

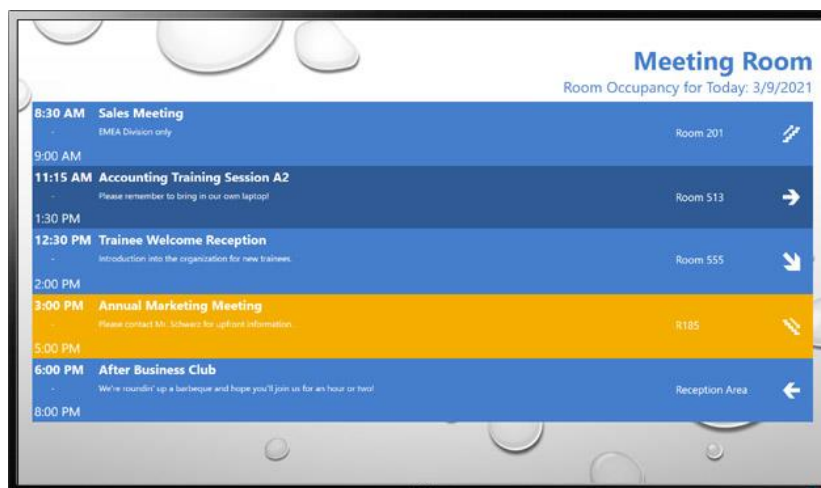
# Calendar

The digital signage & kiosk software **FrontFace** can be extended by plugins that add additional functionality. This way you can e.g., display special content types, integrate external data sources or systems, and add entirely new features to the software.

## Description:

The **Calendar Plugin** allows you to display **calendars, schedules** and/or **occupancy plans for rooms** either for an individual room or an overview of all rooms. The (live) data for the plugin can be provided by one of the following data source types:

- **Excel File** (version 2007 or higher)
- **Exchange Calendar** (via EWS = Exchange Web Services)
- **Office 365 / Exchange Online** (via Microsoft Graph API)
- **Lotus Notes Database** (via Lotus Domino server using Domino XML - DXL)
- **iCalendar / ICS Format** (e.g., from Google Calendar)
- **SharePoint** (On premises or Share Point Online / Office 365)



This plugin is supported by both, the Windows, and the Android version of the *FrontFace Player App*. When using the plugin with the *FrontFace Player App* for Android, some features are not available. On Android only the **“Grid/Table View”** and the **“Single/Door Sign”** can be used. When using the **Office 365 / Exchange Online** data source, the authentication against Office 365 is done using the so called device authentication flow (see below for details!).

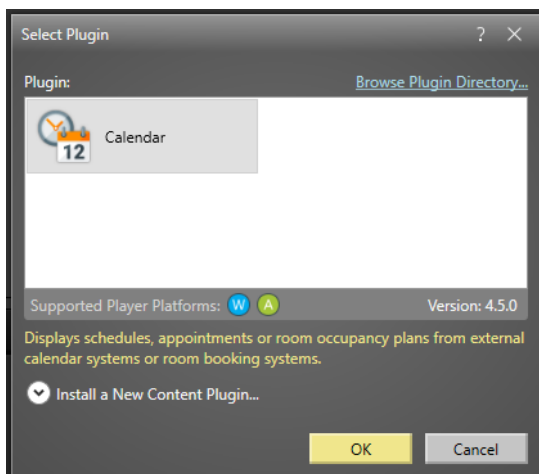
## Installation:

Please refer to the user manual of *FrontFace* on detailed information on how to install a plugin in *FrontFace*.

**Notice:** If you have previously downloaded and installed the trial version of the Calendar Plugin, you must install the full version over the existing trial version in order to get the full version running. The procedure is exactly the same as for installing a new plugin. If you already used the trial version of the plugin in your project, all settings remain after installing the full version!

**Update from a previous version:** If you are using a previous version of the Calendar Plugin (< 4.0.0), you can simply install the new version "over" the existing version in your project. Please note, however, that all settings for the plugin will be lost. You will have to redefine the settings (data source, view, design, etc.) after installing the new version!

## Setup and Usage:



After you have installed the plugin in your project, create a new playlist page or a touch menu button and insert a "Plugin" media object. Then select the "Calendar" plugin from the list.

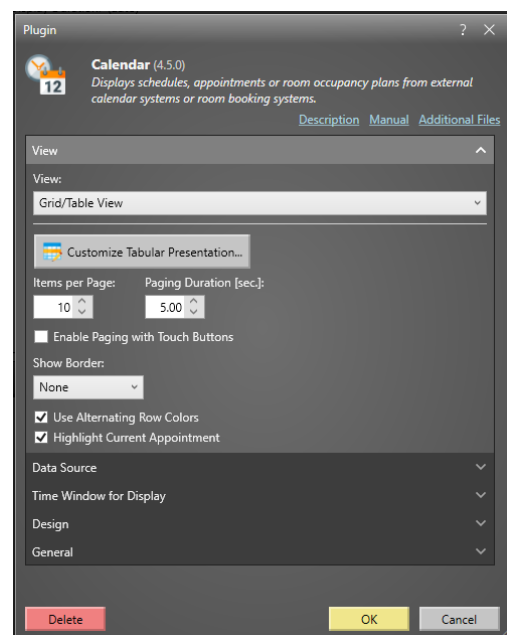
The calendar data to be displayed is always updated "live" by the Calendar Plugin during runtime in the *FrontFace Player App*. As soon as the page with the plugin is displayed or loaded, the plugin automatically queries the configured data source, and the current appointments appear on the screen. There is no need to (re)publish the *FrontFace* project to update the calendar data of the plugin!

