

# DFengage Setup & Admin Guide

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## DFengage Release 2.0.1

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Mar 14 2024

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## DFengage Introduction

DFengage is a mobile application for the collection of electronic patient-reported outcomes (ePRO) that allows research participants to complete study activities (such as questionnaires, surveys, and diaries) assigned by the research team.

DFengage is fully integrated with DFdiscover, using the setup definition defined in DFsetup and the role permissions and user accounts defined in DFadmin. This guide describes instructions and considerations for DFengage setup, administration, and management.

DFengage is installed from the Google Play Store (for Android) or Apple App Store (for iOS and iPadOS) on smartphones and tablets. Study participants login to DFengage with their unique user account and complete assigned activities based on the study schedule. DFengage sends notifications when new activities become available. Refer to the [DFengage User Guide](#) for details about the use of the DFengage app by study participants. DFengage is compatible with DFdiscover version 5.4 and later.

## Study Setup for ePRO

DFengage uses the plate definition, visit schedule, page map, and translations defined in DFsetup. The below sections outline how DFdiscover setup and configuration apply to DFengage and considerations for ePRO form design. See the [Study Setup User Guide](#) for general details on using DFsetup.

### Activity Definition

#### Plate Setup

A plate defined in DFsetup is presented as an activity in DFengage. Forms to be completed in DFengage may be set up as plates with or without CRF backgrounds, but will always be displayed in DFengage with one field or group per screen.

Fields in DFengage are displayed in field order. The visit number (field 6) and subject ID (field 7) are not displayed in DFengage, so field 8 is the first question displayed for an activity in DFengage.

For each field or field group, the Prompt text is displayed in DFengage as the question text above the data field. If no Prompt is defined, the Description will be shown in DFengage. In DFengage version 2.0 and later, fields of any data type may be grouped to display them on a single screen with one prompt in DFengage. Screens and tables are not supported in DFengage.

#### Field Property Considerations

- **Legal ranges:** Legal ranges are supported in DFengage version 2.0 and later. When an illegal value is entered in DFengage, a warning message will appear: “The response you entered might be incorrect. Please double-check it before continuing.” The user will be able to proceed to the next question after the warning is displayed.
- **Required and essential fields:** Fields defined as required or essential must be completed by the DFengage user to continue or complete an activity. The “Next” button in DFengage is disabled and the user cannot proceed to the next question until they provide a response. Subjects may click “Next” for fields that are defined as optional without providing a response.
- **Baseline visit date fields:** Baseline visit dates, used by DFengage to determine the schedule of ePRO activities, must use the DD/MM/YYYY format. Visit dates are defined by the Use field property of “Visit Date” and selected as the visit date field for the B visit type in the visit map. If the visit date at the baseline visit is captured using a different date format (e.g., DD-MMM-YYYY), use a separate hidden field and edit check to convert the visit date at the baseline visit to the correct date format required for DFengage. Only baseline visit dates require the DD/MM/YYYY format.

- **Formats:** DFengage version 2.0 and later displays the defined format in the input field as a guide and warns the user if a response is entered that does not match the defined format. Only values matching the defined format will be accepted by the DFdiscover server when the activity is saved. Provide additional instructions for users if a complicated data format is required, to avoid data entry errors and lost data.
- **Skip patterns:** Skips defined in the field properties are followed when the user clicks the “Next” or “Finish” button, to skip the number of fields defined based on the value selected or entered. Note that a group of fields were considered 1 field for DFengage in version 1.0, but in version 2.0 and later fields within a group are counted individually, as they are in other DFdiscover applications.
- **Instructions:** The Instruction field property is supported in DFengage version 2.0 and later. Instructions can be displayed in DFengage above the prompt, above the field, or below the field. The field right, below field, and below prompt positions defined in DFsetup all display below the field in DFengage.
- **Plate and field help:** Both plate help and field help are supported in DFengage 2.0 and later. Defined plate help is available in DFengage via the “?” icon next to the activity name. Defined field help will be available in DFengage via the “i” icon next to the field prompt within an activity.
- **Edit checks:** Edit checks are not currently supported in DFengage.

