Oracle® Construction and Engineering

Integrate Oracle Primavera Cloud Resources and Schedule with Primavera Unifier

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Primary Author: Oracle Corporation

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About This Content

This document describes how to install, configure, and run this accelerator in Oracle Integration 3.

Related Resources

For more information, see these Oracle resources:

- Oracle Cloud at `http://cloud.oracle.com`
- *Using Integrations in Oracle Integration 3*
- *Using the Oracle Mapper with Oracle Integration 3*
- Oracle Integration documentation
- Oracle Primavera Cloud documentation
- Primavera Unifier 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.

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About This Accelerator

Use this accelerator to integrate Oracle Primavera Cloud resources, roles, rates, activities, assignments, and spreads with Primavera Unifier.

> **Note**
>
> This accelerator is available as **Oracle Primavera Cloud — Primavera Unifier | Integrate Resources and Schedule** in the Integration Store.

Overview

This accelerator integrates Oracle Primavera Cloud resources, roles, rates, activities, assignments, and spreads with Primavera Unifier on an event-driven basis based on the data received in the request.

The accelerator delivers a project that includes three integrations:

1. **Oracle OPC Unifier Resources Roles Sync**
2. **Oracle OPC Unifier Activity Sync**
3. **Oracle OPC Unifier Activity and Assignment Spreads**

The Oracle OPC Unifier Resources Roles Sync integration is used to integrate resources, roles, and rates, while the Oracle OPC Unifier Activity Sync and Oracle OPC Unifier Activity and Assignment Spreads integrations are used together to integrate activities, assignments, and spreads.

To use this accelerator, you run the Oracle OPC Unifier Resources Roles Sync integration first, and then run the Oracle OPC Unifier Activity Sync integration second.

The Oracle OPC Unifier Activity Sync integration is dependent on the Oracle OPC Unifier Resources Roles Sync integration; therefore, you should wait until after the Oracle OPC Unifier Resources Roles Sync integration has finished running (after the resources, roles, and rates have been integrated) before you run the Oracle OPC Unifier Activity Sync integration. The third integration listed above (labeled Oracle OPC Unifier Activity and Assignment Spreads) is called automatically, after the activities and assignments from the Oracle OPC Unifier Activity Sync integration have been integrated.

These application integrations use the standard REST Adapter and the Oracle Primavera Cloud Adapter available in the Integration Store.

To use these integrations, you need to install the accelerator and configure the connections and other resources. Then, activate and run the integrations using the Oracle Integration interface or REST API.

Integration Workflows

The following sections contain high-level explanations about how the main integrations in this accelerator work.

Integrate Resources, Roles, and Rates

The following is a high-level explanation about how resources, roles, and rates are created or updated in Primavera Unifier from Oracle Primavera Cloud.

1. The integration is triggered by a request sent to the integration deployed in Oracle Integration. (For information about how to structure your request, see Activate and Run the Accelerator.)
2. If the request includes a valid `unifierJobId`, Oracle Integration notifies Primavera Unifier that the synchronization process has begun, which helps track the status of the synchronization task.
3. Oracle Integration calls Oracle Primavera Cloud to retrieve the necessary data. The key data elements include:
   - Workspace
   - Currency
   - Resources
   - Roles
4. The resources and roles data is then created or updated in Primavera Unifier by matching with the Primavera Unifier workspaces.
5. If the `unifierJobId` was provided, Oracle Integration sends a final notification to Primavera Unifier confirming that the synchronization job has ended successfully.

> **Note**
>
> - The Workspace code of the parent and child Resource/Role codes should be the same in order to integrate them into Primavera Unifier.
> - If the Resource Id for the parent Workspace code is updated in Oracle Primavera Cloud, then the whole hierarchy has to be removed and recreated in Primavera Unifier.
> - Each Resource/Role supports only one work rate value – specifically, the `pricePerUnit1` rate. This limitation exists because Primavera Unifier does not allow multiple work rates under the same cost and rate type.

Integrate Activities, Assignments, and Spreads

The following is a high-level explanation about how activities, assignments, and spreads are created or updated in Primavera Unifier from Oracle Primavera Cloud.

1. The integration is triggered when a request is sent to an integration in Oracle Integration. This request contains information about the data that should be created or updated in Primavera Unifier. (For information about how to structure your request, see Activate and Run the Accelerator.)
2. If the request includes a valid `unifierJobId`, Oracle Integration notifies Primavera Unifier that the synchronization process has begun, which helps track the status of the synchronization task.