## Settings Dialog:

The settings dialog of the Calendar Plugin is divided into five sections:

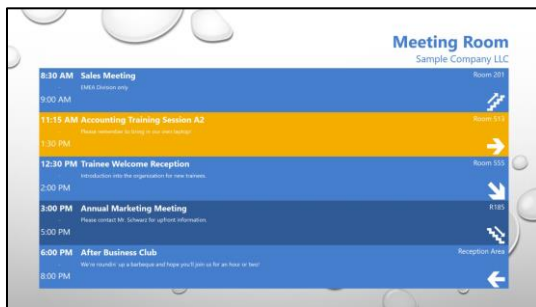
- 1.) **View**
- 2.) **Data Source**
- 3.) **Time Window for Display**
- 4.) **Design**
- 5.) **General**

The individual settings and options that are grouped within these sections are described in detail below:



## 1.) View

Here you specify how the calendar data shall be displayed, e.g., as a grid/table, as a daily, weekly, monthly or agenda view or as a "digital door sign":



Grid/Table View



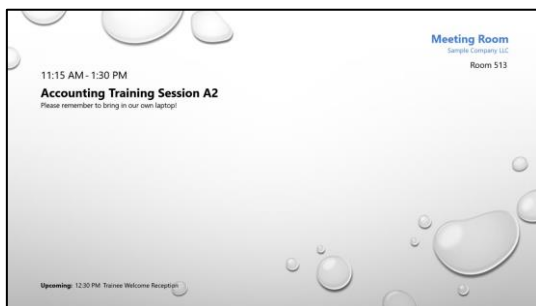
Calendar: Day View



Calendar: Week View



Calendar: Month View



Single/Door Sign

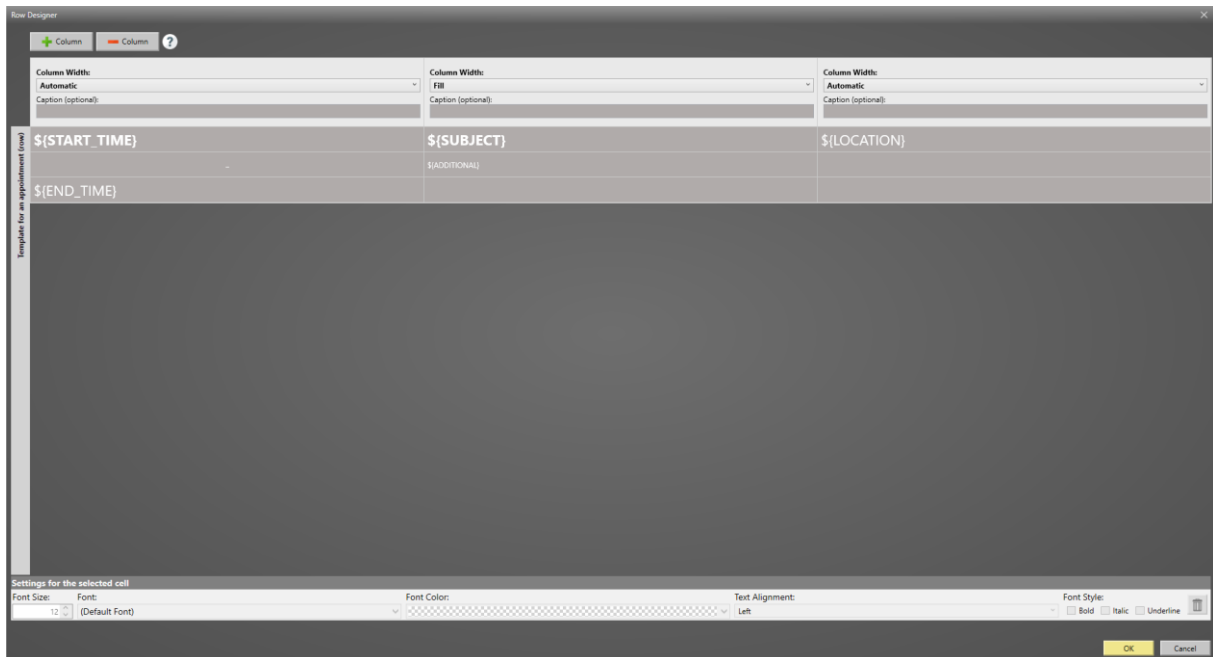


Calendar: Agenda View

Depending on the selected view type, there are further, specific settings available.

The **"Grid/Table View"** offers the greatest flexibility, allowing you to freely design the structure of the table that shows the appointment data.

