



TECHNICAL DOCUMENT

# **Reserva Room Signage Installation and Administration Guide**

Reserva is a range of dedicated meeting room signage which offers a compact and attractive door side display with dynamic integration to multiple calendar systems.

# **Reserva Room Signage Installation and Administration Guide**

Version 4.1.2

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Updated: November 2022

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# 1 Introduction

Thank you for choosing Reserva Connection Manager (RCM). This guide is for administrators responsible for deploying Reserva and explains how to configure and manage a Reserva deployment.

## 1.1 About Reserva

Reserva provides intuitive digital displays to allow efficient use of your meeting rooms and collaboration spaces. Reserva is linked dynamically with your calendar system, ensuring room information is up to date and accurate. Meeting rooms are managed more efficiently, ensuring room information is up to date and accurate. Meeting rooms are managed more efficiently, avoiding issues such as the inconvenience of double bookings or meeting rooms shown as busy despite being vacant (for example, where attendees are unable to make meetings at short notice).

Reserva allows for the use of [Reserva Edge Devices](#). These are interactive room signs showing the status of a meeting room along with a summary of upcoming appointments. Using the interactive touchscreen, users can book, confirm, extend or shorten, and cancel appointments.

### 1.1.1 Reserva Analytics

Reserva Analytics is an additional feature that allows your organization to monitor meeting spaces and optimize resources by analyzing user behavior and room utilization data. Statistics can show who is booking rooms, how frequently users book rooms and who does not regularly attend bookings. By identifying long term trends and issues raised through the **Report an Issue** function, Reserva Analytics allows facility teams to resolve issues faster and identify any trends that occur.

Reserva provides two types of display:



- **Reserva room sign**  
Interactive room sign showing the status of a meeting room along with a summary of upcoming appointments. Using the interactive touchscreen, users can book, confirm, extend, or shorten, and cancel appointments.
- **Reserva room summary display**  
Provides a clear summary of appointments across a collection of meeting rooms. Typical deployments of room summary displays include reception areas and foyers. The room summary content can be displayed in full screen or within a 'zone' within a screen layout with multiple 'zones.'

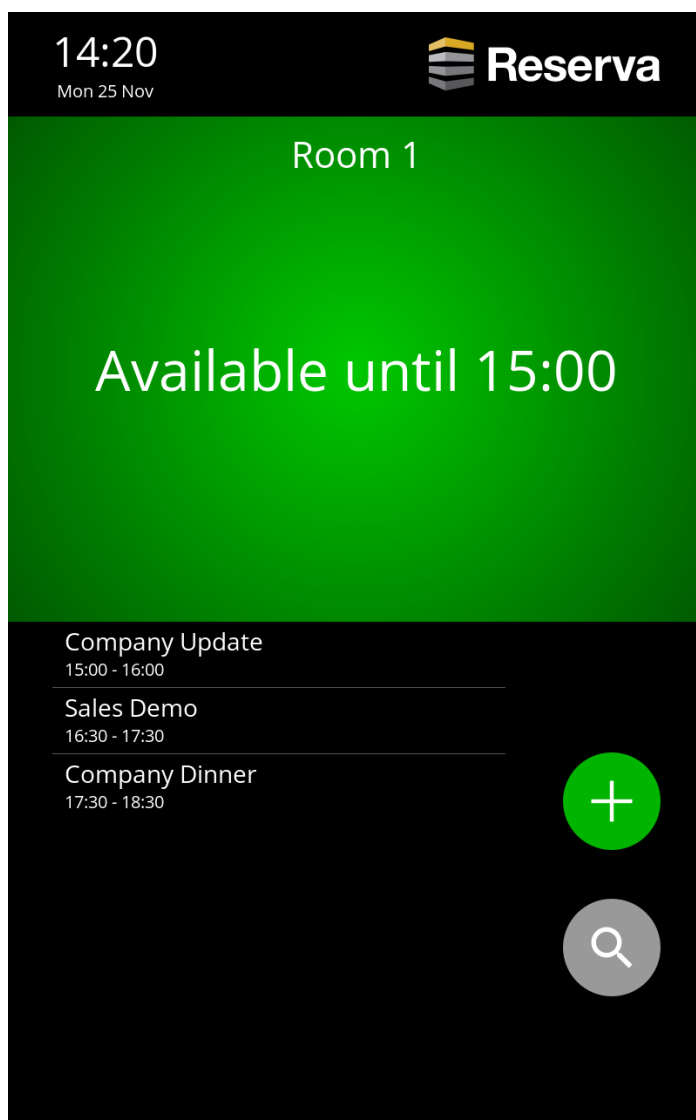
Reserva digital displays are available in a range of sizes to complement your requirements and space considerations. For example, you might decide to mount smaller room signs alongside meeting rooms, larger room signs for big rooms such as auditoriums, and large room summary displays in your reception to provide a summary of appointments across multiple meeting rooms. You can customize the Reserva media to suit your branding and environment.

## 1.1.2 Room Sign Interface

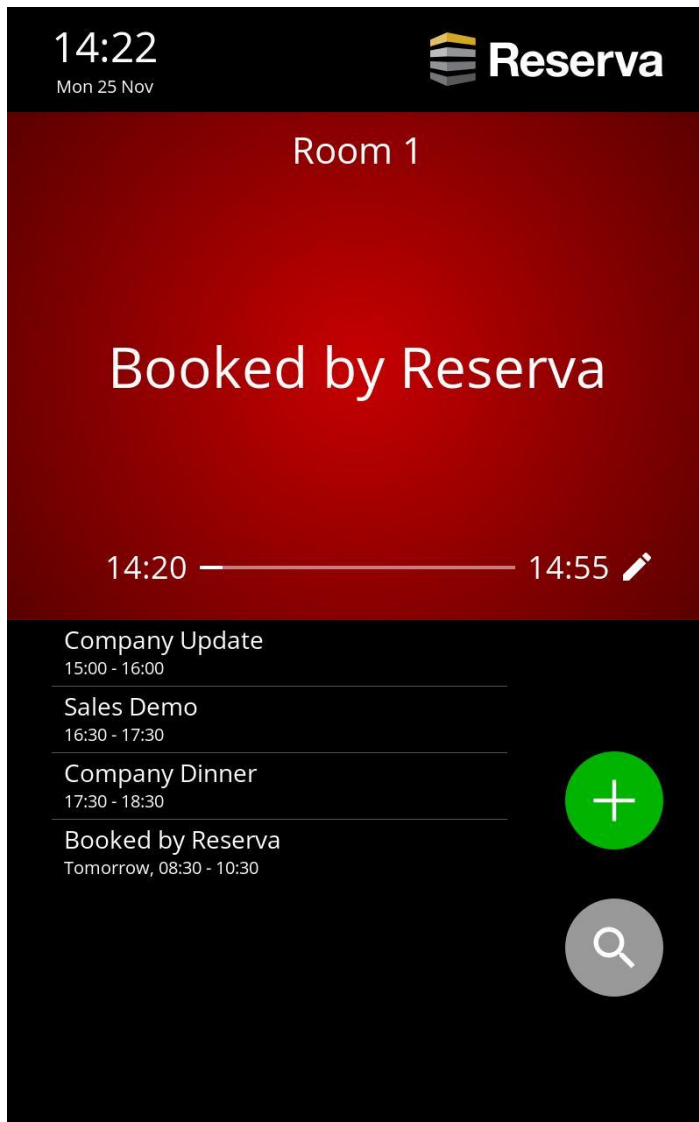
Reserva room signs running outside room media show, depending on configured settings, meeting room availability, a summary of scheduled appointments and booking options. The options available depend on the meeting room status (available or busy) and the options you enable for your end users. Each Reserva room sign is configured to display the information for a specific room in your calendar system.

### 1.1.2.1 Reserva Room Signs

The media can be customized. The examples below include a dark theme with the default Reserva logo and default language settings and show all options, including interactive features. The first example shows the room sign options for an available meeting room. The second shows options available when a meeting room is busy.







## Room Sign Features

These features are available on all devices

### Time and date

The current time and date are shown in the top left-hand corner. Room signs automatically display the time and date for your time zone. You can update this manually if required.

### Meeting room

The meeting room name is shown. This is the room name as defined in the calendar system.

### Room availability

If the room is available, the availability (for example, '**Available until tomorrow at 14:00**') is shown on a green background.

If the room is busy, the meeting title (in the example above, '**Booked by Reserva**') and the start and end times are shown on a red background.

### **Scheduled appointments**

A list of scheduled appointments is shown in the **Upcoming Appointments** area.

### **Interactive Features**

These features must be enabled for your end users. You can configure the options per Connection.

#### **Book an appointment**

Users can book a new appointment and specify the meeting name. The appointment is added to the calendar and the meeting room is reserved.

You can configure the maximum number of days in advance that users can book appointments. For example, you might allow users to book appointments up to 30 days in advance.

#### **Confirm appointment**

Users are prompted to confirm the appointment before the meeting starts. If the appointment is not confirmed ahead of the meeting, users are reminded to confirm the appointment once the meeting starts. Provided they confirm, the meeting room is reserved.

If the appointment is not confirmed, the appointment is removed from the calendar automatically and the meeting room is shown as available. This ensures rooms are not shown as busy when attendees are unable to make the meeting.

You can configure the timing for confirming appointments. For example, you might prompt users to confirm appointments 5 minutes before the scheduled start time and allow users up to 10 minutes (from the scheduled start time) to confirm their appointment.

#### **Extend or shorten appointment**

Users can cancel an appointment during the meeting. For example, if other attendees are unable to join the meeting and the room is no longer needed, the appointment can be cancelled. This removes the appointment from the calendar and the meeting room is shown as available. Each interactive feature can be enabled or disabled via profiles. See [Profiles](#).

### 1.1.2.2 Room Summary Interface

The Reserva room summary media shows a list of appointments for a number of rooms in your calendar system. The information is read-only. An example is shown below.



The screenshot displays a digital interface for a room summary. At the top left, it shows the time '16:07' in a large font, with 'Wed 15th Jun' in a smaller font below it. The main content is a table with four columns: 'Time', 'Meeting Title', 'Room', and 'Organiser'. The table lists six appointments, all organized by 'Andy Mottershead'. The appointments are: 'Prep for Customer Meeting' at 16:00 in Room1; 'Budget Meeting' at 16:30 in Room 3; 'Project Meeting' at 16:30 in Room 4; 'Customer Meeting' at 16:30 in Room1; 'Team Meeting' at 16:30 in Room2; and 'Manager Meeting' at 17:00 in Room 4. At the bottom left of the interface, it says 'Page 1 of 2'.

Time	Meeting Title	Room	Organiser
16:00	Prep for Customer Meeting	Room1	Andy Mottershead
16:30	Budget Meeting	Room 3	Andy Mottershead
16:30	Project Meeting	Room 4	Andy Mottershead
16:30	Customer Meeting	Room1	Andy Mottershead
16:30	Team Meeting	Room2	Andy Mottershead
17:00	Manager Meeting	Room 4	Andy Mottershead

Page 1 of 2

If the list of appointments spans more than one page, as shown in the example, the display cycles through the pages.

Meetings scheduled as 'all day' meetings appear at the top of the list, followed by all other individual meetings. Meetings are shown in order, according to the scheduled start time for each appointment.

## 1.2 Reserva Components

RCM is made up of several discrete components:

- **Media API** – this is a web API that services media endpoints, such as Reserva Room Panels and Reserva Summary. It presents event data to endpoints and uses connectors to make changes in a data source.
- **Web API** – this is a web API that services RCM's web browser UI for management and monitoring, including configuration for the system, connectors, and rooms & resources.
- **Worker Service** – performs the tasks required via connectors to fetch data for a data source.
- **Connectors** – these provide an interface to communicate with a data source (such as Resource Scheduler) and to fetch data.
- **Data Stores** – these provide storage and retrieval of data for components to share across processes, servers and services. The key stores provide for:
  - Event data
  - Rooms & resources configuration
  - Users
  - Credentials

## 1.3 System Requirements

### Desktop:

- Windows 10 64-Bit

### Server:

- Linux (TPS Server)
- Windows Server 2022 64-Bit
- Windows Server 2019 64-Bit
- Windows Server 2016 64-Bit – extended support-only from Microsoft (until 2027).

**Note:** You will need to have **.NET 6 Runtime** installed before installing RCM. Windows users are recommended to install the **ASP.NET Core Runtime Hosting Bundle** available from Microsoft.

### 1.3.1 Calendar Requirements

Before you deploy Reserva, it is important to ensure you have the necessary calendar systems configured.

This version of Reserva supports the following calendar systems:

- [Microsoft Exchange On-Premises](#)
- [Microsoft Exchange Online/365](#)
- [Facilitor](#)
- [FM:Systems Resource Scheduler](#)

## 1.4 Additional Calendar Information

### Microsoft Exchange and Microsoft 365 Calendar Requirements

#### Supported Versions

The following versions are supported:

- Exchange server 2013
- Exchange server 2016
- Exchange server 2019
- Exchange online using Microsoft 365

#### 1.4.1 Microsoft Exchange

To configure Microsoft Exchange Connections, you require:

- **Server:** the address (IP address or host name) of the server running Microsoft Exchange.
- **Credentials:** the email address, username and password for your Microsoft Exchange calendar. The user must have access and the required permissions to access the necessary Exchange mailboxes (for more information, see [Appendix A: Optimizing Exchange](#)).
- **Room Calendars:** ensure that the required room calendar mailboxes are configured for your deployment.

**Note:** If not already configured, Tripleplay recommends a unique Exchange mailbox for each room with a single calendar in each for the room.

For additional configuration options, please refer to [Appendix A: Optimizing Exchange](#).

## 1.4.2 Microsoft 365 (Exchange Online)

To configure Microsoft 365, you require:

- **Credentials:** these are the **Application Permissions** configured in [Azure AD](#) and the corresponding client ID, tenant ID, and client secret to configure RCM.
- **Calendar accounts:** ensure the necessary calendar accounts are configured for your deployment.

**Note:** If not already configured, Tripleplay recommends a unique Exchange mailbox for each room with a single calendar in each for the room.

## 2 Installation

RCM must be installed on a network PC or Server. This host should be 'always on' to ensure that Reserva room signs are always operational.

**Note:** You will need to have **.NET 6 Runtime** installed before installing RCM. Windows users are recommended to install the **ASP.NET Core Runtime Hosting Bundle** available from Microsoft.

To install RCM:

1. Download the installer package via the [Tripleplay support portal](#).
2. Start the setup application for the latest version of RCM.
3. Click through the installation wizard to complete installation.

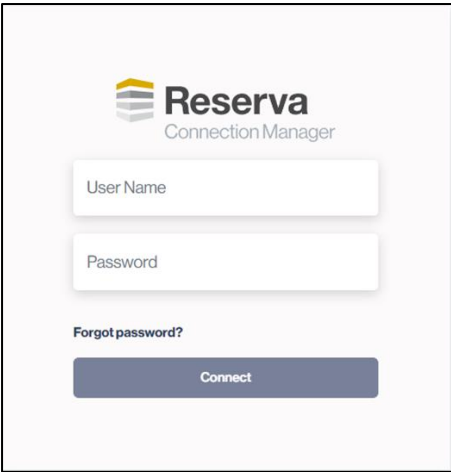
**Note:** If you are installing RCM version 4, we strongly recommend uninstalling any previous installations of RCM before installing a new instance of RCM. Alternatively, you can install RCM 4 on a separate server to any previous RCM version installations. From version 4.1 onwards, you will not have to uninstall before upgrading.

### 2.1 Login

For RCM deployments that are hosted on the TPS (Tripleplay Server) system, **Single-Sign On** will be attempted. This will allow for the user logged into TPS to be the same one used for RCM so there will be no need to log into RCM separately.

Windows users will need to log into RCM. After you have downloaded RCM and installed it on your system, launching it will open RCM in a browser window.

On the login screen, enter the relevant credentials and click **Connect**.

The image shows a login interface for 'Reserva Connection Manager'. At the top is the logo, which consists of three stacked horizontal bars in yellow, grey, and blue, followed by the text 'Reserva' in a bold sans-serif font and 'Connection Manager' in a smaller, lighter font below it. Below the logo are two input fields: the first is labeled 'User Name' and the second is labeled 'Password'. Below these fields is a link that says 'Forgot password?'. At the bottom of the form is a blue button with the word 'Connect' in white text.



**Note:** On initial login, the default credentials are:

- User Name: **remote**
- Password: **9999**

You will be required to change the password on first login to something more secure.

If a value has already been set for this and any other similar fields throughout RCM, a starred out hint will appear.

### 2.1.1 Forgot password?

If you have forgotten your password, you can click **Forgot Password** and follow the prompts. Passwords must be at least 8 characters long and include a capital letter, number and special character.

**Note:** You must have [email notifications](#) enabled in order to use password retrieval services as this is the email address you will need to enter. It is strongly recommended that you set these up as soon as possible. If you forget your password and do not have email notifications enabled, you will need to contact [support@tripleplay.tv](mailto:support@tripleplay.tv).

## 2.2 Upgrading from the RCM Version 3 Series to RCM 4.1

As of RCM 4.1, upgrading from the version 3 series to 4.1 is a manual process. You will need to gather all relevant information from your 3 series installation, including connection details, credentials, media settings, user information and more.

For more information on the upgrade process, please refer to the **Upgrading RCM from the 3.x Series to RCM 4.1** guide.

### 2.2.1 Server Configuration

The default configuration for your server is in the `<AppData>/config/config.json` file.

Where `<AppData>` is typically one of:

- `C:\ProgramData\Tripleplay\Reserva` for Windows installations
- `/usr/local/etc/reserva` for Linux or TPS installations

This contains configurations specific to the platform. While it is possible to modify the configurations in this file, these will be overridden on the next install.

### 2.2.1.1 Overriding with Local Settings

Overrides to the default configuration for the local server can be placed in a new file called `<AppData>/config/settings.json`. These won't be overridden on upgrades.

**Note:** On an updated installation of RCM, check any settings here against any possible breaking changes in `config.json`.

Override settings only need to provide the section required.

For example, to configure Active Directory/LDAP settings, `settings.json` could have:

```
{
  "userAuthConfig": {
    "userAuthenticationMethod": "ActiveDirectory",
    "config": {
      "serverOrDomain": "my-ad.domain"
    }
  }
}
```

The other settings will take defaults.

To configure logging the level for a particular log output:

```
{
  "logConfig": {
    "logFile": {
      "restrictedToMinimumLevel": "Debug"
    }
  }
}
```

Multiple sections can be added and override the specifics needed in each area. The rest of the settings for a section will remain as default.

### 2.2.1.2 Config sections

#### Logging

#### logConfig

Under this there are three types of log output:

- **logfile**  
This is for logging to a plain text file.

- **syslog**  
This is for logging to a syslog server.
- **consoleLog**  
This controls logging to the console.

## Room Sign User Auth (Active Directory / LDAP)

### userAuthConfig

**userAuthenticationMethod** - one of either `ActiveDirectory` or `Ldap`.

**config** (AD or LDAP configuration)

**serverOrDomain** - FQDN of AD DC, LDAP server, or a domain, for example, `my.domain` or `server.domain`. Or null to attempt to detect. This may use the localhost or if an AD joined server will attempt to find the domain controller.

**port** - If required, specify the port for LDAP queries (for example, 389). If null, defaults will be tried.

**useSsl** - Attempts to use SSL to connect to the server. **This currently may not work on Linux hosted RCM.**

**authType** - Any value from <https://docs.microsoft.com/en-us/dotnet/api/system.directoryservices.protocols.authtype?view=dotnet-plat-ext-6.0>

If not specified this will default to **Negotiate** on Windows and **Basic** on Linux (Negotiate may not work when RCM is hosted on Linux)

**baseDn** - If required, the base DN can be set for the server. This is typically not needed for AD but if there are issues it could be useful to set. Likely required for other LDAP servers. For example, `dc=domain,dc=com`.

**bindDnPrefix** - Used for LDAP servers to override the prefix for username authentication, for example, `uid=`.

**bindDnSuffix** - Used for LDAP servers to override the suffix for username authentication, for example, `ou=People,dc=domain,dc=com`.

**bindDnPrefix** and **bindDnSuffix** are used to build the authentication distinguished name. For example, the two would combine with the username when a user authenticates to form:

```
uid=a.user,ou=People,dc=domain,dc=com
```

or the LDAP server may have a different format such as:

```
cn=a.user,cn=Users,dc=domain,dc=com
```

These are only used when **userAuthenticationMethod** is **Ldap**

## Path Base

When RCM is hosted within an existing web site, it needs a configuration to set the path it is running under.

