



ABBYY®

FlexiCapture® 12

System Administrator's Guide

Table of Contents

Introducing ABBYY FlexiCapture	5
ABBYY FlexiCapture architecture	5
Express installation and setup	7
System requirements	7
Installation	8
Setup	10
Deploying ABBYY FlexiCapture	11
Standalone and Distributed editions	11
ABBYY FlexiCapture Standalone	12
System requirements	12
Installation	13
Installing multiple stations with a single Licensing Server	13
Installing, removing, and updating via the command line	13
Creating and opening projects	17
ABBYY FlexiCapture Distributed	17
System requirements	17
Preparing to install the Application Server	26
Installing the servers	27
Database server	29
Installing stations	29
Installing, removing, and updating ABBYY FlexiCapture 12 in silent mode	30
Setup	33
Authenticating ABBYY FlexiCapture applications	33
Single Sign-On authentication	34
Using Single Sign-On in ABBYY FlexiCapture	35
Setting up Single Sign-On	38
Setting up Single Sign-On with Azure Active Directory	41
Deleting an authentication method	45
Implementing custom Single Sign-On authentication	47
Authentication using SAML 2.0 identity providers in ABBYY FlexiCapture 12.....	48
Authentication using JSON Web Tokens	52
Creating a database	57
Creating a database manually	63
Using a Microsoft Azure file share	64
Connecting to an existing database	67
Setting up the Processing Server	68
Description of Processing Server commands	69
Creating and opening projects	71

Table of Contents

Using timeouts to prevent processing delays	71
Specifying timeouts for inactive sessions	72
Specifying timeouts for postponed tasks and tasks assigned to specific operators	77
Managing your licenses	83
License activation	83
License parameters	84
Managing your licenses using the command-line console	86
E-mail notifications	87
Setting up the SMTP server	87
Setting up e-mail notifications	88
Setting up e-mail notifications in a tenant	90
Managing users	91
Setting up user roles and access rights	95
Using the Active Directory to manage users	96
Security in ABBYY FlexiCapture 12	98
Securing your network connections	98
Encrypting your database and files	102
Securing your IIS server	103
Disabling Detailed Error Responses in IIS	108
Multitenant system	109
Managing tenants	109
Working with tenants	110
Monitoring a multitenant system	111
CLI for project administration	111
FCAdminTools commands	112
CheckProjectsVersion	112
CompactProject	114
CopyBatchType	115
CopyDataType	116
CopyDocumentDefinition	118
CopyImportProfile	119
DeleteTrainingSamples	121
DownloadProject	122
SetEnvironmentVariable	124
SetExportRootPath	125
SyncTrainingBatches	126

Table of Contents

UpdateAssembly	128
UpdateProject	129
UpgradeProject	130
UploadProject	131
Description of Processing Server commands	133
Managing your licenses using the command-line console	135
Failover configurations for ABBYY FlexiCapture Distributed	136
Setting up the Processing Server	137
Setting up a distributed file system	155
Setting up the Licensing Server	169
Setting up the Application Server	169
Creating an ABBYY FlexiCapture backup	172
Updating ABBYY FlexiCapture 12	175
Updating your demo version of ABBYY FlexiCapture 12	176
Upgrading from ABBYY FlexiCapture 10 and 11	176
Updating projects created in ABBYY FlexiCapture Standalone (*.fcproj)	177
Updating databases and projects created in ABBYY FlexiCapture Distributed	177
Updating projects created in ABBYY FlexiLayout Studio 10 or 11 (*.fsp)	179
Using FlexiLayouts (*.afl) created in ABBYY FlexiLayout 10 or 11	180

Introducing ABBYY FlexiCapture

ABBYY FlexiCapture is a highly scalable platform for intelligent data and document capture which can be successfully used to extract data from unstructured as well as structured paper documents, scans, e-mail messages, and other sources for subsequent use in document management systems. The four basic data extraction operations in ABBYY FlexiCapture include classification, optical recognition, verification, and export to ERP, ECM or BPM systems.

ABBYY FlexiCapture is capable of handling the full range of data processing needs, from small-scale projects to distributed industrial capture of large volumes of data, providing high levels of security and reliability expected from enterprise-grade software solutions.

The basic document processing scenario is as follows:

1. Documents are placed in the automatic scanner feeder and scanning begins. Images can also be imported from email or a mobile device, etc.
2. Scanned document images are submitted for recognition, at which point the software automatically identifies documents, including multipage documents, locates meaningful fields, extracts data and loads check rules.
3. After the recognition has been completed the extracted data undergoes an automatic check rules. If necessary, the process of visual check for data and rule errors is launched.
4. Recognized and verified data along with electronic copies of documents are saved to a database, an information system, or a file.

ABBYY FlexiCapture architecture

ABBYY FlexiCapture is a set of applications that comprises document processing stations and servers.

Server components:

1. **Application Server** is a web service in Internet Information Services (IIS) which functions as the main gateway for all HTTP/HTTPS traffic in the system . This component provides user authentication and authorization functionality and enables communication between the server and client components.
2. **License Server** is a service that stores information about the current license and allowed uses of the system.
3. **Processing Server** is service that manages the Processing Stations. This component enables distributed processing.
4. **Database** stores the processing settings, information about the users, information about the documents that are being processed, and statistics for the documents that have been processed.
5. **File Storage** stores the images of the documents that are being processed and the data captured from these documents.

Each server component can be installed on a separate computer, allowing variable scalability and individual reliability and security settings.

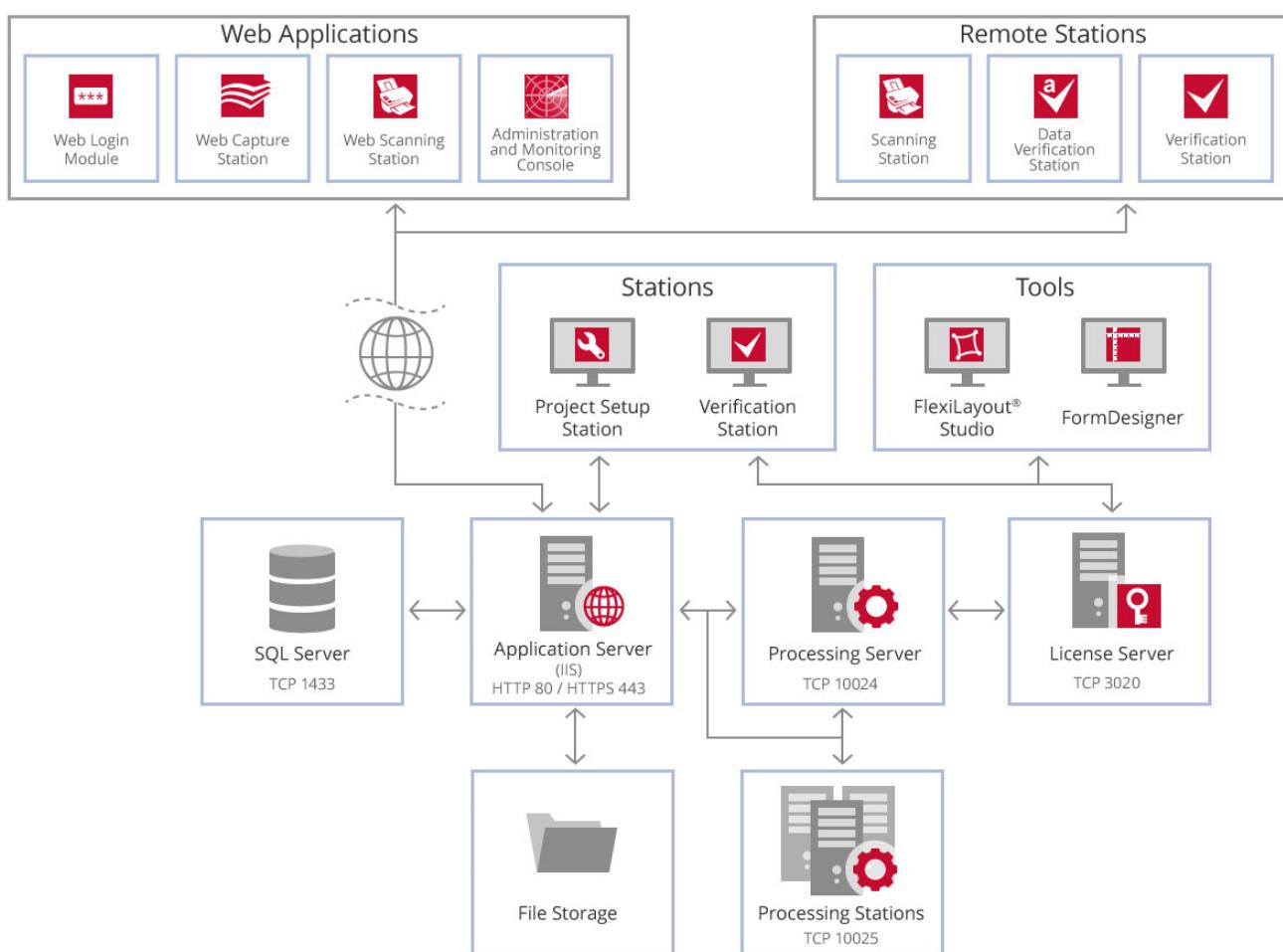
Client components:

1. **Administration and Monitoring Console** is a web application that is used for setting up ABBYY FlexiCapture and monitoring its operation.
2. **Project Setup Station** is used for setting up document processing.
3. **Processing Stations:**

- **Automated Processing Stations** import and process images, perform optical recognition, run user scripts, export extracted data to the user's storage system, and perform a number of service operations.
- **Manual Processing Stations (Scanning Station and Verification Station)** is a set of applications for obtaining document images, feeding them to ABBYY FlexiCapture, and verifying extracted data. They can be installed as separate PC applications, as thin browser-based clients, or as mobile apps.

Component interaction

The flow chart below illustrates interaction among the ABBYY FlexiCapture components.



For details, see: [Overview of interactions between ABBYY FlexiCapture components](#).

By default, the following ports and protocols are used:

- **Application Server** - 80 (if HTTP is used) or 443 (if HTTPS is used)

- **License Server** - 3020
- **Processing Server** - 10024
- **Processing Stations** - 10025

See also: [How to change the ports used by ABBYY FlexiCapture](#).

Express installation and setup

Important! This section describes installing and setting up ABBYY FlexiCapture on a stand-alone computer for evaluation and demonstration purposes. [Distributed installation](#) is recommended for industrial document and data capture.

System requirements

CPU	2.4 GHz or faster 4-core CPU
Operating System	<ul style="list-style-type: none"> • Windows 7 SP1 • Windows 8.1 • Windows 10 • Windows Server 2008 R2 SP1 + Desktop Experience • Windows Server 2012 + Desktop Experience • Windows Server 2012 R2 + Desktop Experience • Windows Server 2016 + Desktop Experience • Windows Server 2019 + Desktop Experience <p> Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.</p>
RAM	8 GB
Disk space	20 GB for installation and temporary files + 10 GB for the Database and File Storage
System and software components	<ol style="list-style-type: none"> 1. Internet Information Services (IIS) 7 or later 2. Microsoft .NET Framework 4.7.2 or later <p> Note: You can look up the version of your .Net Framework in the registry. Please visit this Microsoft web page for detailed instructions.</p> <ol style="list-style-type: none"> 3. Microsoft SQL Server 2012 SP4, 2014 SP2, 2016 SP2, 2017, 2019; Microsoft Azure; Oracle Database 12c, 18c, 19c. <p>Additionally, Microsoft SQL Server Native Client 2012 or later is required for creating databases.</p>

	4. Visual C++ 2015 Redistributable
Other requirements	A scanner with TWAIN, WIA or ISIS support

Installation

 **Important!** Before installing and setting up ABBYY FlexiCapture, be sure to [disable UAC \(User Account Control\)](#). Alternatively, you can install Application Server using the built-in administrator account.

To install and set up the server components of ABBYY FlexiCapture, you must first install Internet Information Services (IIS), Microsoft .NET Framework, and Microsoft SQL Server.

Internet Information Services (IIS) and Microsoft .NET Framework are installed via the Server Manager console (**Start → All programs → Administrative Tools → Server Manager**):

1. In **Server Manager**, click **Add roles and features**.
2. In the **Server Roles** list, select **Web Server (IIS)**.

If IIS is already installed on your computer, make sure that the following IIS components are selected:

Web Management Tools

- IIS 6 Management Compatibility
 - IIS Scripting Tools
 - IIS 6 WMI Compatibility
 - IIS Metabase and IIS 6 configuration compatibility

World Wide Web Services

- Application Development Features
 - .NET Extensibility
 - ASP.NET
 - ISAPI Extensions
 - ISAPI Filters
- Common HTTP Features
 - Default Document
 - HTTP Errors
 - HTTP Redirection
 - Static Content
- Security
 - Basic Authentication
 - Request Filtering
 - Windows Authentication

 **Note:** You can additionally install any other IIS components that you need or install IIS in its entirety.

In the **Features** list, select **.NET Framework 4.5 Features** and make sure that the following components are selected:

- .NET Framework 4.5 Advanced Services
 - ASP.NET 4.5
 - WCF Services
 - TCP Port Sharing

Microsoft SQL Server can be installed from the ABBYY FlexiCapture 12 setup package:

1. Run **Autorun.exe**.
2. Click **1. Distributed Installation → 1. Install External Components → Microsoft SQL Server 2014 Express**.

3. When installing Microsoft SQL Server, specify the following:

- **Named instance:** e.g., SQLEXPRESS;
- **Authentication Mode:** Mixed Mode (SQL Server authentication and Windows authentication);
- The password for the SQL Server system administrator (sa) account and SQL Server administrators.

Installing servers

To install ABBYY FlexiCapture servers:

1. On the **Autorun** menu, click **1. Distributed Installation → 2. Install Servers** and follow the instructions of the install wizard.
2. In the **Custom Setup** dialog box, select the following components:
 - Processing Server
 - Protection Server
 - Application Server
 - Web Stations
3. Finally, specify a destination folder.

Once the setup is finished, the following will be launched automatically:

- the License Manager utility, where you can activate your serial number (see the [Managing your licenses](#) section).
- the Administration and Monitoring Console, where you can set up Application Server (see the [Setup](#) section).

 **Note:** You can also launch the License Manager and the Administration and Monitoring Console manually by clicking **Start → All Programs → ABBYY FlexiCapture 12 Servers**.

Installing stations

To install ABBYY FlexiCapture stations:

1. On the **Autorun** menu, click **1. Distributed Installation → 2. Install Workstations** and follow the instructions of the setup wizard.
2. In the **Custom Setup** dialog box, select the components you want to install (by default, all of the components are selected) and specify a destination folder.
3. In the **Protection Server Location** dialog box, keep the default value (127.0.0.1).
4. In the **User account dialog box**, select this account for the processing service: **Default account (NT AUTHORITY\Network Service)**.

Once ABBYY FlexiCapture is installed, it must be set up for document and data capture.

Setup

To set up ABBYY FlexiCapture:

1. Open the Administration and Monitoring Console under a user account that has administrative privileges. Use one of the following two methods:

- Click **Start → All programs → ABBYY FlexiCapture 12 Servers → Administration and Monitoring Console**
or
- Click this link: <http://localhost/FlexiCapture12/Monitoring/#Settings/DbConn>

Click **Settings → Application Server** and then click the **Create new database** button. In the window that opens, specify the following:

	(local)\sqlexpress
Server instance name	Note: If SQL Server is not installed locally, the server instance name will look like this: <computer_name>\sqlexpress
Database name	FCDemoDataBase
Authentication settings	Database Server Authentication
User name and Password	The name and password of the database administrator that were specified when installing Microsoft SQL Server (see the Installation section)
Use external file storage	Select this option and specify the path to a file storage location for example: C:\FileStorage

Click **OK**. Once the database is created, you will be issued a temporary password, which is the word "password." Please open the log-in page (<http://localhost/FlexiCapture12/Login>) and change this password.

 **Note:** For detailed instructions on creating a new database, see the [Creating a database](#) section.

2. Set up the Processing Server:

1. Launch the Processing Server Monitor (click **Start → All Programs → ABBYY FlexiCapture 12 Servers → Processing Server**);
2. On the **Actions** menu, click **Add Server → Local Host**.
3. Make sure that the Processing Server is running (it should have  next to it). Otherwise, click **Actions → Start**.

 **Note:** For detailed instructions on setting up the Processing Server, see the [Configuring the Processing Server](#) section.

4. To add Processing Stations: selecting the **Stations** item in the **ABBYY FlexiCapture 12 Servers** tree, select <Server_Name>, and then click **Actions → Add Stations....** In the window that opens, click **By name...** and type "localhost" to add the locally installed Processing Station. Start the Processing Station (**Actions → Start**).

3. Upload a project to the server:

1. Launch the Project Setup Station (click **Start** → **All Programs** → **ABBYY FlexiCapture 12 Stations** → **Project Setup Station**).
2. Open a local project (click **File** → **Open Project...**).

 **Note:** You can select any of the sample projects stored in this folder: %public%\ABBYY\FlexiCapture\12.0\Samples.

3. Upload the project to the server (click **File** → **Upload Project to Server...**). Enter the address of the Application Server in the following format: <http://localhost>.

 **Note:** If the Project Setup Station and the Application Server are installed on different computers, the server address will look like this: http://<ApplicationServer> where <ApplicationServer> is the name of the computer on which the Application Server is installed.

4. Select **Use server authentication** and enter the name and password of the database administrator.

 **Note:** If you are planning to demonstrate how images can be imported from Hot Folders, enable Hot Folder processing in the Administration and Monitoring Console (click **Settings** → **Projects**).

ABBYY FlexiCapture 12 is now ready for demonstration.

If you need more information on setting up ABBYY FlexiCapture 12 or if you encounter any problems when completing the steps listed on this page, please refer to the [Deploying ABBYY FlexiCapture](#) section.

Deploying ABBYY FlexiCapture

[Standalone and Distributed Editions](#)

[ABBYY FlexiCapture Standalone](#)

[ABBYY FlexiCapture Distributed](#)

Standalone and Distributed editions

ABBYY FlexiCapture is available in two editions, standalone and distributed.

ABBYY FlexiCapture 12 Standalone is installed on one computer and is intended for processing small volumes of documents by two or three Operators who work in shifts. This edition does not support complex batch routing schemes.

ABBYY FlexiCapture 12 Distributed is installed on multiple computers and is intended for processing large volumes of documents in enterprise environments. This edition is highly scalable, offers centralized control console, and supports complex routing schemes, where documents are distributed among Operators in charge of different types of batches or documents.

There is also an option of installing ABBYY FlexiCapture 12 Distributed with basic settings on one computer or virtual machine for evaluation and demonstration purposes.

ABBYY FlexiCapture productivity

ABBYY FlexiCapture productivity is expressed as the number of pages or documents processed within a certain time period. The major factors affecting productivity are:

1. The size of page images.
- Note:** Images size depends on paper size, scanning resolution, and scanning mode (i.e. whether the image has been scanned in black-and-white, grayscale, or color).
2. The number of automated processing stations.
 3. The number of Operators involved in document processing.

Note: There are two main types of Operators — Scanning Operators and Verification Operators. A Scanning Operator scans, checks, and processes images, while a Verification Operator verifies and corrects captured data.

Depending on your processing needs, select the optimal configuration for your system:

Pages* / 24 hours			Scanning Operators	Verification Operators	Data transfer rate	CPU cores
Black-and-white	Grayscale	Color				
20,000	5,000	1,000	3 or fewer	3 or fewer	-	8
1,000,000	500,000	300,000	300	100	1 Gb/sec	80
3,000,000	2,000,000	1,000,000.	1000	300	10 Gb/sec	160

* A4 pages scanned at 300 dpi.

Note: The performance indicators can vary depending on the processing settings and hardware environment. It is recommended to execute tests in order to identify bottlenecks.

ABBYY FlexiCapture Standalone

ABBYY FlexiCapture Standalone is intended for processing documents on one computer. The program is set up and monitored by an Administrator, while documents are scanned and captured data are verified by Operators. Document recognition is carried out automatically.

System requirements

CPU	2 GHz or faster
Operating system	<ul style="list-style-type: none"> • Windows 7 SP1 • Windows 8.1 • Windows 10 <p>Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.</p>
RAM	at least 4 GB

Disk space	4 GB (including 2 GB for installation)
Other requirements	<ol style="list-style-type: none"> 1. Microsoft .NET Framework 4.7.2 or later <p> Note: You can look up the version of your .Net Framework in the registry. Please visit this Microsoft web page for detailed instructions.</p> <ol style="list-style-type: none"> 2. Microsoft Office (version 2007 or later) or LibreOffice (version 4.0 or later) 3. A scanner with TWAIN, WIA or ISIS support

Installation

1. On the **Autorun** menu, select **Standalone Installation** and follow the instructions of the setup wizard.
2. In the **Setup Type** dialog box, select one of the available installation modes:
 - **Administrator Station** – The Administrator Station, FormDesigner, and FlexiLayout Studio will be installed. Select this option if you need to set up ABBYY FlexiCapture to process a specific kind of document.
 - **Operator Station** – Only the Operator Station will be installed. Select this option to start processing documents as an Operator.
 - **Administrator and Operator Stations** (selected by default) – The Administrator Station, the Operator Station, FormDesigner, and FlexiLayout Studio will be installed. Select this option if you need to set up to set up ABBYY FlexiCapture to process a specific kind of document and start processing documents as an Operator.
3. Select a destination folder.
4. Click **Next** and wait for the installation to complete.

Installing multiple stations with a single Licensing Server

All the stations installed in the system communicate with the Licensing Server. The address of the Licensing Server is stored in the LicensingSettings.xml file, which can be found in the folder where you installed the product. The address of the server is specified in the ServerAddress tag of the MainNetworkLicenseServer attribute.

If you have one license and several Operator stations, specify the address of the computer with the license on each Operator station. To enable a station to access the new Licensing Server, simply change the name of the computer on which the Licensing Server is installed and restart the station.

Installing, removing, and updating via the command line

Installing ABBYY FlexiCapture 12 via the command line in silent mode

ABBYY FlexiCapture 12 components can be installed in silent mode from the Command Prompt window. Silent mode is useful when you need to roll out ABBYY FlexiCapture 12 on a large number of computers simultaneously. No dialog boxes or information messages will be displayed (but you can choose to display a progress bar — see the note below).

Installing in silent mode offers the following benefits:

- A user or administrator only needs to initiate the installation, no further actions or decisions are necessary.
- A silent installation requires less CPU power compared to a standard installation.
- A silent installation is faster, because no visual interaction is required.

To install ABBYY FlexiCapture 12 in silent mode:

1. Open the Command Prompt window (cmd.exe) with administrator permissions.
2. To install server components, run *Servers x64.exe /qn*.
To install client components, run *Stations x64.exe /qn*.
To install ABBYY FlexiCapture Standalone, run *Setup.exe /qn*.

 **Note:** Replace the */qn* switch with */qb* if you want an installation progress bar to be displayed.

Additional command line options

/L <language code> disables the automatic selection of the interface language and installs ABBYY FlexiCapture 12 with the interface language specified at the command prompt.

Possible values:

- 1033 for English
- 1049 for Russian
- 1031 for German
- 1036 for French
- 2052 for Chinese (Simplified)
- 1034 for Spanish
- 2074 for Serbian
- 1029 for Czech
- 1038 for Hungarian
- 1045 for Polish
- 1046 for Portuguese (Brazil)
- 1042 for Korean

/V <commands> passes commands you enter at the command prompt directly to *msiexec.exe*. Replace *<commands>* with a combination of any of the following commands:

- ***INSTALLDIR=<path to folder>***
Replace *<path to folder>* with the path to the folder where ABBYY FlexiCapture 12 is to be installed.
- ***SETUPTYPE_CMD=<install mode>***
Replace *<install mode>* with any of the following modes:
 - *Full* installs the Administrator Station and Operator Station components.
Besides the Administrator Station and Operator Station components, FormDesigner и FlexiLayout Studio will also be installed.
 - *Admin* installs the Administrator Station component.
Besides the Administrator Station component, FormDesigner and FlexiLayout Studio will also be installed.
 - *Operator* installs the Operator Station component.
No other components will be installed.
- ***ADDLOCAL=ApplicationServer,WebStations,ProcessingServer,ProtectionServer*** installs server components.
 - *ApplicationServer* installs the Application Server component.
 - *WebStations* installs the Web Station component.
 - *ProcessingServer* installs the Processing Server component.
 - *ProtectionServer* installs the Licensing Server component.
- ***STATIONS=0,1,2,3,4,5,6*** installs client components.
 - *0* installs the Scanning Station.
 - *1* installs the Processing Station.
 - *2* installs the Verification Station.
 - *3* installs the Data Verification Station.
 - *4* installs the Project Setup Station.
 - *5* installs FlexiLayout Studio.
 - *6* installs FormDesigner.
- ***ACCOUNTTYPE=Custom, LOGIN=<user name>, PASSWORD=<password>*** specifies the credentials of the account that is to be used to run the Processing Station service.
- ***PROTECTIONSERVER=<server name>*** specifies the name of the Licensing Server.
- ***IS_DBD=0*** disables conversion of digital-born documents.

Example 1:

Servers x64.exe /qn /L1049 /vADDLOCAL=ApplicationServer,WebStations

This sequence of commands instructs the installer to install the Application Server and Web Station components with Russian for the GUI language.

Example 2:

```
Stations x64.exe /qn /L1049 /v INSTALLDIR="D:\FC12" STATIONS=1,4 ACCOUNTTYPE=Custom  
LOGIN=Domain\UserLogin PASSWORD=PSWD
```

This sequence of commands instructs the installer to install the Processing Station and the Project Setup Station components into the D:\FC12 folder with Russian for the GUI language and run the Processing Station service under the Domain\UserLogin account using PSWD for the password.

Example 3:

```
Setup.exe /qn /L1049 /v INSTALLDIR="D:\FC12" SETUPTYPE_CMD=Full
```

This sequence of commands instructs the installer to install ABBYY FlexiCapture 12 into the D:\FC12 folder with Russian for the GUI language.

Removing ABBYY FlexiCapture 12 via the command line in silent mode

To remove ABBYY FlexiCapture 12:

1. Open the Command Prompt window (cmd.exe) with administrator permissions.
2. Run this command: *Msiexec /x {<product code>}*
Example: *Msiexec /x {FC12000C-0000-0000-000000000000}*

For a 32-bit operating system, you can look up your product code in the following registry key:

HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall

For a 64-bit operating system, you can look up your product code in the following registry key:

HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Windows\CurrentVersion\Uninstall

Alternatively, you can find out your product code by running the following command:

wmic product where "Name like "%FlexiCapture%" get Name, Version, IdentifyingNumber

Updating ABBYY FlexiCapture 12 via the command line in silent mode

To update ABBYY FlexiCapture 12 components in silent mode:

1. Open the Command Prompt window (cmd.exe) with administrator permissions.
2. Run a component installation command.

Example:

```
Servers x64.exe /qn
```

Note: Replace the */qn* switch with */qb* if you want an installation progress bar to be displayed.

Creating and opening projects

After you install the program, the License Manager utility will be started, prompting you to activate your serial number. See the [Managing your licenses](#) section for more information.

 **Note:** You can also start the License Manager manually by clicking **Start → All Programs → ABBYY FlexiCapture 12**.

To start ABBYY FlexiCapture:

- Click **Start → All Programs → ABBYY FlexiCapture 12 → Administrator Station** to start the program in Administrator mode.
- Click **Start → All Programs → ABBYY FlexiCapture 12 → Operator Station** to start the program in Operator mode.

To create or open a project, perform one of the following three actions on the Administrator Station:

- Create a new project (click **File → New Project...**). Create or import at least one Document Definition (click **Project → Document Definitions**).
- Open a sample project from %Public%\ABBYY\FlexiCapture\12.0\Samples).
- Open a project created in an earlier version of ABBYY FlexiCapture.

Make sure that your project has at least one correct and added Document Definition for which export settings have been specified.

ABBYY FlexiCapture Distributed

ABBYY FlexiCapture Distributed is intended for deployment in enterprise environments.

System requirements

Servers

CPU	Application Server: 2 GHz or faster with 2 cores Other servers: 2 GHz or faster
Operating system	<ul style="list-style-type: none"> • Windows Server 2008 R2 SP1 • Windows Server 2012 • Windows Server 2012 R2 • Windows Server 2016

	<ul style="list-style-type: none"> • Windows Server 2019 <p> Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.</p>
RAM	<p>At least 2 GB for each component</p> <p> Note: An additional 4 GB RAM is required if Database Server is installed.</p>
Disk space	<ol style="list-style-type: none"> 1. Application Server: 500 MB for installation 2. Processing Server: 400 MB for installation 3. Licensing Server: 100 MB for installation 4. 2 GB for SQL Server database 5. Additional space is required for the file storage
	<ul style="list-style-type: none"> • Google Chrome 55 or later (32-bit) • Mozilla Firefox 50 or later (32-bit) • Microsoft Edge 41 or later <p> Note: ABBYY FlexiCapture works best with Google Chrome and other Chromium-based browsers.</p> <ul style="list-style-type: none"> • Internet Explorer 11 <p> Note: To ensure that Internet Explorer 11 works correctly, install .NET Framework 4.7.2 on the computer with the Application Server or add the address of an application server to the list of websites that are opened in compatibility mode.</p> <p>Important! Disclaimer for Internet Explorer users/Known Issue</p> <p>Due to the known limitations of Internet Explorer 11, you may observe the issues while processing more than 100 pages or having numerous verification tasks with ABBYY FlexiCapture. Using Internet Explorer browser for an extended period of time can cause the browser to consume a lot of the machine's memory and slow down the client performance and eventually crash the browser.</p> <p>To avoid the unwanted interruptions of ABBYY FlexiCapture processing tasks ABBYY recommends you to use Microsoft Edge, Google Chrome or other browsers for the professional verification tasks. Nevertheless, ABBYY FlexiCapture web-stations are fully functioning in Internet Explorer 11, thus they should be used for ad-hoc processing preferably.</p> <p>Important notes for users of Internet Explorer</p> <ol style="list-style-type: none"> 1. In the event of a verification malfunction, the operator will not be able to resume the task immediately after the session is restored. This task will become available only after the inactive sessions have been purged. By

	<p>default, inactive sessions are purged every 4 hours. You can change this setting in the web.config file on the Processing Server. We do not recommend purging inactive sessions too often. The recommended minimum setting is 10 minutes.</p> <ol style="list-style-type: none"> 2. Starting from FlexiCapture R3 Update 1, each new task is opened in a new tab to optimize memory use. However, this also means that operators will not be able to receive new tasks automatically. To revert to the old behavior, open the web.config file for the web station and set the IEVerificationNewWindow key to false. 3. In Internet Explorer 11, users will not be able to enter Japanese text using the corresponding Microsoft IME.
Other requirements	<ol style="list-style-type: none"> 1. The computer where the server is installed must be connected to your domain 2. Video card and display with a resolution of 1024×768 3. Internet Information Services 7 or higher 4. Microsoft .NET Framework 4.7.2 or higher 5. Microsoft SQL Server 2012 SP4, 2014 SP2, 2016 SP2, 2017, 2019; Microsoft Azure; <p> Note: Additionally, Microsoft SQL Server Native Client 2012 or later is required for creating databases. Oracle Database 12c, 18c, 19c.</p> <ol style="list-style-type: none"> 6. Visual C++ 2015 Redistributable

Stations

CPU	2 GHz or faster
Operating System	<ul style="list-style-type: none"> • Windows 7 SP1 • Windows 8.1 • Windows 10 • Windows Server 2008 R2 SP1 + Desktop Experience • Windows Server 2012 + Desktop Experience • Windows Server 2012 R2 + Desktop Experience • Windows Server 2016 + Desktop Experience • Windows Server 2019 + Desktop Experience

	 Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.
RAM	Project Setup Station, Verification Station, Data Verification Station: 2 GB Processing Station: at least 2.5 GB for each CPU core Scanning Station: 1 GB
Disk space	Scanning Station: 1 GB (including 200 MB for installation and sufficient disk space for scanned images) Other stations: 4 GB (including 2 GB for installation)
Other requirements	<ol style="list-style-type: none"> 1. A scanner with TWAIN, WIA or ISIS support 2. Video card and display with a resolution of 1024×768 3. The computer where the station is installed must be connected to your domain 4. Microsoft .NET Framework 4.7.2 or later 5. Microsoft Office (version 2007 or later) or LibreOffice (version 4.0 or later)

HTML 5 Web Stations

CPU	1.6 GHz or faster
Operating System	<ul style="list-style-type: none"> • Windows 7 SP1 • Windows 8/8.1 • Windows 10 • Windows Server 2008 R2 SP1 + Desktop Experience • Windows Server 2012 + Desktop Experience • Windows Server 2012 R2 + Desktop Experience • Windows Server 2016 + Desktop Experience • Windows Server 2019 + Desktop Experience  Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.
RAM	1 GB
Disk space	<ul style="list-style-type: none"> • Sufficient space to install a browser • At least 100 MB for program operation

	<ul style="list-style-type: none"> An additional 60 MB is required to install the ABBYY Scanning Plugin for the Web Scanning Station.
	<ul style="list-style-type: none"> Google Chrome 55 or later (32-bit) Security settings for Google Chrome: <ol style="list-style-type: none"> JavaScript = Allow all sites plugins = Run automatically <p>Note: All plugins are disabled by default. To enable a plugin, open chrome://plugins/ in the browser and select the Always allowed option for the desired plugin.</p> Mozilla Firefox 50 or later (32-bit) Security settings for Mozilla Firefox: <ol style="list-style-type: none"> Java scripting = Enable Firefox will remember history (Options → Privacy) Microsoft Edge 41 or later Security settings for Microsoft Edge: <ol style="list-style-type: none"> JavaScript = Allow all sites plugins = Run automatically
Browser	<p>Note: ABBYY FlexiCapture works best with Google Chrome and other Chromium-based browsers.</p> <ul style="list-style-type: none"> Microsoft Internet Explorer 11 Browser security settings: Internet Explorer medium-high protection level. Detailed required settings for Internet Explorer: <ol style="list-style-type: none"> Run ActiveX controls and plugins = Enable Script ActiveX controls marked safe for scripting = Enable Active scripting = Enable <p>Note: To ensure that Internet Explorer 11 works correctly, install .NET Framework 4.7.2 on the computer with the Application Server or add the address of an application server to the list of websites that are opened in compatibility mode.</p> <p>Note: The Metro-style version of Internet Explorer 10 that comes with Windows 8 is not supported.</p> <p>Important! Disclaimer for Internet Explorer users/Known Issue Due to the known limitations of Internet Explorer 11, you may observe the issues while processing more than 100 pages or having numerous verification tasks with ABBYY FlexiCapture. Using Internet Explorer browser for an extended period of time can cause the browser to consume a lot of</p>

	<p>the machine's memory and slow down the client performance and eventually crash the browser.</p> <p>To avoid the unwanted interruptions of ABBYY FlexiCapture processing tasks ABBYY recommends you to use Microsoft Edge, Google Chrome or other browsers for the professional verification tasks. Nevertheless, ABBYY FlexiCapture web-stations are fully functioning in Internet Explorer 11, thus they should be used for ad-hoc processing preferably.</p> <p>Important notes for users of Internet Explorer</p> <ol style="list-style-type: none"> 1. In the event of a verification malfunction, the operator will not be able to resume the task immediately after the session is restored. This task will become available only after the inactive sessions have been purged. By default, inactive sessions are purged every 4 hours. You can change this setting in the web.config file on the Processing Server. We do not recommend purging inactive sessions too often. The recommended minimum setting is 10 minutes. 2. Starting from FlexiCapture R3 Update 1, each new task is opened in a new tab to optimize memory use. However, this also means that operators will not be able to receive new tasks automatically. To revert to the old behavior, open the web.config file for the web station and set the IEVerificationNewWindow key to false. 3. In Internet Explorer 11, users will not be able to enter Japanese text using the corresponding Microsoft IME.
Other requirements	<ol style="list-style-type: none"> 1. Video card and display with a resolution of 1024×768 2. For Web Scanning Station: <ul style="list-style-type: none"> a. A scanner supporting the TWAIN interface. WIA scanners can be accessed from the station but they may not operate properly b. ABBYY Scanning Plugin (see below)

ABBYY Scanning Plug-In

You can install one of the two versions of ABBYY Scanning Plugin:

- The Scanning Plugin that supports PDF (selected by default). Requires ~70 MB of free space.
- The Scanning Plugin without the PDF support. Requires ~17 MB of free space.

