



DFdiscover 2023 Version 5.7.0

Release Notes

Publication date: September 27, 2023

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1. Introduction

Overview

DFdiscover 2023 Version 5.7.0 provides many exciting updates to our clinical data management platform, from dashboards to multi-language support to client app version management. Key features and enhancements include:

Dashboards in DFweb & DFcollect: Gain valuable insights at a glance with an intuitive dashboard, enabling study progress monitoring and quick issue resolution.

Single Sign-On with Microsoft in DFweb: Simplify the DFweb login experience using your authorized Microsoft account, streamlining authentication and security.

eCRF Translations in DFcollect & DFexplore: Supplementing existing multi-language capabilities in DFengage ePRO and in DFexplore and DFweb using CRF backgrounds, we now support multi-language eCRFs in DFexplore and DFcollect.

Query Age Details and Queries Save to Excel in DFweb: Efficiently manage queries with age tracking and easily download to Excel for sharing and further analysis.

Enhanced eCRF Tables Design: Gain more control and flexibility over your eCRF design in DFexplore with new options for column width, column alignment, and background colors.

New Look for DFdiscover Reports: Enjoy a refreshed and user-friendly interface for standard reports in DFexplore and DFweb.

Enhanced Edit Check Code Search: Speed up edit check programming and review with enhanced search capabilities in DFsetup.

Export CDISC ODM-XML via the API: Seamlessly integrate DFdiscover with external systems using CDISC ODM-XML, a vendor-neutral, platform-independent format for sharing data and metadata.

Version Strict Minimum Version in DFadmin: Ensure end users connect using the correct app versions by restricting your study to the minimum version of your choice.

An overview of changes to **desktop, server, and API** tools are covered in the following chapter, [New Features and Enhancements](#). **DFweb** and **DFcollect** updates are described separately in [DFweb Release Notes](#) and [DFcollect Release Notes](#). The complete listing of all changes by product area and type of change is available [in spreadsheet format](#).

Version Numbering

DFdiscover 2023 Version 5.7.0 is a minor release in the DFdiscover 5.X family that started with DFdiscover 2018. DFdiscover version numbers have 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.

Software Components

DFdiscover 2023 Version 5.7.0 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**, **DFsetup**, **DFsend**, **DFATK**, **DFbarcode**
 - Client-side command line tools: DFattach, DFaudittrace, DFbatch, DFexport, DFpass, DFpdfpkg, DFreport, DFuserPerms
- **DFweb:** browser-based 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 DFdiscover administrators, the DFdiscover server, DFws API, and DFweb server installation packages are available as RPM files.

The build date for the 5.7.0 server, API, desktop and client-side tools is 2023/09/20. The DFweb 5.7.0 build date is 2023/09/20. The DFcollect 5.7.0 build date is 2023/09/18.

Supported Configurations

DFdiscover 2023 Version 5.7.0 is supported in the following configurations:

Server

DFdiscover 2023 is supported on Novell openSUSE version Leap 42.1 and newer, SUSE Tumbleweed, and RedHat Enterprise Linux (CentOS) versions 7.X and 8.X. DFdiscover is a 64-bit server application and will not run on 32-bit systems. Other Linux distributions may work but are unsupported. Solaris is not supported.

Desktop and client-side tools

Desktop and client-side tools are supported on Windows 10 and newer and macOS 10.14 (Mojave) and newer. We recommend keeping your operating system up to date.

Compatibility

Client Apps Upgrade

After upgrading the DFdiscover server to 2023 Version 5.7.0, users are not required to upgrade to Version 5.7.0 client applications such as **DFexplore**, **DFweb**, and **DFcollect** immediately however, the server or study must be configured in DFadmin to allow older versions to connect. In this scenario, any changes that were implemented in the client applications are not available until they are also upgraded.

If the use of previous versions of client applications is allowed, ensure that the server or study **Version Strict** setting is **All minor versions supported** or **Minimum version supported** in **DFadmin**. When 'All minor versions' is enabled, the following previous versions of client applications may be used with DFdiscover 2023 Version 5.7.0 server: 2018 5.1.4, 2019 5.2.1, 2020 5.3.2, 2021 5.4.0, 2022 5.5.1, and 2023 5.6.0. When 'Minimum version' is enabled, specify the lowest allowed DFdiscover minor version.