3. Oracle Integration calls Oracle Primavera Cloud to retrieve data for the specified project. This includes:
   - Activities and their dependencies (relationships)
   - Assignments
   - Work Breakdown Structure (WBS) objects
   - Spreads:
     - The spread synchronization uses a dedicated integration process (Oracle OPC Unifier Activity and Assignment Spreads).
     - In this process, activity and assignment spreads are first downloaded from Oracle Primavera Cloud, then uploaded to Primavera Unifier.
     - If both processes complete successfully, Oracle Integration triggers a project recosting of the current system activity sheet data.
4. The project and its associated data is then created or updated in Primavera Unifier by creating a matching Primavera Unifier project. If baseline synchronization is specified in the request, this data will also be created or updated during the process.
5. If the `unifierJobId` was provided, Oracle Integration sends a final notification to Primavera Unifier confirming that the synchronization job has ended successfully.

> **Note**
>
> - Baseline Project Name and current Project Name cannot be the same in Oracle Primavera Cloud.
> - Resources created under Project Workspace can only be assigned to Activities in that project in Oracle Primavera Cloud.
> - Baseline Project Name should be unique across all projects in Oracle Primavera Cloud.
> - For integrating Activity data between Oracle Primavera Cloud and Primavera Unifier projects, the Workspace Code and Workspace Name should be the same in Oracle Primavera Cloud before integrating the projects to Primavera Unifier.

System and Requirements

- Oracle Integration 3
- Oracle Primavera Cloud
- Primavera Unifier
- Oracle Primavera Cloud user account with administrative privileges
- Primavera Unifier user account with administration role

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Before You Install the Accelerator

You must perform the following tasks before you can install and configure this accelerator.

Specifically, you must:

1. Perform the required general configuration tasks in Oracle Primavera Cloud.
2. Perform the required general configuration tasks in Primavera Unifier.
3. Generate a Base64 Encoded User Name and Password.

Configure Oracle Primavera Cloud

To configure Oracle Primavera Cloud, complete the initial setup outlined below:

- **Create an Integration User Account**: You can create an integration user account in Oracle Primavera Cloud to connect with Oracle Integration and manage integrations. Specify the integration account email address in the integration properties to receive integration notifications. Creating an integration account is optional but recommended to keep track of the data modified through integrations and to avoid issues related to using a standard user account, such as account lockouts or the employee leaving the organization. For details, see Setting up an Integration User Account.
- **Create or Use an Existing Workspace**: Workspaces represent the hierarchical structure of your organization's businesses, projects, or processes. Create a new workspace or use an existing one to integrate Oracle Primavera Cloud activities, assignments, roles, and resources with Primavera Unifier. For details, see Add a Workspace.
- **Create or Use an Existing Project**: A project is a formalized plan undertaken to create a service, product, or result. Projects may consist of various other details, including activities and assignments. Create a new project or use an existing one to integrate its activities, assignments, roles, and resources with Primavera Unifier. For details, see Add a Project.

Configure Primavera Unifier

To configure Primavera Unifier, complete the initial setup outlined below:

- **Create an Integration User**: You need to specify the user name and password of an integration user when you configure the Primavera Unifier connections. See Creating Integration Users.
- **Get Relevant Permissions**: Ensure that you have the relevant permissions in Primavera Unifier to configure Oracle Integration. To set these permissions in Primavera Unifier, go to the **Company Workspace**, switch to **Admin mode**, select **User Administration**, then select **Access Control**, then select **Administration Mode Access**, then select **Integrations**, then select **Oracle Integration Cloud**.
- **Add Primavera Unifier as a Trusted Application in Oracle Integration**: Ensure that Primavera Unifier is added as a trusted application using client credentials grant type in Oracle Integration. You will need the **Client ID**, **Client Secret**, and **App Scope** information that gets generated for Primavera Unifier in the procedure, Initial Oracle Integration Setup. Contact Oracle Support for this information.

- **Create or Use an Existing Shell**: A shell is where users can organize and manage their business information. Create a new shell or use an existing one where you want to integrate Oracle Primavera Cloud activities, assignments, roles, and resources. See Creating a Shell.

Generate a Base64 Encoded User Name and Password

A Base64 encoded user name and password is required for the access token requests in the REST connections that you will configure later in this document.

Which User Name and Passwords Do I Need To Encode?