You use the **row designer** to define the number of columns in the table, as well as the content template of an appointment row. This row template is then used for every appointment that is displayed.



An appointment row internally consists of up to three "layout rows" which are used to arrange text elements and placeholders.

For example, you can display the start time of the appointment in the first cell, a static text such as "to" in the cell below and the end time of the appointment underneath. The result would then be one line for each appointment to be displayed, which is structured as follows:

---

00:00 (START TIME)

to

00:00 (END TIME)

---

In each cell of the row designer, you can either enter static text, which is then displayed for each appointment, or you can choose from a set of predefined placeholders. These are:

- `${START_DATE}`      Start date of the appointment
- `${START_TIME}`      Start time of the appointment
- `${END_DATE}`      End date of the appointment
- `${END_TIME}`      End time of the appointment
- `${LOCATION}`      Location
- `${SUBJECT}`      Subject / Title
- `${ADDITIONAL}`      Additional text
- `${DATE}`      Current date
- `${LOGO}`      Logo (PNG or JPG file)
- `${ICON}`      Icon
- `${ORGANIZER}`      Organizer (Name) of the appointment

A detailed description of the placeholders can be found in the section "**Using Placeholders and Special Syntax**" at the end of this manual.

You can also specify an individual text formatting for each cell in terms of font, font color and font style. For this purpose, there are corresponding options at the bottom of the row designer that relate to the currently selected cell.

You can add or delete columns using the "+" and "-" buttons. For each column you can choose an optional column heading and define the width of that column.

## 2.) Data Source

Select a data source from which the calendar data is retrieved and enter the required credentials. You can select either an Excel file that serves as data source, an Exchange calendar (EWS), Office 365 (Exchange Online), a Lotus Domino calendar, a SharePoint server or an iCalendar ICS file. In addition to that there is also a "Demo Data Source" available that generates some sample appointments automatically. You can use this data source to test the plugin in case you do not have a real data source yet or if you just want to experiment with the plugin.

For configuration details on the specific data sources, please see below:

### ► **Excel File**

In case of using an Excel file, it is recommended to provide the UNC file name (e.g., "\\SOMESEREVER\folder\my-excel-file.xlsx") so that both the player PC as well as your local PC can access the file on the same location with the same (!) name. With the Android version of *FrontFace*, the path to the file cannot be specified as a UNC path! Alternatively, you can also specify an HTTP(S) URL or refer to the "\Media\Static\" directory of your *FrontFace* project using the placeholder `${F_STATIC}` if you transfer the Excel file to the player when you publish it want.

The Excel file must contain a worksheet in which you enter the appointments line by line, whereby the first line contains the column headings and is ignored on parsing. In addition to the index of the worksheet within the workbook, you must assign the respective column numbers in the settings dialog of the Calendar Plugin for each field (subject, location, start time, end time, etc.) so that the appointments can be read correctly from the Excel file.

You must make sure that all date-related fields are formatted as "Date" while all time-related fields are formatted as "Time"; otherwise, the plugin is not able to parse the data correctly.

You can design the Excel file freely according to the above specifications, but there is also a ready-to-use sample file that you can access from the plugin's settings dialog by clicking on the "**Other Files**" link.

The update interval is used to determine how often the file should be queried for changes. This setting only affects the plugin "Calendar" (not the plugin "Calendar Trigger") and is only relevant if you display the calendar for longer period of time or even permanently on the screen. Otherwise, a refresh always takes place automatically as soon as the Calendar Plugin is displayed on the screen.

### ► **Exchange Calendar (via EWS)**

Please make sure that *EWS (Exchange Web Services)* is enabled on your Exchange server since it serves as interface for the plugin.

**Notice:** The **EWS (Exchange Web Services)** should **not** be confused with the **OWA (Outlook Web Access)**. You must enter the URL of your EWS here!

Please enter login, password, and domain (optional) for the Exchange user in the plugin's settings dialog. If you leave the credentials empty, the default credentials of the currently signed-in Windows account will be used (only supported for on-premises Exchange servers). In case your server does not support "autodiscover", please also enter the full URL to the EWS (Exchange Web Services) end point.

You will also have to specify the Exchange server version you are using (e.g. "Exchange Server 2013").

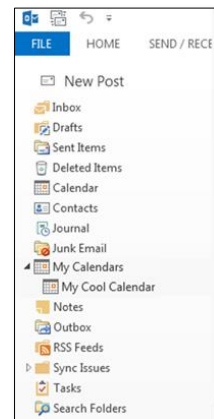
If you are using Exchange Server 2013 or older and experience a problem retrieving appointments, please activate (but only in this case) the checkbox "Use compatibility mode".

#### • **Calendar in the user's mailbox:**

By default, the main calendar of the user whose credentials you entered will be queried.