The table below lists the operating systems on which the ABBYY Scanning Plugin can be installed with various permissions:

ABBYY Scanning Plugin			
OS	Permissions	UAC	EXE
Windows 7 SP1	Administrator	Recommended	✓
		No	✓
	User	Recommended	✓
		No	✓
Windows Server 2008 R2 SP1	Administrator	Recommended	✓
		No	✓
	User	Recommended	✗
		No	✗
Windows 8.1	Administrator	Recommended	✓
		No	✓
	User	Recommended	✓
		No	✓
Windows Server 2012*	Administrator	Recommended	✓
		No	✓
	User	Recommended	✗
		No	✗
Windows Server 2012 R2	Administrator	Recommended	✓
		No	✓
	User	Recommended	✗
		No	✗
Windows 10	Administrator	Recommended	✓
		No	✓
	User	Recommended	✓
		No	✓

 **Note:** To allow the ABBYY Scanning Plugin to be installed on Windows Server 2012, run the executable file Setup.exe as Administrator or change the security policy by setting the value of the registry key HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Windows\Installer DisableMSI to "0".

Remote Verification Station

CPU	2 GHz or faster
Operating System	<ul style="list-style-type: none"> • Windows 7 SP1 • Windows 8.1 • Windows 10 • Windows Server 2008 R2 SP1 + Desktop Experience • Windows Server 2012 + Desktop Experience • Windows Server 2012 R2 + Desktop Experience • Windows Server 2016 + Desktop Experience • Windows Server 2019 + Desktop Experience <p> Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.</p>
RAM	1 GB
Disk space	400 MB
Other requirements	<ol style="list-style-type: none"> 1. Video card and display with a resolution of 1024×768 2. Microsoft .NET Framework 4.7.2 or later

ClickOnce Scanning Station

CPU	2 GHz or faster
Operating System	<ul style="list-style-type: none"> • Windows 7 SP1 • Windows 8.1 • Windows 10 • Windows Server 2008 R2 SP1 + Desktop Experience • Windows Server 2012 + Desktop Experience • Windows Server 2012 R2 + Desktop Experience

	<ul style="list-style-type: none"> • Windows Server 2016 + Desktop Experience • Windows Server 2019 + Desktop Experience <p>Note: To use a localized version of ABBYY FlexiCapture, make sure your operating system supports the corresponding GUI language.</p>
RAM	1 GB
Disk space	1.5 GB (including 550 MB for installation and sufficient space for scanned images). The size of downloadable file is 270 MB
Browser	<p>For ClickOnce deployment:</p> <ul style="list-style-type: none"> • Internet Explorer 11 <p>Note: To ensure that Internet Explorer 11 works correctly, install .NET Framework 4.7.2 on the computer with the Application Server or add the address of an application server to the list of websites that are opened in compatibility mode.</p> <p>Important! Disclaimer for Internet Explorer users/Known Issue Due to the known limitations of Internet Explorer 11, you may observe the issues while processing more than 100 pages or having numerous verification tasks with ABBYY FlexiCapture. Using Internet Explorer browser for an extended period of time can cause the browser to consume a lot of the machine's memory and slow down the client performance and eventually crash the browser. To avoid the unwanted interruptions of ABBYY FlexiCapture processing tasks ABBYY recommends you to use Microsoft Edge, Google Chrome or other browsers for the professional verification tasks. Nevertheless, ABBYY FlexiCapture web-stations are fully functioning in Internet Explorer 11, thus they should be used for ad-hoc processing preferably.</p> <p>Important notes for users of Internet Explorer</p> <ol style="list-style-type: none"> 1. In the event of a verification malfunction, the operator will not be able to resume the task immediately after the session is restored. This task will become available only after the inactive sessions have been purged. By default, inactive sessions are purged every 4 hours. You can change this setting in the web.config file on the Processing Server. We do not recommend purging inactive sessions too often. The recommended minimum setting is 10 minutes. 2. Starting from FlexiCapture R3 Update 1, each new task is opened in a new tab to optimize memory use. However, this also means that operators will not be able to receive new tasks automatically. To revert to the old behavior, open the web.config file for the web station and set the IEVerificationNewWindow key to false. 3. In Internet Explorer 11, users will not be able to enter Japanese text using the corresponding Microsoft IME.

Other requirements	<ol style="list-style-type: none"> 1. A scanner with TWAIN, WIA or ISIS support 2. Video card and display with a resolution of 1024×768 3. Microsoft .NET Framework 4.7.2 or later
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Virtual Environments

The system has been tested on the following virtual machines:

1. Virtual platforms that imitate physical machines:

- VMWare Workstation (any version)
- Hyper-V (any version)

 **Note:** Hyper-V version corresponds to the version of the operating system.

 **Note:** Hyper-V virtual machines do not work with USB devices.

- Oracle VirtualBox (any version)
- VMWare ESXi (server included with VMWare vSphere, any version)

2. Virtual platforms imitating workplaces / applications:

- VMWare Horizon 5.2.0
- Citrix XenApp 7.13

3. Cloud services:

- Microsoft Azure
- Amazon Cloud

Preparing to install the Application Server

 **Important!** We recommend either [disabling User Account Control](#) before installing ABBYY FlexiCapture or performing all setup actions using the built-in administrator account.

.Net Framework 4.7.2 and Internet Information Services must be installed on your computer before you can install the Application Server.

 **Note:** Please visit the Microsoft website for instructions on how to find out which Microsoft .Net Framework versions and updates are installed on your computer.

IIS and .Net Framework are installed via the Control Panel (see the [step-by-step instructions and installation options](#)). In the Add Roles Wizard, select the following components:

Web Management Tools

- IIS 6 Management Compatibility
 - IIS Scripting Tools
 - IIS 6 WMI Compatibility
 - IIS Metabase and IIS 6 configuration compatibility
- IIS Management Console

World Wide Web Services

- Application Development Features
 - .NET Extensibility
 - ASP.NET
 - ISAPI Extensions
 - ISAPI Filters
- Common HTTP Features
 - Default Document
 - HTTP Errors
 - HTTP Redirection
 - Static Content
- Security
 - Basic Authentication
 - Request Filtering
 - Windows Authentication

Other IIS components may be installed if required, e.g. you can install IIS in its entirety.

When you install the ABBYY FlexiCapture servers, the following third-party components will be installed automatically:

- 1. Microsoft Visual C++ 2015 Runtime**
- 2. Microsoft Core XML Services (MSXML6)** – The Application Server requires this component for its operation.
- 3. Microsoft Report Viewer 2015 Runtime** – This component is used by ABBYY FlexiCapture for generating reports.
- 4. Codemeter Runtime** – This component is required if you plan to use a license stored on a CodeMeter USB dongle manufactured by Wibu-Systems.

Installing the servers

 **Important!** In enterprise environments, do not install the Processing Station on the same computer where the ABBYY FlexiCapture servers are installed, as this will degrade server performance.

After you have completed the preparation steps, install the ABBYY FlexiCapture servers. To do this, click **Distributed Installation → Install Servers** on the **Autorun** menu and follow the instructions of the setup wizard.

By default, all of the servers are installed on one computer:

- **Processing Server** is the server that controls the Processing Stations.
- **Licensing Server** is the server used for storing and managing licenses.
- **Application Server** is the server that controls the operation of the remaining components and, in particular:

- **Web stations**, which allow Operators to connect to the server and process documents in the browser window, without installing ABBYY FlexiCapture on their machines.

If required, ABBYY FlexiCapture servers can be installed on different computers. To do this, in the **Setup Type** dialog box clear the boxes next to the servers that you do not want to install on this computer. When installing servers on different computers, note the following:

1. The Licensing Server address should be specified in the format "server" (without \\ or http://), or you can specify its IP address.
2. The Application Server address should be specified in the format "http://<ApplicationServer>" where <ApplicationServer> is the name of the computer on which the Application Server is installed.

Important! To be able to use remote stations over the Internet, make sure that the Application Server is accessible over the Internet.

See also: [Installing and removing ABBYY FlexiCapture components in silent mode](#).

Installing the Application Server and web stations on different computers

By default, the Application Server and the web stations are installed on the same computer. You can install the Application Server and web stations on different computers if required. For example, the Application Server may be installed on a computer in a DMZ network, while the web stations may be made accessible to users in an external network.

The setup program does not allow installing only the Application Server or only the web stations. Use the following workaround:

1. Install both the Application Server and the web stations on computer M1 and on computer M2.
2. Redirect the web stations installed on M1 to the Application Server installed on M2.

Important! The Administration and Monitoring Console cannot be disjoined from the Application Server.

To redirect the web stations to the Application Server, on computer M1, modify the **web.config** file of each web station, specifying the name of computer M2 in the **value** parameter.

```
...
<configuration>
    <appSettings>
        add key="ApplicationServer" value="M2Name"></add>
    ...
</appSettings>
...
</configuration>
```

The folders with the **web.config** file for each web station can be found at <IIS Root Directory (e.g. C:\inetpub\wwwroot)>\FlexiCapture12\<Station Name>.

Example

Web Verification Station that uses HTML5	C:\inetpub\wwwroot\FlexiCapture12\Verification
Web Scanning Station that uses HTML5	C:\inetpub\wwwroot\FlexiCapture12\Scanning
Web Login Page	C:\inetpub\wwwroot\FlexiCapture12>Login

Important! For computers separated by a firewall, allow the use of World Wide Web Services on port 80 if HTTP is used or the use of Secure World Wide Web Services on port 443 if HTTPS is used.

Database server

The Application Server requires Microsoft SQL Server, Azure server, or Oracle for its operation (for a list of supported versions, see the [System requirements](#) section). **Mixed Mode** must be enabled in Microsoft SQL Server ("SQL Server and Windows authentication").

Note: The ABBYY FlexiCapture setup disk includes Microsoft SQL Server 2014 Express, which can be used only for demonstration purposes.

Installing stations

To install ABBYY FlexiCapture stations, click **Distributed Installation → Install Workstations** on the **Autorun** menu and follow the instructions of the setup wizard.

By default, all the stations are installed on one computer:

1. **Scanning Station** scans documents and sends them to the server for further processing;
2. **Processing Station** automatically recognizes, imports, and exports documents; controlled by the Processing Server;
3. **Project Setup Station** is used to set up projects on the server and local projects;
4. **Data Verification Station** is used to verify uncertainly recognized characters;
5. **Verification Station** is used to verify data, correct document assembly errors, and handle exceptions;
6. **FlexiCapture Studio** is a tool for creating FlexiLayouts;
7. **FormDesigner** is a tool for creating forms.

Just like the servers, the stations can be installed on the same or on different computers.

If required, ABBYY FlexiCapture stations can be installed on different computers. To do this, in the **Setup Type** dialog box clear the boxes next to the stations that you do not want to install on this computer. When installing stations on different computers, note the following:

1. If Processing Station is selected, a dialog box will appear, where you must select the account under which the Processing Station service will run. By default, the service runs under the NETWORK SERVICE user account. If you plan to import/export data on this station from/to a storage location with restricted user permissions, you can specify the user that has the appropriate permissions. In this case, the Processing Station service will run under this user.

2. When installing FlexiLayout Studio, FormDesigner, Verification Station or Project Setup Station, provide the name or the IP address of the Licensing Server in the next dialog box that opens (specify the name without "\", for example: MainServer).

See also: [Installing and removing ABBYY FlexiCapture components in silent mode](#).

Installing remote stations

Remote stations allow you to connect to ABBYY FlexiCapture servers from computers that are not part of your LAN. Remote stations include Verification Station, Data Verification Station, and Scanning Station.

Remote stations can connect to the Application Server using HTTP/HTTPS.

To install remote stations, click **Distributed Installation** on the **Autorun** menu, click the desired remote station, and follow the instructions of the setup wizard.

 **Important!** If you wish to use remote stations over the Internet, the Application Server must be accessible over the Internet and the Processing Server must be running to enable exchange of information with the Licensing Server. If basic authentication is to be used for remote stations, basic authentication must be allowed in IIS in Default Web Site\FlexiCapture12\Server.

Installing, removing, and updating ABBYY FlexiCapture 12 in silent mode

Installing ABBYY FlexiCapture 12 via the command line in silent mode

ABBYY FlexiCapture 12 components can be installed in silent mode from the Command Prompt window. Silent mode is useful when you need to roll out ABBYY FlexiCapture 12 on a large number of computers simultaneously. No dialog boxes or information messages will be displayed (but you can choose to display a progress bar — see the note below).

Installing in silent mode offers the following benefits:

- A user or administrator only needs to initiate the installation, no further actions or decisions are necessary.
- A silent installation requires less CPU power compared to a standard installation.
- A silent installation is faster, because no visual interaction is required.

To install ABBYY FlexiCapture 12 in silent mode:

1. Open the Command Prompt window (cmd.exe) with administrator permissions.
2. To install server components, run *Servers x64.exe /qn*.
To install client components, run *Stations x64.exe /qn*.
To install ABBYY FlexiCapture Standalone, run *Setup.exe /qn*.

 **Note:** Replace the */qn* switch with */qb* if you want an installation progress bar to be displayed.

Additional command line options

/L <language code> disables the automatic selection of the interface language and installs ABBYY FlexiCapture 12 with the interface language specified at the command prompt.

Possible values:

- 1033 for English
- 1049 for Russian
- 1031 for German
- 1036 for French
- 2052 for Chinese (Simplified)
- 1034 for Spanish
- 2074 for Serbian
- 1029 for Czech
- 1038 for Hungarian
- 1045 for Polish
- 1046 for Portuguese (Brazil)
- 1042 for Korean

/V <commands> passes commands you enter at the command prompt directly to *msiexec.exe*. Replace *<commands>* with a combination of any of the following commands:

- *INSTALLDIR=<path to folder>*
Replace *<path to folder>* with the path to the folder where ABBYY FlexiCapture 12 is to be installed.
- *SETUPTYPE_CMD=<install mode>*
Replace *<install mode>* with any of the following modes:
 - *Full* installs the Administrator Station and Operator Station components.
Besides the Administrator Station and Operator Station components, FormDesigner и FlexiLayout Studio will also be installed.
 - *Admin* installs the Administrator Station component.
Besides the Administrator Station component, FormDesigner and FlexiLayout Studio will also be installed.
 - *Operator* installs the Operator Station component.
No other components will be installed.
- *ADDLOCAL=ApplicationServer,WebStations,ProcessingServer,ProtectionServer* installs server components.
 - *ApplicationServer* installs the Application Server component.

- *WebStations* installs the Web Station component.
- *ProcessingServer* installs the Processing Server component.
- *ProtectionServer* installs the Licensing Server component.
- *STATIONS=0,1,2,3,4,5,6* installs client components.
 - 0 installs the Scanning Station.
 - 1 installs the Processing Station.
 - 2 installs the Verification Station.
 - 3 installs the Data Verification Station.
 - 4 installs the Project Setup Station.
 - 5 installs FlexiLayout Studio.
 - 6 installs FormDesigner.
- *ACCOUNTTYPE=Custom, LOGIN=<user name>, PASSWORD=<password>* specifies the credentials of the account that is to be used to run the Processing Station service.
- *PROTECTIONSERVER=<server name>* specifies the name of the Licensing Server.
- *IS_DBD=0* disables conversion of digital-born documents.

Example 1:

Servers x64.exe /qn /L1049 /v ADDLOCAL=ApplicationServer,WebStations

This sequence of commands instructs the installer to install the Application Server and Web Station components with Russian for the GUI language.

Example 2:

Stations x64.exe /qn /L1049 /v INSTALLDIR="D:\FC12" STATIONS=1,4 ACCOUNTTYPE=Custom LOGIN=Domain\UserLogin PASSWORD=PSWD

This sequence of commands instructs the installer to install the Processing Station and the Project Setup Station components into the D:\FC12 folder with Russian for the GUI language and run the Processing Station service under the Domain\UserLogin account using PSWD for the password.

Example 3:

Setup.exe /qn /L1049 /v INSTALLDIR="D:\FC12" SETUPTYPE_CMD=Full

This sequence of commands instructs the installer to install ABBYY FlexiCapture 12 into the D:\FC12 folder with Russian for the GUI language.

Removing ABBYY FlexiCapture 12 via the command line in silent mode

To remove ABBYY FlexiCapture 12:

1. Open the Command Prompt window (cmd.exe) with administrator permissions.

2. Run this command: `Msiexec /x {<product code>}`

Example: `Msiexec /x {FC12000C-0000-0000-0000-000000000000}`

For a 32-bit operating system, you can look up your product code in the following registry key:

`HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall`

For a 64-bit operating system, you can look up your product code in the following registry key:

`HKEY_LOCAL_MACHINE\Software\Wow6432Node\Microsoft\Windows\CurrentVersion\Uninstall`

Alternatively, you can find out your product code by running the following command:

`wmic product where "Name like '%FlexiCapture%'" get Name, Version, IdentifyingNumber`

Updating ABBYY FlexiCapture 12 via the command line in silent mode

To update ABBYY FlexiCapture 12 components in silent mode:

1. Open the Command Prompt window (cmd.exe) with administrator permissions.
2. Run a component installation command.

Example:

`Servers x64.exe /qn`

 **Note:** Replace the `/qn` switch with `/qb` if you want an installation progress bar to be displayed.

Setup

After you install the server components, the License Manager utility and the Administration and Monitoring Console will be started automatically. In the License Manager, click the **Activate License...** button to activate your serial number (see the [Activating your license](#) section for detailed instructions). The Administration and Monitoring Console is where you set up ABBYY FlexiCapture.

Note

If you see an error message in the Administration and Monitoring Console, open the IIS Manager console (click **Start** → **Control Panel** → **Administrative Tools** → **Internet Information Services (IIS) Manager**). If the server is stopped, select **Start** on the **Manage Server** menu. In a similar fashion, check that Default Web Site is running.

Authenticating ABBYY FlexiCapture applications

All components and users of ABBYY FlexiCapture 12 Distributed interact with the Application Server and must be authenticated on the computer where it is installed. ABBYY FlexiCapture supports several types of user authentication:

- **Windows or Basic authentication in IIS.** Users are identified in ABBYY FlexiCapture based on their Active Directory logins. This method requires minimal configuration and is suitable for scenarios where all ABBYY FlexiCapture components and users are in the same domain.
- **ABBYY FlexiCapture authentication.** This method is recommended when users cannot be identified based on their Active Directory logins.
- **Authentication using Single Sign-On technology (SSO).** This method allows using a single set of credentials to access all required resources. This means that users will only have to authenticate once when working with multiple corporate systems.

Important! If a user attempts to authenticate with invalid credentials more than 3 consecutive times, the user's account will be locked out for 30 minutes. Neither the user nor an administrator will be able to unlock the locked-out account during this time.

Authentication in ABBYY FlexiCapture client applications that represent Windows applications is performed with one of the two methods:

- When launched, an app uses Windows authentication, which means that a user is identified on a server by means of a Windows account that launches the app.
- An app suggests that a user enters a login and password, which means he/she is identified on a server by means of either Basic authentication or ABBYY FlexiCapture authentication (a type of authentication is selected automatically).

Authentication of ABBYY FlexiCapture client applications that represent web applications always requires users to explicitly enter a login and password. This means that a user is identified on a server by means of either Basic authentication or ABBYY FlexiCapture authentication (a type of authentication is selected automatically). To use Windows authentication in web applications, i.e. enter ABBYY FlexiCapture with a user account that launched a browser, it is necessary to add /winauth to the web station's address in the following format:

http://<ApplicationServer>/FlexiCapture12/<StationName>/winauth where <ApplicationServer> is the name of a computer where the Application Server is installed and <StationName> is the name of a web station that is being entered.

Important! To ensure security of your account, use the [secure connection](#) (HTTPS) when explicitly entering your login and password to authenticate.

The [SAML2.0 protocol](#) is supported to integrate ABBYY FlexiCapture client applications with third-party systems.

Single Sign-On authentication

Single Sign-On technology (SSO) allows using a single set of credentials to access all required resources. This means that users will only have to authenticate once when working with multiple corporate systems.

The advantages of using Single Sign-On technology are as follows:

- Users need to remember only one password.
- Using several accounts becomes more secure due to:
 - Centralized account management (including the ability to add, delete, and block accounts).

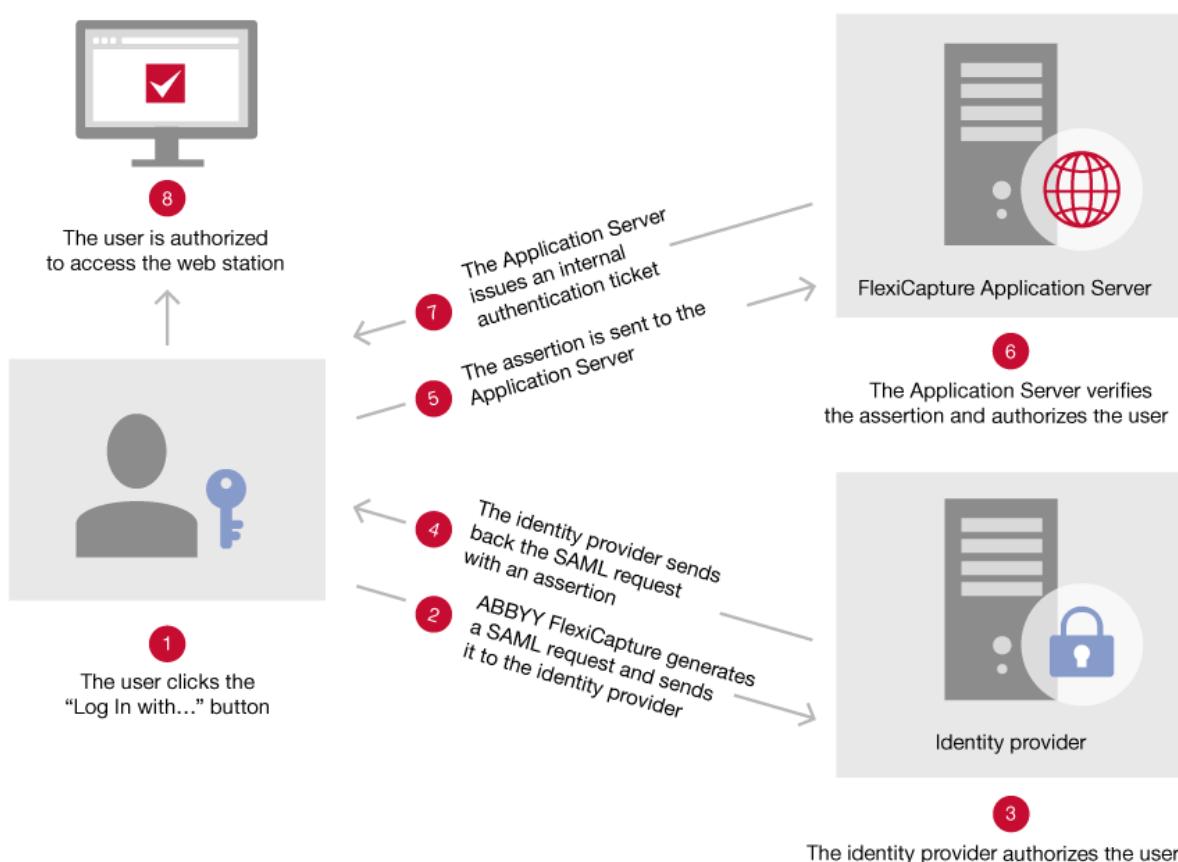
- Centralized password policy (including the ability to ensure password strength, regular password change, and unlock passwords).
- Ability to track users' activities in corporate IT systems.
- Large organizations can easily manage the life cycle of their employee accounts when hiring, firing, promoting or demoting their employees.

Single Sign-On technology is widely used in corporate environments. Both [SAML 2.0](#) and [JSON Web Tokens \(JWT\)](#) standards are supported. Administrators only have to set up pass-through authentication once to enjoy all the above benefits when working with the web stations. Users can then sign in using your company's authentication method.

Using Single Sign-On in ABBYY FlexiCapture

SSO authentication is only supported for web stations. When starting up a station, users need to authenticate. Besides authenticating with their ABBYY FlexiCapture user name and password, users can also be authenticated through an external identity provider (e.g. Azure Active Directory integrated with your corporate Active Directory).

Here's what happens when a user is authenticated through an external identity provider.



1. The user clicks the **Log in with [external server name]** button.

2. ABBYY FlexiCapture generates an AuthnRequest message, puts it into the SAMLRequest parameter of a URL GET request, and sends the request to the identity provider. Encrypted SAML SSO connections are not supported.

 Sample request:

```

<samlp:AuthnRequest ID="id81c79c5cecf44dfbbecdc08ae6c6393f" IssueInstant="2019-07-
17T10:59:19Z"

Version="2.0" xmlns:samlp="urn:oasis:names:tc:SAML:2.0:protocol"
xmlns="urn:oasis:names:tc:SAML:2.0:metadata">

<Issuer xmlns="urn:oasis:names:tc:SAML:2.0:assertion">
http://localhost/FlexiCapture12/Login/ten1/AccessToken/Saml</Issuer>

</samlp:AuthnRequest>
```

REQUEST DATA

method	GET
	https://abbyy.onelogin.com/trust/saml2/http-redirect/sso/952940?RelayState=&SAMLRequest=jdBNa8MwDAbge6H%2flfjeOe5XGpMEysag0F3W0sNuqqKsoYmdWcroz59pj4Oxq%2bDV%2b0gFQ98NdvKxb3T10gsya3vHJdqDM564Jatg57YCtrD9m1v50%2bp7UmgBgGV7F5K1dYbg1mOKyRsIsu6OZ8Ja0w3QGtcl%2fJFo5ITBW69K1WMxxTzSDvHAK7iKDX5LM1mJua1K5ya%2fIP9WDYu%2b9vzBC8ePSdqpLivj85wRgpiCRpKqLyGC1vvoegv%2fWrx3d2mcYZAxk5nrvP1unhZzRW0RiPvorOX2lsEI%2f%2bmKx%2fv3lajqZTn4A
url	https://abbyy.onelogin.com/trust/saml2/http-redirect/sso/952940?RelayState=&SAMLRequest=jdBNa8MwDAbge6H%2flfjeOe5XGpMEysag0F3W0sNuqqKsoYmdWcroz59pj4Oxq%2bDV%2b0gFQ98NdvKxb3T10gsya3vHJdqDM564Jatg57YCtrD9m1v50%2bp7UmgBgGV7F5K1dYbg1mOKyRsIsu6OZ8Ja0w3QGtcl%2fJFo5ITBW69K1WMxxTzSDvHAK7iKDX5LM1mJua1K5ya%2fIP9WDYu%2b9vzBC8ePSdqpLivj85wRgpiCRpKqLyGC1vvoegv%2fWrx3d2mcYZAxk5nrvP1unhZzRW0RiPvorOX2lsEI%2f%2bmKx%2fv3lajqZTn4A
httpVersion	HTTP/1.1
headersSize	886
bodySize	0

REQUEST HEADERS

Host	abbyy.onelogin.com
Connection	keep-alive
Upgrade-Insecure-Requests	1
User-Agent	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/75.0.3770.142 Safari/537.36
Accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3
Referer	http://localhost/FlexiCapture12/Login/ten1/
Accept-Encoding	gzip, deflate, br
Accept-Language	ru-RU,ru;q=0.9,en-US;q=0.8,en;q=0.7
Request-Cookies	

3. The identity provider authorizes the user.
4. If the authentication is successful, the identity provider generates an assertion message, puts it into the SAMLResponse parameter of the request, and sends the request back to ABBYY FlexiCapture.
5. The request containing the assertion message is sent to the ABBYY FlexiCapture Application Server in order to determine whether the specified user has the necessary permissions to log in to the specified station.
6. The Application Server verifies the assertion message using a public certificate obtained from the identity provider and then authorizes the user.
7. The Application Server performs the required operations and issues an internal [authentication ticket](#).
8. The user is granted access to the appropriate web station with the issued authentication ticket.

 **Note:** This feature has been tested using the following identity providers: Azure Active Directory, OneLogin, and Okta.

 **Note:** Multiple identity providers can be used simultaneously. For example, different identity providers can be used for different tenants. New authentication methods will be used side by side with the existing methods, including those used by default.

For more information about SAML authentication, see [Authentication using SAML 2.0 identity providers in ABBYY FlexiCapture 12](#).