Warning

Using older versions of DFsetup or DFadmin to make changes to a study that uses features added in later versions will result in losing changes added in later versions. For example, eCRF table background colors are new in DFsetup 5.7. If colors are added using DFsetup 5.7, and later DFsetup 5.6 is used to make setup changes, the eCRF table background colors will be removed from the setup definition.

API Upgrade

Separate from the DFdiscover server upgrade, the public DFdiscover API available at **dfws.dfdiscovers.com** is upgraded to Version 5.7.0 shortly after release.

For self-hosted clients with their own DFdiscover server and API, we encourage upgrading the API at the same time as the DFdiscover server so that all new features and enhancements are available.

Permission Considerations

When upgrading, review role permissions to ensure new features are available users as intended. Permission requirements for API client applications are described below.

App	Role Permissions Required
DFweb	<ul style="list-style-type: none"> - API Clients-DFweb is required to login to a study. - Server-Attach Document is required to attach documents to CRFs. - Permissions for individual DFdiscover reports are required to view those reports. - NEW: Specific DFdiscover Reports are required for the dashboard: DF_SBCrfoverview, DF_QueryOverview, DF_SBsummary, DF_QueryDataSummary.
DFcollect	<ul style="list-style-type: none"> - API Clients-DFcollect is required to login to a study. - Server-Attach Document is required to attach documents to CRFs. - DFdiscover Reports-DF_TaskSummary is required to view tasks. - NEW: Specific DFdiscover Reports are required for the dashboard: DF_SBCrfoverview, DF_QueryOverview, DF_SBsummary, DF_QueryDataSummary.
DFsources	<ul style="list-style-type: none"> - API Clients-DFsources is required to select a study for submission. - Server-Attach Document is required to submit CRF attachments.
DFengage	<ul style="list-style-type: none"> - API Clients-DFengage is required to login to DFengage. - DFexplore-Views-Data and Setup-View are required to display surveys/questionnaires in DFengage.

Getting Help

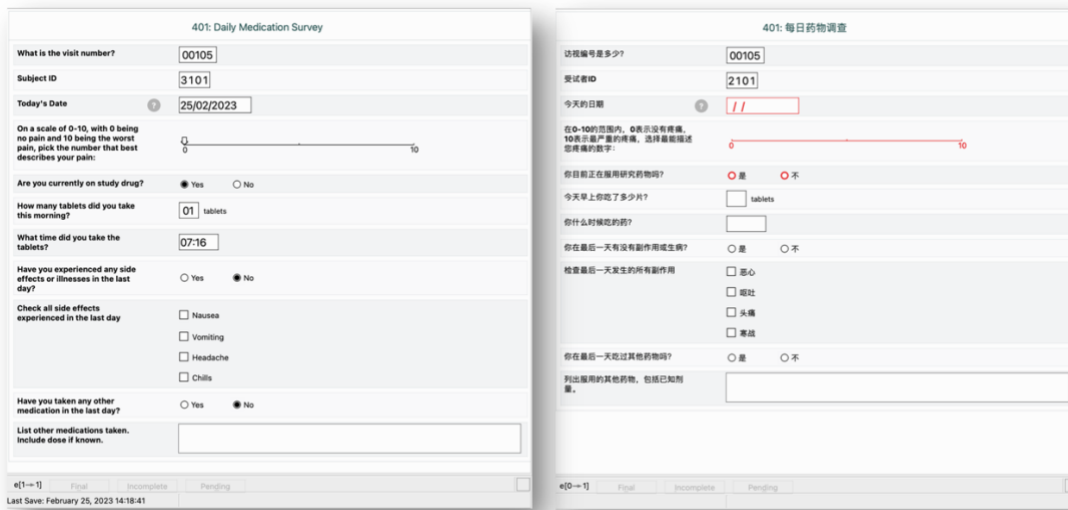
For software support, please contact the DFdiscover team via email at help@dfnetresearch.com or visit the DFnet website at <https://www.dfnetresearch.com>.

2. New Features and Enhancements

This chapter provides an overview of new features and enhancements in the desktop applications, server application, and API since the release of Version 5.6.0. Links in blue will take you to the relevant user guide with further information. The list of all changes, including bug fixes, by product area and type of change is also available [here](#).