## Data Type Considerations

- **Date and time fields:** When capturing dates or times in DFengage, a calendar widget or 24-hour clock widget are provided showing the current date or time. The DFengage user can change the date/time if appropriate for the question. Date fields support all defined date formats but does not support partial dates. Time fields support hh:mm 24-hour clock time only.
- **Choice and check fields:** Both choice and check field option buttons are displayed as circles, whether it’s “select one response” or “select all that apply”. Add instructions to the prompt to clarify this as needed. Up to 98 choices can be defined in a choice field, and choices may be represented in a list or in a dropdown menu according to the Show As field property. The longer the text or the higher the number of choices, the more scrolling needed.
- **Number fields:** DFengage limits the number of characters that can be entered in numeric fields (including decimal places) according to the Store field property. If a format is defined, DFengage displays it in the input field as a guide and warns the user if the response entered does not match the defined format. Only values matching the defined format will be accepted by the DFdiscover server when the activity is saved. For complex number formats, provide instructions for the user to avoid confusion or data loss.
- **VAS fields:** Use the VAS data type to collect numeric responses on a scale (e.g., pain scale of 0-10) and numbers within specific limits (e.g., temperature) to restrict data to allowable values only. Use in place of number fields where feasible or practical. You can set up VAS fields with as much precision as needed, in the field properties.
- **String fields:** Use the string data type to collect text. The store length field property defines how many characters may be entered in that field. In DFengage, the total number of characters allowed is displayed below the input field, along with the count of the characters entered so far.

Refer to [Study Setup User Guide, Defining Data Fields](#) for complete details on creating plates and defining fields in DFsetup.

## Page Map

By default, the plate label is used as the activity name in DFengage. To change the activity name per visit, use the Page Map. Refer to [Study Setup User Guide, Page Map](#).

## Activity Timing

Activities in DFengage become available based on the visit schedule as defined in the Visit Map in DFsetup.

The timing of activities in DFengage refers to the time when a new activity becomes available in the app, when a notification is sent for a new activity, and when a notification is sent for an overdue activity. Timing uses the time zone of the device on which DFengage is installed.

The default timing is 8:00am. Timing can be customized for all activities in a study and/or for individual visits in a study if the 8:00am timing does not align with study requirements. Customizing the timing for individual visits allows for multiple activities at different times per day.

## Custom Timing

To change the default 8:00am study timing for all visits, add the 'ePROStudyNotification' custom study property in Global Settings and then define the value for that property as the 24-hour clock time (e.g., "18:00") to be used for this study.

### Study > Custom Properties

DFsetup - Custom Properties

By default, custom properties have standard names in the format DFXX\_USER the standard name. A description may also be defined for use in tabular listing

DFSTUDY	DFPLATE	DFMODULE	DFVAR	MISCELLANEOUS	Tag
DFSTUDY_USER1					ePROStudyNotification
DFSTUDY_USER2					
DFSTUDY_USER3					

### Study > Global Settings > Custom

DFsetup - Global Settings

Global Help Fields Levels Guides Custom

Property Tag	Property Value
ePROStudyNotification	09:00
DFSTUDY_USER2	
DFSTUDY_USER3	

To change the timing for a specific visit, add "T-XX:XX" to the end of the visit label in the visit map, where XX:XX is the 24-hour clock time to be used for this visit. The timing notation must be added to the end of the visit label or DFengage will not be able to read it.

C	2		ePRO Cycle
B	40	INJ	Study Injection
S	41	ED1-1	eDiary Day 1 T-12:00
S	400	ED1-2	eDiary Day 1 T-18:00
S	42	ED2	eDiary Day 2 T-9:00
T	43	ED3	eDiary Day 3 T-9:00

If no timing is defined for a visit, the custom study timing is used for the visit. If no custom study timing is defined, the default 8:00am time is used.

## Visit Map

The visit map defines the schedule for when activities become available in DFengage. The Visit Map is described in [Study Setup User Guide, Visit Map](#). Only S (Scheduled) and T (Termination) visit types are supported in DFengage. Optional visits and conditional plates, visits, cycles, and terminations are not supported in this release. Visits to be completed in DFengage must be scheduled from a baseline visit date entered on a non-ePRO plate using the DD/MM/YYYY date format.

Notifications for new activities are sent on the day the visit becomes due according to the “Due” property in the Visit Map, at the time defined as described above. If an activity is not completed and becomes overdue according to the “Overdue” property in the Visit Map, an overdue notification is sent on that day at the same time as the initial notification. All plates within a visit become due and overdue at the same time.