For example, the default on a non-hosted install such as Windows self-hosts RCM under the URLs:

- RCM Web UI & APis - <http://<server>:5000>
- RCM media API - <http://<server>:8080> and <https://<server>:8443>

It may be desirable to host in an existing web server, via a reverse proxy or similar configuration, to achieve a URL such as:

- RCM Web UI & APis - <https://<server>/reserva>
- RCM media API - <https://<server>/reserva-media>

The configuration of the web server is outside of the scope of this document. However, changes need to be made to RCM so it is aware of the base path it is hosted under. For example:

## webApiConfig

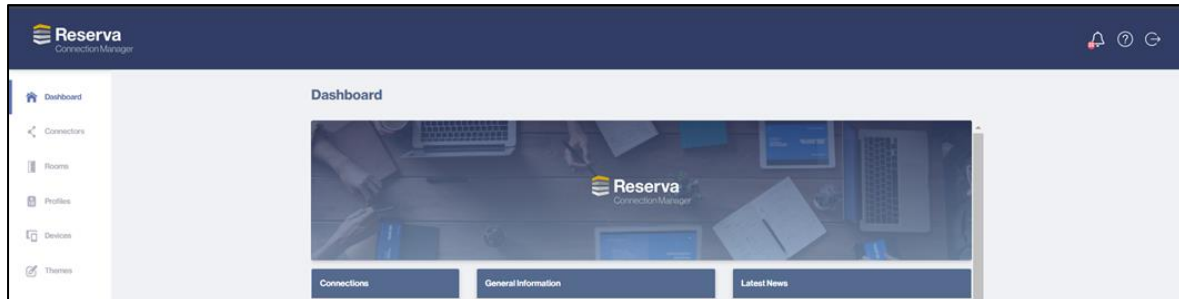
```
pathBath: /reserva
```

## mediaApiConfig






```
pathBath: /reserva-media
```




## 3 Dashboard

After logging into RCM, you land on the **Dashboard**.






On the left-hand side, you will see a menu bar of icons

-  - **Dashboard**. The home page that allows you to view key information regarding Reserva on one page.
-  - **Connectors**. The Connectors page gives you an overview of the connections you have associated with your system, along with information such as status, as well as the ability to add and test connections.
-  - **Rooms**. The collection of rooms and groups assigned to your RCM. From here, you can add or edit rooms and groups, configure additional organization options such as tags. Room resources can also be configured here.
-  - **Profiles**. Setting up different profiles allows you to configure the options available on associated room signs across a wide variety of device settings and interactive features. Default global profiles are provided which can be configured or new profiles can be created from this page.
-  - **Devices**. The devices logged as connected endpoints with your system.

- 
 - **Themes**. Configuration of how the room media displays on your associated room signs. From here, languages, status colors, clocks and logos can also be configured.
- 
 - **Analytics**. Navigate to Reserva Analytics if you have an analytics license.
- 
 - **System**. Licensing, users, and email notifications can be configured from here. Support and Maintenance also provides features to backup files and download support snapshots.

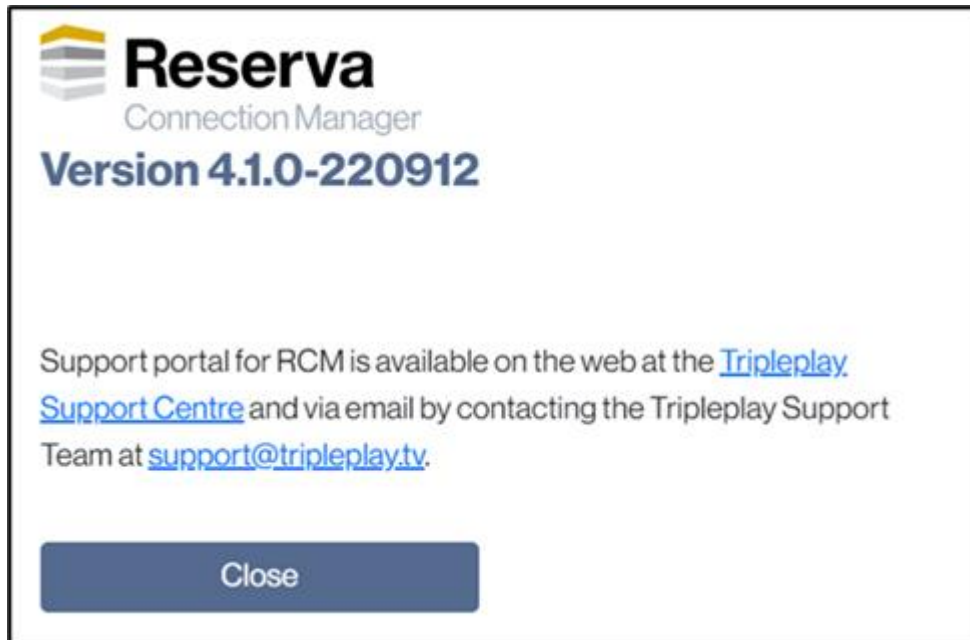
From the dashboard, you can also see an array of key information:

- **Connections** – Connections and their current status. If no connections are configured, **No connections** will display.
- **Room Fault Report** – Overlook of room issues reported. If there are no issues to show, 'No faults reported' will display as a message.
- **General Information** – Brief overlook of connection, room, and unresolved issue numbers.
- **Latest News** – If there are no news items to display, this section will not appear.
- **Devices** – Oversee the number of devices on your RCM network.
- **Current Utilization** – Occupation rate of available rooms.

In the top right-hand corner, you will see icons for  **Notifications**,  **Help** and  **Log out**.

Clicking on the **Notifications** icon will reveal a list of any issues raised by your system. When you hover your cursor over an issue, a cross will appear to allow you to clear it. Alternatively, you can clear all issues at the top of the menu.

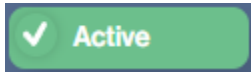

Clicking on the **Reserva Connection Manager** logo in the top-hand corner of the screen will activate the support information dialog. This contains information regarding the version of RCM you have installed as well as support contact information.



## 4 Connections

From this page you will be able to create a connection using your chosen data source for fetching appointments or import an existing connection.

Connections must be enabled in order to fetch rooms, although a disabled connection can be tested first via the **Test** menu.

Connections will display a status of  or , as well as information such as the connection type, update status and the number of enabled rooms associated with it.

Clicking the three dots in the top right-hand corner of a connection will give you the options to **Rename**, **Edit**, **Delete**, **Download/Save** (this will be in .json format) or **Test Connection**.

### To Create a Connection

1. Click **Add Connection**.
2. Under the type of connection you desire, click **Connect**.
3. For connection type specific configuration instructions, please see the relevant section on the next pages.



## 4.1 Exchange On-Premises

This connector is for connections to **Exchange Server On-Premises**, using **Exchange Web Services (EWS)** and uses **Basic Authentication**.

< Add Connection

**Exchange On-Premises**

**Name Your Connection**

Name

Description

**Username or Email**

Username

Password

**Domain**

Domain (optional)

**Service Account Email**

Service Account Email

**Connection Mode**

Polling

**Hostnames**

Hostname

Protocol

HTTPS

**Sync Resources**

Rooms

☐ Use Autodiscover ☐ Use Mailbox Impersonation ☐ Use SCP Lookup with Active Directory Domain Services ☐ Enable Trace Log ☒ Enabled

**Start Offset**  
(Events fetched before now)

2 day

**End Offset**  
(Events fetched after now)

14 day

**Resource Sync Interval**

1 day

**Event Fetch Poll Interval**

30 seconds

**Polling Batch Size**

20

Cancel Connect

On the **Add Connection** screen:

1. Enter an appropriate **Name** and **Description** (if required) for your connection.
2. Enter the **Username** and **Password** for your Exchange server account. The username may be an Exchange service account email address or simple username is combined with **Domain**.
3. If required and not using an email address as the Username, enter the NT Domain name of the Exchange server account.

**Note:** Please contact your administrator if you are unsure of any connection details.

4. Enter the email address you wish to designate as the **Service Account Email**. This might be the same as the **Username** if the account credentials use the email address as the username.

5. If not using Autodiscover, enter the address of the Exchange server endpoint that hosts EWS.
6. Select **Http** or **Https** as appropriate from the **Protocol** drop-down menu.
7. Under **Sync Resources**, the default option is **Rooms** to sync available rooms. Alternatively, you can use the drop-down menu to select **None** in order to disable the syncing of available rooms.
8. Use the tick boxes to configure desired settings:
  - a. **Use Autodiscover:** this option will use the email address provided to discover the endpoint server on the Exchange web service. For this option, the email address domain will need to have the correct **Autodiscover DNS** settings configured.
  - b. **Use Mailbox Impersonation:** this option allows a service account to impersonate a room mailbox. Exchange may limit the number of subscriptions and connections per service account, so using impersonation means that the limits are per room mailbox.
  - c. **Use SCP Lookup with Active Directory Domain Services:** this uses on-premises active discovery **Autodiscover SCP** objects to locate the Exchange web service endpoint. This option can be deselected if it causes slowdown of your system.
  - d. **Enable Trace Log:** for diagnostic use if you are having issues. Contact [Tripleplay support](#) for assistance in such a case.
9. Use the arrows to set the desired intervals for **Start** and **End** offsets to determine how many events you want fetched before and after now, the **Resource Sync** and **Event Fetch Poll Intervals** and the number of rooms you want fetched per **Event Poll Batch**.
10. Once you have configured all the appropriate options, click **Connect**.

## 4.2 Exchange Online/365

This connector is for connections to **Exchange Online/365** and uses **Microsoft Graph** and requires **Modern Authentication** credentials.

As such, you will need the client credentials generated as part of the process in registering Reserva as an application with **Application Permissions** in Azure AD. The credentials you will need to make a note of are the **Application (client) ID**, **Directory (Tenant) ID** and the **Client Secret**. For full instructions, see [Registering Reserva as an application with Azure AD](#).

The screenshot shows the 'Add Connection' interface for 'Exchange Online / 365'. The interface is divided into several sections:

- Name Your Connection:** Includes a 'Name' text field and a 'Description' text field.
- Client ID:** Includes a 'Client ID' text field and a 'Tenant ID (optional)' text field.
- Client Secret:** Includes a 'Client Secret' text field.
- Cloud Instance:** A dropdown menu currently showing 'Global'.
- Sync Resources:** A dropdown menu currently showing 'Rooms'.
- State of the Connection:** A checkbox labeled 'Enabled' which is checked.
- Start Offset:** A section with two dropdowns: 'Start Offset (Events fetched before now)' set to '2 day' and 'End Offset (Events fetched after now)' set to '14 day'.
- Resource Sync Interval:** A dropdown set to '1 day'.
- Event Fetch Poll Interval:** A dropdown set to '30 seconds'.
- Polling Batch Size:** A dropdown set to '20'.

At the bottom of the form are two buttons: 'Cancel' and 'Connect'.

On the **Add Connection** screen:

1. Enter an appropriate **Name** and **Description** (if required) for your connection.
2. Enter the appropriate **Azure AD** credentials under **Client ID**, **Tenant ID** and **Client Secret**.

**Note:** **Directory (Tenant) ID** can be left blank, or set to the value '**common**' if there is only one tenant or multiple tenants and you want the application to apply to all tenants.

3. Select the desired **Cloud Instance** from the drop-down menu.

**Note:** The default **Cloud Instance** will be suitable for most users, but if you need a specific instance for your instance hosting location for Exchange Online/365, you can select from the drop-down. This affects the endpoint used to connect to Microsoft Graph.

4. Under **Sync Resources**, the default option is **Rooms** to sync available rooms. Alternatively, you can use the drop-down menu to select **None** in order to disable the syncing of available rooms.
5. Under **State of the Connection**, you can tick the box for **Enabled** if you want the connection to be enabled as soon as you connect it.
6. Use the arrows to set the desired intervals for **Start** and **End** offsets to determine how many events you want fetched before and after now, the **Resource Sync** and **Event Fetch Poll Intervals** and the number of rooms you want fetched per **Event Poll Batch**.
7. Once you have configured all the appropriate options, click **Connect**.

## 4.3 Facilitor

This connector is for connecting the **Facilitor Facility Management** solution and requires a [license](#).

< Add Connection

**FACILITOR**  
FACILITY MANAGEMENT SOFTWARE

Name Your Connection

Name

Description

Description

Url

Url

API User

API User (optional)

API Key

API Key

Sync Resources

Rooms and Groups

State of the Connection

☒ Enabled

Start Offset  
(Events fetched before now)

2 day

End Offset  
(Events fetched after now)

14 day

Resource Sync Interval

1 day

Event Fetch Poll Interval

30 seconds

Cancel

Connect

On the **Add Connection** screen:

1. Enter an appropriate **Name** and **Description** (if required) for your connection.
2. Enter the appropriate API endpoint **Url**, **API User** (optional), and **API Key** information provided by Facilitor.
3. Under **Sync Resources**, you can use the drop-down menu to determine whether you want **Rooms** or **Rooms and Groups** to be synced. Alternatively, you can set to the default of **None**.
4. Under **State of the Connection**, you can tick the box for **Enabled** if you want the connection to be enabled as soon as you connect it.
5. Use the arrows to set the desired intervals for **Start** and **End** offsets to determine how many events you want fetched before and after now, the **Resource Sync** and **Event Fetch Poll Intervals** and the number of rooms you want fetched per **Event Poll Batch**.

6. Once you have configured all the appropriate options, click **Connect**.

## 4.4 FM:Systems Resource Scheduler

This connector is for connecting to **FM:Systems Resource Scheduler** and requires a [license](#).

< Add Connection

fm:systems Resource Scheduler

Name Your Connection

Name

Description

Url

Username

Password

Sync Resources

Rooms and Groups

State of the Connection

☒ Enabled

Start Offset  
(Events fetched before now)

2 day

End Offset  
(Events fetched after now)

14 day

Resource Sync Interval

1 day

Event Fetch Poll Interval

30 seconds

Cancel Connect

On the **Add Connection** screen:

1. Enter an appropriate **Name** and **Description** (if required) for your connection.
2. Enter the appropriate API endpoint **Url**, **Username** and **Password** information for your **Resource Scheduler** account.
3. Under **Sync Resources**, you can use the drop-down menu to determine whether you want **Rooms** or **Rooms and Groups** to be synced. Alternatively, you can set to the default of **None**.
4. Under **State of the Connection**, you can tick the box for **Enabled** if you want the connection to be enabled as soon as you connect it.
5. Use the arrows to set the desired intervals for **Start** and **End** offsets to determine how many events you want fetched before and after now, the **Resource Sync** and **Event Fetch Poll Intervals** and the number of rooms you want fetched **per Event Poll Batch**.

6. Once you have configured all the appropriate options, click **Connect**.

## 4.5 To Import a Connection

1. On the **Connections** page, click **Import Connection**.

**Note:** Only .json files are accepted for importing.

2. Either drag and drop the files into the box or click the here to open a file explorer on your machine.

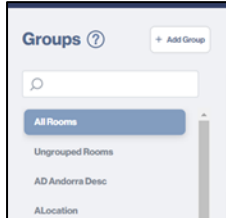
**Note:** As a security feature, the imported connection will have some credentials removed. Once the connection is imported, you will need to Edit it and enter all relevant credentials.

3. With the correct files selected, click **Save**.



# 5 Rooms and Groups

## 5.1 Groups

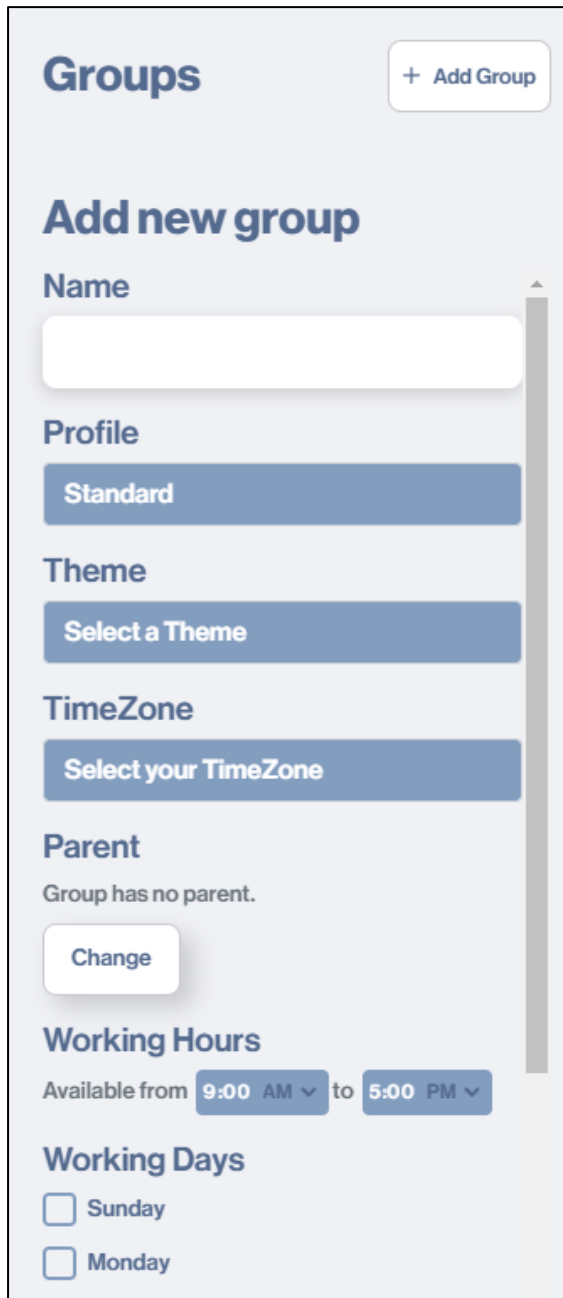


Groups are used to provide a way to organize several rooms. Rooms can belong to a group or a group can have no rooms. If your connection is set to **Sync Group**, there is usually no need to add a group. RCM creates groups automatically but it may be desirable to add additional groups. By default, groups will be organized by their type of connection.

**Note:** A room can only belong to one group.

Groups have a hierarchical structure, with sub-groupings appearing under a parent group. When configuring a group, you can set the parent profile to include all rooms, ungrouped rooms or default rooms.

### 5.1.1 Create a New Group



The screenshot shows a sidebar titled 'Groups' with a '+ Add Group' button. The 'Add new group' dialog is open, containing the following fields and options:

- Name:** A text input field.
- Profile:** A button labeled 'Standard'.
- Theme:** A button labeled 'Select a Theme'.
- TimeZone:** A button labeled 'Select your TimeZone'.
- Parent:** Text 'Group has no parent.' and a 'Change' button.
- Working Hours:** Text 'Available from' followed by a time selector '9:00 AM' and a 'to' separator, followed by another time selector '5:00 PM'.
- Working Days:** Two checkboxes, 'Sunday' and 'Monday', both of which are currently unchecked.

1. On the **Rooms** page, click **Add Group**.
2. The **Add new group** dialog will appear on the left-hand side.
3. Give your group an appropriate name.

4. Select the relevant [profile](#) type for your new group.
5. Select the required theme for room media from the drop-down menu.
6. Select your **TimeZone** from the menu. You can either scroll or start to type the name of a specific time zone for quicker navigation.
7. If you wish your new group to be grouped under an existing parent group, select it from the **Parent** section by clicking **Change**.
8. Set the working hours and days of the group (for more information, see [working hours](#)).
9. Click **Save**. A green success banner will display at the top of the screen when the group has been added.

Once you have a group created, you can go on to create sub-groups within it. You can also click the dots on the right-hand side of a group to activate its menu.

From here you can **Rename**, **Edit** the group settings, **Delete** or **Add Sub-group**. Sub-groups automatically inherit settings from the parent group. Unless changed, the sub-group will have the same theme, profile and working hours as its parent.

**Note:** There is a limit on how many sub levels you can add under a parent group. You will only be able to add 4 sub-levels, after which the option in the group's menu to add a sub-group will no longer be available.

### 5.1.2 Working Hours and Days

Working hours define available hours and days for booking appointments. You can configure the settings for working hours and apply these working hours to **Working Days** and restrict booking times on Reserva room signs. Working hours can be set for all rooms. As groups have a hierarchical structure, working hours can be determined at a parent level and the hours will apply to all rooms in the group and child groups (unless overridden).

