# Oracle® Cloud

# Using the Microsoft Office 365 Calendar Adapter with Oracle Integration 3

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# Contents


## Preface

Audience v
Documentation Accessibility v
Diversity and Inclusion v
Related Resources vi
Conventions vi

## 1 Understand the Microsoft Office 365 Calendar Adapter

Microsoft Office 365 Calendar Adapter Capabilities 1-1
What Application Version Is Supported? 1-1
About Microsoft Office 365 Calendar Adapter Use Cases 1-1
Workflow to Create and Add a Microsoft Office 365 Calendar Adapter Connection to an Integration 1-2

## 2 Create a Microsoft Office 365 Calendar Adapter Connection

Prerequisites for Creating a Connection 2-1
Create a Connection 2-3
- Configure Connection Security 2-4
- Test the Connection 2-5

Upload a Certificate to Connect with External Services 2-5

## 3 Add the Microsoft Office 365 Calendar Adapter Connection to an Integration

Basic Info Page 3-1
Invoke Operations Page 3-1
Invoke Request Parameters Page 3-2
Summary Page 3-3

# Custom Legal Notice

# Preface

This guide describes how to configure this adapter as a connection in an integration in Oracle Integration.

> **Note:**
>
> The use of this adapter may differ depending on the features you have, or whether your instance was provisioned using Standard or Enterprise edition. These differences are noted throughout this guide.

**Topics:**


- Audience
- Documentation Accessibility
- Diversity and Inclusion
- Related Resources
- Conventions


## Audience

This guide is intended for developers who want to use this adapter in integrations in Oracle Integration.

## 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.

## Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation.

We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

# Related Resources

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 on the Oracle Help Center.

# 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

# Understand the Microsoft Office 365 Calendar Adapter

Review the following conceptual topics to learn about the Microsoft Office 365 Calendar Adapter and how to use it as a connection in integrations in Oracle Integration. A typical workflow of adapter and integration tasks is also provided.

**Topics:**


- Microsoft Office 365 Calendar Adapter Capabilities
- What Application Version Is Supported?
- About Microsoft Office 365 Calendar Adapter Use Cases
- Workflow to Create and Add a Microsoft Office 365 Calendar Adapter Connection to an Integration


> **Note:**
>
> There are overall service limits for Oracle Integration. A service limit is the quota or allowance set on a resource. See Service Limits.

## Microsoft Office 365 Calendar Adapter Capabilities

The Microsoft Office 365 Calendar Adapter enables you to create a Microsoft Office 365 Calendar application integration.

Microsoft Office 365 Calendar enables you to organize your events and appointments. You can use the Microsoft Office 365 Calendar Adapter to connect to Microsoft Office 365 Calendar to manage events and appointments.

The Microsoft Office 365 Calendar Adapter supports the Microsoft Graph REST API operations.

The Microsoft Office 365 Calendar Adapter is one of many predefined adapters included with Oracle Integration. You can configure the Microsoft Office 365 Calendar Adapter as a connection in an integration in Oracle Integration.

## What Application Version Is Supported?

For information about which application version is supported by this adapter, see the Connectivity Certification Matrix.

## About Microsoft Office 365 Calendar Adapter Use Cases

The Microsoft Office 365 Calendar Adapter can be used in scenarios such as the following.

You can create an integration that includes the REST Adapter on the trigger (inbound) side and a Microsoft Office 365 Calendar Adapter on the invoke (outbound) side.

When configuring the Microsoft Office 365 Calendar Adapter, you can select the Create Event operation to create an event in Microsoft Office 365 Calendar. The REST Adapter is configured with a POST action, an endpoint relative resource URI of createEvent, and a JSON response payload file type. Appropriate data mapping between the REST Adapter and the Microsoft Office 365 Calendar Adapter is performed in the mapper. The REST Adapter sends a POST request to the Microsoft Office 365 Calendar Adapter, which creates the event, and returns details about event attendees, start time, and so on.