If custom timing is required for a specific activity, include the “T-XX:XX” notation at the end of the visit label in the Visit Map where needed, as described above. This also allows for scheduling of multiple activities in a day.

## Activity Expiry

By default, if a subject does not complete an activity in DFengage, the activity remains available for completion in the app until the record is completed in DFengage or another application (e.g., DFweb, DFcollect, or DFexplore).

To automate the removal of activities that have not been completed in DFengage within a specific time window, consider including a hidden field on each ePRO plate to function as the “expiry” indicator. Using edit checks run in batch, identify which records have expired based on the study schedule and mark the hidden field. This will remove the activity from DFengage, once the app syncs with the DFdiscover server. If the participant completed the activity offline and later syncs the data with the server after the records has “expired”, the data will still be received.

## Translations

Use the Translations configuration in DFsetup to define the available languages and provide translations of the page labels, field prompt, instructions, choice and check field labels, and help. Refer to [Study Setup User Guide, Translations](#) for details.

DFengage app interface text is in English only in this release.

## Mid-study Changes

If any setup changes are made after data collection begins, those changes are available to DFengage users the next time they open the app while online.

Changes to the study setup such as typo corrections in the prompt, description, instruction, or code labels; field or plate help updates; visit, plate, or plate label changes; store length increases; field grouping changes; or changes to legal range, need, units, and skip do not impact the data structure and can be implemented without risk of data loss.

However, **structural changes to the database must be taken with care** since these may lead to data loss. These include changing data type, changing data format, reducing store length, changing code numbers, and adding, removing, or reordering fields. If study participants are completing activities in DFengage using an older database structure, data may be lost when it is synced with the DFdiscover server where the database structure has been changed.

If database structure changes are required for your study after data collection begins, consider creating a new plate (and visit, if appropriate) for this data and decommissioning the old plate (by changing role permissions)

once all data has been received.

Refer to [Study Setup User Guide, Modifying Plates that Contain Data](#) for more details on making mid-study changes.

## Study Administration for ePRO

DFengage relies on the role permissions and user accounts defined in DFadmin. This section describes the configuration required in DFadmin to support DFengage use.

### Role Definition

The definition of the role assigned to DFengage users has specific requirements outlined below.

#### Role Name

- Role name must be **ePROdata** (case-sensitive).

#### Tools & Reports

- Under DFexplore, check Data.
- Under API Clients, check DFengage.

The screenshot shows the configuration page for a role named 'ePROdata'. The 'Name' field contains 'ePROdata'. Below the 'Description' field, there are three tabs: 'Tools & Reports', 'Auto Logout', and 'Permissions'. The 'Tools & Reports' tab is active. Under the heading 'DFexplore & API Clients', there is a list of checkboxes. The 'Data' checkbox is checked and highlighted in yellow. Other checkboxes include 'Batch Edits', 'Dashboard', 'Data - Attach subject document', 'Data - Import subject CRFs', 'Data - Submit PDF', 'Data - with Select', 'Image', 'Image - Create tasks', 'Image - Delete new records', and 'Image - Raw data entry'. Below this list, there are more checkboxes for 'Images' and 'Reports'. Under the heading 'DFexplore Miscellaneous', there are checkboxes for 'Developer', 'May disable edit checks', and 'Show query status detail'. Under the heading 'API Clients', there are checkboxes for 'DFcollect', 'DFengage' (checked and highlighted in yellow), 'DFsources', and 'DFweb'.

#### Permissions

- View only access is required to the visit and plate where the baseline visit date is captured. This record will not be displayed in DFengage. No modify, write, data, query, or reason permissions.
- Write access is required for scheduled ePRO visits and plates. Only S and T visit types are supported in

DFengage, as described in [Visit Map](#). List the plates and visits individually. Write level must be 1. Data – C (Create) and M (Modify) and Reasons – M (Modify) permissions are required.

