TIMEFLEX GROUP CALENDAR FOR MICROSOFT EXCHANGE

Setup manual

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Table of content

Installation prerequisites

TimeFleX for Exchange is a modern web application with HTML5 front-end, which has to be installed on an IIS server.

To use TimeFleX, every user requires a modern browser, e.g. Google Chrome, Mozilla Firefox, Microsoft Edge, Internet Explorer 10/11 or Apple Safari.

TimeFleX can read calendar data from Exchange servers 2010 and above, and from Office 365.

TimeFleX IIS Server

To install TimeFleX, a server is required that fulfils the following requirements:

- Windows Server 2008R2 or newer
- IIS has to be installed with default web site on port 80 and additional roles
    - "Webserver" -> "HTTP Features" -> "Static Content"
    - "Webserver -> Security -> Windows Authentication"
    - "Webserver -> Application development -> .NET Extensibility 4.x"
- .NET Framework 4.5.2 or newer installed
- ASP.NET 4.x has to be installed
    - Under Windows 2012, this is a Windows feature
    - Under Windows 2008R2, you have to execute *aspnet_regiis –i* in the .NET-Framework directory, usually C:\Windows\Microsoft.NET\Framework64\v4.0
- The server may not be used as Skype for Business server or Dynamics CRM server.
- Setup on a domain controller is allowed.
- Setup on the Exchange server is recommended for small businesses.
- Setup in a Microsoft Azure Virtual Machine is possible.

The performance of the IIS server should be tailored to the size of your organization:

- Small organizations up to 500 TimeFleX seats can do with a single core and 2 GB of memory, although a second core is always a good idea.
- Four to six cores with 4 to 6 GB RAM can serve 3,000 to 5,000 users.
- Bigger machines are not useful, since TimeFleX does not crunch numbers, and the first limit hit will be in- and outgoing connections.
- Organizations with more than 5,000 TimeFleX seats should consider a redundant setup with multiple IIS servers.

These performance considerations are to be taken with a grain of salt. Depending on your organization's activity and usage of TimeFleX, and how sharp your load peaks are, the system requirements can be both too conservative or too low. You may also have to adjust for an anti-virus software or other system services which are not installed with Windows.

TimeFleX SQL Server

Furthermore, a SQL server is required, where TimeFleX will store its data and cache the Exchange calendar data. The SQL server should provide the same performance as the IIS server, and have roughly 1 GB of free disk space per 100 users.

For smaller environments up to 500 seats, if you have no full SQL server available, you can install the free SQL Server Express onto the IIS server. If you install the SQL Server on the IIS server, you should double the server's cores and memory.

Important: If your environment is over 500 seats, not only may SQL Server Express cause performance problems, but also consistency problems, should the database grows above the maximum database size in Express edition (10 GB).

Important: Your SQL Server has to be installed in *Mixed Mode* with a password for the SQL user (e.g. *sa*). A domain user **cannot** be provided during setup.

TimeFleX Service account in Exchange

Furthermore, you need a service account in Exchange, that can access all user calendars. If you don't have a service account, please create a new one.

- Please note that the service account requires an Exchange mailbox to accomplish its tasks.
- To keep administration easy, you should provide Application Impersonation permissions to your service account. To do so, in ECP under "permissions" -> "admin roles", assign a role group containing "Application Impersonation" to the user.
- Under Exchange 2010 please use the following Exchange Management Shell command:
  ```
  New-ManagementRoleAssignment –Name:TimeFleXImpersonation
  –Role:ApplicationImpersonation –User:UsernameAD
  ```
- Should you be unable to use an Impersonating user, you will have to provide Full Access on all mailboxes to the service user; or the owners of the mailboxes have to provide a calendar sharing to the service user. Please note that this will require action whenever you add new users/mailboxes to your Exchange environment.
- The service mailbox has to be set up with a password that does not expire nor change.

TimeFleX Connectivity

TimeFleX installs into the IIS Default Web Site, which, by default, allows incoming connections on port HTTP 80 TCP and HTTPS 443 TCP (requires certificate). This can be changed to 443-only by setting "Enforce SSL" on the Default Website.