In order to use a different calendar from the user's mailbox, please enter the path to the calendar. E.g., if the calendar you want to display is located in Outlook under "**My Calendars\My Cool Calendar**", you have to enter:

**My Calendars\My Cool Calendar**



#### • **Calendar in a Public Folder:**

In order to access a calendar that is stored in a *public folder*, you have to enter the path to the calendar with the `$PublicFoldersRoot` prefix. E.g. if the calendar you want to display is located in Outlook under "**All Public Folders\My Public Folder\My Cool Calendar**" you have to enter this path:

**\$PublicFoldersRoot\My Public Folder\My Cool Calendar**

#### • **Calendar from a Resource:**

To directly access a "resource" (e.g., the calendar of a room) which is not implemented as *public folder* but as a separate mailbox without a login, simply enter the e-mail address of the resource as "path to the calendar". Please also make sure that you set the appropriate access rights for the user with which you connect to the Exchange server and that this

user has been added as “delegate user” for the resource ([see Microsoft TechNet for details](#)).

**Notice:** In case you are getting the error message *„Fatal error while loading Exchange data! The request failed. Could not establish a trust relationship for the SSL/TLS secure channel.”* you have to make sure that your player PC trusts the SSL certificate of the Exchange server. Please open the EWS URL in the Internet Explorer on the player PC. You will get a warning message telling you that there is a problem with the Web page. Click on “continue” to show the Web page. In the address bar of the Internet Explorer a problem with the SSL certificate is now indicated by a red shield icon. You now have to add the certificate of that site to the list of trusted certificates on the player PC. When you afterwards access the EWS URL once again in the Internet Explorer, no warning message will appear and also the *FrontFace* Player App will be able to successfully connect to the Exchange server using EWS.

You can also specify more than one calendar (e.g., for different rooms) as long as these reside on the same server and can be accessed with the given credentials. In this case, the appointments from all calendars are merged for display.

If you want to integrate the main calendar from the user's mailbox as well as other calendars from that mailbox, you must enter a period (“.”) as “path” for the user's main calendar.

The update interval is used to determine how often the calendar(s) are queried for changes. This setting only affects the plugin “Calendar” (not the plugin “Calendar Trigger”) and is only relevant if you display the calendar for longer period of time or even permanently on the screen. Otherwise, a refresh always takes place automatically as soon as the Calendar Plugin is displayed on the screen.

### ► Office 365 (Graph API)

In addition to accessing Exchange Online (Office 365) via EWS (see above), it is also possible to use the newer Graph API by Microsoft. In order to be able to use this interface, some adjustments and setup steps are required to your Office 365 account.

In the settings dialog of the plugin, you have to enter the tenant ID, the client ID and the client secret as well as the email address of the user whose calendar you want to access. You can also specify more than one calendar (e.g., for different rooms). In this case, the appointments from all selected calendars are merged for display.

The following, the setup steps that are required are described so that you can access the Graph API of your Office 365 tenant with the Calendar Plugin:

#### Registering a New Application in the Azure Portal:

1. First, you must register the plugin as “app” to your Microsoft Entra ID (previously Azure Active Directory). Sign in with your business, school or university account or using your personal Microsoft account at the [Azure Portal](#).
2. In case you can access multiple tenants with your account, click on your account in the upper right corner of the screen to set your current session for the intended tenant.
3. Select from the navigation pane on the right the service **Microsoft Entra ID** and then go to **App registrations > New registration**.
4. On the **“Register an application”** page, please enter the registration information for the Calendar Plugin. Enter a name like e.g., **“FrontFace Calendar Plugin”** and make sure you select **“Accounts in this organizational directory only”**.
5. Click on **Register**.
6. A **Redirect URI** is not required in this case!

#### Creating a Client Secret:

1. The **Client Secret** is a static password, which grants the plugin access to Office 365. Go to **Certificates & secrets** and then add a **new client secret**. Write down the client secret.

#### Setting the Required Authorizations:

1. Click on the newly created **„FrontFace Calendar Plugin”** and then click on **“View API Permissions”**.
2. Select the **Calendars.Read** permission from the **API “Microsoft Graph”**. This may not be a delegated permission. You have to create an application permission here! NOTICE: This permission requires a so called admin consent since this permission, by default grants access to all calendars of the tenant! This can, however, be narrowed to a specific user with the help of a PowerShell CMDlet (see below).

Call APIs



Build more powerful apps with rich user and business data from Microsoft services and your own company's data sources.

[View API Permissions](#)



### 3. Granting Admin Consent:

#### API permissions

Applications are authorized to use APIs by requesting permissions. These permissions show up during the consent process where users are given the opportunity to grant/deny access.

[+ Add a permission](#)

API / PERMISSIONS NAME	TYPE	DESCRIPTION	ADMIN CONSENT REQUIRED
▼ Microsoft Graph (3)			
Calendars.Read	Application	Read calendars in all mailboxes	Yes  Granted for

#### Restrict Authorization to a Specific User:

By default, a newly registered app has access to ALL mailboxes in an Office 365 tenant. To limit this, a so-called application access policy must be configured, as described below. You can find more about this here: <https://learn.microsoft.com/en-us/graph/auth-limit-mailbox-access>