> **Note:**
>
> Oracle Integration offers a number of prebuilt integrations, known as *recipes*, that provide you with a head start in building your integrations. You can start with a recipe, and then customize it to fit your needs and requirements. Depending upon the solution provided, a variety of adapters are configured in the prebuilt integrations.
> See the Recipes and Accelerators page on the Oracle Help Center.

# Workflow to Create and Add a Microsoft Office 365 Calendar Adapter Connection to an Integration

Follow a workflow to create a connection with an adapter and include the connection in an integration in Oracle Integration.

| Step | Description | More Information |
|---|---|---|
| 1 | Create the adapter connections for the applications you want to integrate. The connections can be reused in multiple integrations and are typically created by the administrator. | Create a Microsoft Office 365 Calendar Adapter Connection |
| 2 | Create the integration. When you do this, you add trigger and invoke connections to the integration. | Understand Integration Creation and Best Practices and Add the Microsoft Office 365 Calendar Adapter Connection to an Integration |
| 3 | Map data between the trigger connection data structure and the invoke connection data structure. | Map Data in *Using Integrations in Oracle Integration 3* |
| 4 | (Optional) Create lookups that map the different values used by those applications to identify the same type of object (such as gender codes or country codes). | Manage Lookups in *Using Integrations in Oracle Integration 3* |
| 5 | Activate the integration. | Manage Integrations in *Using Integrations in Oracle Integration 3* |

| Step | Description | More Information |
|---|---|---|
| 6 | Monitor the integration on the dashboard. | Monitor Integrations During Runtime in *Using Integrations in Oracle Integration 3* |
| 7 | Track payload fields in messages during runtime. | Assign Business Identifiers for Tracking Fields in Messages and Track Integration Instances in *Using Integrations in Oracle Integration 3* |
| 8 | Manage errors at the integration level, connection level, or specific integration instance level. | Manage Errors in *Using Integrations in Oracle Integration 3* |

2

# Create a Microsoft Office 365 Calendar Adapter Connection

A connection is based on an adapter. You define connections to the specific cloud applications that you want to integrate.

**Topics:**


- Prerequisites for Creating a Connection
- Create a Connection
- Upload a Certificate to Connect with External Services


## Prerequisites for Creating a Connection

These are the prerequisites for creating a connection with the Microsoft Office 365 Calendar Adapter.

> **Note:**
>
> Before creating a Microsoft Office 365 Calendar Adapter connection, you must upload the trusted public certificate to Oracle Integration. The public certificate is created when you create the private key. Rename the public certificate file extension to `.crt`. To upload the certificate, see Upload a Certificate to Connect with External Services.

1. Log in to `https://azure.microsoft.com/` with administrator access. If you do not have an account, click **Free account**.
2. In the upper right, click **Portal**.
3. In the search field at the top, enter `app registration`, then click the **Search** icon.
4. Click **New registration**.
5. In the **Name** field, enter the user-facing display name for this application.
6. In the **Supported account types** section, select **Accounts in Any Organizational Directory**.
7. In the **Redirect URI (optional)** section, select **Web**, then enter the redirect URL.

> **Note:**
>
> If you don't know the following information, check with your administrator:
>
> - If your instance is new or upgraded from Oracle Integration Generation 2 to Oracle Integration 3.
> - The complete instance URL with the region included (required for new instances).

| For Connections… | Include the Region as Part of the Redirect URL? | Example of Redirect URL to Specify… |
|---|---|---|
| Created on new Oracle Integration 3 instances | Yes. | `https://`*`OIC_instance_URL`*`.region.ocp.oraclecloud.com/icsapis/agent/oauth/callback` |
| Created on instances upgraded from Oracle Integration Generation 2 to Oracle Integration 3 | No.<br>This applies to both:<br>• New connections created after the upgrade<br>• Existing connections that were part of the upgrade | `https://`*`OIC_instance_URL`*`.ocp.oraclecloud.com/icsapis/agent/oauth/callback` |