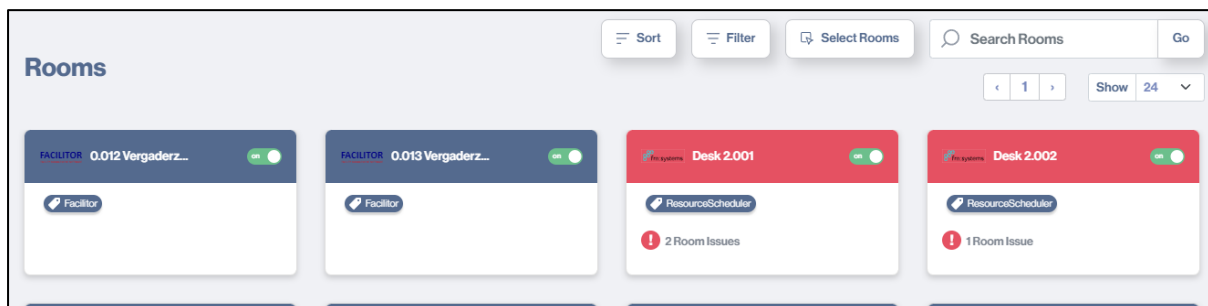
**Note:** If no times are defined, Reserva defaults to 24 hours, 7 days a week availability.

### 5.1.3 Deleting a Group

To delete a group, you must first delete or move any sub-groups associated with the group you wish to remove. If you attempt to delete a group that still has associated sub-groups, a pop-up dialog will prompt you to delete the sub-groups first.

1. To remove a sub-group, select it and click the dots on the right-hand side to activate the drop-down menu.
2. Click **Delete**.

## 5.2 Rooms



This is a collection of the rooms added to RCM. You can use the drop-down menu under **Show** to choose how many rooms are displayed per page.

The list will default to enabled rooms only, but you can use the **Filter** function to switch the search to other types of room. You can also search for a specific room in the search bar. The **Select Rooms** button allows you to select multiple rooms at once. You can then choose an **Action** to apply to all of the selected rooms. Actions include: **Move to Room**, **Move to New Room**, **Select All**, **Deselect All**, **Enable**, **Disable** or **Cancel**.

**Note:** After clicking **Select**, the **Room** > **Edit** function is disabled.

Rooms can be configured to set desired room media settings. In the room list, you can also rename, edit or delete your room.

If a connection is set to **Sync Rooms**, rooms will automatically be added by RCM from the designated data source. These will automatically be disabled until enabled for use.

To enable a room, click the toggle in the top right-hand corner of the room you want to enable. If enabled, the room toggle will display as **On** and the room box will show as blue. If disabled, the room toggle will display as **Off** and the box will appear gray.

### 5.2.1 Resources

Clicking on a room in the room page list allows you to edit it.

#### Alias

If you wish for your room to display an alternative name to the one it is listed as within RCM, give it an appropriate **Alias**.

When enabled, the appropriate resource icons will display on the Reserva room sign for the designated room.

- **Seat** – use the up and down arrows to configure the number of seats to match the number available in the room. Alternatively, you can click into the box and type the relevant number.

- Screen
- Telephone
- Videophone
- Lights
- Computer
- Air Conditioner
- Whiteboard
- WiFi
- Audio
- Other

There are other options available:

- **Issue reporting enabled** – faults with any of the associated room resources can be reported via the interactive room sign. To complete the notification setup, you will need to configure email settings.
- **Notify service desk** – an email will be sent to the designated service desk email when an issue is reported.
- **Notify organiser** – an email will be sent to the person who booked the meeting when an issue is reported.

**Note:** The **notify service desk** and **notify organiser** options will be greyed out until you have configured [email notifications](#).

## 5.3 Tags


Tags can be used to provide alternative groupings for rooms.

Tags act similarly to hashtags and can be assigned to rooms or groups. Reserva Analytics and the Reserva media use the tags to filter rooms which can be useful to define a list of rooms across their function as opposed to groupings, which are more structural and often based on location. For example, you can create a tag for 'Meeting Rooms' to allow an overview of all such spaces.

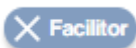
Once tags are added, they can be assigned to resources such as rooms and groups. Tags can be added, updated or deleted at any time.

**Note:** A room can only belong to one group but can have multiple tags associated with it.

#### To add a tag:

1. Click into the room you would like to tag.
2. Under the **Tags** section, you can see all tags currently applied to the room.
3. Click into the blank tag box 
4. Begin to type the tag you want to apply, previously applied tags will be suggested as you type.
5. Either click the suggested tag or finish typing and press **Enter**.
6. Click **Save**.

To remove a tag, click the tag you wish to remove and click the X that becomes available.



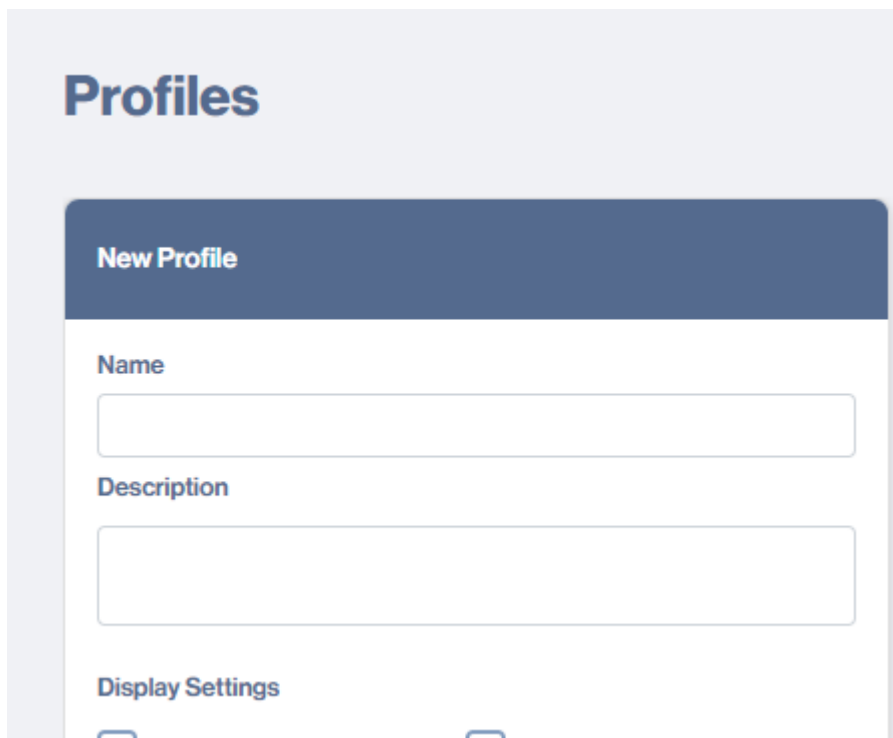
## 6 Profiles

Profiles are used for room display functionality and data display properties. They can be linked to one or more groups and tags can also be associated with profiles. Grouping or tagging profiles will make any configurations made to the profile apply to specific displays. It is recommended that you create a new profile or copy a default profile for this purpose.

There is a default profile that is applied globally. You can set a group to use a specific profile overriding this default.

RCM includes pre-set profiles: **Standard**, **Education** and **Hospitality**. You can copy a default profile to link to groups or tags. Default settings can be configured at any point to your preferences. When copying a profile, it is recommended that you change the **Name** and **Description**.

### 6.1 Add New Profile

The screenshot shows a web interface for adding a new profile. At the top, there's a header 'Profiles' in a large, bold, blue font. Below it, a dark blue bar contains the text 'New Profile' in white. The form itself is white and contains three sections: 'Name' with a text input field, 'Description' with a larger text area, and 'Display Settings' with a section header and some partially visible options below it.

#### To add a new profile:

1. Click the **Add Profile** button.
2. Give your profile a relevant **Name** and, if you wish, a **Description**.



3. Configure **Device** settings as required. These settings relate to how Reserva room signs display media (see below for more information on individual settings).
4. Configure Interactive Features – Booking Events settings as required. These settings relate to the interactive features available via Reserva room signs (see below for more information on individual settings).
5. Click **Save**.

All default time and number settings can be configured with the up and down arrows.

### Devices

- **Show organizer** – the meeting organizer will be displayed on screen.
- **Show parent event name.**
- **Show settings icon.**
- **Disable external LED** – any LED lights on the Reserva room sign will be disabled.
- **Show amber status** – the room sign display will come up as amber before the meeting is due to start. This is pre-set to 5 minutes before meeting start.

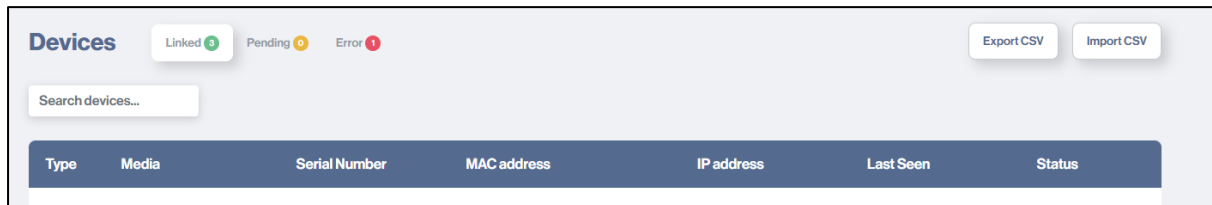
- **Show upcoming events** – pre-set to a maximum of 7 are enabled.
  - If you select this option, a further option will become available to Hide upcoming event details
- **Show Up Next** – the next appointment will be displayed on the Reserva room sign. Up next events will display on the meeting banner on screen.

### Interactive Features – Booking Events

- **Book event** – events can be booked from the Reserva room sign.
- **Default duration** – the default duration for appointments. This is set to a default of 15 minutes.
- **Maximum duration** – the longest duration a meeting can be booked for. This is pre-set to 6 hours.
- **Maximum book in advance** – the maximum number of days in advance that a meeting can be booked. This is pre-set to 7 days.
- **Check in required** – whether you want attendees to have to check in for meetings. If enabled, this is pre-set to 5 minutes before event start time and 10 minutes after.
- **Find free room** – enable the feature of using room signs to locate available meeting rooms.
- **End/cancel event** – appointments can be ended early or cancelled from the Reserva room sign.
- **Extend and shorten event** – appointment timings can be adjusted from the Reserva room sign.
- **Adjust time in unites of X minutes** – pre-set to 5-minute units.
- **Enable Room Fault Reporting** – allows for room facility faults to be reported via the Reserva room sign.
  - **Reporting Requires Authorisation** – when fault reporting is enabled, you can choose to require authorisation from reporters via the room sign.
- **Requires authorisation** – whether interactive features require a user to enter credentials to make changes.

## 7 Devices

On this page, you will find a collection of devices that have been connected as endpoints to your RCM system. At the top of the page, you will see an overview of the number of devices connected categorized into **Linked**, **Pending** and **Error**.



Type	Media	Serial Number	MAC address	IP address	Last Seen	Status
------	-------	---------------	-------------	------------	-----------	--------

Clicking on these statuses will filter the device listings on the rest of the page.

Linked Devices are all devices currently associated with your RCM that have no errors. Pending Devices are devices that are due to be connected with your system. Error will display any devices with errors.

Within the table, you will be able to see

- **Devices Type:** for example, **Reserva Edge** or **Room Summary**.
- **Serial Number**
- **MAC address**
- **IP address**
- **Creation Date** – the date that the device was connected to RCM.
- **Modified Date** – the most recent date of device modification.

Clicking the button on the right-hand side of the table will allow you to **Edit** or **Delete** the selected player.

## 7.1 Back Up Devices

Clicking the **Export CSV** button allows you to download a .csv files containing the information of all the devices currently associated with your RCM. It is recommended that you keep regular backups of your devices database.

You can also import a .csv file to bulk upload an existing devices database. This is useful should you need to move your devices to a different RCM in your deployment.

## 8 Themes

From this page you can customize the media that appears on your Reserva room signs and room summary displays. The default theme is applied globally unless otherwise configured. Themes can be applied to a group or tag, meaning that any rooms assigned to that group or tag will automatically have that theme applied.

Reserva media can be customized to complement your branding and environment. For example, you can upload a logo of your choice and set a light or dark theme. You can also specify the display language.

You can create themes which you may then select to display on your connected devices.

### Customization Options

- **Theme** – You can set the theme to dark or light. Transparent dark and light themes are also available, optimized for dark and light backgrounds respectively. Alternatively, you can override colors to reflect your brand and environment.
- **Logo** – You can use the default logo, specify your own logo or remove the logo from the media altogether.
- **Language** – You can also specify the language settings. Set a primary language and you may choose to display one or more translations that the media will cycle through.
- **Status Colors** – Set the status colors for **Available**, **Starting** and **Reserved** display media. You may use the default colors or override to suit your brand and environment.

Changes are applied the next time the device polls the web service (typically within a few minutes). This is the global setting, applied to media of the same type and version.

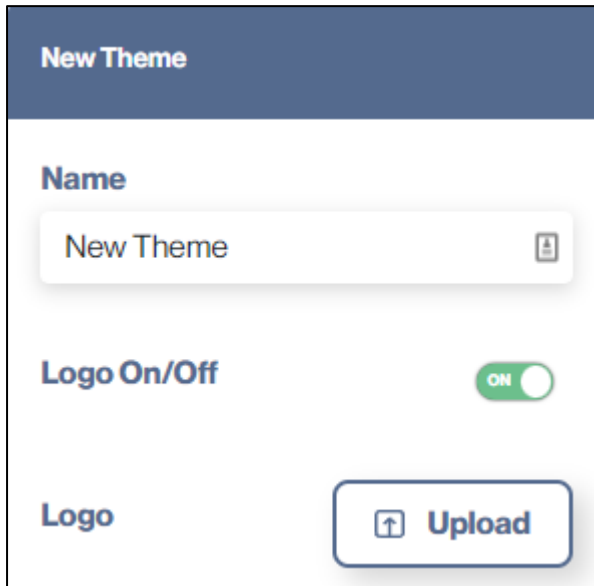
### 8.1 Create a Reserva Media Theme

You can create multiple themes dependent upon your requirements.

#### To Add a New Theme:

1. Navigate to **Themes** on the left-hand side task bar.
2. Click **Add New Theme**.
3. The **Add New Theme** dialog will appear on the left-hand side.

4. Give your theme a relevant name.



5. Choose to display a logo or remove the logo from the media display:
  - i. If you select **On**, the default Reserva logo will display. If you wish to override with your own logo, click **Upload**.
  - ii. Your Files and folders will open, select the logo you would like to use.
  - iii. Click **Open**.
  - iv. Alternatively, select **Off**, and no logo will be displayed within the media.

**Note:** Tripleplay recommends the logo size to be limited to no bigger than 450 pixels wide x 100 pixels high and uses any of the following file formats: BMP, JPG, GIF, PNG or SVG.

6. **Logo** and **Clock Position** can be interchanged. Select **Start** for the Logo to be left, or **End** for the Clock to be on the left.
7. Select your **Theme** style:
  - Light
  - Dark
  - Transparent Light
  - Transparent Dark

8. You can choose to have one or more languages displayed. Select the primary language from the menu, this will be the default display language.

If you select **Additional Display Languages** the media will cycle through the various languages.

To enable the additional display languages, tick the required languages. You may set as many languages you require.

### Additional Display Languages

No Additional Languages Selected ^

☐

Arabic (Saudi Arabia)

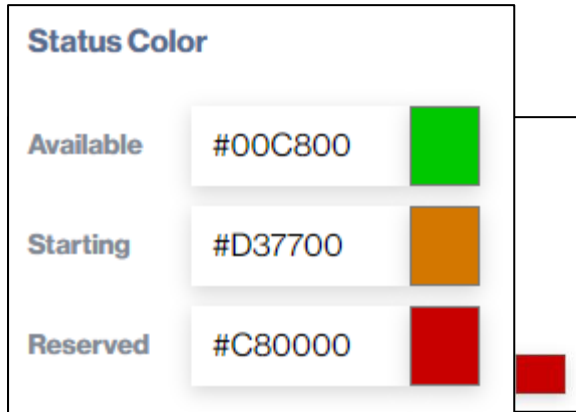
☐

Chinese (Simplified)

☐

Chinese (Traditional)☐☐☐☐☐☐☐☐☐☐☐☐

9. **Status** allows you to choose the default colors for the Available, Starting and Reserved display media. However, you may override these colors to suit your branding.



**To customize the status colors:**

1. Tick **Custom** under the status color you would like to replace.
2. Click the colored square. The color chart will open:
3. Select your color:
  - Drag the circle along the rainbow bar to navigate to different colors.
  - Click the required shade on the shade chart.

Alternatively, if there is a specific color you require:

- Use the color selector and drag the color selector circle to the preferred color. This is useful if you have an image open with a specific color you want to use.





- If you know the color code, use the arrows to select RGB, HSL or HEX code and enter the numbers in the relevant boxes.

**Note:** You may want to write down the color codes for future reference.

10. Click **Save**. A green success banner will display on the top of your screen, and your theme will be shown in the themes list.

You can edit the theme at any time.

## 9 Reserva Analytics

From this page, you view Reserva Analytics. See [Licensing](#) for more information.

For TPS setups of RCM, a user should be created in TPS with a **Reserva Analytics** role. When logging into TPS as that user, you will be able to access RCM in TPS and go to **Analytics**.

**Note:** Should you need to log in, the default username is **reserva** and the default password is **9999**.

Reserva Analytics allows you to access statistical insights relating to meeting space utilization, including individual user behaviour, such as who books spaces, how frequently and the users who 'no show' most frequently. That is, users who book meetings that don't go ahead.

These insights are presented in graphical format across various dashboards designed to meet a variety of different facility management needs.

For example, a facilities manager trying to plan interventions to reduce the frequency of 'no shows' (that is, meeting rooms booked for meetings that do not go ahead) might want to see a list of users who 'no show' most frequently for a given time frame.

Reserva Analytics will highlight the most and least popular meeting rooms throughout your organization.

Reserva Analytics will help with various aspects of facilities management, including:

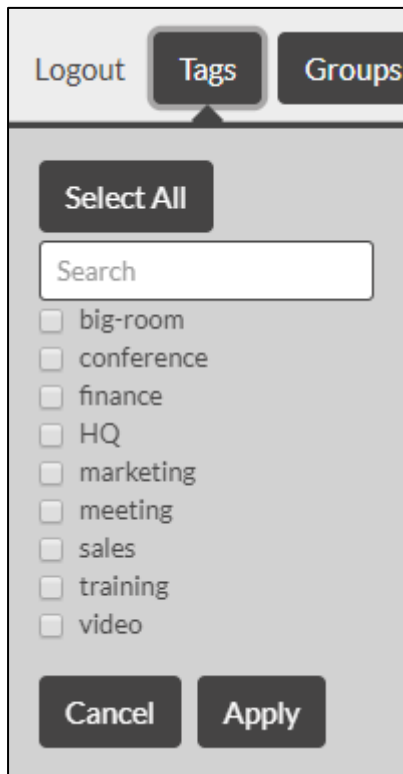
- Understanding which individuals within your organisation are making the most use of meeting space provisions.
- Measuring average percentage occupancy for a given meeting space.
- Planning interventions to reduce the number of future resource faults based on fault frequency over a given time period.

Reserva Analytics is a licensed feature per predetermined numbers of rooms.

## Data Filters

The data shown in Reserva Analytics depends on various filter selections and is shown across three different pages: [User Behaviour](#), [Room Utilisation](#) and [Resource Faults](#).

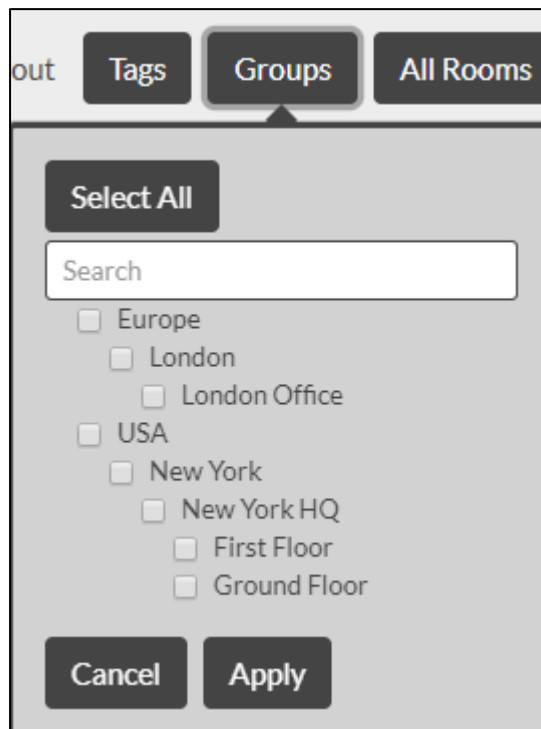
## Tags



The screenshot shows a web interface for managing tags. At the top, there are three tabs: 'Logout', 'Tags' (which is selected and highlighted with a dark background), and 'Groups'. Below the tabs, there is a 'Select All' button. Underneath that is a search input field labeled 'Search'. Below the search field is a list of tags, each with an unchecked checkbox: 'big-room', 'conference', 'finance', 'HQ', 'marketing', 'meeting', 'sales', 'training', and 'video'. At the bottom of the list are two buttons: 'Cancel' and 'Apply'.

