



# Connect for Calendars

Planon Software Suite

Version: L102

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# About this Document

## Intended Audience

This document is intended for *Planon Software Suite* users.

## Contacting us

If you have any comments or questions regarding this document, please send them to: [support@planonsoftware.com](mailto:support@planonsoftware.com).

## Document Conventions

### **Bold**

Names of menus, options, tabs, fields and buttons are displayed in bold type.



### *Italic text*

Application names are displayed in italics.

### CAPITALS

Names of keys are displayed in upper case.

## Special symbols

	Text preceded by this symbol is intended to alert users about consequences if they carry out a particular action in Planon.
	Text preceded by this symbol refers users to where they can find more information.

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# Connect for Calendars (C4C)

**Planon Connect for Calendars (C4C)** offers a solution to integrate the product **Planon Reservation Management (RESM)** with a reservation management system (e.g. Microsoft Exchange, Google GSuite, Apple iCloud, Skidata Parking Management, etc.) and/or non-reservation management systems that are somehow linked to reservations (e.g. a financial system).

The integration allows Planon ProCenter to synchronize a reservation of a reservation unit with a corresponding calendar item/event in a corresponding room/equipment resource in the reservation management system and vice versa or to provide data to a non-reservation management system for further processing of a reservation.

Also it will synchronize non-bookable periods of a reservation unit as calendar items/event in a corresponding room/equipment resource.

The solution will provide two main types of synchronization behavior with respect to a reservation management system: Planon ProCenter is *in the lead* or Planon ProCenter *follows*, which will be further explained in the section about [synchronization behavior](#).

## Concepts

The following topics describe the concepts that are key to understanding the functionality.

### Connect for Calendars app

A C4C app is an app created for **Planon-as-a-Platform (PaaS)**, which uses the *Calendar Processing API*. A C4C app is setup according to a best practice approach that is based on the way *C4C app for Microsoft Graph API* is built. The **C4C-App development guide** provides more detail on this subject.

A C4C app provides the connection between Planon ProCenter and the third-party reservation management system.

Typically, a C4C app will have some sort of subscription on events occurring in a resource in the third-party reservation management system and Planon ProCenter will be notified when these events happen.

### Synchronization behavior

A C4C app connection can be configured with a synchronization behavior *In-the-lead* or *follows*. The selected type of synchronization behavior must be supported by the C4C app that is referenced by the C4C app connection.

The *C4C app for Microsoft Graph API* supports both types of synchronization behavior.

In general, the synchronization behavior *In-the-lead* will allow Planon ProCenter to accept/decline an incoming invite/update for an event in a resource in the third-party reservation management system and synchronize the event as a reservation in Planon ProCenter .

The synchronization behavior *follows*, on the other hand, will allow Planon ProCenter to take over the details of an event as a reservation and decline it if applicable.

## Difference in synchronization behavior



Planon will determine whether a Reservation can be created!

The synchronization behavior is implemented by the C4C-App and thus depends on the C4C-App that is installed and whether that C4C-App supports one or both types of synchronization behavior.

The **C4C-App for Microsoft Graph API** supports both synchronization behaviors.

### In-the-lead

For the synchronization behavior **In-the-lead** the C4C-App expects that the **Calendar Processing** property of the **Room Resource in Exchange** is set to **AutoUpdate** and that it **accepts new requests tentatively**. This means that the requests will remain pending in the Inbox of a Room Resource till they are handled.

The C4C-App also has a **subscription on incoming requests**, hence the C4C-App will be notified when someone creates/updates/cancels an Event that invited the Room Resource.

Upon a notification the C4C-App will start a synchronization process to synchronize the Event in Exchange with a Reservation in Planon. When a Reservation could be synchronized, then the C4C-App will instruct the Room Resource to accept the Event. In case a Reservation could not be synchronized, then the C4C-App will instruct the Room Resource to decline.

### Follows

For the synchronization behavior **Follows** the C4C-App expects that the **Calendar Processing** property of the **Room Resource in Exchange** is set to **AutoAccept**. This means that the requests are handled immediately by the Room Resource, thus changing the Calendar of a Room Resource.

The C4C-App also has a **subscription on changes to the Calendar** of a Room Resource, hence the C4C-App will be notified when someone creates/updates/cancels an Event that invited the Room Resource.

Upon a notification the C4C-App will start a synchronization process to synchronize the Event in Exchange with a Reservation in Planon. When a Reservation could be synchronized, then the C4C-App does not have to do anything. In case a Reservation

could not be synchronized, then the C4C-App will instruct the Room Resource to decline (this might confuse an end user: first one gets an accept from the Room Resource and later a decline will follow because of a check with Planon).



For an animated video explaining the difference between In-the-lead and Follows, please see our [video channel](#)

## Configure C4C linking objects

### External Account

An external account links an account in Planon ProCenter to an account in the third-party reservation management system. The account of the third-party reservation management system will be linked through an **account identifier**, which depends on the related C4C app (e.g. the C4C app for a Microsoft Graph API requires an account identifier to be the email address of a user in Exchange).

### External Reservation Unit

An external reservation unit links a reservation unit in Planon ProCenter to a resource in the third-party reservation management system. The resource of the third-party reservation management system will be linked through a **resource identifier**, which depends on the related C4C app (e.g. the C4C app for Microsoft Graph API requires the resource identifier to be the email address of the resource in Exchange).



For reservation units, make sure that its property has a time zone linked. The **Reservation time zone** column (element's panel) displays the time zone of the reservation unit's property - this time zone is leading. Invites are sent in the reservation unit's time zone.

### External Reservation / Non-Bookable Period

An external reservation links a reservation in Planon ProCenter to an event in the Calendar of the corresponding resource in the third-party reservation management system, whereas an external non-bookable period links a (virtual) occurrence of a non-bookable period to an event in the calendar of the corresponding resource.

### Configuration

There are two configuration options available:

- [C4C Configuration using C4C app for Microsoft Graph API](#), used for Office365.

- [C4C Configuration using C4C app for Microsoft EWS API](#), used for on-premise Exchange environments.

## C4C Configuration using C4C app for Microsoft Graph API

The following overview provides a sequence of steps in the configuration of **Connect for Calendars** along with the C4C app for Microsoft Graph API (used for Office365).

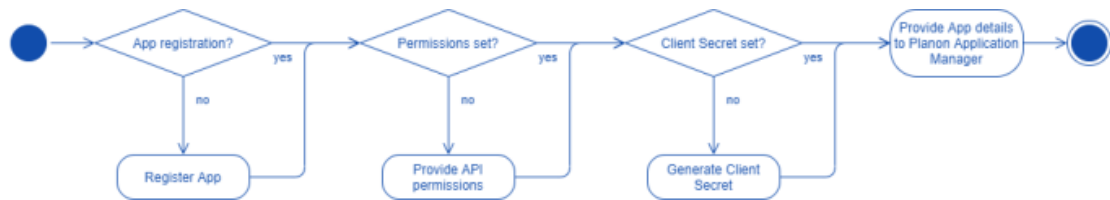


Before configuring **Connect for Calendars**, the first step is to prepare **Azure AD** and **Exchange** in Office365 such that the configuration in Planon ProCenter runs smoothly.

### Configuring Azure AD

The C4C-App for Microsoft Graph API requires that you [register a new App through Azure AD](#). This new App should use OAuth2.0's [Client Credentials grant-flow](#) and should provide application level read-write permissions to the **APIs**: Calendar and Mail.

The following flow diagram displays the steps involved in configuring Azure AD.



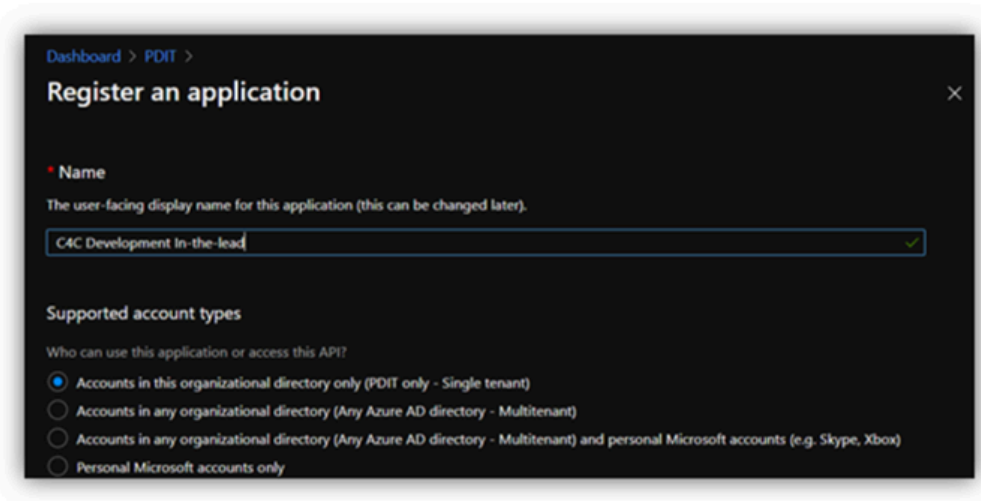
### Registration Azure AD

Take the following steps to register Azure AD.

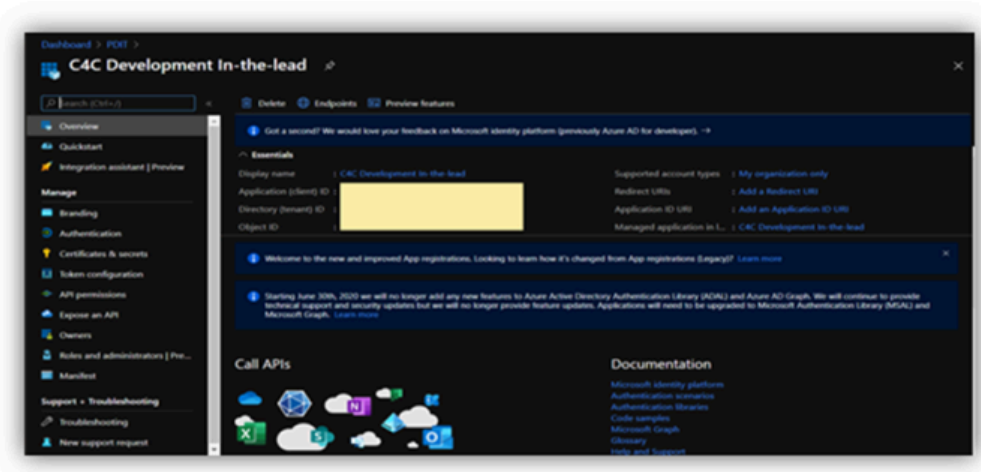
#### Procedure

1. Open a Web browser and navigate to your Azure Active Directory.
2. Select the menu option: **App Registrations**.
3. Click the button **New registration**.





