getting Started with Oracle Blockchain Platform on Oracle Cloud Infrastructure

2   Create an Instance

3   Manage the Life Cycle of an Instance

4   Set Up Users, Access Roles, and Permissions

5   Top FAQs for Administration and Configuration

Preface

Administering Oracle Blockchain Platform explains how to provision and maintain Oracle Blockchain Platform instances.

Audience

This guide is intended for service administrators responsible for provisioning and maintaining Oracle Blockchain Platform .

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at `https://www.oracle.com/corporate/accessibility/`.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `https://support.oracle.com/portal/` or visit `Oracle Accessibility Learning and Support` if you are hearing impaired.

Related Documents

For more information, see these Oracle resources:

- Oracle Cloud Infrastructure
- *Getting Started with Oracle Cloud*
- Managing and Monitoring Oracle Cloud
- Using Oracle Blockchain Platform

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
Getting Started with Oracle Blockchain Platform on Oracle Cloud Infrastructure

The following topics describe how to get started with Oracle Blockchain Platform for Oracle Cloud Infrastructure administrators.

- About Oracle Blockchain Platform
- Integration with Oracle Cloud Infrastructure
- Workflow for Administering Oracle Blockchain Platform
- Accessing the Oracle Cloud Infrastructure Console

About Oracle Blockchain Platform

Oracle Blockchain Platform gives you a pre-assembled platform for building and running smart contracts and maintaining a tamper-proof distributed ledger.

Oracle Blockchain Platform is a network consisting of validating nodes (peers) that update the ledger and respond to queries by executing smart contract code—the business logic that runs on the blockchain. External applications invoke transactions or run queries through client SDKs or REST API calls, which prompts selected peers to run the smart contracts. Multiple peers endorse (digitally sign) the results, which are then verified and sent to the ordering service. After consensus is reached on the transaction order, transaction results are grouped into cryptographically secured, tamper-proof data blocks and sent to peer nodes to be validated and appended to the ledger. Service administrators can use the Oracle Blockchain Platform web console to configure the blockchain and monitor its operation.

With Oracle Blockchain Platform, you complete some simple instance creation steps, and then Oracle takes care of service management, patching, backup and restore, and other service lifecycle tasks.

For information about available features, see *Using Oracle Blockchain Platform*.

About Application and Network Security in Oracle Blockchain Platform

Oracle Cloud Infrastructure Identity and Access Management (IAM) helps you secure your blockchain platform through the use of compartments, users, roles, and policies.

When you set up your tenancy, you'll create compartments for your instance. Policies are used to control access to these compartments. See:

- Setting Up Your Tenancy
- Managing Compartments

You'll use IAM security policies to grant Blockchain Platform administrative permissions. You can set up security policies that give other users permission to set up and manage Oracle Blockchain Platform instances. See Using Permissions and Policies to Administer Oracle Blockchain Platform.

New Oracle Cloud accounts in regions that have been updated to use identity domains manage users, groups, and roles through Oracle Cloud Infrastructure Identity and Access Management (IAM) identity domains.

- For information on IAM and identity domains, see Overview of IAM.

Existing Oracle Cloud accounts and new accounts in regions that haven't migrated to IAM identity domains still include access to Oracle Identity Cloud Service (IDCS). You use IDCS to add users and groups and assign roles for Oracle Blockchain Platform.

- For more information about IDCS and how Oracle Blockchain Platform uses it, see Set Up Users, Access Roles, and Permissions.
- For information on when to use IAM and when to use Oracle Identity Cloud Service to log in, see Understanding the Sign-In Options.
- For information on the migration of existing Oracle Cloud accounts to Identity Domains, see Migrating to OCI IAM: What Oracle IDCS customers need to know

In addition, Oracle Cloud provides a reliable and flexible network security infrastructure to further control how clients, administrators, and other cloud services access your service instance and its applications. By default, your service instances can only be accessed over secure protocols like HTTPS and SSH.

What's a Platform Version?

Oracle Blockchain Platform is based on the Hyperledger Fabric open source project from the Linux Foundation. Starting with version 23.3.3, a new underlying version, or **platform version**, of Hyperledger Fabric is available. Oracle Blockchain Platform now supports Hyperledger Fabric v2.5.3 as well as existing instances of Hyperledger Fabric v2.2.4 and Hyperledger Fabric v1.4.7.

Typically, for new instances, you'll run the latest platform version available.

Oracle Blockchain Platform supports and enhances the following functions of the Hyperledger Fabric v2.2.4 platform:

- Decentralized governance of chaincodes. A new life cycle for installing chaincode on peers and starting it on a channel enables new decentralized modes of collaboration and consensus. Multiple organizations can agree on chaincode parameters, including the chaincode endorsement policy, before a chaincode is deployed on the channel. These functions are implemented in the new quick deployment and advanced deployment wizards, as well as in the REST API. To learn more about deploying chaincodes on Hyperledger Fabric v2.2.4, see Deploy and Manage Chaincodes on Hyperledger Fabric 2.x. For more information about the new life cycle, see Fabric chaincode lifecycle in the Hyperledger Fabric v2.2.4 documentation.
- Private data collection enhancements. You can specify an endorsement policy to control access to a private data collection. Also, every chaincode has an implicit private data collection specific to the organization. For more information, see *Implicit private data collections* in the Private data section of the Hyperledger Fabric v2.2.4 documentation.

You can upgrade existing instances that are running on Hyperledger Fabric v1.4.7 to use Hyperledger Fabric v2.2.4. For more information, see Upgrade an Instance.

Upgrading instances from Hyperledger Fabric v2.2.4 to Hyperledger Fabric v2.5.3 is not yet supported.

For more information about Hyperledger Fabric v2.5.3, see What's new in Hyperledger Fabric v2.x.

Integration with Oracle Cloud Infrastructure

Blockchain Platform is integrated with Oracle Cloud Infrastructure services and features.

Identity and Access Management (IAM)

Oracle Cloud Infrastructure Identity and Access Management (IAM) lets you control who has access to your cloud resources. You can control what type of access a group of users have and to which specific resources. See Overview of Oracle Cloud Infrastructure Identity and Access Management.

For information on how IAM policies are used in Blockchain Platform, see Using Permissions and Policies to Administer Oracle Blockchain Platform.

Work Requests

Work requests allow you to monitor long-running operations such as the provisioning of instances. When you launch such an operation, the service spawns a *work request*. A work request is an activity log that enables you to track each step in the operation's progress. See Work Requests.

Blockchain Platform is *not* integrated with the common Work Requests API.

For information on how work request REST APIs are used in Blockchain Platform, see Blockchain Platform REST API documentation.

Events

Oracle Cloud Infrastructure Events enables you to create automation based on the state changes of resources throughout your tenancy. Use Events to allow your development teams to automatically respond when a resource changes its state. See Overview of Events.

For information on how events are used in Blockchain Platform, see Service Events.

Monitoring

The Oracle Cloud Infrastructure Monitoring service enables you to actively and passively monitor your cloud resources using the Metrics and Alarms features. See Monitoring Overview.

