



# DFdiscover 2023 Version 5.6.0

## Release Notes

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# 1. Introduction

## Overview

DFdiscover 2023 Version 5.6.0 is a minor release in the DFdiscover 5.X family that started with DFdiscover 2018. Key updates to the core client applications, server, and API in this release include:

1. Improved experience for **data review in DFexplore**: the metadata panel displays the query creation details, and the new History button gives a quick way to drill down to the query, reason, and field history of changes.
2. New options for saving **annotated, blank, or completed CRFs** to PDF in DFexplore and DFsetup, including bookmarked blank and annotated CRFs.
3. New options for creating **custom listings** in DFexplore, exporting **custom datasets** to Excel, csv, and text with DFexplore and DFexport, running reports with **DFreport**, and **standardizing subject headers** when exporting data by module.
4. Split screen option in the **DFsetup Edit Checks** dialog to speed up programming.
5. Enhanced support for CDISC controlled terminology with a new “sub label” option for fields with coding in **DFsetup**.
6. Server and API updates to support new features in **API client tools**.

Full details of changes are covered in the following chapter, [Summary of Changes](#).

**DFweb** and **DFcollect** are also updated with the 5.6.0 release, described separately in the [DFweb Release Notes](#) and [DFcollect Release Notes](#).

## Version Numbering

DFdiscover version numbers can have up to 3 components:

1. The first number identifies a major release containing all software components with both new features and bug fixes.
2. The second number identifies a minor release with bug fixes, backward compatible new features, and feature enhancements. It contains all software components. If there is no minor release for a major release, this number is 0.
3. The third number identifies incremental patches (bug fixes only) to specified software components for the minor release identified by the first 2 digits of the version number. If there is no patch release, this number is 0.

For example, 5.0.2 is the second patch to the 5.0.0 major release. 5.2.1 is the first patch to the 5.2.0 minor release.

DFdiscover 2023 Version 5.6.0 is a minor release.

## Software Components

DFdiscover 2023 Version 5.6.0 includes the following components:

- **DFexplore:** desktop app for clinical data management (Windows, macOS)
- **DFsend:** desktop app for submission of scanned paper CRFs (Windows, macOS)
- Client application package (Windows, macOS):
  - Desktop apps: **DFexplore**, **DFadmin** (server and study administration), **DFsetup** (database setup and configuration), **DFsend**, **DFATK** (acceptance test kit), **DFbarcode** (barcode generator for paper based CRFs)
  - Client-side command line tools: DFattach, DFaudittrace, DFbatch, DFexport, DFpass, DFpdfpkg, DFreport, DFuserPerms
- **DFweb:** browser-based web app for online data collection (see [DFweb Release Notes](#))
- **DFcollect:** tablet-based app (iOS, Android) for online and offline data collection (see [DFcollect Release Notes](#))

For self-hosted clients, DFdiscover server, DFws API, and DFweb are available as RPMs.

Additional DFdiscover applications are released separately and not covered here:

- **DFengage:** Mobile app for ePRO data capture (iOS, Android)
- **DFsources:** Mobile app for source document capture (iOS, Android)

## Supported Configurations

DFdiscover 2023 Version 5.6.0 is supported in the following configurations:

### Server

- OpenSUSE version Leap 42.1 and newer
- SUSE Tumbleweed
- RedHat Enterprise Linux version 7+

DFdiscover is a 64-bit server application. It installs on the 64-bit versions of any of these Linux distributions. It will not run on 32-bit systems. Other Linux distributions may work but are unsupported. Debian distributions such as Ubuntu will not work at this time. CentOS and Oracle Linux are clones of RHEL and will work as expected. Solaris is not supported.

## Desktop and client-side tools

- Windows 10 and newer
- macOS 10.14 (Mojave) and newer

## Compatibility

### Desktop Client Apps Upgrade

After upgrading the DFdiscover server to 2023 Version 5.6.0, users are not required to upgrade to DFdiscover 2023 Version 5.6.0 client applications such as **DFexplore** and **DFsetup** immediately, however the new features and fixes are only available after upgrading, and the server or study must be configured in DFadmin to allow older versions to connect.