Outgoing connections, for which you may need to tunnel through the firewall, are as follows:

- To the Exchange Autodiscover and EWS via HTTPS port 443, and under some circumstances, port 80 (especially to Office 365).
- To Active Directory, which should work out of the box if the TimeFleX server is already joined to the Active Directory domain of the Exchange organization that you install TimeFleX for. Otherwise, Microsoft has a port list: https://social.technet.microsoft.com/Forums/windows/en-US/1c6a59de-c1fe-4946-bb4e-1fe36fd40b08/required-ports-to-communicate-with-domain-controller?forum=winserverDS
- To a SQL server of your choice, on the port that has been selected by Microsoft for that instance during setup (1433 for the default instance). Before boring any holes into a firewall for SQL, consider installing a SQL server on the IIS server.

Modes: Setup in local environment

With an on-premise IIS server, TimeFleX supports three different modes of operation, which are particularly suitable for pure Office 365 environments, hybrid environments and local Exchange environments, respectively.

Modes available for certain deployments

While TimeFleX uses the ubiquituous EWS API for Mailbox content, directory access can be done in two different modes: against a local Active Directory or against the Office 365 directory via AD Graph. Depending on available directories and your mailbox deployment, you can choose your options:

		Available directory	
		Office 365 only/not synced	On-premise/synced
Mailbox deployment	**Office 365 only**	AD Graph	Both possible
	Local Exchange Server or Hybrid	n.a.	Active Directory

Exchange locally (on premise)

If you use a local Exchange installation, the web server has to be placed in the same Active Directory Domain as the user accounts. TimeFleX setup has to be executed as a domain administrator. TimeFleX will pull the user information from Active Directory, and the Exchange data from EWS.

For the local Exchange installation, Single Sign-On (SSO) using *Integrated Windows Authentication* is supported by default, i.e. users don't have to manually log into TimeFleX when they use compatible browsers:

- Microsoft Edge does not support SSO right now.
- Mozilla Firefox does support SSO only if configured adequately
- Internet Explorer does support SSO by default, this can be disabled in the settings.
- Google Chrome does support SSO, and it cannot be disabled.

Exchange Online / Office 365 via AD Graph

If you use a pure Office 365 or Exchange Online environment, the user accounts can be read via Microsoft AAD Graph API directly from your Office 365 directory. In this case, the users authenticate against Microsoft server, and Single Sign-On with the Office 365 Portal and other Office 365 based Web Applications is supported.

Please note that Office 365 Login demands that you configure your web server with HTTPS and "Enforce SSL", and that users have to access TimeFleX using a single domain name, because neither IP address nor alternate names will work with authentication. A valid SSL certificate is required.

Exchange Online / Office 365 / Hybrid via AD Sync

If you use a hybrid environment, with some mail boxes locally and some in the cloud, or if you don't want to set up https on your server, you have to synchronize the directories between your local server and Office 365, so that TimeFleX can get the user information from the local directory instance.

The Microsoft tool „Azure AD Connect" does support the main synchronization part, but we recommend to check manually that the distribution groups are indeed available in both directories.

During setup, please attend to two more details about the service account:

1. The service account has to be set up as Impersonating Account separately on the local Exchange and in Office 365.
2. The service account has to be provided by UPN name, and that name has to be the same in both directories.
3. The password of the service account has to be the same on both systems; you may not (have to) change it after it has been entered in setup.

After you have set up the synchronization, the setup process can proceed as described in „Exchange locally".

Modes: Setup in Azure Cloud

Setting up TimeFleX in Azure Cloud is interesting for organizations using Office 365 and removing their hardware servers. Azure has two different services: App Services, where you don't have to care about Windows, and Virtual Machines, where you have full control over the system. TimeFleX can be installed in either.

Azure Virtual Machine

TimeFleX can be installed in an Azure Virtual Machine just like on a local IIS server. Both Office 365 via AD Graph and Office 365 via AD Sync are supported; for the latter, you have to prepare the virtual machine as a domain controller and set up synchronization, before you start the installation.

Azure App Service

TimeFleX in mode „Office 365 via AD Graph" can run as an Azure App Service. As of today, no installer is available in market place, a manual installation is required. For detailed information and support, please contact support@timeflex-us.com.