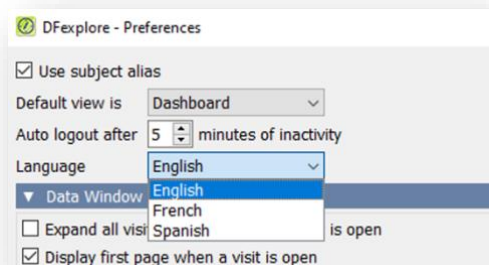
Multi-language eCRFs in DFExplore

DFdiscover now supports multi-language eCRFs in DFExplore and DFCollect. Each plate may have translations defined so that questionnaires and surveys without CRF backgrounds are displayed in the appropriate language when being administered to or completed by study participants or site staff.



The Translation configuration in DFsetup has been updated to support eCRF translations, in addition to the support already available for multiple languages for ePRO in DFengage. A new Uses column has been added to the Translations table in DFsetup to limit translations to specific plates or translate visit and page labels. [See details](#).

A new Language preference has been added to DFExplore. This option sets the eCRF language for the study, displaying the eCRF translations in Data View, Dashboard, List View, and Reports View, based on what has been defined in DFsetup in the Translations configuration. The available languages depend on the translations added for the study. [See details](#).

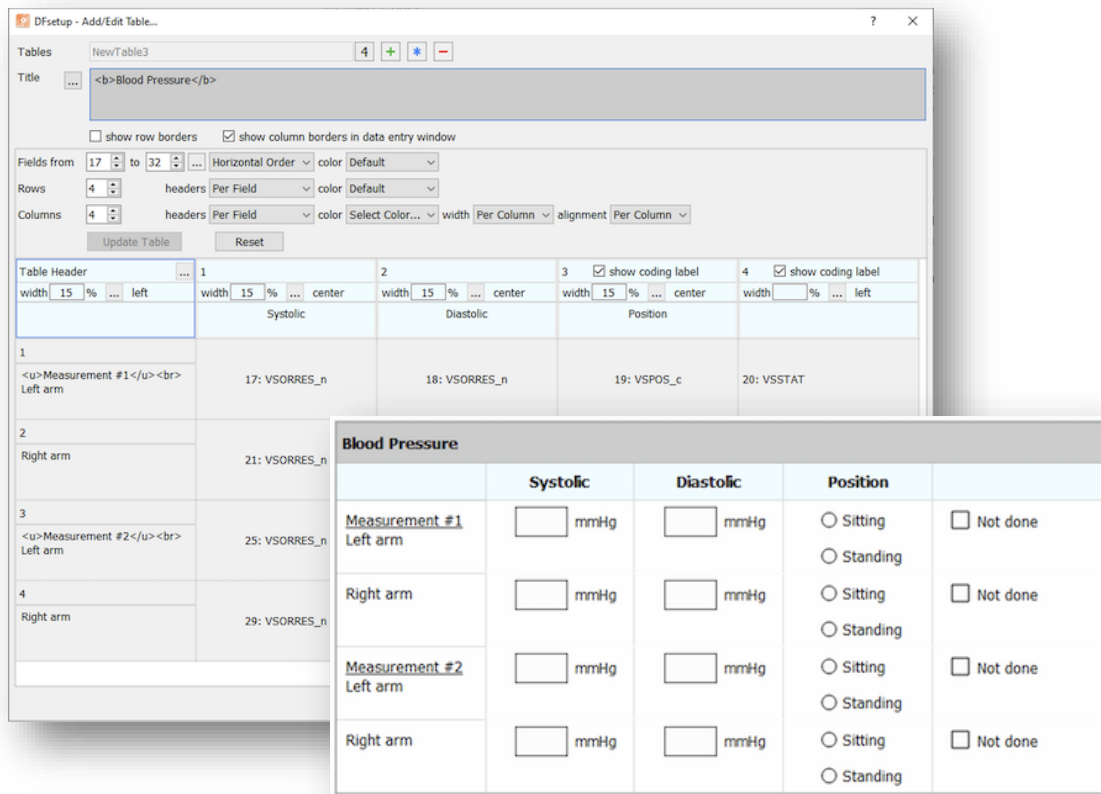


As with other DFExplore preferences, Language may be predefined using the `dfpref()` edit check function. Edit check functions `dfpref()` and `dfprefinfo()` have been updated with the new Language preference, so that the eCRF language can be set with edit checks in DFExplore and DFCollect. This preference is no-op in DFbatch. The `dfvarinfo()`, `dfmoduleinfo()`, `dfplateinfo()`, `dfvisitinfo()`, and `dfstudyinfo()` edit check functions have been updated to return the string associated with the Language preference. The attribute `DFVAR_SUBLABEL` has also been added to the `dfvarinfo()` edit check function.