Setting up Single Sign-On

To set up Single Sign-On authentication, do the following:

1. Create an application in the identity provider.
If several tenants are used, a separate application should be created for each.
2. Enable the Single Sign-On authentication method in the identity provider.
3. In the identity provider settings, specify the URL that will be used to send an assertion message back to ABBYY FlexiCapture if authentication is successful.
4. Save the public certificate in Base64 format. Then save the URL that will be used by the application to access the external identity provider.
5. Set up the required parameters in ABBYY FlexiCapture using a script. To do this:
 - a. Download the script [here](#) or use the script code provided below.
 -  PowerShell script

```
$url = 'http://localhost';           # application server endpoint
$cert = 'C:\Temp\AzureAD_FC_integration.cer'; #Certificate (Base64)
$picture = 'C:\Temp\index.svg';
$name = 'Azure AD'; # Text on button: "Login with $providerName"
```

```

$reference = 'https://login.microsoftonline.com/123e4567-e89b-12d3-a456-
426655440000/saml2'; #Login URL

$tenant = 'Tenant Name' ; # You may find Tenant name from Administration
and Monitoring Station. If you use default Tenant: $tenant = $null .

function readCertificateFromFile( $filepath )

{
    $reader = new-object System.IO.StreamReader( $filepath )
    while( ( $line = $reader.ReadLine() ) -ne $null ) {
        # skip ----begin cert--- and ---end cert--- lines
        if( -not( $line -like '-*' ) ) {
            $content += $line;
        }
    }
    return $content;
}

function readBytesFromFile( $filepath )

{
    $bytes = [System.IO.File]::ReadAllBytes( $filepath );
    return $bytes;
}

# Parse parameters from command line

for ( $i = 0; $i -lt $args.count; $i++ ) {
    if ( $args[ $i ] -eq "/url") { $url = $args[ $i + 1 ];}
    if ( $args[ $i ] -eq "/name") { $name = $args[ $i + 1 ];}
    if ( $args[ $i ] -eq "/tenant") { $tenant = $args[ $i + 1 ];}
    if ( $args[ $i ] -eq "/cert") { $cert = $args[ $i + 1 ];}
    if ( $args[ $i ] -eq "/picture") { $picture = $args[ $i + 1 ];}
    if ( $args[ $i ] -eq "/reference") { $reference = $args[ $i + 1 ];}
}

```

```

# Auth service

$serviceWsdlUrl = $url + '/FlexiCapture12/Server/AuthAPI/v1/WSDL';

$svc = New-WebServiceProxy -Uri $serviceWsdlUrl -UseDefaultCredential;

$ns = $svc.GetType().Namespace;

$svc.Url = $url + '/FlexiCapture12/Server/AuthAPI/v1/SOAP';

# Get TenantId from Application server

if (! [string]::IsNullOrEmpty($tenant)) {

    $tenantId = $svc.FindTenant( $tenant );

} else {

    $tenantId = $null;

}

$provider = New-Object ( $ns + ".IdentityProvider" );

$provider.Reference = $Reference;

$provider.TenantId = $tenantId;

$provider.Name = $name;

if( -not [string]::IsNullOrEmpty( $cert ) ) {

    $provider.Certificate = readCertificateFromFile( $cert );

}

if( -not [string]::IsNullOrEmpty( $picture ) ) {

    $provider.Picture = readBytesFromFile( $picture );

}

$svc.AddIdentityProvider( $provider );

```

b. On the machine where ABBYY FlexiCapture Application Server is installed, open the Windows PowerShell console as an administrator.

c. Specify the script name, the path to the script, and the following parameters:

- the path to the Application Server
- the path to the public certificate

- the path to the image that will be used for the new button (images in *.svg, *.jpg, and *.png formats are supported)
- the name of the tenant for which the parameters are being set up
- the name of the external identity provider that will be contacted when the user clicks the **Log in with...** button
- the URL that will be used to access the server of the external identity provider

 **Note:** The script must be run by a user that has administrative permissions for ABBYY FlexiCapture.

Below is a sample command that runs the script:

```
C:\Temp\SetIdentityProvider.ps1 /url 'http://localhost' /cert C:\Temp\IdP_FC_integration.cer /picture 'C:\Temp\index.svg' /tenant 'TenantName' /name 'IdP Name' /reference 'https://login.microsoftonline.com/123e4567-e89b-12d3-a456-426655440000/saml2'
```

In this sample command:

a. url is the path to the Application Server,
for example, \$url = '*http://localhost*'.

b. cert is the path to the public certificate,
for example, \$cert = '*C:\Temp\IdP_FC_integration.cer*'.

c. picture is the path to the image that will be used for the new button,
for example, \$picture = '*C:\Temp\index.svg*'.

d. tenant is the name of the tenant for which the parameters are being set up,
for example, \$tenant = 'TenantName'.

 **Note:** This parameter should only be specified if multiple tenants are used.

e. name is the name of the external identity provider,
for example, \$name = 'IdP Name' (the text on the button will then say "**Log in with IdP Name**").

f. reference is the URL for accessing the server of the external identity provider,
for example, \$reference = '*https://login.microsoftonline.com/123e4567-e89b-12d3-a456-426655440000/saml2*'.

As a result, the following button will appear on the station's login page: **Log in with [IdP Name]**.

To be able to use ABBYY FlexiCapture, users should have appropriate permissions. For more information about accounts and permissions, see Managing user accounts and permissions.

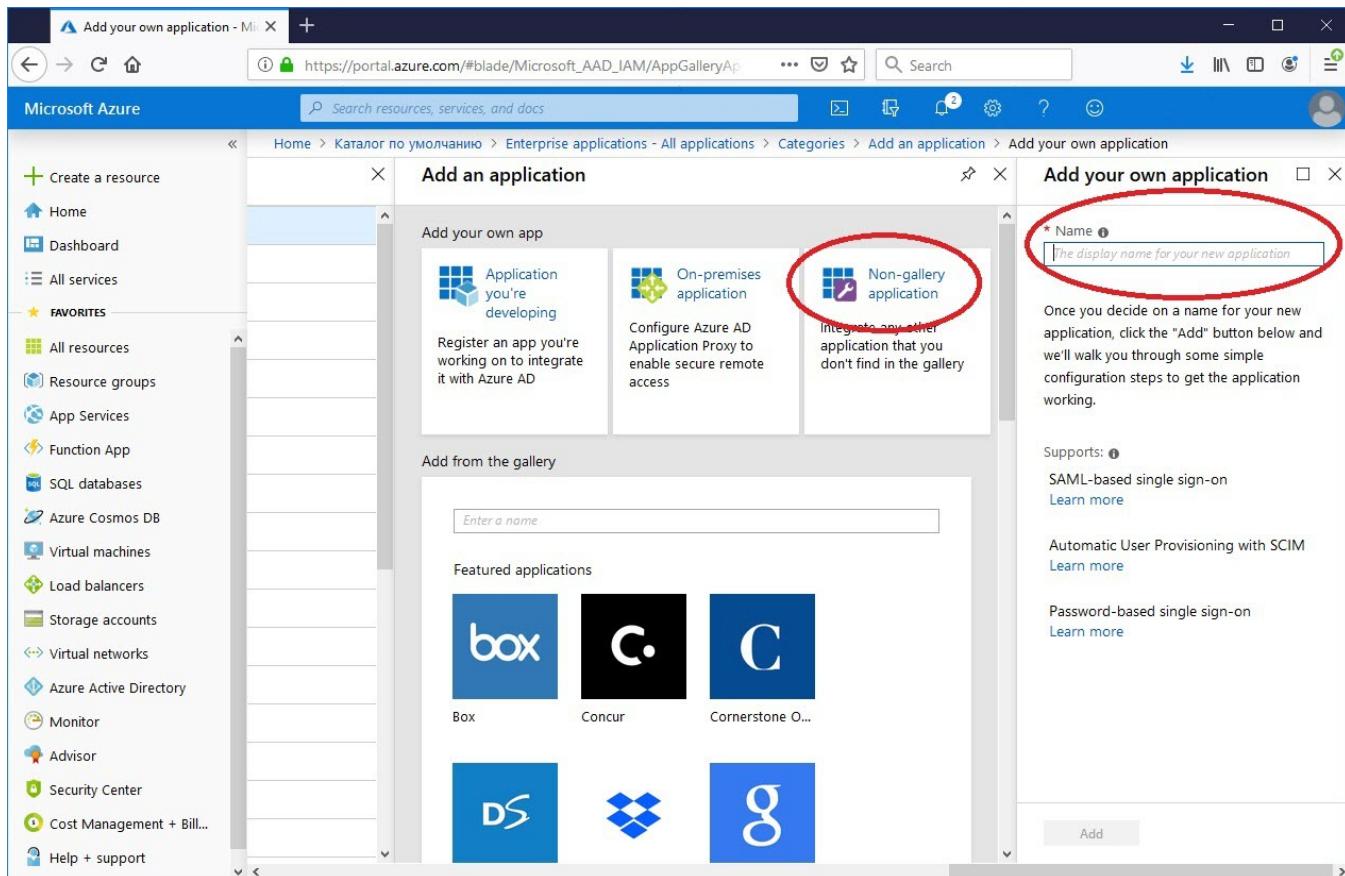
Setting up Single Sign-On with Azure Active Directory

To set up SSO authentication using Azure Active Directory:

1. Create and set up an application in Azure Active Directory.
 - a. Go to <https://portal.azure.com/> and log in to your Microsoft Azure account.
 - b. Go to the **Azure Active Directory > Enterprise applications** section.

c. In the **Add an application** window, go to the **Non-gallery application** section and specify a name for the new application.

If several tenants are used, a separate application should be created for each.



d. Go to the **Users and groups** section and add all required users. Give them the **User** role.

e. Go to the **Single sign-on** subsection and select **SAML**.

The screenshot shows the Microsoft Azure portal interface. The left sidebar lists various services like Home, Dashboard, All services, and Favorites. Under Favorites, 'Boris_FC_AzureAD_FC_integration' is selected. The main content area shows the 'Boris_FC_AzureAD_FC_integration - Single sign-on' blade. The navigation bar at the top includes links for Overview, Getting started, Deployment Plan, Properties, Owners, Users and groups, Single sign-on (which is highlighted with a red circle), Provisioning, Application proxy, and Self-service. Below this, under Manage, are sections for Security (Conditional Access, Permissions, Token encryption (Preview)), Activity (Sign-ins, Usage & insights (Preview)), and Help + support.

The right side of the blade displays four options for single sign-on:

- Disabled**: User must manually enter their username and password.
- SAML**: Rich and secure authentication to applications using the SAML (Security Assertion Markup Language) protocol. This option is circled in red.
- Password-based**: Password storage and replay using a web browser extension or mobile app.
- Linked**: Link to an application in the Azure Active Directory Access Panel and/or Office 365 application launcher.

f. Edit the **Basic SAML Configuration** section as follows:

The screenshot shows the Microsoft Azure portal interface for managing enterprise applications. On the left, there's a sidebar with various service icons. The main area is titled 'Boris_FC_AzureAD_FC_integration - SAML-based sign-on'. It has four sections:

- Basic SAML Configuration:** This section is circled in red. It contains fields for Identifier (Entity ID), Reply URL (Assertion Consumer Service URL), Sign on URL, Relay State, and Logout URL. The first two are marked as required.
- User Attributes & Claims:** This section lists attributes like Givenname, Surname, Emailaddress, Name, and Unique User Identifier, each mapped to a user claim.
- SAML Signing Certificate:** This section shows certificate details: Status (Active), Thumbprint (90ACA05BF490DECC1BDAB395A65A991805BA4950), Expiration (7/2/2022, 11:40:47 AM), Notification Email (boris.arefev@abbyy.com), App Federation Metadata Url (https://login.microsoftonline.com/a1697ab7-...), and download links for Certificate (Base64), Certificate (Raw), and Federation Metadata XML.
- Set up Boris_FC_AzureAD_FC_integration:** This section is circled in red. It asks to configure the application to link with Azure AD. It shows the Login URL (https://login.microsoftonline.com/a1697ab7-...) and the Azure AD Identifier (http://fc-windows-2012-01/).

Specify the **Identifier (Entity ID)** and the **Reply URL (Assertion Consumer Service URL)** in the respective fields:

<https://<app-server-dns-name>/FlexiCapture12/Login/AccessToken/Saml>

Note: When setting up a tenant, URLs should be specified in the following format: <https://<app-server-dns-name>/FlexiCapture12/Login/<TenantName>/AccessToken/Saml>

Leave the rest of the fields blank.

2. In the **SAML Signing Certificate** section, download your public certificate in Base64 format by clicking the link next to **Certificate (Base64)**.
3. From the **Login URL** field in the **Set up [application name]** section, copy the URL for accessing the server of the external identity provider.
4. Set up the required parameters in ABBYY FlexiCapture using a script. To do this:
 - a. Download the script [here](#).
 - b. On the machine where ABBYY FlexiCapture is installed, open the Windows PowerShell console as an administrator.
 - c. Specify the script name, the path to the script, and the following parameters:

- the path to the Application Server
- the path to the public certificate
- the path to the image that will be used for the new button (images in *.svg, *.jpg, and *.png formats are supported)
- the name of the tenant for which the parameters are being set up
- the name of the external identity provider that will be contacted when the user clicks the **Log in with...** button
- the URL that will be used to access the server of the external identity provider

Below is a sample command that runs the script.

```
C:\Temp\SetIdentityProvider.ps1 /url 'http://localhost' /certFilePath C:
\Temp\AzureAD_FC_integration.cer /pictureFilePath 'C:\Temp\index.svg' /tenant
'TenantName' /providerName 'Azure AD' /pictureFilePath 'C:\Temp\index.svg' /Reference
'https://login.microsoftonline.com/123e4567-e89b-12d3-a456-426655440000/saml2'
```

In this sample command:

- a. url is the path to the Application Server,
for example, \$url = '*http://localhost*'.
- b. certFilePath is the path to the public certificate,
for example, \$certFilePath = 'C:\Temp\AzureAD_FC_integration.cer'.
- c. pictureFilePath is the path to the image that will be used for the new button,
for example, \$pictureFilePath = 'C:\Temp\index.svg'.
- d. tenant is the name of the tenant for which the parameters are being set up,
for example, \$tenant = '*TenantName*'.
- Note:** This parameter should only be specified if multiple tenants are used.
- e. providerName is the external identity provider,
for example, \$providerName = 'Azure AD' (the button text will then say "**Log in with Azure AD**").
- f. Reference is the URL for accessing the external identity provider,
for example, \$Reference = '<https://login.microsoftonline.com/123e4567-e89b-12d3-a456-426655440000/saml2>'.

As a result, the following button will appear on the web station's login page: **Log in with Azure AD**.

Note: For more technical details about SAML authentication requests and responses that Azure Active Directory supports for Single Sign-On, please refer to [this article on Microsoft.com](#).

Deleting an authentication method

You can use a script to delete authentication methods that you have created. To delete an authentication method using a script, do the following:

1. Download the script [here](#) or use the script code provided below.
 - PowerShell script

```

$url = 'http://localhost';

$IdPID = 22; # Id of Identity Provider to be deleted


# Parse parameters from command line

for ( $i = 0; $i -lt $args.count; $i++ ) {

    if ($args[ $i ] -eq "/url"){ $url = $args[ $i + 1 ];}

    if ($args[ $i ] -eq "/IdPID"){ $IdPID = $args[ $i + 1 ];}

}

# Auth service

$serviceWsdlUrl = $url + '/FlexiCapture12/Server/AuthAPI/v1/WSDL';

$svc = New-WebServiceProxy -Uri $serviceWsdlUrl -UseDefaultCredential;

$ns = $svc.GetType().Namespace;

$svc.Url = $url + '/FlexiCapture12/Server/AuthAPI/v1/SOAP';




# Get TenantId from Application server

if (! [string]::IsNullOrEmpty($tenant)) {

    $tenantId = $svc.FindTenant( $tenant );

} else {

    $tenantId = $null;

}

$svc.DeleteIdentityProvider( $IdPID );

```

2. On the machine where ABBYY FlexiCapture Application Server is installed, open the Windows PowerShell console as an administrator
3. and specify the script name, the path to the script, and other required parameters.

Note: The script must be run by a user that has administrative permissions for ABBYY FlexiCapture.

Below is a sample command that runs the script:

C:\Temp\DeleteIdentityProvider.ps1 /url 'http://localhost' /IdPID 22

In this sample command:

- a. url is the path to the Application Server,
for example, \$url = 'http://localhost'.

- b. IdPID is the ID of the identity provider that needs to be deleted, for example, \$IdPID = 22.

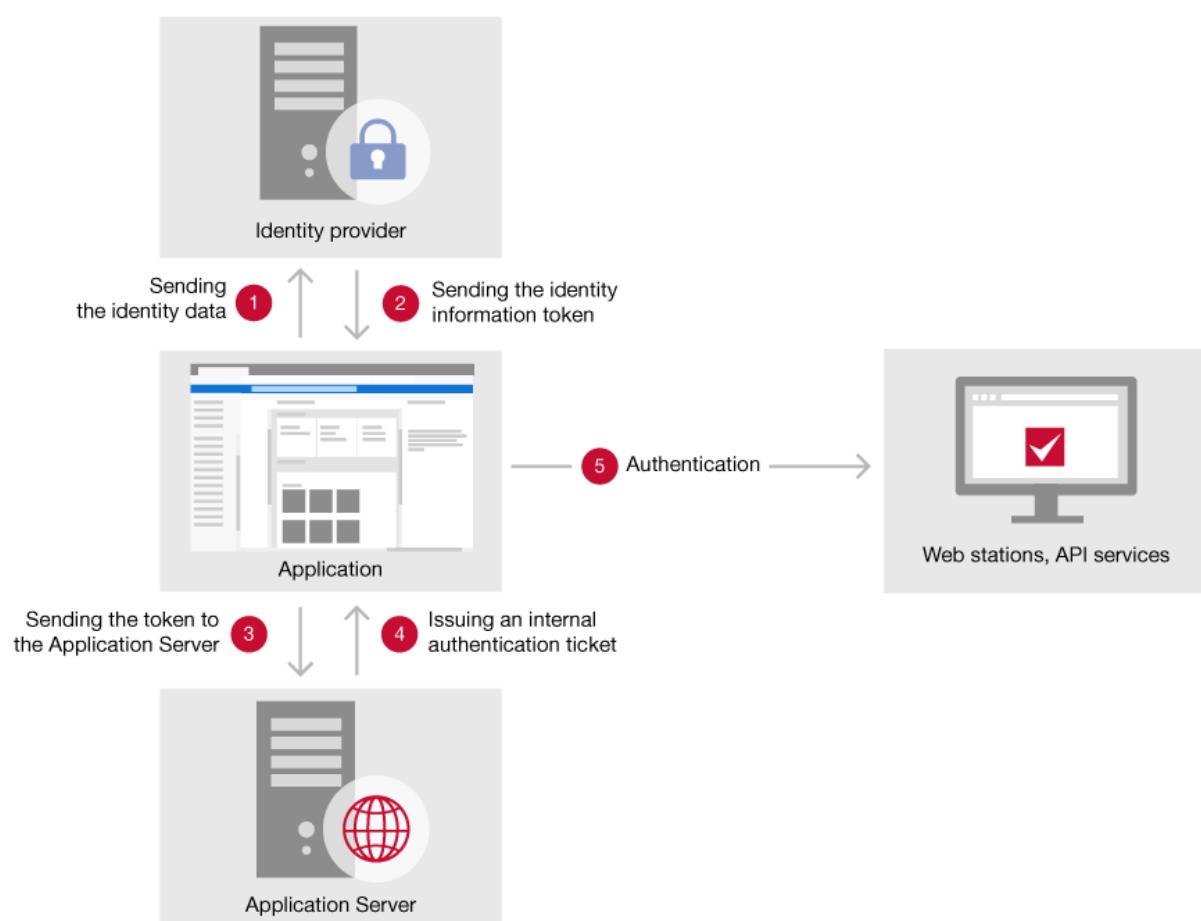
Implementing custom Single Sign-On authentication

In ABBYY FlexiCapture, you can implement your own custom Single Sign-On authentication (SSO). This may be necessary if you are using a non-standard [identity provider](#) or a non-standard work process.

Both [SAML 2.0](#) and [JSON Web Tokens \(JWT\)](#) standards are supported.

The authentication process will proceed as follows:

- The custom application will send the identity data to the identity provider.
- The identity provider will return a token containing the identity information.
- The application will pass the token to the Application Server.
- The Application Server will issue an internal [authentication ticket](#).
- The internal authentication ticket will then be used for authenticating the user on web stations and API services.



Authentication using SAML 2.0 identity providers in ABBYY FlexiCapture 12

Overview of the authentication process

SAML authentication lets ABBYY FlexiCapture 12 users avoid sending identity data (such as a user name and a password) to the Application Server component of FlexiCapture by authenticating on a third-party identity provider (e.g. Google or Facebook) and then passing data about successful authentication by a trusted third party to the Application Server.

The SAML authentication process on a user application consists of the following steps:

- Authenticate on the third-party identity provider
- Get the user's SAML authentication data from the third-party identity provider
- Send the SAML authentication data to the Application Server
- Receive an authenticated ticket from the Application Server

This ticket can then be used in requests to the Application Server.

 **Note:** The user account must exist in the FlexiCapture database and must have all of the required permissions.

Implementation

Getting SAML data

□ SAML data from the third-party identity provider is formatted as follows (this example is from OneLogin):

```

<?xml version="1.0" encoding="UTF-8" ?>

<samlp:Response xmlns:saml = "urn:oasis:names:tc:SAML:2.0:assertion"
      xmlns:samlp = "urn:oasis:names:tc:SAML:2.0:protocol" ID =
"R85bc5e644b6749bf20939c99cacf35945d74bf48" Version = "2.0"
      IssueInstant = "2016-09-15T09:56:20Z" Destination = "{recipient}" InResponseTo =
"_1ba6250c-3c4e-49e1-9bff-fc82bc266b34">

    <saml:Issuer>https://app.onelogin.com/saml/metadata/585198</saml:Issuer>
    <samlp:Status><samlp:StatusCode
Value="urn:oasis:names:tc:SAML:2.0:status:Success"/></samlp:Status>
    <saml:Assertion xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion"
          xmlns:xs="http://www.w3.org/2001/XMLSchema"
          xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" Version="2.0"
ID="pxf5b0edaf1-7296-f635-b387-a964c92e4d5f" IssueInstant="2016-09-15T09:56:20Z">
        <saml:Issuer>https://app.onelogin.com/saml/metadata/585198</saml:Issuer>
        <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
            <ds:SignedInfo>
                <ds:CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
                <ds:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
                <ds:Reference URI="#pxf5b0edaf1-7296-f635-b387-a964c92e4d5f">
                    <ds:Transforms>
                        <ds:Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature" />
                        <ds:Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#" />
                    </ds:Transforms>
                    <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
                    <ds:DigestValue>udRgHOqBktJRsEzF5xkmJMouwIk=</ds:DigestValue>
                </ds:Reference>
            </ds:SignedInfo>
        </ds:Signature>
    <ds:SignatureValue>LfHQBqg+S72CtSefOA8KMNxTUpOJcFCdemZ2B1CU/FR1n6pnLqZT6+m90729ciy7CNzT/w40G
CcuVDggcgDKFqDb47Wzc6vs7ejC8W90AdbJKXBK5jwYeYcJO4utN15k4e18Bv8zv96Bx/C8mBxcflSSP5C/tDAtbzvPB
syd25qADNTsKxwppZxAh4frdmSFQ4rYCOO1PnBFrS3zzguGXB9ZM0V9AAPYEJ5nU046NIVt3FTwZFoycZW2PxG+/o/JS
XWS6loPnQZkWkTwrluAcRh1dPl OSDvllGELD4Z7BN4wEVXOFBJtaU+ILLBgnncNwQvFIGLF5a6YhG0hGYLaPsA==</ds:SignatureValue>
    <ds:KeyInfo>
        <ds:X509Data>
<ds:X509Certificate>MIIEjdCCAvagAwIBAgIUQWL60N8pdoL8VJeC0v2eJV60L4AwDQYJKoZIhvcNAQEFBQAwVTEL
MAkGA1UEBhMCVVMxDjAMBgNVBAoMBUFQC1lZMRUwEwYDVQQLDAxPbmVMb2dpbiBJZFAXHzAdBgNVBAMMFk9uZUxvZ2lu
IEfjY291bnQgOTE1MTcwHhcNmTYwOTA4MDkyNzA3WhcNmjEwOTA5MDkyNzA3WjBVMQswCQYDVQQGEwJVUzEOMAwGA1UE
CgwFQUJCWVkxFTATBgnVBAsMDE9uZUxvZ2luIElkUDEFMB0GA1UEAwwWT251TG9naW4gQWNjb3VudCA5MTUxNzCCASIw
DQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBAK3vEVaTlbLjzwJPDPGCKC4TnCbnYMsxwInvKABFF4S21PYHG6M47zkO
1My1P89BUXySk8TdeHb1Sd3upSoqGaM3uGd+/kv7KW71QQQG9AtczWom8VfPxju9L9t1bSsMVYjXGROv40H1Q99dGsFr
aiSvKAKUj5ABY6WdVNaKAU50y7XzbnwCGm65ErLwH4hW+t0wJew/hOWSb9grtKkBWNJN3BUGBOVG9YJD5U40YGJJaeha

```

For details on how to get authentication data from a third-party identity provider, see the identity provider's documentation. For instance, OneLogin offers [ready-to-use toolkits](#) for enabling SAML authentication in several programming languages.

Sending SAML data to FlexiCapture 12 Application Server

Encode the SAML data in Base64 and send it to the Application Server by making a POST request to `http://<Application Server>/Flexicapture12/Server/Saml`. The name of the field containing the SAML data should be `SAMLResponse`.

```
public static async Task sendSamlToServer( string samlData )
{
    string serviceUrl = "http://<ApplicationServer>/Flexicapture12/Server/SAML";
    HttpWebRequest request = (HttpWebRequest)WebRequest.Create( serviceUrl );
    request.Method = "POST";

    var fields = new Dictionary<string, string>();
    fields.Add( "SAMLResponse",
    Convert.ToBase64String( Encoding.Default.GetBytes( samlData ) ) );
    HttpClient client = new HttpClient();
    FormUrlEncodedContent content = new FormUrlEncodedContent( fields );
    HttpResponseMessage response = await client.PostAsync( serviceUrl, content );
    if( response.StatusCode == HttpStatusCode.OK ) {
        processServerResponse( response.Content.ToString() );
    } else {
        processServerError( response.StatusCode, response.Content.ToString() );
    }
}
```

If you are using a tenant, add the tenant's identifier to the server URL, e.g.

`http://<ApplicationServer>/Flexicapture12/Server/Saml?Tenant=MyTenantName`

In order for authentication to work, a user with a login matching the identifier in the SAML data must be registered on the Application Server. The value of the `/samlp:Response/saml:Assertion/saml:Subject/saml:NameID` field will be used as the login.

□ The Application Server will return a response like the one below:

```
<authTicket>
<userName>maksim_p@abbyy.com</userName>
<ticket>82BD00C6601EB7F8EF4265450F934D4103C5CA2F010DE1C5FAB4CC830A82300C743D09E547727
9733F283D0B6E1C93ACC30FE353D4D9396649965432AAA7994078C3CC63567A95A35E03DA6FDE020F57</ticket>

</authTicket>
```

The value in the `<ticket>` tag is the authenticated FlexiCapture 12 ticket. You can use this ticket to make calls to all Application Server interfaces that require authentication. Requests to FlexiCapture web services must be made using FlexiCapture authentication (addresses starting with `http://<ApplicationServer>/flexicapture12/Server/FCAuth/` or `http://<ApplicationServer>/flexicapture12/Server/MobileApp/`).

Using the authenticated FC 12 ticket

You can pass the ticket to the server using a cookie file (the file must be named *FlexiCaptureTmpPrn*) or an **Authorization: Bearer** header. Example:

```
Authorization: Bearer
82BD00C6601EB7F8EF4265450F934D4103C5CA2F010DE1C5FAB4CC830A82300C743D09E5477279733F283D0B6E1C93A
CC30FE353D4D9396649965432AAA7994078C3CC63567A95A35E03DA6FDE020F57
```

We recommend using the header. Cookies are supported for compatibility with older solutions.

If authentication succeeds, the server's response will contain an updated ticket value both in a cookie file with the same login (*FlexiCaptureTmpPrn*) and in the **AuthTicket** header. The next request must be made using the updated ticket (tickets will expire after a certain amount of time).

Setting up a trusted certificate on the Application Server

The Application Server will check the data received from the identity provider. In order for the Application Server to trust this data, it should be signed with a custom certificate issued by an authority from the Application Server database of trusted authorities.

Import the certificate to the ABBYY FlexiCapture database. Now data will be checked using this certificate. For more information, see [Setting up Single Sign-On](#).

If the check fails, the Application Server will refer to the **AllowMixedModeCertificateValidation** parameter in the `<appSettings>` settings in the Web.config file. If this parameter is set to true, the check will be carried out using the certificate added into the **Trusted Root Certification Authorities** folder in the Local Computer certificate store on the computer that is running the Application Server.

If no certificates are added to the database, the check will be carried out using the certificate located in the **Trusted Root Certification Authorities** folder, and the **AllowMixedModeCertificateValidation** parameter will be ignored.

Download the project and the accompanying materials: <http://help.abby.com>

Authentication using JSON Web Tokens

Overview of the authentication process

JSON Web Token (JWT) is a data transfer format that is used to transfer data securely between the ABBYY FlexiCapture 12 Application Server and third-party services. When authenticating through JWT, no identification data is sent to the Application Server. Authentication is carried out on a third-party service, following which the Application Server is informed that the user has been authenticated by a trusted service.

Implementation

Getting JSON data

JSON data sample:

```
{"alg":"RS256","kid":"-JLCtyyTyF69AZrtjpk-xGs-nUE","x5t":"-JLCtyyTyF69AZrtjpk-xGs-nUE","typ":"JWT"}.  
{"nameid":"user","nbf":1572267172,"exp":1572267772,"iss":"ABBYY","aud":"test JWT app"}
```

JSON data containing user certificates is encrypted in Base64 in order to create a JSON web token (JWT).

The following sample request creates a JWT token:

```
using System.IdentityModel.Tokens.Jwt;
using System.Security.Cryptography.X509Certificates;
...
static string createEncryptedJwtToken(
    X509Certificate2 encryptCert,
    string issuer,
    string audience,
    string nameid,
    TimeSpan expirationTimespan )
{
    X509Signing Credentials signingCredentials = new X509Signing
    Credentials( encryptCert );

    JwtHeader jwtHeader = new JwtHeader( signingCredentials );

    var claims = new Claim[]
    {
        new Claim( "nameid", nameid )
    };

    var now = DateTime.UtcNow;

    JwtSecurityToken newToken = new JwtSecurityToken(
        issuer,
        audience,
        claims,
        now,
        now.Add( expirationTimespan ),
        signingCredentials
    );
    var token = new JwtSecurityTokenHandler().WriteToken(newToken);
    return token;
}
```

Sending a JWT to the Application Server

A JWT needs to be sent to the Application Server using the following URL:

http://<ApplicationServer>/Flexicapture12/Server/jwt. This is done using a POST request.

Note: If you are using a tenant, add the tenant's identifier to the Application Server URL:
<http://<ApplicationServer>/Flexicapture12/Server/jwt?Tenant=MyTenantName>

```
static async Task<string> AuthenticateByJwtAsync( string jwtToken )
{
    var fields = new Dictionary<string, string>
    {
        { "JwtToken", jwtToken }
    };
    FormUrlEncodedContent content = new FormUrlEncodedContent( fields );

    using ( var client = new HttpClient() )
    {
        HttpResponseMessage response = await client.PostAsync( jwtServiceUrl, content );
    };

    if ( response.StatusCode == HttpStatusCode.OK )
    {
        return response.Headers.GetValues( "AuthTicket" )?.First() ?? throw new
Exception( "AuthTicket header not found" );
    }
    else
    {
        throw new Exception( await response.Content.ReadAsStringAsync() );
    }
}
```

In order for authentication to work, a user with a login matching the identifier in the JWT (enclosed in the nameid node value) must be registered on the Application Server

The Application Server will return a response like the one below:

```
<?xml version="1.0" encoding="utf-8" ?>
<authTicket>
    <userName>user</userName>
    <ticket>79BB391216E9BBA3DA13E5F29669FF1EB48C387C8FDE41D473AA5698A2E16A8B6E91470F05F3C2FBF68563
0FD7683DC2FA42A900A007CFAD1AD310FEE1ADADFC</ticket>
</authTicket>
```

The value in the *ticket* field is the authenticated ABBYY FlexiCapture 12 ticket. You can use this ticket to make calls to all Application Server interfaces that require authentication. Services should be accessed using ABBYY FlexiCapture authentication, i.e. addresses starting with <http://<ApplicationServer>/flexicapture12/Server/FCAuth/> or <http://<ApplicationServer>/flexicapture12/Server/MobileApp/>.

Using an authenticated ABBYY FlexiCapture 12 ticket

You can pass an authenticated ABBYY FlexiCapture 12 ticket to the server using a cookie file (the file must be named **FlexiCaptureTmpPrn**) or an **Authorization: Bearer** header.

Example:

```
Authorization: Bearer
82BD00C6601EB7F8EF4265450F934D4103C5CA2F010DE1C5FAB4CC830A82300C743D09E5477279733F283D0B6E1C93
ACC30FE353D4D9396649965432AAA7994078C3CC63567A95A35E03DA6FDE020F57
```

We recommend using an **Authorization: Bearer** header (cookies are only supported for downward compatibility).

Setting up a trusted certificate on the Application Server

The Application Server will check the data received from the identity provider. In order for the Application Server to trust this data, it should be signed with a custom certificate issued by an authority from the Application Server database of trusted authorities.

Import the certificate to the ABBYY FlexiCapture database. Now data will be checked using this certificate. For more information, see [Setting up Single Sign-On](#).

If the check fails, the Application Server will refer to the **AllowMixedModeCertificateValidation** parameter in the **<appSettings>** settings in the Web.config file. If this parameter is set to true, the check will be carried out using the certificate added into the **Trusted Root Certification Authorities** folder in the Local Computer certificate store on the computer that is running the Application Server.

If no certificates are added to the database, the check will be carried out using the certificate located in the **Trusted Root Certification Authorities** folder, and the **AllowMixedModeCertificateValidation** parameter will be ignored.

To download the project and accompanying materials, use this link: <http://help.abbyy.com>

Creating a database

First, you need to create a database.

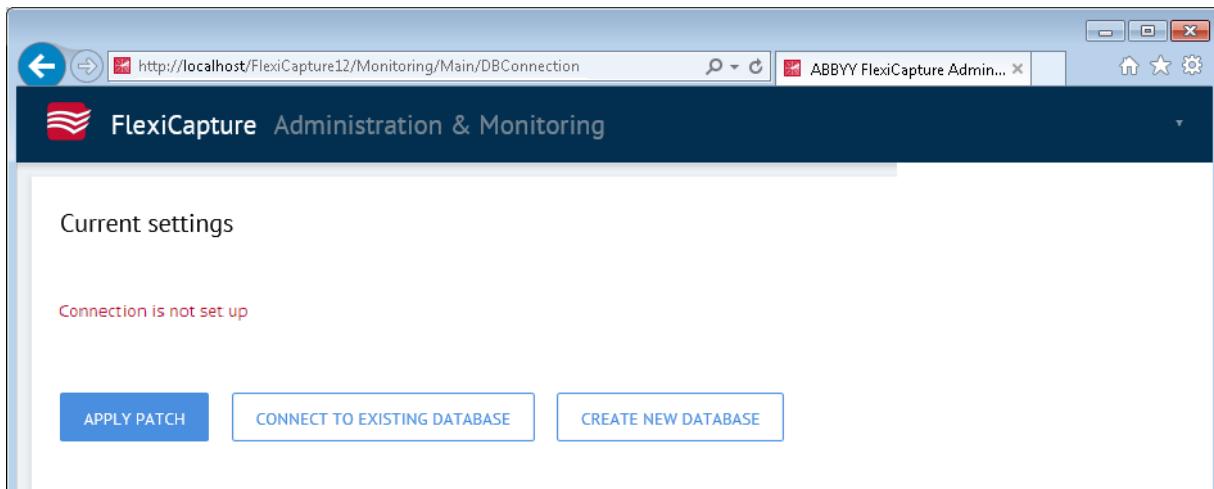
Note: Depending on your setup, you may need to create a new database or [connect to an existing database](#).