For information on how monitoring is used in Blockchain Platform, see Monitor Metrics

Region Availability

Oracle Blockchain Platform is currently available on data regions in North America, Europe, and Asia-Pacific (APAC). Thereafter, Oracle Blockchain Platform may expand to other regions.

For the latest information on availability in regions, see Data Regions for Platform and Infrastructure Services.

For information about regions hosting Oracle Cloud Infrastructure, see Regions and Availability Domains.

Service Limits

Oracle Blockchain Platform has various default limits. Whenever you create an Oracle Blockchain Platform instance, the system ensures that your request is within the bounds of

your limit. The limit that applies to you doesn't depend on which edition and size you subscribe to.

Resource Limit	Limit Short Name	Default Value (Universal Credits)	Description
Oracle Blockchain Platform Count	platform-count	100	Maximum number of Blockchain Platforms available with Oracle Blockchain Platform

You can submit a request to increase your limits from **Limits, Quotas, and Usage** page in Oracle Cloud Infrastructure Console.

See About Service Limits and Usage.

Service Quotas

You can use quotas to determine how other users allocate Oracle Blockchain Platform resources across compartments in Oracle Cloud Infrastructure. Whenever you create an Oracle Blockchain Platform instance or scale up, the system ensures that your request is within the bounds of the quota for that compartment.

The quota that you use to allocate Oracle Blockchain Platform resources depends on which edition you subscribe to: Professional Edition or Enterprise Edition.

Quota Name	Scope	Description
platform-count	Regional	Number of Blockchain Platforms

Example Quota Statements for Oracle Blockchain Platform

* **Limit the number of Blockchain Platforms that users can create in compartment CompA to 2.**

  ```
  set blockchain quota 'platform-count' to 2 in compartment CompA
  ```

* **Prevent users from creating any Blockchain Platforms in compartment MyCompartment**

  ```
  zero blockchain quota 'platform-count' in compartment MyCompartment
  ```

See About Compartment Quotas.

Service Events

Actions that you perform on Oracle Blockchain Platform instances emit events.

You can define rules that trigger a specific action when an event occurs. For example, you might define a rule that sends a notification to administrators when someone deletes an instance. See Overview of Events and Get Started with Events.

This table lists the Oracle Blockchain Platform events that you can reference.

Event Name	Event Type
Blockchain Platform - Instance - Change Compartment	com.oraclecloud.blockchain.changeplatformcompartment

Event Name	Event Type
Blockchain Platform - Instance - Create Instance Begin	com.oraclecloud.blockchain.createplatforminstance.begin
Blockchain Platform - Instance - Create Instance End	com.oraclecloud.blockchain.createplatforminstance.end
Blockchain Platform - Instance - Delete Instance Begin	com.oraclecloud.blockchain.deleteplatforminstance.begin
Blockchain Platform - Instance - Delete Instance End	com.oraclecloud.blockchain.deleteplatforminstance.end
Blockchain Platform - Instance - Scale Instance Begin	com.oraclecloud.blockchain.scaleplatforminstance.begin
Blockchain Platform - Instance - Scale Instance End	com.oraclecloud.blockchain.scaleplatforminstance.end
Blockchain Platform - Instance - Start Instance Begin	com.oraclecloud.blockchain.startplatforminstance.begin
Blockchain Platform - Instance - Start Instance End	com.oraclecloud.blockchain.startplatforminstance.end
Blockchain Platform - Instance - Stop Instance Begin	com.oraclecloud.blockchain.stopplatforminstance.begin
Blockchain Platform - Instance - Stop Instance End	com.oraclecloud.blockchain.stopplatforminstance.end
Blockchain Platform - Instance - Update Instance Begin	com.oraclecloud.blockchain.updateplatforminstance.begin
Blockchain Platform - Instance - Update Instance End	com.oraclecloud.blockchain.updateplatforminstance.end
Blockchain Platform - OSN - Create OSN Begin	com.oraclecloud.blockchain.createosn.begin
Blockchain Platform - OSN - Create OSN End	com.oraclecloud.blockchain.createosn.end
Blockchain Platform - OSN - Delete OSN Begin	com.oraclecloud.blockchain.deleteosn.begin
Blockchain Platform - OSN - Delete OSN End	com.oraclecloud.blockchain.deleteosn.end
Blockchain Platform - OSN - Update OSN Begin	com.oraclecloud.blockchain.updateosn.begin
Blockchain Platform - OSN - Update OSN End	com.oraclecloud.blockchain.updateosn.end
Blockchain Platform - Peer - Create Peer Begin	com.oraclecloud.blockchain.createpeer.begin
Blockchain Platform - Peer - Create Peer End	com.oraclecloud.blockchain.createpeer.end
Blockchain Platform - Peer - Delete Peer Begin	com.oraclecloud.blockchain.deletepeer.begin
Blockchain Platform - Peer - Delete Peer End	com.oraclecloud.blockchain.deletepeer.end
Blockchain Platform - Peer - Update Peer Begin	com.oraclecloud.blockchain.updatepeer.begin
Blockchain Platform - Peer - Update Peer End	com.oraclecloud.blockchain.updatepeer.end

Example

This example shows information associated with the event **Blockchain - Instance - Create Instance Begin**:

```
{
        "cloudEventsVersion": "0.1",
        "contentType": "application/json",
        "source": "blockchain",
        "eventID": "<unique_ID>",
        "eventType":
"com.oraclecloud.blockchain.createplatforminstance.begin",
        "eventTypeVersion": "<version>",
        "eventTime": "2020-06-14T00:53:04.126Z",
```

```
"data": {
    "additionalDetails": {},
    "availabilityDomain": "<availability_domain>",
    "compartmentId": "ocid1.compartment.oc1..<unique_ID>",
    "compartmentName": "my_compartment",
    "freeformTags": {},
    "resourceId": "ocid1.blockchaininstance.oc1..<unique_ID>",
    "resourceName": "my_blockchain_cloud"
},
"extensions": {
    "compartmentId": "ocid1.compartment.oc1..<unique_ID>"
}
```

Workflow for Administering Oracle Blockchain Platform

To start using Oracle Blockchain Platform, refer to the following tasks as a guide.

Task	Description	More Information
Before you start		
Activate your order and sign in to Oracle Cloud Infrastructure	As Cloud Account Administrator, you can complete all setup tasks for Oracle Blockchain Platform.	Sign up for your Oracle Cloud Account Sign In For the First Time
(Recommended) Create a compartment for your service	Create a compartment for your Oracle Blockchain Platform deployment.	Before You Create Your Instance
Create the service instance		
Provision an instance	Set up and configure your Oracle Blockchain Platform components.	Create an Oracle Blockchain Platform Instance Using the Console
Complete the setup	Verify that your service instance is up and running and that you can sign in.	Verify Your Instance
After creating your service instance		
Manage users	Set up users for Oracle Blockchain Platform in Oracle Identity Cloud Service (IDCS) or an Oracle Cloud Infrastructure Identity and Access Management (IAM) identity domain and assign roles to them.	Set Up Users, Access Roles, and Permissions

After you've created your instance and any required users, you can begin to use Oracle Blockchain Platform as described in *Using Oracle Blockchain Platform*.