This feature is only available when both client and server versions are 5.7 or later.

Enhanced eCRF Tables Design

In DFsetup, eCRF tables now support customized column widths, column alignment, and background colors. Each column may be set to a percentage of the full width. The heading and contents for each column can be aligned left, center, or right. Background colors may be defined for headings and cells. Specify a custom color for multiple or individual cells in a table or use the default color specified in DFExplore Preferences.



The screenshot shows the 'DFsetup - Add/Edit Table...' dialog box. The 'Title' field contains 'Blood Pressure'. The 'Fields from' is set to 17 to 32. The 'Columns' section is configured with 4 columns, each with a width of 15%, center alignment, and a 'show coding label' checkbox checked. The 'Table Header' section shows the following configuration:

Table Header	1	2	3	4
width	15 %	15 %	15 %	15 %
alignment	left	center	center	left
content	Systolic	Diastolic	Position	

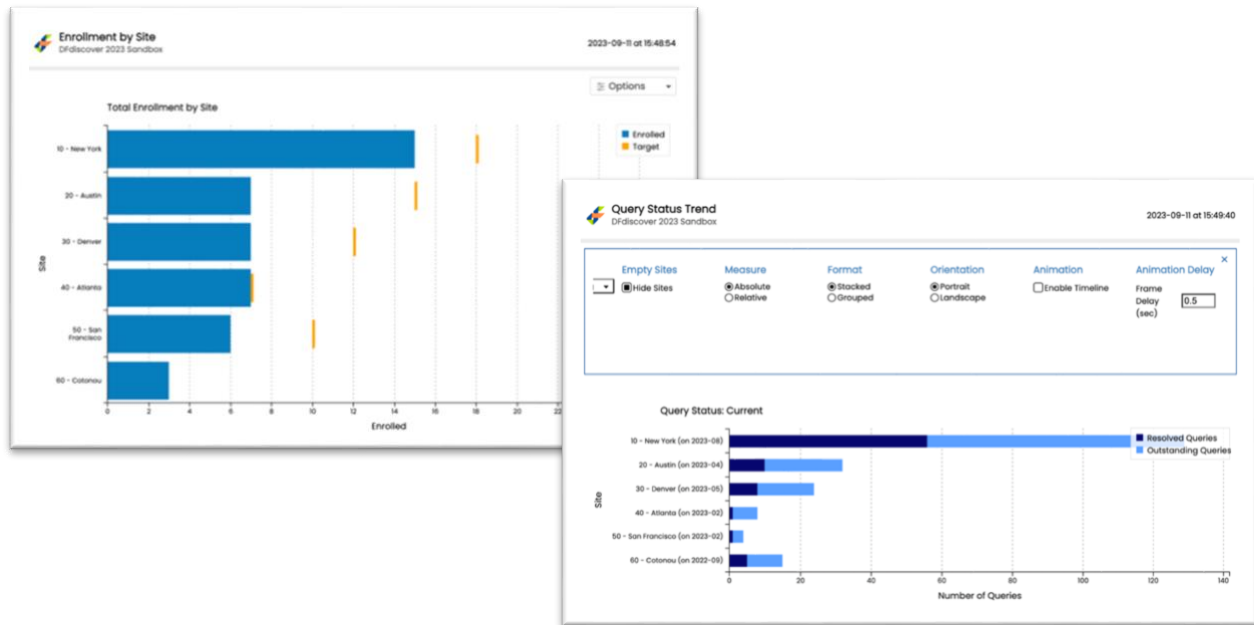
The preview window shows the resulting eCRF table design for 'Blood Pressure' with the following structure:

	Systolic	Diastolic	Position	
<u>Measurement #1</u>	<input type="text"/> mmHg	<input type="text"/> mmHg	<input type="radio"/> Sitting	<input type="checkbox"/> Not done
Left arm			<input type="radio"/> Standing	
Right arm	<input type="text"/> mmHg	<input type="text"/> mmHg	<input type="radio"/> Sitting	<input type="checkbox"/> Not done
			<input type="radio"/> Standing	
<u>Measurement #2</u>	<input type="text"/> mmHg	<input type="text"/> mmHg	<input type="radio"/> Sitting	<input type="checkbox"/> Not done
Left arm			<input type="radio"/> Standing	
Right arm	<input type="text"/> mmHg	<input type="text"/> mmHg	<input type="radio"/> Sitting	<input type="checkbox"/> Not done
			<input type="radio"/> Standing	

eCRF tables are currently supported in DFExplore only. These enhancements are only available when both client and server versions are 5.7 or later. [See details.](#)

New Look for DFdiscover Reports

[DFdiscover reports](#) have been updated with a new look in [DFexplore](#) and [DFweb](#) and with improved usability on smaller screens (tablets and phones) in DFweb. The Options panel now opens above the report output. These updates are available when connecting to DFdiscover server (and API, for DFweb) version 5.7 or later.

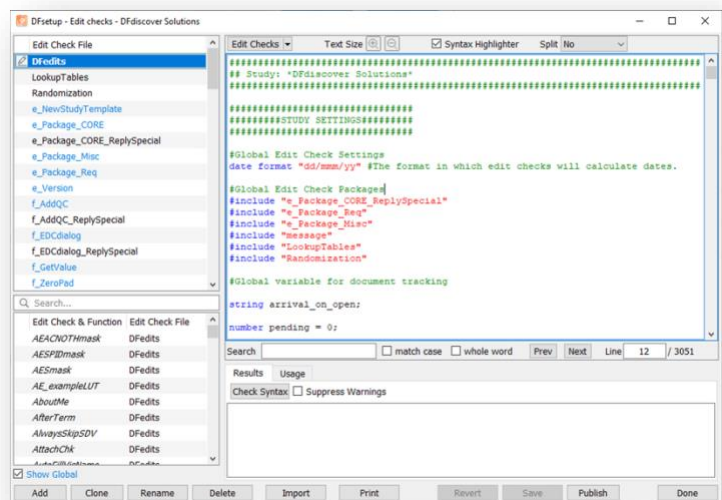


Enhanced Edit Check Code Search in DFsetup

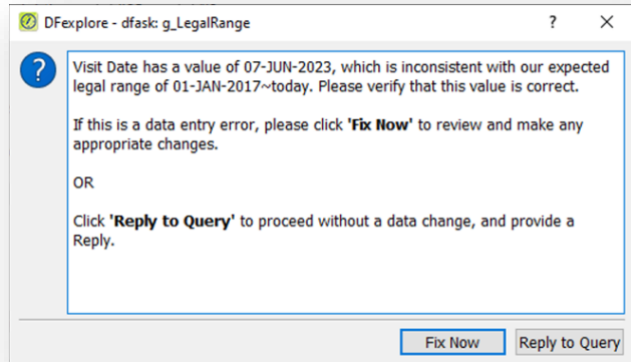
The Edit Checks dialog in DFsetup includes a new panel that provides the ability to search all edit check code, including all local and global edit check source files.

The new panel lists edit checks and functions in alphabetical order across all edit check files for quick access.

Use the search field at the top of this new panel to search all edit check code. The search results are shown below the search bar, and the same search term is added to the search bar for the current source file. [See details.](#)



Updated Edit Check Dialogs in DFExplore

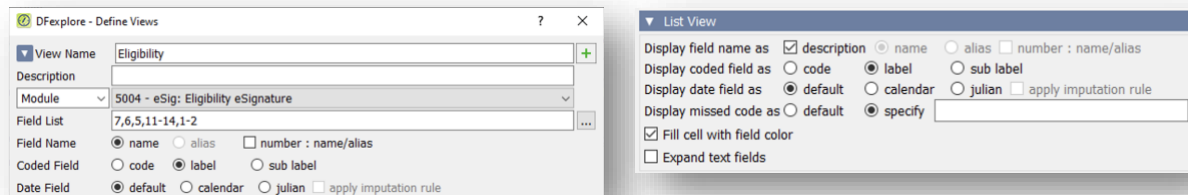


In DFExplore, the edit checks dialogs for dfask, dfcapture, dferror, and dfwarning have been updated.

The dialogs can now display larger amounts of text, and contents can be selected copied to the clipboard. Previously, links to external websites worked in dferror and dfwarning only; they are now also supported in dfask and dfcapture.