Tags are user-defined and can be configured depending on particular data you wish to collect. A room will always belong to only one group, but can be given multiple tags.

## Groups



The screenshot shows a web interface for selecting groups. At the top, there are three tabs: 'out', 'Tags', and 'Groups'. The 'Groups' tab is selected and highlighted with a dark background and white text. Below the tabs, there is a 'Select All' button. Underneath that is a search bar with the placeholder text 'Search'. Below the search bar is a list of checkboxes for selecting groups. The list is organized hierarchically: 'Europe' (checkbox), 'London' (checkbox), 'London Office' (checkbox), 'USA' (checkbox), 'New York' (checkbox), 'New York HQ' (checkbox), 'First Floor' (checkbox), and 'Ground Floor' (checkbox). At the bottom of the interface are two buttons: 'Cancel' and 'Apply'.

Groups are defined by the **Rooms and Resources** settings of your RCM. The default setting is for each group to be all rooms under a specific connector, such as Exchange-On Premises.

## Rooms

Groups All Rooms 27/10

Clear All

Search

- ☒ Conference Room
- ☒ Corporate Conference Centre
- ☒ Meeting Room 1
- ☒ Meeting Room 2
- ☒ Meeting Room 3
- ☒ Meeting Room 4
- ☒ Meeting Room 5
- ☒ Meeting Room 6
- ☒ Meeting Room 7
- ☒ Meeting Room 8
- ☒ Meeting Room 9
- ☒ Meeting Room 10
- ☒ Meeting Room 11
- ☒ Training Room 1
- ☒ Training Room 2
- ☒ Training Room 3
- ☒ Training Room 4
- ☒ Training Room 5
- ☒ Tulip Room
- ☒ VC Room 1
- ☒ VC Room 2

Cancel Apply

All rooms are selected by default. De-selecting rooms will remove them from graphs.

## Date

ce
Logout
All Tags
All Groups
All Rooms
01/02/2020 → 29/02/2020

Last 7 days
Last 30 days
Previous month
Last 90 days
Last 6 months
Last 12 months
Custom Range

<
Feb
2020

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
1	2	3	4	5	6	7

Mar
2020

Su	Mo	Tu	We	Th	Fr	Sa
23	24	25	26	27	28	29
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

01/02/2020 - 29/02/2020
Cancel
Apply

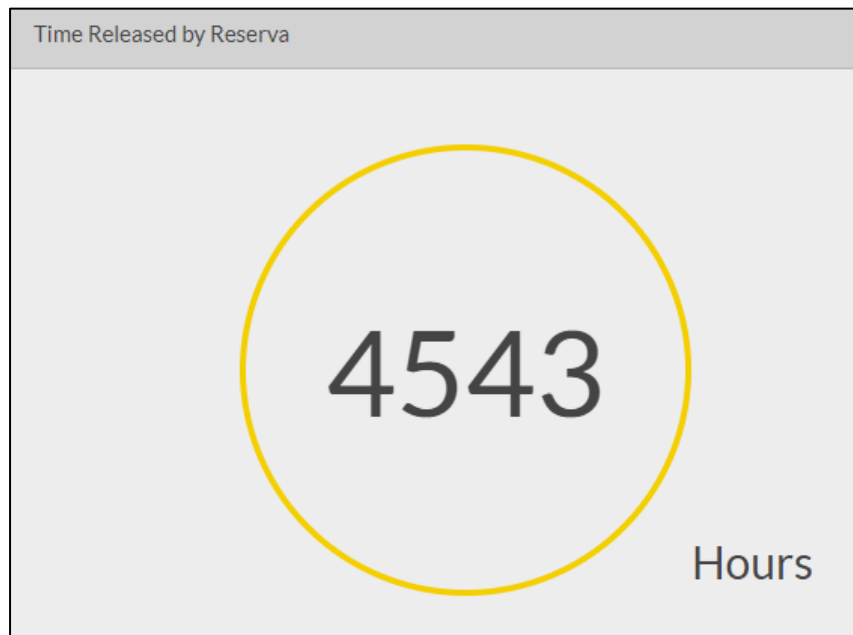
You can filter data based on date. The most recent date you can select will always be the previous day. Pre-set filters can show you selections such as the previous month or 60 days, or you can select a particular date range from the calendars.

All tool descriptions can also be found in the web UI to assist your use of Reserva Analytics.

## User Behaviour

### Time Released by Reserva

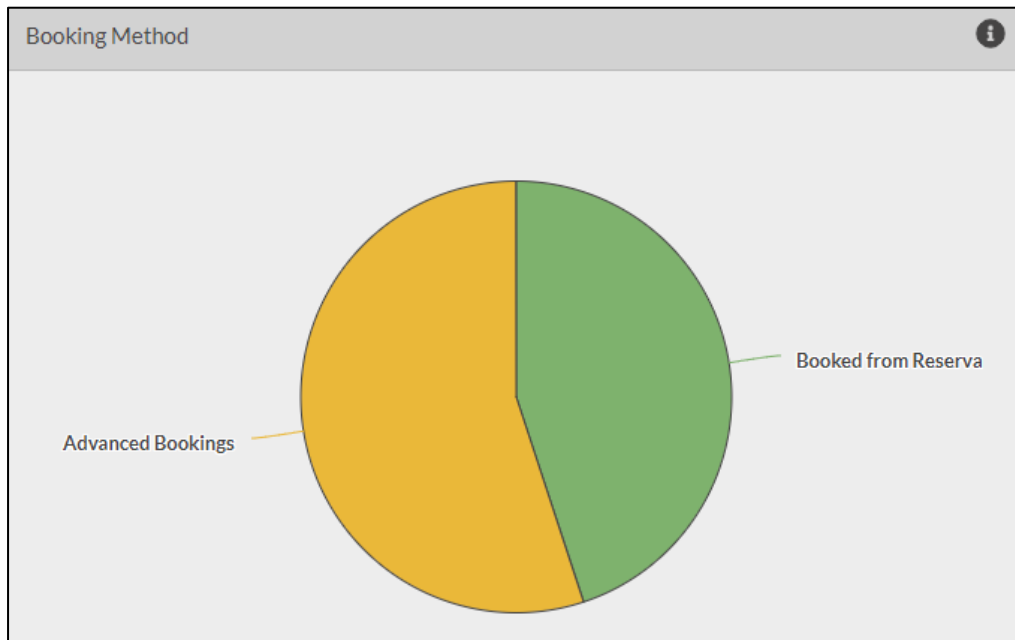
This value represents the total amount of meeting time released back into availability when a 'no show' is detected.



This is a key metric of Return on Investment (ROI) as without Reserva's detection of a 'no show' and subsequent removal of the unattended meeting, this is the total time where the room would be incorrectly shown as occupied within the booking system. A 'no show' can only be detected where **Appointments must be confirmed** is enabled in RCM.

## Booking Method

This chart shows the breakdown of how meetings are booked. **Booked from Reserva** includes all bookings from the Reserva room sign, **Advanced Bookings** include bookings from all other interfaces.





## Room Usage by Organiser

This list shows meeting organisers who are using the rooms most. This is defined by the sum of time where the user was the organiser of an event.

Room Usage By Organiser		
Organiser	Events	Total Duration ↓
Lilah Patel	146	315 hours
Simon Williams	122	265 hours
Molly Powell	126	261 hours
Isobel Evans	109	260 hours
Elliot Cook	136	255 hours

To maximise utilisation, organisations should validate that meetings are being booked for legitimate purposes and, if necessary, address scenarios where rooms are booked just-in-case rather than based on genuine need.

This table shows the top or bottom 5 users (depending on whether total duration is ascending or descending). You can click to see an expanded list of organisers.

## No Show by Organiser

This list shows meeting organisers who have been responsible for the most 'no show' instances, that is, when a meeting is booked but doesn't go ahead and the room is still booked for the duration. The list is sorted by default from most to least. A 'no show' can only be detected where **Appointment must be confirmed** is enabled in RCM. A 'no show' is defined by no meeting confirmation being detected at the Reserva room sign.

No Show By Organiser		
Organiser	No Shows ↓	Time Released
Elliot Cook	129	309 hours
Ivy Hunter	128	230 hours
Molly Powell	125	262 hours
Aleena Burton	121	225 hours
Daniella Cole	121	234 hours

To maximise utilisation, steps should be taken to reduce 'no shows.'

This table shows the top or bottom 5 users (depending on whether no shows is ascending or descending). You can click to see an expanded list of organisers.

## Room Utilisation

### Room Utilisation – Most Used (Top 5)

This list shows the most popular meeting rooms based on percentage utilisation.

Room Utilisation - Most Used (Top 5)		
Room	Total Duration	Utilisation ↓
Meeting Room 5	150 hours	24%
Training Room 4	100 hours	16%
VC Room 2	97 hours	16%
Training Room 5	96 hours	16%
Tulip Room	89 hours	15%

Utilisation is defined by (time where the room is occupied/total available time) x 100. Available time is not based on a 24-hour day, available time is defined by the working hours configured in RCM. For example, if a room is occupied for 3.5 hours within an available period of 8 hours, then the calculation would be (3.5 hours/8 hours) x 100 = 43.75%.

To improve utilisation in other rooms, organisations could research the popularity of these rooms to identify any commonality or trends which make them more appealing to use.

This table shows the top 5 rooms). You can click to see an expanded list of rooms.

## Room Utilisation – Least Used (Bottom 5)

This list shows the least popular meeting rooms based on percentage utilisation.

Room Utilisation – Least Used (Bottom 5)		
Room	Total Duration	Utilisation ↑
Meeting Room 6	0 hours	0%
Meeting Room 7	0 hours	0%
Meeting Room 8	0 hours	0%
Meeting Room 9	0 hours	0%
Meeting Room 10	0 hours	0%

Utilisation is defined by (time where the room is occupied/total available time) x 100. Available time is not based on a 24-hour day, available time is defined by the working hours configured in RCM. For example, if a room is occupied for 3.5 hours within an available period of 8 hours, then the calculation would be (3.5 hours/8 hours) x 100 = 43.75%.

Organisations may research reasons for low utilisation. For example, survey users and plan corrective action to increase utilisation. Alternatively, if a reduction in meeting rooms is planned this list may guide which rooms to target.

This table shows the bottom 5 rooms. You can click to see an expanded list of rooms.

## No Show by Room

This list shows which have had the most 'no show' instances, that is, when a meeting is booked but doesn't go ahead for whatever reason. This list is sorted most to least. A 'no show' can only be detected where **Appointments must be confirmed** is enabled in RCM. A 'no show' is defined by no meeting confirmation being detected at the Reserva room sign.

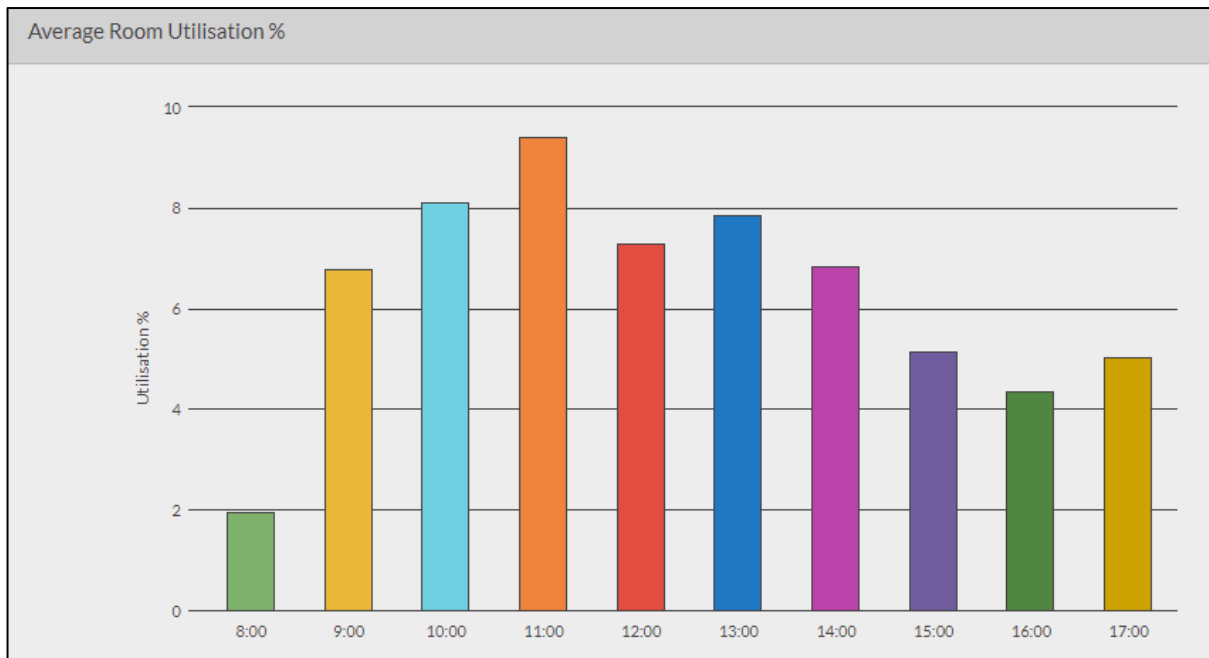
No Show by Room	
Room	No Shows ↓
Corporate Conference Centre	46
Meeting Room 3	43
Meeting Room 2	41
Tulip Room	41
Training Room 4	37

To maximise utilisation, steps should be taken to reduce 'no shows.'

This table shows the top or bottom 5 rooms (depending on whether no shows is ascending or descending). You can click to see an expanded list of rooms.

## Average Room Utilisation %

This chart shows average utilisation rate throughout the day. This allows organisations to identify periods of high/low utilisation of rooms and validate subjective feedback from users regarding the availability of meeting rooms.



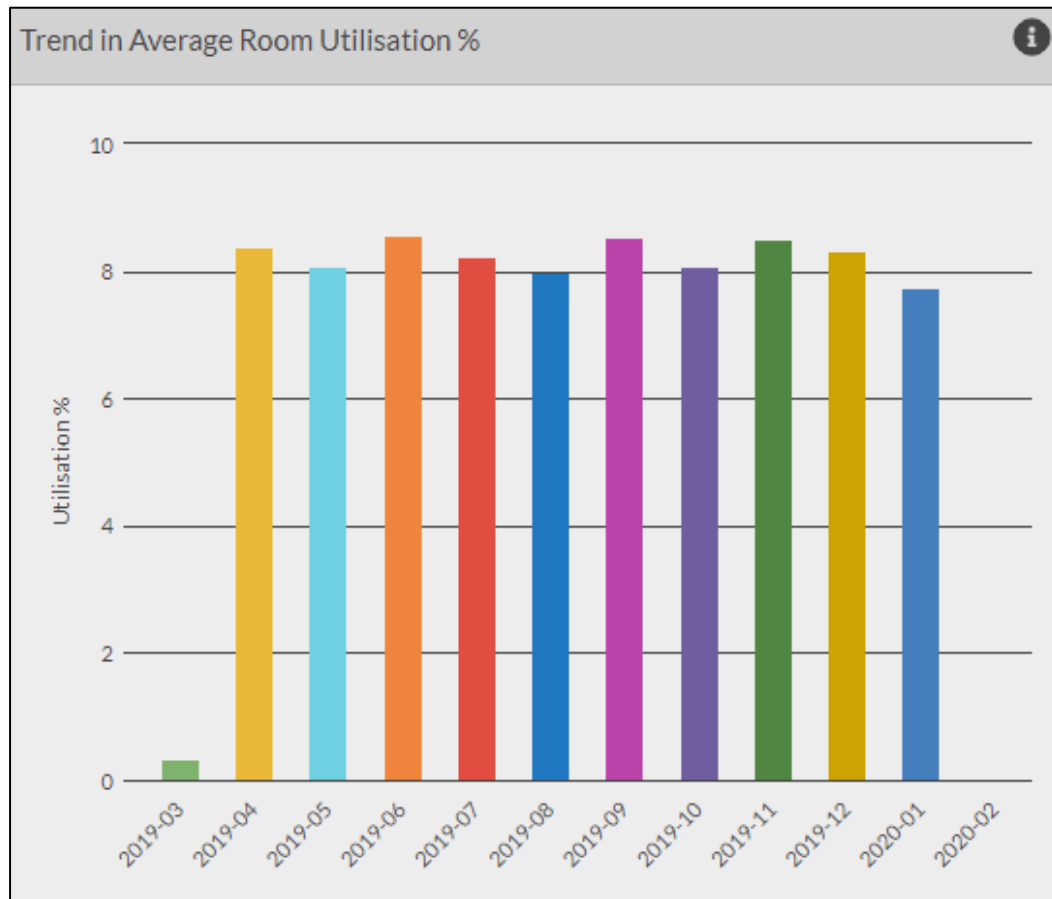
Utilisation is defined by (time where the room is occupied/total available time) x 100. For example, if a room is occupied for 15 minutes within a 60-minute period for 15 minutes within a 60-minute period  $(15 \text{ minutes} / 60 \text{ minutes}) \times 100 = 25\%$

The local start/end times of meetings are normalised into UTC for this chart.

To maximise utilisation, organisations can advise users when quieter periods are and therefore when rooms are more accessible.

## Trend in Average Room Utilisation

This chart shows a long-term trend of average room utilisation. The time range for this chart is independent of the time range used in the rest of the dashboard. This chart will show a rolling 12 month range up to the last complete month.



Utilisation is defined by (time where the room is occupied/total available time) x 100. Available time is not based on a 24-hour day. Available time is defined by the working hours configured in RCM. For example, if a room is occupied for 3.5 hours within an available period of 8 hours  $(3.5 \text{ hours} / 8 \text{ hours}) \times 100 = 43.75\%$

This chart will show a positive trend where interventions and strategies successfully improve utilisation. It will also show seasonality in utilisation of rooms. For example, low utilisation during festive periods.

## Resource Faults

### Total Faults Reported

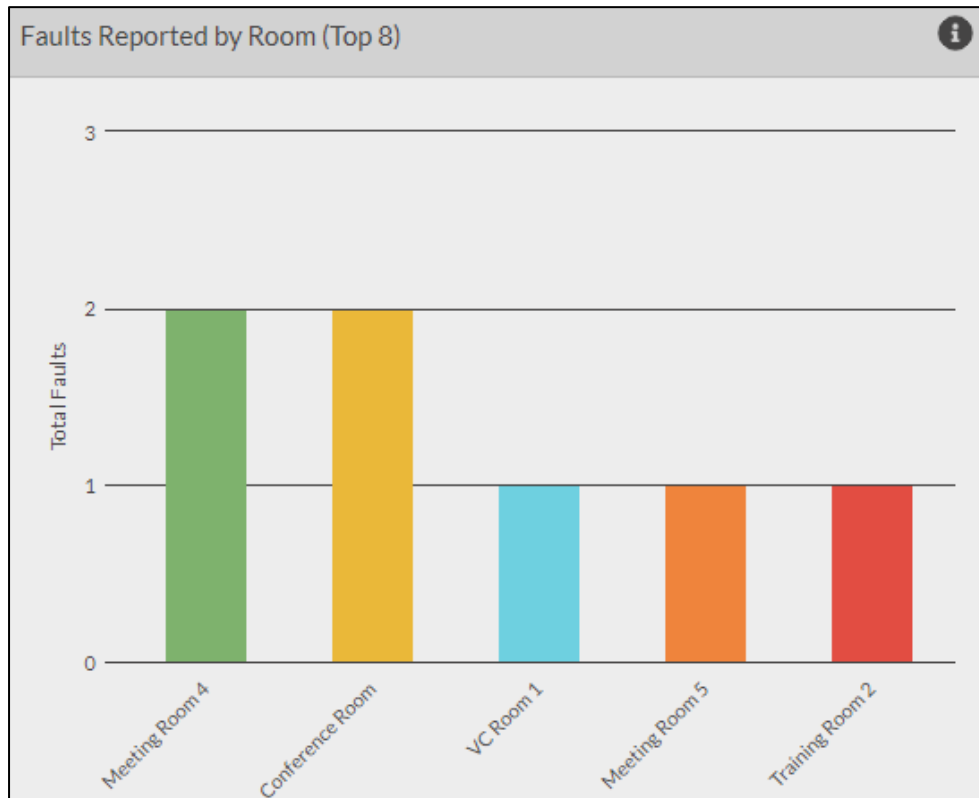
This value represents the total number of fault reports across all selected rooms and the date range. **Fault reporting** from Reserva room signs must be enabled in RCM to populate this chart.