Accessing the Oracle Cloud Infrastructure Console

Oracle Blockchain Platform can be accessed through a web-based console.

To access the console:

1. Sign in to Oracle Cloud. If you received a welcome email, use it to identify the URL, your user name, and your temporary password. After signing in, you will be prompted to change your password.

2. From the Infrastructure Console, click the navigation menu in the top left corner, and then select **Blockchain Platform**. Note that in newer versions of the Console, it can be found under **Developer Services**.

For more information about signing into Oracle Cloud Infrastructure for the first time including supported browsers and console URLs, see Signing In to the Console.

2

Create an Instance

As an Oracle Cloud Infrastructure administrator, you can create and set up an Oracle Blockchain Platform instance for your organization.

Before You Create Your Instance

Before you set up Oracle Blockchain Platform using Oracle Cloud Infrastructure Console, Oracle recommends that you take some time to plan your service.

Create a Compartment

When you sign up for Oracle Cloud Infrastructure, Oracle creates your tenancy with a root compartment that holds all your cloud resources. You then create additional compartments within the tenancy (root compartment) and corresponding policies to control access to the resources in each compartment. Before you create an Oracle Blockchain Platform instance, Oracle recommends that you set up the compartment where you want the instance to belong.

You create compartments in Oracle Cloud Infrastructure Identity and Access Management (IAM). See:

- Setting Up Your Tenancy
- Managing Compartments

Plan Your Instance

Editions

There are three editions of Oracle Blockchain Platform available:

- Standard Edition: 2 OCPUs, 50 GB storage, 2 peers (additional can be added later)
- Enterprise Edition:
  - Small: 4 OCPUs, 150 GB storage, 2 peers (additional can be added later)
  - Medium: 8 OCPUs, 150 GB storage, 4 peers (additional can be added later)
  - Large: 16 OCPUs, 150 GB storage, 6 peers (additional can be added later)
  - X-Large: 32 OCPUs, 150 GB storage, 6 peers (additional can be added later)
- Digital Assets Edition:
  - Medium: 8 OCPUs, 150 GB storage, 4 peers (additional can be added later)
  - Large: 16 OCPUs, 150 GB storage, 6 peers (additional can be added later)
  - X-Large: 32 OCPUs, 150 GB storage, 6 peers (additional can be added later)

If you create an Enterprise or Digital Assets shape, you can scale your Blockchain Platform up or down resulting in a new shape called Enterprise or Digital Assets Custom. See Scale Your Instance for details.

Platform Versions

You can also select which platform version to use, which will determine if your network is running on Hyperledger Fabric v1.4, v2.2, or v2.5. See What's a Platform Version?.

- If you're joining a pre-existing network, you must select the same platform version as the founder.

- Hyperledger Fabric v1.4 and v2.2 are only available to users who have pre-existing instances using that platform version.

- If you're creating a new network, we recommend starting with Hyperledger Fabric v2.5.

Billing

Oracle Blockchain Platform OCPU-based meters use high precision billing, meaning that you are billed per second. The minimum billing amount is for one minute; any instance running for less than one minute will still be charged for one minute of time.

Create an Oracle Blockchain Platform Instance Using the Console

As an Oracle Cloud Infrastructure administrator, you can create and set up an Oracle Blockchain Platform instance for your organization.

There are two types of Oracle Blockchain Platform instances you can provision:

- **Founder organization**: a complete blockchain environment, including a new network to which participants can join later on.

- **Participant instance**: if there is already a founder organization you want to join, you can create a participant instance if your credentials provide you with access to the network.

1. Sign in to your Oracle Cloud Infrastructure account. You must sign in as a federated Oracle Identity Cloud Service user.

2. In Console, click the **Navigation** menu in the top-left corner.

3. Under **Developer Services**, select **Blockchain Platform**.

4. From the **Compartment** list, select the compartment in which you want to create the service.

5. Click **Create Blockchain Platform**.

6. Enter a name for your Oracle Blockchain Platform instance.
   The service instance name:

   - Must contain one or more characters.

   - Must not exceed 15 characters.

   - Must start with an ASCII letter: `a` to `z` or `A` to `Z`.

   - Must contain only ASCII letters or numbers.

   - Must not contain a hyphen.

   - Must not contain any other special characters.

   - Must be unique within the identity domain.

7. Optionally enter a description of your instance.

8. Select your platform version. This specifies the version of Hyperledger Fabric you want your instance to run on. The founder and participants must all be on the same version of Hyperledger Fabric.

9. Select if you are creating a new network, or creating a participant instance to join an existing network.

10. Select your edition. The editions are described in Plan Your Instance.

11. Oracle Blockchain Platform includes a certificate authority (CA), which is used to create self-signed certificates for all blockchain nodes in your instance.
    If you want to use certificates from your own certificate authority and use the Oracle Blockchain Platform certificate authority as an intermediary CA, you can upload your CA archive. The certificate you upload will be used to sign the intermediary certificates for Oracle Blockchain Platform nodes, thus including them under your root CA chain.

    The archive is a zip file which contains the following files:

    • CA chain - named `ca-chain.pem`. The entire CA file sequence from the signing CA to the top-level CA should be present.

    • key - named `ca-key.pem`. The key should be a 256-bit elliptic curve key. The `prime256v1` curve is recommended.

    • certificate - named `ca-cert.pem`

    The archive must be less than 2MB. The files must directly reside inside the zip archive such that when the archive (.zip) is unzipped, the files are visible in the current directory at the same level as the archive (.zip) file. The files should not be present inside a nested directory inside the archive.

12. If you want to use tags for your instance, expand the Advanced Options section and add your tags.

13. Click **Create**.

It takes about 15 minutes to create the service. Display the **Instance** page to check the current status.

Verify Your Instance

Navigate to your service in the Oracle Cloud Infrastructure console, and sign in to verify that your Oracle Blockchain Platform instance is up and running.

For more information about signing into the Oracle Cloud Infrastructure console, see Signing In to the Console.

1. On the Oracle Cloud Infrastructure console, click the **Navigation** menu in the top-left corner.

2. Under **Developer Services**, select **Blockchain Platform**.

3. From the **Compartment** list, select the compartment that you used to create the instance.

4. Click the name of the new instance.

5. Click **Service Console**. This launches the Oracle Blockchain Platform console.

3

Manage the Life Cycle of an Instance

You can use the Instances page of the Oracle Cloud Infrastructure console to complete routine maintenance or troubleshooting tasks for your Oracle Blockchain Platform instance.

- Start or Stop an Instance
- Upgrade an Instance
- Delete an Oracle Blockchain Platform Instance
- Scale Your Instance
- Monitor the Status of Your Blockchain Platform
- Monitor Metrics
- Oracle-Managed Instance Maintenance

Start or Stop an Instance

You can start or stop an instance using the Oracle Cloud Infrastructure console or the REST APIs.

To start or stop an instance in the console:

1. In the Oracle Cloud Infrastructure console, under **Developer Services**, select **Blockchain Platform**.
2. Select the correct compartment, and click the instance you want to start or stop.
3. Select **Start** or **Stop**. You'll be prompted to confirm your selection.