If the use of previous versions of client applications is allowed, ensure that the overall, or study specific, **Version Strict** setting is **All minor versions supported in DFadmin**. When enabled, the following previous versions of client applications maybe be used with DFdiscover 2023 Version 5.6.0 server: DFdiscover 2018 Version 5.1.4, DFdiscover 2019 Version 5.2.1, DFdiscover 2020 Version 5.3.2, DFdiscover 2021 5.4.0, DFdiscover 2022 5.5.1.

Note that using older versions of **DFsetup** or **DFadmin** to make changes to a study which uses features added in later versions will result in losing changes specific to the later versions. For example, sub labels for fields with coding are an enhancement added in DFsetup 5.6. If sub labels are added using DFsetup 5.6, and later DFsetup 5.5 is used to make setup changes, the sub labels will be removed from the setup definition.

### API Upgrade

Separate from the DFdiscover server upgrade, the public DFdiscover API available at **dfws.dfdiscover.com** is upgraded to Version 5.6.0 shortly after release.

For self-hosted clients with their own DFdiscover server and API, we recommend updating the DFdiscover API at the same time as the DFdiscover server.

## Getting Help

For software support, please contact the DFdiscover team via email at [help@dfnetresearch.com](mailto:help@dfnetresearch.com) or visit the DFnet website at <https://www.dfnetresearch.com>.

## 2. Summary of Changes

This chapter provides a summary of new features, changes, and bug fixes implemented since the release of Version 5.5.0. Changes are organized by product. The “See details” links below take you to the relevant user guide with further information.

### DFexplore

1. **Metadata panel** now includes the query creator username, date, and time (for studies with multiple queries enabled) and a history button for queries and reasons which opens the history of queries or reasons for the current field. [See details.](#)
2. **History of changes dialog** has been updated with a ‘Field History’ toggle to switch between the field history and page history, and auto load is now enabled for field history to make it easier to view changes to the current field only.
3. New options when saving **blank and completed CRFs to PDF**:
  - a. Include bookmarks when saving blank or completed CRFs from the [File > Save as PDF](#) menu option. [See details.](#)
  - b. The user preference ‘Display plate as’ under Record List is followed to include or exclude the plate number on eCRFs.
  - c. Data records ‘expand text fields’ option is now available for bookmarked PDFs and subject packages.
4. In List View, two new options have been added for creating **cross-record custom listings**: Records that match subject from all selected plates and Records that match subject from any selected plates. [See details.](#)
5. In List View, a new **Custom Export** feature has been added to export multiple plates, modules, or custom listings to Excel, CSV, or text, with the option to merge multiple files into one. [See details.](#)
6. In Reports View, new options are available under [Help > Show Command](#), including support for **Excel and CSV formats** for some reports, to support automated report and tabular listing updates via DFreport. [See details.](#)
7. The following bugs have been fixed:
  - a. In some cases, the visit order in subject packages did not match the visit map order.
  - b. On eCRFs, long field prompts were cut off for auto-expand string fields.

- c. DFSas exported hidden fields for users without hidden field permissions. DFSas now uses DFexport instead of DFexport.rpc when run in DFexplore.
  - d. Subject schedule did not handle type R visits correctly.
  - e. When printing or saving an eCRF with 'use subject alias' preference enabled, subject alias in eCRF table was not printed.
  - f. In List View, refreshing a custom listing to show updated data opened the Modules tab rather than the current Custom tab.
8. The following bugs were fixed in the 5.5.1 release:
- a. Save as PDF caused crash when an eCRF table cannot fit on one page.
  - b. Create subject package progress message was incorrect.