1. Open this page in your Web browser:  
<https://www.powershellgallery.com/packages/ExchangeOnlineManagement/>
2. On that page you will find the command to install **ExchangeOnlinePowerShell**  
The command should look like this:  
`Install-Module -Name ExchangeOnlineManagement -RequiredVersion 2.0.3`
3. Open up PowerShell (as administrator) and execute the above command. Please confirm any queries that may appear (the module **ExchangeOnlineManagment** needs to be installed so that you can sign on to Azure Exchange PowerShell!).
4. Now import the module using the following command:  
`Import-Module ExchangeOnlineManagement`
5. The execute this command  
`$UserCredential = Get-Credential`  
And enter your Azure credentials.
6. Establish a connection with Exchange Online:  
`Connect-ExchangeOnline -Credential $UserCredential -ShowProgress $true`
7. To restrict the policy, you need the client ID that you have used for registering the application in the previous step.
8. Now execute the following PowerShell command:  
`New-ApplicationAccessPolicy -AppId YOUR_APP_ID  
-PolicyScopeGroupId YOUR_MAIL_ADDR -AccessRight RestrictAccess  
-Description "Restrict this app to a given user"`

Replace **YOUR\_APP\_ID** and **YOUR\_MAIL\_ADDR** with the actual data. The processing of this command may take a while. If you want to restrict access to more than one mailbox, instead of **YOUR\_MAIL\_ADDR** you can also enter the e-mail address of a mail-enabled security group previously created in [Azure](#), which contains the authorized mailboxes. Finally, you can use this command to test if everything has run through correctly:

```
Test-ApplicationAccessPolicy -Identity YOUR_MAIL_ADDR -AppId  
YOUR_APP_ID
```

Finally, you must note the **client ID**, the **tenant ID** and the **client secret** and enter these in the plugin's settings dialog. The **e-mail address** you enter is used to determine which mailbox you want to access. If you do not enter a **calendar name**, the mailbox's standard calendar is used. Alternatively, you can specify the **calendars** in the mailbox. The syntax is: **Calendar group\Calendar name**

It is recommended, however, not to add the calendar(s) manually, but to use the "**Check connection and select calendar...**" button. A connection to Office 365 is then established (with this you can also test whether the given credentials are correct!) and a list of all available calendar groups and calendars is displayed. Then select the calendar(s) you want to add to the list.

The update interval is used to determine how often the calendar(s) are queried for changes. This setting only affects the plugin "Calendar" (not the plugin "Calendar Trigger") and is only relevant if you display the calendar for longer period of time or even permanently on the screen. Otherwise, a refresh always takes place automatically as soon as the Calendar Plugin is displayed on the screen.

**Notice:** When accessing an Office 365 room calendar mailbox (aka resource), by default, the room calendar shows only a busy status. But in most cases, you want to see the organizer of the meeting and also the subject. To see these room details in an Office 365 room calendar, you need to apply the following settings for the resource (in this example it is named "Meetingroom"):

1. Connect to your Exchange Online with PowerShell.
2. Give all the users limited access to the calendar:  

```
Set-MailboxFolderPermission -Identity Meetingroom:\calendar  
-User default -AccessRights LimitedDetails
```
3. Make the subject and organizer of the meeting visible:  

```
Set-CalendarProcessing -Identity Meetingroom  
-AddOrganizerToSubject $false -DeleteComments $false  
-DeleteSubject $false
```

**Using Office 365 on Android:** Due to technical reasons, the Android version of the plugin uses a different method to authenticate against Office 365 which is called "device authentication flow". To activate this method, open the **Authentication** menu of the **App registration** in the Azure portal and make sure **Allow public client flows** is enabled. When you publish to an Android Player, and the Calendar Plugin appears on the screen for the first time, a code is shown which needs to be entered on the Website <http://microsoft.com/devicelogin> on ad different device in order to authenticate the Android device. The authentication remains active for 90 days (if not being used) and renews itself automatically every time the date source is accessed.

### ► Lotus Domino Calendar (via XML)

A Notes database on a Lotus Domino Server (Domino 5 or higher) which can be accessed using Domino XML (DXL) over HTTP is required. The user account that is used to access the database needs to have a HTTP password in the Domino Person document. If possible, you should activate HTTP basic authentication. The plugin also supports the session-based authentication with cookies that is used by the Domino Web Access but generally it is recommended to use basic authentication in combination with this plugin.

In addition to the authentication method, you also have to enter your username and password.

If you want to access the personal calendar in the mailbox of a Notes user, the Domino Server URL ("URL to Lotus Domino Server") which you have to provide in the plugin configuration dialog is:

```
http(s)://server-name/mail/username.nsf
```

You must also provide the name (s) of the Domino object (s) in the database that you want to retrieve. If you do not specify anything, the Calendar object is retrieved by default. In some cases, it may be required to prefix the object name with a "\$" sign. You can also enter several Domino objects (= calendars, e.g., calendars for different rooms) if they are on the same server. All appointments from those calendars are then merged for display.

Generally, any Notes database that contains appointment data can be integrated since the required fields for "start date/time", "end date/time", "subject" and "location" can be configured individually. You must provide the XPath expressions that refer to the fields in the `ViewEntry` elements of the `DXL ReadViewEntries` method (see [http://www.ibm.com/developerworks/lotus/library/ls-Domino\\_URL\\_cheat\\_sheet/](http://www.ibm.com/developerworks/lotus/library/ls-Domino_URL_cheat_sheet/) for details).