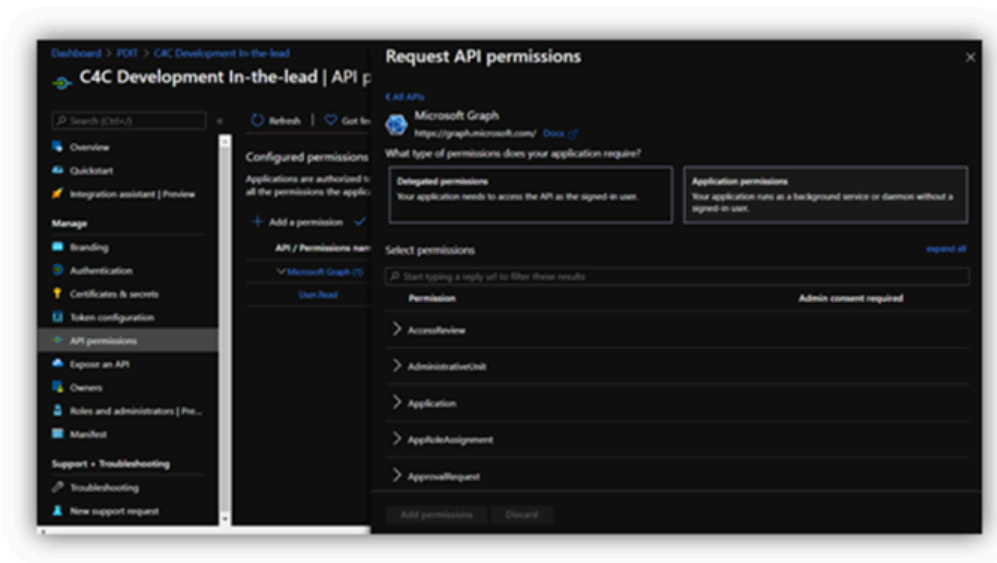
4. Provide a name for the application and save (e.g. Planon C4C).
5. Once created, note down the Tenant ID and Client ID. You will need them later when configuring the C4C app in Planon ProCenter .



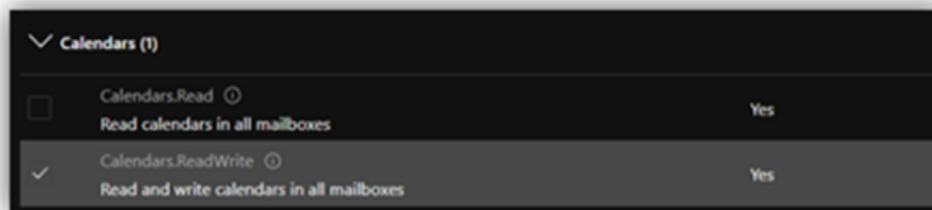
## Azure permissions

### Procedure

1. Select the button **View API Permissions** or select the menu option **API permissions**.
2. Click the button **Add a permission**.  
A Request API permissions window appears.
3. Select **Graph API**.
4. Select **Application permissions**.

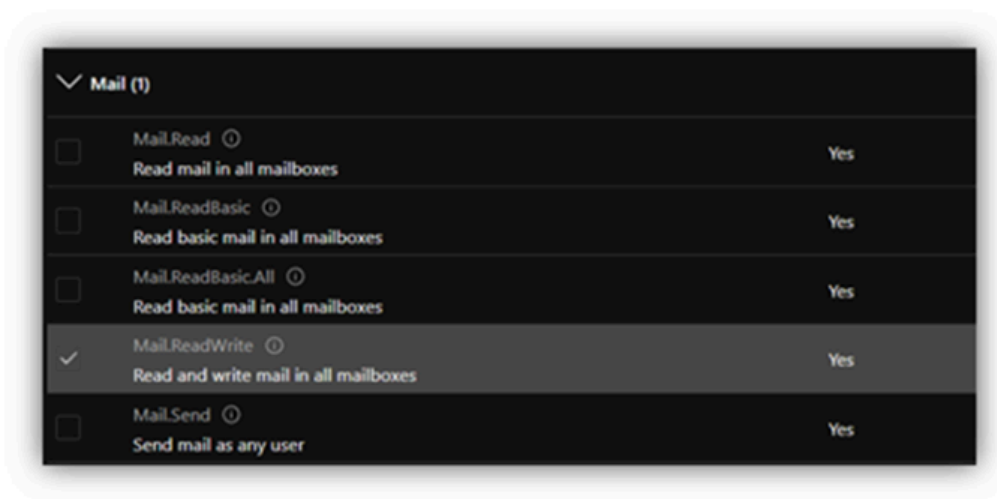


- Expand the permissions for **Calendars** and select the check box **Read & write calendars in all mailboxes**.



- Expand the permissions for **Mail** and select the check box **Read & write mail in all mailboxes**.

**i** Permissions only to be set for sync-behavior **In-the-lead**.



- Click the button **V Grant admin consent for ...**

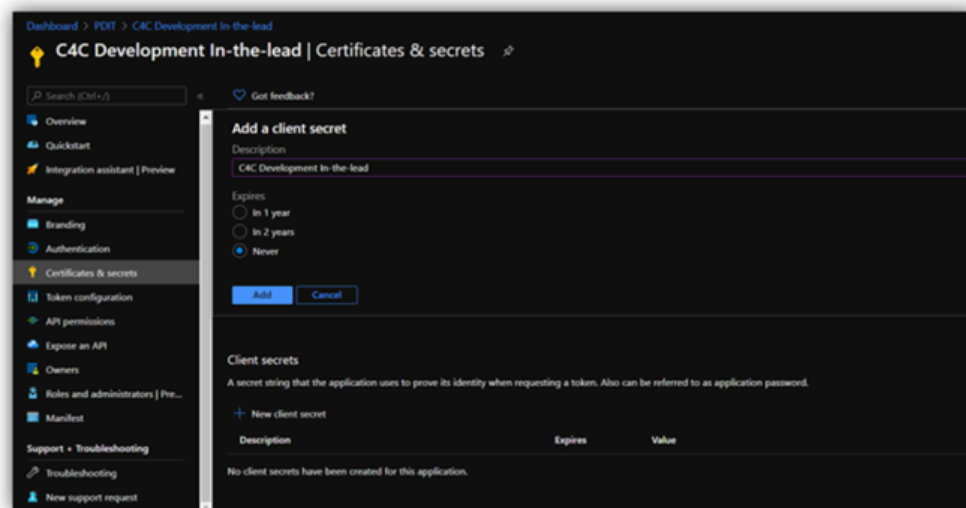
## Adding client credentials

### Procedure

- Select the menu option **Certificates & secrets**.
- Click **New Client Secret**.

The **Add a client secret** dialog box appears.

- Add a **Description** and an **Expiration period** for the client secret.



- Click **Add**.

**i** Copy the generated **Client secret** to a safe location. You will not be able to retrieve it once you leave the page or perform another operation.

The **Client secret** is added.

## Configure Exchange

This section describes the steps for configuring Exchange.



## Set an application access policy

It is a best practice to restrict the access of an app to resources in Exchange. This can be achieved by defining an **Application Access Policy** for an app created through **Azure AD**.



It is required that you create a [mail-enabled security group](#) with all the applicable Room resources as a member. This group's ID will be used as a value for the parameter **PolicyScopeGroupId** to set the Application access policy.

## Procedure

1. Follow the instructions to install the Exchange Online PowerShell V2 module.
2. Connect to Exchange Online (without) using MFA.

For more information on restricting or denying access to a specific set of mailboxes by an application that uses APIs or EWS, see [how-to configure an Application Access Policy](#).

3. Run the command *New-ApplicationAccessPolicy*.
  - Provide the app's **Client ID**
  - Provide the **PolicyScopeGroupId** (you may need to group all room resources)
  - Provide a **Description**

```
#Restrict Access

New-ApplicationAccessPolicy -AppId "<your App's ID>"

-Description "C4C-App resource access policy"

-AccessRight RestrictAccess

-PolicyScopeGroupId "<Mail-Group with only the Room/Equipment resources>"
```

## Align resource's regional configuration with time zone information in Planon ProCenter

A resource in **Exchange** has no regional configuration set by default. It is important that the regional configuration of the resource is aligned with the time zone of the reservation unit's property.

## Procedure

1. Follow the instructions to install the Exchange Online PowerShell V2 module.
2. Connect to **Exchange** online (without) using MFA.
3. Execute the following **PowerShell** command to achieve the goal.

```
#Retrieve a list of available time zones

$TimeZone = Get-ChildItem "HKLM:\Software\Microsoft\Windows NT\CurrentVersion\Time zones" | foreach {Get-ItemProperty $_.PSPath};

$TimeZone | sort Display | Format-Table -Auto PSChildname,Display

#Regional Configuration

Set-MailboxRegionalConfiguration -Identity <Resource's email address>
```

-TimeZone "<Time zone aligned with the one of the Property in Planon>"

## Room resource calendar processing configuration

The C4C app for **Microsoft Graph API** supports two types of synchronization behavior: **In-the-Lead** and **Follows**. Depending on the configuration of the C4C app connection, you need to configure the *Resource's Calendar Processing* configuration differently.



Calendar Processing properties for which the default value corresponds with a correct configuration are not mentioned here.

### Procedure

1. Follow the instructions to install the Exchange Online PowerShell V2 module.
2. Connect to **Exchange** online (without) using MFA.
3. Execute the following **PowerShell** command to achieve the goal.

```
#Configure Calendar Processing

Set-CalendarProcessing -Identity <Resource's email address>

-AutomateProcessing <AutoUpdate (for In-the-Lead) / AutoAccept (for Follows)>

-DeleteSubject $false

-AddOrganizerToSubject $false

-AllowConflicts $true

-EnforceSchedulingHorizon $false

-MaximumDurationInMinutes 0

-RemoveOldMeetingMessages $false

-RemovePrivateProperty $false

-BookingWindowInDays 900
```

## Setting Organization Configuration (In-the-Lead only)

In a default environment, **Exchange** will send explicit updated meeting requests to a resource when changing the location property of a meeting or any other property within fifteen minutes from the start time of the meeting ("Location,AllProperties:15").

Planon ProCenter requires to receive explicit updated meeting requests for it to be able to update a reservation.

The following tutorial provides a **PowerShell** command to configure this in **Exchange**.

### Procedure

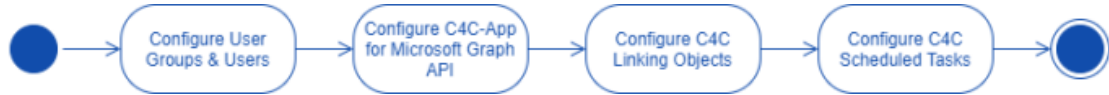
1. Follow the instructions to install the Exchange Online PowerShell V2 module.
2. Connect to **Exchange** online (without) using MFA.
3. Execute the following **PowerShell** command to achieve the goal.