For this accelerator, you need to:

1. Generate an encoded version of your Primavera Cloud user name and password. This encoded version will be used in the access token request in the connection named **OPC Rest API** (the second Primavera Cloud connection).
2. Generate an encoded version of your Unifier user name and password. This encoded version will be used in the access token request in the connection named **Unifier token** (the second Unifier connection).

How Do I Encode the User Name and Password?

To generate an encoded version of your user name and password:

1. Go to https://www.base64encode.org/.
2. Enter the user name and password in the following format:

   ```
   username:password
   ```

3. Click **Encode**.

Where Do I Enter the Encoded User Name and Password in the Access Token Request?

Once generated, you can copy the encoded user name and password and paste it in the appropriate location of your access token request.

Specifically, you will:

1. Replace the variable `<Base64-encoded-username-and-password>` in the access token request example in the connection named **OPC Rest API** (the second Primavera Cloud connection) with the encoded Primavera Cloud user name and password.
2. Replace the variable `<Base64-encoded-username-and-password>` in the access token request example in the connection named **Unifier token** (the second Unifier connection) with the encoded Unifier user name and password.

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Install and Configure the Accelerator

On your Oracle Integration instance, install the accelerator to deploy project and configure the connections of the integrations.

1. On the Oracle Integration Home page, in the **Get Started** section, click **Browse store**.
2. Search for this accelerator:
   Oracle Primavera Cloud — Primavera Unifier | Integrate Resources and Schedule
3. After you find the accelerator, click **Get** on the accelerator card.
   A message confirms that the accelerator was successfully installed, and the accelerator card shows **In Use**.
4. Click **Configure** on the accelerator card.
   The project workspace opens, displaying all the resources of the accelerator. Configure the connections before you activate and run the integrations in this accelerator.

Topics:

Configure the Oracle Primavera Cloud Connections

After installing this accelerator, you need to configure the delivered Oracle Primavera Cloud connections.

This accelerator delivers two connections that are required for connecting with Oracle Primavera Cloud through Oracle Integration:

- **OPC Adapter**
- **OPC Rest API**

The first connection uses the Oracle Primavera Cloud Adapter to retrieve data from Oracle Primavera Cloud. The second connection uses the REST Adapter to send additional requests, such as retrieving baseline data.

Follow the steps in the sections below to configure these connections to connect with Oracle Primavera Cloud.

Connection 1 - Using Oracle Primavera Cloud Adapter

The first connection to Oracle Primavera Cloud in this accelerator is labeled **OPC Adapter**.

To configure the connection:

1. In the **Connections** section, click **Actions** ⋮ on the connection, then select **Edit**.
2. In the **Properties** section, in the **Connection URL** field, enter the URL of your Oracle Primavera Cloud instance.

   For example:

`https://primavera.oraclecloud.com`

3. Go to the **Security** section, enter the login credentials (user name and password) of your Oracle Primavera Cloud account, or a Oracle Primavera Cloud integration user account.
4. Click **Save**. If prompted, click **Save** again.
5. Click **Test** to ensure that your connection is successfully configured. In the resulting dialog box, click **Test** again.

   A message confirms if your test is successful.
6. To return to the project workspace, click **Go back**  .

Connection 2 - Using REST Adapter

The second connection to Oracle Primavera Cloud in this accelerator is labeled **OPC Rest API**.

To configure the connection:

1. In the **Connections** section, click **Actions** ⋯ on the connection, then select **Edit**.
2. Go to the **Properties** section and do the following:
   a. In the **Connection Type** field, select **REST API Base URL**.
   b. In the **Connection URL** field, enter the base URL of your Oracle Primavera Cloud REST API instance.

      For example:

      `https://primavera.oraclecloud.com/api/restapi/`

      > **Note**
      >
      > You must include `/api/restapi/` in the URL.
3. Go to the **Security** section and do the following:
   a. In the **Security Policy** field, select **OAuth Custom Two Legged Flow**.
   b. In the **Access Token Request** field, enter the access token request in the following format:

      ```
      -X POST "https://<SERVER_URL>/primediscovery/apitoken/request?
      scope=http://<SERVER_URL>/api" -H "Authorization: Basic <Base64-encoded-
      username-and-password>
      ```

      Where:

      - `<SERVER_URL>` is the base URL of your Primavera Cloud instance (for example, `https://primavera.oraclecloud.com`)
      - `<Base64-encoded-username-and-password>` is your encoded Primavera Cloud user name and password.