For the personal calendar of a user's mailbox, these are default XPath expressions:

Feld	XPath-Ausdruck
ViewEntry Field StartDateTime	entrydata[@name='\$134']
ViewEntry Field EndDateTime	entrydata[@name='\$146']
ViewEntry Field Subject	(entrydata[@name='\$147']//text)[1]
ViewEntry Field Location	(entrydata[@name='\$147']//text)[2]
ViewEntry Field Additional	
ViewEntry Field Logo	

**Hint:** To view the XML document to which these XPath expressions refer to, you can simulate the HTTP request that is performed by the plugin by entering the following URL in your browser:

```
https://server-name/mail/username.nsf/$Calendar?ReadViewEntries
```

The update interval is used to determine how often the Notes database(s) are queried for changes. This setting only affects the plugin "Calendar" (not the plugin "Calendar Trigger") and is only relevant if you display the calendar for longer period of time or even permanently on the screen. Otherwise, a refresh always takes place automatically as soon as the Calendar Plugin is displayed on the screen.

### ► *iCalendar (ICS-Format)*

The iCalendar format (iCal) is a standardized format for the exchange of appointment and calendar data which is supported by many systems and applications. You can either provide a path (local path or an UNC network path) or a URL (http:// or https://) to an ICS file. With the Android version of *FrontFace*, the path to the file cannot be specified as a UNC path! Alternatively, you can refer to the "\Media\Static\" directory of your *FrontFace* project using the placeholder `${F_STATIC}` if you want to transfer the ICS file to the player when publishing.

If you want to use a Google Calendar, you first have to make the calendar "public" (see <http://support.google.com/calendar/answer/37083> for details) and then request the ICAL-URL which you can then enter in the settings dialog of the plugin.

The update interval is used to define how often the ICS file is queried for changes. This setting only affects the plugin "Calendar" (not the plugin "Calendar Trigger") and is only relevant if you display the calendar for longer period of time or even permanently on the screen. Otherwise, a refresh always takes place automatically as soon as the Calendar Plugin is displayed on the screen.

## ► SharePoint

You can integrate both appointment lists (lists of type "Calendar") from local SharePoint installations (On Premises) or SharePoint Online (Office 365). You have to enter the URL to your SharePoint Website (e.g., TeamSite) and the name of the calendar list. For example:

`https://your-name.sharepoint.com/TeamSite/Lists/Team%20Calendar/calendar.aspx`

...enter as server/Website URL: `https://your-name.sharepoint.com/TeamSite/`

...and as list/calendar name: `Team Calendar`

You can also enter several calendar lists with separate URLs (e.g., calendars for different rooms) if these are on the same server and can be accessed with the same credentials. All appointments from all calendars are then merged for display.

In addition to that the login (e.g., e-mail address) and the password are required.

The update interval is used to determine how often the SharePoint lists are queried for changes. This setting only affects the plugin "Calendar" (not the plugin "Calendar Trigger") and is only relevant if you display the calendar for longer period of time or even permanently on the screen. Otherwise, a refresh always takes place automatically as soon as the Calendar Plugin is displayed on the screen.

**Notice:** In case you are getting the error message: „*Identity Client Runtime Library (IDCRL) did not get a response from the Login server*“ (SharePoint Online) you have to enable legacy authentication for your Sharepoint instance:

Firstly install the SharePoint Online Service for PowerShell.

1. `Connect-SPOService -Url https://<COMPANY>-admin.sharepoint.com`
2. `Set-SPOTenant -LegacyAuthProtocolsEnabled $True`
3. `Set-SPOTenant -RequireAcceptingAccountMatchInvitedAccount $False`

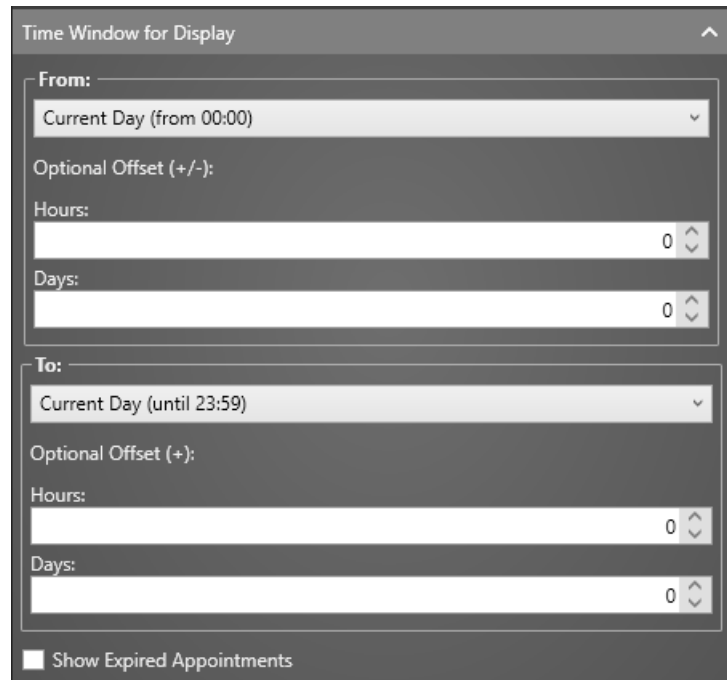
Alternatively you could also enable legacy authentication using the **SharePoint Admin Center**: Access control → Apps that don't use modern authentication → Allow access.