Prepare your Office 365 organization for TimeFleX via AD Graph

If you are not using Azure AD Connect or another type of directory synchronization between Office 365 and your local server, TimeFleX can directly access Azure AD once you have set up the required permissions:

Old Azure portal

1. Register TimeFleX as an App in Azure AD
    a. Navigate to https://manage.windowsazure.com
    b. Select Directory -> <Your Organization> -> Applications
    c. Create a new application. ("Add") -> "Add an application my organization is developing"
    d. Select „Web Application" and a name (e.g. TimeFleX)
    e. The Sign-On URL is the URL, at which TimeFleX will be available in your network; it is of the form: https://<serverdnsname>/timeflex/timeflex/ (HTTPS required).
    f. As App-ID URI, please enter the same URL.
2. Enter authentication data and apply permissions
    a. Select the application and click "Configure"
    b. Copy the Client ID from the web interface; it will be needed later.
    c. Create a new key.
    d. Under "Reply URLs", add https://server-dns-name/timeflex/timeflex/ and https://server-dns-name/timeflex/admin/.
    e. Under "permissions to other applications" -> "Windows Azure Active Directory", select the application permission "Read directory data" and the delegated permission "Sign in and read user profile".
    f. Click "Save".
    g. IMPORTANT: Now save the key from the web interface into a file; it will be needed later and cannot be revisited after the current page has been left!
    h. Also copy the "Tenant ID" of your Azure Active Directory from the web interface URL(!). The Tenant ID has the same form as the Client ID.
3. Execute Setup
    a. Now execute the TimeFleX Setup on your server as described below, with the following changes:
    b. In the dialog for authentication information, a directory selection is available. Here, select "Azure Active Directory".
    c. The connectivity check may need 30 seconds; the user interface may show "Is not responding". Please let it run a minute before aborting.
    d. The following dialog is special for Azure Active Directory. Here, into the appropriate fields, enter the authentication data we asked you to keep earlier in this instruction.
    e. After the setup has run through properly, you can check that TimeFleX is indeed running.
    f. Should any problems or questions arise, please contact support@timeflex-us.com. We will gladly assist you.

1. Register TimeFleX as an App in Azure AD
    a. Navigate to https://portal.azure.com
    b. Select Azure Active Directory -> App registrations
    c. Create a new application. ("Register a new application")
    d. Choose a name (e.g. TimeFleX)
    e. The Sign-On URL is the URL, at which TimeFleX will be available in your network; it is of the form: https://<serverdnsname>/timeflex/timeflex/ (HTTPS required).
2. Enter authentication data and apply permissions
    a. Select the application.
    b. Copy the Application ID from the web interface; it will be needed later.
    c. Click on "Reply URLs". Add https://server-dns-name/timeflex/timeflex/ und https://server-dns-name/timeflex/admin/.
    d. Click on "Permissions" -> "Windows Azure Active Directory"
    e. Select "Application permissions" -> "Read directory data" and "Delegated Permissions" -> "Sign in and read user profile".
    f. Click save.
    g. IMPORTANT: Click "Grant permissions".
    h. Click on "Keys".
    i. Enter a key description, select a duration and click "Save".
    j. IMPORTANT: Now save the key from the web interface into a file; it will be needed later and cannot be revisited after the current page has been left!
    k. Close the app registration. In Azure Active Directory, click on "Properties" and copy the Directory ID; it will be required later.
3. Execute Setup
    a. Now execute the TimeFleX Setup on your server as described below, with the following changes:
    b. In the dialog for authentication information, a directory selection is available. Here, select "Azure Active Directory".
    c. The connectivity check may need 30 seconds; the user interface may show "Is not responding". Please let it run a minute before aborting.
    d. The following dialog is special for Azure Active Directory. Here, into the appropriate fields, enter the authentication data we asked you to keep earlier in this instruction.
    e. After the setup has run through properly, you can check that TimeFleX is indeed running.
    f. Should any problems or questions arise, please contact support@timeflex-us.com. We will gladly assist you.

Preparing your Exchange 2010 server for TimeFleX

Background information

The Exchange server has a so-called Throttling Policy to be accessible for all users. The throttling policy only allows every user to produce a certain amount of load on the Exchange server, and delays or refuses connections if this allowance is exceeded.