To start or stop an instance using the REST APIs, you can use the following operations. Refer to the REST API Reference for information about how to use these operations:

- `/20191010/blockchainPlatforms/{blockchainPlatformId}/actions/start`
- `/20191010/blockchainPlatforms/{blockchainPlatformId}/actions/stop`

Upgrade an Instance

When a new release is available, you can upgrade an instance by using the Oracle Cloud Infrastructure console or the REST APIs.

When a new release is available, you will receive a notification from the Oracle Cloud Infrastructure Notifications service. To upgrade your instance before the specified deadline, complete the following steps. If you don't upgrade the instance by the deadline, the instance is upgraded automatically.

1. In the Oracle Cloud Infrastructure console, under **Developer Services**, select **Blockchain Platform**.
2. Select the correct compartment, and click the instance that you want to upgrade.

    A message is displayed that indicates a new version is available.
3. Click **Upgrade Platform Instance**, and then click **Upgrade** to confirm.

> **✎ Note:**
>
> Oracle Blockchain Platform restarts as part of the upgrade process. The system remains available for most of the upgrade process, but is not available while it restarts, which can typically take up to ten minutes.

The **State Message** changes to `Upgrading` and an entry of the **Upgrade Blockchain Platform** type is displayed in the **Work Requests** table.

Upgrade the Platform Version of an Instance

When a new platform version is available, you can upgrade an instance by using the Oracle Cloud Infrastructure console.

The platform version is the version of Hyperledger Fabric that Oracle Blockchain Platform is based on. When a new version is available, you will receive a notification from the Oracle Cloud Infrastructure Notifications service. For example, you will receive a notification that you can upgrade an instance that is based on Hyperledger Fabric v1.4.7 to Hyperledger Fabric v2.2.4. To learn more about platform versions, see What's a Platform Version?.

Upgrading from Hyperledger Fabric v2.2.4 to Hyperledger Fabric v2.5.3

If you want to upgrade from Hyperledger Fabric v2.2.4 to Hyperledger Fabric v2.5.3, Oracle will assist you with the upgrade.

Upgrading from Hyperledger Fabric v1.4.7 to Hyperledger Fabric v2.2.4

- The platform upgrade function to Hyperledger Fabric v2.2.4 is available only for founder instances with no participant instances in the same network. If your Oracle Blockchain Platform network contains multiple instances (founder and participants), Oracle will assist you with the upgrade. For more information, see Request a Platform Upgrade for Multiple Instances.

- Upgrading to Hyperledger Fabric v2.2.4 means that you will use a new chaincode life cycle and a new model that separates chaincode packages from chaincode definitions. To learn more about the new features, see Deploy and Manage Chaincodes on Hyperledger Fabric v2.2.4. When you upgrade the platform version, you might need to make changes to your existing applications and REST API calls so that they work with the new version of Hyperledger Fabric. To learn more about the impact of a new version of Hyperledger Fabric on existing applications, see Updating Applications for Hyperledger Fabric v2.2.4.

- Because client SDK versions have to be upgraded to work with Hyperledger Fabric v2.2.4, for applications that use client SDKs typically you first upgrade and verify them in a test environment before upgrading your production environment.

- When you upgrade an instance from Hyperledger Fabric v1.4.7 to Hyperledger Fabric v2.2.4, the ordering service settings are not updated. In other words, an upgraded instance uses the existing ordering service settings of the Hyperledger Fabric v1.4.7 instance, not the default settings for a new Hyperledger Fabric v2.2.4 instance. For more information about the ordering service, see Manage Ordering Service.

- The typical downtime for a platform upgrade is 60 minutes for a single founder instance.

- Once the upgrade starts, all traffic to the instance is rejected until the upgrade completes. In other words, no administrative operations or transactions can be processed during the platform upgrade process.

To upgrade the platform version of an instance, complete the following steps.

1. Review the impact to existing client applications and REST API calls and plan any required updates. For more information, see Updating Applications for Hyperledger Fabric v2.2.4.

2. In the Oracle Cloud Infrastructure console, under **Developer Services**, select **Blockchain Platform**.

3. Select the correct compartment, and click the instance that you want to upgrade.

   A message is displayed that indicates a new platform version is available.

4. Click **Upgrade Platform Instance**, and then click **Upgrade** to confirm.

> **Note:**
>
> Oracle Blockchain Platform will not be available during the upgrade process, which typically takes 60 minutes or less for a single instance.

The **State Message** changes to `Upgrading` and an entry of the **Upgrade Blockchain Platform** type is displayed in the **Work Requests** table.

When the upgrade is complete:

- The state of the **Upgrade Blockchain Platform** work request changes to `Succeeded` and the **Platform Version** displays the new version of Hyperledger Fabric.

- In the Oracle Blockchain Platform console, all of the previously instantiated Hyperledger Fabric v1.4.7 chaincodes are displayed in the **Deployed Chaincodes** list for each specific channel page under the **Channels** tab, with the **Sequence**, **Package ID**, **Approved**, and **Committed** settings all shown as `N/A`.

- Where the **Chaincode** tab for the Hyperledger Fabric v1.4.7 platform displayed the fields **Chaincode ID**, **Versions**, **Chaincode Path**, **Installed on Peers**, and **Instantiated on Channels**, the **Chaincodes** tab for the Hyperledger Fabric v2.2.4 platform displays the fields **Package ID**, **Installed on Peers**, and **Deployed on Channels**.

- Existing Hyperledger Fabric v1.4.7 chaincodes are not listed as installed on the **Chaincodes** tab. When chaincode packages are installed again, they will be listed on the **Chaincodes** tab. After the upgrade, you must use Hyperledger Fabric v2.2.4 life cycle operations to deploy new or upgrade existing chaincodes.

After the instance is upgraded, complete the following steps:

- Update your client application, if needed. For more information, see Updating Applications for Hyperledger Fabric v2.2.4.

- Verify that your client application works on the upgraded instance.

Request a Platform Upgrade for Multiple Instances

If your Oracle Blockchain Platform network contains multiple instances (founder and participants), Oracle will assist you with the platform upgrade.

The upgrade from Hyperledger Fabric v1.4.7 to Hyperledger Fabric v2.2.4 must be coordinated across all instances in your network. The Oracle DevOps team uses internal tools and processes to complete the upgrade. The downtime for the platform upgrade process is a function of the number of instances, and is typically in the range of 4 to 10 hours.

The platform upgrade includes the following high-level steps:

- You review the impact to existing chaincodes, client applications, and REST API calls and make any required updates. For more information, see Updating Applications for Hyperledger Fabric v2.2.4. Due to the potential impact to existing applications, typically you will schedule with the Oracle DevOps team to upgrade your test environment or stage environment first before upgrading your production environment.

- You submit a service request to Oracle to upgrade a specified set of instances that belongs to one or more Oracle Blockchain Platform networks, and provide a contact to coordinate the upgrade. To request an upgrade, open a service request (SR) in My Oracle Support. To learn more about Service Requests, see the documentation that is available at My Oracle Support. Include the following information in the Service Request:

  – Oracle Cloud Infrastructure region

  – Tenancy name

  – Oracle Blockchain Platform instance names

- The Oracle DevOps team coordinates the upgrade schedule with you.