8. Click **Register**.
9. If you want to add more redirect URLs, click the link in the **Redirect URIs** section on the right side of the page.
10. In the left navigation pane, click **Certificates & secrets** to generate a secret.
11. In the **Client secrets** section, click **New client secret**.
12. In the **Description** field, enter a description for the secret.
13. In the **Expires** section, select the proper expiration time (preferably **Never**).
14. Click **Add**.
15. In the **Client secrets** section at the bottom, copy the client secret value in the **Value** column. This value is required when configuring the connection on the Connections page.

> **Note:**
>
> The client secret value cannot be displayed again once you exit the Microsoft Azure page. Ensure that you copy this value.

16. In the left navigation pane, click **API permissions** to add required permissions to the application.

17. Click **Microsoft Graph**.
18. In the **Select permissions** field, begin entering the name of the adapter for which you are configuring permissions. For Microsoft Office 365 Calendar Adapter, enter `Calendar`. Available permissions are displayed. You enter these permissions in the **Scope** field when configuring a connection on the Connections page.
19. Select the necessary permissions, and click **Update Permissions**. The `offline_access` scope is required. This scope is needed to get a refresh token, which is then used to get new access tokens. See Scopes and permissions in the Microsoft identity platform.
20. In the left navigation pane, click **Overview**.
21. Copy the value shown in the **Application (client) ID** field. This value is required when configuring the connection on the Connections page.

Microsoft also provides an example of how to create this application. See Quickstart: Configure a client application to access web APIs.

# Create a Connection

Before you can build an integration, you must create the connections to the applications with which you want to share data.

To create a connection in Oracle Integration:

1. In the navigation pane, click **Design**, then **Connections**.
2. Click **Create**.

> **Note:**
>
> You can also create a connection in the integration canvas. See Define Inbound Triggers and Outbound Invokes.

3. In the Create connection panel, select the adapter to use for this connection. To find the adapter, scroll through the list, or enter a partial or full name in the **Search** field.
4. Enter the information that describes this connection.

| Element | Description |
|---|---|
| **Name** | Enter a meaningful name to help others find your connection when they begin to create their own integrations. |
| **Identifier** | Automatically displays the name in capital letters that you entered in the **Name** field. If you modify the identifier name, don't include blank spaces (for example, `SALES OPPORTUNITY`). |

| Element | Description |
|---|---|
| **Role** | Select the role (direction) in which to use this connection (trigger, invoke, or both). Only the roles supported by the adapter are displayed for selection. When you select a role, only the connection properties and security policies appropriate to that role are displayed on the Connections page. If you select an adapter that supports both invoke and trigger, but select only one of those roles, you'll get an error when you try to drag the adapter into the section you didn't select.<br>For example, assume you configure a connection for the Oracle Service Cloud (RightNow) Adapter as only an **invoke**. Dragging the adapter to a **trigger** section in the integration produces an error. |
| **Keywords** | Enter optional keywords (tags). You can search on the connection keywords on the Connections page. |
| **Description** | Enter an optional description of the connection. |
| **Share with other projects** | **Note**: This field only appears if you are creating a connection in a project.<br>Select to make this connection publicly available in other projects. Connection sharing eliminates the need to create and maintain separate connections in different projects.<br>When you configure an adapter connection in a different project, the **Use a shared connection** field is displayed at the top of the Connections page. If the connection you are configuring matches the same type and role as the publicly available connection, you can select that connection to reference (inherit) its resources.<br>See Add and Share a Connection Across a Project. |

5. Click **Create**.

   Your connection is created. You're now ready to configure the connection properties, security policies, and (for some connections) access type.

## Configure Connection Security

Enter connection information so your application can process requests.

1. Go to the **Security** section.
2. Enter the client ID (Microsoft application ID) and client secret values you recorded when you added your application to your Microsoft email account.