TimeFleX is running all Exchange requests under the single user that is provided in setup. Since TimeFleX requires all calendar data from all mailboxes to be accessible via this single user, but the Default Throttling Policy under Exchange 2010 is configured in a way that a single user can work with his Outlook, OWA and ActiveSync, TimeFleX may be throwing errors if running under that Throttling Policy; especially if it is used by multiple users simultaneously.

How to disable Throttling

To disable throttling for the user "TimeFleX" on your Exchange server, you can create a new Throttling Policy, configure it to allow access to the server freely, and then apply it to the user TimeFleX. The three Exchange Management Shell commands are, in that order:

1. `New-ThrottlingPolicy TimeFleXPolicy`
2. `Set-ThrottlingPolicy TimeFleXPolicy -EWSMaxConcurrency $null -EWSPercentTimeInAD $null -EWSPercentTimeInCAS $null -EWSPercentTimeInMailboxRPC $null -EWSMaxSubscriptions $null -EWSFastSearchTimeoutInSeconds $null -EWSFindCountLimit $null -CPUStartPercent $null`
3. `Set-Mailbox "TimeFleX" -ThrottlingPolicy TimeFleXPolicy`

The third command has to be adapted if your impersonating user does not go by the name "TimeFleX".

SQL Server Express Setup

TimeFleX requires a Microsoft SQL Server or SQL Server Express. (If you intend to purchase more than 500 licenses of TimeFleX, a full version of SQL Server is strongly recommended.)

If you don't have SQL Server at hands, you can install SQL Server Express on the machine hosting your IIS. You can download Microsoft SQL Server 2014 Express (or better) for free from the Microsoft Download Center.

To download SQL Server Express 2014, please navigate to http://www.microsoft.com/de-de/download/details.aspx?id=42299

Select, depending on the server operating system, either **SQLEXPR_x64_ENG.exe** or **SQLEXPR_x86_ENG.exe**.

When installing the new SQL Server Express on your system, please make sure to enable the "Mixed Mode" as shown in the screenshot below.
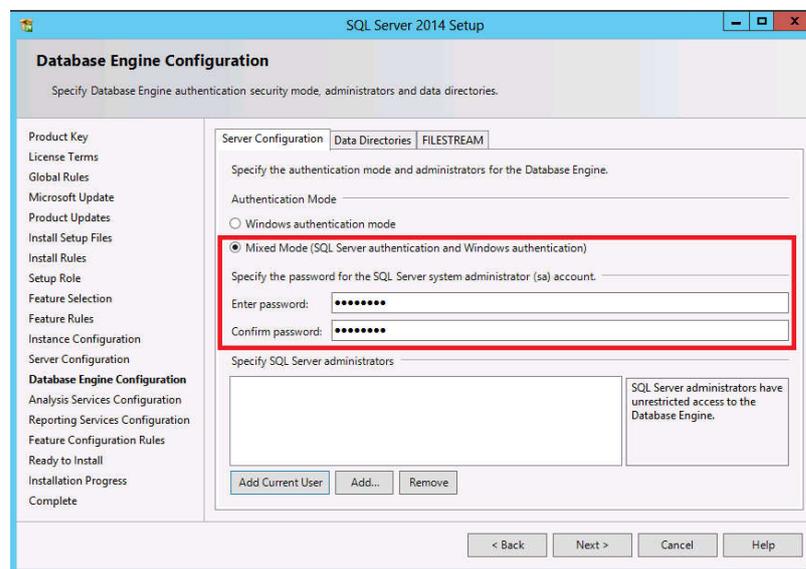
First install of TimeFleX

After all prerequisites are met, you can start with TimeFleX setup.