#Organization Config

Set-OrganizationConfig -VisibleMeetingUpdateProperties "Location,Subject,Sensitivity"

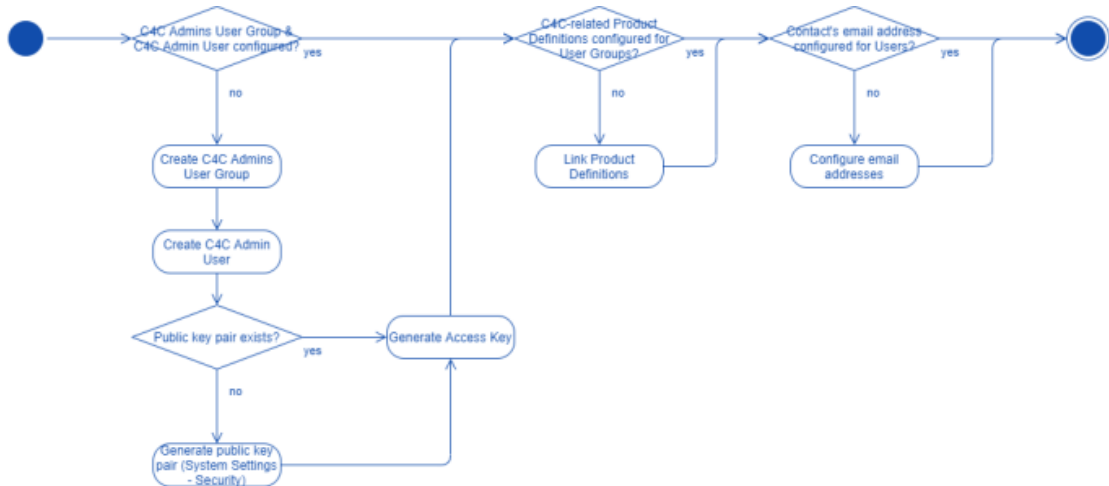
## Configure Planon ProCenter

The following flow chart displays all the steps that have to be taken in the configuration of Planon ProCenter for **Connect for Calendars (C4C)**.



## Configure User Groups and Users

The following flow chart depicts a list of actions to be performed to correctly configure User groups and Users for C4C.



## Create C4C Admin Group & C4C Admin User

1. Create a new **User group**: *C4C Admins* and create a new **User** linked to that **User group**: *C4C Admin*.
2. Make sure that the **User Group** has similar rights as the **User group System Administrators**.
3. Generate an access key for the C4C admin account.

## Link product definitions

C4C requires that **User groups** (or account groups) involved in reservation management are linked to certain product definitions.

The following table provides an overview of the product definitions and to which type of **User group** they need to be linked.

Product Definition	User Group	Reason
EnterpriseServiceAPI	C4C Admins	This product definition is required

Product Definition	User Group	Reason
EventConnector	All <i>Reservation Management</i> related <b>User Groups</b> including the C4C Admins	by the C4C app such that it can use the <b>PaaP</b> API.  This product definition is required so that the C4C app and C4C can use the <b>Event Connector</b> when an <b>Event</b> or a <b>Reservation</b> has to be synchronized.
JSONServices	C4C Admins	This product definition is required by the C4C app so that it can use the <b>PaaP</b> API.
Scheduler	C4C Admins	This product definition is required by the C4C app for <b>Microsoft Graph API</b> as it provides two scheduled tasks for subscription and recovery.
PPWeb	All <i>Reservation Management</i> related <b>User Groups</b> including the C4C Admins	This product definition allows a <b>User</b> to use the <b>Task Specific Interfaces (TSIs)</b> in the Web client.
PSS2	All <i>Reservation Management</i> related <b>User Groups</b> including the C4C Admins	This product definition allows a <b>User</b> to use the <b>Reservation Wizard</b> .

## Provide contact's email address for each user

Provide a Contact's Email Address for each User (including the C4C Admin). This email address will be used by C4C to send notifications to a User about the status of synchronizing an Event and a Reservation.

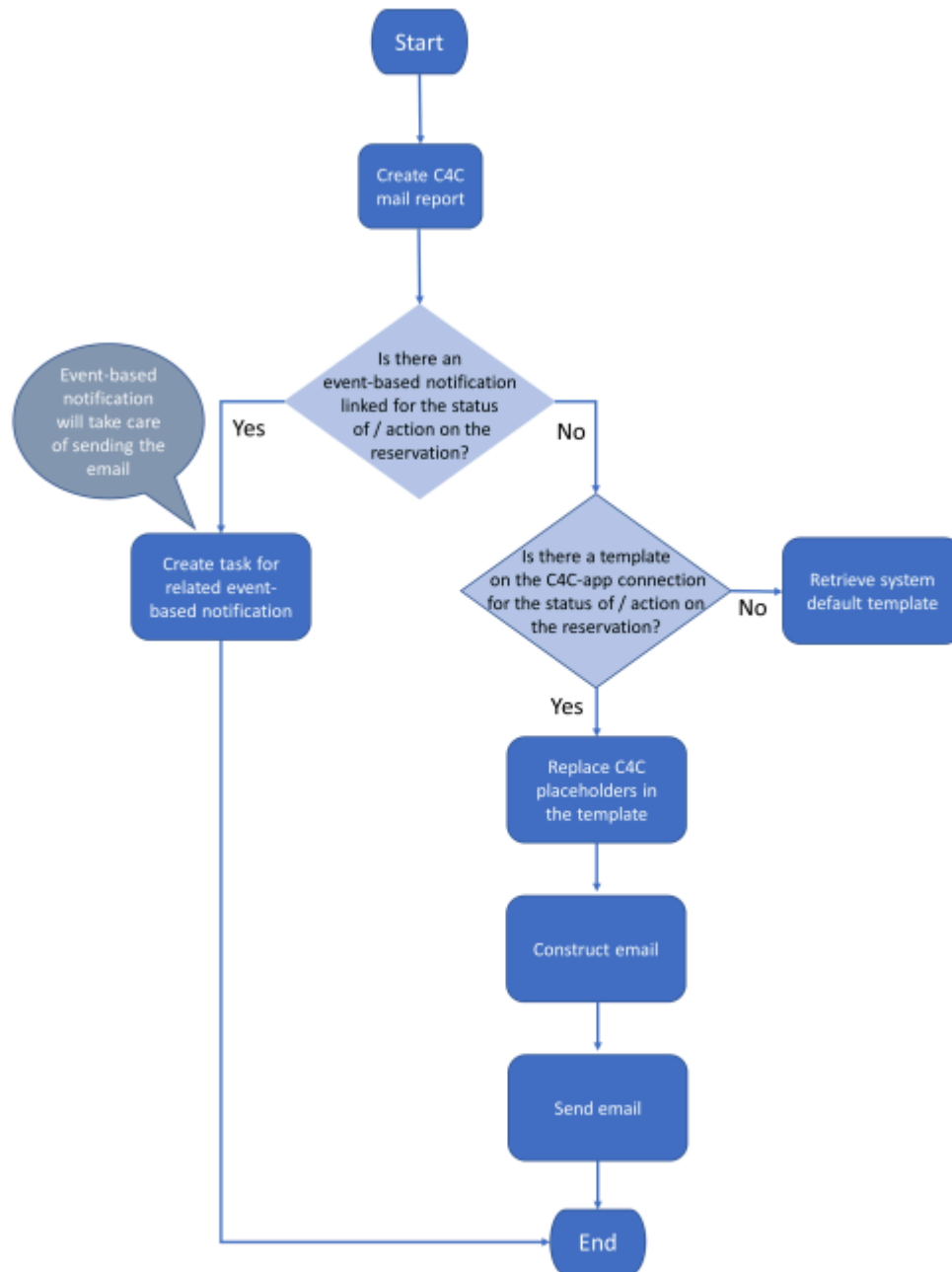
If errors occur during synchronization, a notification will be sent to the C4C Admin.

## Configuring notifications

There are three options for Connect for Calendars reporting:

- **Do not configure Connect for Calendars reporting:** Connect for Calendars will use default templates to send emails to a user about the status of the Reservation and the outcome of an action on the reservation;
- **Configure simple templates on a C4C app Connection:** The C4C app Connection has fields that allow one to provide simple templates. When provided, then this template will be used instead of the system's default template;
- **Configure templates, use them in a Report definition on Connect for Calendars Mail Report, create event-based notifications and link them to the appropriate external reservation unit;**



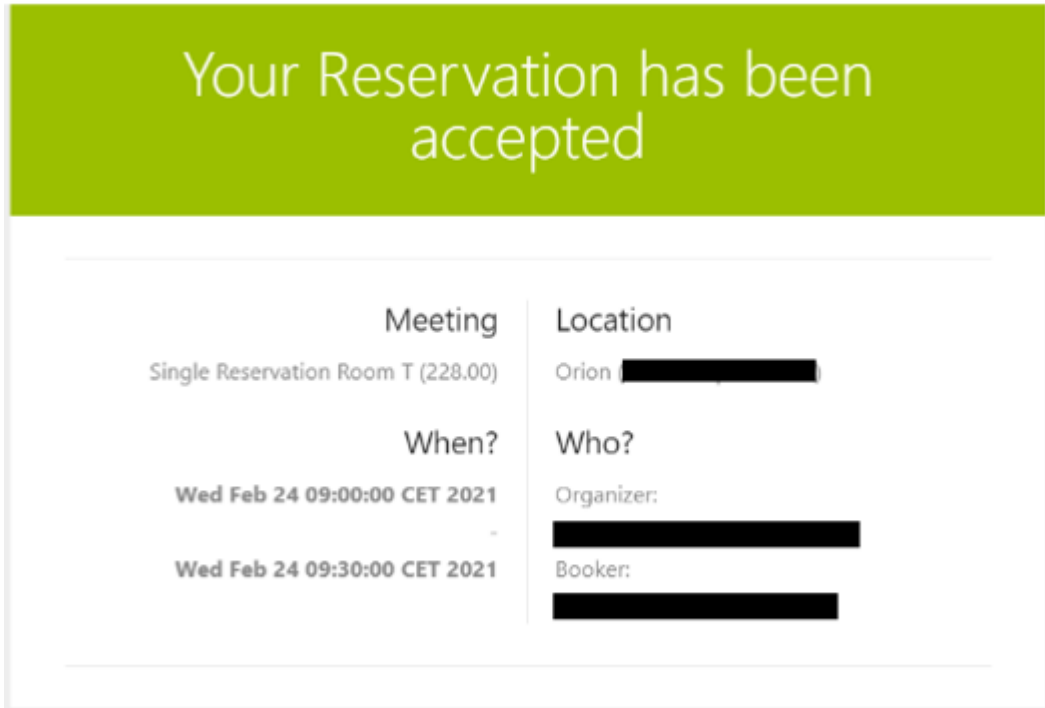


*Report selection process at runtime.*

### Default email templates

The product comes with default email templates that cannot be modified.

The default email templates have the look-and-feel as displayed below.



*Format of default email sent by Connect for Calendars.*

### Simple email templates

The C4C app Connection has fields that allow you to create a simple email template. The placeholders in this template should match the *PnName (System name)* of a field in the business object Connect for Calendars Mail Report. The following code-snippet displays a simple template.