### 3.) Time Window for Display

You also have to specify which appointments from the data source are supposed to be displayed by the plugin. A time window is defined for this purpose. This can either be an absolute time window with a fixed start and end time or a "rolling" time window, which is based on the current point in time. For example, you can specify to display the appointments for the current day or the current week.

You can also move the start and end times forwards or backwards using an offset. For example, if you set "Current day (from 00:00)" as the start time and set a positive offset of 9 hours, only those appointments for the current day starting at 09:00 will be displayed. Earlier appointments will be skipped.

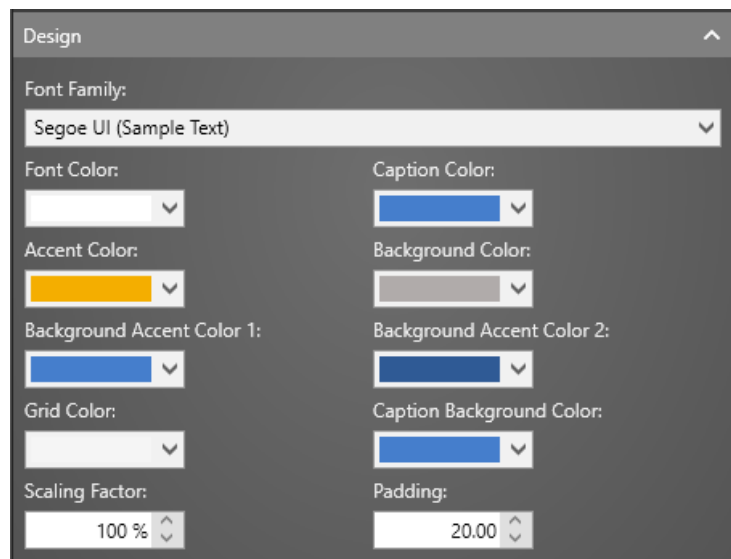
Furthermore, you optionally can prevent that appointments, which are expired (i.e., those that are in the past) are being displayed. If this option is activated, an appointment at 09:00 will no longer be displayed at 10:00, even if the defined time window would potentially include this appointment.



The 'Time Window for Display' dialog box is shown. It has a title bar with a close button. The main content is divided into two sections: 'From:' and 'To:'. Each section contains a dropdown menu for selecting a time range (e.g., 'Current Day (from 00:00)'), an 'Optional Offset (+/-):' label, and input fields for 'Hours' and 'Days' with spinners. At the bottom, there is a checkbox labeled 'Show Expired Appointments'.

### 4.) Design

You can define general design-related settings such as the font to be used or various colors in this section of the settings dialog. You can also set a scaling factor to enlarge or reduce the overall representation on the screen. This allows you to customize the plugin for use on very large or very small screens.