- Download the most recent version of the setup:
  http://www.timeflex-us.com/downloads/TimeFleXSetupExchange.zip
- Unzip the file on your IIS server
- Execute TimeFleXSetup.exe on the IIS-Server.
- In the welcome dialog, click on "Next".
- In the following step you can select the setup directory of TimeFleX. The IIS path is preselected. If you want to keep it, click "Next".
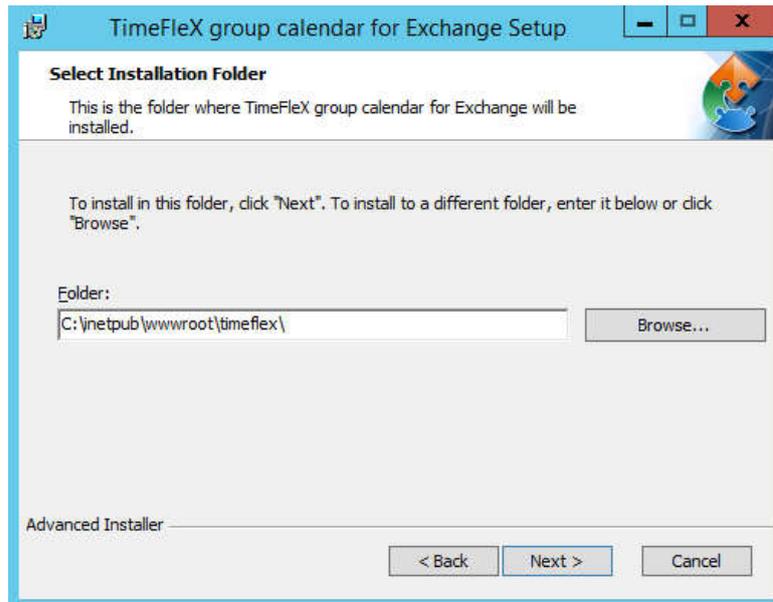

1. In the following dialog, provide the service account that has access to all mailboxes. Click "Next".
   Attention: If you setup an Office 365, Exchange Online or hybrid environment, you have to provide the UPN name.
   **Note:** If you change the password in AD, you have to do a repair install of TimeFleX.
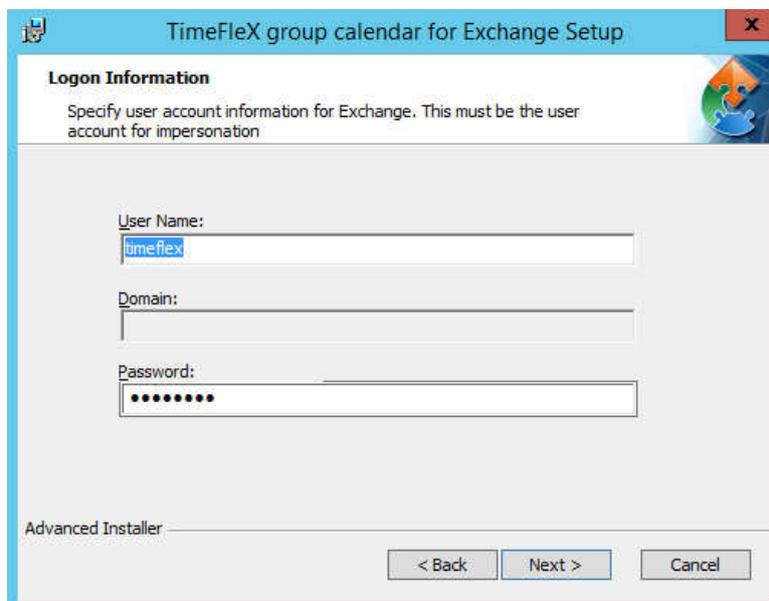
2. In the following dialog, please provide the SQL server name and the instance name (if applicable), database name, sql username (usually "sa") and password.