**i** Note that the placeholders are surrounded by '[' and ']'. In addition, you can reference every field on a Reservation and Reservation Unit by using '[Reservation.<PNNAME OF FIELD>]' and '[ReservationUnit.<PNNAME OF FIELD>]' respectively.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" lang="en-GB">

<head>

  <meta charset="utf-8"/>

  <meta http-equiv="x-ua-compatible" content="ie=edge"/>

  <meta name="viewport" content="width=device-width, initial-scale=1"/>

  <meta name="x-apple-disable-message-reformatting"/>

  <title>[MailReservationAcceptedTitle]</title>

</style>
```

```

</head>

<body style="margin: 0; padding: 0;">

  <h1 class="webfont h1" style="font-size: 36px; font-weight: 300; line-height: 100%; margin: 0 0 16px;">

    [MailReservationAcceptedHeader]

  </h1>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailMeeting]

  </h3>

  <p style="color: #888888; margin: 0;">[CalendarItemSubject] ([Reservation.OrderNumber])</p>

  <br/>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailLocation]

  </h3>

  <p style="color: #888888; margin: 0;">[ReservationUnit.Name]
([CalendarItemResourceIdentifier])<br></p>

  <br/>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailWhen]

  </h3>

  <p style="color: #888888; margin: 0;">

    <b>[CalendarItemStartDateTime]</b><br> <span>-</span></br>
<b>[CalendarItemEndDateTime]</b><br>

  </p>

  <br/>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailWho]

  </h3>

  <p style="color: #888888; margin: 0;">

    [MailOrganizer]:</br>

    <b>[CalendarItemOrganizerAccountIdentifier]</b></br>

    [MailBooker]:</br>

```

```
<b>[CalendarItemBookerAccountIdentifier]</b>

</p>

</body>

</html>
```

### *Simple Notification template*

## **Email template, report definition and event-based notification definition**

Using your own custom mail templates requires further configuration. You can create **Report definitions** for each type of email that is sent by Connect for Calendars in the regular way that reports are being defined. This requires you to upload the mail templates to Planon's WebDAV location for templates.

In addition, you must define a *Recipients report* on the business object **Connect for Calendars Mail report**. This report is used by the **Event-based notification** to determine the addressees to which an email should be sent.

Next you must define **Event-based notification definitions** for each type of email for which a report definition is constructed.

An **External reservation unit** has several fields that reference an **Event-based notification definition** related to the type of email that is to be sent.

## **P r o c e d u r e**

### *Configuring Connect for Calendars Mail Reports*

1. Open a browser and navigate to the *Planon Web client*
2. Navigate to the TSI **C4C Mail reports**
3. On the level **C4C Mail Reports** click the **Report** button and add a new report for each of the following email types:
  - **ACCEPTED**: The Reservation's status is REQUESTED/MADE/COMPLETED
  - **CANCELLED**: The Reservation's status is CANCELLED
  - **CHANGED**: The Reservation's details have changed
  - **DECLINED**: The Reservation could not be made
  - **DELETED**: The Reservation is deleted
  - **EXCEPTION**: There was an exception in the synchronization process of a Reservation;
  - **TENTATIVELY ACCEPTED**: The Reservation's status is IN OPTION

### *Configuring a Recipients report*

4. On the **Connect for Calendars mail reports** level click the **Report** button and add a new report for a generic recipient report.

This recipient report requires at least two fields **ID** and **To**. Optional are **CC** and **BCC**.

- The **ID** field is the *Syscode* field of the C4C Mail Report;

- The **To** field is an *expression* that consists of the **To** field of the Connect for Calendars Mail Report.

#### *Configuring an Event-based Notification*

5. Navigate to the TSI **Alerts** and select the step **Event-based notifications**.
6. Click **Add** to create a new **Event-based notification**.
7. Configure the following fields of this **Event-based notification**:
  - a. **Code**: Provide a recognizable code for the event-based notification.
  - b. **Description**: Provide a description for the event-based notification.
  - c. **Alert Condition**: Create a new condition, select the BO **Connect for Calendars mail report** and add the condition that the **To** field should contain a value.
  - d. **Mail template**: Select a **Report definition** created on the Connect for Calendars mail report.
  - e. **Recipient Report**: Select the **Recipient report definition** created on the C4C mail report.
  - f. **Schedule**: Define a schedule for this **Event-based notification** (for example, it should run every 5 minutes).
8. Set the status of the event-based notification to **Active**.

#### *Configuring the notifications for an External reservation unit*

9. Navigate to the TSI **Connect for Calendars – processing**.
10. Drill-down to the level **Accounts & reservation units** and select the step **External reservation units**.
11. Select the **External reservation unit** that needs to be configured.
12. Set the reference to the **Event-based notification definition** on the appropriate fields.

#### **Including a link to the reservation wizard**

In confirmations sent to the organizer you can include a link to the reservation wizard overview page.

To make this possible, you need to enable a setting and adapt your mail merge report for confirmations.

#### **P r o c e d u r e**

1. Go to **Self-Service modules > Reservations**.
2. Select a Reservation wizard (if not already present, create one).
3. Set the field **Allow access from Connect for Outlook** to **Yes**

For more information, see [Reservation wizard fields](#).

4. Save the configuration of the Reservation wizard.
5. In your mail merge that you send out as confirmation include an expression such as the following:

```
<a href="<https://your reservation wizard URL/case/BP/B001>?
action=InitialMM4OAction&PK=" + formatNumeric('Connect for Calendar – mail
reports'.Reservation.'System code', "#####")>Click here</a>
```



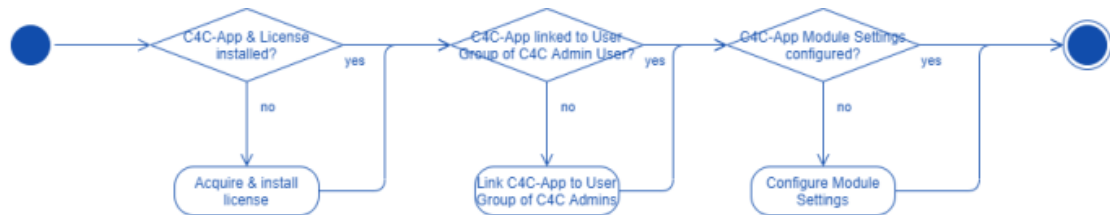
Replace the URL in bold in between and including the angle brackets with your reservation wizard URL.

## Install & configure C4C app for Microsoft Graph API

Prior to installing the C4C-App you should get its license from the Planon License Desk.

Once the license for the C4C-App for Microsoft Graph API has been acquired you can add it through the TSI - AppCenter.

Adding the license through the AppCenter will cause Planon to download and install the C4C-App from the Planon Marketplace.



### Procedure

1. Acquire the license for the C4C app for **Microsoft Graph API**.
2. Navigate to the TSI **AppCenter**.
3. Click **Add License** and provide the license acquired.



This will cause Planon ProCenter to download & install the latest version of the C4C app for **Microsoft Graph API** compatible for the version of the Planon ProCenter environment.

4. Click **Configure**.

The C4C-App will be in the status **Configuration**.

5. Click **Link App User Group** and select the **C4C Admin** user's user group.
6. Drill-down to the Level **Apps > Modules > Details** and select the step **Module Settings**.
7. Select the module **c4cappgraph**.
8. Provide the following settings:
  - **Access Key:** The generated access key for the **C4C Admin User**.
  - **Notification URL:** The URL that Exchange will use to send notifications to the C4C app is:

`https://<your Planon environment>/sdk/platform/jaxrs/planonsoftware/com/c4cappgraph/c4cappgraphrest/rest/notification`

- **Subscription Duration:** The C4C app for **Microsoft Graph API** uses the subscription model of **Office365** to get notified about events it is interested in for the resources (rooms or equipment) it monitors.

**Office365** offers a subscription to last for 4230 minutes, which corresponds to nearly three days. The C4C app allows a subscription duration between 5 minutes and 4230 minutes.

If no subscription duration is provided through the app module settings, the default subscription duration is 6 hours. It is recommended to use 120 minutes as the subscription duration.

- **(Follows only!) Event Recovery days past:** This value is used in the recovery task and determines the start date of the period for which **Events** are retrieved from a resource's calendar (now - days past = start date).
- **(Follows only!) Event Recovery days future:** This value is used in the recovery task and determines the end date of the period for which **Events** are retrieved from a resource's calendar (now + days future = end date).


## Configure C4C linking objects

### External Account

An external account links an account in Planon ProCenter to an account in the third-party reservation management system. The account of the third-party reservation management system will be linked through an **account identifier**, which depends on the related C4C app (e.g. the C4C app for a Microsoft Graph API requires an account identifier to be the email address of a user in Exchange).

### External Reservation Unit

An external reservation unit links a reservation unit in Planon ProCenter to a resource in the third-party reservation management system. The resource of the third-party reservation management system will be linked through a **resource identifier**, which depends on the related C4C app (e.g. the C4C app for Microsoft Graph API requires the resource identifier to be the email address of the resource in Exchange).

 For reservation units, make sure that its property has a time zone linked. The **Reservation time zone** column (element's panel) displays the time zone of the reservation unit's property - this time zone is leading. Invites are sent in the reservation unit's time zone.

### External Reservation / Non-Bookable Period

An external reservation links a reservation in Planon ProCenter to an event in the Calendar of the corresponding resource in the third-party reservation management system, whereas an external non-bookable period links a (virtual) occurrence of a non-bookable period to an event in the calendar of the corresponding resource.

#### Configure C4C app connection

##### Procedure

1. Navigate to the TSI **C4C-App Connection**.

2. Click **Add** to create a new C4C-App Connection.
3. Provide a **Name**.
4. Provide a **Synchronization behavior** (*In-the-Lead* or *Follows*) for the C4C-App Connection.
5. Select the **Classname** belonging to the installed C4C-App's implementation of the Calendar item processor.
6. Provide the settings for the Calendar item processor. For the C4C-App for Microsoft Graph API these are:

- **Tenant ID:** The Tenant ID for which the app was registered in Azure AD.
- **Client ID:** The Client ID of the app registered in Azure AD.
- **Client Secret:** The Client Secret of the app registered in Azure AD.
- **Prevent Inbound Decline:** This setting allows you to suppress or prevent Planon from proactively canceling a reservation when not intended or desired.

When set to **Yes**, the C4C-App will not decline the Event in Exchange if the corresponding reservation could not be made in Planon.

When set to **No** (default), the C4C-App will decline the Event in Exchange if the corresponding reservation could not be made in Planon.

This functionality applies to both **In -the-lead** and **Follows** connections.

- **Send Outbound Invitation (Y/N):** Indication whether C4C should add the organizer as an attendee to the event that is created in a Room resource for an outbound synchronization. Adding an attendee to the event will cause Exchange to send an invite to that attendee.
- **Add Virtual Meeting (Y/N):** Indication whether C4C should ask Exchange to create a Virtual Meeting when a Reservation gets synchronized to Exchange.  
On **Orders**, a field of type URL will be used to save the virtual meeting.
- **Use proxy (Y/N):** Indication whether the C4C-App should set up a connection to O365 through a proxy. If enabled, then it will use the values provided in *proxy host name* and *proxy host port*.
- **Proxy host name:** The host name of the proxy to be used.
- **Proxy host port:** The port number of the proxy to be used.
- **Delete original subject:** Deletes the original subject when enabled (if **Append Organizer to Subject** is not enabled, then the subject will be replaced by a translation of *No subject*)
- **Append Organizer to Subject:** Adds either the name (inbound sync) or email address (outbound sync) to the subject.

7. (Optional) Provide custom generic templates for the notifications sent by C4C upon a synchronization action (e.g. Accept, Decline, Cancel, etc.).
8. Save the C4C-App Connection.
9. Perform a status transition to the status ACTIVATED (for the C4C-App for Microsoft Graph API this will trigger a subscription process for each External reservation unit that is active and belongs to the activated C4C-App connection).

### **Configure external accounts**



Take the following steps to configure the external accounts for a C4C app connection.

### Procedure

1. Navigate to the TSI **Enterprise Talk** (PEET).
2. Import PEET definition **C4C-ONB-EA**.
3. Select the imported PEET definition and drill-down to the level **Documents** and select the document **C4C-ONB-IMP-EA1**.
4. Navigate to the step **Business Objects** and select the business object related to **External Accounts**.
5. Select the field definition **C4CAppConnectionRef**, which is the reference to a C4C app connection.
6. Configure the default value for this to be the C4C app Connection that was created in the previous step.
7. Go back to the level **Definitions** and run the PEET definition **C4C-ONB-EA**.
8. After the run is completed you can go to the TSI **C4C Processing**, to the step **External Accounts** to verify the result.

### Configure external accounts - without Enterprise Talk definition

If you do not want to run the PEET definition, then you can also add an **External Account** by taking the following steps.

### Procedure

1. Navigate to the TSI, **C4C Processing**.
2. Go to the step **External Accounts**.
3. Click **Add** to create a new External account.
4. Provide the following details:
  - **Account Identifier:** the identifier for the user, which is used by the installed C4C app (e.g. the C4C app for Microsoft Graph API requires this to be the email address of the user)
  - **Account:** The account in Planon ProCenter to which the user should be linked
  - **C4C app connection:** The C4C app connection for which this **External Account** is active
  - **Is primary?:** Whether the **External Account** should be used as the primary **External Account** in an outbound synchronization
5. Save the **External Account**.

### Configure external reservation unit

Take the following steps to configure an external reservation unit.

### Procedure

1. Navigate to the TSI, **C4C processing**.
2. Go to the step **External Reservation Units**.
3. Click **Add** to create a new external reservation unit.
4. Provide the following details:

- **Resource Identifier:** The identifier for the resource, which is used by the installed C4C app (e.g. the C4C app for Microsoft Graph API requires this to be the email address of the resource).
- **Reservation Unit:** A reservation unit in Planon ProCenter to which the resource should be linked.

The reservation unit must reference a **Standard Order** or a **Standard Order** has been configured in **Order Settings**.

**i** For reservation units, make sure that it's property has a time zone linked. The **Reservation time zone** column (element's panel) displays the time zone of the reservation unit's property - this time zone is leading. Invites are sent in the reservation unit's time zone.

- **Is production mailbox?:** Indicator whether the external reservation unit is **in use** given the environment (e.g. in non-production environments this indicator should be set to **No** when you want to be able to synchronize the resource).
- **C4C app connection:** The C4C app connection for which this external reservation unit is active.
- Provide a user status for a reservation's status corresponding with an event being **CANCELED**.
- **(Optional)** Provide a user status for a reservation's state corresponding with an event being **ACCEPTED**.
- **(Optional)** Provide a user status for a reservation's state corresponding with an event being **TENTATIVELY ACCEPTED**.
- **(Optional)** Provide links to **Event-Based Notifications** for the notifications sent by **C4C** upon a synchronization action (e.g. Accept, Decline, Cancel, etc.).

5. Save the **External reservation unit**.

6. Change status to **ACTIVATED**.

For the C4C-App for Microsoft Graph API this will trigger a subscription process for the involved resource.

After a subscription attempt, the field **App - custom field** will show the outcome of the subscription).

### Configure C4C scheduled tasks

The following diagram shows a series of scheduled tasks related to C4C that have to be configured.

There are *system* scheduled tasks that come with the product C4C and there are *user* scheduled tasks that come with the C4C app for Microsoft Graph API.



### Configure system scheduled tasks for C4C

The product C4C has three **System Scheduled Tasks** that can be configured in a similar way. Follow the steps below to configure the task.

## Procedure

1. Navigate to the TSI **Scheduled Tasks** and step **Scheduled Tasks**.
2. Select one of the following **System Scheduled Tasks**.
  - Remove obsolete **External Reservations & External Non-Bookable Periods** (including C4C Processing Items).
  - Archive **External Reservations** (including C4C Processing Items) that are successfully synchronized and for which the start date/time of the reservation is 30 days ago.
  - Remove **C4C Mail Reports** that are older than 7 days.
3. Select and configure the frequency of the task.
  - **Remove obsolete External Reservations**: each day
  - **Archive External Reservations**: each week
  - **Remove C4C Mail Reports**: each week
4. Save the task.
5. Activate the task.

### Configure user scheduled tasks for C4C

Prior to the configuration, you must check the configuration of the existing system scheduled task *Task User Extension*, which has to be configured correctly for the task user extensions.



This task needs to run every 5 minutes.

The C4C app for Microsoft Graph API provides two **Task User Extensions** that can be configured in a similar way. Follow the steps below to configure the tasks.

## Procedure

1. Navigate to the TSI **Scheduled Tasks** and step **Task User Extensions**.
2. Click **Add** to create a new task.
3. Provide a **Code** for the task (e.g. C4C-SUB for the **Subscription Task**).
4. Select a **Classname**:
  - **C4C Subscription**: This **Task User Extension** will periodically create and patch subscriptions for resources that are linked to active **External Reservation Units**.
  - **C4C Recovery**: This **Task User Extension** will periodically recover **Events** and **Reservations**. This behavior of this recovery depends on the synchronization behavior of the C4C app connection.



There will only be five recovery attempts for an external reservation. After five attempts, inbound events will be declined. Outbound events remain as is and can be followed up. After resolving the issue, you can click **Reset recovery attempts** on the external reservation after which recovery will be re-attempted.

5. Select the **C4C Admin User** for the field **User**.
6. Select the and configure the frequency of the task.

- **C4C Subscription:** This depends on the number of **External Reservation Units** configured and when one run of subscription completes for them. If this is less than 110 minutes, then put 110 minutes.
- **C4C Recovery:** This depends on the synchronization behavior of the C4C app connection and the number of **External Reservation Units** configured.

For **Synchronization Behavior In-the-Lead:** 4 hours (as it only needs to synchronize pending **Event Messages**).

For **Synchronization Behavior Follows:** 12 hours (as it needs to synchronize all events in the calendar of the resource for a period bounded by the C4C app module settings configuration for recovery number of days past and future).

7. Provide a start date/time (in the future).
8. Save the task.
9. Activate the task.

## C4C Configuration using C4C app for Microsoft EWS API

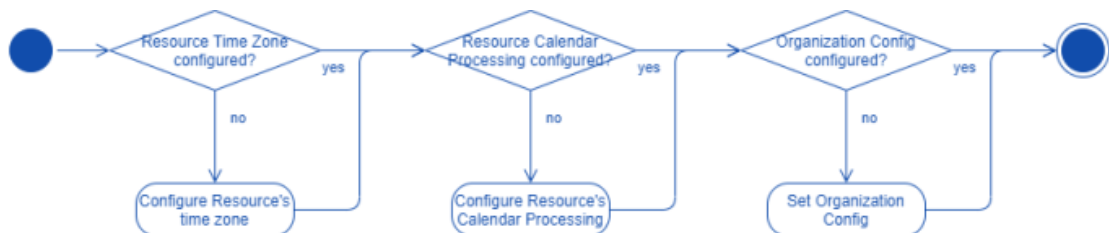
The following figure provides a sequence of steps in the configuration of **Connect for Calendars** along with the C4C app for Microsoft EWS API (used for on-premise Exchange environments).



Before configuring **Connect for Calendars**, make sure to prepare the on-premise **Exchange** environment so that the configuration in Planon ProCenter runs smoothly. For more information, see [Configuring Exchange](#).

### Configure Exchange

The following overview provides a sequence of steps in the configuration of Exchange for Connect for Calendars.



### Align Resource's regional configuration with time zone information in Planon ProCenter

A **Resource** in **Exchange** has no regional configuration set by default. It is important that the regional configuration of the **Resource** is aligned with the time zone of the **Reservation Unit's Property**.

#### Procedure

1. Open the **Exchange Management Shell** on the **Exchange** server.

2. Execute the following **PowerShell** command to achieve the goal.

```
#Retrieve a list of available time zones

$TimeZone = Get-ChildItem "HKLM:\Software\Microsoft\Windows NT\CurrentVersion\Time
zones" | foreach {Get-ItemProperty $_.PSPath};

$TimeZone | sort Display | Format-Table -Auto PSChildname,Display

#Regional Configuration

Set-MailboxRegionalConfiguration -Identity <Resource's email address>

-TimeZone "<Time zone aligned with the one of the Property in Planon>"
```

## Room Resource Calendar processing configuration

The C4C app for Microsoft EWS API supports the two types of synchronization behavior: **In-the-Lead** and **Follows**.

Depending on the configuration of the C4C app Connection you need to configure the **Resource's Calendar Processing** configuration differently.



Calendar Processing properties for which the default value corresponds with a correct configuration are not mentioned here.

### Procedure

1. Open the **Exchange Management Shell** on the **Exchange** server.
2. Execute the following **PowerShell** command to achieve the goal.

```
#Configure Calendar Processing

Set-CalendarProcessing -Identity <Resource's email address>

-AutomateProcessing <AutoUpdate (for In-the-Lead) / AutoAccept (for Follows)>

-DeleteSubject $false

-AddOrganizerToSubject $false

-AllowConflicts $true

-EnforceSchedulingHorizon $false

-MaximumDurationInMinutes 0

-RemoveOldMeetingMessages $false

-RemovePrivateProperty $false

-BookingWindowInDays 900
```

## Setting Organization Configuration (In-the-Lead only!)

In a default environment, **Exchange** will send explicit updated **Meeting Requests** to a **Resource** when changing the location property of a **Meeting** or any other property within 15 minutes from the start time of the **Meeting** ("Location,AllProperties:15").

Planon requires to receive explicit updated Meeting Requests for it to be able to update a **Reservation** in Planon ProCenter .

The following instruction provides a PowerShell command [Set-OrganizationConfig](#) to configure this in **Exchange**.

### Procedure

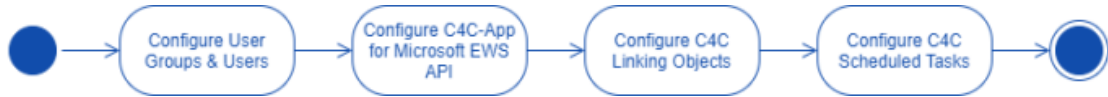
1. Open the **Exchange Management Shell** on the **Exchange** server
2. Execute the following **PowerShell** command to achieve the goal