## DFsetup

1. The process for creating **annotated CRFs** has been updated to support new options: annotate using the field alias or a custom field property, include plate bookmarks, and exclude eCRF plate numbers from the label. [See details.](#)
2. The Edit Checks dialog now provides a **split screen view**. [See details.](#)
3. A new option has been added to **define the SDTM submission value** ("sub label") for coded fields if it differs from the label. This new feature is currently supported in the setup definition only. In a future release, data exporting will be updated to allow decoding using the sub label instead of the label. [See details.](#)
4. **New global setting** to match plate subject headers for module data exports has been added. [See details.](#)
5. The following bugs have been fixed:
  - a. The system module (DFSYSTEM) included in setup JSON incorrectly identified the field type and style for DFCREATE and DFMODIFY fields.
6. The following bugs were fixed in the 5.5.1 release:
  - a. Annotated CRFs print out of expected order.
  - b. eCRF table columns are shifted left when table header is blank.
  - c. Save as PDF causes crash when an eCRF table cannot fit on one page.
  - d. Instruction field property does not accept Unicode text.
  - e. Unicode cannot be entered nor pasted to blank fields in eCRF table.
  - f. Unit does not show for check field in eCRF table.



- g. Field properties on eCRF plate now display correctly in macOS Dark Appearance.

## DFadmin

1. The ability to **search for a study** has been added in the Studies, Roles, and Status tabs. The Wildcard Search field functions the same as the Wildcard Search in the Users tab and searches for both study name and number.
2. The following bugs have been fixed:
  - a. In the User Profile section in the Users tab, email addresses could be added with white spaces, resulting in rejected forgot password requests.

## General/Server/API

1. The **dfvarinfo** edit check function has been updated with attributes for skip patterns and constant values. [See details.](#)
2. The **DFreport** tool now includes output options for generating DFdiscover reports via command line, including support for **Excel and CSV** formats for some reports. [See details.](#)
3. The **DFexport** tool now includes options to select multiple plates, modules, or pre-defined custom listings, and to combine outputs into a single Excel, CSV, or text file. [See details.](#)
4. **DFauditdb** has improved loading performance for large studies. [See details.](#)
5. **DFsas** has a new option '-newexp' to use DFexport instead of DFexport.rpc, which requires authentication when run from the command line. [See details.](#)
6. The following server and DFws updates have been made to support API clients:
  - a. Support is added for missed records, missing page and overdue visit queries, and the option to manually add new visits not shown in the subject binder. Note that blank records now have a status of 8 instead of 0 if they have a missing page or overdue visit query.
  - b. New requests added for site subject counts and task listings.
  - c. New requests added for lookup tables, to support enhanced offline use in DFcollect.

- d. The API now auto generates client-secret-token for each session instead of handing out with API access credentials, to improve DFweb performance.
  - e. The API subject binder request now excludes records with no view permissions.
7. The documentation and ATK have been updated.
8. The following bugs have been fixed:
- a. Subject schedule did not handle type R visits correctly.
  - b. API did not provide full header specifications for lookup tables without them.
  - c. Subjects in very large studies could not be loaded in DFcollect. Server has been updated to return subject records faster.
  - d. API clients still depended on DFexplore-Reports view permission to run reports.
  - e. API did not sort sites list correctly.
9. The following bugs were fixed in the 5.5.1 release:
- a. DFdiscover server crashes on RHEL 7.0 based servers when user resets their own password for the first time.
  - b. Missing and Overdue report in subject schedule may display duplicate entries when IF statement contains two or more conditions in DFcplate\_map.
  - c. DFsas created .sas file does not support multi-byte Unicode strings.
  - d. DFsas does not convert time field with hh:mm:ss format to string when 'INFORMAT all' specified.
  - e. Incorrect documentation of DFauditdb usage in Release Notes, Software Installation Guide, and Programmer's Guide.

### 3. Known Issues

1. In DFsetup, when pasting data into the Edit Coding table for check, choice, and numeric fields, only code and label may be pasted, and sub label is ignored.
2. In DFsetup, the complete contents of very large lookup tables may not be displayed. Any rows beyond approximately 64,000 are not shown. As a workaround, view the lookup table file directly on the server or using the lookup table dialog in DFexplore or DFweb. Lookup tables used in DFcollect must have a file size below 40 MB.
3. In DFexplore, missing page and overdue visit queries are not displayed in the subject binder for users without get level 0 access. However, for API clients DFweb and DFcollect, missing page and overdue visit queries are displayed in the subject binder.