        For information about how to obtain this, see Generate a Base64 Encoded User Name and Password.

> **Note**
>
> The URL for `scope` must be the full path to the application's context root (`scope=http://<SERVER_URL>/api`) and must always be `http` (not `https`).

4. In the **Optional Security** section, in the **access_token_usage** field, enter the token type and token header details in the following format:

   ```
   -H Authorization: Bearer ${access_token} -H x-prime-tenant:<PRIME_TENANT_NAME>
   -H x-prime-identity-app:<PRIME_IDENTITY_APP> -H x-prime-tenant-
   code:<PRIME_TENANT_CODE>
   ```

5. Click **Save**. If prompted, click **Save** again.
6. Click **Test** to ensure that your connection is successfully configured. In the resulting dialog box, click **Test** again.

   A message confirms if your test is successful.

7. To return to the project workspace, click **Go back** .

Configure the Primavera Unifier Connections

After installing this accelerator, you need to configure the delivered Primavera Unifier connections.

This accelerator delivers two connections that are required for connecting with Primavera Unifier through Oracle Integration:

- **Unifier basic**
- **Unifier token**

The first connection obtains the endpoint. The second connection sends the OAuth token, custom headers, and endpoint details to Primavera Unifier. Both connections use the REST Adapter in Oracle Integration to make API requests.

Follow the steps in the sections below to configure these connections to connect with Primavera Unifier.

Connection 1 - Using REST Adapter

The first connection to Primavera Unifier in this accelerator is labeled **Unifier basic**.

To configure the connection:

1. In the **Connections** section, click **Actions** ⋮ on the connection, then select **Edit**.
2. In the **Properties** section, do the following:
   a. In the **Connection type** field, select **REST API Base URL**.
   b. In the **Connection URL** field, enter the base URL of your Primavera Unifier environment, including your region (if there is one), the host server, and your specific company code.

      For example:

      ```
      https://<region>.unifier.oraclecloud.com/<companycode>
      ```

      If there is no region, the base connection URL is:

```
https://unifier.oraclecloud.com/<companycode>
```

3. In the **Security** section, do the following:
   a. In the **Security Policy** field, select **Basic Authentication**.
   b. In the **User Name** and **Password** fields, enter the login credentials of your Primavera Unifier integration user.
4. Click **Save**. If prompted, click **Save** again.
5. Click **Test** to ensure that your connection is successfully configured. In the resulting dialog box, click **Test** again.

   A message confirms if your test is successful.
6. To return to the project workspace, click **Go back**  .

Connection 2 - Using REST Adapter

The second connection to Primavera Unifier in this accelerator is labeled **Unifier token**.

To configure the connection:

1. In the **Connections** section, click **Actions** ... on the connection, then select **Edit**.
2. In the **Properties** section, do the following:
   a. In the **Connection type** field, select **REST API Base URL**.
   b. In the **Connection URL** field, enter the base URL of your Primavera Unifier environment, including your region (if there is one), the host server, and your specific company code.

      For example:

      ```
      https://<region>.unifier.oraclecloud.com/<companycode>
      ```

      If there is no region, the base connection URL is:

      ```
      https://unifier.oraclecloud.com/<companycode>
      ```
3. In the **Security** section, do the following:
   a. In the **Security policy** field, select **OAuth Two Legged Custom Flow**.
   b. In the **Access Token Request** field, enter the access token request in the following format:

      ```
      -X GET -H "Content-Type: application/x-www-form-urlencoded" -H
      "Authorization: Basic <Base64-encoded-username-and-password>" -d
      'grant_type=client_credentials' https://<SERVER_URL>/ws/rest/service/v2/
      auth/token
      ```

      Where:

      - `<Base64-encoded-username-and-password>` is the Base64 encoded version of your Primavera Unifier user name and password.

        For information about how to obtain this, see Generate a Base64 Encoded User Name and Password.
      - `<SERVER_URL>` is the base URL of your Primavera Unifier environment, including your region (if there is one), host server, your specific company code. For example:

        ```
        https://<region>.unifier.oraclecloud.com/<companycode>
        ```

4. Click **Save**. If prompted, click **Save** again.
5. Click **Test** to ensure that your connection is successfully configured. In the resulting dialog box, click **Test** again.

   A message confirms if your test is successful.
6. To return to the project workspace, click **Go back**  .

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Activate and Run the Accelerator

After configuring connections and resources, activate and run the integrations in this accelerator.