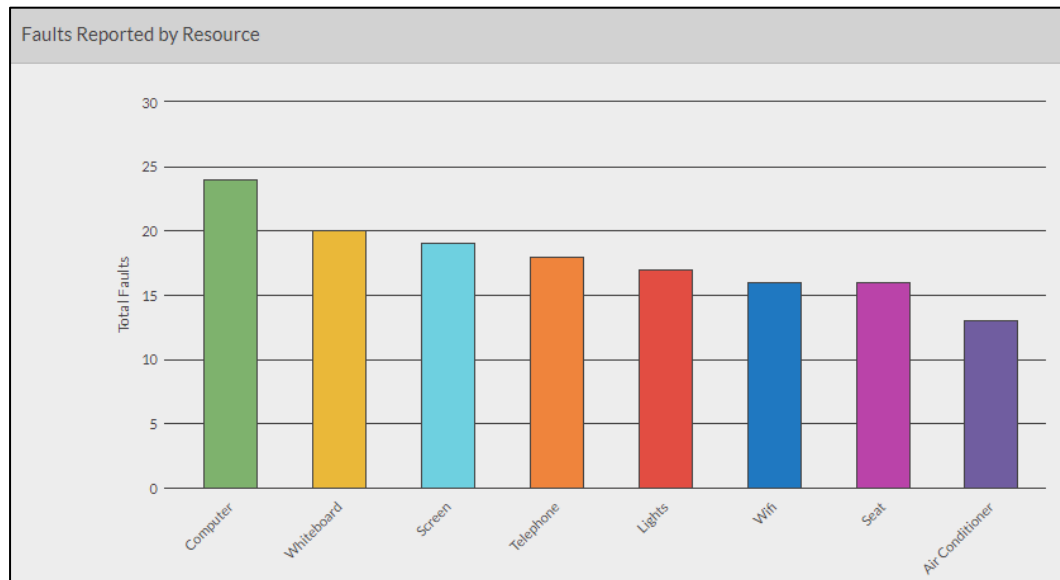
## Faults Reported by Room

This chart shows the total of faults reported based on the room. **Fault reporting** from Reserva room signs must be enabled in RCM to populate this chart.



## Faults Reported by Resource

This chart shows the total of faults reported based on the resource type.

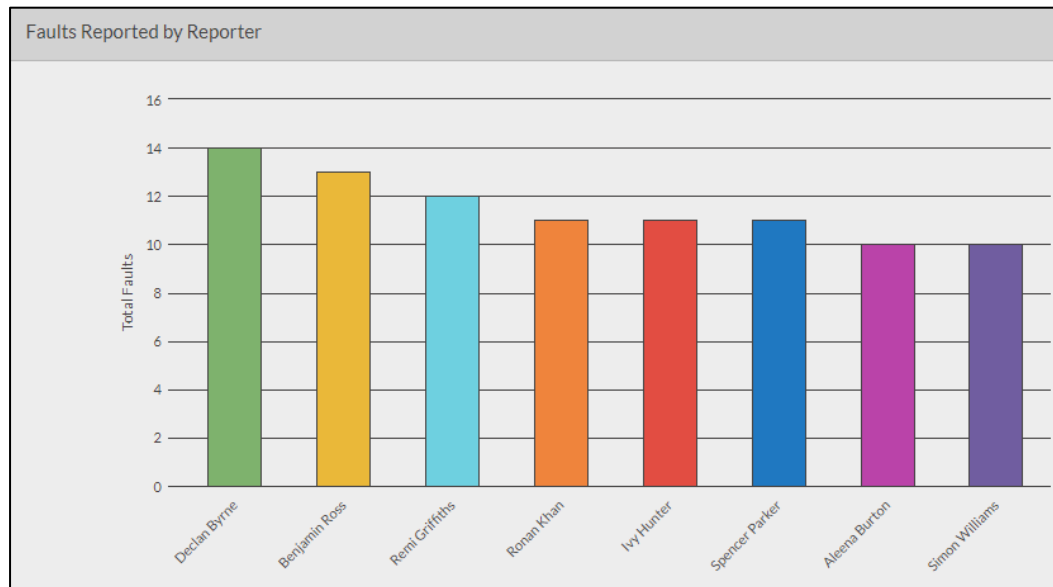


Resources which generate more fault reports than others may not be functioning correctly. Example causes include software bugs and incorrect configuration. Increased fault reports may also identify training needs.

**Fault reporting** from Reserva room signs must be enabled in RCM to populate this chart.

## Faults Reported by Reporter

This chart shows the total of faults reported based on the user who reported the issue.



Users who generate more fault reports than others may highlight user error rather than underlying technical issues. Such users may require additional support or training.

**Fault reporting** from Reserva room signs must be enabled in RCM to populate this chart.

# 10 System

## 10.1 Licensing

On this page, you can see existing licenses applied to your system, licenses due for renewal and options to add new licenses to your system.

If your deployment includes certain features such as NFC authorization or particular calendar systems, you must obtain and add the appropriate license to your RCM.

To add a license:

**Add Licence**

**Some features may require additional software licences**  
Follow steps below to obtain software licence.

Enter your email address and press the Generate button.

Generate

Press the copy button and email the below Activation Code to support@onelan.com

Copy

Paste the licence text into the box below and press Add

Add

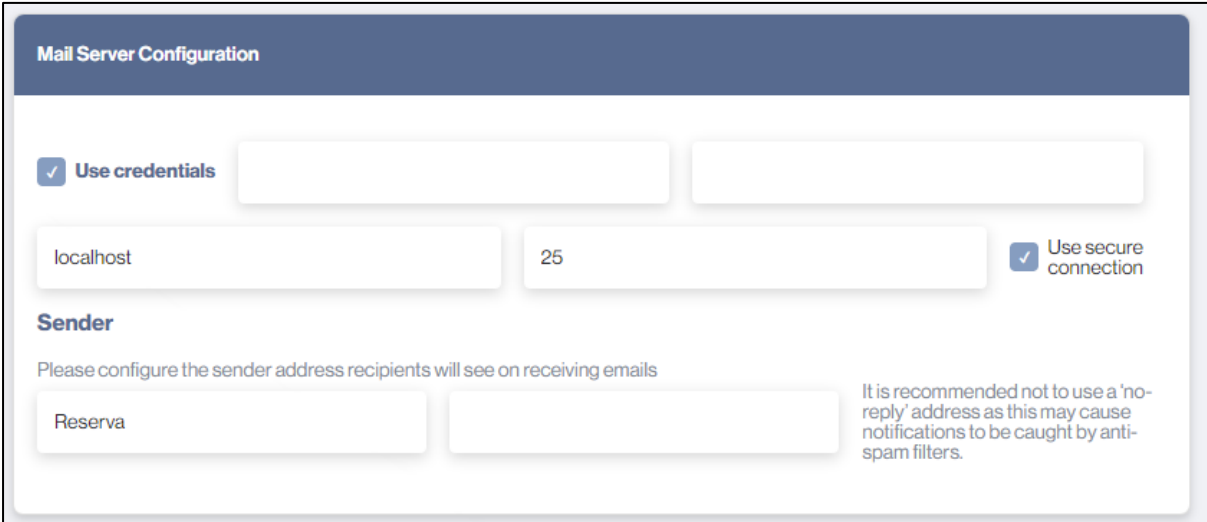
1. Click **Add License**.
2. Enter your email address in the appropriate box and click **Generate**.
3. **Copy** the generated **Activation Code** and contact support ([support@onelan.com](mailto:support@onelan.com)) to obtain an appropriate license.
4. Paste the licence text in the appropriate box and click **Add**.
5. The licence will be applied to your system.

## 10.2 Email Notifications

From this tab, you can configure notifications to be sent from a room within your RCM setup via email. For this to work, **Issue Reporting** must be enabled in applicable rooms and a [profile](#) with **Room Fault Reporting** applied to the room's sign.

Having enabled issue reporting in the desired rooms, you will need to complete email notification setup.

**Note:** Users who want to use Microsoft 365 as the mail server for notifications may find that SMTP AUTH is disabled by default, which in turn disables sending emails via SMTP. If you wish to configure email notifications with this kind of setup, you will have to enable SMTP AUTH for specific mailboxes. Please refer to [Microsoft](#) for more information.



The screenshot shows the 'Mail Server Configuration' interface. It features a dark blue header with the title 'Mail Server Configuration'. Below the header, there are several input fields and checkboxes. A checkbox labeled 'Use credentials' is checked. To its right are two empty input fields. Below these, there are two more input fields: one containing 'localhost' and another containing '25'. To the right of these fields is a checkbox labeled 'Use secure connection', which is also checked. Below the 'localhost' field, the word 'Sender' is displayed in bold. Underneath 'Sender', there is a line of text: 'Please configure the sender address recipients will see on receiving emails'. Below this text are two input fields; the first one contains the word 'Reserva'. To the right of these input fields, there is a note: 'It is recommended not to use a 'no-reply' address as this may cause notifications to be caught by anti-spam filters.'

To do so:

1. Under **Email Notifications Setup**, tick the box for enable sending email notification when issues are reported and use the up and down arrows to set the number of days before a meeting that organizers will be notified of the room faults.

2. Under **Mail Server Configuration**:

- a. If you wish for credentials to be required for sending room fault reports, tick Use credentials and enter the appropriate information in the boxes that will become available when this option is ticked.
- b. Enter an appropriate **Host** and **Port** for your email notifications.
- c. If you wish for a secure connection only to be used, tick the box.
- d. Under **Sender**, enter the email address from which you wish notification emails from RCM to be sent.

3. Under **Service Desk Notification**, enter the contact information for the designated service desk.

4. Once you are happy you have entered the correct details, click **Save**.

Once you have email notifications configured, you can test the system by sending a test email to a particular email address by entering an email address in the **Send a Test Email** box and clicking **Test**. Ensure this is an email you can access to so that you can check the success.

## 10.3 Users

The **Users** tab displays a database of users associated with your RCM for use with authorization. Users are either endpoint users or login users:

<b>System</b> ?		Licensing	Email Notifications	Users	Support & Maintenance	Export CSV	Import CSV	Add entry
Search								
UserID	Email	Full Name	NFC Tag Type	NFC Tag ID	User Type	Created	Modified	
838398020	nick.lavender@uniguest.com	Nick Lavender			123	07/01/2022	08/01/2022	

- **Room sign users** – link an NFC tag to an authenticated user. No credentials are stored in RCM. To authenticate a user, a valid NFC tag must be presented to a Reserva room sign enabled with NFC which will then associate the tag with that user via an email address.

- **RCM Admin** – users authorized to administrate Reserva. These users have access to RCM, the Reserva UI of Edge devices, Reserva Analytics, and so on. Login users are configured within RCM with credentials. You can either choose to give an RCM admin read only access or full read-write access.
- **Analytics** – users are able to log into [Reserva Analytics](#).

**Note:** External authentication is not yet supported.

A user can have one or more roles:

- **Room sign user**
- **Analytics**
- **RCM admin (read only)** – RCM user (read-only)
- **RCM admin** – RCM administration user (read-write)

**Note:** Each user should have at least one **User Role**. This allows access to basic functions, such as the ability to change password, regardless of other roles. When **User Authorisation** is enabled on a connection, RCM will store a database of users and their credentials.

### 10.3.1 Create a New User

**To create a new user:**

1. Click **the Add Entry** button.
2. Enter the **Full Name** and **Email** address of the new user.
3. Give the new user an appropriate **Username**.
4. Select the **User Type: Room Sign User, RCM Admin (read only), RCM Admin** or **Analytics**. All users apart from room sign users will have login privileges for RCM.
5. For room sign users only, enter any appropriate **Authentication Tags**. A user may have one or more tags (for example, NFC tags) associated. Tags are used for authentication on the endpoint device.

6. Click **Save**. For login users, once you have clicked save you will be able to assign a password.

Tags Reserva currently supports:

- MIFARE Ultralight
- MIFARE Ultralight C
- MIFARE Classic
- MIFARE Classic Plus
- MIFARE Classic Pro
- MIFARE Plus
- MIFARE DESFire
- MIFARE DESFire EV1
- MIFARE DESFire EV2

You can also create a new user by linking a new NFC tag on a Reserva device. You will be prompted to enter an email and password for authentication.

RCM will populate other credentials such as **Full Name**, and **Tag Type**.



## 10.4 Support & Maintenance

From this page, you have the ability to create and restore backups, and download a support snapshot.

### Create Backup

Clicking the **Download** button under **Create Backup** will download a zip file that includes backup content for your RCM.

### Restore Backup

To restore RCM to a previously backed-up version, click the **Restore** button under **Restore Backup** and upload the desired zip file to RCM.

### Support Snapshot

Clicking the **Download** button under **Support Snapshot** will create and download a support snapshot as a zip file. This can be sent when requested to Tripleplay support in order to help diagnose issues you may be experiencing with the system.

## 10.5 Legacy Auth

On this tab, you will find and be able to set the global system credentials for configuring existing RCM media setups of version 3.1 and earlier.

# 11 Configuring RCM on Other Devices

For more information of the operation of the Reserva Edge devices that are configurable for use with RCM please refer to the associated user guides.

## 11.1 Media Authentication

To configure media of version 4.0.0 and later:

1. On your media device, configure your RCM server address.
2. Navigate to the [Devices](#) tab of your RCM.
3. Wait for the relevant device to appear under **Pending**.
4. Click on the **Edit device** menu on the device you wish to configure.
5. Pick a group or tag and select the relevant room to display.

**Note:** The group or tag selected will affect the scope of Find Free Room and the profile & theme used as these are assigned to groups and tags.

6. The device will have configured itself shortly.

### 11.1.1 Updating Media Versions on Reserva Edge Devices

#### Updating a Standalone Edge via a Layout Package

First, you will need to download the layout package. Visit the [support portal](#) to do so. Make a note of the download name and file location.

1. Log into the web UI of the relevant NTB.
2. Navigate to **Layout > Layout Packages**.
3. Click **Choose File** and then navigate to the layout package you downloaded earlier.
4. Click **Upload**.
5. Once completed, click **Install**.

6. Observe the **Layout Name**.
7. Select **Schedules**.
8. Edit the **Default** (or current) schedule and change **Show Layout** to the name of the layout you installed.
9. Click **Activate Schedule & Layouts**.

### Updating an Edge subscribed to a CMS

1. Log into the web UI of the relevant CMS.
2. Create a channel on the CMS with your required media layout.
3. Re-subscribe the Edge to the new channel.

For more information, please refer to the CMS User Guide.

### Troubleshooting

The Edge device will try to reconnect to its designated RCM connection, even if the RCM server no longer exists so ensure that this is kept up to date.

You can remove the **Player Local Information** (PLI) information for the RCM server by navigating to **Setup > System > Player Local Information**. Additionally, select **Media > Files & Folders** and navigate to **/HOME/datastore/media/** and delete any files you may have here.

Click **Activate Schedule & Layout** to launch the media again.

## 11.2 Configuring Room Signs

This section explains how to configure your Reserva room signs via **Legacy Authentication** for media version 3.1 and earlier. Topics include:

- Configure Reserva Outside Room Media that runs on the room sign.
- Set the room sign time and date.
- Set the room sign time zone.
- Reconfigure room sign.

## 11.2.1 Configure Room Sign Media

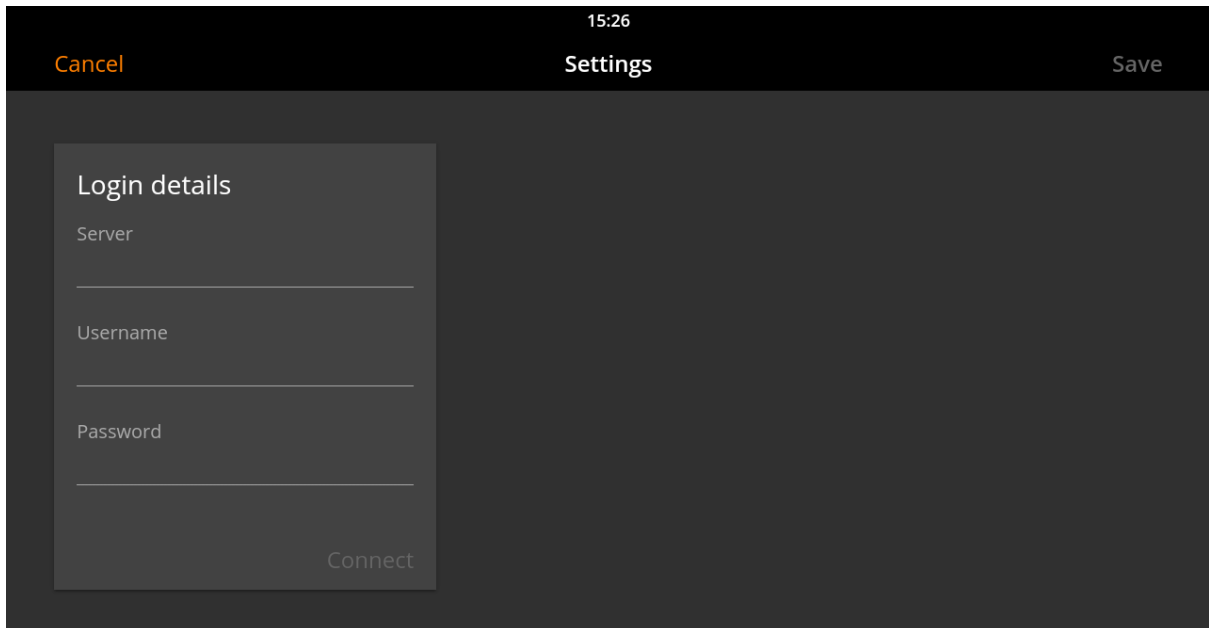
After setting up the required room lists, you configure the outside room media on each room sign for the appropriate room list and room. Once configured, the room sign shows the relevant room information and options.

Each room sign is configured to display the information for a single room within your calendar system. To connect to a specific room, you specify the room list and room.

### **To configure Reserva Outside Room Media**

1. Switch on the device and follow the onscreen instructions to:
  - Connect to the relevant network (to allow the room sign to communicate with RCM).
  - Specify an access code. This code is required to access the device management features.
  - Ensure the room sign time and date is correct. The time and date should be correct. However, if you need to make any changes, see Set the Room Sign Date and Time.

2. You are prompted to provide **the Reserva web server address, username and password.**



The screenshot shows a mobile application interface with a dark theme. At the top, there is a status bar with the time '15:26'. Below it is a header bar with three buttons: 'Cancel' (orange), 'Settings' (white), and 'Save' (white). The main content area is a dark gray rectangle. On the left side of this area is a light gray rounded rectangle titled 'Login details'. Inside this rectangle are three input fields labeled 'Server', 'Username', and 'Password', each with a horizontal line for text entry. At the bottom right of the 'Login details' rectangle is a button labeled 'Connect'.

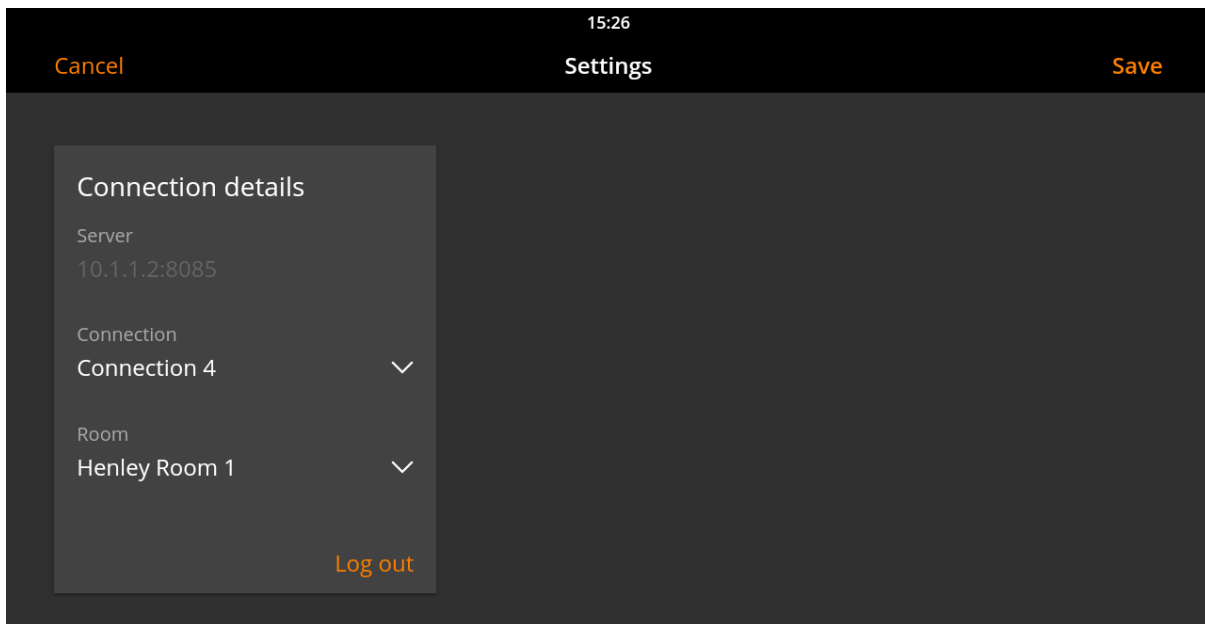
**Note:** You must ensure to include https:// in the server login pane in order to use the HTTPS protocol.