To create a new database:

1. On the computer where the Application Server is installed, install [Microsoft SQL Server Native Client](#) 2012 or later or [Oracle Data Access Components \(ODAC\)](#) of the same bitness with the Application Server. If you attempt to create a database without Microsoft SQL Server Native Client, you will see this error message: "Provider cannot be found. It may not be properly installed."

Note: You don't need to install Microsoft SQL Server Native Client if you have Microsoft SQL Server 2012 or later or Microsoft SQL Management Studio 2012 or later installed.

2. On the computer where the Application Server is installed, open the Administration and Monitoring Console and click **Service** → **Application Server** to open the page <http://<ApplicationServer>/FlexiCapture12/Monitoring/#Settings/DbConn> (where <ApplicationServer> is the name of the computer on which the Application Server is installed) under the Windows administrator account:



3. Click the **Create New Database** button.

Note

If you are already connected to another database, you will need to close the existing sessions prior to creating a new database. If, for some reason, this is not possible or necessary, add the following key into the web.config file that is located at <IIS Root Directory (the default location is "C:\inetpub\wwwroot">|<FlexiCapture12\Monitoring>:

```
<appSettings>
<add key="IgnoreCurrentSessions" value="true"/>
</appSettings>
```

In this case, a new database will be created without a warning about existing sessions. In the old database, all sessions are preserved. By default, the key is set to *False* and you will be prompted to close the sessions when creating a new database.

4. The database creation page will open:

Database creation page (ORACLE):

The screenshot shows the 'Create new database' dialog box. On the left, a sidebar lists 'Tenants', 'Projects', 'Users', 'Groups', and 'Requests'. Below this, under 'Application Server', are 'SMTP settings', 'Email notifications', 'Event logging mode', and 'Cleanup'. The main dialog has a title 'Create new database' and a radio button group for 'MS SQL', 'Oracle' (which is selected), and 'Azure'. A field 'Server instance name (Oracle)' is empty. The 'Server access authentication' section contains fields for 'Authentication settings' (set to 'Windows Authentication'), 'User name', 'Password', and a checked checkbox 'Use external file storage' with a 'Path' field. At the bottom are 'OK', 'CANCEL', and 'TEST CONNECTION' buttons.

Database creation page (MS SQL):

The screenshot shows the ABBYY FlexiCapture 12 Application Server Settings page. On the left sidebar, under the 'Application Server' section, the 'SMTP settings' option is selected. In the main content area, a 'Create new database' dialog is open. The 'MS SQL' radio button is selected. The 'Server instance name (MS SQL)' field is empty. The 'Database name:' field is also empty. Below these fields, the 'Server access authentication' section is visible, showing 'Windows Authentication' selected in the dropdown. There are also fields for 'User name:' and 'Password:', both of which are empty. A checked checkbox labeled 'Use external file storage' has a 'Path:' field next to it, which is also empty. At the bottom of the dialog are three buttons: 'OK', 'CANCEL', and 'TEST CONNECTION'.

□ Database creation page (Azure):

This screenshot shows the same 'Create new database' dialog as the previous one, but with different configuration options. The 'Azure' radio button is selected. The 'Server instance name (Azure)' field is empty. The 'Database name:' field is also empty. The 'Server access authentication' section shows 'Database Server Authentication' selected in the dropdown. The 'User name:' and 'Password:' fields are empty. The 'Use external file storage' checkbox is checked, and its 'Path:' field is empty. The dialog includes the same 'OK', 'CANCEL', and 'TEST CONNECTION' buttons at the bottom.

On this page, specify the following:

- The name of the Server instance in the format <server name>\<instance name>
- The name of the new database for Microsoft SQL Server and Azure. Note the limitations imposed by Microsoft SQL Server on database names (see [this Microsoft website](#) for details)
- A user account that has necessary permissions for Microsoft SQL Server, Azure or Oracle

 **Note**

1. A user who connects to the Oracle database must have the "DBA" WITH ADMIN OPTION role and the EXECUTE on "SYS"."DBMS_LOCK" privilege. Bear in mind Oracle restrictions regarding user names (please refer to the [Oracle website](#)).
2. We recommend choosing the TCP/IP protocol rather than Named Pipes to communicate with the database server (the protocol is specified when you configure the Microsoft SQL Server client, which is installed on the computer hosting the Application Server).

- Select the **Use external file storage** option and specify the path to the file storage. For details, see the Setting up a file storage section. The file storage stores binary data, such as images to be processed, project settings, captured data, etc. The speed of communication between the Application Server and the file storage greatly affects the overall performance of ABBYY FlexiCapture. For this reason, we recommend placing the file storage on the same disk as the Application Server.

 **Note**

To achieve maximum performance in enterprise environments, we recommend using a fail-safe disk, RAID configuration, or high-performance external storage solutions. When using a high-performance disk, be sure to place the file storage on the same physical disk where you keep the IIS temporary folders.

 **Important!** A file storage can only be created when creating a database and cannot be created later while processing documents with ABBYY FlexiCapture. You also won't be able to disconnect the file storage you connected when creating the database.

 **Note**

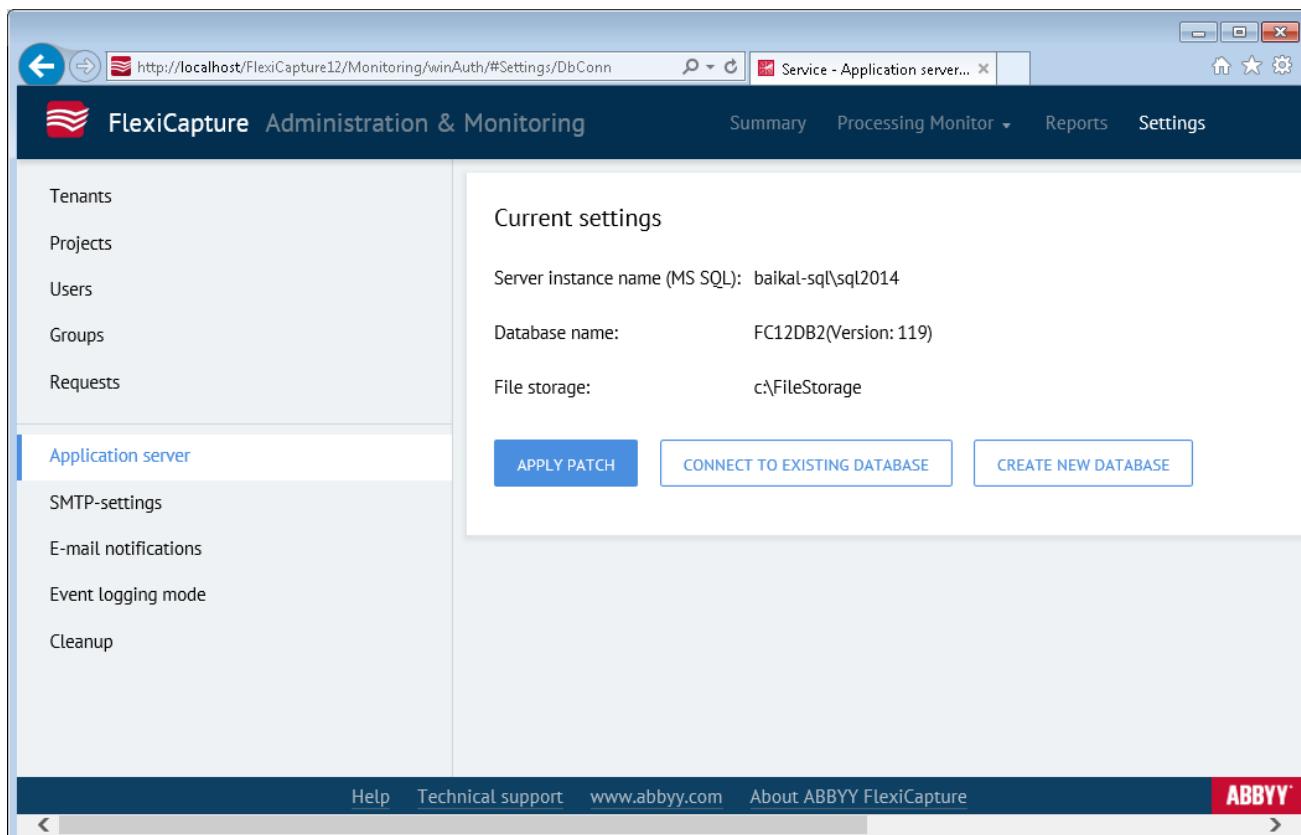
If no file storage is used, all project files are stored in the database. Note, however, that this approach is only feasible for small projects with low processing volumes. While storing project files in the database makes it easier to back up and recover your data, the size of the database may become unacceptably large, causing performance degradation.

You must add the file storage to the exceptions of your anti-virus software and the Windows search indexing service.

- Use the **Test Connection** button to check the entered values. If the test is successful, click **OK**.

 **Note**

If you encounter authentication problems when testing the connection, check to make sure that **Mixed Authentication Mode** is enabled for Microsoft SQL Server ("SQL Server and Windows authentication").



When creating a Microsoft SQL Server database, the following operations will be performed:

1. A FlexiCapture12 database will be created. If server authentication is used, the database will be created using the account specified on the page that opens when you click **Settings → Application Server → Connect to Existing Database/Create New Database** in the Administration and Monitoring Console. If Windows authentication is used, the database will be created using the account under which the browser displaying the Application Server is running.

This account will be used to run the Description.sql script followed by the DBInitFill.sql script. These scripts are located in the following folder on the computer where the Application Server is installed: <IIS Root Directory (the default directory is "C:\inetpub\wwwroot")>\FlexiCapture12\Server. The first script will create the database and the second script will populate it with data. The files named "Upgrade*.sql," which are also located in this folder, are not used for database creation.

2. A new account will be added on the Database Server. This will be the account under which the FlexiCapture 12 Web Services application pool is running on the Application Server (the Network Service user account will be used default).
3. The account created in step 2 will be given db_owner permissions for the FlexiCapture12 database created in step 1. For any further interaction between the Application Server and the database, the user account created in step 2 will be used. You can delete the account created in step 1 if it is no longer needed.

- Permissions required for creating and configuring a Microsoft SQL database

When creating a new database:

- CREATE ANY DATABASE (required to create a new database)
- SECURITYADMIN (required to create a new user under whose account the Application Server is running)

When connecting to an existing database:

- EXECUTE ON SCHEMA::dbo
- SELECT ON SCHEMA::dbo

When installing patches, connecting to, and using the database:

- DB_DATAREADER
- DB_DATAWRITER (DBInitFill)
- DB_DDLADMIN
- ALTER ON DATABASE::<DB_NAME> (required for specifying the recovery model and enabling Snapshot isolation)
- EXECUTE ON SCHEMA::dbo
- GRANT EXECUTE ON SCHEMA::dbo
- DB_BACKUPOPERATOR (required for creating backups and restoring the database)
- DB_ACCESSIONADMIN (required for adding users to the database)
- DB_SECURITYADMIN (required for managing database permissions)

Privileges required for working with an Oracle database

Oracle database users will need the following privileges to be able to work with the database and install patches:

- CONNECT
- CREATE SESSION
- CREATE TABLE
- CREATE VIEW
- CREATE SEQUENCE
- CREATE PROCEDURE
- CREATE TYPE
- CREATE TRIGGER
- EXECUTE ON SYS.DBMS_LOCK

5. Once the database is created, the user name and the temporary *password* password will be displayed.

Important! The user will need to change the temporary password on the login page (<http://<ApplicationServer>/FlexiCapture12/Login> where <ApplicationServer> is the name of the computer on which the Application Server is installed). Once the temporary password is changed, the user will be redirected to the Administration and Monitoring Console.

6. The user that creates the database automatically gets administrative privileges. The Administrator also has the permissions to change the settings of the Application Server, upload projects, grant

access permissions for projects, create new users, and manage their roles and access permissions. The Administrator can grant the Administrator role to another user and delegate further configuration of the system to that user. The user that creates the database cannot be deprived of the Administrator role.

Creating a database manually

To create a database manually:

1. Create a blank database.
2. For an SQL database, run the *Description.sql* script.
For an Oracle database, run the *Description_Oracle.sql* script.

Note: By default, the scripts are placed into the C:\inetpub\wwwroot\FlexiCapture12\Server folder on the computer where the Application Server is installed.

3. For an SQL database, run the *DBInitFill.sql* script.
For an Oracle database, run the *DBInitFill_Oracle.sql* script,

Note: By default, the scripts are placed into the C:\inetpub\wwwroot\FlexiCapture12\Server folder on the computer where the Application Server is installed.

4. Provide a unique identifier for the database:

```
INSERT INTO dbo.Settings( Name, Value, ProjectId, BatchTypeId, UserId, Workstation, RoleId, ProcessingStage) VALUES ('DatabaseGUID', NEWID(), NULL, NULL, NULL, NULL, NULL, NULL )
```

5. Add the first user:

```
INSERT INTO principal (Name, FullName, EMail, PasswordHash, PasswordReset) values (N'Login', N'FullName', N'email', "", 0)
```

where

- Login is the login that the user will use,

Important! You must specify the login of the Windows user that will be used to open the Administration and Monitoring Console when connecting to the database.

- FullName is the full name of the user as displayed in their profile, and
- Email is the user's e-mail address.

6. Specify the system administrator roles for the newly created user:

```
INSERT INTO principalpermission (PrincipalId, RoleType, IsAllowed) values (1, 10, 1).
```

7. Connect to the newly created database using the Administration and Monitoring Console.

SQL database users

For details about user permissions, see [Permissions required for creating and configuring a Microsoft SQL database](#).

Using a Microsoft Azure file share

This section provides instructions for connecting the ABBYY FlexiCapture Application Server to a file share in Microsoft Azure.

Note: It is assumed that a storage account has already been created in Microsoft Azure Files and is available for use by ABBYY FlexiCapture.

1. On the Azure portal, go to your storage account (**abbyystorage** in this example) and click **Files** in the storage account pane.

The screenshot shows the 'Services' section of the Azure Storage Account pane. It includes four options: 'Blobs' (REST-based object storage for unstructured data), 'Tables' (Tabular data storage), 'Files' (File shares that use the standard SMB 3.0 protocol, which is highlighted with a red box), and 'Queues' (Effectively scale apps according to traffic). Each option has a 'Learn more' link below it.

2. Create a new file share in your storage account by specifying its name (**fcstorage** in this example) and a space quota as required.

The screenshot shows the 'File share' creation dialog on the right side of the Azure Storage Account pane. It includes fields for 'Name' (set to 'fcstorage') and 'Quota' (set to 1000 GiB), along with 'Create' and 'Discard' buttons. On the left, the 'Storage account' sidebar shows 'abbyystorage - Files' selected, and the main area shows a list of file shares with a note: 'You don't have any file shares yet. Click '+ File share' to get started.'

3. Open the created file share and click **Connect**.

The screenshot shows the 'fcstorage' file share details page. It includes a 'Connect' button (highlighted with a red box), 'Upload', 'Add directory', 'Refresh', 'Delete share', 'Quota', 'View snapshots', and 'Create Snapshot' buttons. The 'Overview' tab is selected in the sidebar. The main area shows a table with columns 'NAME', 'TYPE', and 'SIZE', and a message: 'No files found.'

4. Copy the cmdkey command to the Clipboard.

The screenshot shows the Azure Storage Explorer interface for the 'fcstorage' file share. The left sidebar includes 'Overview', 'Access Control (IAM)', 'Settings', 'Access policy', and 'Properties'. The main area displays a search bar and a message indicating 'No files found.' At the top right, there is a 'Connect' button. To the right of the connect button, there is a 'Connect' section for 'Windows', 'Linux', and 'MacOS'. The 'Windows' section contains a 'Drive letter' dropdown set to 'Z', a note about secure transfer requirements, and a PowerShell command to connect:

```
Test-NetConnection -ComputerName abbyystorage.file.core.windows.net -Port 445
# Save the password so the drive will persist on reboot
Invoke-Expression -Command "cmdkey /add:abbyystorage.file.core.windows.net
 addUser:Azure\abbyystorage
 /pass:sJjmbu+HbiPI3kWd4ZKNflgNfSDNJWRlc00bk4rNC5ZsBoqtU0dxFG9Vp699F/Iej9cLbMovA/akZVMZNHD5A=="
 ==
```

Below this, another PowerShell command is shown in a red box:

```
cmdkey /add:abbyystorage.file.core.windows.net
 /user:Azure\abbyystorage
 /pass:sJjmbu+HbiPI3kWd4ZKNflgNfSDNJWRlc00bk4rNC5ZsBoqtU0dxFG9Vp699F/Iej9cLbMovA/akZVMZNHD5A==
```

A note below the command states: 'When connecting from a computer from outside Azure, remember to open outbound TCP port 445 in your local network. Some Internet service providers may block port 445. Check with your service provider for details.'

5. Log on to the virtual machine with the FlexiCapture Application Server as a system user with permissions to access the FlexiCapture services (**fcuser** in this example), open the command line prompt, and paste and execute the *cmdkey* command from the Clipboard. This will add the file share credentials to the Windows Credential Manager.

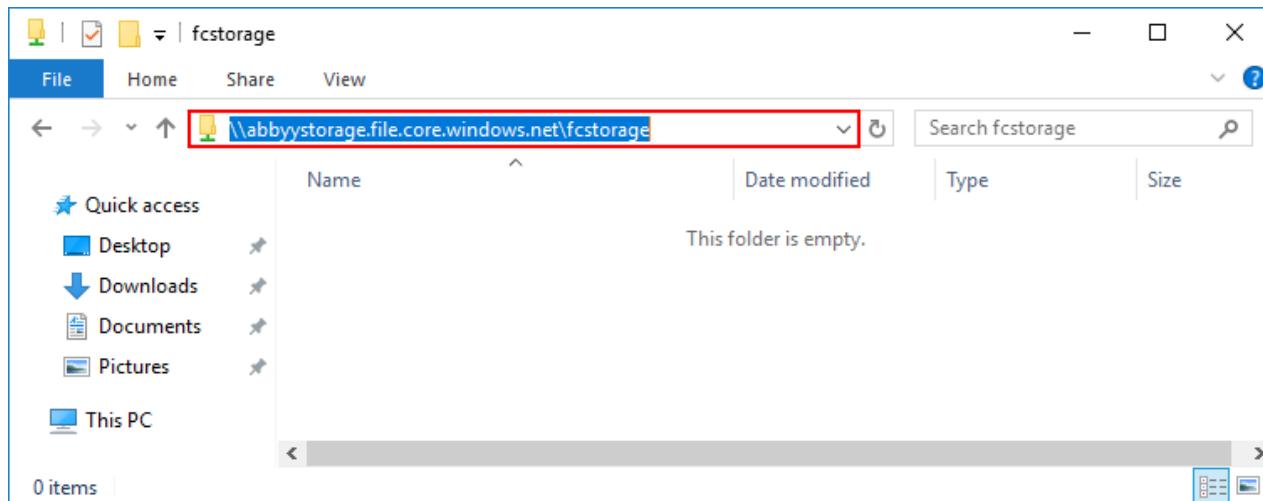
The screenshot shows a Windows Command Prompt window titled 'C:\Windows\System32\cmd.exe'. The window displays the following command and its output:

```
C:\Windows\system32>cmdkey /add:abbyystorage.file.core.windows.net /user:Azure\abbyystorage /pass:sJjmbu+HbiPI3kWd4ZKNflgNfSDNJWRlc00bk4rNC5ZsBoqtU0dxFG9Vp699F/Iej9cLbMovA/akZVMZNHD5A==

CMDKEY: Credential added successfully.

C:\Windows\system32>
```

6. Open Windows Explorer and make sure that the user can access the file share.



7. Open the Internet Information Services (IIS) Manager, select the FlexiCapture application pool, and click **Advanced Settings**.

A screenshot of the IIS Manager 'Application Pools' page. The left pane lists application pools: .NET v4.5, .NET v4.5 Classic, DefaultAppPool, FlexiCapture 12 Monitoring, FlexiCapture 12 Web Services, and FlexiCapture 12 Web Stations. The 'FlexiCapture 12 Web Services' pool is selected. The right pane has an 'Actions' sidebar with options like 'Add Application Pool...', 'Set Application Pool Defaults...', 'Start', 'Stop', 'Recycle...', 'Edit Application Pool', 'Basic Settings...', 'Recycling...', 'Advanced Settings...', and 'Rename'. The 'Advanced Settings...' link is highlighted with a red box.

8. Change the pool identity to the FlexiCapture user account with the required permissions, set **Load User Profile** to **True**, confirm the changes by clicking **OK**, and recycle the application pool.

A screenshot of the 'Advanced Settings' dialog for the 'FlexiCapture 12 Web Services' application pool. The 'Identity' field is set to '\fcuser'. The 'Load User Profile' checkbox is checked ('True'). Other settings include 'Limit Action' (NoAction), 'Processor Affinity Enabled' (False), 'Processor Affinity Mask' (4294967295), 'Processor Affinity Mask (64-bit)' (4294967295), 'Idle Time-out (minutes)' (20), 'Idle Time-out Action' (Terminate), 'Maximum Worker Processes' (3), 'Ping Enabled' (True), 'Ping Maximum Response Time' (90), 'Ping Period (seconds)' (30), 'Shutdown Time Limit (seconds)' (90), and 'Startup Time Limit (seconds)' (90). The 'Process Model' section is expanded, showing 'Generate Process Model Event L'. The 'Process Orphaning' section is collapsed. The right pane of the IIS Manager shows the same 'Actions' sidebar as the previous screenshot, with the 'Recycle...' link highlighted with a red box.

- In the Administration and Monitoring Console, select the **Use external file storage** option and specify the path to the file share in Microsoft Azure.

Create new database

- MS SQL
- Oracle
- Azure

Server instance name (Azure):

Database name:

Server access authentication

Authentication settings

Database Server Authentication

User name:

Password:

Use external file storage

Path:

\abbystorage.file.core.windows.net\abbyys 

OK

CANCEL

TEST CONNECTION

Connecting to an existing database

Instead of [creating a new database](#), the administrator may need to connect to an existing database (e.g. if the connection settings have been changed).

 **Note:** For databases created in earlier versions of ABBYY FlexiCapture, see [Upgrading databases and projects created in an earlier version of the program](#).

To connect to an existing database, do the following:

- On the computer where the Application Server is installed, open the Administration and Monitoring Console and click **Settings** → **Application Server** to open the page <http://<ApplicationServer>/FlexiCapture12/Monitoring/#Settings/DbConn> (where <ApplicationServer> is the name of the computer on which the Application Server is installed) under the Windows administrator account.
If the Application Server is already connected to a database, start at step 4.
- Click **Connect to Existing Database**.

3. In the form that opens, complete the following fields: the name of the Microsoft SQL Server, Oracle or Azure instance, the name of the existing database (for Oracle and Azure), the user that administers the database server, the path to the file storage (if any).
4. Use the **Test Connection** button to check the entered values. If the test is successful, click **OK**.
5. Now your server is connected to the database. If an **Upgrade** link is displayed on the **Settings → Application Server** page next to the database version, then you should upgrade the database before you proceed.
6. If ABBYY FlexiCapture authentication has never been used for this database, to the user under whose account the Administration and Monitoring Console is running will be issued the temporary password *password*.

Setting up the Processing Server

To set up the Processing Server, complete the following steps:

1. Assign the Processing Server role to the user under whose account the Processing Server is running.
By default, the Processing Server is installed on the same computer as the Application Server and is started under the Network Service user account. In this case, the role is assigned to the Processing Server automatically and this step can be skipped.
If the Processing Server role is not assigned automatically, grant the necessary permissions to the Processing Server on the **Settings → Users** page of the Administration and Monitoring Console.
If the Processing Server is installed on a computer other than the computer with Application Server and is running under the Network Service user account, the user will be displayed as <Domain>\<Machine Name>\$ in the Administration and Monitoring Console. If the Processing Server service is running under a different user, it assign Processing Server the role to that user.
2. Start the Processing Server Monitor (click **Start → All Programs → ABBYY FlexiCapture 12 Servers → Processing Server**).
3. In the Processing Server Monitor, click **Actions → Properties** and in the dialog box that opens, specify the address of the Application Server (e.g. <http://ApplicationServer>). If the Processing Server and the Application Server are installed on the same computer, the address of the Application Server will be specified automatically.
4. Click  to start the Processing Server.
5. Add Processing Stations. To do this, select **Stations** in the tree and click . In the dialog box that opens, select desired stations based on the names of their computers or click **Browse...** to find stations on the network. After adding a station, you specify its parameters in the **Station Properties** dialog box (click **Actions → Properties**). The station will be started automatically (this will take about a minute). If the station requires lengthy setup or you do not want to start the station, clear the **Start automatically** option in the station properties.
To start desired stations manually, select them in the Processing Server Monitor main window and click .

 **Note:** We do not recommended installing the Processing Station on the computer where the FlexiCapture servers are installed as it will degrade server performance.

6. If required, specify processing settings for your project on the Project Setup Station (the settings you specify will apply to batches of the Default type). To specify processing settings, click **Project** → **Project Properties...** and then click the **Workflow** tab. If your project contains various batch types, specify workflow settings for each. To do this, click **Project** → **Batch Types...**, then select a batch type, click **Edit...** and in the dialog box that opens click the **Workflow** tab.

Description of Processing Server commands

A command line interface may be used for managing the Processing Server. The command line interface can be used to perform the following operations on the Processing Server:

- initializing and stopping the server;
- adding, setting up, and removing stations;
- updating data sets;
- managing hot folders;
- managing the diagnostics mode.

Processing server commands should be entered as follows: '**FlexiBrSvc Please [command]**'. In order to not have to enter the phrase '**FlexiBrSvc Please**' every time, you can enable command mode by using **FlexiBrSvc Please obey**. To disable command mode, use **FlexiBrSvc Please quit**.

For help regarding one or several of the above commands, use **help [command]**.

Below is a description of all commands authorized to be used in the Processing Server.

Managing the server

- **set <param>=<value>** – assigns the <value> value to the <param> parameter. Use the 'view' command to display a list of available parameters. Use the 'set <param>=?' command to display a list of all allowed values for a parameter.
- **start server** – initializes the Processing Server.
- **stop server [timeout]** – stops the Processing Server.

Use the **[timeout]** parameter to set a time period during which the server should finish carrying out initialized tasks. If this parameter has not been set, the server will stop instantly.

Managing stations

- **add station <location>** – adds a new station to <location>.
- **list stations** – displays information about existing stations.
- **remove station <station>|*** – removes a <station>. Use '*' to remove all stations.

Note: Carrying out this command requires that the station's name as well as its location or UUID are specified.

- **set station <station> <param>=<value>** – assigns the <value> value to the <param> station parameter. Use the 'view' command to display a list of all available parameters. Use the 'set station

<station> <param>=? command to display a list of all possible parameter values. Use '*' instead of the station name to assign the specified parameter value to all stations.

- **start station <>|*> [/Async]** – attempts to initialize the <station> station. Use '*' to attempt to initialize all stations.

Note: Carrying out this command requires that the station's name as well as its location or UUID are specified.

Use the **[/Async]** parameter so that other commands are not blocked if station <station> has not been initialized.

- **stop station <>|*> [timeout]** – stops the <station> station. Use '*' to stop all stations.

Note: Carrying out this command requires that the station's name as well as its location or UUID are specified.

Use the **[timeout]** parameter to set a time period during which the server should finish carrying out initialized tasks.

- **view <station>|*** – displays detailed information about station <station>. Use '*' to display information about all stations. If no station has been specified, this command will display information about the server.

Managing projects

- **update dataset <project> [document definition] [data set]** – updates a data set. Use <project> to specify the full path to the project, for example: http://app-server/f24d.../Banking_eng. If either the document definition name or the data set name are not specified, all document definitions and data sets will be updated.

Managing hot folders

- **list hotfolders <project>** – displays detailed information about all enabled hot folders.
- **set hotfolder <project> Enabled/Disabled** – enables or disables hot folder processing for project <project>. Use the 'view' command to display a list of available projects.

Process diagnostics

The profiling system is designed for low-level monitoring of Server and Processing Station internal conditions. If profiling is enabled, the Processing Server will begin to collect statistics about its own and the stations' internal processes. By default, this function is disabled.

The Processing Server will save the collected data to the following folder in the file system: %ProgramData%\ABBYY\FlexiCapture\12.0\FlexiBr[Svc]\Profiling. The frequency with which the collected data is saved to disk is set by the following registry key:
ProfilingManagerSaveWindowProfilingReportPeriod in
HKEY_LOCAL_MACHINE\SOFTWARE\[Wow6432Node]\ABBYY\FlexiCapture\12.0\FlexiBr (in milliseconds; the default value is 3600000).

- **reset total profiling report** – resets the full profiling report. After this command has been used to clear the profiling report, the report will only cover the time period after the command has been called.

- **save total profiling report <path>** – saves the full profiling report to the specified folder.
- **save window profiling report <path>** – saves the full profiling report for the specified period to the specified folder.
- **set profiling disabled** – disables profiling.
- **set profiling enabled** – enables profiling.

Creating and opening projects

For ABBYY FlexiCapture Operators to be able to work on the same project(s) together, the project(s) must be uploaded to the Application Server. To upload a project to the server, the user must have the role of Administrator.

To upload a project to the server, open the Project Setup Station and do one of the following:

- Create a new project (click **File → New project...**). Create or import at least one Document Definition (click **Project → Document Definitions**).
- Open a sample project from %Public%\ABBYY\FlexiCapture\12.0\Samples.
- Open a project created in an [earlier version of ABBYY FlexiCapture](#).
- Create a new project. Make sure that your project has at least one correct and added Document Definition for which export settings have been specified.

Next, upload your project to the Application Server (click **File → Upload Project to Server...** and in the dialog box that opens, specify the URL server in the format http://<ApplicationServer> (where <ApplicationServer> is the name of the computer on which the Application Server is installed) and authentication method).

 **Note:** When uploading a local project to the Application Server, a new project that is identical to the local one is created on the server. The newly created project contains the same Document Definitions, batch types, import sources, and project settings. The working batches with the images are copied to the server. Test batches (they are created for each user) are accessible both from the local and from the server project.

Using timeouts to prevent processing delays

Sometimes, delays may occur when processing document batches. Possible situations include:

- An operator opened a task a long time ago but has not yet started working on it.
- An operator has too many tasks assigned to him/her.
- An operator postponed a task a long time ago and has not yet resumed work on the task.
- A station closed unexpectedly or malfunctioned, causing the task to hang.

All this may delay the processing of the entire batch or result in a failure to meet the processing targets specified in your SLA.

To prevent such delays in processing, you can specify timeouts for inactive sessions. When a session times out, it will be closed and its tasks will be returned to the general queue.

You can specify timeouts for:

- [inactive sessions on local or remote stations](#) and on [web stations](#)
- [postponed tasks](#), [postponed rescanning tasks](#) and [tasks assigned to specific operators](#)

Specifying timeouts for inactive sessions

An operator may open a task and then remain inactive for a considerable period of time. After some time of inactivity, the working session of this operator will become inactive. Inactive sessions with open tasks may result in a failure to meet the processing targets specified in your SLA, or delay the processing of entire batches.

To prevent this from happening, you can specify a timeout period after which an inactive session will be automatically closed.

All open sessions, both active and inactive, are displayed in the Administration and Monitoring Console in **System Monitor → Sessions**.

You can specify a timeout on the following stations:

- (local or remote) Verification Station
- (local or remote) Data Verification Station
- (local) Project Setup Station
- Web Verification Station
- Web Capture Station

Specifying timeouts for inactive sessions on local and remote stations

A session becomes inactive if the operator has not performed any actions within a certain period of time. The Processing Server will poll the Application Server every 60 minutes and delete any sessions that have timed out. If a timed out session contains an open task, this task will be returned into the general queue and all the changes made by the operator will be lost.