   See Prerequisites for Creating a Connection.
3. Enter the scope URLs in the **Scope** field.

   A scope is a list of authorization permissions for the target application. You must include the `offline_access` scope along with the application-specific scopes.

For example:

```
https://graph.microsoft.com/Calendars.ReadWrite offline_access
```

4. Click **Provide Consent**.

## Test the Connection

Test your connection to ensure that it's configured successfully.

1. In the page title bar, click **Test**. What happens next depends on whether your adapter connection uses a Web Services Description Language (WSDL) file. Only some adapter connections use WSDLs.

| If Your Connection... | Then... |
|---|---|
| Doesn't use a WSDL | The test starts automatically and validates the inputs you provided for the connection. |
| Uses a WSDL | A dialog prompts you to select the type of connection testing to perform:<br>• **Validate and Test**: Performs a full validation of the WSDL, including processing of the imported schemas and WSDLs. Complete validation can take several minutes depending on the number of imported schemas and WSDLs. No requests are sent to the operations exposed in the WSDL.<br>• **Test**: Connects to the WSDL URL and performs a syntax check on the WSDL. No requests are sent to the operations exposed in the WSDL. |

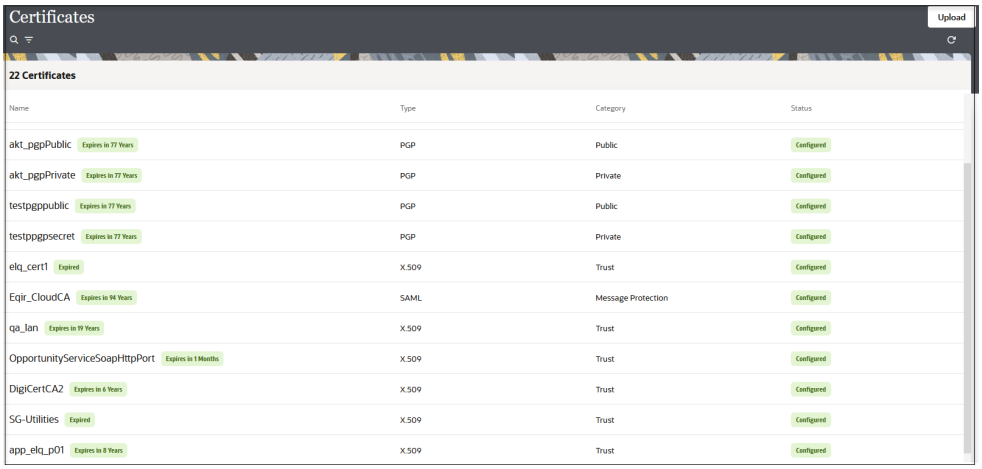
2. Wait for a message about the results of the connection test.
   - If the test was successful, then the connection is configured properly.
   - If the test failed, then edit the configuration details you entered. Check for typos and verify URLs and credentials. Continue to test until the connection is successful.
3. When complete, click **Save**.

# Upload a Certificate to Connect with External Services

Certificates allow Oracle Integration to connect with external services. If the external service/endpoint needs a specific certificate, request the certificate and then import it into Oracle Integration.

If you make an SSL connection in which the root certificate does not exist in Oracle Integration, an exception error is thrown. In that case, you must upload the appropriate certificate. A certificate enables Oracle Integration to connect with external services. If the external endpoint requires a specific certificate, request the certificate and then upload it into Oracle Integration.

1. Sign in to Oracle Integration.
2. In the navigation pane, click **Settings**, then **Certificates**.
   All certificates currently uploaded to the trust store are displayed on the Certificates page.
3. Click **Filter** to filter by name, certificate expiration date, status, type, category, and installation method (user-installed or system-installed). Certificates installed by the system cannot be deleted.