  – All instances in an Oracle Blockchain Platform network must be upgraded in the same time period.

  – Once the upgrade starts, all traffic to the instances is rejected until the upgrade completes. In other words, no administrative operations or transactions can be processed during the platform upgrade process.

- The Oracle DevOps team runs the platform upgrade process and then notifies the specified customer contact when the upgrade is complete.

- After instances are upgraded, update your client application if needed and verify that your client application works on the upgraded instances. For more information, see Updating Applications for Hyperledger Fabric v2.2.4.

Delete an Oracle Blockchain Platform Instance

When you no longer require an Oracle Blockchain Platform instance, you can delete it. Your account is no longer charged for the instance.

Only a blockchain administrator can delete a service instance. See Assigning Roles for the Oracle Blockchain Platform Network and REST APIs.

To delete an Oracle Blockchain Platform instance:

1. In the Oracle Cloud Infrastructure console, select **Developer Services**, select **Blockchain Platform**.

2. Select the correct compartment, and click the instance you want to delete.

3. From the **More Actions** dropdown, select **Terminate**.

4. You will be asked to confirm your selection. Note that all information in the ledger will be lost when you terminate the instance.

Scale Your Instance

You can scale your overall instance OCPU capacity or the components of any instance.

- Scaling the OCPU Capacity of an Enterprise or Digital Assets Instance

- Scaling Components of Your Instance

Scaling the OCPU Capacity of an Enterprise or Digital Assets Instance

If you've selected an Enterprise or Digital Assets edition when provisioning your instance, you can scale its OCPU capacity up or down. When you scale OCPU capacity, the platform shape changes to **Custom** in the Instance Details view. The total OCPU capacity represents the total number of OCPUs that are equally allocated among all the VMs in the Oracle Blockchain Platform cluster.

To change your OCPU capacity:

1. In the Oracle Cloud Infrastructure console, under **Developer Services**, select **Blockchain Platform**.
2. Select the correct compartment, and click the instance that you want to modify.
3. In the Instance Details view, click **Scale**, and then from the **Select Scale Object** drop-down list select **Platform**.
4. You are prompted to select the number of OCPUs that you want provisioned for this instance.
   Note that the resizing process will take several minutes and will result in downtime of your Oracle Blockchain Platform instance.

Your instance is now resized to its new OCPU capacity and is listed as a customized edition.

Scaling Components of Your Instance

You can scale components of your instance by selecting it in the Oracle Cloud Infrastructure console and clicking **Scale**.

Peers

- You can change the OCPUs for the peer nodes. The total value of the OCPUs must not exceed the size of the instance edition that you selected when scaling your instance. After you select the OCPUs for a peer, you can decrease the OCPU allocation if required.
- You can add a new peer by clicking **Add Row** and selecting the alias, OCPUs, role, and availability domain or fault domain for that peer.

> **Note:**
>
> When scaling peers, the OCPUs field is a logical representation of processing power, which is used to determine whether a newly scaled peer will be placed on an existing VM or a new VM. It does not map to the actual number of OCPU cores enabled on the virtual machine (VM).

You can see the availability domains or fault domains for the existing peers on the Scale Blockchain Platform window. Each Oracle Blockchain Platform instance is deployed across three availability domains or fault domains.

You can use the following REST API call to get more information about the logical OCPU consumption for each VM: Get Blockchain Platform Information.

The `peers` array in the `BlockchainPlatformComponentDetails` object shows information for each peer, including the host where the peer is located and the `ocpuAllocationNumber`, which indicates the number of OCPUs allocated to the peer.

The `hostOcpuUtilizationInfo` array shows the `ocpuCapacityNumber` and `ocpuUtilizationNumber` values for each VM (host). To determine the remaining OCPU

capacity that can be allocated on a VM, subtract the `ocpuUtilizationNumber` value from the `ocpuCapacityNumber` value.

When you add a peer to a particular availability domain or fault domain, if the specified OCPUs value is greater than the remaining OCPU capacity on the VM in that domain, then a new VM is allocated. Otherwise, the existing VM is used to host the new peer. For domains that already have multiple VMs, if at least one VM has enough OCPU capacity, the peer is hosted there. Otherwise, a new VM is allocated.

Ordering Service

* You can add an additional orderer node if you have selected to provision an Enterprise or Digital Assets Edition instance.

REST Proxy

* You can change the number of cluster replicas for your REST proxy.

Certificate Authority:

* You can change the number of cluster replicas for your certificate authority.

Storage

* Storage scaling is for Enterprise and Digital Assets shapes only.

* You can add storage in 1TB increments. Metering of storage is also in 1TB increments. You can't decrease storage once allocated.

* The initial block size is 50GB for each manager VM in the cluster, and is increased in increments of 100GB.

* When storage is scaled up on an instance, the block volume on each VM in the cluster will be increased by the same size. All VMs in a cluster will have block storage volumes of the same size at all times.

* When new VMs are added as part of scaling peers and OSNs, every new VM will be brought to parity with existing VMs in the cluster by adding the same number and size of storage volumes as present in an existing VM. This additional storage will be taken from your platform storage pool (storage which has been purchased but not yet allocated to a VM). In situations when the platform storage pool does not have sufficient capacity to create the same number and size of block volumes for the new VM:

  – If the additional storage required is less than 0.5TB of the total purchased (metered) storage, we will add additional storage to enable creation of required volumes, and you will not be charged for additional <0.5TB of storage.

  – If the additional storage required is more than 0.5TB of the total purchased (metered) storage, you will be charged for additional storage units as applicable.

Monitor the Status of Your Blockchain Platform

You can use Oracle Cloud Infrastructure console, command line, or REST APIs to check the status of your Oracle Blockchain Platform instances and any operations that are in progress.

Monitor Status by Using the Console

1. In the Console, click the navigation menu icon (☰) in the top left corner.
2. Under **Developer Services**, select **Blockchain Platform**.

3. Select the compartment that contains the Oracle Blockchain Platform instances that you want to monitor.
A list of all the instances in the compartment is displayed.

4. Check the **State** column to determine the current status of your instance.

   • **Creating**: The instance is in the process of being created.

   • **Active**: The instance is running normally.

   • **Updating**: The instance is being updated.

   • **Scaling**: The instance is in the process of being scaled.

   • **Inactive**: The instance has been temporarily stopped or is stopping.

   • **Failed**: The instance isn't running due to an error.

   • **Deleting**: The instance is in the process of being deleted.

5. Click the name of your instance to access the work request details.
Use the **Work Requests** table to track the history and status of activities (work requests) related to the instance. For example, create, start, stop, scale, and so on. The status of a work request is shown in the **State** column of the **Work Requests** table.

   • **Accepted**: The request is in the queue to be processed.

   • **InProgress**: The work request started but isn't complete.

   • **Succeeded**: A work request record exists for this request and an associated `WORK_COMPLETED` record is in the state `SUCCEEDED`.

   • **Failed**: A work request record exists for this request and an associated `WORK_COMPLETED` record is in the state `FAILED`.

   • **Canceling**: The work request is in the process of being canceled.

   • **Canceled**: The work request was canceled.