Example database permissions for the ePROdata role are shown below:

Get	Shows	Modify	Write	Data					Queries					Reasons						
				C	M	D	L	P	C	M	D	A	B	C	M	D	A			
<input type="checkbox"/> 100	Plates: 1	Levels: 0-5	<input type="checkbox"/> Show	<input type="checkbox"/> Show	1	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> 1, 2, 3, 4, 5, 6, 7, 14, 21, 28, 35, 42, 49	20, 21, 22, 23	0-5	<input type="checkbox"/> Show	<input type="checkbox"/> Show	1-5	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>			<input type="checkbox"/> Show	<input type="checkbox"/> Show			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Refer to [System Administrator User Guide, Roles](#) for complete details about defining and managing roles.

## User Access

Each DFengage user requires a DFdiscover user account with access to one study, one site, one subject ID, and the ePROdata role defined as described above. **DFengage will not work if the user has permissions for more than one study or subject ID.** An example DFengage user account is shown below.

Username	Date	Subject	Company
beta007	2020-11-29	Subject 2007	DF/Net Research, Inc.
beta008	2020-11-29	Subject 2008	DF/Net Research, Inc.
beta009	2020-11-29	Subject 2009	DF/Net Research, Inc.
beta010	2020-11-29	Subject 2010	DF/Net Research, Inc.

  

Study	Sites	Subjects	Role Name
809 Dfengage Beta	2	2007	ePROdata

Since DFengage users are study participants, personal details such as name and email address must not be recorded in DFadmin. DFengage does not support forgot password or two-factor authentication functionality for this reason.

Refer to [System Administration User Guide, Users](#) for complete details about managing users and assigning study permissions. DFengage users may be added in bulk (up to 100 user accounts at one time) using the [Add Bulk Users](#) feature in DFadmin.

## Study Configuration

The DFdiscover server and API used by DFengage may be different versions. For example, your DFdiscover server version may be 5.5 but the DFws API version is 5.7. In this scenario, your study configuration **Version Strict** setting must be set to “All minor versions supported”. This will enable the different API and server versions to connect to each other.

Refer to [System Administrator User Guide, Software Version](#) for complete details about the **Version Strict** setting.

## Troubleshooting

### Common Problems

The following sections outline a few basic troubleshooting scenarios. Knowing the error code and message displayed to the user in DFengage will help resolve issues more quickly. Ask DFengage users to report error

codes and share screenshots where possible to help with diagnosing any issues. For technical support, contact the DFnet software support team at [help@dfnetresearch.com](mailto:help@dfnetresearch.com).

## Unable to log in

Ensure the user has the correct username, password, server, and API. Contact the DFdiscover system administrator to check for any problems with the DFdiscover server or API, including the server configuration to allow the DFengage app to connect to your DFdiscover server.

## Able to log in, but unable to proceed past PIN setup

In DFadmin, double-check the user account, user permissions, and role definition. The user may have access to only one subject ID in one study with the ePROdata role. Check that the study configuration setting "Version Strict" is set to "All minor versions supported" if your server and API are not the same version.

## Able to log in, but expected activities do not appear on Today screen

In DFadmin, double-check the user permissions, role definition, and database permissions. In DFsetup, double-check the visit map definition and the baseline visit date format. In DFexplore, double-check the baseline visit date.

## Activities completed in DFengage not received in DFdiscover

The user must not uninstall or delete DFengage or delete its app data, since this will delete all data stored locally, including partially completed activities and completed activities not yet synced with DFdiscover.

Check that the subject is not locked in DFexplore and that the data record is not locked in DFweb or DFcollect. With the DFengage user, check that they are connected to the internet. Navigate to the History screen in DFengage and check the sync status. If the activity is Pending, click the cloud icon at the top right to send data to the DFdiscover server.

## Notifications stop working for DFengage activities

If the user does not open DFengage on their device, their device may stop sending notifications for new or overdue activities. DFengage schedules notifications on the device for the next 72 hours or at least 32 notifications after the app was last accessed. After 72 hours of notifications or 32 total notifications without the user opening the app, the background processes that schedule new notifications on the device may stop working and the user may stop receiving notifications.

We recommend study teams make a plan to follow up with participants if ePRO activities are not received, to avoid missing data and ensure participants are accessing DFengage as expected.

## Error Codes

Most error messages in DFengage will include an error code that can be used to help diagnose and resolve the issue. The table below lists all error codes, the error message, the issue, and instructions to resolve the issue.