4. Click **Upload** at the top of the page.
   The Upload certificate panel is displayed.
5. Enter an alias name and optional description.
6. In the **Type** field, select the certificate type. Each certificate type enables Oracle Integration to connect with external services.
   - Digital Signature
   - X.509 (SSL transport)
   - SAML (Authentication & Authorization)
   - PGP (Encryption & Decryption)
   - Signing key

### Digital Signature

The digital signature security type is typically used with adapters created with the Rapid Adapter Builder. See Learn About the Rapid Adapter Builder in Oracle Integration in *Using the Rapid Adapter Builder with Oracle Integration 3*.

1. Click **Browse** to select the digital certificate. The certificate must be an X509Certificate. This certificate provides inbound RSA signature validation. See Implement Digital Signature Validation (RSA) in *Using the Rapid Adapter Builder with Oracle Integration 3*.
2. Click **Upload**.

### X.509 (SSL transport)

1. Select a certificate category.
   a. **Trust**: Use this option to upload a trust certificate.
      i. Click **Browse**, then select the trust file (for example, `.cer` or `.crt`) to upload.
   b. **Identity**: Use this option to upload a certificate for two-way SSL communication.
      i. Click **Browse**, then select the keystore file (`.jks`) to upload.

ii. Enter the comma-separated list of passwords corresponding to key aliases.

> **Note:**
>
> When an identity certificate file (`.jks`) contains more than one private key, all the private keys must have the same password. If the private keys are protected with different passwords, the private keys cannot be extracted from the keystore.

iii. Enter the password of the keystore being imported.

c. Click **Upload**.

**SAML (Authentication & Authorization)**

1. Note that **Message Protection** is automatically selected as the only available certificate category and cannot be deselected. Use this option to upload a keystore certificate with SAML token support. Create, read, update, and delete (CRUD) operations are supported with this type of certificate.
2. Click **Browse**, then select the certificate file (`.cer` or `.crt`) to upload.
3. Click **Upload**.

**PGP (Encryption & Decryption)**

1. Select a certificate category. Pretty Good Privacy (PGP) provides cryptographic privacy and authentication for communication. PGP is used for signing, encrypting, and decrypting files. You can select the private key to use for encryption or decryption when configuring the stage file action.
   a. **Private**: Uses a private key of the target location to decrypt the file.
      i. Click **Browse**, then select the PGP file to upload.
      ii. Enter the PGP private key password.
   b. **Public**: Uses a public key of the target location to encrypt the file.
      i. Click **Browse**, then select the PGP file to upload.
      ii. In the **ASCII-Armor Encryption Format** field, select **Yes** or **No**.
         - **Yes** shows the format of the encrypted message in ASCII armor. ASCII armor is a binary-to-textual encoding converter. ASCII armor formats encrypted messaging in ASCII. This enables messages to be sent in a standard messaging format. This selection impacts the visibility of message content.
         - **No** causes the message to be sent in binary format.
      iii. From the **Cipher Algorithm** list, select the algorithm to use. Symmetric-key algorithms for cryptography use the same cryptographic keys for both encryption of plain text and decryption of cipher text. The following supported cipher algorithms are FIPS-compliant:
         - AES128
         - AES192
         - AES256

- TDES

c. Click **Upload**.

### Signing key

A signing key is a secret key used to establish trust between applications. Signing keys are used to sign ID tokens, access tokens, SAML assertions, and more. Using a private signing key, the token is digitally signed and the server verifies the authenticity of the token by using a public signing key. You must upload a signing key to use the OAuth Client Credentials using JWT Client Assertion and OAuth using JWT User Assertion security policies in REST Adapter invoke connections. Only PKCS1- and PKCS8-formatted files are supported.

1. Select **Public** or **Private**.
2. Click **Browse** to upload a key file.
   If you selected **Private**, and the private key is encrypted, a field for entering the private signing key password is displayed after key upload is complete.
3. Enter the private signing key password. If the private signing key is not encrypted, you are not required to enter a password.
4. Click **Upload**.