**Reserva web server address:** the IP address or host name of the server running RCM.

**Username** and **Password:** the username and password specified in the RCM Connection for media authentication.

3. Tap **Connect** to connect to RCM. The list of available connections and rooms will appear.
4. Select the required connection and, if applicable, room:
  - To connect to a specific room within your calendar system, select the required **Connection** and **Room Name**. Tap **Save**.

- To configure a summary for a number of rooms within your calendar system, select the required **Connection**. Tap **Save**.



5. This completes initial setup. The room sign presents the room information and relevant/enabled options. For example, the availability of a specific room within your calendar system.

### 11.2.2 Reconfigure Room Sign Media

A Reserva room sign can be reconfigured at any time, using the **Settings** option. For example, you may need to reconfigure the sign to retrieve information for a different meeting room.

To view and update the room sign settings

1. Tap the **Settings** icon on your Reserva room sign. The Reserva setup screen appears.
2. Specify the required details (for example, select a different connection and room name).
3. Tap **Apply** to save the changes and return to the main screen.

## 11.3 Configure Reserva Room Summary Media

After setting up the required connections, you configure the Reserva room summary media on your NTB. The room summary media shows a summary of the appointments for the rooms added to the connection.

**Note:** For more information regarding your particular NTB model, features and configuration, please refer to the relevant NTB user guide. This procedure assumes your NTB is set up already and describes how to configure Reserva room summary media only.

The procedure below explains how to configure room summary media using the layout package available from Tripleplay. This results in the room summary media displayed in full screen (in a single zone layout). However, if preferred, you can configure the layout as a multi-zone layout. Please refer to your NTB user guide for further details.

The NTB is configured to show a mix of media including Reserva room summary information. The NTB display is divided into zones and the recommended sizing for the zone is configured to display Reserva room summary media is shown below.

Configuration of the room summary media includes the following tasks:

- [Obtain room summary media layout package](#)
- [Check NTB license](#)
- [Configure NTB XML web services](#)
- [Install room summary media layout package](#)
- [Configure room summary media](#)
- [Configure NTB schedule](#)

### 11.3.1 Obtain room summary media layout package

Before configuring the room summary media on your NTB, ensure you have the Reserva room summary media layout package. The layout package can be downloaded from the [Tripleplay support portal](#). The layout package is a single file containing all the media and control files needed to install the room summary media layout on your NTB. During configuration of your NTB, you upload the layout package file to the NTB.

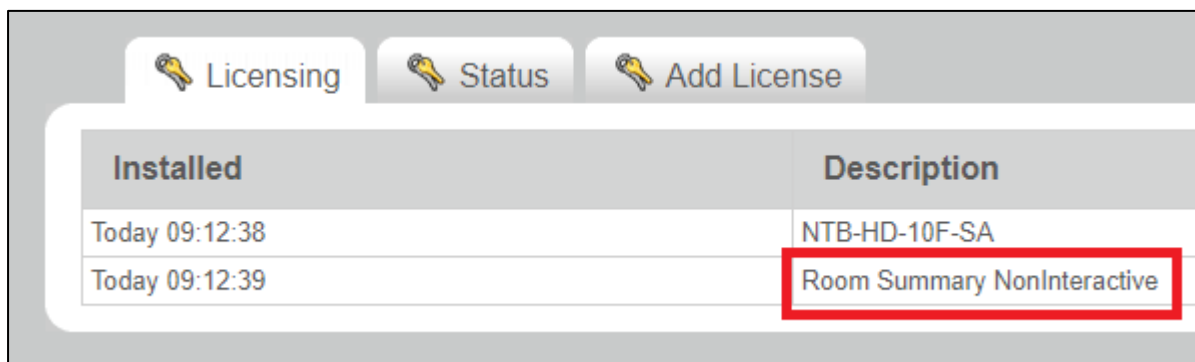
### 11.3.2 Check NTB License

A license is required to enable room summary media support. The license may have been installed during the sales process. The procedure shows you how to check if your NTB includes the license already.

#### To configure Reserva room summary media on your NTB

1. Log into your NTB.
2. To check if your NTB is licensed to run the room summary media, navigate to **Setup > System > Licensing**.

The **Licensing** screen appears.



Licensing	
Status	
Add License	
Installed	Description
Today 09:12:38	NTB-HD-10F-SA
Today 09:12:39	Room Summary NonInteractive

- If **RoomSummaryNonInteractive** appears in the list of licenses, the NTB is licensed to run room summary media and no further licensing is required. Continue to the next step.
- If **RoomSummaryNonInteractive** is not on the list, you must obtain and apply a room summary license. For more information, see the process in the next section (then return to this procedure to complete the room summary media configuration).

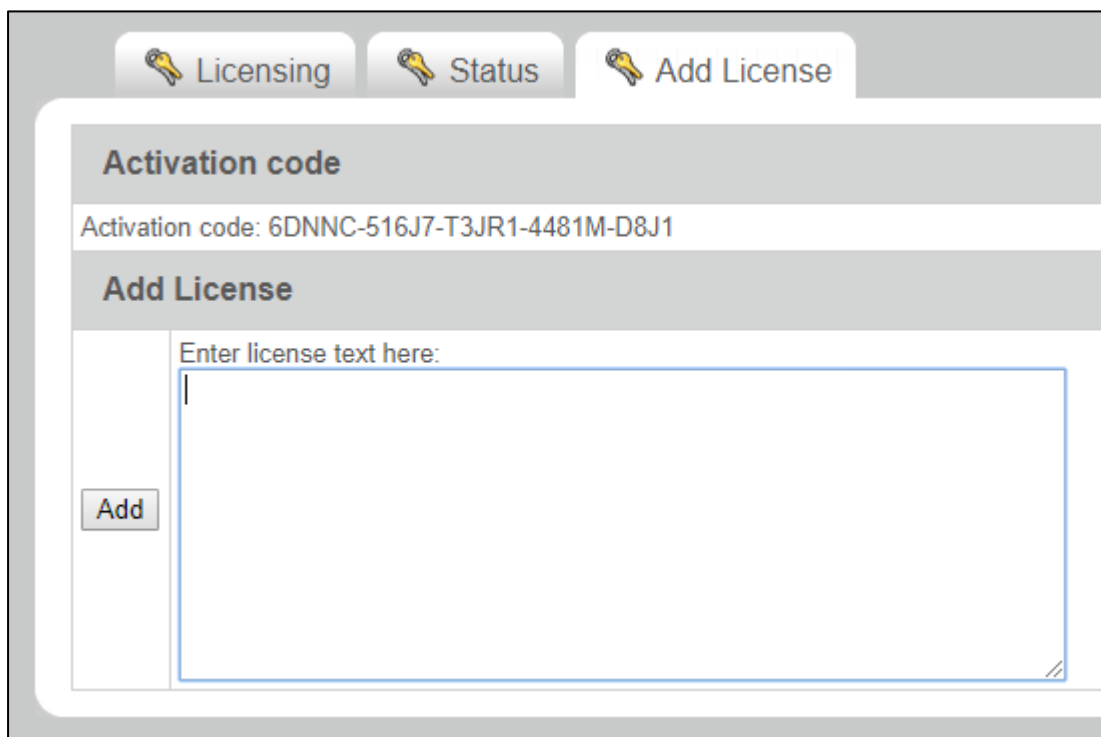


### 11.3.3 License NTB for Room Summary Media

A license is required to allow your NTB to run the room summary media. The license may have been purchased and installed during the sales process. If so, no additional licensing steps if the license is not installed, you must install the license.

#### To add a license for room summary

1. Navigate to **Setup > System > Licensing** and select the **Add License** tab to find your activation code.
2. Contact Tripleplay to request a room summary license for your NTB. You must provide your NTB serial number and activation code and request a room summary media license.
3. On receipt of your license details, you will need to add the license. On the **Add License** tab, copy and paste the license into the license text box. Click **Add**.



The screenshot shows a web interface with three tabs: 'Licensing', 'Status', and 'Add License'. The 'Add License' tab is active. Below the tabs, there is a section titled 'Activation code' with a text box containing the code '6DNNC-516J7-T3JR1-4481M-D8J1'. Below this is another section titled 'Add License' with a large text box labeled 'Enter license text here:'. To the left of this text box is a button labeled 'Add'.

4. Reboot your NTB.

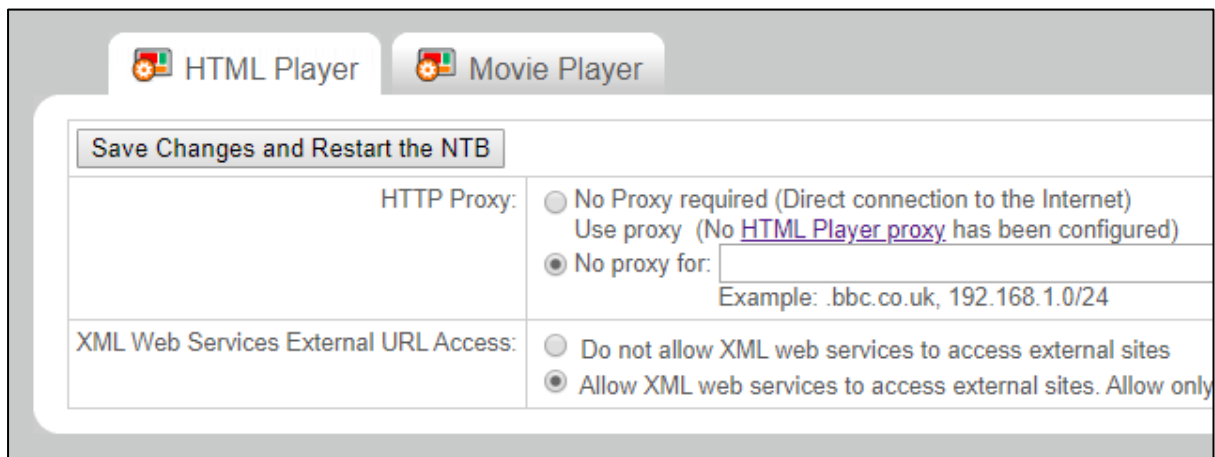
This completes the room summary media licensing. You can now configure your NTB room summary media.

### 11.3.4 Configure NTB Player XML Web Services

You must configure the NTB player to allow XML web services to external sites, to allow the room summary media to retrieve the room summary information from RCM.

To configure NTB player XML web services

1. Navigate to **Setup > Player > Players**.
2. Ensure **Allow XML web services to access external sites** is selected. Click **Save Changes and Restart the NTB**.

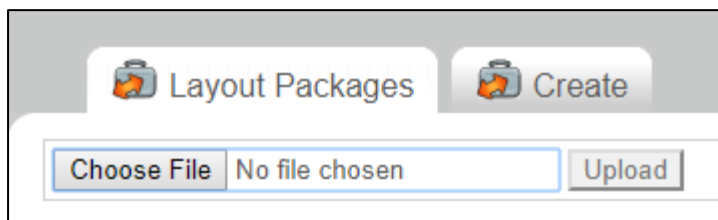


The screenshot shows the 'HTML Player' configuration window. At the top, there are tabs for 'HTML Player' and 'Movie Player'. Below the tabs is a button labeled 'Save Changes and Restart the NTB'. The main configuration area is divided into two sections. The first section is 'HTTP Proxy:' with two radio button options: 'No Proxy required (Direct connection to the Internet) Use proxy (No [HTML Player proxy](#) has been configured)' and 'No proxy for:'. The second section is 'XML Web Services External URL Access:' with two radio button options: 'Do not allow XML web services to access external sites' and 'Allow XML web services to access external sites. Allow only'.

### 11.3.5 Install Room Summary Media Layout Package

To install the Reserva room summary media layout package.

1. On your NTB, navigate to **Layouts > Layout Packages**.



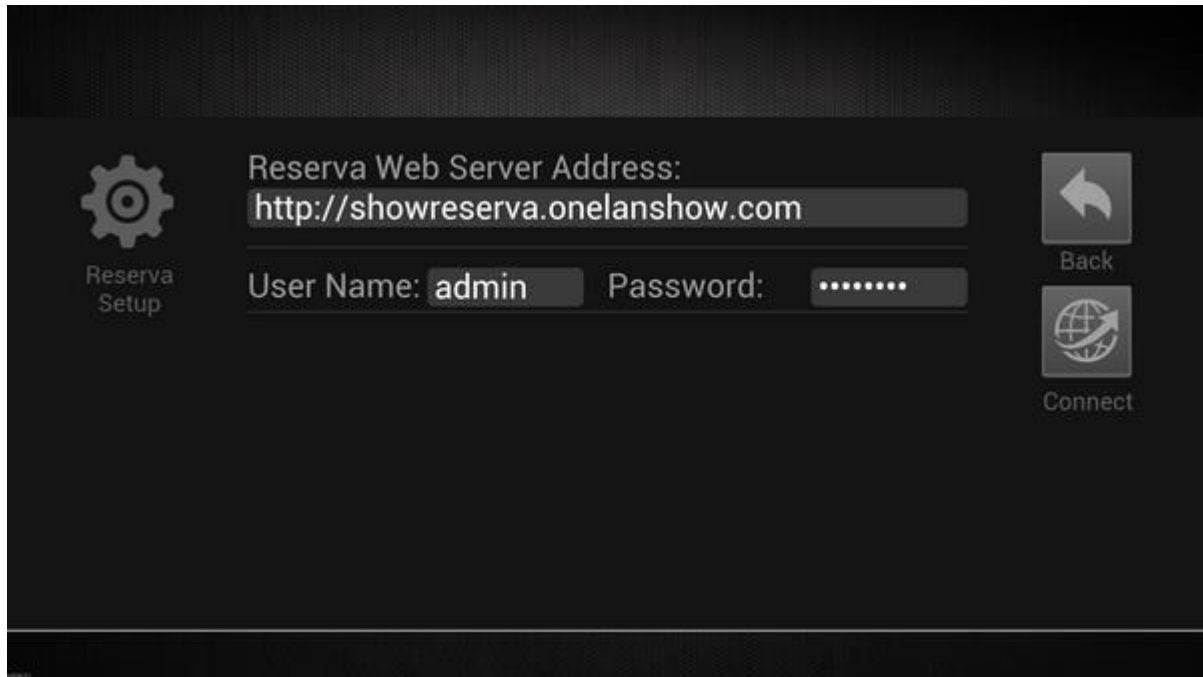
The screenshot shows the 'Layout Packages' interface. At the top, there are tabs for 'Layout Packages' and 'Create'. Below the tabs is a button labeled 'Choose File' followed by a text box containing 'No file chosen' and an 'Upload' button.

2. Click **Browse** and select the Reserva room summary layout package. Click **Upload**.
3. Select **Playlists > [OutsideRoom] > [Zone]**.

4. Click the **index.html** link to open the Reserva configuration page.

### 11.3.6 Configure Room Summary Media

1. Enter the Reserva web service address, username and password.

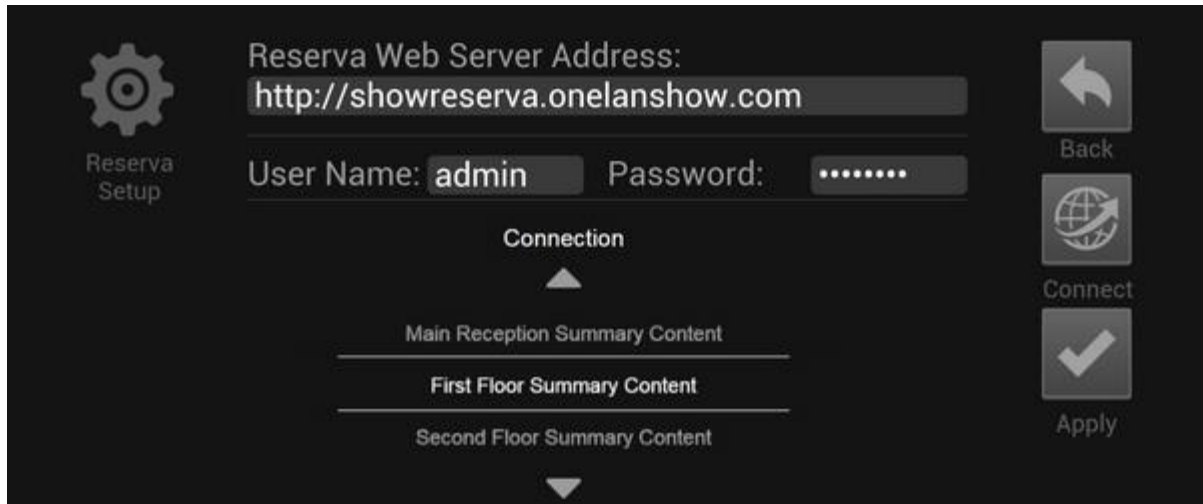
The image shows a dark-themed web interface for 'Reserva Setup'. On the left, there is a gear icon and the text 'Reserva Setup'. The main area contains three input fields: 'Reserva Web Server Address:' with the value 'http://showreserva.onelanshow.com', 'User Name:' with the value 'admin', and 'Password:' with a masked password '.....'. On the right side, there are two buttons: 'Back' with a left-pointing arrow icon and 'Connect' with a globe and right-pointing arrow icon.

**Reserva web server address:** the IP address or host name of the server running the RCM.

**Username and password:** the username and password specified in your RCM for media authentication.

2. Click **Connect** to connect to your RCM. The list of available Connections appears.

3. Select the required Connection. Click **Apply**.



The image shows a 'Reserva Setup' screen. On the left is a gear icon with the text 'Reserva Setup'. The main area contains the following fields and options:

- Reserva Web Server Address:** A text box containing 'http://showreserva.onelanshow.com'.
- User Name:** A text box containing 'admin'.
- Password:** A text box with masked characters '.....'.
- Connection:** A section with a downward arrow and three options, each with a horizontal line below it:
  - Main Reception Summary Content
  - First Floor Summary Content
  - Second Floor Summary Content

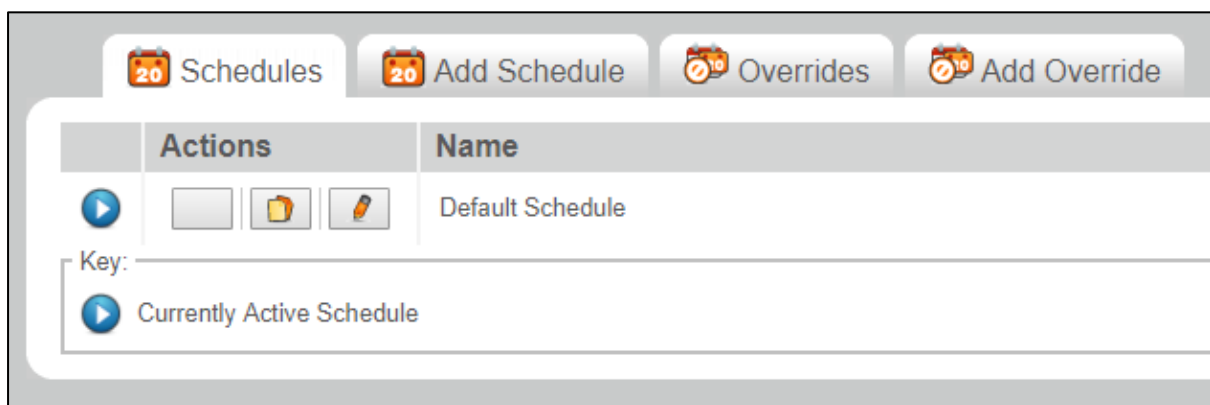
On the right side, there are three buttons: 'Back' (with a left arrow icon), 'Connect' (with a globe icon), and 'Apply' (with a checkmark icon).

4. Navigate to your NTB home page and click **Activate Schedules and Layouts**. You should now be able to see all appointments for all rooms assigned to the Connection you have specified.

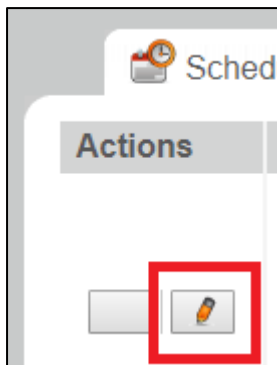
### 11.3.7 Configure NTB Schedule

To complete the configuration, you need to add the new layout to a schedule and activate the schedule. The schedule determines the layout to display and the specific times and dates for the schedule. For more information regarding schedules and layouts, refer to your NTB user guide or online help. In the steps below, a room summary layout is added to the default schedule.