Monitor Status by Using the Command Line

You can use the `work-request list` and `work-request get` commands to get the current status of operations on Oracle Blockchain Platform instances. To cancel an operation, use the `work-request delete` command. To check errors and access logs, use the `work-request-error list` and `work-request-log list` commands.

For more information on how to use the commands, see the *Oracle Cloud Infrastructure CLI Command Reference*:

• work-request list

• work-request get

• work-request delete

• work-request-error list

• work-request-log list

Monitor Status by Using the REST API

You can use the `GetWorkRequest` API call to get the current status of operations on Oracle Blockchain Platform instances. To cancel an operation, use the `DeleteWorkRequest` API call. To check errors and access logs, use the `ListWorkRequestErrors` and `ListWorkRequestLogs` API calls.

For more information on how to use the API calls, see the *Oracle Cloud Infrastructure REST API Reference*:

- GetWorkRequest
- DeleteWorkRequest
- ListWorkRequestErrors
- ListWorkRequestLogs

Monitor Metrics

You can monitor the health, capacity, and performance of your Oracle Blockchain Platform resources by using metrics, alarms, and notifications.

Required IAM Policy

To monitor resources, you must be given the required type of access in a policy written by an administrator, whether you're using the Cloud console or the REST API with an SDK, CLI, or other tool. The policy must give you access to the monitoring services as well as the resources being monitored. If you try to perform an action and get a message that you don't have permission or are unauthorized, confirm with your administrator the type of access you've been granted and which compartment you should work in. For more information on user authorizations for monitoring, see the Authentication and Authorization section for the related service: Monitoring or Notifications.

Available Metrics: oci_blockchainplatform

The metrics listed in the following table are automatically available for any Oracle Blockchain Platform that you create. You don't need to enable monitoring on the resource to get these metrics.

Metric	Metric Display Name	Unit	Description
CpuUtilization	**CPU Utilization**	Percentage	CPU utilization by the Blockchain Platform
NodesOcpuConsumption	**Nodes OCPU Consumption**	OCPU	OCPU consumption by individual nodes in the Blockchain Platform
StorageUtilization	**Storage Utilization**	Percentage	The percentage of provisioned storage capacity in use
CommitsProcessedByOrderer	**Commits Processed by Ordering Service**	Count	Number of broadcast commits processed by the ordering service during the collection interval
EndorsementsProcessedByPeer	**Endorsements Processed by Peer**	Count	Number of endorsements processed by peer during the collection interval
CommitsProcessedByPeer	**Commits Processed by Peer**	Count	Number of commits processed by peer during the collection interval

View Default Metric Charts in the Console

Default metric charts use predefined service queries. You can select resources of interest and update the interval, statistic, and time range.

To view default metric charts for all Blockchain Platforms in a compartment:

1. Open the navigation menu. Under **Observability & Management**, go to **Monitoring** and click **Service Metrics**.

2. For **Compartment**, select the compartment that contains the instances that you're interested in.

3. For **Metric Namespace**, select **oci_blockchainplatform**. The **Service Metrics** page dynamically updates the page to show charts for each metric that is emitted by the selected metric namespace.

Optionally, you can specify other dimensions to filter your displayed metrics. For more information, see To filter results and To select different resources in the Oracle Cloud Infrastructure documentation.

For more information about monitoring and notifications in Oracle Cloud Infrastructure, see Monitoring Overview and Notifications Overview in the Oracle Cloud Infrastructure documentation.

To view default metric charts for a specific Blockchain Platform instance:

1. Open the navigation menu. Under **Developer Services**, select **Blockchain Platform**.

2. Select the compartment that contains the instance that you're interested in, and click that instance name from the list of instances.

3. On the Instance page, under Resources, click **Metrics**. The default metrics for your instance will be displayed.

Create Metric Queries in the Console

To create a query for a customized view of your metrics:

1. Open the navigation menu. Under **Observability & Management**, go to **Monitoring** and click **Metrics Explorer**.

   The **Metrics Explorer** page displays an empty chart with fields to build a query.

2. Fill in the fields for a new query.

   For more information, see Building Metric Queries in the Oracle Cloud Infrastructure documentation.

View Metrics By Using the API

For information about using the API and signing requests, see REST APIs and Security Credentials in the Oracle Cloud Infrastructure documentation. For information about SDKs, see Software Development Kits and Command Line Interface.

Use the following APIs for monitoring:

• Monitoring API for metrics and alarms

• Notifications API for notifications (used with alarms)

Oracle-Managed Instance Maintenance

In addition to the management tasks that you perform, Oracle manages the patching and updating of some components of an Oracle Blockchain Platform instance and regularly completes other maintenance tasks to keep the instance healthy.

The regular maintenance that Oracle performs on the instances of Oracle Blockchain Platform on Oracle Cloud Infrastructure includes the following tasks.

Activity	Typical Frequency	Customer Action	Impact on Oracle Blockchain Platform Service
Addressing disk space issues	When the provisioned storage capacity of the instance approaches 90% usage	For Enterprise and Digital Assets instances, scale up the storage capacity. For more information, see Scale Your Instance. For Standard instances, additional disk capacity cannot be added.	The system might become unusable if storage space is low.
Applying operating system patches	Monthly	None	Typically, there is no impact. Very rarely, a VM might need to be restarted.
Applying hotfixes and upgrades to Oracle Blockchain Platform	Varies; typically once every 3-6 months	Check the health metrics of the instance after the maintenance activity.	Some components might be restarted. Patches are applied one VM at a time. If an instance has redundant peers, other peers can process blockchain requests while patches are applied.
Renewing identity certificates	Annually	If you use the Hyperledger Fabric SDK, download the renewed admin certificates from the service console and then associate them with your client application.	Some components might be restarted during the certificate renewal process.
Renewing load balancer certificates	Annually	None	Typically, no impact. If the instance wildcard certificate and its intermediate or root certificates changed, the wildcard certificate might need to be associated with your application.
Renewing Raft certificates	Annually	None	Some components might be restarted during the certificate renewal process.

Activity	Typical Frequency	Customer Action	Impact on Oracle Blockchain Platform Service
Restarting virtual machines (VMs)	Varies	Check the health metrics of the instance after the maintenance activity.	All components are restarted. VMs are normally restarted one at a time. If an instance has redundant peers and orderers, other peers can process the blockchain requests when VMs are being restarted.

If your instance of Oracle Blockchain Platform is stopped, Oracle might start the instance, complete the maintenance activity, and then stop the instance. Typically this maintenance could last 1-2 hours. You might notice a slight increase in the billing because the instance will be turned on during the maintenance window, and it will be billed according to regular billing for that shape instance for the duration of time it is turned on.

4

Set Up Users, Access Roles, and Permissions

One of the first tasks to complete after setting up a service with Oracle Blockchain Platform is to add user accounts in Oracle Identity Cloud Service (IDCS) or your Identity and Access Management (IAM) identity domain for everyone you expect to use the service and to assign them suitable permissions in the service.