```
#Organization Config

Set-OrganizationConfig -VisibleMeetingUpdateProperties "Location,Subject,Sensitivity"
```

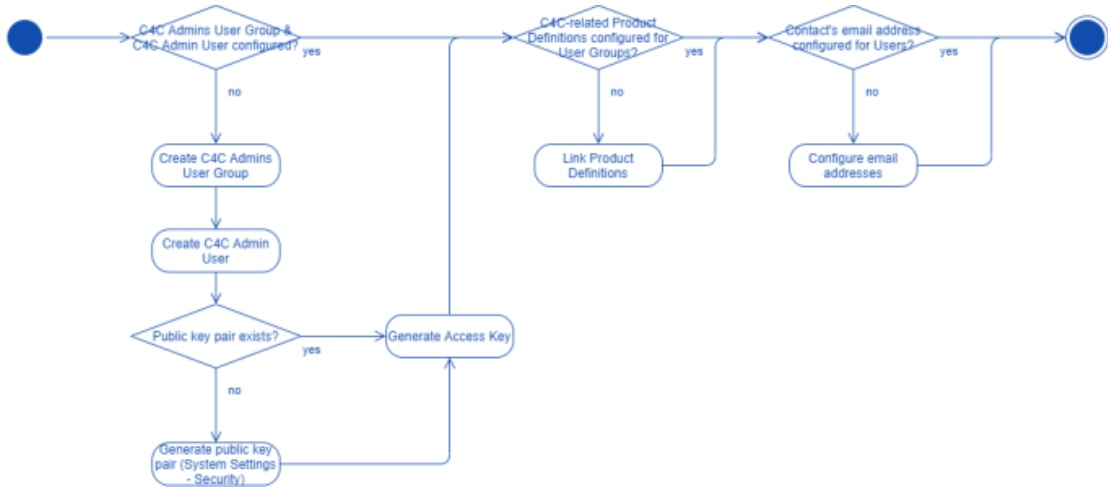
## Configure Planon ProCenter

The following figure displays all steps for configuring Planon ProCenter with respect to Connect for Calendars (C4C).



## Configure User Groups and Users

The sequence below shows a list of actions to perform such that the **User groups** and **Users** are correctly configured for **Connect for Calendars**.



## Create C4C Admin Group & C4C Admin User

1. Create a new **User group**: *C4C Admins* and create a new **User** linked to that user group: *C4C Admin*.
2. Make sure that the **User Group** has similar rights as the **User Group System Administrators**.

3. Generate an **Access Key** for the **C4C Admin Account**.

## Link product definitions

C4C requires that for **User Groups** (aka Account Groups) involved in **Reservation Management** are linked to certain **Product Definitions**. The table below provides an overview of the **Product Definitions** and to which type of **User Group** need to be linked.

<b>Product Definition</b>	<b>User Group</b>	<b>Reason</b>
EnterpriseServiceAPI	C4C Admins	This product definition is required by the C4C app so that it can use the <b>PaaP</b> API.
EventConnector	All <b>Reservation Management-related User Groups</b> including the <b>C4C Admins</b>	This product definition is required so that the C4C app and C4C can use the <b>Event Connector</b> when an <b>Event/Reservation</b> has to be synchronized.
JSONServices	C4C Admins	This product definition is required by the C4C app so that it can use the <b>PaaP</b> API.
Scheduler	C4C Admins	This product definition is required by the C4C app so that it can use the <b>PaaP</b> API.
PPWeb	All <b>Reservation Management-related User Groups</b> including the <b>C4C Admins</b>	This product definition allows a <b>User</b> to use the <b>Task Specific Interfaces (TSIs)</b> in <b>Web client</b> .
PSS2	All <b>Reservation Management-related User Groups</b> including the <b>C4C Admins</b>	This product definition allows a <b>User</b> to use the <b>Reservation Wizard</b> .

## Provide contact's email address for each user

Provide a contact's Email address for each **User** (including the C4C Admin). This email address will be used by C4C to send notifications to a **User** about the status of synchronizing an **Event** and a **Reservation**.

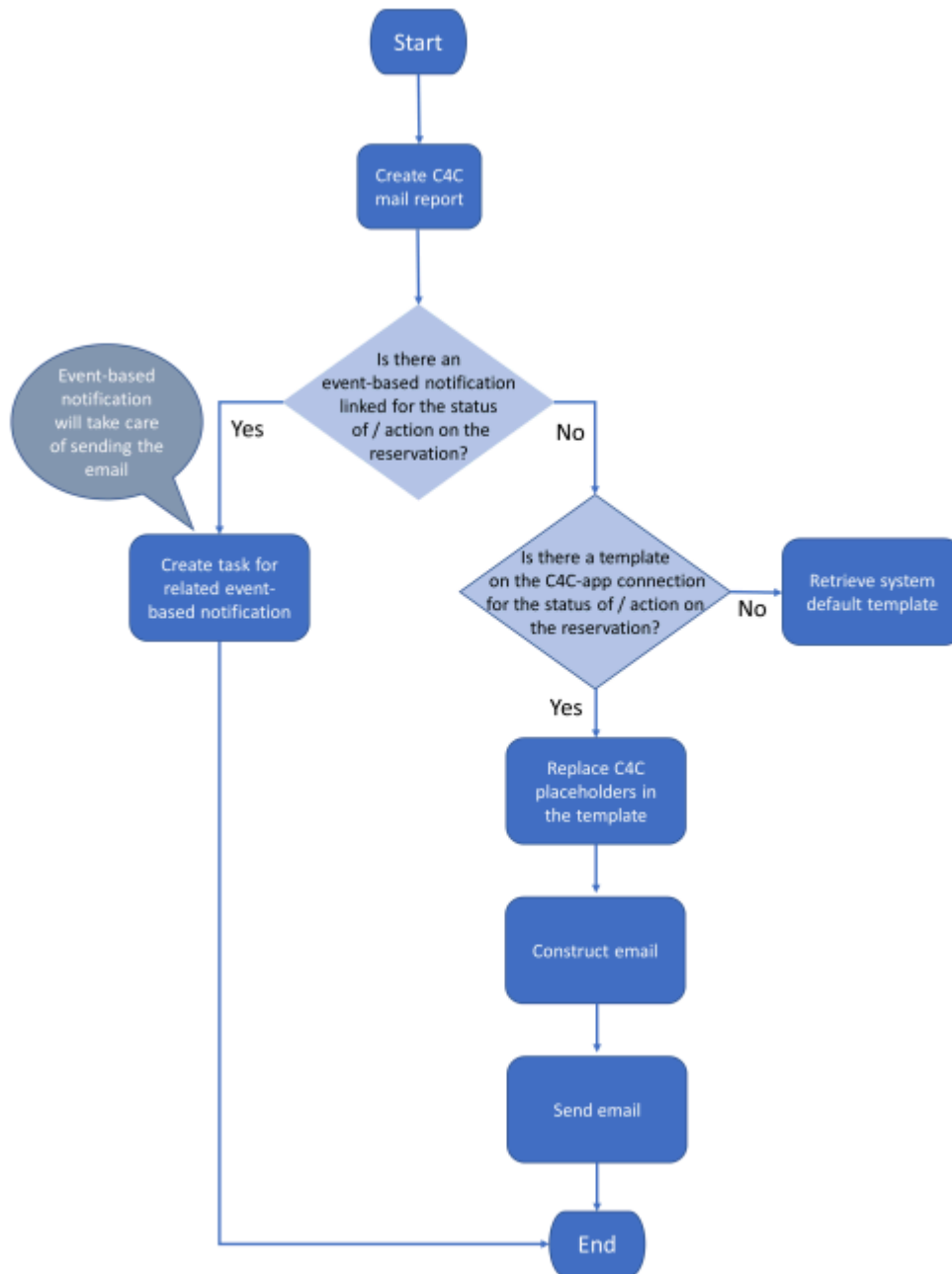
If errors occur during synchronization, a notification will be sent to the **C4C Admin**.

## Configuring notifications

There are three options for Connect for Calendars reporting:

- **Do not configure Connect for Calendars reporting:** Connect for Calendars will use default templates to send emails to a user about the status of the Reservation and the outcome of an action on the reservation;
- **Configure simple templates on a C4C app Connection:** The C4C app Connection has fields that allow one to provide simple templates. When provided, then this template will be used instead of the system's default template;
- **Configure templates, use them in a Report definition on Connect for Calendars Mail Report, create event-based notifications and link them to the appropriate external reservation unit;**



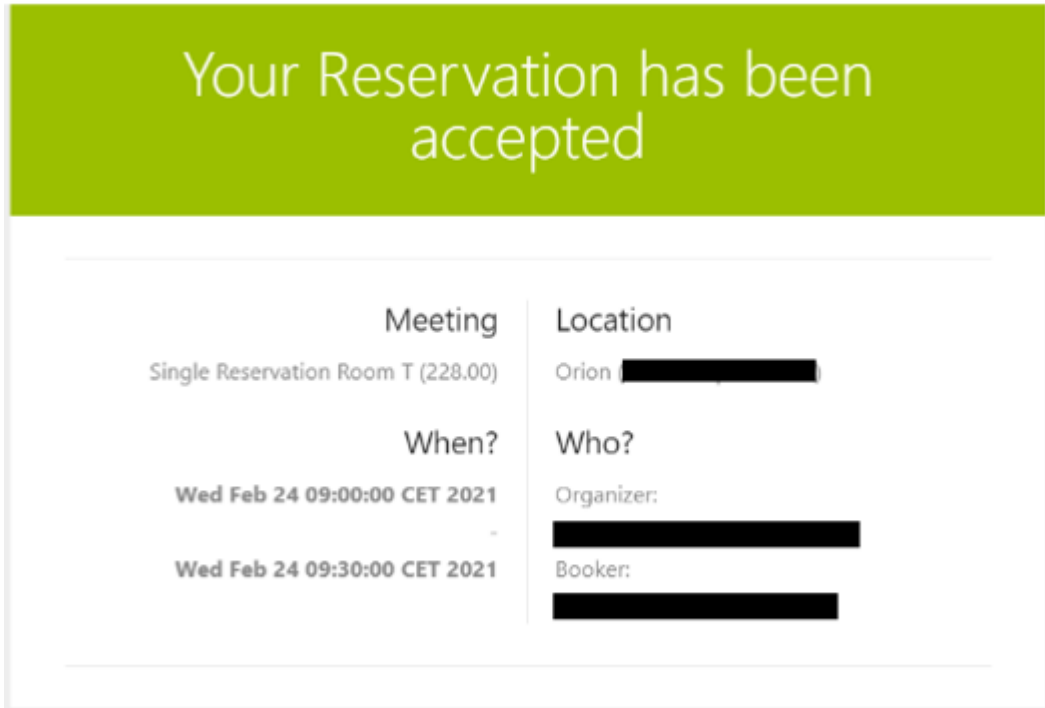


*Report selection process at runtime.*

### Default email templates

The product comes with default email templates that cannot be modified.

The default email templates have the look-and-feel as displayed below.



*Format of default email sent by Connect for Calendars.*

### Simple email templates

The C4C app Connection has fields that allow you to create a simple email template. The placeholders in this template should match the *PnName (System name)* of a field in the business object Connect for Calendars Mail Report. The following code-snippet displays a simple template.

**i** Note that the placeholders are surrounded by '[' and ']'. In addition, you can reference every field on a Reservation and Reservation Unit by using '[Reservation.<PNNAME OF FIELD>]' and '[ReservationUnit.<PNNAME OF FIELD>]' respectively.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" lang="en-GB">

<head>

  <meta charset="utf-8"/>

  <meta http-equiv="x-ua-compatible" content="ie=edge"/>

  <meta name="viewport" content="width=device-width, initial-scale=1"/>

  <meta name="x-apple-disable-message-reformatting"/>

  <title>[MailReservationAcceptedTitle]</title>

</style>
```

```

</head>

<body style="margin: 0; padding: 0;">

  <h1 class="webfont h1" style="font-size: 36px; font-weight: 300; line-height: 100%; margin: 0 0 16px;">

    [MailReservationAcceptedHeader]

  </h1>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailMeeting]

  </h3>

  <p style="color: #888888; margin: 0;">[CalendarItemSubject] ([Reservation.OrderNumber])</p>

  <br/>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailLocation]

  </h3>

  <p style="color: #888888; margin: 0;">[ReservationUnit.Name]
([CalendarItemResourceIdentifier])<br></p>

  <br/>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailWhen]

  </h3>

  <p style="color: #888888; margin: 0;">

    <b>[CalendarItemStartDateTime]</b><br> <span>-</span></br>
<b>[CalendarItemEndDateTime]</b><br>

  </p>

  <br/>

  <h3 class="h3" style="color: #232323; font-size: 18px; font-weight: 400; margin: 0 0 8px;">

    [MailWho]

  </h3>

  <p style="color: #888888; margin: 0;">

    [MailOrganizer]:</br>

    <b>[CalendarItemOrganizerAccountIdentifier]</b></br>

    [MailBooker]:</br>

```

```
<b>[CalendarItemBookerAccountIdentifier]</b>

</p>

</body>

</html>
```

### *Simple Notification template*

## **Email template, report definition and event-based notification definition**

Using your own custom mail templates requires further configuration. You can create **Report definitions** for each type of email that is sent by Connect for Calendars in the regular way that reports are being defined. This requires you to upload the mail templates to Planon's WebDAV location for templates.