1. On your NTB, navigate to **Schedules > Manage Schedules**.
2. Click the **Edit** option for the default schedule.



3. Click the **Edit** button.



4. From the **Show Layout** drop-down menu, select the **Room-Summary** layout and click **Save Changes**.

The screenshot shows the 'Schedule Entry' dialog box. The 'Add Schedule Entry' tab is selected. The 'Default Actions' section includes the following settings:

- Audio: Unmute
- Screen: On
- Show Layout: Room-Summary
- Advance To: Asia

The 'Save Changes' button is highlighted.

5. Click **Activate Schedules and Layouts** to apply the changes.

This completes the room summary media configuration. The NTB presents a summary of the appointments for the rooms added to the Connection.

Meetings scheduled as all day meetings appear at the top of the list, followed by all other individual meetings. Meetings are shown in order according to the scheduled start time for each appointment.

### 11.3.8 Reconfigure Room Summary Media

Reserva room summary media can be reconfigured at any time. For example, you may need to reconfigure the room summary media to retrieve summary information for rooms on a different Connection.

To reconfigure room summary media

1. Log into your NTB and select **Playlists > Layout > Zone**.
2. The Reserva zone playlist window appears.



3. Click the **index.html** to open the Reserva configuration page.
4. Modify the room summary media as required. For more information regarding the configuration options, see [Configure Reserva Room Summary Media](#).

## 12 Appendix A: Optimizing Exchange

This section details recommendations and options to optimize integration with Microsoft Exchange. It includes instructions designed for the administrator of the Microsoft 365 or Exchange environment and such optimization requires previous experience with using PowerShell. See [Appendix B: PowerShell Commands for Exchange/365](#) for more information.

### Auto accept meetings

It is recommended that Exchange is configured to automatically accept or decline meetings.

If this is not enabled, there will be a discrepancy between the information display on Reserva room signs and the information in Exchange. This discrepancy will be present from the point at which an appointment is added, or modified, until the change is approved manually in Exchange. During this time, it is possible for conflicted meetings to be booked for the same resource (mailbox).

### Resource permissions

All accounts used by Reserva require, at a minimum, **Reviewer** permission with Exchange. If a Reserva Connection is configured to allow users to create, cancel or modify meetings, the Exchange account for the Connection also requires **Editor** permission.

### Room Resource Display Properties

You can use the Exchange **AddOrganizerToSubject** mailbox property to automatically display the organizer within the appointment subject, if required.

### Privacy

The Exchange **DetailLevel** mailbox property specifies the level of calendar detail to be published and displayed on the room signs. The following values can be specified:

- **AvailabilityOnly**
- **LimitedDetails**
- **FullDetails**
- **Editor**

**Note:** The default value is **AvailabilityOnly**.



## Remove Private Meeting Property

The **ExchangeRemovePrivateProperty** Boolean mailbox property indicates if Exchange will show details for meetings that are marked as private.

It is recommended that the setting is disabled (false) for each mailbox used by Reserva, indicating that private meetings will be displayed with obscured details.

## Throttling

Exchange may throttle the number of requests that each user is allowed to execute. These are per user limits and the impact can be avoided or minimized by using one user per account per Connector.

## Exchange 2013 Settings

Property	Description
<b>EwsCutoffBalance</b>	Defines the resource consumption limits for an Exchange web services (EWS) user before that user is completely blocked from performing operations on a specific component.
<b>EwsMaxBurst</b>	Defines the amount of time that an EWS user can consume an elevated amount of resources before throttling is applied. This is measured in milliseconds. This value is set separately for each component.
<b>EwsRechargeRate</b>	Defines the rate at which an EWS user's budget is recharged (budget grows by) during the budget time.

## Exchange 2010 Settings

Property	Description
<b>EWSPercentTimeInAD</b>	Defines the percentage of time per minute during which a specific user can execute Active Directory requests.
<b>EWSPercentTimeInCAS</b>	Defines the percentage of time per minute during which a specific user can execute Client Access server code.
<b>EWSPercentTimeInMailboxRPC</b>	Defines the percentage of time per minute during which a specific user can execute mailbox RPC requests.

## 12.1 Azure AD Configuration for Modern Authentication

The **Exchange Online/365 connector** in RCM 4.1 is based on **Microsoft Graph API**. **Modern Authentication** is required for this connector. This authentication is done at the application level.

To use **Modern Authentication** for [Exchange Connections](#), you will need to register Reserva as an application with **Azure AD** and configured with **Application Permissions**. This needs to be configured by the administrator of your Exchange Online/365 account.

Reserva requires access to the **Calendars** API for room mailboxes and the **Places** API for lists of rooms in Microsoft Graph.

**Note:** **Modern Authentication** is only supported in Exchange Online / 365 or Hybrid environments.

Requirements:

- Administrator access to Exchange Online/365 and Azure AD
- Room mailboxes. These do not need any prior permissions assigned and don't need licences in 365.

### 12.1.1 Registering Reserva as an Application with Azure AD

1. Open a browser and navigate to the [Azure Active Directory admin center](#). Log in using a **personal account** (your Microsoft account) or a **Work or School Account**.
2. Select **Azure Active Directory** in the left-hand navigation, then select **App registrations** under **Manage**.

3. Select **New registration**. On the **Register an application** page, set the values as follows:
  1. Enter a friendly **Name** for your app (for example, Reserva).
  2. Set **Supported account types** to the choice that makes sense for your setup:
    - **Accounts in this organizational directory only** for single tenant.
    - **Accounts in any organizational directory** for multi-tenant.(Options including personal Microsoft accounts should not be required)
  3. For **Redirect URI**, change the drop-down to **Public client/native (mobile & desktop)** and set the value to `urn:ietf:wg:oauth:2.0:oob`
  4. Click **Register**. On the next page, copy the value of the **Application (client) ID** and **Directory (tenant) ID** and save them, you will need these later.
  5. Select Certificates & Secrets in the left-hand navigation under Manage.
  6. Select **New client secret**, enter a short description, select expiry and click **Add**.

**Note:** If an expiry other than **Never** is used, the secret will need to be updated in RCM when it expires. **Never** is recommended for a service application. The secret can be changed or permissions revoked at any time by the administrator.

7. Copy the **Value** of the newly added client secret and save it. You will need it later.

**Note:** Only **Client Secrets** are supported in RCM. Certificates are not supported.

### 12.1.2 Configure application permissions

The following applies default permissions granting Reserva access as an application to mailbox Calendars and (optionally) Places. These permissions can be further restricted in the next section if desired.

1. Select **API permissions** from the left-hand navigation under **Manage**.
2. Select **Add a permission** to bring up **Request API permissions** page.
3. Select the **Microsoft APIs** tab and **Microsoft Graph**.

4. On the next page, select **Application** permissions and then expand **Calendars**.
5. Select **Calendars.ReadWrite** for interactive use (**Calendars.Read** can be used if Reserva is to be used in read-only mode).
6. Expand **Place** and select **Place.Read.All**. This allows Reserva to fetch available room mailboxes and read location-based group information.
7. Click **Add permissions**.
8. Select **Grant admin consent for [your organization]** and accept the consent dialog.

### 12.1.3 Restrict mailbox access

To restrict access to desired mailboxes, use the following steps to define an **Application Access Policy** to restrict the application's access. This is an optional step.

1. Connect to Exchange Online PowerShell. See the following document for information: [Connect to Exchange Online PowerShell](#).
2. Create a distribution group for Reserva Rooms. Note, this is different to room distribution lists as it needs to be a group of type **Security** to be able to assign an **Application Access Policy**.

```
New-DistributionGroup -Name ReservaRooms -Type Security -Notes  
"Reserva Rooms"
```

3. Add rooms to the distribution group. This would need to be repeated for all desired rooms.

```
Add-DistributionGroupMember -Identity ReservaRooms -Member  
room1
```

4. Create an **Application Access Policy** for the rooms.

```
New-ApplicationAccessPolicy -AccessRight RestrictAccess -AppId  
"[APP_ID]" -PolicyScopeGroupId "ReservaRooms" -Description  
"Restrict access to Reserva Rooms"
```

Replace **[APP\_ID]** with the **Application (client) ID** noted earlier on registering Reserva as an application.

5. To test the access that will apply for the policies set, the following command can be used:

```
Test-ApplicationAccessPolicy -Identity [MAILBOX] -AppId "[APP_ID]"
```

Replace [APP\_ID] with the Application (client) ID noted earlier on registering Reserva as an application.

Replace [MAILBOX] with the ID of the mailbox you want to check the application has access to or to check a mailbox is denied access as expected (for example, a non-room mailbox, other than the service account).

**Note:** An access policy can take up to an hour to apply to RCM.

The `Test-ApplicationAccessPolicy` command may succeed as PowerShell is connected directly to Exchange Online environment and gets immediate changes before they have propagated.

## 13 Appendix B: PowerShell Commands for Exchange/365

This section provides examples of Exchange PowerShell commands for setting up rooms with RCM.

The following steps are not required for Office 365 connections:

- Create service account
- Create room list
- Add to the room list
- Assign permissions to the service account
- Impersonation role

They are needed for Exchange On-Premises. That is, EWS needs them but Microsoft Graph does not.

This @my.domain address and names/aliases used within the examples are sample text only. These room names, descriptions, aliases and email addresses should be replaced as appropriate.

### Create Service Account (if not already set up)

First, set a password for the account. This will prompt for a password as a secure string and set it in the variable \$password.

```
$password = Read-Host "Password:" -AsSecureString
```

### Microsoft 365/Exchange Online

```
New-Mailbox -MicrosoftOnlineServicesID reserva@my.domain -Alias  
reserva -Name Reserva -DisplayName "Reserva Service Account"  
-PrimarySmtpAddress reserva@my.domain -Password $password
```

### Exchange on premises

```
New-mailbox -UserPrincipalName reserva@my.domain -Alias reserva  
-Name Reserva -DisplayName "Reserva Service Account"  
-PrimarySmtpAddress reserva@my.domain -OrganizationalUnit users  
-Password $password
```

## Create room list

**Note:** The domain part of the SMTP address must match the domain of the account used to query rooms.

```
New-DistributionGroup -NameRooms -DisplayName "Rooms"  
-PrimarySmtpAddress rooms@my.domain -RoomList
```

## Create rooms

Repeat for each room (optional if you already have rooms).

```
New-Mailbox -Name "TestRoom1" -DisplayName "Test Room 1" -Room
```

For Exchange On-Premises only, to create a room in a specific database if desired:

```
New-Mailbox -Database "Mailbox Database 1" -Name "TestRoom1" -  
DisplayName "Test Room 1" -Room
```

Where "Mailbox Database 1" is the name of the desired database.

## Assign permission to the service account

**Note:** This step is optional for an Exchange On-Premises connector. It's not required if **Use Impersonation** is enabled.

All mailbox accounts used by RCM require, at a minimum, **Reviewer** permission.

If a Connection is configured to allow users to create, cancel or modify appointments, then Editor permission is required at a minimum. These permissions are set on the room mailbox calendar folder.

```
Add-MailboxFolderPermission -Identity "TestRoom1:\Calendar"  
-AccessRights Editor -User reserva@my.domain
```

**FullAccess** can also be set on the mailbox itself. This may ensure full access by RCM to the mailbox and appointments.

```
Add-MailboxPermission -Identity "TestRoom1" -AccessRights FullAccess  
-User reserva@my.domain
```

## Add to the room list

```
Add-DistributionGroupMember Identity Rooms -Member "TestRoom1"
```

## Set attributes on each room

These are the advised default attributes for a room for use with Reserva.

<code>AutomateProcessingAutoAccept</code>	This auto-accepts bookings in the room.
<code>DeleteSubject \$False</code>	This means that the organizer name will not be appended to the subject text. The organizer is still available as a property on the booking anyway.
<code>RemovePrivateProperty \$False</code>	This will allow the use of the private meeting flag when inviting a room to a meeting.
<code>RemovePrivateProperty \$False</code>	This will allow the use of the private meeting flag when inviting a room to a meeting.

```
Set-CalendarProcessing -Identity "TestRoom1" -AutomateProcessing  
AutoAccept -DeleteSubject $False -AddOrganizerToSubject $False  
-RemovePrivateProperty $False
```

## Impersonation Role

The impersonation role allows a service account to impersonate room mailbox. This applies particularly to the push (streaming subscriptions) method that RCM uses to connect with Exchange by default.

Push subscriptions will open Connection for each mailbox or mailbox group in Exchange and wait on notifications. Exchange and, in particular, Microsoft 365 may limit the number of subscriptions and Connections per service account. However, using impersonation means that the limits are per room mailbox.

The impersonation role can be used as an alternative to setting up mailbox permissions per room mailbox. This applies to both push and legacy polling methods in RCM.

If impersonation is being used, this must also be enabled in ECM under the Exchange Connection [Advanced settings](#).

## Scope limited to room mailboxes

By default, an impersonation role is wide open and applies to all mailboxes in the organization. However, you can limit the scope of impersonation to, for example, just room mailboxes.

```
New-ManagementScope -Name ReservaImpersonationScope  
-RecipientRestrictionFilter {RecipientTypeDetails for example,  
"RoomMailbox"}
```



## Impersonation role assignment

```
New-ManagementRoleAssignment -Name ReservaImpersonation  
-Role ApplicationImpersonation -User reserva@my.domain -  
CustomRecipientWriteScope ReservaImpersonationScope
```

Further information can be found in the following articles:

- [Connect to Exchange Online PowerShell](#)
- [Open the Exchange Management Shell](#)
- [Enable Room Finder with Room List Distribution Groups](#)

# 14 Appendix C: Additional Internet Settings and Configuration

## 14.1 Configure SSL

SSL can be configured in RCM to establish a secure connection between:

- A web browser and RCM
- Reserva room signs and RCM

This requires applying an SSL certificate to RCM.

### 14.1.1 Configure RCM Ports

On installing RCM, you are prompted to configure the ports and protocol for the web services. RCM should be configured to use internal ports and HTTP protocol. Internet Information Server (IIS) will map HTTPS ports to these internal ports.

The default ports may be suitable for this:

- Room sign port – 8080 – HTTP
- Connection manager port – 5000 - HTTP

It is advised that when using IIS to configure SSL, you leave RCM on HTTP. When using IIS, RCM should be installed on a HTTP port only as IIS does the rest.

Next you will need to create an SSL certificate.

### 14.1.2 Creating an SSL Certificate

There are 2 different options for creating an SSL certificate.

#### **Option 1: From a certificate issuing authority**

This will depend on your IT processes, contact your administrator for more information. A web certificate needs to be acquired that is valid for the DNS name of the RCM server as would be used by users in a browser to access the RCM UI and any Reserva media connecting to RCM. You can also use an existing domain certificate if it is valid for the server, such as a wildcard certificate.

Once received, the certificate will need to be installed into the **Local Machine** certificate store on the RCM server. Consult Windows documentation and help guides from the certificate issuing authority for more information.

## Option 2: Creating a Self-Signed SSL Certificate

This should not be used for public facing servers. For environments on a private network, it is possible to create a self-signed SSL certificate.

**Note:** Self-signed certificates are generally discouraged, and browsers typically show an error where used. The user can ignore the error or add a trust for the self-signed certificate, but it's encouraged to use a certificate from a trusted authority where possible.

There are various ways of generating self-signed certificates, but using PowerShell is a quick option.

1. Open a PowerShell prompt as an administrator.
2. Issue the following command:

```
New-SelfSignedCertificate -DnsName "[SERVER_DNS_NAME]" -  
CertStoreLocation Cert:\LocalMachine\My
```

Replace [SERVER\_DNS\_NAME] with the RCM server name. For example, `rcmserver.yourdomain.somewhere`).

3. This will create a certificate in the local store.

### 14.1.3 TPS Configuration

SSL handling is part of the TPS platform. Please refer to TPS guides for full details of configuration. The following covers the steps required for Reserva.

First, you will need to acquire a certificate issuing authority or use existing domain certificate.

This will depend on your IT processes, contact your administrator for more information. A web certificate needs to be acquired that is valid for the DNS name of the RCM server as would be used by users in a browser to access the RCM UI and Reserva media connecting to RCM. You can also use an existing domain certificate if it is valid for the server, such as a wildcard certificate.

## Installing in TPS

You will need the certificate **key** file and certificate in **PEM** format.

1. Log into the TPS admin center.
2. Navigate to **System Config > Network > SSL Certificate**.
3. In **Add Certificate**, go to **System**.
4. Enter the domain of the server as the user will see it from a browser or Reserva Signage device will see it.

If the certificate is for the **Fully Qualified Domain Name (FQDN)**, enter the full name as in the certificate. If the certificate is a wildcard cert then you can enter the wildcard as the domain (for example, \*.mydomain) or the FQDN of the server.

5. Use **Choose File** to select the **PEM** file and click **Upload**.
6. Use **Choose File** to select the **key** file and click **Upload**.
7. If the **key** file requires a password, enter the password.
8. Click **Submit**.

TPS should now be accessible via the FQDN with HTTPS URL, for example, <https://myserver.mydomain>.

The certificate will apply also to Reserva URLs, <https://myserver.mydomain/reserva> and <https://myserver.mydomain/reserva-media>.

## 14.2 Install and Configure IIS

Once you have an SSL certificate, you will need to install and configure IIS as required and configure a web site as a reverse proxy to RCM, based on the port numbers you have configured for your system.

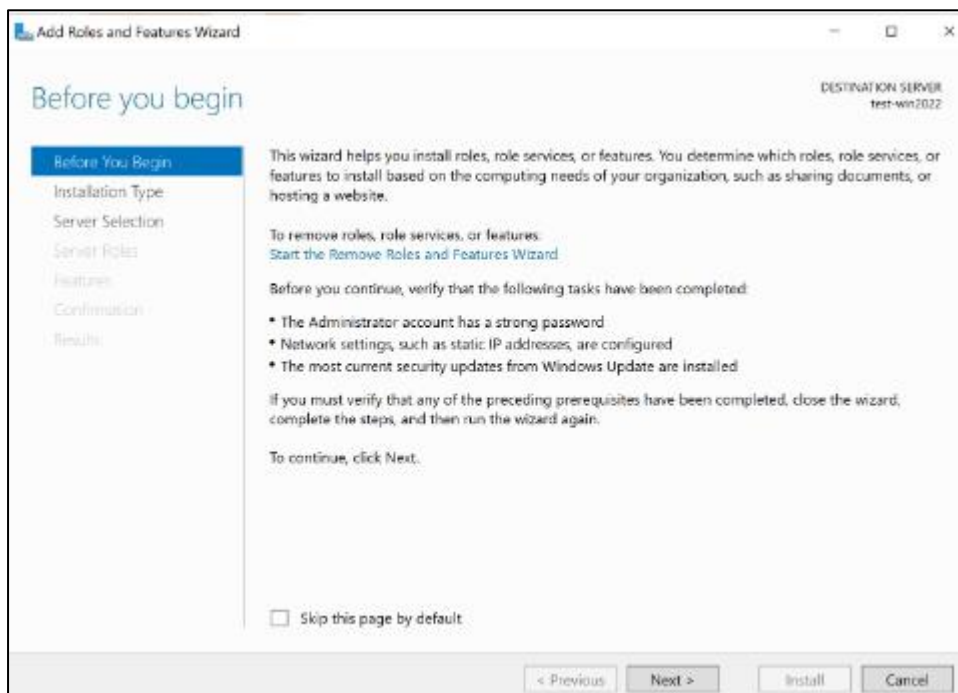
### 14.2.1 Windows Configuration

Configuring IIS may be required to integrate RCM into an existing site or to host with SSL. For information beyond the scope of this document, please consult your administrator.