## 4. Installation

This section is applicable only to those hosting their own DFdiscover server installation.

This release of DFdiscover is a complete release. It can be installed as a new install or as an upgrade of any previous release. Existing studies will continue to work in the updated installation, once migrated with the **DFmigrate** utility (required for upgrades from pre-2014.X releases).

### Pre-upgrade Steps

The steps in this section are required only for an upgrade installation. Skip this section if you are performing a new installation on a system where DFdiscover is not running.

#### 1. Halt DFdiscover

**a. Ensure that all users have exited DFdiscover.**

This is easiest if the installation is performed at a pre-arranged time when all users are known to be out of DFdiscover.

**b. Shutdown DFdiscover.**

As the DFdiscover administrator, shutdown is initiated using the command:

```
# systemctl stop dfdiscover
```

#### 2. Halt HylaFAX (if required)

If you are using HylaFAX to send and receive faxes, you must stop the existing HylaFAX installation. If you are using Protus fax services you can skip this step.

**a. Wait for incoming/outgoing faxes to terminate.**

Use **faxstat** to monitor the status of any faxes that are being received or sent, as in:

```
# /opt/hylafax/bin/faxstat -a
```

For each idle modem, turn the modem off – this will prevent it from answering another incoming call. Repeat as necessary until all modems are off.

**b. Shutdown HylaFAX daemons.**

As super-user, this can be accomplished using the command:

```
# /etc/init.d/hylafax stop
```

### c. Disable faxgetty processes.

A **faxgetty** process is spawned by **init** for each defined modem. These processes must be disabled separately. Edit the `/etc/inittab` file and for each record that references **faxgetty**, replace the word `respawn` in field 3 with `off`. Save the changes and exit the file.

The **init** process must be informed that the file has been updated. Do this with the command:

```
# kill -1 1
```

This is the end of the pre-upgrade steps.

## Installation

Release 5.6.0 is a complete release that includes all components. Installation of complete releases is documented in the [Software Installation Guide](#).

## Post-upgrade Steps

### 1. Restart DFdiscover

DFdiscover must be restarted following the upgrade. To restart, as super-user, use the command:

```
# systemctl start dfdiscover
Starting "DFdiscover"...
Initializing DFmaster.rpcd...
DFmaster.rpcd: your software license expires in 290 days DFmaster.rpcd:
starting slave on hostname
1. Checking state of incoming daemons...
2. Checking /opt/dfdiscover/work/.dfincoming_work...
   0 stale incoming entries obsoleted
3. Checking /opt/dfdiscover/incoming...
   0 faxes awaiting processing.
# DFmaster.rpcd: started.
Started "DFdiscover".
Done.
```

All of these messages are written to the system log. Some may also be written to the command-line.

### 2. Update value for `CDN_URL`

This step is required only if upgrading from a previous DFdiscover release and is not required for new installs or when upgrading from a previous DataFax release.

This release includes updated resources used during the display of graphical report output. Those resources are specified in the value of `CDN_URL` in the system master configuration. To inspect and update the value:

- a. Start DFadmin.
- b. Click the **Master** tab to display the master configuration panel.
- c. Inspect the value specified for **CDN\_URL**.
- d. If the value reads `https://cdn.dfdiscover.com/v5.6`, it is already up-to-date and no change is needed. Exit DFadmin
- e. Otherwise, update the value to read `https://cdn.dfdiscover.com/v5.6`.
- f. Click **Save** to apply the change. Exit DFadmin.

### 3. Restart HylaFAX (if required)

*NOTE: HylaFAX is no longer distributed with DFdiscover. If it is still needed, download and install the official build from an internet repository.*

If you use HylaFAX, it must be restarted following the upgrade. To restart, as super-user:

#### 1. Enable faxgetty processes.

Edit the `/etc/inittab` file and for each record that references **faxgetty**, replace the word off in field 3 with `respawn`. Save the changes and exit the file.