In addition, you must define a *Recipients report* on the business object **Connect for Calendars Mail report**. This report is used by the **Event-based notification** to determine the addressees to which an email should be sent.

Next you must define **Event-based notification definitions** for each type of email for which a report definition is constructed.

An **External reservation unit** has several fields that reference an **Event-based notification definition** related to the type of email that is to be sent.

## **P r o c e d u r e**

### *Configuring Connect for Calendars Mail Reports*

1. Open a browser and navigate to the *Planon Web client*
2. Navigate to the TSI **C4C Mail reports**
3. On the level **C4C Mail Reports** click the **Report** button and add a new report for each of the following email types:
  - **ACCEPTED**: The Reservation's status is REQUESTED/MADE/COMPLETED
  - **CANCELLED**: The Reservation's status is CANCELLED
  - **CHANGED**: The Reservation's details have changed
  - **DECLINED**: The Reservation could not be made
  - **DELETED**: The Reservation is deleted
  - **EXCEPTION**: There was an exception in the synchronization process of a Reservation;
  - **TENTATIVELY ACCEPTED**: The Reservation's status is IN OPTION

### *Configuring a Recipients report*

4. On the **Connect for Calendars mail reports** level click the **Report** button and add a new report for a generic recipient report.

This recipient report requires at least two fields **ID** and **To**. Optional are **CC** and **BCC**.

- The **ID** field is the *Syscode* field of the C4C Mail Report;

- The **To** field is an *expression* that consists of the **To** field of the Connect for Calendars Mail Report.

#### *Configuring an Event-based Notification*

5. Navigate to the TSI **Alerts** and select the step **Event-based notifications**.
6. Click **Add** to create a new **Event-based notification**.
7. Configure the following fields of this **Event-based notification**:
  - a. **Code**: Provide a recognizable code for the event-based notification.
  - b. **Description**: Provide a description for the event-based notification.
  - c. **Alert Condition**: Create a new condition, select the BO **Connect for Calendars mail report** and add the condition that the **To** field should contain a value.
  - d. **Mail template**: Select a **Report definition** created on the Connect for Calendars mail report.
  - e. **Recipient Report**: Select the **Recipient report definition** created on the C4C mail report.
  - f. **Schedule**: Define a schedule for this **Event-based notification** (for example, it should run every 5 minutes).
8. Set the status of the event-based notification to **Active**.

#### *Configuring the notifications for an External reservation unit*

9. Navigate to the TSI **Connect for Calendars – processing**.
10. Drill-down to the level **Accounts & reservation units** and select the step **External reservation units**.
11. Select the **External reservation unit** that needs to be configured.
12. Set the reference to the **Event-based notification definition** on the appropriate fields.

#### **Including a link to the reservation wizard**

In confirmations sent to the organizer you can include a link to the reservation wizard overview page.

To make this possible, you need to enable a setting and adapt your mail merge report for confirmations.

#### **P r o c e d u r e**

1. Go to **Self-Service modules > Reservations**.
2. Select a Reservation wizard (if not already present, create one).
3. Set the field **Allow access from Connect for Outlook** to **Yes**

For more information, see [Reservation wizard fields](#).

4. Save the configuration of the Reservation wizard.
5. In your mail merge that you send out as confirmation include an expression such as the following:

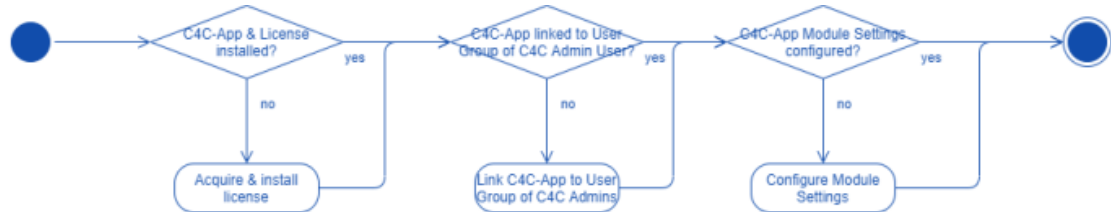
```
<a href="<https://your reservation wizard URL/case/BP/B001>?
action=InitialMM4OAction&PK=" + formatNumeric('Connect for Calendar – mail
reports'.Reservation.'System code', "#####")>Click here</a>
```



Replace the URL in bold in between and including the angle brackets with your reservation wizard URL.

## Install & configure C4C app for Microsoft EWS API

Prior installing the C4C app you should acquire its license from the **Planon License Desk**. Once the license for the C4C app for Microsoft Graph API has been acquired you can add that license through the **TSI - AppCenter**. By adding the license through the **AppCenter**, the C4C app will be downloaded and installed from the **Planon Marketplace**.



### Procedure

1. Acquire the license for the C4C app for Microsoft EWS API.
2. Navigate to the TSI, **AppCenter**.
3. Click **Add License** and provide the license acquired.



This will cause Planon ProCenter to download & install the latest compatible version of the C4C app for Microsoft EWS API for the version of the Planon ProCenter environment.

4. Click **Configure**.

The C4C app will be in the state **Configuration**.

5. Click **Link App User Group** and select the **C4C Admin** user's user group.
6. Go to **Apps > Modules > Details** and select the step **Module Settings**.
7. Select the module **c4cappews**.
8. Provide the following settings:

- **Access Key**: The generated access key for the **C4C Admin User**.
- **Notification URL**: The URL that **Exchange** will use to send notifications to the C4C app is:

<https://<your Planon environment>/sdk/platform/jaxrs/planonsoftware/com/c4cappews/c4cappewsrest/rest/notification>

- **Subscription check frequency (in minutes)**: The C4C app for Microsoft EWS API uses the subscription model of an on-premise **Exchange** environment. The **Subscription check frequency** will be used by **Exchange** to send a **Status** notification when the **Room Resource** has been idle for the provided time.

The C4C app for Microsoft EWS API will process this **Status** notification so that it knows that the subscription is still active.

We recommend to use 30 minutes as the subscription check frequency.

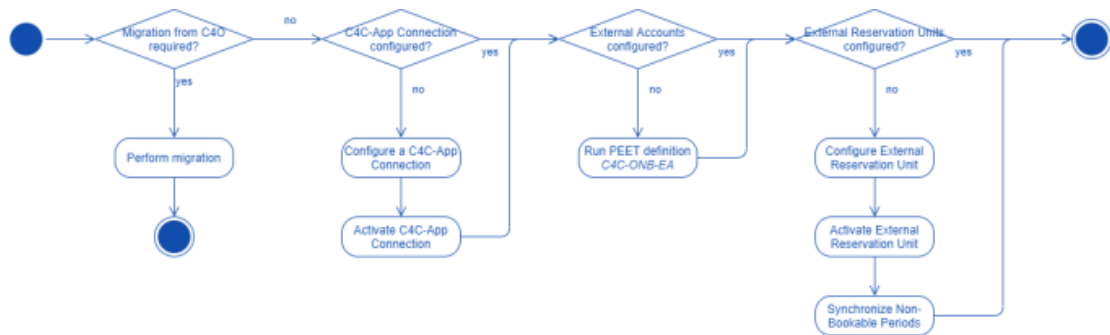
- **(Follows only!) Event Recovery days past:** This value is used in the **Recovery Task** and determines the start date of the period for which **Events** are retrieved from a **Resource's Calendar (now - days past = start date)**.
- **(Follows only!) Event Recovery days future:** This value is used in the **Recovery Task** and determines the end date of the period for which **Events** are retrieved from a **Resource's Calendar (now + days future = end date)**.

## Configure C4C linking objects

Once the C4Ca pp for Microsoft EWS API is installed, you can start to configure the C4C linking objects:

- **C4C app Connection**
- **External Accounts**
- **External Reservation Units.**

The following figure shows the steps that need to be performed.



## Configure C4C app connection

### Procedure

1. Navigate to the TSI **C4C app connection**.
2. Click **Add** to create a new C4C app connection.
3. Provide a **Name**.
4. Provide a **Synchronization behavior** (*In-the-Lead* or *Follows*) for the C4C app connection.
5. **Notification behavior:** specify whether and to whom notifications should be sent:
  - No notification
  - Organizer
  - Booker
  - Organizer & booker
6. Select the **Classname** belonging to the installed C4C app's implementation of the **Calendar Item Processor**.
7. Provide the settings for the **Calendar Item Processor**. For C4C app for Microsoft EWS API, these are:

- **Exchange EWS URL:** The URL of the **Exchange Web Services** for the **Exchange Server**.
  - **Exchange Version:** The version of the **Exchange Server**. Valid values are *2013, 2016 and 2019*.
  - **Username:** The email address of a service account in **AD** that is allowed to impersonate the **Room Resources**.
  - **Password:** The password belonging to the service account in **AD**.
  - **Send Outbound Invitation (Y/N):** Indication whether C4C should add the organizer as an attendee to the event that is created in a Room resource for an outbound synchronization. Adding an attendee to the event will cause Exchange to send an invite to that attendee.
  - **Prevent Inbound Decline:** This setting allows you to suppress or prevent Planon from proactively canceling a reservation when not intended or desired.  
 When set to **Yes**, the C4C-App will not decline the Event in Exchange if the corresponding reservation could not be made in Planon.  
 When set to **No** (default), the C4C-App will decline the Event in Exchange if the corresponding reservation could not be made in Planon.  
 This functionality applies to both **In -the-lead** and **Follows** connections.
8. (Optional) Provide custom generic templates for the notifications sent by **C4C** upon a synchronization action (e.g. Accept, Decline, Cancel, etc.).
  9. Save the C4C app connection.
  10. Change status to **ACTIVATED**.  
 (For the C4C-App for Microsoft Graph API, this will trigger a subscription process for each External reservation unit that is active and belongs to the activated C4C-App Connection).

### Configure external accounts

Complete the following steps to configure the **External accounts** for a C4C app connection.