#### Installing IIS

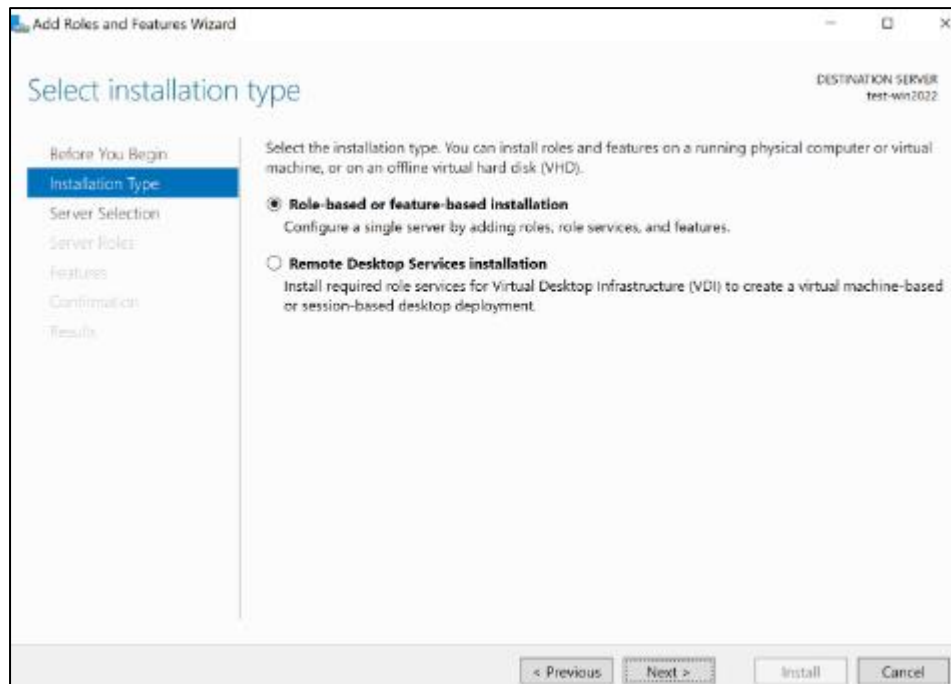
##### For Windows Server 2019/2022

1. Search **Turn Windows features on or off**.
2. This will open the **Add Roles and Features Wizard**.



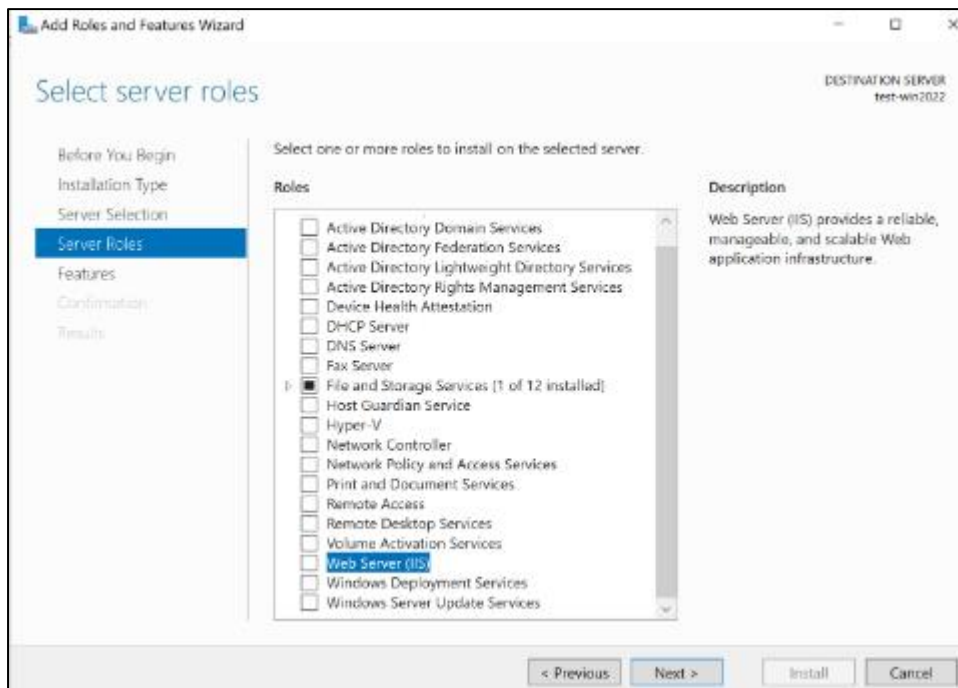
3. Click **Next**.

4. Select **Role-based or feature-based installation** and click **Next**.



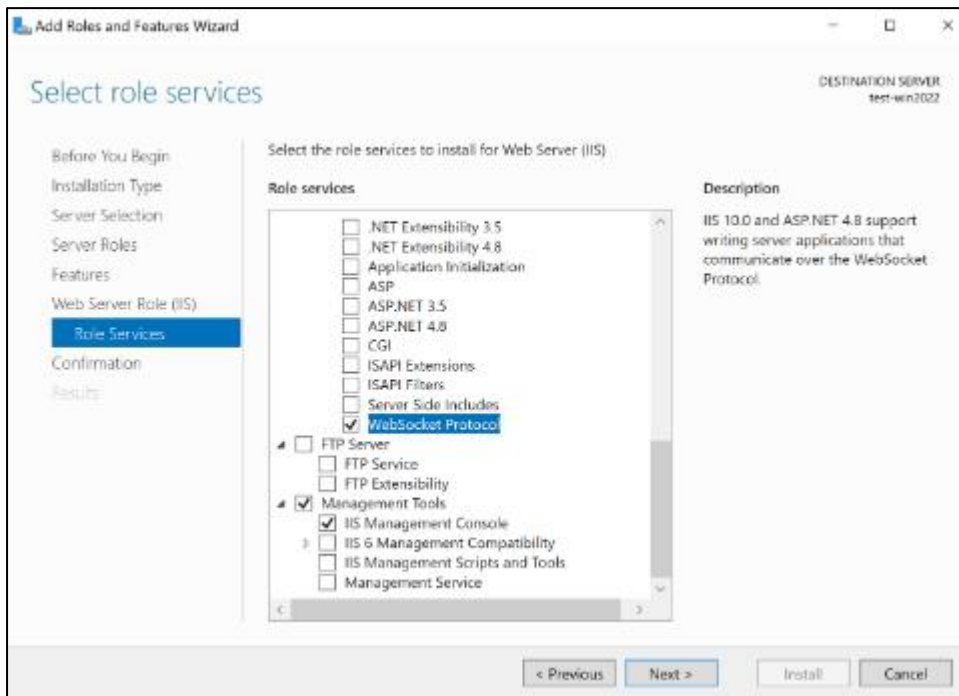
5. Select the server required and click **Next**.

6. Tick **Web Server IIS** and accept **Management Tools** in the pop-up and **Add Features**.



7. Click **Next**.
8. Leave as the defaults for **Features** and click **Next**.
9. On **Web Server Role (IIS)**, click **Next**.

10. On **Select role services**, expand the **Web Server > Application Developments** menu and select **WebSocket Protocol**.



11. Click **Next**.

12. Click **Install**.

## Install URL Rewrite and Application Request Routing modules

1. Download from: <http://www.iis.net/downloads/microsoft/url-rewrite>.
2. Install **URL Rewrite Module**. When **Web Platform Installer** finishes, go to **Products** tab and **Server**.
3. Select **Application Request Routing 3.0** and click **Add** and then **Install**.

## Configuring RCM

This configures IIS as a proxy for RCM. The desired configuration will depend how you wish to expose RCM from IIS.

The following is an example that configures RCM to listen on the default HTTPS port (443) for the web UI and port 8443 for the Room sign service.

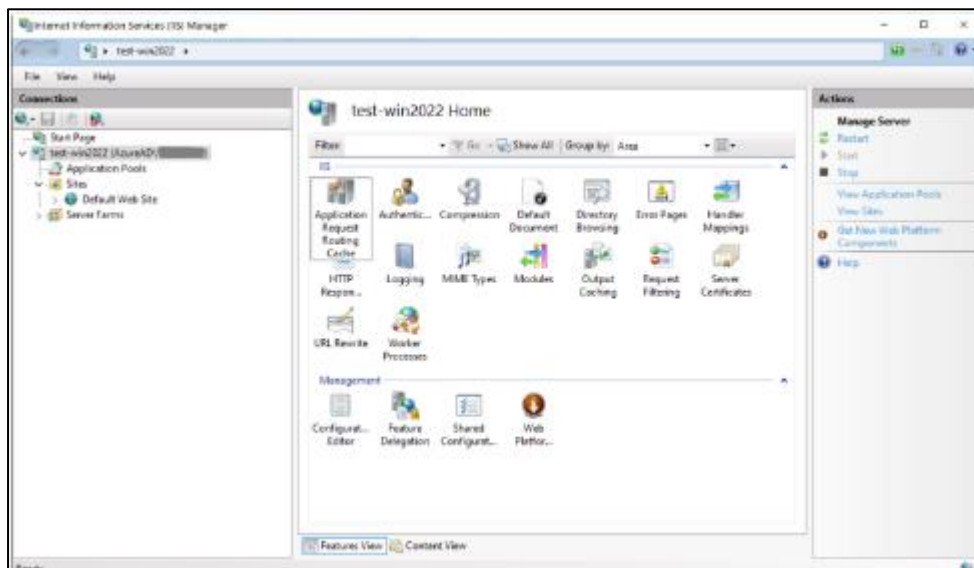


For example:

- **https://myserver** - For RCM.
- **https://myserver:8443** - For use when configuring Reserva room signs.

## Configuration Steps

1. Open IIS Manager.



2. Select the server node, and open **Application Request Routing Cache**.
3. On the right, select **Server Proxy Settings** > **Enable proxy**. Leave the settings as default and click **Apply** on the right.
4. The next step is to configure the default web site. Go to **Default Web Site** and click **Bindings** on the right.
5. In **Add Site Binding**, pick **HTTPS** type, port **443**.

6. Select an SSL certificate for the site. This assumes that an SSL certificate has been created/applied to the computer already.

The screenshot shows the 'Add Site Binding' dialog box. The 'Type' is set to 'https', 'IP address' is 'All Unassigned', and 'Port' is '443'. The 'Host name' field is empty. There are several unchecked checkboxes: 'Require Server Name Indication', 'Disable TLS 1.3 over TCP', 'Disable Legacy TLS', 'Disable OCSP Stapling', 'Disable QUIC', and 'Disable HTTP/2'. The 'SSL certificate' dropdown shows '-test-win2022.northeurope.cloudapp.azure.com'. There are 'Select...', 'View...', 'OK', and 'Cancel' buttons.

**Note:** This also assumes the server is hosting only one domain and listening on any IP address. If required, specify the host name and/or IP address required.

7. Click **OK**.
8. Repeat the same for port **8443**.

**Note:** There should be bindings for ports 443 and 8443 after this (there may be a port 80 but this can be removed if it's not required).

9. Click **Close**.
10. The next step is to create reverse proxy rules.
11. Edit or create **c:\inetput\wwwroot\web.config**.

12. Add the following **rules**. If there is an existing config, the `<rule>` elements will have to be added in the appropriate section under `<rules>`.

This maps port **8443** to `http://localhost:8080` (Room sign service)  
and port **80** to `http://localhost:5000` (Reserva Connection Manager web service)

```
<?xml version="1.0" encoding="UTF-8"?>
<configuration>
  <system.webServer>
    <rewrite>
      <rules>
        <rule name="Reverse Proxy to Reserva"
stopProcessing="true">
          <match url="^(.*)" />
          <conditions>
            <add input="{URL}" pattern="^/(.*)$" />
            <add input="{HTTP_HOST}" pattern="(.*) :8443"
/>
          </conditions>
          <action type="Rewrite"
url="http://localhost:8080/{R:1}" />
        </rule>
        <rule name="Reverse Proxy to Reserva Media API"
stopProcessing="true">
          <match url="^(.*)" />
          <action type="Rewrite"
url="http://localhost:5000/{R:1}" />
        </rule>
      </rules>
    </rewrite>
  </system.webServer>
</configuration>
```

In this configuration, a firewall port rule on the server should already exist for port 443 created by IIS.

However, a firewall port will be required for port 8443. There may also be external firewalls to configure.

For further info on rewrite rules, please visit <https://docs.microsoft.com/en-us/iis/extensions/url-rewrite-module/url-rewrite-module-configuration-reference>.

## Sub-folders

Proxy mapping from a subfolder, such as <https://mydomain.com/reserva>, will allow you to host within an existing website.

For this, the rewrite rule needs to include the subfolder, for example:

```
<rule name="Reverse Proxy to Reserva" stopProcessing="true">
    <match url="^reserva/(.*)" />
    <action type="Rewrite" url="http://localhost:5000/{R:1}" />
</rule>
```

When running under subfolders, you will need to carry out additional configuration for RCM.

1. In **C:\ProgramData\Tripleplay\Reserva\config** create a file called **settings.json** if there isn't one already.
2. Add the following (if there are existing configs, add the **webApiConfig** as a new section within the existing content):

```
{
  "webApiConfig": {
    "pathBase": "/reserva"
  }
}
```

3. You may also want one for Room Sign service (media API). For example:

```
{
  "webApiConfig": {
    "pathBase": "/reserva"
  },
  "mediaApiConfig": {
    "pathBase": "/reserva-media"
  }
}
```

}

4. RCM services will need restarting to pick up this change.
5. You could also host the Room sign service on the same port 443 if using a subfolder for it. In which case the rules become something like this:

```
<rule name="Reverse Proxy to Reserva" stopProcessing="true">
    <match url="^reserva/(.*)" />
    <action type="Rewrite" url="http://localhost:5000/{R:1}" />
</rule>
<rule>
    <match url="^reserva-media/(.*)" />
    <action type="Rewrite" url="http://localhost:8080/{R:1}" />
</rule>
```

## 14.3 Configure Windows Firewall

You may need to configure Windows Firewall for RCM where RCM services are exposed over the network without a front-end web server. If you are using IIS or have something similar running on the same server as a reverse proxy, this will not be required.

### To Configure the Firewall

1. On your machine, Search for **Firewall with Advanced** and select **Windows Defender Firewall with Advanced Security**.
2. From the left-hand side, select **Inbound Rules**.
3. Under the **Actions** menu on the right-hand side, click **New Rule...**
4. In the **New Inbound Rule Wizard**, select **Port** and click **Next**.
5. Select **TCP** and **Specific local ports**.

If your RCM is self-hosting directly, enter the ports that RCM was configured with on install. For example, **5000, 8080** (these are the default ports).

If your RCM is behind IIS as a reverse proxy, then enter the ports required for IIS. If you have followed our configure IIS example earlier in this appendix, the applicable port would

be port **8443** for the room sign service as IIS itself opens a port for the standard HTTPS port **443**.

6. Click **Next**.
7. Select the applicable action to **Allow the connection** and click **Next**.
8. On the **Profile** page, select **Domain** and **Private** for a typical corporate environment. Only select **Public** if you need to expose Reserva to a public network. Click **Next**.
9. Specify an appropriate **Name** for your new rule and click **Finish**.

## 14.4 Configure Proxy Server

In some environments, a proxy server may be required to connect to external services, such as a calendar system. The following covers configuring your system to specify proxy servers for use with RCM.

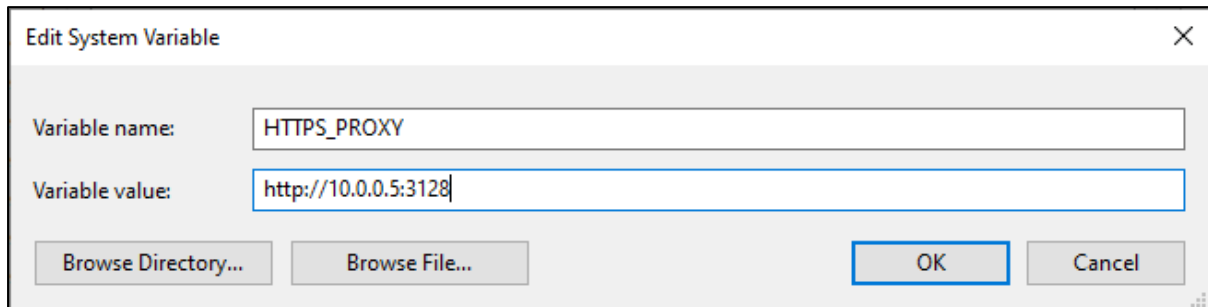
Environment variables are used to configure proxies for outbound web-based traffic. You can define one or more of these variables on your system.

- **HTTP\_PROXY**: the proxy server used on HTTP requests.
- **HTTPS\_PROXY**: the proxy server used on HTTPS requests.
- **ALL\_PROXY**: the proxy used on HTTP and/or HTTPS requests in case **HTTP\_PROXY** and/or **HTTPS\_PROXY** are not defined.
- **NO\_PROXY**: a comma-separated list of hostnames that should be excluded from proxying.

### 14.4.1 Configuring on Windows

1. Open the **Control Panel** and use the search box to search for 'Environment.'
2. Click on **Edit the system environment variables**.
3. On the **Advanced** tab, click **Environment Variables...**
4. Under **System variables**, click **New...**

5. Enter the proxy **Variable name** required and specify the proxy server as the **Variable value**.



The screenshot shows a Windows-style dialog box titled "Edit System Variable". It has a close button (X) in the top right corner. Inside the dialog, there are two text input fields. The first is labeled "Variable name:" and contains the text "HTTPS\_PROXY". The second is labeled "Variable value:" and contains the text "http://10.0.0.5:3128". Below these fields are four buttons: "Browse Directory...", "Browse File...", "OK", and "Cancel". The "OK" button is highlighted with a blue border.

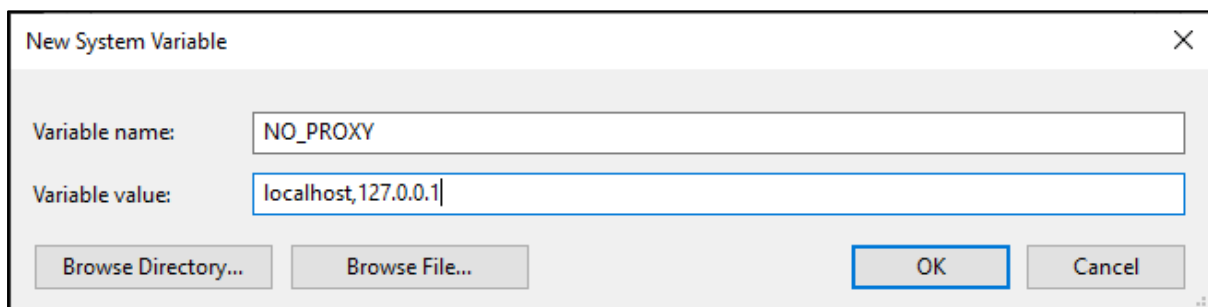
The proxy server should be an http URL, optionally including a username and password for proxy authentication. The URL usually must start with http, not https, and cannot include any text after the hostname, IP or port.

In this example, a proxy for all outbound HTTPS traffic is being configured. It will proxy all outbound HTTPS traffic to go to the proxy server at 10.0.0.5 running on port 3128. Alternatively, to proxy only HTTP traffic, use **HTTP\_PROXY** or to proxy all web traffic, use **ALL\_PROXY** as the variable name.

6. When finished, click **OK**.
7. Add additional variables as required. For example, different proxy for HTTP vs HTTPS traffic, or to exclude servers from proxying.

For RCM, you will need to exclude local traffic such as localhost and 127.0.0.1, using **NO\_PROXY**, as it has local call-backs communicating between services.

8. Click **OK** when finished.



The screenshot shows a Windows-style dialog box titled "New System Variable". It has a close button (X) in the top right corner. Inside the dialog, there are two text input fields. The first is labeled "Variable name:" and contains the text "NO\_PROXY". The second is labeled "Variable value:" and contains the text "localhost,127.0.0.1". Below these fields are four buttons: "Browse Directory...", "Browse File...", "OK", and "Cancel". The "OK" button is highlighted with a blue border.

9. Click **OK** to close the environment variables and **OK** again to close the **System Properties**.
10. If this has been configured after installing RCM, restart the Reserva services. To do so:
  - a. Go to Search to search for 'services.'
  - b. Restart **Reserva Worker Service**. This will ask to restart **Reserva Web API** and **Reserva Media API services**.
  - c. Click **Yes**.
  - d. If the process doesn't start, restart each service individually.

## 14.4.2 Configuring Tripleplay Server

RCM uses the same proxy environment that the Tripleplay Server (TPS) uses based on environment variables.

Consult Tripleplay Server documentation for full information. The following are the requirements for RCM.

### Global Proxy Configuration

1. Edit the file **/etc/environment**.
2. Add proxy variables if not already configured:

```
HTTPS_PROXY=http://<proxy-server>:3128
```

for just HTTPS traffic, or (for example) for all traffic:

```
ALL_PROXY=http://<proxy-server>:3128
```
3. Add exclusions for local server traffic:

```
NO_PROXY=localhost,127.0.0.1
```
4. Edit **/etc/systemd/system/rcm\*.service** files and add:

```
EnvironmentFile=/etc/environment
```
5. Restart the services



Alternatively for proxy configuration specific to RCM services only:

1. Edit **/etc/systemd/system/rcm\*.service** files.

2. Add proxy variables:

```
Environment=HTTPS_PROXY=http://<proxy-server>:3128
```

for just HTTPS traffic, or (for example) for all traffic:

```
Environment=ALL_PROXY=http://<proxy-server>:3128
```

3. Add exclusions for local server traffic:

```
Environment=NO_PROXY=localhost,127.0.0.1
```

4. Restart the services.

## 15 Contact Tripleplay

If you have any questions about Reserva Room Signage, please contact Tripleplay Support:

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