A timeout can be set locally for each station. The default timeout value is 15 minutes. This value can be changed by modifying the following registry key:

`Computer\HKEY_CURRENT_USER\Software\ABBYY\FlexiCapture\12.0\Shell\Options\UserTimeOut.`

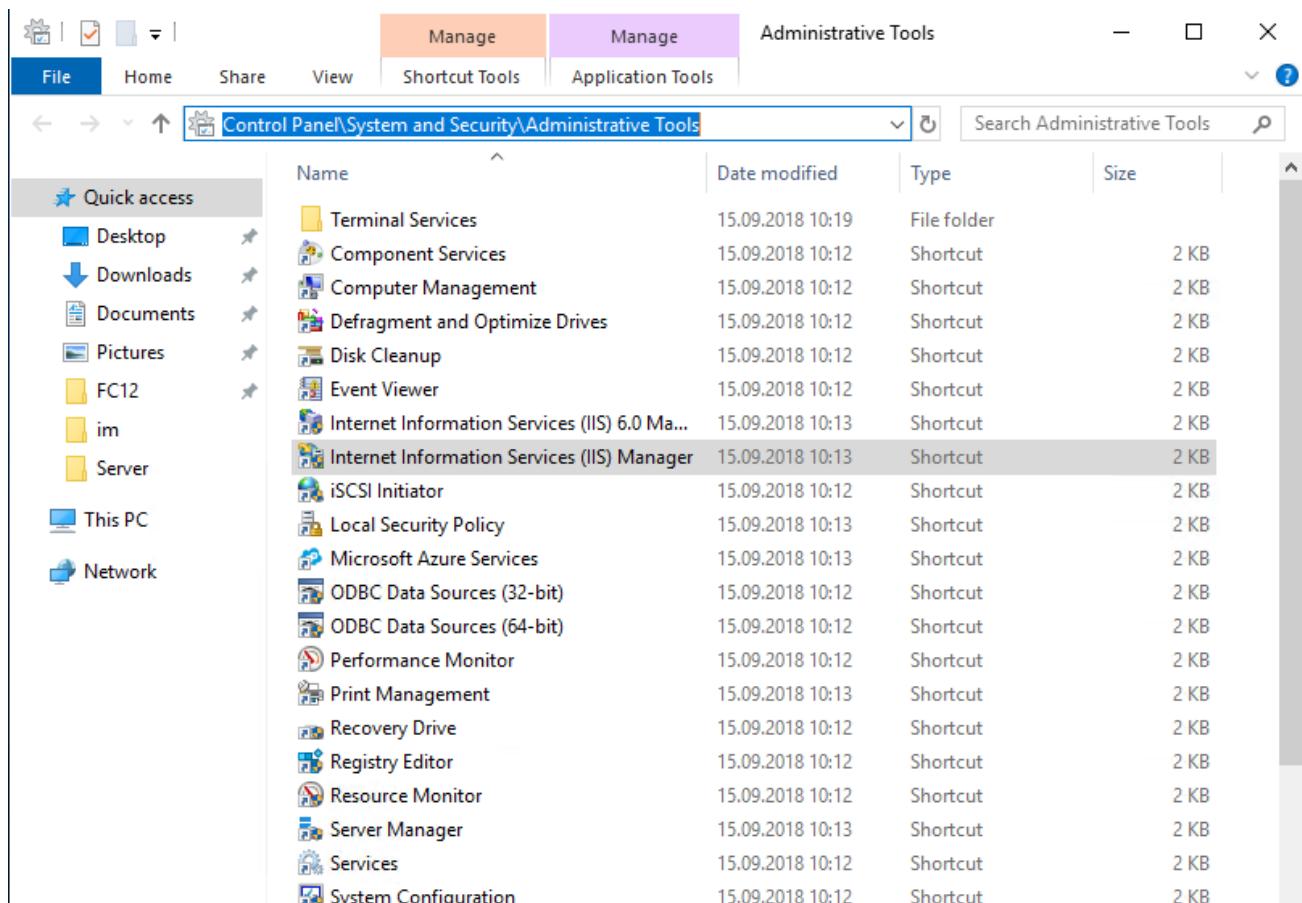
If there is no such key in the Windows registry on a given machine, simply add this key and enter a desired timeout value.

Once a session becomes inactive, the timeout countdown begins on the Application Server.

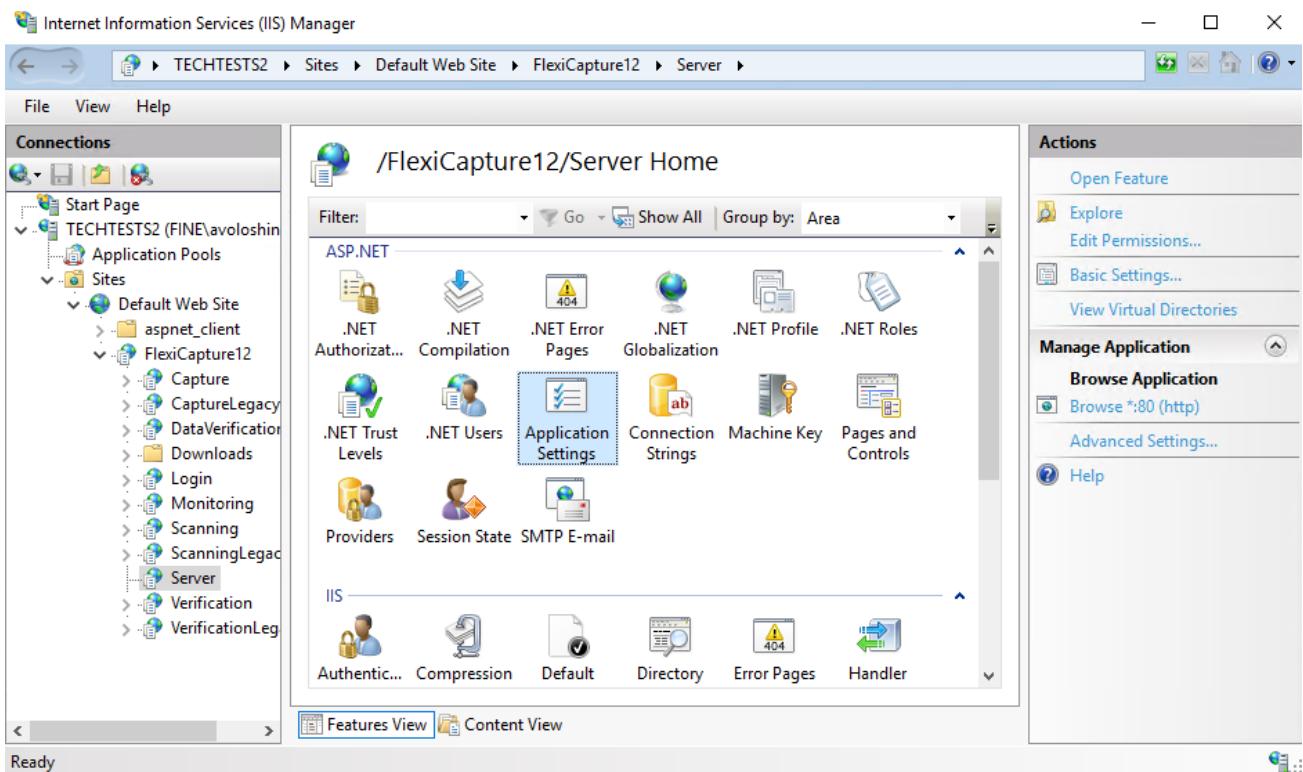
A timeout period after which a session will become inactive can be specified in Internet Information Service on the computer where the Application Server is installed.

To specify a timeout value:

1. Click **Control Panel → System and Security → Administrative Tools → Internet Information Service (IIS) Manager.**



2. In IIS Manager, click **Sites → Default Web Site → FlexiCapture12 → Server → Application Settings.**



3. Enter a timeout value in minutes in the *InactiveSessionTimeoutMinutes* parameter. The default value of this parameter is 0. If there is no such parameter in IIS Manager, simply add this parameter and specify a desired timeout value.

The screenshot shows the 'Application Settings' page. The left sidebar shows the 'FlexiCapture12' application selected. The main pane displays a table of application settings:

Name	Value	Entry Type
FlexiCaptureFileStoragePath	D:\FileSt...	Local
InactiveSessionTimeoutMinutes	120	Local

The timeouts for the Verification Stations, the Data Verification Stations, and the Project Setup Station are stored in the *web.config* file on the Application Server (the default address is C:\inetpub\wwwroot\FlexiCapture12\Server\web.config).

You can use any text editor to open and edit the *web.config* file.

If a timed out session contains an open task, this task will be returned into the general queue and all the changes made by the operator will be lost.

 Specifying timeouts for inactive sessions on web stations

On a web station, the timeout countdown begins after the operator has not performed any actions in the station's browser window for a certain period of time. The default timeout value is 120 minutes. The Processing Server will poll the Application Server every 60 seconds (unless you have specified a different polling period) and delete any inactive sessions that have timed out.

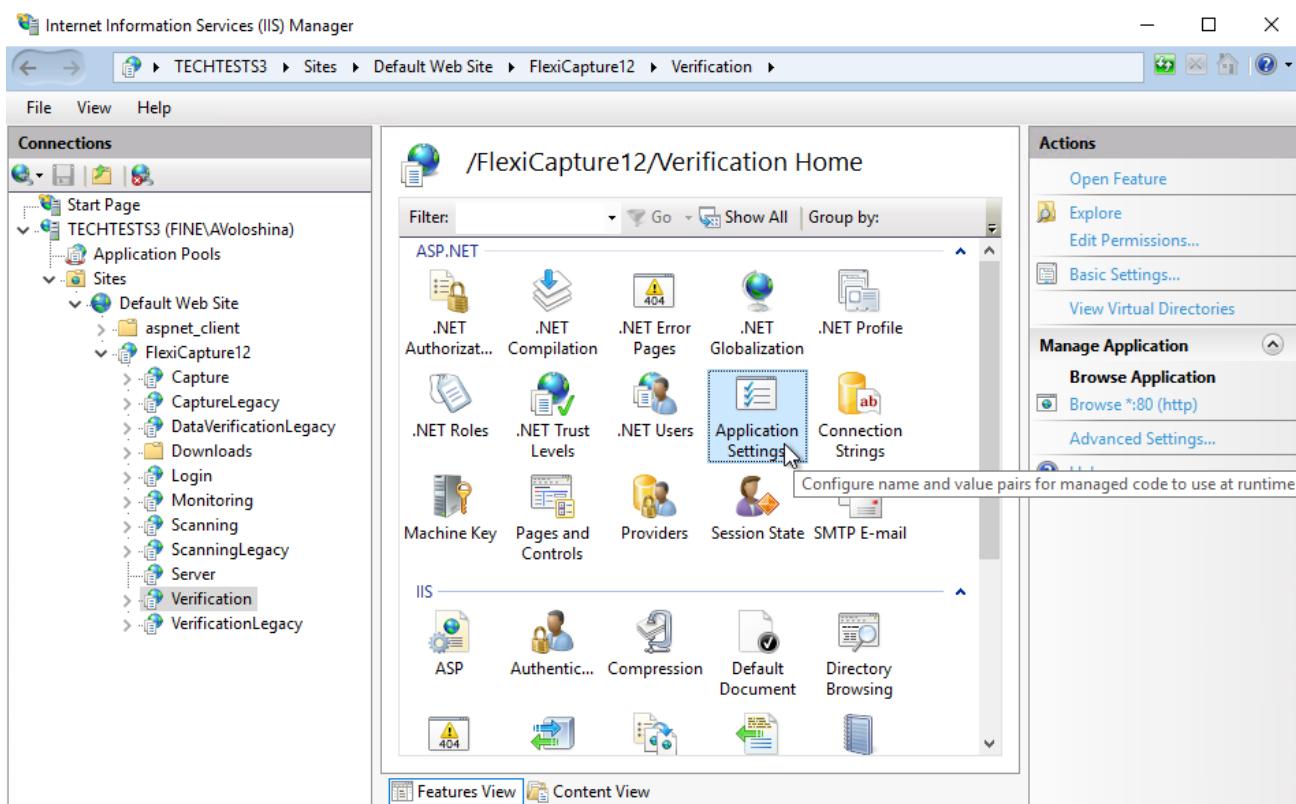
You can modify any of the timeout values.

Note: The timeout value you specify for the web stations will only apply to the Web Verification Stations and the Web Capture Stations.

A timeout period after which a session will become inactive on a web station can be specified in Internet Information Service on the computer where the Application Server is installed

To specify a timeout value:

1. Click **Control Panel** → **System and Security** → **Administrative Tools** → **Internet Information Service (IIS) Manager**.
2. In IIS Manager, click **Sites** → **Default Web Site** → **FlexiCapture12** → **Verification** → **Application Settings**.



3. In Application Settings, modify the values of the following parameters:

- *SessionInactivityLifetimeInMinutes* specifies a timeout value after which a session becomes inactive. The default value is 120 minutes.
- *SessionRefreshInterval* specifies a polling interval in milliseconds. The default value is 60,000, i.e. the Application Server will poll the web stations for inactive sessions every 60 seconds.

If there are no such parameters in IIS Manager, simply add these parameters and specify desired values.

Specifying timeouts for postponed tasks and tasks assigned to specific operators

You can specify a timeout period after which a task will be automatically returned to the general queue.

Timeouts can be specified for the following types of tasks:

- [Postponed tasks](#)

An operator can pick up a task from a queue and then decide to postpone it. Postponed tasks of one operator will remain inaccessible to other operators, which may sometimes delay the processing of the entire batch.

- [Postponed rescanning tasks](#)

- [Tasks assigned to specific operators](#)

Tasks assigned to one operator will remain inaccessible to other operators.

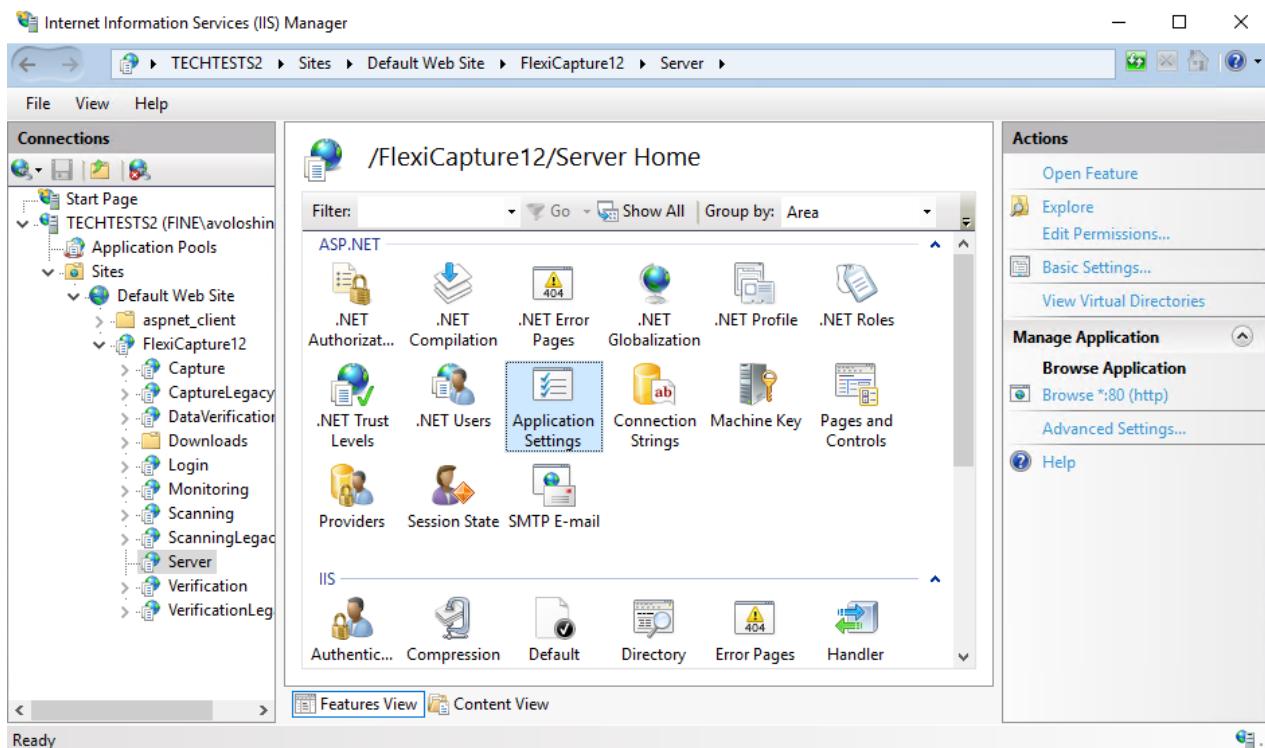
Postponed tasks and tasks assigned to a specific operator can be returned to the general queue either manually or automatically.

- Specifying a timeout to return postponed tasks to the general queue

A timeout period after which a postponed task will be returned to the general queue can be specified in Internet Information Service Manager. Every 60 minutes, the Processing Server will check for timed out tasks and return them to the general queue.

To specify a timeout value:

1. Click **Control Panel → System and Security → Administrative Tools → Internet Information Service (IIS) Manager**.
2. In IIS Manager, click **Sites → Default Web Site → FlexiCapture12 → Server → Application Settings**.



3. Enter a timeout value in minutes in the *PostponedTaskExpirationMinutes* parameter. The default value of this parameter is 0. If there is no such parameter in IIS Manager, simply add this parameter and specify a desired timeout value.

The screenshot shows the 'Application Settings' dialog box. The left sidebar shows the 'Connections' tree with 'Default Web Site', 'aspnet_client', and 'FlexiCapture12' selected. The main area is titled 'Application Settings' and contains the following text: 'Use this feature to store name and value pairs that managed code applications can use at runtime.' Below this is a table with the following data:

Name	Value	Entry Type
FlexiCaptureFileStoragePath	D:\FileSt...	Local
InactiveSessionTimeoutMinutes	120	Local
PostponedTaskExpirationMinutes	200	Local

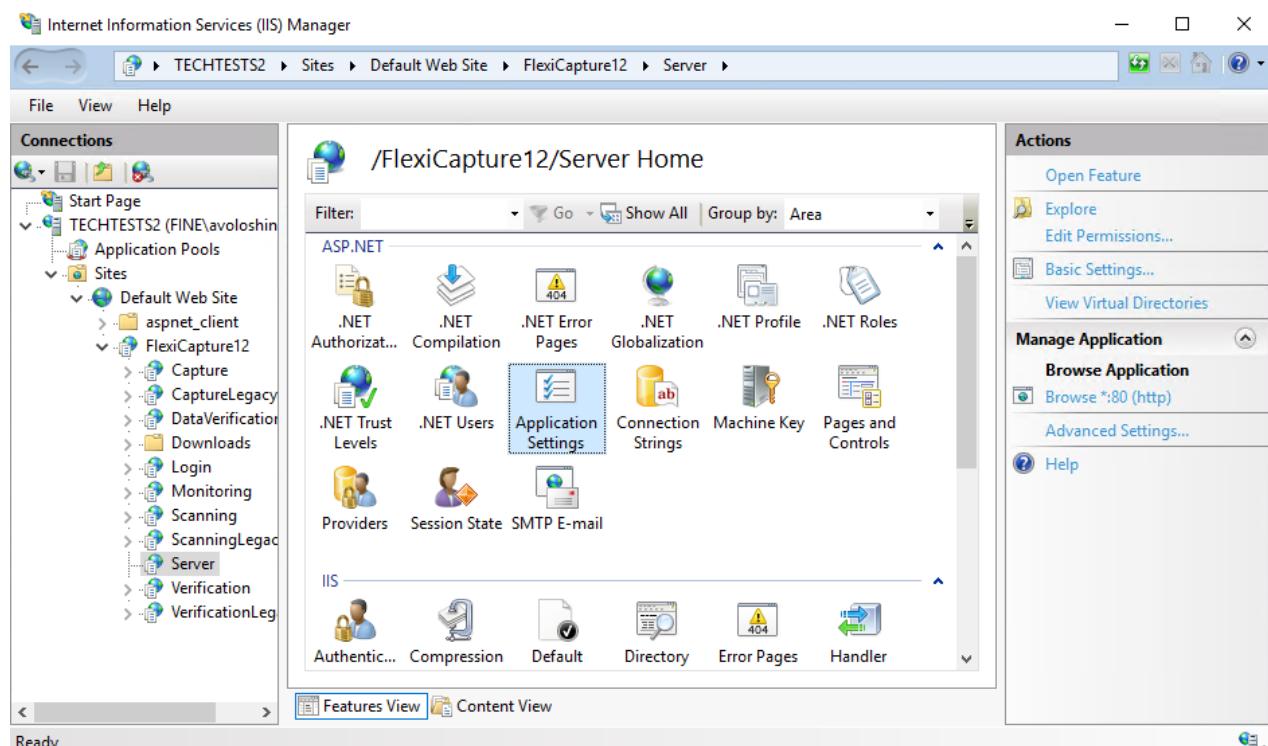
When a postponed task is returned to the general queue, all the changes made by the operator will

- Specifying a timeout to return postponed rescanning tasks to the general queue

A timeout period after which a postponed rescanning task will be returned to the general queue can be specified in Internet Information Service Manager. Every 60 minutes, the Processing Server will check for timed out rescanning tasks and return them to the general queue.

To specify a timeout value:

1. Click **Control Panel → System and Security → Administrative Tools → Internet Information Service (IIS) Manager**.
2. In IIS Manager, click **Sites → Default Web Site → FlexiCapture12 → Server → Application Settings**.



3. Enter a timeout value in minutes in the *RescanningTaskExpirationMinutes* parameter. The default value of this parameter is 0. If there is no such parameter in IIS Manager, simply add this parameter and specify a desired timeout value.

The screenshot shows the 'Application Settings' page for the 'FlexiCapture12' application. The left pane shows the 'Connections' tree. The main area has a title 'Application Settings' with the sub-instruction 'Use this feature to store name and value pairs that managed code applications can use at runtime.' Below this is a table with columns 'Name', 'Value', and 'Entry Type'. A new row for 'RescanningTaskExpirationMinutes' is being added, with its value set to '200'. The 'Entry Type' column for this row shows a dropdown menu with 'Local' selected. A cursor arrow points to the 'Entry Type' dropdown for the last row.

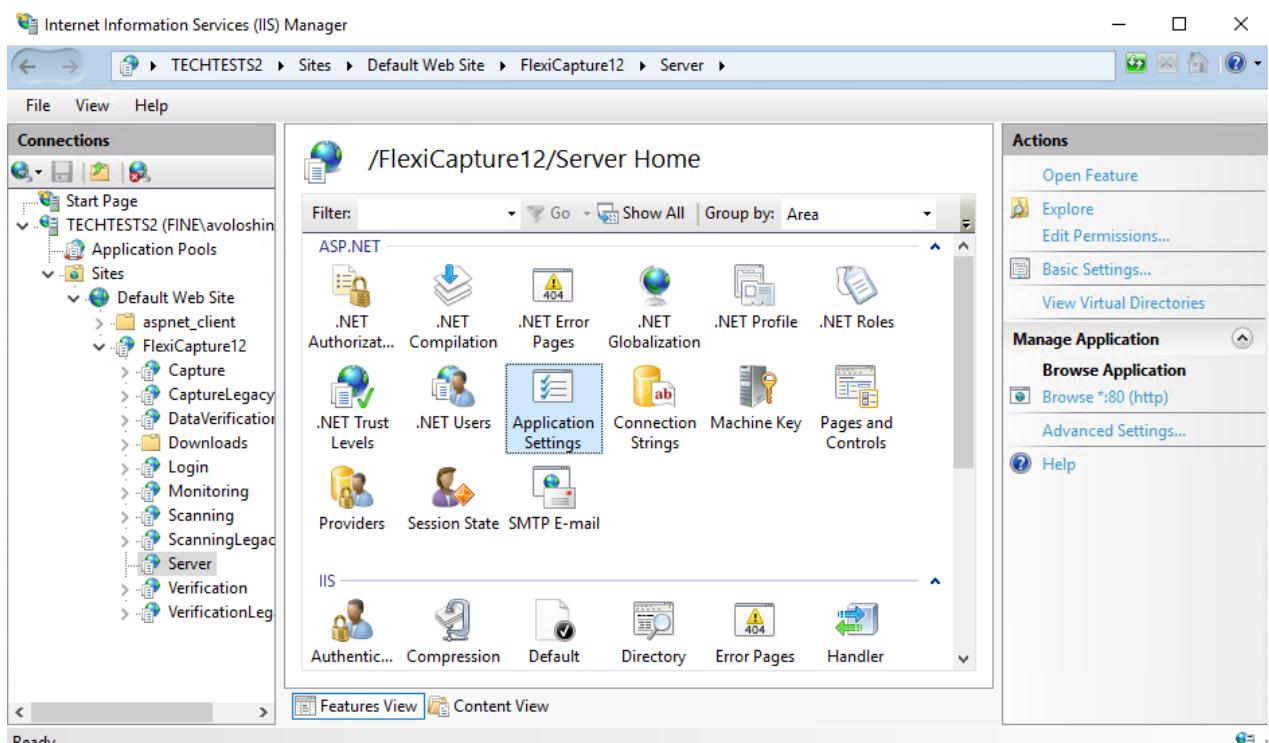
Name	Value	Entry Type
FlexiCaptureFileStoragePath	D:\FileSt...	Local
InactiveSessionTimeoutMinutes	120	Local
PostponedTaskExpirationMinutes	200	Local
RescanningTaskExpirationMinutes	200	Local

- Specifying a timeout to return to the general queue tasks assigned to specific operators

A timeout period after which a task assigned to a specific operator will cease to be assigned to that operator can be specified in Internet Information Service Manager. Every 60 minutes, the Processing Server will check for timed out assigned tasks and return them to the general queue.

To specify a timeout value:

1. Click **Control Panel → System and Security → Administrative Tools → Internet Information Service (IIS) Manager**.
2. In IIS Manager, click **Sites → Default Web Site → FlexiCapture12 → Server → Application Settings**.



3. Enter a timeout value in minutes in the *PersonalTaskExpirationMinutes*. The default value of this parameter is 0. If there is no such parameter in IIS Manager, simply add this parameter and specify a desired timeout value.

The screenshot shows the 'Application Settings' page for the 'FlexiCapture12' application. The left sidebar is identical to the previous screenshot. The main pane has a title 'Application Settings' with a sub-instruction: 'Use this feature to store name and value pairs that managed code applications can use at runtime.' Below this is a table with three columns: 'Name', 'Value', and 'Entry Type'. The table contains the following data:

Name	Value	Entry Type
FlexiCaptureFileStoragePath	D:\FileStorage	Local
InactiveSessionTimeoutMinutes	360	Local
PersonalTaskExpirationMinutes	25	Local
PostponedTaskExpirationMinutes	280	Local
RescanningTaskExpirationMinutes	7	Local

An 'Edit Application Setting' dialog box is open at the bottom of the table.

Managing your licenses

The License Server of ABBYY FlexiCapture 12 includes the License Manager, an application for adding and activating licenses and viewing license parameters. To open the License Manager, open the **Start** menu and click **All Programs** → **ABBYY FlexiCapture 12 Servers** → **FlexiCapture 12 License Manager**.

An ABBYY FlexiCapture distribution kit can include one of two types of protection keys:

- A hardware protection key (USB dongle)
- A software protection key (serial number)

If you have been issued with a software protection key, you will need to activate it in the **Activation Wizard** before you can use it. To open the **Activation Wizard**, click the **Activate License...** button in the License Manager. The activation technology limits the number of ABBYY FlexiCapture 12 copies that can be used and prevents multiple installations of the same licensed copy.

 **Important!** The number of times a license can be activated is limited. Each time a license is activated, the number of remaining activations goes down, and each time a license is deactivated the number of remaining activations goes up.

License activation

The **Activation Wizard** is a dialog box that provides a simple interface for activating ABBYY FlexiCapture. During the activation process, the **Activation Wizard** generates a Product ID out of all the information that is required for activation and sends the Product ID to ABBYY. This activation information **does not include any private data about you or your computer** that could be used to identify you.

To activate your license, complete the following steps:

1. Provide your serial number (24 characters) and click **Next**.
2. Select an activation method:
 - **via Internet (recommended)**
FlexiCapture will be activated automatically in just a few seconds. This method requires an Internet connection.
 - **by e-mail**
You will be prompted to send an automatically generated e-mail message containing activation information to ABBYY. Do not make any changes to the title and body of the message to ensure a prompt reply.
 - **by e-mail from another computer**
You will be prompted to send an e-mail message with generated activation information to ABBYY. Use this method if the Licensing Server is not connected to the Internet and cannot send e-mails.

 **Note:** If you have already received a license file in response to an e-mail request, click **Load activation file** and specify the path to the license file (*.ABBYY.License).

3. Click **Next** to activate your license.

After the activation process is completed, you will be able to run ABBYY FlexiCapture 12 on the server.

Note: If you reinstall ABBYY FlexiCapture 12, you will not have to activate it again. The FlexiCapture stations will automatically connect to the Licensing Server and use the existing license.

The Processing Server, Project Setup Station, and Verification Stations connect to the Licensing Server directly using the address stored in the **LicensingSettings.xml** file in the FlexiCapture installation folder. You can find this address in the **ServerAddress** tag of the **MainNetworkLicenseServer** attribute. If you install the Licensing Server on a different computer, you will need to activate your licenses again (if you are using license files) and change the address of the Licensing Server in the **LicensingSettings.xml** files on the stations.

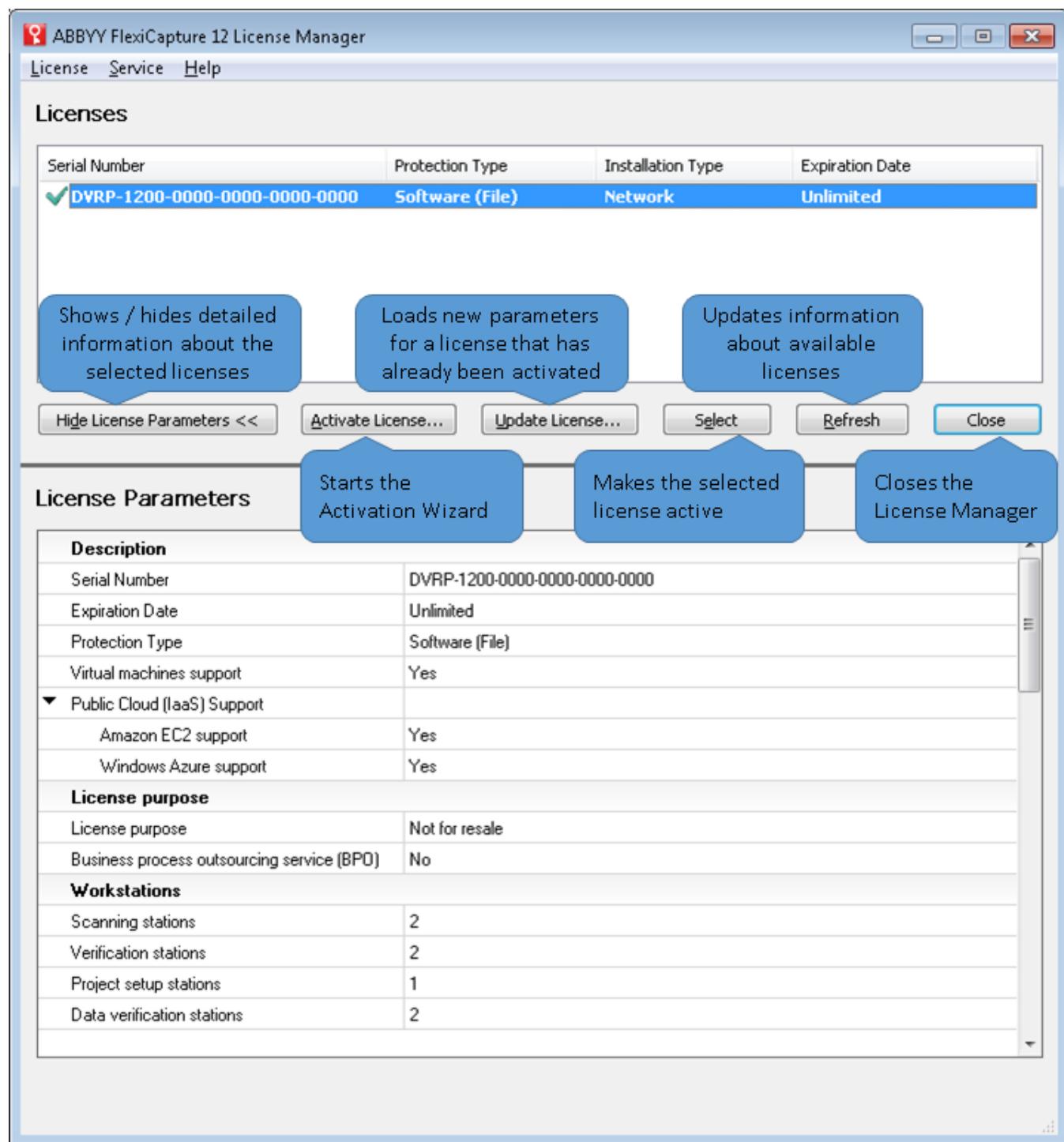
All other stations, including remote stations, web stations, Scanning Stations and Data Verification Stations will receive licensing information from the Application Server.

Note: The Processing Server facilitates interactions between the Licensing Server and the Application Server, so you will not be able to complete the activation process unless the Processing Server is running and connected to the Application Server.

License parameters

The License Manager window is split into two parts:

- **Licenses** contains a list of installed licenses.
- **License Parameters** displays the parameters of the selected license.



Important license details, such as its date of expiration and the number of remaining pages, are displayed on the **Summary** page of the Administration and Monitoring Console if the Processing Server is running. If it is not, the message "**Data could not be accessed**" is displayed instead. License parameters can only be viewed by the Administrator.

To make licenses easier to monitor, you can set up automatic e-mail notifications about the statuses of licenses to be sent to specific users. To do this, open the Administration and Monitoring Console, click **Settings → E-mail notifications** and specify the notification settings. For details, see the online help of the Administration and Monitoring Console.