Running the integrations requires passing a JSON payload in the provided format.

Activate the Integrations

Before you can run an integration, you must activate it.

This accelerator contains the following three integration flows:

- **Oracle OPC Unifier Resources Roles Sync**
- **Oracle OPC Unifier Activity Sync**
- **Oracle OPC Unifier Activity and Assignment Spreads**

Repeat the following steps to activate each of the three integrations listed above.

1. In the **Integrations** section of the project workspace, hover over the integration flow you want to activate, click **Actions** ⋯, then select **Activate**.
2. In the **Activate integration** panel, choose an appropriate tracing level, then click **Activate**.

   A message confirms that the integration has been activated. Refresh the page to view the updated status of the integration.

Run the Oracle OPC Unifier Resources Roles Sync Integration

1. Make sure you have already activated this integration.
2. Make sure you run this integration first, before running the Oracle OPC Unifier Activity Sync integration.
3. Run the Oracle OPC Unifier Resources Roles Sync integration.
   a. In the Integrations section of the project workspace, click **Actions** ⋯ on the integration flow, then select **Run**.
   b. On the **Configure and run** page, in the **Request** section, click the **Body** tab.
   c. In the **Body** field, enter the required JSON payload.

      For example:

```
{
  "source": "Primavera Cloud",
  "unifierJobId": "3A0429936DD166A",
  "workspaceCode": "OPCworkspace"
}
```

Element	Required	Data Type	Description
source	Yes	String	The external application from which data is pulled to be populated in the target application. Valid values include: "Primavera Cloud".
unifierJobId	No	String	A unique identifier for the Primavera Unifier job.
workspaceCode	No (If not provided, data from all workspaces that the user has access to will be transferred.)	String	The Oracle Primavera Cloud workspace ID.

d. Click **Run**.

You've now successfully submitted the integration for execution.

> **Note**
>
> You can also schedule this integration to run at a date, time, and frequency of your choosing. See Define the Integration Schedule.

Run the Oracle OPC Unifier Activity Sync Integration

1. Make sure you have already activated all three integrations in this accelerator.
2. Make sure you have already run the Oracle OPC Unifier Resources Roles Sync integration.
3. Run the Oracle OPC Unifier Activity Sync integration.
   a. In the Integrations section of the project workspace, click **Actions** ... on the integration flow, then select **Run**.
   b. On the **Configure and run** page, in the **Request** section, click the **Body** tab.
   c. In the **Body** field, enter the required JSON payload.

   For example:

```
{
  "opcProjectCode": "OPC-Jira-Integrated",
  "opcWorkspaceCode": "OPCworkspace",
  "performRecostingAutomatically": true,
  "removeUnreferencedData": true,
  "synchronizeBaselineProjects": false,
  "unifierJobId": "3A0429936DD166A",
  "unifierProjectNumber": "P-001"
}
```

Element	Required?	Data Type	Description
opcProjectCode	Yes	String	The Oracle Primavera Cloud project ID.
opcWorkspaceCode	Yes	String	The Oracle Primavera Cloud workspace ID.
removeUnreferencedData	Yes	Boolean	Determines if the integration should remove any data (primarily Activities and Assignments) in Primavera Unifier that no longer exists in Oracle Primavera Cloud. Enabling this ensures that the data remains an exact 1-to-1 copy of Oracle Primavera Cloud.
synchronizeBaselineProjects	Yes	Boolean	Indicates whether to also integrate the baseline projects. Set this to `true` to synchronize baseline data along with the main project information.
unifierJobId	No	String	A unique identifier for the Primavera Unifier job.
unifierProjectNumber	Yes	String	The project number of the Primavera Unifier project.

d. Click **Run**.

You've now successfully submitted the integration for execution.

> **Note**
>
> You can also schedule this integration to run at a date, time, and frequency of your choosing. See Define the Integration Schedule.

Run the Integrations Using the REST API (optional)

If you want to run the integrations using the REST API instead of using the standard methods described above, do the following:

1. In the Integrations section of the project workspace, click **Actions** ... on the integration flow, then select **Run**.
2. On the **Configure and run** page, click the **Endpoint Metadata** tab.
3. Copy the **Endpoint URL** and use additional information as necessary.

Monitor the Integrations

To monitor the running of each integration flow:

1. In the project workspace, click **Observe**. You'll see the integration flow being triggered and running successfully.
2. To manage errors in your project, see Manage Errors in a Project.