Export Sub Label for SDTM-ready Datasets

Data export tools (DFExplore, DFExport, DFExport.rpc, DFsas) have been updated with an option to export the sub label instead of the code or label for coded fields (choice and check data types). When using the sub label for CDISC controlled terminology, where it differs from the CRF labels, exporting the sub label avoids the need to update these labels during SDTM preparation after export.



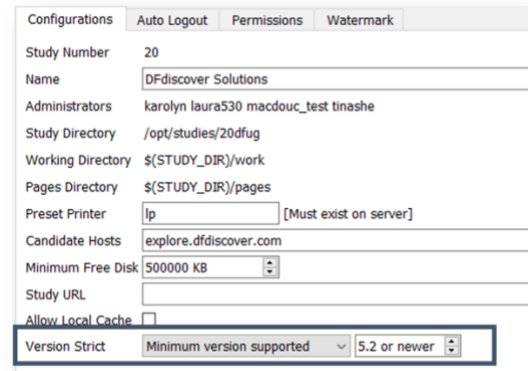
Where a sub label is not defined for a code, the label is exported, however a new option has been added in DFsetup Global Settings to export a blank value instead of the label for 'no choice' codes.

Version Strict Minimum Version in DFAdmin

DFAdmin now allows administrators to specify the minimum minor version of client applications allowed to connect to the study.

This allows you to be more specific about which older client application versions may be used to access a study, to ensure that necessary new features, enhancements, and bug fixes are being used in your study.

This setting may be configured for all studies on a server in the Master tab by a DFdiscover administrator or, if allowed, at the study level in the Studies tab. [See details.](#)



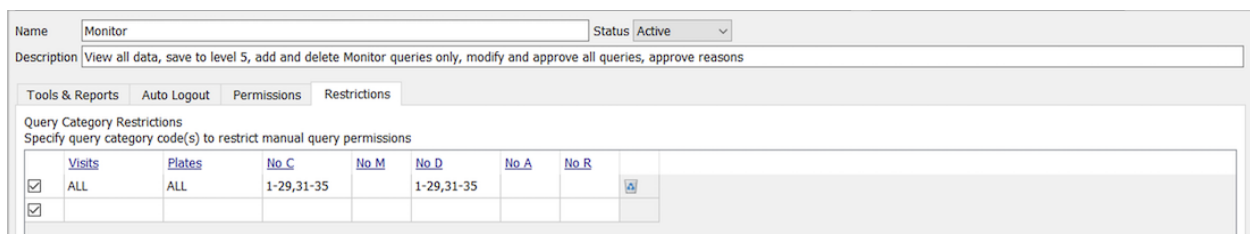
The screenshot shows the 'Configurations' tab in DFAdmin. The 'Version Strict' setting is highlighted with a red box. It is currently set to 'Minimum version supported' with a dropdown menu showing '5.2 or newer'.

Export CDISC ODM-XML via API

Simplify integrations with external systems by exchanging data in common formats. The API now exports study data and metadata in CDISC ODM-XML format, a vendor-neutral, platform-independent format for exchanging and archiving clinical research data. [See details.](#)

[Limited Release] Query Category Restrictions by Role

In DFAdmin, roles may now include query permission restrictions by category, limiting who can add and change queries of specific categories in DFExplore. These restrictions apply to manual queries only and do not affect queries added or modified by edit checks. [See details.](#)



The screenshot shows the 'Restrictions' tab in DFAdmin. The 'Query Category Restrictions' section is visible, showing a table with columns for 'Visits', 'Plates', 'No. C', 'No. M', 'No. D', 'No. A', and 'No. R'. The table contains two rows of data, both with checkboxes in the first column.

	Visits	Plates	No. C	No. M	No. D	No. A	No. R
<input checked="" type="checkbox"/>	ALL	ALL	1-29,31-35		1-29,31-35		
<input checked="" type="checkbox"/>							

Note: This feature is currently in [limited release](#). It is available in DFExplore on DFnet servers only and is not supported when importing and exporting roles. This feature is planned to be fully supported in a future release.