3

# Add the Microsoft Office 365 Calendar Adapter Connection to an Integration

When you drag the Microsoft Office 365 Calendar Adapter into the invoke area of an integration, the Adapter Endpoint Configuration Wizard appears. This wizard guides you through configuration of Microsoft Office 365 Calendar Adapter endpoint properties.

These topics describe the wizard pages that guide you through configuration of the Microsoft Office 365 Calendar Adapter as an invoke in an integration. The Microsoft Office 365 Calendar Adapter cannot be used as a trigger in an integration.

**Topics:**


- Basic Info Page
- Invoke Operations Page
- Invoke Request Parameters Page
- Summary Page


## Basic Info Page

You can enter a name and description on the Basic Info page of each adapter in your integration.

| Element | Description |
|---|---|
| **What do you want to call your endpoint?** | Provide a meaningful name so that others can understand the responsibilities of this connection. You can include English alphabetic characters, numbers, underscores, and hyphens in the name. You can't include the following characters:<br>• No blank spaces (for example, `My Inbound Connection`)<br>• No special characters (for example, `#;83&` or `righ(t)now4`) except underscores and hyphens<br>• No multibyte characters |
| **What does this endpoint do?** | Enter an optional description of the connection's responsibilities. For example:<br>`This connection receives an inbound request to synchronize account information with the cloud application.` |

## Invoke Operations Page

Select the Microsoft Graph REST API operation to perform.

The Microsoft Office 365 Calendar Adapter supports the selection of Microsoft Graph REST API operations from the **Select Operation** list.

| Operation | Description |
|---|---|
| Get user's primary calendar | Returns the properties of the primary calendar. |
| Create a calendar | Creates a calendar in the default calendar group. |
| Get a calendar view | Returns the occurrences, exceptions, and single instances of events from the user's primary calendar for a specific time range. |
| Sync user's calendar | Synchronizes and adds, updates, or deletes events in the user's primary calendar for a specific time range. |
| Sync a specific calendar | Synchronizes and adds, updates, or deletes events in a specific calendar for a specific time range. |
| Get an event | Returns event information from the user's primary calendar or from a different calendar. |
| Get series master and single instance events | Returns a collection of series master and single instance events from the user's primary calendar or from a different calendar. |
| Create event | Creates an event in the user's primary calendar. |
| Create event in a specific calendar | Creates an event in a specific calendar. |
| Accept event | Accepts the specified event. |
| Tentatively accept event | Tentatively accepts the specified event. |
| Decline event | Declines an invitation to a specified event. |
| Delete a calendar event | Moves an event to the Deleted Items folder. If the event is a meeting, a cancellation notice is sent to all attendees. |
| Get event instances | Returns the all instances of an event for a specific time range. |
| Delete attachments | Delete the specified attachment from an event. |
| Get an attachment collection | Get the attachments from a particular event. |
| Get an attachment | Get an attachment from a particular event. |
| Create a file attachment | Create a file attachment. |

# Invoke Request Parameters Page

You can configure the request query parameters on the invoke Microsoft Office 365 Calendar Adapter Request Parameters page. This page is displayed when you select an operation that includes request parameters (for example, the operation **Sync user's calendar includes query parameters**).

| Element | Description |
|---|---|
| **Enter name to filter** | Enter the initial letters of the query parameter to filter the list. |
| **Available Query Parameters** | Select the query parameters to include. |
| **Selected Query Parameters** | Displays the selected query parameters. |

# Summary Page

You can review the specified adapter configuration values on the Summary page.

| Element | Description |
|---|---|
| **Summary** | Displays a summary of the configuration values you defined on previous pages of the wizard.<br>The information that is displayed can vary by adapter. For some adapters, the selected business objects and operation name are displayed. For adapters for which a generated XSD file is provided, click the XSD link to view a read-only version of the file.<br>To return to a previous page to update any values, click the appropriate tab in the left panel or click **Go back**.<br>To cancel your configuration details, click **Cancel**. |