Managing your licenses using the command-line console

ABBYY FlexiCapture 12 includes a license management utility that allows you to manage your licenses from a command-line console. The utility executable is named *LicenseManager.Console.exe* and can be found in the following folder:

C:\Program Files\ABBYY FlexiCapture 12 Servers\LicenseManager.Console.exe

The following is a list of commands that can be used to manage licenses from the console:

Command	Description
/Help	Displays the help screen.
/ListAvailableLicenses	Displays a list of all activated licenses.
/Activate:SerialNumber	Activates the license with the specified serial number.
	/ErrorIfActivated
	Returns a non-zero exit code if a license with the specified number has already been activated.
	/SaveActivationEMail:FileName
	Saves the activation e-mail to file.
	/LoadActivationFile
	Activates a license using the specified activation file. FileName is used to specify the absolute path to the file.

Example:

"C:\Program Files\ABBYY FlexiCapture 12 Servers\LicenseManager.Console.exe" /Activate:DVRP-1234-0000-1111-2222-3333 /ErrorIfActivated /SaveActivationEMail:"C:\Temp\ActivationFile.txt"

/Deactivate:SerialNumber	Deactivates a license with the specified serial number.
/Update:SerialNumber	Updates the license with the specified serial number.
/SetWorkingLicense:SerialNumber	Sets the license with the specified serial number as the currently active (working) license.
/ShowLicenseParameters:SerialNumber	Displays the parameters for the license with the specified serial number.
/LoadOnlineToken:FileName	Loads a license token from a file.
/SaveOnlineToken:FileName	Saves a license token to a file.

E-mail notifications

E-mail notifications allow users to receive e-mails about events that occurred in the system. To set up e-mail notifications for an administrator and users of ABBYY FlexiCapture, proceed as follows:

1. Open the **Settings** section in the Administrator and Monitoring Console.
2. Specify the [SMTP server connection parameters](#) in **Settings → SMTP settings**.
3. Go to the **Settings → Email notifications** page and set up e-mail notifications [in the system](#) or [in a tenant](#).

Setting up the SMTP server

To launch the notification service, specify the following SMTP server connection parameters in the **Settings → SMTP settings** page of the Administration and Monitoring Console:

 **Important!** Make sure that the Processing Server is running.

- **SMTP server**

The address of the notification server (e.g. smtp.email.com).

- **SMTP port**

The port number. By default, port 25 is used for unencrypted connections and port 465 is used for SSL-encrypted connections.

- **SMTP login**

The name of the mail box that will be used for sending notifications.

- **Password**

The password used for accessing the e-mail server.

To use SSL encryption, select the Use SSL option.

 **Note:** If the format of the data in the **SMTP login** field does not match the e-mail address format, change the parameters of the user account which will be used to send out e-mail notifications. This is done by selecting **Use other account settings** option and filling out the **Name** and **E-mail address** fields. In the **Name** field, type the name of the user to be used in e-mail notifications. In the **E-mail address** field, type the e-mail address from which e-mail notifications will be sent.

To check the validity of SMTP server settings, click **Test connection**. After the check is complete, one of the following messages will be displayed:

- "Test connection complete";

 **Note:** Due to technical constraints of email servers, it is not possible to guarantee that electronic mailing list will function even after you check the settings.

- "Test connection failed", the system failed to find the reason why the test failed;
- "SMTP server connection failed. Check server url or port", a server was not found for the specified address or port;
- "SMTP login failed. Check server login or password.";

 **Note:** With some ports, an SMTP server may disregard login and password. In this case, the check

will be successfully completed even if user credentials are invalid.

Example of a notification setup that uses Gmail

The screenshot below shows a notification setup where Gmail is used as the e-mail server:

The screenshot shows the 'Settings' section of the ABBYY FlexiCapture interface. On the left sidebar, under 'Application Server', 'SMTP settings' is selected. The main area displays 'Server Information' fields for an SMTP server setup:

- SMTP server: smtp.gmail.com
- SMTP port: 465
- SMTP login: FCadmin@gmail.com
- Password: (redacted)
- Use SSL:
- Use other account settings:
- Name: (redacted)
- E-mail address: (redacted)

A blue 'SAVE' button is located at the bottom of the form. At the very bottom of the screen, there is a navigation bar with links: Help, Technical support, www.abbyy.com, About ABBYY FlexiCapture, and the ABBYY logo.

Important! Make sure that the specified port is not blocked by your firewall.

Setting up e-mail notifications

The **Settings → Email notifications** page contains a list of all available e-mail notifications. An Administrator may set up notifications for the following events:

- **New user registration** – a new user is added to the system
- **Password reset** – an Administrator resets the password of a user (the e-mail contains a temporary password that can be used to log in to the system)
- **New tenant creation** – a new tenant is created
- **Tenant renaming** – a tenant name is changed
- **New permission request** – a user sends [a permission request](#)
- **The license is running out of pages** – a license is about to run out of pages (the percentage of remaining pages is shown)
- **The license will expire soon** – a license will expire after the specified period of time

Note: If you replace a license that is about to expire with another license that will also expire soon, no more notifications will be sent.

- **Other notifications → Errors and warnings** – notifications about errors and/or warnings in projects

By default, all e-mail notifications are disabled. Specify the address of the server that contains the client's web server in the **Server address** field (in the format of <http://<ApplicationServer>/FlexiCapture12>) before proceeding to configure e-mail notifications.

An Administrator may view and edit templates of all types of e-mail notifications. When editing the text, it is allowed to use parameters whose values will be populated automatically by the system.

System tags to be used in system messages

- {url} – the address of a server where FlexiCapture is installed (specified by an Administrator in the **Server address** field)
- {name} – the name of a user
- {login} – the login of a user
- {password} – the password of a user
- {tenantname} – the name of a tenant
- {oldtenantname} – the old name of a tenant
- {tenantname} – the new name of a tenant
- {username} – the name of the user who sent the request
- {usertext} – the text of a request
- {ndays} – the number of days before a license expires
- {npages} – the percentage of remaining pages

Note: The **Reset to default** option allows you to use the default text.

When editing the **New permission request**, **The license is running out of pages**, **The license will expire soon**, and **Errors and warnings** system notifications:

- you can add system users and user groups to a list of subscribers (the **Send To** field lets you find the user you are looking for and add them to the "send to" list)
- you can use the **Send emails** option to enable and disable notifications (if a notification is disabled, the  icon will display near it in the list of notifications)

E-mail notification about errors and warnings

Settings of this notification type allow an Administrator to:

- Configure error and/or warning e-mail notifications for one or several projects (the **Projects** field)

- Add users or groups of users to the recipient list (the **Send To** field)
- Configure how often this notification will be sent to subscribers (the **Frequency of notifications** field)
- Determine the number of errors which will be displayed in the e-mail body (the **Include N error messages in the email body** field)

This type of notification may be created an unlimited number of times. You are allowed to configure notifications for different projects with different users and notification frequency.

Notifications of this type may be deleted and renamed.

The subject of notifications and the text itself are available for editing. When modifying the text, an Administrator may use parameters whose values will be populated automatically by the system.

System tags to be used in error and warning messages

- {nminutes} – the time it takes to update a notification
- {errorsdescription} – the description of errors in an e-mail body
- {url} – the address of a server where FlexiCapture is installed (specified by an Administrator in the **Server address** field)

The **Reset to default** option allows you to use the default text.

Setting up e-mail notifications in a tenant

A tenant administrator can configure e-mail notifications to be sent to users of the tenant if any of the following events occurs:

- **New user registration** – A new user has been added into the system.
- **Password reset** – The administrator has reset the user's password (the e-mail will contain a temporary password that can be used to log in to the system).
- **New permission request** – The user has submitted a permission request
- **Your license is running out of pages** – The number of pages that the user can process using the current license has reached a certain threshold.
- **Your license is about to expire** – The number of days when the license will remain valid has reached a certain threshold.

 **Note:** If a license that is about to expire is replaced with another license that is also about to expire, no repeat notification will be sent.

- **Other notifications → Errors and warnings** – notifications about errors and/or warnings in projects.

The way notifications inside a tenant are configured is similar to [general notification settings](#).

System tags to be used in system messages inside a tenant

- {name} – the name of a user
- {login} – the login of a user
- {password} – the password of a user
- {tenantname} – the name of a tenant
- {username} – the name of a user who sent a request
- {usertext} – the text of a request
- {nminutes} – the time it takes to update a notification
- {errorsdescription} – the description of errors in an e-mail body

 **Note:** The tenant administrator can configure notifications about the license status (i.e. **Your license is running out of pages** and **Your license is about to expire**) only if the tenant is using a personal license.

Managing users

User accounts are created and deleted by the FlexiCapture administrator. The procedure to be followed when creating a new user depends on the authentication type to be used for this user (see [Authenticating FlexiCapture applications](#) section).

 **Note:** If standard IIS authentication is used, ABBYY FlexiCapture must store the user's Windows login in order to authenticate him/her. If FlexiCapture authentication is used (included in the server components setup), the program must also store the user's password (the ABBYY FlexiCapture database will store the password hash).

Generally, an account to be authenticated by means of FlexiCapture can have any login. The login may also be the same as the user's Windows login. If this is the case, the user should use two different passwords to access the system using different authentication types (for standard IIS authentication, the password specified in Windows should be used; for FlexiCapture authentication, the password specified in ABBYY FlexiCapture should be used). Regardless of the type of authentication used, ABBYY FlexiCapture will identify users only by their logins.

If ABBYY FlexiCapture knows only the login of a user, the user can only be authenticated using standard IIS authentication. If ABBYY FlexiCapture knows both the login and password of a user, the user can be authenticated using FlexiCapture authentication. To enable FlexiCapture authentication for a user, specify "password" as a temporary password for that user:

1. In the Administration and Monitoring Console, click **Settings** → **Users**.
2. In the **Login** column, click the user's login.
3. On the page that opens, click the **Reset password** button.

The user will receive an e-mail notification containing the temporary password.

Adding users manually

To add users manually, the FlexiCapture administrator must do the following:

1. Open the Administration and Monitoring Console, go to the **Settings → Users** page, and click the **NEW USER** button.
2. On the page that opens, specify the login, full name, and e-mail address of the new user, grant the required roles and permissions to the user, and click the **Save** button.

A user added in this manner can be authenticated using standard IIS authentication, provided that the user's login in the system matches the user's Windows login. In this case, the Windows password must be used for authentication. If the user is not in the domain where the Application Server is located, the pass-through authentication can be used.

For more information on user management, please refer to the [Administration and Monitoring Console help page](#).

For instructions on importing users from the Active Directory, see [Using the Active Directory to manage users](#).

User self-registration (using the web interface)

This method of adding users is used for operators who need to access the system remotely from a browser and who are not in the domain where the Application Server is installed. For such operators to be authenticated by the Application Server, the use of FlexiCapture authentication is recommended.

New users will be able to self-register with ABBYY FlexiCapture by clicking the **Registration** link on the <http://<ApplicationServer>/FlexiCapture12/Login> page, where <ApplicationServer> is the name of the computer on which the Application Server is installed.

 **Note:** For the <http://<ApplicationServer>/FlexiCapture12/Login> web application, anonymous authentication is enabled in IIS, so the registration page can be accessed by any user.

The screenshot shows a web browser window for the FlexiCapture registration page. The URL in the address bar is <http://localhost/FlexiCapture12/Login/#/RegistrationPage>. The page title is "Registration". The top right corner shows the language setting as "LANGUAGE: ENGLISH (UNITED STATES)". The main content area is titled "Registration" and contains five input fields: "First and Last Name:" with a placeholder icon, "User name:", "E-mail:", "Password:", and "Repeat password:". Below the input fields are two buttons: "SIGN UP" (blue) and "CANCEL" (white). At the bottom of the page are links for "Help" and the ABBYY logo.

After the user completes the registration form and clicks the **Sing up** button, they will be asked to specify the web stations for which they need access permissions. Next, the user will be added into the system and redirected to their personal page.

The screenshot shows the ABBYY FlexiCapture 12 Personal Page. At the top, there is a header bar with a back/forward button, a search bar, and a user profile for ANNA KROTOVA. Below the header, the page title is "FlexiCapture". The main content area starts with a section for "Available web stations", which displays a message stating "You do not have permissions to access any of the stations. You can create a request to get these permissions from the administrator." Below this, there is a "Requests" section with a "+", followed by "Active" and "Processed" tabs. Under "Active", it lists "Web Scanning Station" created on "12/25/2017 12:46 pm". Further down, there is a "Downloads" section for "Scanning Station" with an "INSTALL" button, and links for "Hardware and software requirements" and "Installation instructions". At the bottom, there are "Help" and "ABBYY" buttons.

Requests for roles and access permissions are processed by the administrator on the **Settings → Requests** page of the Administration and Monitoring Console.

The screenshot shows the "Settings - Requests" page in the ABBYY FlexiCapture 12 Administration and Monitoring Console. The left sidebar includes options like "Tenants", "Projects", "Users", "Groups", and "Requests" (which is selected). The main content area has tabs for "Active", "Completed", and "All", with "Active" selected. It shows a table with one row of data: ID 2, Creation date 12/25/2017 12:46 pm, Request text Web Scanning Station, User Anna Krotova, and Status (with a "COMPLETE" button). The table also includes sorting and filtering options like "Showing: 1 to 1 of 1" and "Show 10". At the bottom, there are "Help", "Technical support", "www.abbyy.com", and "About ABBYY FlexiCapture" links, along with an "ABBYY" logo.

To process a request for a role and access permissions, the administrator must click **Settings → Users** and then click the user's login in the **Login** column. On the page that opens, the administrator can select the necessary roles and access permissions. To complete the process, the administrator must click **Settings → Requests** and then click the **Complete** button. The user will be able to see that their request has been processed by clicking the **Processed** link on their personal page.

Once the roles are assigned and access rights are granted to the user, the list of available stations will be displayed on the user's personal page. To update the information displayed on their personal page, the user must click the **Refresh** button.

User self-registration (without using the web interface)

This method of adding new users is suitable when only standard IIS authentication is used. The method eliminates the need for the administrator to enter user logins manually. Instead, the administrator only assigns roles and grants access rights to already created logins.

To use this registration method, a user must log in to a station using their Windows login and attempt to open a project. An error message "Access denied. Contact your administrator." will be displayed. At the same time, the user's login will be displayed on the **Settings → Users** page of the Administration and Monitoring Console, so that the administrator won't have to type it manually. All the administrator has to do is grant the requested roles and access rights to the user.

Deleting user groups

Users can be deleted on the **Settings → Users** page. User groups can be deleted on the **Settings → Groups** page. To delete users, select them in the list and click the **Delete** button.

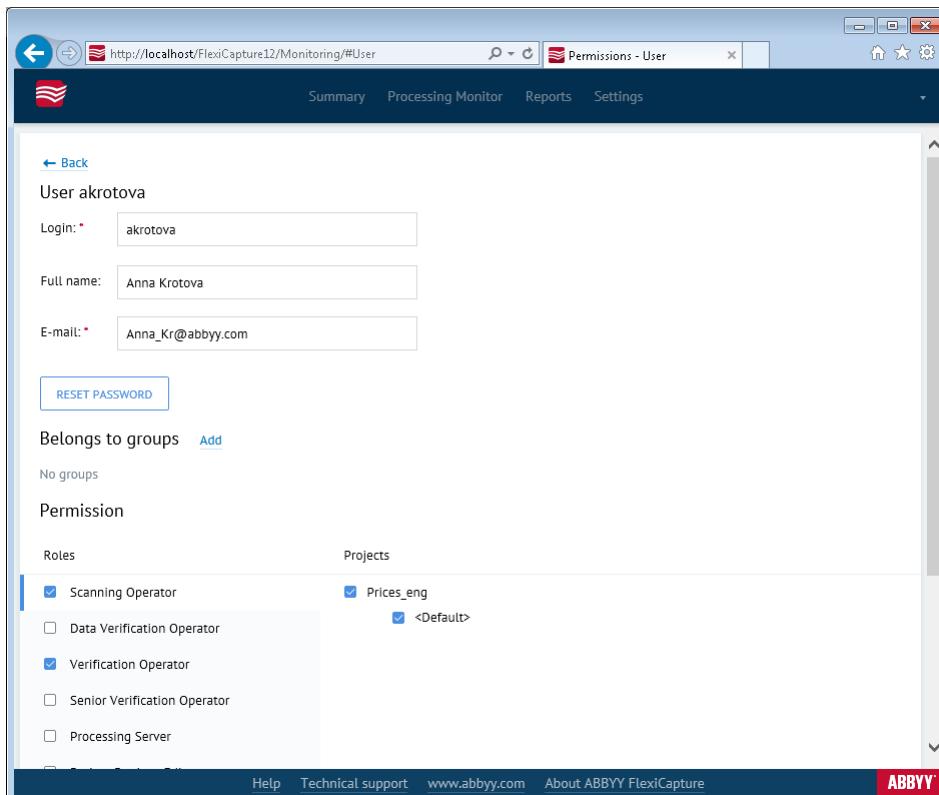
 **Note:** Information about each user is automatically recorded in the database archive. Deleting a user won't affect the statistics included in reports.

Setting up user roles and access rights

To manage user roles and access rights, the administrator must go to the **Settings → Users** page of the Administration and Monitoring Console. To edit a user account, click the respective login in the **Login** column.

The administrator can assign roles (e.g. scanning operator, verification operator, etc.) to users and grant access rights to projects and individual batch types within the assigned role.

 **Note:** When a user is granted rights to a project, the user gets access to all of the batch types currently configured for the project. If any new batch types are added to the project later, the administrator will need to grant rights for such batch types separately.



The roles of Administrator, Processing Server, and Monitoring Operator are assigned for all projects at once. The role of Processing Server should be assigned only to the user under whose account the Processing Server is running (see [Configuring the Processing Server](#)).

Note: For the Web Capture Operator role, the list of projects and batch types may not allow choosing any items. This is because for the given role, access rights may be granted only to the projects in which the "for Web Capture station" or "Advanced for Web Capture station" workflow scheme is used.

Clicking the **Reset password** button will issue a temporary password to the user. The word "password" is always used as a temporary password. The user will have to change this password on first login.

Note: If you can't see the **Reset password** button, this means that the user has already been issued with a temporary password.

Using the Active Directory to manage users

It is possible to use Active Directory accounts to work with ABBYY FlexiCapture. To enable the use of Active Directory accounts, you need to import them from the Active Directory and set up their [roles and access rights](#).

To import users from the Active Directory, the FlexiCapture administrator should open the Administration and Monitoring Console and on the **Settings → Users** page, click the **Import** button. Either individual accounts or groups can be imported (select the **Search groups** option to find groups).

In the **Active Directory path** field, specify the address of the domain controller where ABBYY FlexiCapture is installed.

Note: By default, users and groups are imported and synced in one Active Directory domain. If a group being imported contains users from another subdomain, make sure to specify the address of the domain's controller in the following format: `GC://<address>`.

Use the **Name** field in the **Search and import settings** section to find a particular user or group by their name.

 **Note:** You can replace a portion of the name with an asterisk.

Users added in this manner can authenticate using the standard IIS authentication methods, specifying their Windows account names. Additionally:

- When accessing FlexiCapture stations, users must select Windows authentication.
- When accessing web stations, users must specify station addresses in the following format:
`http://<ApplicationServer>/FlexiCapture12/<Station>/WinAuth`, where <ApplicationServer> is the name of the computer on which the Application Server is installed and <Station> is the web station that the user wants to access.

Using FlexiCapture authentication

If you need to use FlexiCapture authentication for a user imported from the Active Directory, the administrators and the user must complete these steps:

1. The administrator must click the user's login and on the page where roles and permissions are specified, click the **RESET PASSWORD** button, and specify "password" as a temporary password for the user.

 **Note:** If the **RESET PASSWORD** button is not available on the roles and permissions page, this means that the user has already been issued with a temporary password.

2. The user must now log in to ABBYY FlexiCapture and change their password.
3. When accessing a ABBYY FlexiCapture station, the user must select server authentication. When accessing a web station, the user must specify the address of the station in the following format: `http://<ApplicationServer>/FlexiCapture12/<Station>`, where <ApplicationServer> is the name of the computer on which the Application Server is installed and <Station> is the web station that the user wants to access.

Using the Active Directory to manage ABBYY FlexiCapture groups

You can synchronize the groups in ABBYY FlexiCapture with the groups in the Active Directory by clicking the **Synchronize all groups** button. In this manner, you can manage ABBYY FlexiCapture groups via the Active Directory.

Synchronizing groups and user accounts using a POST request

You can synchronize groups of FlexiCapture accounts with Active Directory without using the interface. For example, this approach can be applied if you need to perform synchronization automatically on schedule.

To do this, send the following request:

```
http://urlToMonitoring/winauth/ActiveDirectory/SynchronizeGroups
```

Be sure to specify required parameters:

- Server – Active Directory domain name
- Iswindowsauthentication – Windows authentication on a Active Directory server
- UserName – user name to connect to Active Directory

 **Note:** This parameter is not applied if IsWindowsAuthentication=true

- Password – user password

 **Note:** This parameter is not applied if IsWindowsAuthentication=true

- SearchGroups – group search
- SearchGroupsUsers – allows to search for users in groups
- SearchSubGroups – allows to search for subgroups in groups
- Query – search bar to search for groups and users in Active Directory

Security in ABBYY FlexiCapture 12

ABBYY FlexiCapture 12 is a highly scalable data and document capture system comprising multiple components installed on multiple computers (see the [ABBYY FlexiCapture Architecture](#) section for a detailed description of its architecture). Various kinds of data that are required or processed by the system are continuously transferred among the components and stored in different locations — databases, file storage systems, temporary folders, etc.

This section provides guidelines for securing data transfer and storage within the system.

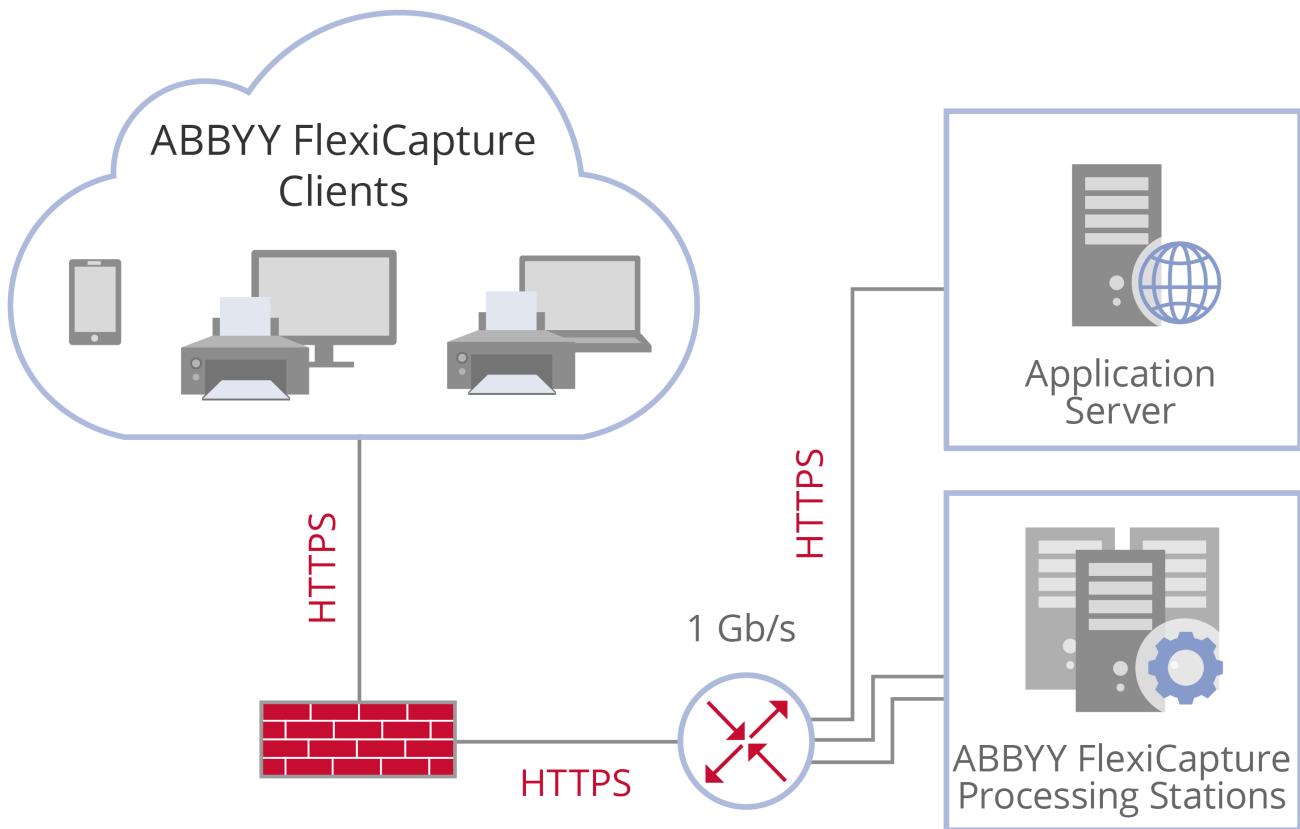
Securing your network connections

For secure transfer of data among ABBYY FlexiCapture components, a secure network connection is required.

Securing your connection with HTTPS

By default, ABBYY FlexiCapture is configured to use the HTTP protocol, which is only recommended for staging, testing or demo environments.

For production use, HTTPS must be used to protect sensitive data.

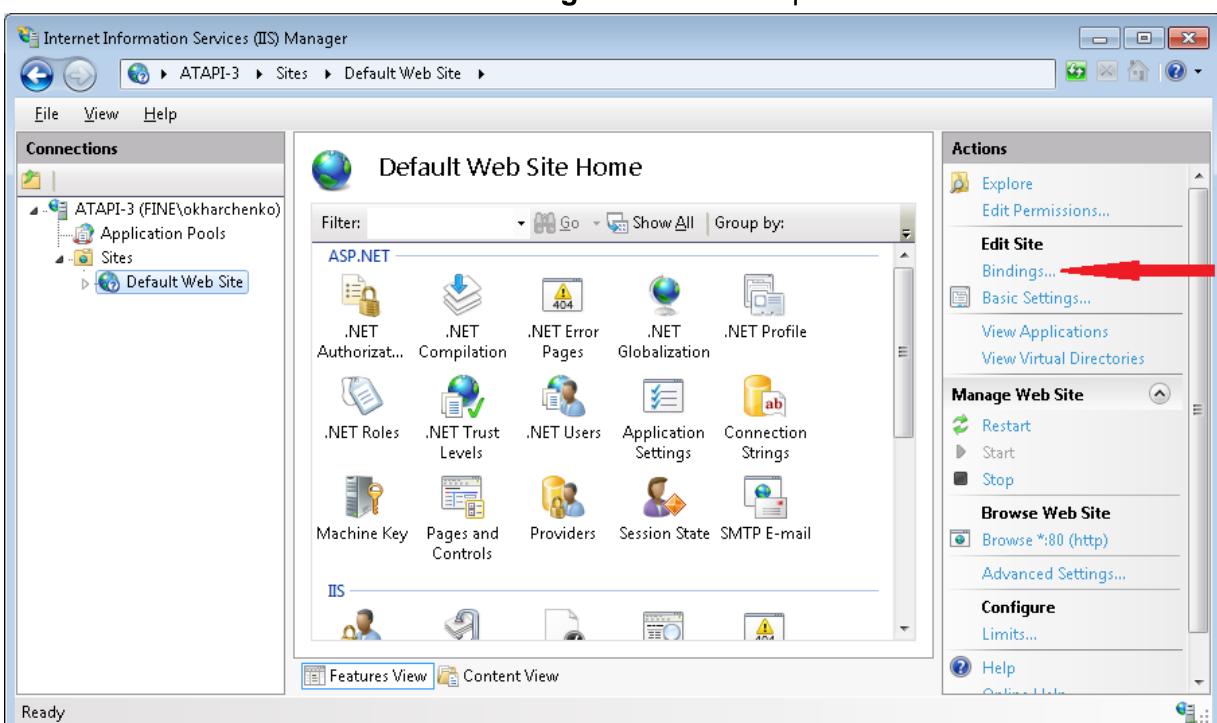


To use HTTPS, enable SSL support in the IIS settings.

To work with IIS over HTTPS, you need to obtain a certificate for the server. Please refer to [this section of the Microsoft website](#) for more information about managing certificates.

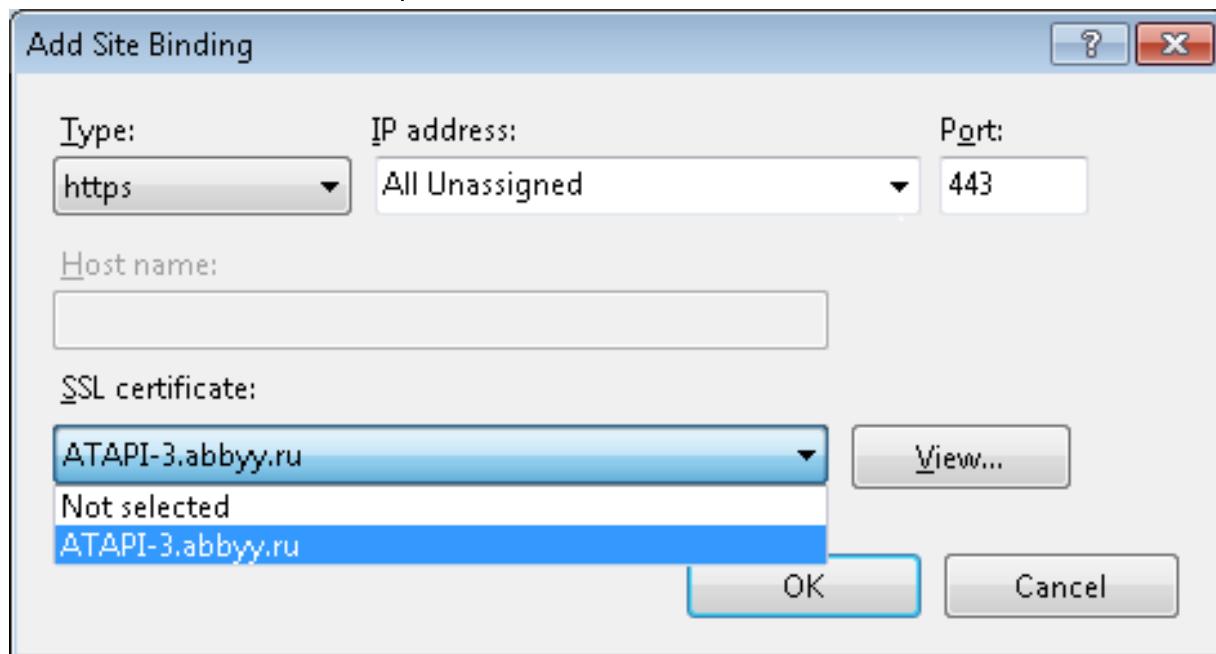
In the IIS settings, specify HTTPS protocol for the default website. To do this:

1. Run the IIS Manager console from the Control Panel.
2. Select **Default Web Site** and click **Bindings** in the **Actions** pane.



3. In the dialog box that opens, click **Add** and select **https** from the **Type** drop-down list.

4. From the **SSL Certificate** drop-down list, select a desired certificate and click **OK**.



5. If you want a site to be available via HTTPS only, select the site in the tree pane, double-click **SSL Settings** in the content pane, and select the **Require SSL** option.

Note: As client certificates are not verified, set the **Client certificates** option to **Ignore** when configuring SSL.

Once the certificate has been added, the Application Server address must be prefixed with "https" (i.e. `https://<server name>`) and the name of each client machine connecting to the Application Server must match the name in the certificate.

You will need to specify the Application Server address on the Processing Server, on user stations, and on web stations.

To specify the Application Server address on the Processing Server:

1. Start the Processing Server Monitor.
2. Open the Processing Server shortcut menu and select **Change Application Server**.
3. In the dialog box that opens, specify the address: `https://<server name>`.

The Application Server address must also be specified when you start a user station or open a project.

When working on a web station, enter the URL in the following format:

`https://<server_name>/FlexiCapture12/<web_station_name>`.

Using TLS 1.2 for data encryption

ABBYY FlexiCapture 12 supports the TLS 1.2 protocol, which is the recommended encryption protocol for secure connections.

When connecting to ABBYY FlexiCapture, other protocols can be used at the operating system level. Please refer to [this section of the Microsoft website](#) for detailed instructions on how to restrict the use of certain protocols.

Securing your connection with Mutual SSL

By default, when configuring HTTPS, one-way SSL authentication is configured. This means that the client will verify the authenticity of the server certificate. You can make the connection more secure by using Mutual SSL, so that the client will verify the authenticity of the server certificate and the server will verify the authenticity of the client certificate.

To configure Mutual SSL for the Application Server, complete the following steps:

1. In IIS, specify HTTPS as the protocol to be used for connections to the Application Server (see [Securing your connection with HTTPS](#) above).
2. For Default Web Site\FlexiCapture12\Server, select the **Require SSL** option in **SSL Settings**.
3. For **Client certificates**, select the **Require** option.

Now a client will need to provide a certificate when connecting to the Application Server.