    If you select that the user has admin rights, TimeFleX will try to create a new user that only has access to the TimeFleX database, and use that user throughout the web application.
    If you select that the user has no admin rights, TimeFleX will not try to create a new user, and use the provided user for access to the database from the web application.
    Note: If you have installed Microsoft SQL Server Express on the local machine without deviating from the default settings, the prefilled value for server and instance should already be correct: *localhost\SQLEXPRESS*
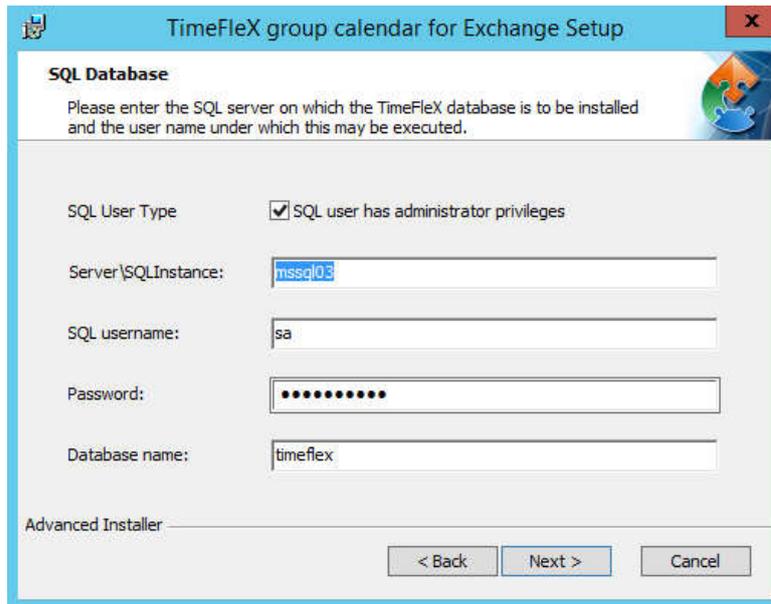
3. You have made all required inputs. Now you can start the setup process, which should take about 1-2 minutes to complete.
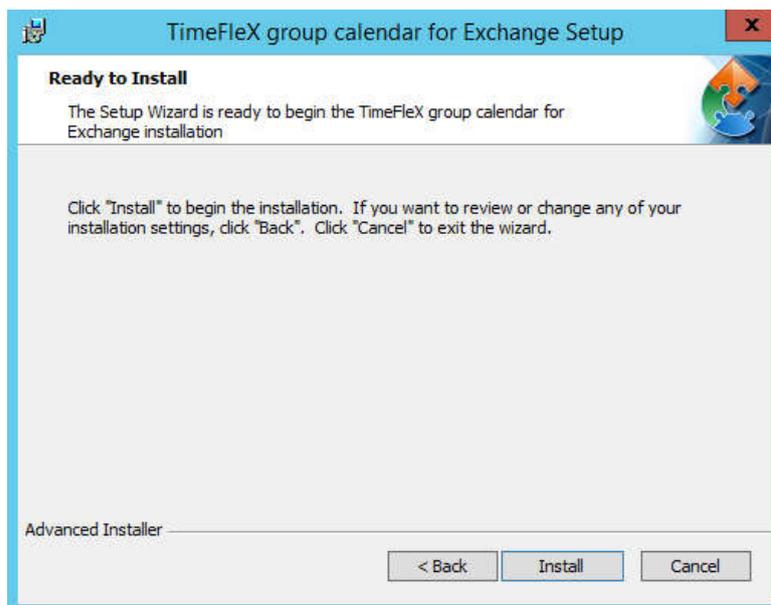
4. Then TimeFleX Group Calendar will be installed. You will be notified once the setup is complete. Should errors occur during setup, please submit the error message to support@timeflex-us.com. We will gladly assist you with any troubleshooting.