Code	Error message	Issue	Instructions
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Code	Error message	Issue	Instructions
01	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	Server could not retrieve the study that the user was trying to access.	Check if user has access to the correct site and subject in DFAdmin. Check for any errors in DFsetup.
02	Study is currently being edited. We can't receive/send study info since your study is currently being edited. Please close the app and try again later.	Another user has the subject binder locked in DFExplore or the record locked in DFweb or DFcollect. Another user may have DFsetup open in exclusive or developer mode.	Ask other users to close binder (check DFExplore Status View to see who is connected) or exit DFsetup.
03	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	The data returned from the server was an unrecognized format.	Check for incorrect format of fields and variables in DFsetup.
04	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	The server could not respond with relevant site data. Possible internal server error retrieving data.	Check if user has access to the correct site in DFAdmin.
05	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	The server could not respond with relevant subject data. Possible internal server error retrieving data.	Check if user has access to the correct subject in DFAdmin.
06	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	The server could not respond with relevant binder data. Possible internal server error retrieving data.	Check if user has access to the correct subject in DFAdmin.

Code	Error message	Issue	Instructions
07	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	The server could not respond with relevant visit map data. Possible internal server error retrieving data.	Check visit permissions in DFAdmin. Check for any errors in DFsetup.
08	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	The server could not respond with relevant baseline data. Possible internal server error retrieving data.	Check that baseline visit date has been entered. Baseline visit date must be in DD/MM/YYYY format. Review visit map in DFsetup. Review role permissions for view access to visit and plate with baseline visit date in DFAdmin.
09	Can't finalise questions. We're having trouble sending data to the server. Please make sure you have internet access.	User was trying to submit the answers to the server and an error occurred (other than study currently being edited).	User may have to redo questionnaire. Ask user to retry.
10	Can't receive study info. We're having trouble receiving your study info. Please make sure you have internet access.	This error will only occur if the user has no internet access and has not saved any local data yet for them to work offline.	Ask the DFengage user to close the app, connect the device to the internet, and open the app again to retrieve data from the server.

Code	Error message	Issue	Instructions
11	Can't receive study info. We couldn't retrieve one of your questionnaires. Please close the app and try again later.	The server could not respond with relevant plate data. Possible internal server error retrieving data.	Check plate permissions in DFAdmin. Check for any errors in DFsetup.
12	Invalid credentials. The username or password you have entered is invalid. Please check and try again.	Incorrect username or password.	Confirm correct username and password. Ask DFengage user to use eye icon in password field to check for typing errors in the password.
13	Sync failed: We're having trouble syncing your data. Please make sure you have internet access, close the app and try again later. If this issue persists, please contact support	The app cannot sync data to the server.	Similar to error code 02. Ask other DFdiscover users to close binder (check Status View in DFexplore) or exit DFsetup.
14	Can't retrieve languages. We're having trouble receiving the languages of your study. Please close the app and try again later.	The app cannot retrieve languages.	Check translation map in DFsetup.
15	Connection timeout. Please check your connection and try again. If this issue persists, please contact support.	VPN or IP has no access.	Contact your DFdiscover server administrator.
16	The server or API you have entered is invalid. Please check and try again	Incorrect server or API.	Confirm correct server and API. Contact your DFdiscover server administrator if the problem persists.

Code	Error message	Issue	Instructions
17	The server you have entered is invalid. Please check and try again	Received 'Host not found' error (status 600) from the server.	Confirm correct server and API. Contact your DFdiscover server administrator if the problem persists.
18	Can't receive study info. We're having trouble receiving your study info. Please close the app and try again later.	Session timeout due to some reason.	Contact your DFdiscover server administrator.
19	The app could not access the server or API you have entered. Please contact support.	Invalid authorization token.	Server is not configured to allow DFengage to connect. Contact your DFdiscover server administrator.
20	Activity is currently locked.	Another user has the subject binder locked in DFexplore or the record locked in DFweb or DFcollect.	Ask other users to close subject binder. App will automatically retry when opened later.
21	Your password has expired. Please set a new password.	The user's password has expired.	The DFengage user must set a new password to continue using the app.

Code	Error message	Issue	Instructions
99	An error has occurred. We have encountered an unknown error. Please close the app and try again later.	Generic error. May occur if more than one of the above errors exists.	Review user permissions and role definition in DFadmin. Review baseline visit date entered for the subject. Check for visit map or plate definition errors in DFsetup. Contact your DFdiscover server administrator if the problem persists.