#### Procedure

1. Navigate to the TSI **Enterprise Talk**.
2. Import **Enterprise Talk** definition *C4C-ONB-EA*.
3. Select the imported **Enterprise Talk** definition and go to the level **Documents** and select the document *C4C-ONB-IMP-EA1*.
4. Go to and select the step **Business Objects** and select the business object related to **External Accounts**.
5. Go to and select the field definition **C4CAppConnectionRef**, which is the reference to a C4C app connection.
6. Configure the default value for this to be the **C4C app connection** that was created in the previous step.
7. Go back to the level **Definitions** and run the **Enterprise Talk definition** *C4C-ONB-EA*
8. After the run is done, you can go to the TSI **C4C Processing** and select the step **External Accounts** to verify the outcome.



## Configure external accounts - without Enterprise Talk definition

If you do not want to run the **Enterprise Talk** definition, you can also add an **External Account** by completing the following steps.

### Procedure

1. Navigate to the TSI **C4C Processing**.
2. Go to the step **External accounts**.
3. Click **Add** to create a new **External account**.
4. Provide the following details:
  - **Account Identifier**: the identifier for the **User**, which is used by the installed C4C app (e.g. the C4C-App for Microsoft Graph API requires this to be the email address of the User).
  - **Account**: The **Account** in Planon ProCenter to which the **User** should be linked.
  - **C4C app connection**: The C4C app connection for which this **External account** is active.
  - **Is primary?**: Whether the **External account** should be used as the primary **External account** in an outbound synchronization.
5. Save the **External account**.

## Configure external reservation unit

Complete the following steps to configure an **External Reservation Unit**.

### Procedure

1. Navigate to the TSI **C4C Processing**.
2. Go to the step **External Reservation Units**.
3. Click **Add** to create a new **External reservation unit**.
4. Provide the following details:
  - **Resource Identifier**: The identifier for the **Resource**, which is used by the installed C4C app (e.g. the C4C-App for Microsoft EWS API requires this to be the email address of the Resource).
  - **Reservation Unit**: A **Reservation Unit** in Planon ProCenter to which the **Resource** should be linked.

The **Reservation Unit** must reference a **Standard Order** or a **Standard Order** has been configured in **Order Settings**.



For reservation units, make sure that its property has a time zone linked. The **Reservation time zone** column (element's panel) displays the time zone of the reservation unit's property - this time zone is leading. Invites are sent in the reservation unit's time zone.

- **Is production mailbox?**: Indicator whether the **External Reservation Unit** is **in use** given the environment (e.g. in non-production environments, this indicator should be set to **No** when you want to be able to synchronize the Resource).
- **C4C app connection**: The C4C app connection for which this **External reservation unit** is active.

- Provide a user status for a reservation's status corresponding with an **Event** being **CANCELED**.
- (Optional) Provide a user status for a reservation's status corresponding with an **Event** being **ACCEPTED**.
- (Optional) Provide a user status for a reservation's status corresponding with an **Event** being **TENTATIVELY ACCEPTED**.
- (Optional) Provide links to **Event-based notifications** for the notifications sent by C4C upon a synchronization action (e.g. Accept, Decline, Cancel, etc.).

5. Save the **External reservation unit**.

6. Change status to **ACTIVATED**

(For the C4C-App for Microsoft Graph API, this will trigger a subscription process for the involved Resource. After a subscription attempt, the field **App - Custom field** will show the outcome of the subscription).

### Configure C4C scheduled tasks

The following diagram shows a series of **Scheduled tasks** related to C4C that have to be configured.

There are *system* scheduled tasks that come with the product C4C and there are *user* scheduled tasks that come with the C4C app for Microsoft EWS API.



### Configure system scheduled tasks for C4C

The product C4C has three **System scheduled tasks** that can be configured in a similar way. Complete the following steps to configure the task.

#### Procedure

1. Navigate to the TSI **Scheduled tasks** and step **Scheduled tasks**.
2. Select one of the following **System scheduled tasks**:
  - Remove obsolete External Reservations & External Non-Bookable Periods (including C4C Processing Items).
  - Archive External Reservations (including C4C Processing Items) that are successfully synchronized and for which the start date/time of the Reservation is 30 days ago.
  - Remove C4C Mail Reports that are older than 7 days.
3. Select the and configure the frequency of the **Task**:
  - **Remove obsolete External Reservations**: each day
  - **Archive External Reservations**: each week
  - **Remove C4C Mail Reports**: each week
4. Save the **Task**.

5. Activate the **Task**.

### Configure user scheduled tasks for C4C

Prior to the configuration, check the configuration of the existing **System scheduled task** *Task User Extension*, which has to be configured correctly for the **Task user extensions**. This task needs to run each 5 minutes.

The C4C app for Microsoft Graph API provides two **Task user extensions** that can be configured in a similar way. Take the following steps to configure the tasks.

### Procedure

1. Navigate to the TSI **Scheduled tasks** and step **Task user extensions**.
2. Click **Add** to create a new task.
3. Provide a **Code** for the task (e.g. *C4C-SUB* for the Subscription Task).
4. Select a *Classname*:
  - **C4C Subscription**: This **Task user extension** will periodically create and patch subscriptions for **Resources** that are linked to active **External reservation units**.
  - **C4C Recovery**: This **Task user extension** will periodically recover **Events** and **Reservations**. The *behavior* of this recovery depends on the **Synchronization behavior** of the C4C app connection.
5. Select the **C4C Admin User** for the field **User**.
6. Select the and configure the frequency of the task:
  - **C4C Subscription**: This depends on the number of **External reservation units** configured and when one run of subscription completes for them. If this is less than 110 minutes, then change it to 110 minutes.
  - **C4C Recovery**: This depends on the synchronization behavior of the **C4C app connection** and the number of **External reservation units** configured.
    - *For Synchronization Behavior In-the-Lead*: 4 hours (as it only needs to synchronize pending Event Messages).
    - *For Synchronization Behavior Follows*: 12 hours (as it needs to synchronize all Events in the Calendar of the Resource for a period bounded by the C4C-App module settings' configuration for recovery number of days past and future).
7. Provide a start date/time (in the future).
8. Save the **Task**.
9. Activate the **Task**.

## Onboarding procedure (Automated)

Before starting the Automated onboarding procedure, make sure that you have properly prepared your configuration as described earlier in the **Configuration** sections of both:

- [Microsoft Graph API](#)
- [Microsoft EWS API](#)

The following overview describes a sequence of activities to perform in this subprocess. The goal of this subprocess is to prepare the onboarding items for C4C and to onboard them.



## Execute action to prepare onboarding

Depending on the scenario, if you want to onboard all or a single (eligible) External Reservation Unit for a given C4C-App connection, then you should either use the preparation action on the C4C-App connection (all) or on the External Reservation Unit (single).

Executing this action will display a pop-up to the user to provide a period for which the onboarding has to take place. **This period can have a maximum range of 2 years (limitation by Microsoft Graph API).**

The preparation of the onboarding items uses Planon's [Event Connector](#) to distribute the processing load, hence verify that all inbound messages related to the onboarding are processed before proceeding to the next step.

## Verify created C4C onboarding items

The preparation action for onboarding should have generated a C4C Onboarding Item for each Event and Reservation that is eligible to be onboarded.

Take the following steps to verify which Events and Reservations will be onboarded:

### Procedure

1. Navigate to the **C4C Onboarding TSI**.
2. Select the **C4C Onboarding Task** related to the C4C-App Connection for which you have executed the preparation action.
3. Navigate to the level of the **C4C Onboarding Resources**.
4. Verify that it lists all External Reservation Units as expected.
5. For each External Reservation Unit you can navigate to the **C4C Onboarding Items** level.
6. Verify that it lists all Events and Reservations as expected.
7. If all C4C Onboarding Items are OK, then go back to the **C4C Onboarding Resources** level.
8. Change the status of the C4C Onboarding Resource to *Prepared*.
9. When all C4C Onboarding Resources are verified, then go back to the **C4C Onboarding Task** level.
10. Change the status of the **C4C Onboarding Task** to *Prepared*.



At any given point it is possible to abort the onboarding for a C4C Onboarding Task / C4C Onboarding Resource. This will halt the process and you can resume the onboarding after having dealt with the problems.

## Run the C4C Onboarding Task

After performing the preparation checks you can run the C4C Onboarding Task.

This will asynchronously start the onboarding for each C4C Onboarding Item of each C4C Onboarding Resource. This process uses Planon's [Event Connector](#) for distributing the processing load.


Take the following steps to initiate the onboarding:

### Procedure

1. Navigate to the **C4C Onboarding** TSI.
2. Select the **C4C Onboarding Task** for which you want to onboard the related C4C Onboarding Items.
3. Click **Run**.

This action will perform the following:

- It will put an onboarding event for each related C4C Onboarding Resource on the Event Connector queue.
- The C4C Onboarding Processor will process each event related to a C4C Onboarding Resource and will generate separate onboarding events for each related C4C Onboarding Item.
- Once all events related to C4C Onboarding Items are processed, the status of the related C4C Onboarding Resource will be changed to either *Completed* or *Completed with Failures* (the onboarding for the C4C Onboarding Resource can be resumed after the problems have been mitigated).
- Once all C4C Onboarding Resources are **completed**, the status of the related C4C Onboarding Task will change to a corresponding status being either *Completed* or *Completed with Failures*.

 At any given point it is possible to abort the onboarding for a C4C Onboarding Task / C4C Onboarding Resource. This will halt the process and you can resume the onboarding after having dealt with the problems.

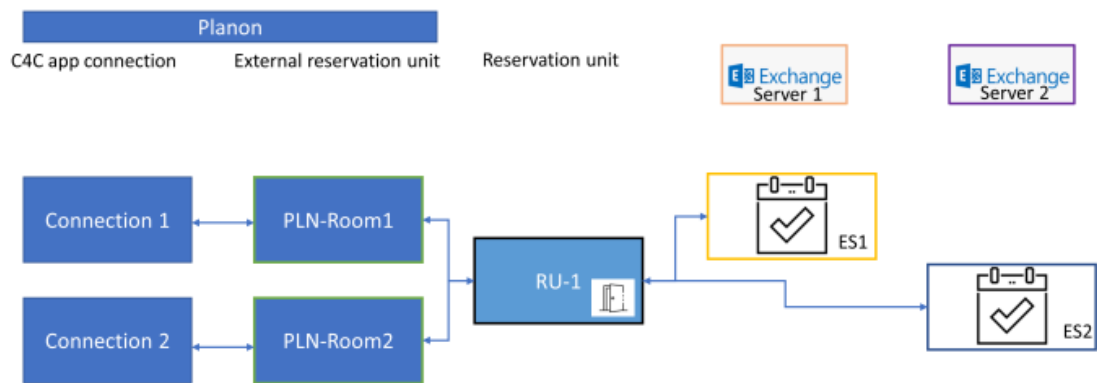
## Shared rooms functionality

When using a setup with multiple app connections and Exchange servers, it is still possible to use and share the same physical rooms.

Because there are multiple connections, it is essential that all involved components are updated accordingly.

This is accomplished by using the shared rooms functionality. This works bi-directional (left-to-right and right-to-left).

 Shared rooms functionality only works within a single property set.



### Inbound (right-to-left)

When a reservation starts in Exchange (ES1), RU-1 is booked. The same (shared) room will be blocked on Exchange (ES2) because RU-1 is a shared room.

**i** Information about the organizer, is then unknown to ES2.

### Outbound (left-to-right)

RU-1 is reserved/blocked in Planon. The reservation is synchronized with both Exchange servers since this is a shared room.

**i** The organizer information is retrieved from the respective external accounts.

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