Once successfully installed, TimeFleX Group calendar admin area can be reached under the following URL:
http(s)://YourWebServerDNS/timeflex/admin/index.html
From the server itself, it is available at
http(s)://localhost/timeflex/admin/index.html

The first user to access the admin area will be considered a TimeFleX administrator.

License keys
We gladly provide you with a time-limited evaluation license key at no cost.
Please note: Our license keys will be connected to your qualified active directory domain, (e.g. test.local), which we kindly ask you to include in your request.
In the admin area under „Options" -> „Licensing", you are able to generate a license key request.

If you don't have a license key, TimeFleX won't show current calendar data, but you can test the working of TimeFleX with old calendar data (older than 1 week) for an infinite time span.

High availability/redundancy
TimeFleX can be run behind a proxy or Load Balancer. In this case, you have to prepare your SQL Server in a redundant setup. Then, execute TimeFleX setup on each of the machines, and provide to all installations the same highly available database. Afterwards, configure the load balancer. We recommend that your load balancer does keep a session on a single server (e.g. IP-based load balancing), because some data is cached in IIS cache on a per-user base to reduce AD and Exchange requests.

Common issues
SQL connection problems
If the TimeFleX setup denotes that your SQL Server cannot be reached, the SQL server connection may be unavailable or the credentials wrong. Please check the following:

1. Check whether the server is running.
   For this, run "services.msc" on the SQL server machine and check that the service "SQL Server (Instancename)" is running.
2. The server, instance name and credentials have to be entered correctly. The user you entered during setup has to be an SQL user.
   Open SQL Server Management Studio. Enter the values from the connection string into the appropriate fields of the SSMS login screen. Click „Login". If this doesn't work, you have to get it working first, before proceeding with TimeFleX Setup.
   Check that username and password are correct, and that the user is enabled. Right-click the user in Sql Server Management Studio, click "Properties", and select the "Status" tab, where "Login" should be "Enabled".
3. If the user works, make sure that you didn't enter a user with a backslash "\" in the name; as this denotes Windows Logins, which are not supported by the Installer.
4. If you are required to create a new SQL user via SSMS, please also make sure that the server has mixed mode enabled:
   In SSMS, being logged in, right click on the server and click "Properties". Switch to "Security" tab and check that "SQL Server and Windows Authentication mode" is selected.

If the credentials were accepted by TimeFleX setup, but a SQL error occurs during install, the issue may be that the user hasn't got the required permissions on the database.

> If the database doesn't yet exist, check that the user has the permission to create databases. If it does exist, open the node of the database you intend to install into, and browse to its subnode "Security" -> "Users". You may have to add the user to the database if it is not yet in the list, and check that the minimum required permissions (db_datareader, db_datawriter, db_ddladmin) are met.

If TimeFleX stops working at all during normal operation, the issue may as well be a SQL server problem. In this case, check the following:

1. Check whether the SQL server is running.
   For this, run services.msc on the SQL server machine and check that the service "SQL Server (Instancename)" is running.
2. Server, instance name and credentials have to be correct in Web.config.
   For this, open C:\inetpub\wwwroot\timeflex\Web.config on the TimeFleX server and SSMS. Copy the values from the connection string into the appropriate fields of the SSMS login screen. Click „Login".
3. If the SQL server and the TimeFleX server are on different machines, the SQL server has to be reachable from the TimeFleX server. A ping does usually suffice, although you may want to check any proxies or firewalls that you may have installed between the TimeFleX server and the SQL server.

Could not access calendar: The Url property on the Exchange server must be set

A common issue with TimeFleX is the error "Could not access calendar: The Url property on the Exchange server must be set." This error is caused by a malconfiguration of the TimeFleX Service Account in Active Directory. Exchange will deny access to the Autodiscover service if the TimeFleX Service Account has to "change password on next logon", provide additional security information or do an MFA authentication. Please make sure to disable all these features and keep them disabled, even during security upgrades to your Active Directory. Make sure that the password of the user in AD has not been altered between setup and connection problem.

In a hybrid setup, if your local mailboxes are working and your cloud mailboxes are throwing said error, please check that the TimeFleX Service Account is provided by full UPN name, because the local Autodiscover service does accept the user name without domain, but Office 365 Autodiscover service does not, and make sure that the password is the same in both environments.

Update

Whenever new versions of TimeFleX are available, everyone with a valid license key will receive an email notification from us. TimeFleX does not support automatic updates, a manual install is required. Also, there is no incremental update; the whole old version will be replaced during an update. Installing an update is done like the first setup; the difference is that most fields are already filled in with the information provided during first install.

Tipp: Before installing an update, make a full backup of your database to prevent data loss and allow for a downgrade (see below).

Repair install

To repair an install of TimeFleX, execute setup once again.

High availability

A 24/7 available copy of TimeFleX is updated in several steps:

1. To make sure that the new version of TimeFleX can be installed correctly in production, please copy your production database onto a testbed SQL server and try to install TimeFleX on a non-production server into that test database.
2. Afterwards, remove one server from load balancing and update that server.
3. Then remove all other servers from the load balancer while adding the first. Now it may be required that your users refresh the browser window to load the new frontend version.
4. Afterwards, execute the update on the other servers and, after the update was successful, add them to the load balancer rotation again.

Downgrade

While you can install older versions of TimeFleX, TimeFleX does not support automatic downgrade of the database schema.

If you have a full backup of the old database, you can safely downgrade as follows:

- Uninstall the current version.
- Replace the database on your SQL server with the backup version.
- Install the old version.