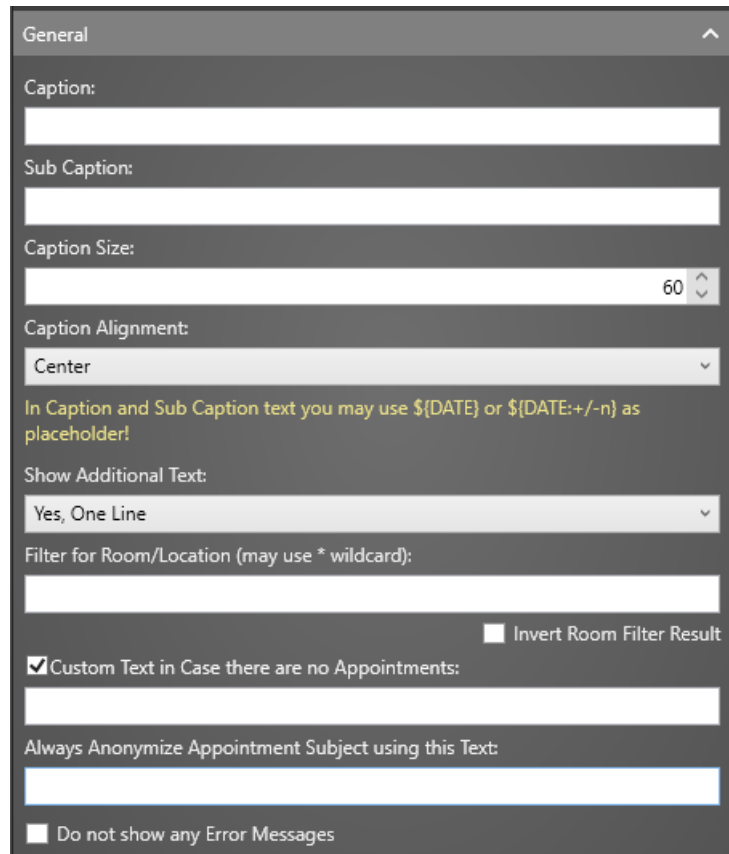


The 'Design' dialog box is shown. It has a title bar with a close button. The settings are organized into two columns. The left column includes: 'Font Family:' (dropdown, 'Segoe UI (Sample Text)'), 'Font Color:' (color picker), 'Accent Color:' (color picker), 'Background Accent Color 1:' (color picker), 'Grid Color:' (color picker), 'Scaling Factor:' (spinner, '100 %'), 'Caption Color:' (color picker), 'Background Color:' (color picker), 'Background Accent Color 2:' (color picker), 'Caption Background Color:' (color picker), and 'Padding:' (spinner, '20.00').

## 5.) General

In this configuration section, you can define optional headings that are displayed above the actual area with the appointments. You can also define other general settings that affect how the content is displayed on the screen.

You can use the **"Do not display error messages"** option to prevent error messages from being displayed in the event of an error (e.g., when accessing the data source fails). This is only recommended for productive operation and should not be activated during the initial setup so that you can more easily obtain diagnostic information in case of any errors.



The screenshot shows a 'General' configuration panel with the following settings:

- Caption:** An empty text input field.
- Sub Caption:** An empty text input field.
- Caption Size:** A numeric input field set to 60.
- Caption Alignment:** A dropdown menu set to 'Center'.
- Help Text:** A note stating, 'In Caption and Sub Caption text you may use \${DATE} or \${DATE: +/-n} as placeholder!'.
- Show Additional Text:** A dropdown menu set to 'Yes, One Line'.
- Filter for Room/Location (may use \* wildcard):** An empty text input field.
- Invert Room Filter Result:** An unchecked checkbox.
- Custom Text in Case there are no Appointments:** A checked checkbox with an empty text input field below it.
- Always Anonymize Appointment Subject using this Text:** An empty text input field.
- Do not show any Error Messages:** An unchecked checkbox.

## Using Placeholders and Special Syntax:

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With the help of placeholders, you can display certain dynamic values, hide text or store additional information.

You can use the placeholder `${DATE}` to display the current date or `${DATE+/-n}` to display a date relative to today (e.g., results in `${DATE+1}` tomorrow's date).

In the row designer of the "Grid/Table" view you can use a set of predefined placeholders (see **section "View"**) to output certain values of an appointment (e.g., the start time or the subject).

You can hide text in the title and the additional text field of an appointment (it will then not appear on the screen) if you mark this text as a comment (`/ * ... */`). This works with all data sources.

### Placeholder for logo artwork:

Certain data sources (e.g., Excel files) have a predefined placeholder `${LOGO}` with which you can store the path or the URL to an image file (PNG or JPG) for an appointment. If this placeholder is used in a field in the row designer of the "Grid/Table" view, the corresponding image is displayed instead of the text. If this placeholder is available, the logo is also displayed in the "Single/Door Sign" view.

In the case of the Exchange and the iCalendar data source, the data source does not have the ability of directly specifying a logo/image for an appointment. You can still achieve this by entering the following placeholder in the additional text (body) of the appointment:

```
${LOGO}=http://...
```

In the same way, you can also insert additional images in the "Table/Grid" view by defining your own placeholders and assigning a URL or a path to an image file as a value.

### User defined, custom placeholders:

The "Additional text" field (Body) can be used to define additional, user-defined placeholders and to assign values to them. To do this, you can enter a placeholder per line in the following syntax:

```
${NAME}=value
```

In the case of the data source "Excel File", you can store additional, user-defined placeholders in the form of additional columns in your table. The first row is used to define the placeholder's name and the following lines then contain the placeholder values. So, if you have added an "ExtraText" column in the table, you can access the value with the placeholder `${ExtraText}`. Please note that you must specify all columns to be used for custom placeholders in the data source settings dialog (e.g., "K", "K-P" or "K, M-O", etc.).

### Placeholders for pictograms:

Finally, for the "Grid/Table" view, you can also use the predefined placeholder `${ICON}` to display a built-in icon. You can assign the following values to the `${ICON}` placeholder:

STAIRS_UP	Upstairs
STAIRS_DOWN	Downstairs
ARROW_N	Arrow up
ARROW_NE	Arrow up, right
ARROW_E	Arrow right
ARROW_SE	Arrow down, right



ARROW_S	Arrow down
ARROW_SW	Arrow down, left
ARROW_W	Arrow left
ARROW_NW	Arrow up, left

If the option **"Do not display error messages"** is selected from the **"General"** configuration section, placeholders that are not defined but which are used in a view are hidden. If, on the other hand, this option is not active, the name of the placeholder, e.g., `${PLACEHOLDER}`, is shown instead of the (non-existent) value for diagnostic purposes. In this way you can check whether the value of a placeholder for an appointment has been correctly assigned.

### Help and Support:

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If you need help or technical support when using this plugin or the *FrontFace* software, you can contact our support. For more information, please visit: <http://www.mirabyte.com/en/support/>