If you're an existing customer or a new customer whose region does not yet support IAM identity domains, IDCS is available with your Oracle Blockchain Platform account. Use IDCS to add users and groups, and then assign them roles to control their usage of Oracle Blockchain Platform. See Manage Oracle Identity Cloud Service Users and Manage Oracle Identity Cloud Service Groups

If you're a new customer and your OCI region has been migrated to use IAM identity domains, a default domain is created with your instance. You can use this to add users and groups, and then assign them roles to control their usage of Oracle Blockchain Platform. See Managing Users and Managing Groups.

Use Oracle Identity Cloud Service for Authentication

Oracle Blockchain Platform uses Oracle Identity Cloud Service for identity management and authentication.

Oracle Identity Cloud Service provides Oracle Cloud administrators with a central security platform to manage the relationships that your users have with your applications, including with other Oracle Cloud services like Oracle Blockchain Platform. With Oracle Identity Cloud Service you can create custom password policies and email notifications, onboard new users, assign users and groups to applications, and run security reports. See these topics in *Administering Oracle Identity Cloud Service*:

- About Oracle Identity Cloud Service Concepts
- How to Access Oracle Identity Cloud Service

Each Oracle Cloud service instance in your account is associated with an Oracle Identity Cloud Service security application. Each security application defines one or more application roles. Assign users and groups to these application roles in order to grant them administrative access to a service. See these topics in *Administering Oracle Identity Cloud Service*:

- Creating User Accounts
- Creating Groups
- Assigning Users to Oracle Applications
- Assigning Groups to Oracle Applications

Connecting to Oracle Identity Cloud Service in the Oracle Cloud Infrastructure Console

Oracle Blockchain Platform tenancies are automatically federated with Oracle Identity Cloud Service and configured to provision federated users in Oracle Cloud Infrastructure.

You manage users and groups through Oracle Identity Cloud Service as described in
Managing Oracle Identity Cloud Service Users and Groups in the Oracle Cloud Infrastructure
Console.

> ✎ **Note:**
>
> In earlier versions of Oracle Identity Cloud Service, the Blockchain Platform
> applications were in the **Navigation Drawer** under **Applications**. They can now be
> found in the **Navigation Drawer** under **Oracle Cloud Services**.

Add Oracle Identity Cloud Service Users

To access a Oracle Blockchain Platform instance that uses Oracle Identity Cloud Service for
authentication, Oracle Blockchain Platform users must first have valid Oracle Identity Cloud
Service credentials. Administrators manage the provisioning of users in Oracle Identity Cloud
Service and perform the task of adding users.

To add users and provide them access to Oracle Blockchain Platform:

1. Open the security application associated with the Oracle Blockchain Platform instance in
   Oracle Identity Cloud Service.

2. Click the Identity Cloud Service **Users** tab at the top of the page (not the Users tab for the
   Oracle Blockchain Platform instance).

3. Click **Add** and provide user details, then click **Finish**.

   The Details page is displayed for the user. An email will be sent to the user with login
   information.

Use Identity and Access Management Identity Domains for Authentication

If your instance uses identity domains for identity management, you use Oracle Cloud
Infrastructure Console to set up and manage user accounts for everyone you expect to use
Oracle Blockchain Platform. After setting up the users and groups, you assign them suitable
permissions (also known as application roles)

To determine whether or not your cloud account offers identity domains, in the Oracle Cloud
Infrastructure Console, navigate to **Identity & Security**. Under **Identity**, look for **Domains**.

To access a Oracle Blockchain Platform instance that uses identity domains for authentication,
Oracle Blockchain Platform users must first have valid domain credentials. Identity Domain
Administrators manage the provisioning of users in the domain and perform the task of adding
users.

To add users and provide them access to Oracle Blockchain Platform:

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

2. Select the identity domain you want to work in and click **Users**.

3. Click **Create user**. Enter the user information.

For additional details see these topics in the Oracle Cloud Infrastructure documentation:

- Managing Users

- Managing Groups

Assigning Roles for the Oracle Blockchain Platform Network and REST APIs

This overview describes the roles that are relevant to Oracle Blockchain Platform network users, administrators, and REST API users. Anyone who uses or administers Oracle Blockchain Platform must be added in Oracle Identity Cloud Service or Identity and Access Management and granted the correct user role.

How to Associate Roles to Users

If you're using IDCS, you need to add the appropriate roles for each user in IDCS. For information on how to add or manage user role in IDCS, see Managing Oracle Identity Cloud Service Roles for Users.

If you're using IAM with identity domains, you need to add the appropriate roles for each user in the domain.

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

2. Select the identity domain you want to work in, and then select **Oracle Cloud Services**, and then choose your service from the list.

3. Under **Resources** select **Application roles**.

4. Select the role you want to assign to a user, click the More icon to the right of the role, and select **Assign Users**.

Roles Needed to Use or Administer the Network or REST APIs

Below are the roles that are available for Oracle Blockchain Platform.

User Role	Granted Automatically to Instance Creator?	Description
ADMIN	Yes	This role is the overall administrator for the Oracle Blockchain Platform cloud application.
		See the table in Access Control List for Console Function by User Roles for a complete list of console functions available for this user role.
USER		See the table in Access Control List for Console Function by User Roles for a complete list of console functions available for this user role.
CA_USER	Yes	This user role is assigned to Oracle Blockchain Platform participants to grant the user access to call certificate authority APIs.
REST_CLIENT	Yes	Grants user access to call all REST proxy endpoints available on the REST proxy node with the same number.

Access Control List for Console Function by User Roles

The following table lists which console features are available to the ADMIN and USER roles.

Feature	ADMIN	USER
Dashboard	Yes	Yes
Network: list orgs	Yes	Yes
Network: add orgs	Yes	No
Network: ordering service setting	Yes	No
Network: export certificates	Yes	No
Network: export orderer settings	Yes	No
Network: add OSN	Yes	No
Network: export network config block	Yes	No
Node: list	Yes	Yes
Node: start/stop/restart	Yes	No
Node: add/remove	Yes	No
Node: view attributes	Yes	Yes
Node: edit attributes	Yes	No
Node: view metrics	Yes	Yes
Node: view logs	Yes	Yes
Node: export/import peers	Yes	No
Node: show VM placement	Yes	Yes
Peer Node: list channels	Yes	Yes
Peer Node: join channel	Yes	No
Peer Node: list chaincode	Yes	Yes
Orderer: export OSN settings	Yes	No
Orderer: import network config block	Yes	No
Channel: list	Yes	Yes
Channel: create	Yes	No
Channel: add org to channel	Yes	No
Channel: update ordering service settings	Yes	No
Channel: view/query ledger	Yes	Yes
Channel: list instantiated chaincode	Yes	Yes
Channel: list joined peers	Yes	Yes
Channel: set anchor peer	Yes	No
Channel: upgrade chaincode	Yes	No
Channel: manage OSN admin	Yes	No
Channel: join orderers to channel	Yes	No
Channel: remove orderers from channel	Yes	No
Chaincode: list	Yes	Yes
Chaincode: install	Yes	No
Chaincode: instantiate	Yes	No

Feature	ADMIN	USER
Sample chaincode: install	Yes	No
Sample chaincode: instantiate	Yes	No
Sample chaincode: invoke	Yes	Yes
CRL	Yes	No

Using Permissions and Policies to Administer Oracle Blockchain Platform

Each service in Oracle Cloud Infrastructure integrates with Identity and Access Management (IAM) for authentication and authorization, for all interfaces (the Console, SDK or CLI, and REST API). You use IAM authorization policies to control access to resources in your tenancy. For example, you can create a policy that authorizes users to create and manage Oracle Blockchain Platform instances.