Documentation Refresh

The [DFweb User Guide](#), [DFcollect User Guide](#), [DFsend User Guide](#), and [Barcoding User Guide](#) have been updated with a new look. Navigate to different chapters and sections using the sidebar on the left, use the browser search function to find keywords quickly, and download a PDF copy for use offline. All other user guides and manuals will receive similar updates in a future release.

Additional Updates

- New **DFdiscover Reports** and server requests have been added for the DFweb and DFcollect dashboards and are also available in DFexplore and DFweb Reports views: Subject and CRF Status Overview (DF_SBcrfoverview), Query Overview (DF_QueryOverview), Subject Summary (DF_SBsummary), and Data Entry and Query Metrics (DF_QueryDataSummary).
- **DFsas** in DFexplore has been updated with a new option to enforce role permissions. Enabling this option ensures that any user permission restrictions (e.g., hidden fields) are applied to the export. This option is enabled by default but can be disabled for backwards compatibility.
- **DFversion** now provides the version of DFws API as well as other applications.
- The **ATK** now includes an optional module for **DFengage**.
- Several server and API updates have been made to support API clients:
 - The server has been updated to support authentication with Azure Active Directory. Single sign on with Microsoft is available in DFweb.
 - An API request has been added to enable the use of subject alias in place of the subject ID during a session.
 - The subject binder API request has been updated to support manually adding new visits not shown in the binder.
 - The API has been updated to include the page map in the 'setuppackage' request.
 - A new API request has been added to download site query listings in Excel, csv, and dat formats.
 - The API provides a new 'permissions' request.
- See all bug fixes [here](#).

3. Known Issues and Advance Notices

Known Issues

This section provides information about low-severity, low-priority issues that exist in the current release, with details about available workarounds. Generally, issues are planned to be addressed in a future release.

1. In DFsetup, multi-line translation text cannot be imported into the Translations table. As a workaround, enter any multi-line translations directly in the table rather than using the import feature.
2. In DFsetup, when pasting a table of data into the Edit Coding table for check, choice, and numeric fields, only code and label may be pasted, and sub label is ignored. As a workaround, type or paste individual sub labels into each field.

Advance Notices

This section provides information about changes planned in a future release that may impact ongoing projects, in particular any features that will be deprecated. These notices are intended to support planning for future upgrades.

3. In a future release, the Help > Topics dialog in the desktop applications will be updated to open the online HTML documentation in a web browser. This change is due to a planned Qt upgrade.

4. Server 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 5.7.0 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/v5.7`, it is already up to date and no change is needed. Exit DFadmin
- e. Otherwise, update the value to read `https://cdn.dfdiscover.com/v5.7`.
- 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 under [Permissions Considerations](#). If upgrading from a DFdiscover version earlier than 5.5.0, role permissions for all API client apps are

disabled by default, so any DFweb, DFcollect, DFengage, or DFsources users may lose their access after upgrading if their roles are not updated to enable access.

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, DFweb, 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' or 'Minimum version supported' to allow access to client apps not matching your DFdiscover server version.

Documentation

Version 5.7.0 includes updates to all documentation, which is available on the DFnet website [Software Releases](#) page and is also installed on the server as described below.

The DFdiscover documentation is in the process of being updated to a new format. The new format is single-page HTML with an embedded option to download as a PDF. In Version 5.7.0, the DFweb User Guide, DFcollect User Guide, DFsend User Guide, and Barcoding User Guide have been updated to this new format. The multi-page HTML format is no longer available for these manuals. In a future release, all manuals will be updated to this format.

The documentation included with the server RPM and client packages is a snapshot of the documentation at the time of release. The [DFdiscover Releases](#) page on the DFnet website provides the most up-to-date version of the documentation.

Installed Documentation

A user guide is available in each desktop client application in a help browser by selecting the **Help > Topics** menu item. This functionality uses the documentation installed under the `doc` directory of `/opt/dfdiscover`. The index page for all HTML documentation is `/opt/dfdiscover/doc/allman/html/index.html`.

If copying the HTML documentation from the `/opt/dfdiscover/doc` directory to another location, it is important to maintain all files and directories within the hierarchy so that the cross-guide hyperlinks stay intact. The original `doc` directory must be maintained to support the help browsers in the desktop applications.

The PDF documentation can be found under each `doc/manual/pdf` directory of `/opt/dfdiscover`. For example, the PDF file for the Programmer's Guide (progman) is `/opt/dfdiscover/doc/progman/pdf/progman.pdf`.