- a. The Project Setup Station and the Verification Station do not require any additional configuration. When connecting, the client will be asked to select a certificate that should be provided to the Application Server.
- b. For the Processing Server and the Processing Station, you need to specify the thumbprint of the appropriate certificate in the registry. Locate HKLM\Software\ABBYY\FlexiCapture\12.0\FlexiBr in the registry and specify:

```
<ClientCertificateThumbPrint>
```
- c. For the Administration and Monitoring Console, you need to specify which certificate to provide. To do this, modify the web.config file as follows:

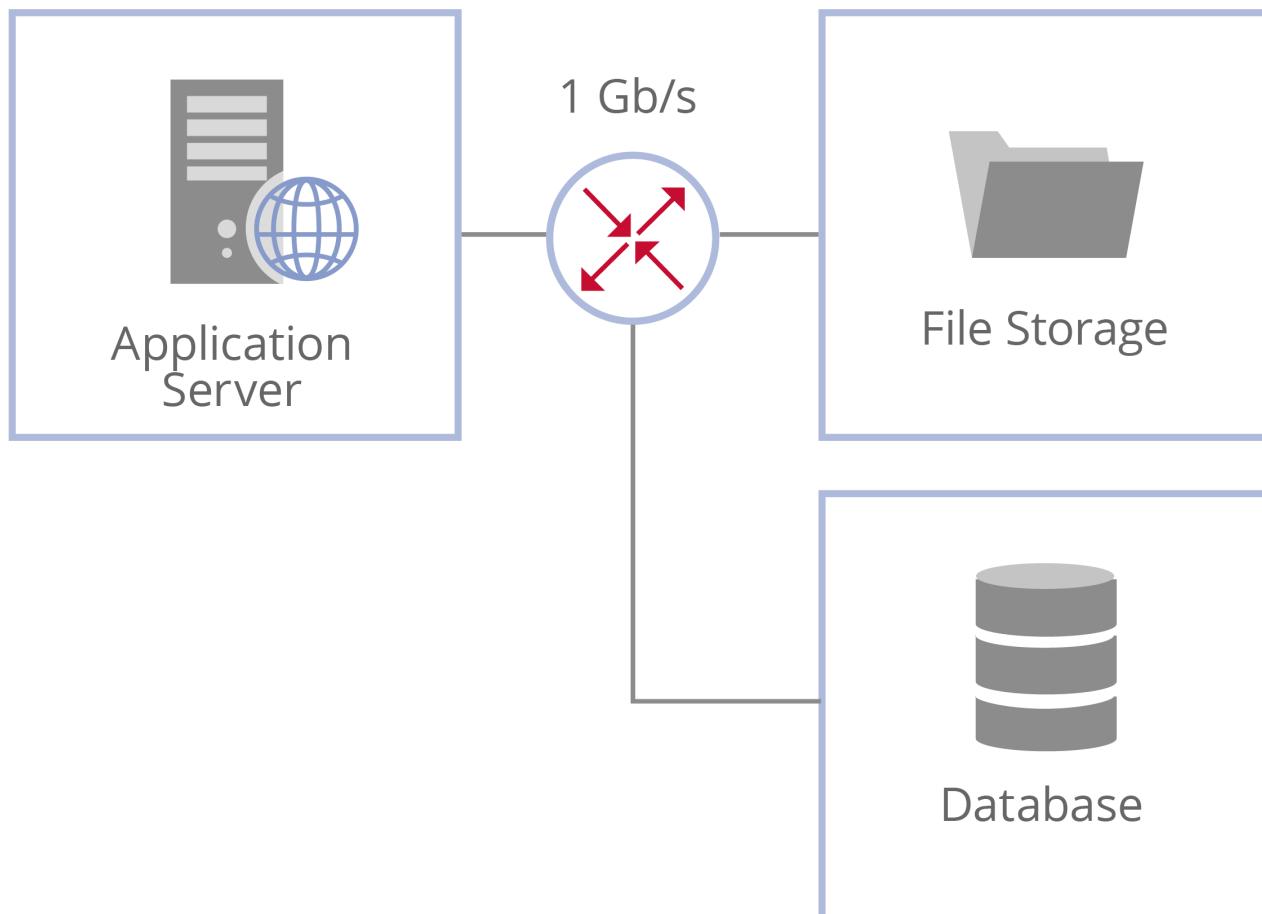
```
<add key="UseClientCertificate" value="True" />
<add key="ClientCertificateThumbprint" value="Certificate Thumbprint" />
```

 **Note:** The client certificate with the specified thumbprint must be stored in **Local Computer > Personal**. The account providing this certificate must have the permission to use it. Please refer to [this section of the Microsoft website](#) for detailed information.

 **Note:** Mutual SSL cannot be configured for the Web Scanning Station or the Web Capture Station.

Securing your connection to the database and file storage

The Application Server interacts with the database and file storage.



To secure your connection to an SQL, SQL Azure, or Oracle database, we recommend using the TLS 1.2 encryption protocol. TLS should be configured in the database:

1. If you are using an SQL database, please refer to [this section of the Microsoft website](#) for detailed instructions.
2. If you are using an SQL Azure database, please refer to [this section of the Microsoft website](#) for detailed instructions.
3. If you are using an Oracle database, please refer to [this section of the Oracle website](#) for detailed instructions.

The Application Server uses SMB protocols to interact with file storage. A number of security enhancements were introduced in SMB 3.0. Please refer to [this section of the Microsoft website](#) for detailed information.

Encrypting your database and files

ABBYY FlexiCapture 12 does not include any encryption mechanisms of its own, but allows you to use standard and recommended encryption technologies from well-known suppliers of operating systems and database management software.

Database encryption

ABBYY FlexiCapture 12 supports Transparent Data Encryption (TDE), a technology for encrypting databases and protection of keys. Data are encrypted at the server level, and backups cannot be decrypted without a valid key.

Detailed information about how to encrypt data using SQL and Oracle is available on the [Microsoft](#) and [Oracle](#) websites.

File and temporary folder encryption

ABBYY FlexiCapture 12 supports Windows Encryption File System (EFS), a file encryption technology offered by Microsoft. EFS is used for encrypting files and folders on servers and client computers. It protects confidential information contained in files and folders by generating a unique key that uses a combination of server and user credentials.

Please refer to [this section of the Microsoft website](#) for detailed instructions on enabling EFS.

When EFS is used in ABBYY FlexiCapture 12, the following are encrypted:

1. Storage folders

In ABBYY FlexiCapture 12, the storage facility is controlled by the Application Server. For this reason, storage folders must be encrypted using the account under which the FlexiCapture 12 Web services application pool is running in IIS.

2. Processing Station temp folders

Depending on which account is used to run the station, you must encrypt either the domain user's temp folder or the NetworkService temp folder (C:

\Windows\ServiceProfiles\NetworkService\AppData\Local\Temp).

3. Scanning Station (C:\Users\<username>\AppData\Local\ABBYY\ScanStationFC\4.0) or scanning plug-in (C:\Users\<username>\AppData\Local\ABBYY\ScanningPlugin\)

temp folders and project folders.

These folders must be encrypted using the account of the user that is using the Scanning Station.

4. Export and import folders

The Processing Station must have access to the files stored in the import folder, as well as write permissions for the export folder in order to be able to create files in that folder. To encrypt the import folder, the user that is running the Processing Station must have access permissions to these files.

To encrypt files prior to sending them to the export folder, the Processing Station must use the key of the user that is running that Processing Station. This will allow the user to decrypt the files later.

Note: Each new file added to an encrypted folder must be encrypted for each user of the Processing Station separately. For this reason, we recommend that files be placed into an import folder by the user that is running the Processing Station. If encrypted files are to be accessed by other users, one option is to use the Cipher.exe command-line tool. Please refer to [the Microsoft website](#) for detailed instructions on using the utility.

Securing your IIS server

When ABBYY FlexiCapture 12 is deployed, the default IIS security configuration settings are used. You can also set up additional rules for specific requests to make your web server more secure.

The Content-Security-Policy Header

Content Security Policy (CSP) is a security standard used by modern browsers to protect against data injection attacks, such as cross-site scripting (XSS). CSP uses a whitelist to determine which resources are safe to load and ignores unverified sources. It also logs any attempts to bypass the security policy.

To make use of this policy, the server must have a Content-Security-Policy HTTP header with one or more directives set up, with each directive responsible for a specific resource type. Directives set out a security policy by declaring rules for resources.

To set up CSP for your browser, add the following code into your web.config file:

```
<system.webServer>
<httpProtocol>
<customHeaders>
<add name="Content-Security-Policy" value="default-src https: 'unsafe-inline' 'unsafe-eval'" />
</customHeaders>
</httpProtocol>
</system.webServer>
```

 **Note:** If you need to integrate ABBYY FlexiCapture with third-party systems and require access to other hosts, specify them in the web.config file. Be sure to check the operation of the software each time you change your security configuration settings.

For more information about the Content-Security-Policy header, see [this website](#).

The HTTP Strict-Transport-Security Header

HTTP Strict-Transport-Security (HSTS) is a website protection mechanism that restricts all interactions between the browser and the website to a secure connection using the SSL protocol. A web server that has HSTS set up contains an instruction for the browser to exclusively use HTTPS and forbids it from using HTTP. HSTS is primarily used to fend off interception attacks involving queries and responses, e.g. MITM (Man-In-The-Middle) attacks.

To be able to use this security policy, you need to use URL address rewrite rules to add a Strict-Transport-Security (STS) header to HTTP responses. This is necessary to prevent unwanted HTTP queries and redirect all HTTP traffic to HTTPS (based on the logic set out in the rules). To set up the rules, you need to install the URL Rewrite module. For more information, please see the [Microsoft website](#).

To set up HSTS for your browser, add the following code into your web.config file:

```
<rule name="Add the STS header in HTTPS responses">
<match serverVariable="RESPONSE_Strict_Transport_Security" pattern=".+" />
<conditions>
<add input="{HTTPS}" pattern="on" />
</conditions>
<action type="Rewrite" value="max-age=31536000" />
</rule>
```

 **Note:** The *max-age* directive specifies the time period (in seconds) during which the rule will be applied. The value specified in the code snippet above equals a period of one year.

For more information about HSTS, please see the [Microsoft website](#).

The X-Powered-By and X-AspNet-Version Headers

Apart from HTTP headers that are essential for improving the security of your web server, there are also headers that are optional. Often, such optional headers are not governed by any standards and their use increases the amount of traffic generated by each HTTP query, making it easier to carry out malicious attacks.

The following are two such optional headers:

- X-Powered-By is an HTTP header that contains information about various technologies used by the web server.
- X-AspNet-Version is an HTTP header that contains information about the ASP.NET version that is used to deploy applications on the web server.

By default, both X-Powered-By and X-AspNet-Version are included in server responses. We recommend that you disable these headers, since providing identifying information can pose a security threat.

To remove the X-Powered-By header from the IIS configuration, paste the following code into your web.config file:

```
<httpProtocol>
<customHeaders>
<remove name="X-Powered-By" />
</customHeaders></httpProtocol>
```

To remove the X-AspNet-Version header from your IIS configuration, paste the following code into your web.config file:

```
<httpRuntime enableVersionHeader="false" />
```

The X-XSS-Protection Header

X-XSS-Protection is an HTTP header that is used by browsers to prevent Cross-Site Scripting attacks. The header works by enabling an XSS filter, which intercepts unwanted attempts to insert malicious third-party code into web pages opened on a browser.

X-XSS-Protection is compatible with the following browsers: Internet Explorer 8+, Chrome, and Safari. However, most modern browsers use a stricter security policy (e.g. Content-Security-Policy), which makes this header necessary only if you are using an older browser that does not support CSP.

To enable the X-XSS-Protection header for your browser, copy the following code to your web.config file:

```
<system.webServer>
<httpProtocol>
<customHeaders>
<add name="X-XSS-Protection" value="1; mode=block" />
</customHeaders>
</httpProtocol>
</system.webServer>
```

The X-Content-Type-Options Header

X-Content-Type-Options is an HTTP header that is used by browsers to prevent attacks that exploit MIME (Multipurpose Internet Mail Extensions) vulnerabilities. MIME is an Internet standard for content that is sent over an internet connection. All files served by the web server are processed by browsers in a manner that depends on the MIME type of those particular files. Browsers determine the resource type by either using the Content-Type response, or by inspecting the resource contents, which makes it possible for attackers to mask HTML files as files of a different type.

The only directive available for this header is the *nosniff* directive. It instructs browsers to use only the MIME type that was specified by the web server.

To enable the X-Content-Type-Options header for your browser, paste the following code into your web.config file:

```
<system.webServer>
<httpProtocol>
<customHeaders>
<add name="X-Content-Type-Options" value="nosniff" />
</customHeaders>
</httpProtocol>
</system.webServer>
```

The Server Header

Server Header is a response header that contains information about the application used by the source server to process a request (e.g. the version number of the application). Potential availability of this kind of information to third parties is a security threat. For this reason, we recommend deleting the contents of the Server Header.

To delete the contents of the Server Header, add the following code into your web.config file:

```
<rewrite>
  <outboundRules rewriteBeforeCache="true">
    <rule name="Remove Server header">
      <match serverVariable="RESPONSE_Server" pattern=".+" />
      <action type="Rewrite" value="" />
    </rule>
  </outboundRules>
</rewrite>
```

If you are using IIS 10.0, Windows Server 2016, or Windows Server 2019, use the following code instead:

```
Set-WebConfigurationProperty
-pspath 'MACHINE/WEBROOT/APPHOST'
-filter "system.webServer/security/requestFiltering"
-name "removeServerHeader"
-value "True"
```

 **Note:** The settings described above require the URL Rewrite module to be installed. For more information, please see [the Microsoft documentation](#).

Protection Against Distributed Denial-of-Service Attacks

Distributed denial-of-service (DDoS) attacks involve overloading an application with HTTP requests, causing a significant increase in the amount of traffic and making the application inaccessible to legitimate users. It may not be easy to detect such attacks, as it is often difficult to distinguish between legitimate and malicious traffic.

To protect your web server from DDoS attacks, we recommend that you set up your IIS server to block access to your application if someone exceeds either the allowed number of requests over a certain period of time or the allowed number of concurrent requests.

To set up DDoS protection in IIS as described above, do the following:

1. Launch IIS Manager.
2. Select your website in the treeview and double-click the **IP Address and Domain Restrictions** icon on the site home page.
3. In the **Actions** pane, click **Edit Dynamic Restriction Settings**.
4. In the dialog box that opens, select the preferred method: **Deny IP Address based on the number of concurrent requests** or **Deny IP Address based on the number of requests over a period of time**.
5. Click **OK**.

In the IIS server settings, you can also restrict access to your application from specific IP addresses and specify the type of action that the server should perform when attempts are made to access your application from restricted IP addresses:

1. Launch IIS Manager.
2. Select your website in the treeview and double-click the **IP Address and Domain Restrictions** icon on the site home page.
3. In the **Actions** pane, click **Edit Dynamic Restriction Settings**.
4. In the dialog box that opens, select the desired type of action from the **Deny Action Type** drop-down list.
5. Click **OK**.

For cases where multiple HTTP requests are sent by multiple users from a single IP address, enable proxy mode in the IIS server settings. Doing so will let the proxy server pass the *x-forwarded-for* header to the web server to help identify the user.

To enable proxy mode, do the following:

1. Launch IIS Manager.
2. Select your website in the treeview and double-click the **IP Address and Domain Restrictions** icon on the site home page.
3. In the **Actions** pane, click **Edit Feature Settings**.

4. In the **Edit IP and Domain Restriction Settings** dialog box, select **Enable Proxy Mode**.

5. Click **OK**.

For more information about using IIS to restrict access to your application from certain IP addresses, please see [the Microsoft documentation](#).

Note: Using the proxy mode for handling large amounts of traffic may affect system performance and make it harder for legitimate users to access your application.

Disabling Detailed Error Responses in IIS

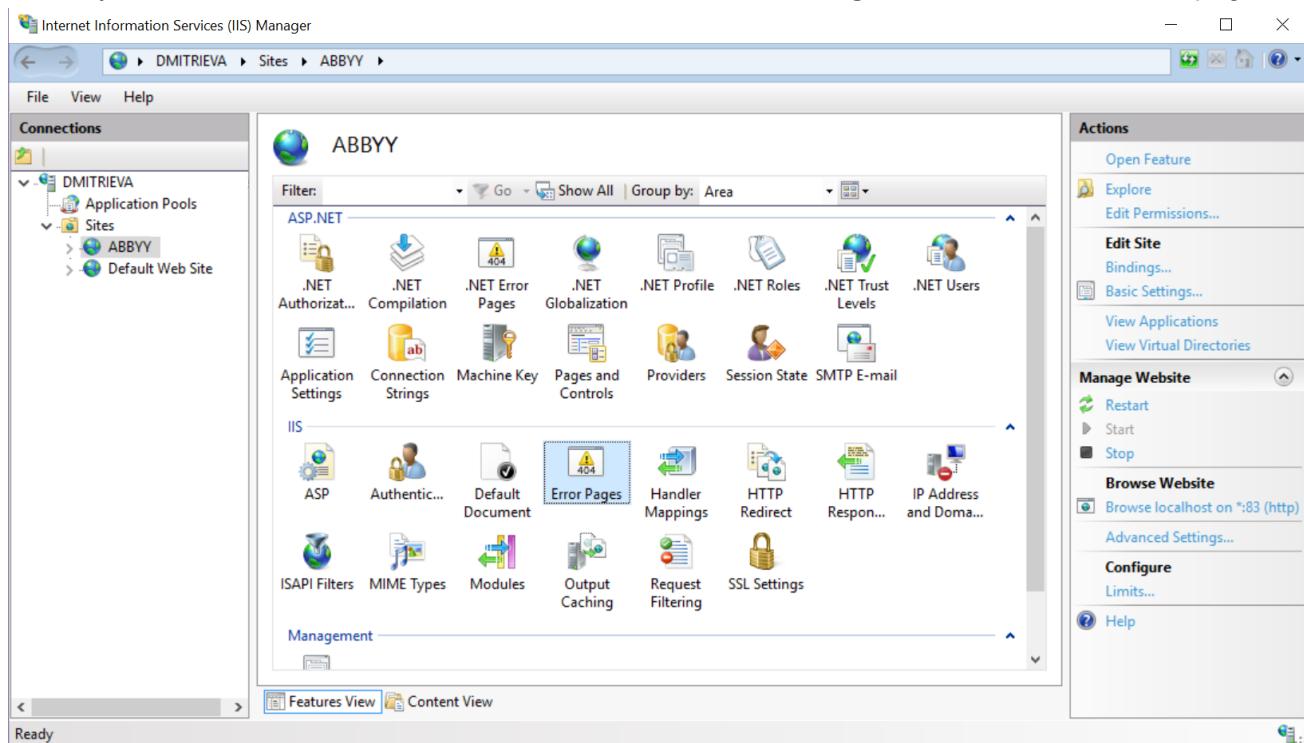
Detailed information about specific HTTP request errors is intended to help local administrators resolve errors as they occur. In certain cases, such information may identify the application, thus posing a security threat.

You can set up IIS to display detailed information only for local requests and have remote requests redirected to custom error pages.

To disable detailed error responses for remote requests in IIS Manager:

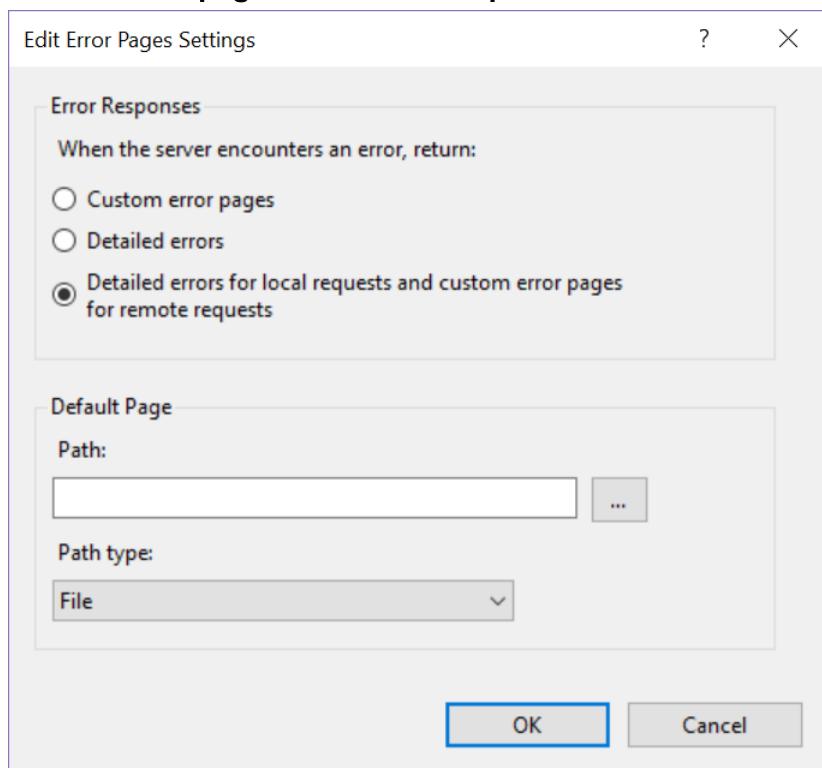
1. Launch IIS Manager.

2. Select your website in the treeview and double-click the **Error Pages** icon on the site home page.



3. In the **Actions** pane, click **Edit Feature Settings...**

4. In the **Edit Error Pages Settings** dialog box, select **Detailed errors for local requests and custom error pages for remote requests**.



5. Click **OK**.

For more information, please see [the Microsoft documentation](#).

Multitenant system

ABBYY FlexiCapture 12 supports multitenancy, allowing multiple independent users to access a single instance of the program. Multiple tenants can be used by large companies and enterprises or in clouds. Each tenant will correspond to a separate company or client working with ABBYY FlexiCapture. The data of one tenant (i.e. projects, batches, users, and groups) will be fully isolated from any other tenants.

Tenants are created, set up and deleted by the ABBYY FlexiCapture administrator, who also ensures that the multitenant system stays operational. The administrator can process documents in the default tenant but cannot access the data of any other tenants.

When creating a tenant, the ABBYY FlexiCapture administrator assigns a tenant administrator, who will add users to the tenant, delete users from the tenant, upload projects, and monitor document processing within the tenant.

Managing tenants

Creating a new tenant

Important! When you create a tenant, an e-mail message will be sent to the tenant Administrator. This message will not be sent unless [e-mail notifications](#) have been set up. To set up the notifications, click **Settings → SMTP settings**.

To create a new tenant, complete the following steps:

1. Open the Administration and Monitoring Console, click **Settings → Tenants** and then click the **New tenant** button.

2. On the page that opens, specify the following settings:

- The name of the tenant (required).

Note: Tenant names can contain only English characters, digits, and underscores. Do not use spaces in tenant names.

- A description of the tenant.
- The e-mail address of the tenant Administrator (required)
- License number.

Note: You can either let the tenant use the main license by enabling the **Share main license** option, or activate an individual license for the tenant by specifying it in the **License number** field. For details, see the [Using the main license for tenants](#) and [Using tenant licenses](#) sections of the Administration and Monitoring Console help page.

3. Click **Save**.

ABBYY FlexiCapture will automatically generate an e-mail message containing the address of the tenant sign-in page (in the format `https://<ApplicationServer>/FlexiCapture12/Login/<TenantName>`), a login, and a temporary password.

Note: You can change the address of the tenant included in the e-mail message by editing the value of the "SiteUrl" key in the web.config file, which can be found in <IIS Root Directory (e.g. "C:\inetpub\wwwroot">)\FlexiCapture12\Monitoring. Example

```
<appSettings>
  ...
  <add key="SiteUrl" value="https://myserver.flexicapture.com/FlexiCapture12" />
  ...
</appSettings>
```

Deleting a tenant

Important! Once you delete a tenant, all of its data (i.e. projects, users, etc.) will be irrevocably lost. To delete a tenant, open the Administration and Monitoring Console, navigate to the **Settings** → **Tenants** page, select the tenant in the list, and click the **Delete** button.

Working with tenants

All tenants are listed on the **Settings** → **Tenants** page. To view or edit a tenant's properties, click the link in the **Name** column of the list. To open a tenant's sign-in page, click the **Login** link in the **Login reference** column of the list.

Every tenant has an Administrator who manages the tenant's projects. To upload a tenant's project to the server or make the project available within a specific tenant, open the Project Setup Station or a Verification Station and follow the instructions below:

1. Click **File** → **Upload Project to Server...** or **Open Project from Server...**;
2. In the dialog box that opens, specify the name of the FlexiCapture server (`http://<ApplicationServer>` where `<ApplicationServer>` is the name of the computer on which the

Application Server is installed, example: `http://localhost`) and specify the name of the tenant in field **Tenant name**;

3. Check the connection and click **OK**.

Monitoring a multitenant system

To monitor the performance and workload of a multitenant system, the Administration and Monitoring Console is used.

- **System Monitor** is designed to monitor the performance and workload both of the entire multitenant system and of each tenant individually. This page is only available to the ABBYY FlexiCapture administrator and contains the following information:
 - system performance (within the last hour, the last 24 hours or the last 72 hours)
 - state of queues
 - processing events
- **Processing Monitor** is designed to monitor the performance and workload of a particular tenant. This page is only available to the tenant administrator and contains the following information:
 - system performance (within the last hour, the last 24 hours or the last 72 hours)
 - batches being processed
 - active tasks
 - state of queues
 - processing events

For details, see the [Monitoring ABBYY FlexiCapture](#) section of the Administration and Monitoring Console help page.

CLI for project administration

In an enterprise setting, you may need to work in multiple environments or with multiple ABBYY FlexiCapture projects, which may require synchronizing your project settings or project modifications across your working environments. FCAdminTools is a utility designed specifically to address this need. It also allows you to administer your projects in multiple installations. In this section, you will find a detailed description of the FCAdminTools commands.

FCAdminTools.exe is provided together with ABBYY FlexiCapture Distributed Edition and can be found in the folder where you chose to install the Project Setup Station (the default location is `<C:\Program Files\ABBYY FlexiCapture 12 Stations>`).

By default, the language of the messages displayed by FCAdminTools is the same as the UI language of your Project Setup Station. You can change this language by modifying the following key in the Windows

registry:

\HKEY_CURRENT_USER\Software\ABBYY\FlexiCapture\12.0\FineObjects\InterfaceLanguage.

FCAdminTools commands

The following command line switches can be used with any of the commands described in this section:

Switch	Description
/Verbosity	<p>Chooses a logging level.</p> <p>All – All types of messages will be logged (i.e. information messages, warnings, and errors).</p> <p>Warnings – Only warnings will be logged.</p> <p>Errors – Only errors will be logged.</p> <p>None – No messages will be logged.</p>
/? or /help	If this switch is placed after a command, help for the command will be displayed. Otherwise, general help will be displayed.
/NoLogo	Hides the product logo (including product name, version, and copyright notice) at start-up.

Examples of use:

FCAdminTools.exe /? - Displays help for all commands.

FCAdminTools.exe CommandName /? - Displays help for the <CommandName> command.

 **Note:** For a local project, neither the /U nor the /P parameter is required.

 **Note:** The command and option names are not case-sensitive. Quotation marks can be preceded by the "\" symbol to avoid string truncation.

CheckProjectsVersion

When updating ABBYY FlexiCapture 12, all document processing needs to be stopped. After updating ABBYY FlexiCapture 12, all the projects on the server must also be updated. Updating all of the projects may take a significant amount of time. However, document processing can be resumed even before all of the projects have been updated – the system will ignore any processing jobs in projects that have not yet been updated.

You can use the **CheckProjectsVersion** command to get information about the projects that have not yet been updated. Depending on the parameters you specify, running this command will display the following information:

- The current version of the product – if no parameters are specified.
- The number of projects on the server that need to be updated.
- The projects that need to be updated.

- The version of the product that was used to create a specific project.

Parameters:

/Project	Optional	<p>Specifies a project. A project can be specified in any of the following ways:</p> <ul style="list-style-type: none"> • Full local path to the project. • Path to the project on the server. • Name of the project on the server (this requires the /Server parameter to be specified). <p>If a project is specified, the product version that was used to create it will be returned.</p>
/Server	Optional	<p>Server address. If a server is specified but no value for the /ListProjects flag is specified, the number of projects with earlier versions on the server will be returned.</p>
/U	Optional	<p>User name. If this parameter is not specified, Windows authentication will be used.</p>
/P	Optional	<p>User password.</p>
/Tenant	Optional	<p>Tenant name.</p>
/ListProjects	Flag	<p>If this parameter is specified, a list of projects on the server that need to be updated will be returned in the following format: <Tenant> <Project Name> <Project Id in the Database> <Current project version>. <Current project version> can be specified as:</p> <ul style="list-style-type: none"> • Older • Newer • Unknown • Version number (if the version corresponds to the version specified in the version table in the database).

		Note: If the /ListProjects flag is specified, the name of the default tenant need not be specified.
--	--	---

Note: To get information about a project in a tenant, the tenant administrator credentials must be specified in the **/U** and **/P** parameters. The link to the project must be specified without the tenant name.

Example of use:

`CheckProjectsVersion` – Displays the current product version.

`/CheckProjectsVersion /Server="https://FCSRV" /ListProjects` – Displays the projects that have not been updated, together with their versions.

`/CheckProjectsVersion /Server="https://FCSRV" /Project="IdProject"` – Displays the version of the product that was used to create the project.

`/CheckProjectsVersion /Project="https://FCSRV/idProject" /Tenant=tenant /U=admin /P=password` – Displays the version of the product that was used to create the given project in the given tenant.

CompactProject

When you publish a new version of a Document Definition, its older versions are not deleted automatically, as they may be in use by some documents in the current project. However, over time, as documents are deleted or their Document Definitions are upgraded, unused Document Definitions may accumulate. These can be deleted using the **CompactProject** command.

1. For a local project, running the **CompactProject** command is identical to clicking **Project → Compact**.
2. For a project stored on a server, running the **CompactProject** command will delete all the unused versions of the Document Definition and any related files. The command will look for unused files both in working and in training batches.

Note: The latest versions of Document Definitions are never deleted.

Parameters

<code>/Project</code>	Optional	<p>Specifies a project. You can specify any of the following:</p> <ul style="list-style-type: none"> • the full path to a local project • the path to a project on a server • the name of a project on a server (the /Server parameter must be specified) <p>If no project is specified, the command will compact all the projects on the server.</p>
<code>/Server</code>	Optional	Server address.

/U	Optional	User name. If no user name is specified, Windows authentication will be used.
/P	Optional	Password.
/Tenant	Optional	Tenant name.

Example of use:

CompactProject /Project="<https://FCSRV/1/SingleEntryPoint>" /U=user /P=password

CopyBatchType

When creating a new project, you can use batch types created in other projects. This will save time and prevent configuration errors. You can use the **CopyBatchType** command to copy batches from one project to another. The command will overwrite any batch types having the same names as the batch types that you want to copy.

 **Note:** A batch type may reference a Document Definition. If there is no such Document Definition in the target project, a warning message will be displayed and the reference to the missing Document Definition will be removed.

Parameters

/Source	Required	The source project from which batch types should be copied. You can specify either the full path to a local project or the path to a project stored on a server.
/Target	Required	The target project where you want to add or replace batch types. You can specify either the full path to a local project or the path to a project stored on a server.
/Name	Optional	Batch type name. If a batch type with this name already exists in the target project, the batch type will be overwritten. If no batch type name is specified, all the batch types will be copied.
/TargetName	Optional	New batch type name.

		If it is not set, the original name will be used.
/DocumentDefinitions	Optional	A list of document definitions referenced by the new batch type.
/Classified	Optional	The batch classifier ID referenced by the new batch type.
/SourceU	Optional	User name. If no user name is specified, Windows authentication will be used.
/SourceP	Optional	Password.
/SourceTenant	Optional	The tenant with the source project.
/TargetU	Optional	User name. If no user name is specified, Windows authentication will be used.
/TargetP	Optional	Password.
/TargetTenant	Optional	The tenant with the target project.
/AlwaysAdd	Flag	If this parameter is set, a new batch type is added regardless of whether the given batch type exists or not.

Example of use:

```
CopyBatchType /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:  
\Projects\SingleEntryPoint /SourceU=user /SourceP=password /Name="Batch type"
```

CopyDataType

When creating a new Document Definition in a project, you can re-use a correctly specified data type from another project. This will save time and prevent configuration errors. You can use the **CopyDataType** command to copy custom data types from one Document Definition into another. The command will overwrite any custom data types having the same names as the custom data types that you want to copy.

 **Note:** Upon import, the version of the Document Definition will be updated and the copied data type will become available only within its data type category (e.g. numbers, dates, currency, etc.).

Parameters

/Source	Required	The source project where the command should look for the Document Definition containing the data type that you want to copy. You can specify either the full path to a local project or the path to a project stored on a server.
/Target	Required	The target project where the command should look for the Document Definition to which you want to copy the data type. The target project can be the same as the source project. You can specify either the full path to a local project or the path to a project stored on a server.
/SourceDocumentDefinition	Required	The source Document Definition that contains the data type that you want to copy.
/TargetDocumentDefinition	Required	The target Document Definition where you want to copy the data type.
/Name	Required	The name of the data type that you want to copy.
/SourceU	Optional	User name. If no user name is specified, Windows authentication will be used.
/SourceP	Optional	Password.
/SourceTenant	Optional	The tenant with the source project.
/TargetU	Optional	User name. If no user name is specified, Windows authentication will be used.

/TargetP	Optional	Password.
/TargetTenant	Optional	The tenant with the target project.

Example of use:

```
CopyDataType /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:  
\\Projects\\SingleEntryPoint /SourceDocumentDefinition=Banking_eng /TargetDocumentDefinition=Banking_eng /SourceU=user /SourceP=password /Name="Data type"
```

CopyDocumentDefinition

Multiple projects may use the same Document Definition. When you edit such a Document Definition in one project, you may want to copy it to the other projects. This will save time and prevent configuration errors. You can use the **CopyDocumentDefinitions** command to copy a Document Definition from one project to another. The command will overwrite any Document Definition having the same name as the Document Definition that you want to copy, changing its version number accordingly.