You create policies using the Oracle Cloud Infrastructure Console. For more information about IAM policies, see Overview of Oracle Cloud Infrastructure Identity and Access Management in the Oracle Cloud Infrastructure documentation. For details about writing policies, see Policy Syntax and Policy Reference.

Resource Types for Oracle Blockchain Platform

Resource Kind	Permissions	Description
blockchain-platforms	• BLOCKCHAIN_PLATFORM_ CREATE • BLOCKCHAIN_PLATFORM_ UPDATE • BLOCKCHAIN_PLATFORM_ INSPECT • BLOCKCHAIN_PLATFORM_ READ • BLOCKCHAIN_PLATFORM_ DELETE	One or more Oracle Blockchain Platform instances.
blockchain-platform-work-requests	• BLOCKCHAIN_PLATFORM_ WORK_REQUEST_INSPEC T • BLOCKCHAIN_PLATFORM_ WORK_REQUEST_READ • BLOCKCHAIN_PLATFORM_ WORK_REQUEST_DELETE	A single work request for Oracle Blockchain Platform. Each operation you perform on an Oracle Blockchain Platform instance, creates a work request. For example, operations such as create, start, stop, and so on.

Operations to Permissions Map

The following table lists the IAM operations that are specific to Oracle Blockchain Platform. You can write an IAM policy that includes these operations, or you can write a policy that uses a defined verb that encapsulates these operations.

Operation ID	Permissions Required to Use the Operation	API Operation
createBlockchainPlatform	BLOCKCHAIN_PLATFORM_CREATE	CreateBlockchainPlatform
deleteBlockchainPlatform	BLOCKCHAIN_PLATFORM_DELETE	DeleteBlockchainPlatform
getAllPlatformsInCompartment	BLOCKCHAIN_PLATFORM_INSPECT	GetBlockchainPlatforms
getBlockchainPlatformInformation	BLOCKCHAIN_PLATFORM_READ	GetBlockchainPlatformInformation
getWorkRequest	BLOCKCHAIN_PLATFORM_WORK_REQUEST_READ	GetWorkRequest
getWorkRequestErrors	BLOCKCHAIN_PLATFORM_WORK_REQUEST_READ	ListWorkRequestErrors
getWorkRequestLogs	BLOCKCHAIN_PLATFORM_WORK_REQUEST_READ	ListWorkRequestLogs
listWorkRequests	BLOCKCHAIN_PLATFORM_WORK_REQUEST_INSPECT	ListWorkRequests
restartBlockchainPlatform	BLOCKCHAIN_PLATFORM_UPDATE	RestartBlockchainPlatform
startBlockchainPlatform	BLOCKCHAIN_PLATFORM_UPDATE	StartBlockchainPlatform
stopBlockchainPlatform	BLOCKCHAIN_PLATFORM_UPDATE	StopBlockchainPlatform
updateBlockchainPlatform	BLOCKCHAIN_PLATFORM_UPDATE	UpdateBlockchainPlatform

Details for Verb and Resource-Type Combinations

Oracle Cloud Infrastructure offers a standard set of verbs to define permissions across Oracle Cloud Infrastructure resources (**Inspect**, **Read**, **Use**, **Manage**). These tables list the Oracle Blockchain Platform permissions associated with each verb. The level of access is cumulative as you go from **Inspect** to **Read** to **Use** to **Manage**.

INSPECT

Resource- Type	INSPECT Permission
• blockchain-platforms • blockchain-platform-work-requests	• BLOCKCHAIN_PLATFORM_INSPECT • BLOCKCHAIN_PLATFORM_WORK_REQUEST_INSPECT

READ

Resource- Type	READ Permission
• blockchain-platforms	• BLOCKCHAIN_PLATFORM_INSPECT • BLOCKCHAIN_PLATFORM_READ
• blockchain-platform-work-requests	• BLOCKCHAIN_PLATFORM_WORK_REQUEST_INSPECT • BLOCKCHAIN_PLATFORM_WORK_REQUEST_READ

USE

Resource- Type	USE Permission
• blockchain-platforms	• BLOCKCHAIN_PLATFORM_READ • BLOCKCHAIN_PLATFORM_UPDATE
• blockchain-platform-work-requests	• BLOCKCHAIN_PLATFORM_WORK_REQUEST_INSPECT • BLOCKCHAIN_PLATFORM_WORK_REQUEST_READ

MANAGE

Resource- Type	MANAGE Permission
• blockchain-platforms	• BLOCKCHAIN_PLATFORM_READ • BLOCKCHAIN_PLATFORM_UPDATE • BLOCKCHAIN_PLATFORM_CREATE • BLOCKCHAIN_PLATFORM_DELETE
• blockchain-platform-instance-work-requests	• BLOCKCHAIN_PLATFORM_WORK_REQUEST_INSPECT • BLOCKCHAIN_PLATFORM_WORK_REQUEST_READ • BLOCKCHAIN_PLATFORM_WORK_REQUEST_DELETE

Operation-Specific Attributes

The values of these variables are supplied by Oracle Blockchain Platform. In addition, other general variables are supported. See General Variables for All Requests.

For a given resource kind, you should have the same set of attributes across all operations (get, list, delete, and so on). The one exception is for a `create` operation, where you won't have the ID for that object yet, so you can't have a `target.RESOURCE-KIND.id` attribute for `create`.

Resource Kind	Name	Type	Source
blockchain-platforms			
blockchain-platform-work-requests			

5

Top FAQs for Administration and Configuration

The top FAQs for Oracle Blockchain Platform administration and configuration are identified in this topic.

How do I get support for Oracle Blockchain Platform?

You create a service request in the same way as for on-premises software.

How do I access my service once it's created?

It's accessible from the Oracle Cloud Infrastructure Console. Navigate to **Blockchain Platform**, select the **Instances** page and look for the service you want to access. From the menu associated with this instance, select **Service Console**.

How do I patch or upgrade my service?

You don't need to patch or upgrade your service. Oracle takes care of patching for you.

If you want to upgrade your service on your own schedule, follow the instructions in Upgrade an Instance.

How do I backup or restore my service?

You can't create a backup and restore an instance yourself.

Can I reuse instance names?

You won't be able to create a new instance with a name used previously, even if the instance has been deleted. Oracle is required to preserve data from the deleted instance for 60 days which would cause conflicts if the name were reused.

Do I have direct access to the file system associated with my service?

No. You can't access the file system for your service. Your service is managed by Oracle.

Is the data that is stored on the blockchain encrypted?

Yes. Oracle Blockchain Platform uses the Block Volumes service of Oracle Cloud Infrastructure to store configuration and ledger data on the blockchain. By default, the Block Volumes service uses the Advanced Encryption Standard (AES) algorithm with 256-bit keys to encrypt data. For more information, see Overview of Block Volume and Securing Block Volume.