The **init** process must be informed that the file has been updated. Do this with the command:

```
# kill -1 1
```

#### 2. Restart HylaFAX daemons.

As super-user, issue the command:

```
# /etc/init.d/hylafax start
```

### 4. Run DFauditdb (if required)

If upgrading from a DFdiscover version earlier than 5.5.0, existing journal files must be loaded into the new audit database for each study. **DFauditdb** is provided for this purpose. Until study journal files are loaded, it is not possible to view page or field history or run **DF\_SBhistory**.

Load the new audit trail database for all ongoing studies using this command as either `user datafax` or `root`:

```
# /opt/dfdiscover/utils/DFauditdb -reload -s all
```

## 5. Verify study role permissions (if required)

For users of DFweb, DFcollect, DFengage, and DFsources, verify that the study roles are set up with the required permissions. See permission requirements for the API client apps and their features below. If upgrading from a DFdiscover version earlier than 5.5.0, role permissions for all API client apps are disabled by default, so any users with access to DFweb, DFcollect, DFengage, or DFsources may lose their access after upgrading to 5.6.0 if their roles are not updated to enable access.

Users of **DFweb** require the following role permissions for features to function:

- API Clients-DFweb permission is required to login to a study.
- Server-Attach Document permission is required to attach documents to CRFs.
- DFdiscover Reports report-specific permissions are required to view reports.

Users of **DFcollect** require the following role permissions for features to function:

- API Clients-DFcollect permission is required to allow login to DFcollect.
- Server-Attach Document permission is required to allow documents to be attached to CRFs.
- DFdiscover Reports-DF\_TaskSummary permission is required to view tasks.

Users of **DFsources** require the following permissions to function:

- API Clients-DFsources permission is required to allow login to DFsources.
- Server-Attach Document permission is required to allow documents to be attached to CRFs.

Users of **DFengage** require the following permissions to function:

- API Clients-DFengage permission is required to allow login to DFengage.
- DFexplore-Views-Data, Setup-View, and Setup-Visit Map permissions are required to display surveys/questionnaires in DFengage.

## 6. Update version strict setting (if required)

If you are upgrading your DFdiscover server but not all users are updating their client applications (e.g., DFexplore, DFcollect), ensure that your *Version Strict* mode is set to allow connections from client applications not matching the server version.

In DFadmin, under **Master** tab, *Version Strict* setting must be set to 'Version strict mode applied per study basis'. Under **Studies** tab, *Version Strict* setting must be set to 'All minor versions supported' to allow access to client apps not matching your DFdiscover server version.

## Documentation

Release 5.6.0 is accompanied by updates to all documentation. The documentation is installed on the server into the `doc` directory as part of the installation process and is available in HTML and PDF formats.

## Documentation Updates

The documentation included with the server RPM and the client packages is a snapshot of the documentation at the time that the release was built. For the most up-to-date version of the documentation, please use the online documentation available on the [DFdiscover Releases](#) page on the DFnet website.

## HTML Documentation

This is the "native" documentation format for DFdiscover and is displayed when selecting the **Help > Topics** menu item in each desktop client application.

The documentation can be found under the `doc` directory of `/opt/dfdiscover`. The main index page that is the starting point for all the documentation is `/opt/dfdiscover/doc/allman/html/index.html`.

The HTML documentation can be copied from the `/opt/dfdiscover/doc` directory to a suitable location on a web server by simply copying the entire `doc` directory hierarchy to a new location. It is important to maintain the relative positions of files and directories within that hierarchy so that the cross-guide hyperlinks stay intact. The original `doc` hierarchy should additionally be maintained, if possible, as this is the location that the help browsers built-in to the DFdiscover tools expect.

The HTML documentation can be viewed with any web browser, such as Edge, Firefox, Chrome, or Safari.

## PDF Documentation

The documentation set includes PDF documentation in separate files for each of the software manuals.



The PDF documentation can be found under the `doc` directory of `/opt/dfdiscover`. The PDF file for a specific manual is located below this directory in a further `manual/pdf` directory. For example, the PDF file for the Programmer's Guide (progman) is `/opt/dfdiscover/doc/progman/pdf/progman.pdf`.