 **Note:** When you copy a Document Definition, the changes will be published immediately. The previously published versions of this Document Definition will still be accessible to the program.

Parameters

/Source	Required	<p>The source project containing the Document Definition that you want to copy.</p> <p>You can specify either the full path to a local project or the path to a project stored on a server.</p>
/Target	Required	<p>The target project where you want to copy the Document Definition.</p> <p>You can specify either the full path to a local project or the path to a project stored on a server.</p>
/Name	Optional	<p>The name of the Document Definition that you want to copy.</p> <p>If a Document Definition with this name already exists in the target project, it will be replaced. If no Document Definition is specified, all the Document Definitions will be copied.</p>
/SourceU	Optional	<p>User name.</p> <p>If no user name is specified,</p>

		Windows authentication will be used.
/SourceP	Optional	Password.
/SourceTenant	Optional	The tenant with the source project.
/TargetU	Optional	User name. If no user name is specified, Windows authentication will be used.
/TargetP	Optional	Password.
/TargetTenant	Optional	The tenant with the target project.
/UpdateDataSets	Flag	If this switch is specified, the data sets from the source project will be copied to the target project.

Example of use:

```
CopyDocumentDefinition /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:  
\Projects\SingleEntryPoint /SourceU=user /SourceP=password /Name="Banking_eng"
```

CopylImportProfile

When creating a new project, you can reuse import profiles created in another project. This will save time and prevent configuration errors. You can use the **CopylImportProfile** command to copy import profiles specified for hot folders from one project to another.

 **Note:** Import profiles involving scanners are shared by all the projects on a given machine and will not be copied.

Parameters

/Source	Required	The source project containing the import profile that you want to copy. You can specify either the full path to a local project or the path to a project stored on a server.
/Target	Required	The target project where you want to copy the import profile. You can specify either the full path to a local project or the path to a project stored on a server.

/Name	Optional	The name of the import profile that you want to copy. If an import profile with this name already exists, it will be overwritten. If no import profile is specified, all the import profiles will be copied.
/SourceU	Optional	User name. If no user name is specified, Windows authentication will be used.
/SourceP	Optional	Password.
/SourceTenant	Optional	The tenant with the source project.
/TargetU	Optional	User name. If no user name is specified, Windows authentication will be used.
/TargetP	Optional	Password
/TargetTenant	Optional	The tenant with the target project.

Some image import parameters are project-dependent and have to be processed separately. The **CopyImportProfile** command will process the following hot folder parameters:

Parameter	Value assigned by command
Import source	This parameter will remain unchanged.
Hot folder crawling times	This parameter will remain unchanged.
The batch where images should be added	<ol style="list-style-type: none"> 1. Add images to the current batch – This parameter will remain unchanged. 2. Add images to an existing batch – This parameter will be reset to Create new batches. 3. Create new batches – The batch type can be found in the new project by its name. If it is not found, the type is reverted to the default type. Does not affect anything else.
Message parameters	This parameter will remain unchanged.
Image processing parameters	This parameter will remain unchanged.
Got folder clean-up parameters	This parameter will remain unchanged.

Example of use:

```
CopyImportProfile /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:  
\Projects\SingleEntryPoint /SourceU=user /SourceP=password /Name="Load from D:\123"
```

DeleteTrainingSamples

Over time, documents and images will accumulate in training batches. They can sometimes contain user data which may only be stored for a limited period of time for legal reasons. These files need to be deleted after that time period expires. Besides, such documents and images also take up storage space. You can use the **DeleteTrainingSamples** command to delete such accumulated documents and images from all the training batches, leaving only the training results.

 **Note:** Deleting all documents and images makes further training impossible. To resume training, new images need to be added. Training will then resume from scratch using only the new images. The results of prior training will be deleted and will no longer be used.

Parameters

/Project	Required	<p>Specifies a project.</p> <p>You can specify any of the following:</p> <ul style="list-style-type: none"> • the full path to a local project • the path to a project on a server
----------	----------	--

		<ul style="list-style-type: none"> • the name of a project on a server (the /Server parameter must be specified) <p>If no project is specified, the command will process all the projects on the server.</p>
/TrainingBatches	Optional	<p>Training batches from which all files must be deleted.</p> <p>Possible values are All, LayoutOnly, ClassifierOnly or None. By default, this parameter is set to All.</p>
/DeleteOlderThan	Optional	<p>Specifies the number of days (starting from creation date) after which an image must be deleted.</p> <p>If no value is specified, all images will be deleted.</p>
/LockTraining	Flag	Disables further training for a batch if at least one image is deleted from that batch.
/U	Optional	<p>User name.</p> <p>If no user name is specified, Windows authentication will be used.</p>
/P	Optional	Password.
/Tenant	Optional	Tenant name.

Example of use:

```
DeleteTrainingSamples /Project="https://FCSRV/1/SingleEntryPoint" /U=user /P=password /DeleteOlde
rThan=90 /LockTraining
```

DownloadProject

To archive a project or to transfer it to another environment, you must first download it into your file system using the **DownloadProject** command, which allows you to download projects together with any required working or training batches.

By default, the **DownloadProject** command will download a project without any working batches but with all the training batches (no images will be downloaded, however). You can use additional command parameters to select which batches to download. The types of the downloaded batches will be preserved and they will be saved to their respective folders.

To upload a project to the server, use the [UploadProject](#) command.

Parameters

/Source	Optional	The path to a project on the local machine or on a server. If you specify a server but specify no project, all the projects available on the server will be downloaded.
/Target	Optional	The local directory where the project will be saved. If multiple projects are downloaded, multiple subdirectories will be created in this directory, one for each project.
/Server	Optional	The server with the projects that you want to download.
/Tenant	Optional	Tenant name.
/U	Optional	User name. If no user name is specified, Windows authentication will be used.
/P	Optional	Password.
/CopyTrainingBatches	Optional	Downloads training batches. The parameters may have any of the following values: <ul style="list-style-type: none"> • All – downloads all the training batches • LayoutOnly – downloads all the field extraction training batches • ClassifierOnly – downloads all the classifier training batches • None – downloads only those training batches specified in the /BatchIds parameter (if any); otherwise, no training batches are downloaded The default value is All .
/CopyBatches	Flag	Downloads all the working batches regardless of the batch IDs specified in the /BatchIds parameter. The working batches are downloaded together with their images.
/CopyTrainingSamples	Flag	Downloads the contents of the training batches.

/BatchIds	Optional	The IDs of the batches to be downloaded.
-----------	----------	--

Note: To download only specific working or training batches, specify their ID in the /BatchIds parameter. If the /BatchesIds parameter is used in conjunction with the /CopyBatches or /CopyTrainingBatches parameter, all the working or training batches with the specified values are downloaded, regardless of the IDs specified in the /BatchIds parameter.

Example of use:

DownloadProject /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:
 \Projects /CopyTrainingBatches=none /BatchIds=1,2,3 /U=user /P=password – Downloads a project with the specified batches (training and classifier batches are downloaded without their images).

DownloadProject /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:
 \Projects /CopyTrainingBatches=none /BatchIds=1,2,3 /CopyTrainingSamples /U=user /P=password – Downloads a project with the specified batches (training and classifier batches are downloaded together with their images).

DownloadProject /Server=https://FCSRV /Target=D:
 \Projects /CopyTrainingBatches=LayoutOnly /BatchIds=2,3,7954 /U=user /P=password – Downloads a project with all the field extraction training batches (without their images) and with the specified working or classifier batches.

DownloadProject /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:
 \Projects /CopyTrainingBatches>All /CopyTrainingSamples /U=user /P=password – Downloads a project with all the training batches (together with their images).

SetEnvironmentVariable

You can use an environment variable to specify a general setting for a project. You can use the **SetEnvironmentVariable** command to create such an environment variable. If an environment variable with the name you specify already exists, the command will change its value and description; otherwise, a new environment variable will be created.

Note: You cannot change the type of an existing environment variable. If you specify a different type for an existing environment variable, the command will return an error.

Parameters

/Project	Optional	<p>Specifies a project.</p> <p>You can specify any of the following:</p> <ul style="list-style-type: none"> • the full path to a local project • the path to a project on a server • the name of a project on a server (the /Server parameter must be specified)
----------	----------	--

		If no project is specified, the command will process all the projects on the server.
/Name	Optional	Environment variable name.
/Value	Optional	Environment variable value. If it is not set, it is processed as an empty line.
/Type	Optional	Environment variable type. Possible values are String and ADOConnectionString . By default, this parameter is set to String .
/Description	Optional	Environment variable description.
/Server		Server address.
/Tenant	Optional	Tenant name.
/U	Optional	User name. If no user name is specified, Windows authentication will be used.
/P	Optional	Password.

Example of use:

SetEnvironmentVariable /Project="D:\Banking_eng" /Name="ImportPath" /Value="D:\123" – For a local project.

SetEnvironmentVariable /Project="<https://localhost/1>" /Name="ImportPath" /Value="D:\123" – For a project on a server.

SetExportRootPath

You can use the **SetExportRootPath** command to specify an export root path.

Parameters

/ExportPath	Required	The new root export path.
/Project	Optional	Specifies a project. You can specify any of the following:

		<ul style="list-style-type: none"> • the full path to a local project • the path to a project on a server • the name of a project on a server (the /Server parameter must be specified) <p>If no project is specified, the command will process all the projects on the server.</p>
/Server		Server address.
/Tenant	Optional	Tenant name.
/U	Optional	User name. If no user name is specified, Windows authentication will be used.
/P	Optional	Password.

Example of use:

SetExportRootPath /Project="D:\Banking_eng" /ExportPath="D:\123" – For a local project.

SetExportRootPath /Project="https://localhost/1" /ExportPath="\pc\share" – For a project on a server.

SyncTrainingBatches

Document processing is carried out in several different projects or environments. Hence, images are accumulated, and models are trained in a specific project or environment. If a need to use the training results in a different environment arises, trained models will need to be transferred from one environment to another. The **SyncTrainingBatches** command is used to transfer training batches from one project or environment to another. Only the models that have a higher quality than the ones already present in an existing project or environment will be transferred. This command can also be used to transfer images used for training.

Parameters

/Source	Required	The project from which the training batches should be copied.
/Target	Required	The project to which the training batches should be copied.
/SourceTenant	Optional	The tenant containing the source project.

/TargetTenant	Optional	The tenant where the project should be updated.
/SourceU	Optional	User name. If no user name is specified, Windows authentication will be used.
/SourceP	Optional	Password.
/TargetU	Optional	User name. If no user name is specified, Windows authentication will be used.
/TargetP	Optional	Password.
/CopyTrainingBatches	Optional	Copies the training batches. Possible values are All , LayoutOnly , ClassifierOnly or None . By default, this parameter is set to All .
/BatchIDs	Optional	The IDs of the batches that should be synchronized. If no batch IDs are specified, all the training batches will be synchronized. If some batch IDs are specified, the /CopyTrainingBatches parameter should be set to either LayoutOnly or ClassifierOnly to avoid duplicate batch IDs as different collections may contain identical batch IDs.
/CopyTrainingSamples	Flag	Copies the contents of a training batch. By default, if the batches are identical (have the same GUID), the contents of the batch will not be copied. This can be changed using the ForceSync flag (see below for more information). The contents of a batch are

		copied only if the batch itself is copied.
/ForceSync	Flag	Disables the training quality check and copies a training batch even if the quality of the new model is worse than that of the existing model.

Example of use:

```
SyncTrainingBatches /Source="https://FCSRV/1/SingleEntryPoint" /Target=D:\Projects\SingleEntryPoint
/SourceU=user /SourceP=password /ForceSync /BatchIDs=1,2,3,4
```

UpdateAssembly

Some script stages and rules can use external libraries, which will need to be kept up to date. When editing assembly code used for customizing projects, you may need to update a particular assembly in all projects. You can use the **UpdateAssembly** command to update assemblies in project settings, batch types, and Document Definitions. This command can be used for a single project or for all the projects on a server at once.

Parameters

/AssemblyPath	Required	The path to the assembly. Only assemblies whose full name matches the specified name will be updated.
/Project	Optional	Specifies a project. You can specify any of the following: <ul style="list-style-type: none">• the full path to a local project• the path to a project on a server• the name of a project on a server (the /Server parameter must be specified) If no project is specified, the command will process all the projects on the server.
/Server	Optional	Server address.
/Tenant	Optional	Tenant name.

/U	Optional	User name. If no user name is specified, Windows authentication will be used.
/P	Optional	Password.
/DocumentDefinition	Optional	The name of the Document Definition containing the assembly that needs to be updated.
/BatchType	Optional	The name of the batch type containing the assembly that needs to be updated.

Note: If neither the **/DocumentDefinition** parameter nor the **/BatchType** parameter is set, the program will look for the document assembly in all the Document Definitions and batch types.

Example of use:

```
UpdateAssembly /Project="https://FCSRV1/SingleEntryPoint" /AssemblyPath="D:\FlexiCapture\ClassLibrary1\bin\Release\ClassLibrary1.dll" /DocumentDefinition=*
```

UpdateProject

In an enterprise setting, changes made to a project are first implemented in a test environment. Once tested, they need to be transferred to the deployment environments. You can use the **UpdateProject** command to replace an existing project with its new version in the deployment environment.

Note:

1. FCAdminTools will rename the processing stages in projects whose language differs from the language of FCAdminTools. You can prevent this by specifying the appropriate language in the Windows registry. Please refer to [this section](#) for more information about it.
2. Using the **UpdateProject** command will update your entire project, including its Document Definitions and import profiles. To only update the Document Definitions, use the [**CopyDocumentDefinition**](#) command.

Parameters

/Source	Required	The full path to the source project. If the project is located on a server, the path should contain the tenant ID.
/Target	Required	The full path to the target project. If the project is located on a server, the path should contain the tenant ID.

/SourceTenant	Optional	The tenant with the source project.
/TargetTenant	Optional	The tenant with the target project.
/UpdateDataSets	Flag	<p>By default, no data sets are copied into the target project.</p> <p>To copy data sets, specify this switch.</p> <p>Note: If the Document Definition in the source project is newer than the Document Definition in the target project, the data sets will be updated irrespective of the value of this switch.</p>
/UpdateEnvironmentVariables	Flag	<p>By default, no environment variables are copied to the target project.</p> <p>To copy environment variables, specify this switch.</p>
/SourceU	Optional	<p>User name.</p> <p>If no user name is specified, Windows authentication will be used.</p>
/SourceP	Optional	Password.
/TargetU	Optional	<p>User name.</p> <p>If no user name is specified, Windows authentication will be used.</p>
/TargetP	Optional	Password.

Example of use:

```
/UpdateProject /Source="https://FCStage/1/Banking_eng"/Target="https://FCProd/1/Banking\_eng"
```

UpgradeProject

When you upgrade ABBYY FlexiCapture, you also need to upgrade all your projects. You can use the **UpgradeProject** command to upgrade all your projects to the latest version of ABBYY FlexiCapture.

Parameters

/Project	Optional	<p>Specifies a project.</p> <p>You can specify any of the following:</p> <ul style="list-style-type: none"> • the full path to a local project • the path to a project on a server • the name of a project on a server (the /Server parameter must be specified) <p>If no project is specified, the command will process all the projects on the server.</p>
/Server	Optional	The server containing the project that should be upgraded.
/Tenant	Optional	The name of the tenant containing the project that should be upgraded.
/U	Optional	<p>User name.</p> <p>If no user name is specified, Windows authentication will be used.</p>
/P	Optional	Password.

Note: When upgrading a project in a tenant, specify the ABBYY FlexiCapture administrator's username and password in the **/U** and **/P** parameters respectively. Do not include the name of the tenant in the project URL.

Example of use:

`UpgradeProject /Server="https://FCSRV" /Project="Banking_eng" /U=user /P=password`

`UpgradeProject /Project="https://FCSRV/5" /U=admin /P=password /AutomaticProcessorRole – Upgrades a project in a tenant.`

`UpgradeProject /Server="https://FCSRV" /U=admin /P=password /AutomaticProcessorRole – Upgrades all projects on a server.`

UploadProject

You can use the **UploadProject** command to upload a project from a local file system to a server. By default, the training batches are also copied.

Note: Uploading a project to the server always modifies the project's UUID. By default, the system does not check whether the project being uploaded already exists on the server. To avoid this, use the /CheckProjectExists flag, which will display an error message when a project with the same UUID already exists on the server.

To download a project from a server to a local file system, use the [DownloadProject](#) command.

Parameters

/Source	Required	The path to the local project. Relative local paths are not supported.
/Target	Required	The path to the location on a server where the project will be saved, or the full path to a local folder where the project will be saved.
/Tenant	Optional	Tenant name.
/U	Optional	User name. If no user name is specified, Windows authentication will be used.
/P	Optional	Password.
/CopyTrainingBatches	Optional	Downloads training batches. Possible values are All , LayoutOnly , ClassifierOnly or None . By default, this parameter is set to All .
/CopyTrainingSamples	Flag	Downloads the contents of training batches.
/CheckProjectExists	Flag	Checks if a specified project already exists on the server, and if not, copies it together with its UUID. If it does, an error message will be displayed.

Example of use:

```
UploadProject /Source="D:\Projects\FCProject" /Target="https://FCSRV" /U=user /P=password /CopyTrainingSamples - uploads a project and all contents of its training batches to the server.
```

UploadProject /Source="D:

\Projects\FCProject" /Target="https://FCSRV" /U=user /P=password /CopyTrainingBatches=LayoutOnly /CheckProjectExists - uploads a project and all its field extraction training batches, and checks whether an identical project exists on the server.

Description of Processing Server commands

A command line interface may be used for managing the Processing Server. The command line interface can be used to perform the following operations on the Processing Server:

- initializing and stopping the server;
- adding, setting up, and removing stations;
- updating data sets;
- managing hot folders;
- managing the diagnostics mode.

Processing server commands should be entered as follows: '**FlexiBrSvc Please [command]**'. In order to not have to enter the phrase '**FlexiBrSvc Please**' every time, you can enable command mode by using **FlexiBrSvc Please obey**. To disable command mode, use **FlexiBrSvc Please quit**.

For help regarding one or several of the above commands, use **help [command]**.

Below is a description of all commands authorized to be used in the Processing Server.

Managing the server

- **set <param>=<value>** – assigns the <value> value to the <param> parameter. Use the 'view' command to display a list of available parameters. Use the 'set <param>=?' command to display a list of all allowed values for a parameter.
- **start server** – initializes the Processing Server.
- **stop server [timeout]** – stops the Processing Server.

Use the **[timeout]** parameter to set a time period during which the server should finish carrying out initialized tasks. If this parameter has not been set, the server will stop instantly.

Managing stations

- **add station <location>** – adds a new station to <location>.
- **list stations** – displays information about existing stations.
- **remove station <station>|*** – removes a <station>. Use '*' to remove all stations.

 **Note:** Carrying out this command requires that the station's name as well as its location or UUID are specified.

- **set station <station> <param>=<value>** – assigns the <value> value to the <param> station parameter. Use the 'view' command to display a list of all available parameters. Use the 'set station

<station> <param>=? command to display a list of all possible parameter values. Use '*' instead of the station name to assign the specified parameter value to all stations.

- **start station <>|*> [/Async]** – attempts to initialize the <station> station. Use '*' to attempt to initialize all stations.

Note: Carrying out this command requires that the station's name as well as its location or UUID are specified.

Use the **[/Async]** parameter so that other commands are not blocked if station <station> has not been initialized.

- **stop station <>|*> [timeout]** – stops the <station> station. Use '*' to stop all stations.

Note: Carrying out this command requires that the station's name as well as its location or UUID are specified.

Use the **[timeout]** parameter to set a time period during which the server should finish carrying out initialized tasks.

- **view <station>|*>** – displays detailed information about station <station>. Use '*' to display information about all stations. If no station has been specified, this command will display information about the server.

Managing projects

- **update dataset <project> [document definition] [data set]** – updates a data set. Use <project> to specify the full path to the project, for example: http://app-server/f24d.../Banking_eng. If either the document definition name or the data set name are not specified, all document definitions and data sets will be updated.

Managing hot folders

- **list hotfolders <project>** – displays detailed information about all enabled hot folders.
- **set hotfolder <project> Enabled/Disabled** – enables or disables hot folder processing for project <project>. Use the 'view' command to display a list of available projects.

Process diagnostics

The profiling system is designed for low-level monitoring of Server and Processing Station internal conditions. If profiling is enabled, the Processing Server will begin to collect statistics about its own and the stations' internal processes. By default, this function is disabled.

The Processing Server will save the collected data to the following folder in the file system: %ProgramData%\ABBYY\FlexiCapture\12.0\FlexiBr[Svc]\Profiling. The frequency with which the collected data is saved to disk is set by the following registry key:
ProfilingManagerSaveWindowProfilingReportPeriod in
HKEY_LOCAL_MACHINE\SOFTWARE\[Wow6432Node]\ABBYY\FlexiCapture\12.0\FlexiBr (in milliseconds; the default value is 3600000).

- **reset total profiling report** – resets the full profiling report. After this command has been used to clear the profiling report, the report will only cover the time period after the command has been called.

- **save total profiling report <path>** – saves the full profiling report to the specified folder.
- **save window profiling report <path>** – saves the full profiling report for the specified period to the specified folder.
- **set profiling disabled** – disables profiling.
- **set profiling enabled** – enables profiling.

Managing your licenses using the command-line console

ABBYY FlexiCapture 12 includes a license management utility that allows you to manage your licenses from a command-line console. The utility executable is named *LicenseManager.Console.exe* and can be found in the following folder:

C:\Program Files\ABBYY FlexiCapture 12 Servers\LicenseManager.Console.exe

The following is a list of commands that can be used to manage licenses from the console:

Command	Description
/Help	Displays the help screen.
/ListAvailableLicenses	Displays a list of all activated licenses.
/Activate:SerialNumber	Activates the license with the specified serial number.
	/ErrorIfActivated
	/SaveActivationEMail:FileName
	/LoadActivationFile

Example:

"C:\Program Files\ABBYY FlexiCapture 12 Servers\LicenseManager.Console.exe" /Activate:DVRP-1234-0000-1111-2222-3333 /ErrorIfActivated /SaveActivationEMail:"C:\Temp\ActivationFile.txt"

/Deactivate:SerialNumber	Deactivates a license with the specified serial number.
/Update:SerialNumber	Updates the license with the specified serial number.
/SetWorkingLicense:SerialNumber	Sets the license with the specified serial number as the currently active (working) license.

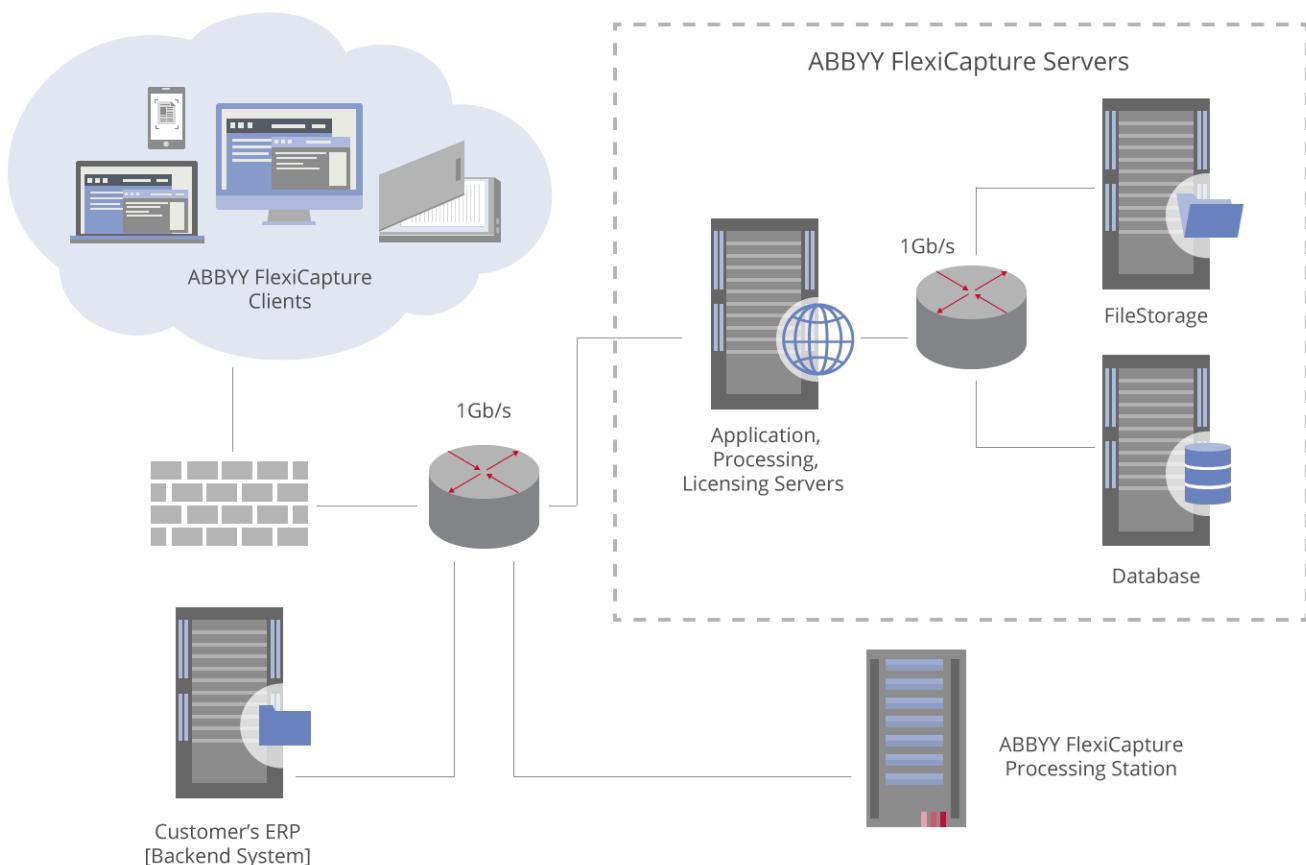
<code>/ShowLicenseParameters:SerialNumber</code>	Displays the parameters for the license with the specified serial number.
<code>/LoadOnlineToken:FileName</code>	Loads a license token from a file.
<code>/SaveOnlineToken:FileName</code>	Saves a license token to a file.

Failover configurations for ABBYY FlexiCapture Distributed

ABBYY FlexiCapture supports clusters. There are two important benefits of using clusters:

- **Fault tolerance.** In the event of a failure of one of the servers, the request will be executed by another server.
- **Distributed workloads.** Query processing is distributed among cluster nodes, improving performance.

The architecture of ABBYY FlexiCapture is shown in the figure below.

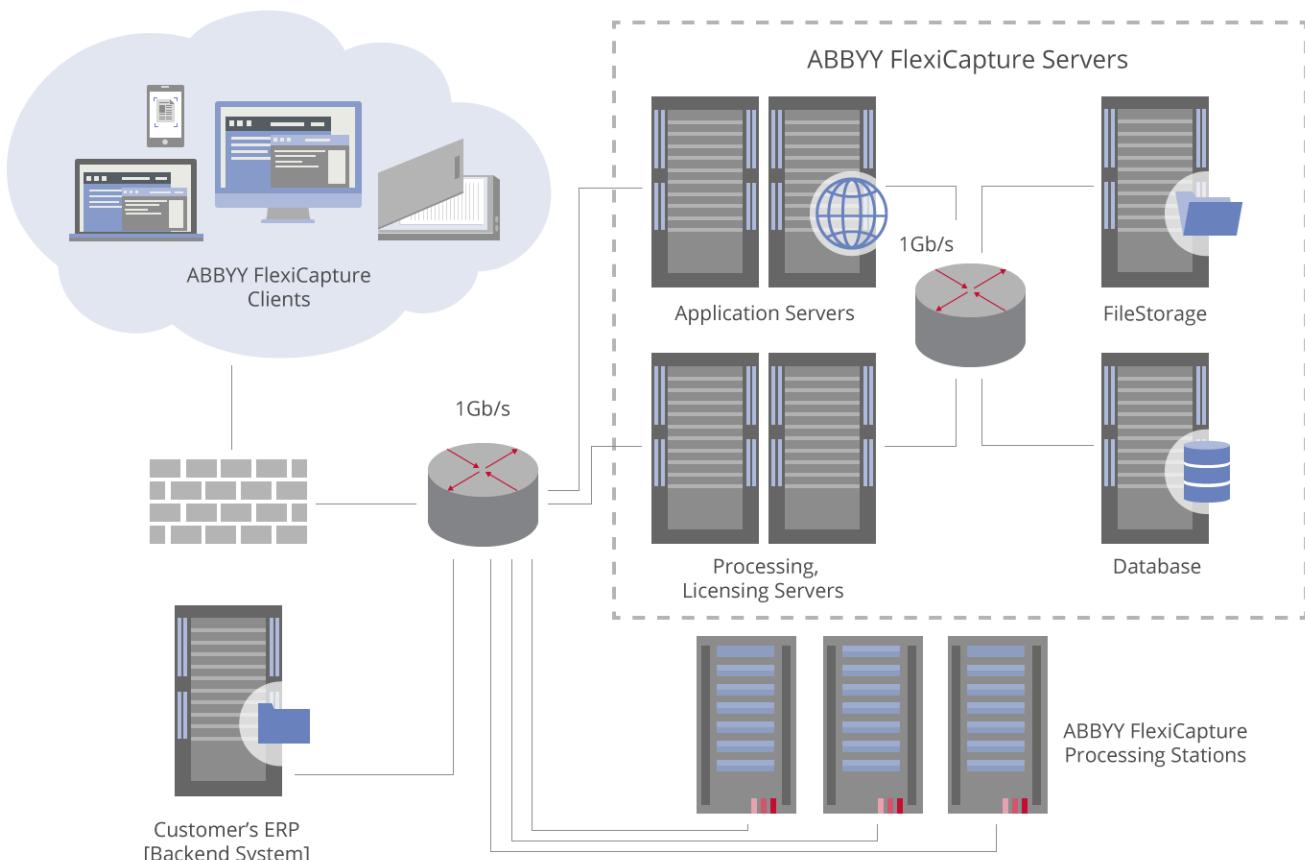


Note: For more information about system components and the way they interact with each other, see [ABBYY FlexiCapture architecture](#).

The following components may be installed on cluster computers: Processing Server, Licensing Server, and the Application Server.

Installing the Application Server in an NLB cluster allows you to balance the workload. Installing the Processing Server and the Licensing Server in a failover cluster ensures fault tolerance. Additionally, you need to install more than one Processing Station, and the Database Server and the File Storage must run in failover mode. For example, you can set up a failover cluster for Microsoft SQL Server (for details, see [this page on the Microsoft website](#)).

The figure below provides an example of a failover configuration.



To create a failover configuration for ABBYY FlexiCapture Distributed, complete the following steps:

1. Set up the [Processing Server in a failover cluster](#).
2. Set up a [distributed file system](#).
3. Set up the [Licensing Server in a failover cluster](#).
4. Set up the [Application Server in an NLB cluster](#). This includes [setting up a NLB cluster](#) and [configuring the Application Server](#).

Important! The instructions in this section presume that you are using Windows Server 2016. If you are using a different operating system, some of the steps may vary.

One and the same computer cannot be a node in an NLB and in a failover cluster at the same time. This means that to cluster the server part of ABBYY FlexiCapture you need at least four computers — two for an NLB cluster and two for a failover cluster. For file storage, use a separate fail-safe unit, e.g. a Network Attached Storage device.

Setting up the Processing Server

For the Processing Server, failover clusters are used. For detailed instructions on creating a failover cluster, please refer to [this page on the Microsoft website](#).

Hardware requirements

Cluster nodes:

- All cluster nodes must have identical or essentially similar hardware configuration.
- All cluster nodes must be running the same version of Windows Server.
- All cluster nodes must be joined to the same Active Directory domain.

Shared storage:

 **Note:** Shared storage will store a folder containing the files required by the cluster.

Disk requirements:

- The disk must be connected using Serial Attached SCSI (SAS), iSCSI or Fibre Channel.
- The disk must be accessible to all cluster nodes.
- The disk must not be used as a boot or system volume.
- The disk must not be used for swap, dump or hibernation files.

 **Note:** The following are the most commonly used cluster storage solutions:

- Ready-made storage systems based on DAS, SAN, NAS, JBOD or other technologies.
- A separate server machine for which the [iSCSI Target Server](#) role has been set up.

For detailed clustering hardware requirements, please refer to [this page on the Microsoft website](#).

Setting up the Processing Server in a failover cluster

To set up the Processing Server in a failover cluster, complete the following steps:

1. [Create a failover cluster](#).
2. [Create a basic configuration](#).
3. [Add the ABBYY FlexiCapture Processing Server service](#).
4. [Create a shared folder for the ABBYY FlexiCapture Processing Server service](#).
5. [Configure the cluster nodes](#).

 **Note:**

- The addresses, computer names, domain names, etc. used below are not mandatory and may be changed by the administrator.
- The following server configuration is intended only for local use in a local area network.

 **Important!** The names of servers, services, and shared folders must not contain spaces.

Creating a failover cluster

To cluster two machines, complete the following steps:

1. Check that you have all the necessary components in place and that they meet the [hardware requirements](#) listed above.
2. Install the Failover Clustering feature.
3. [Validate the configuration](#) to make sure that it is suitable for failover clustering.
4. Create a failover cluster.

Note: If your cluster has an even number of nodes, we strongly recommend using a quorum configuration with a witness resource (e.g. a Disk Witness, a Share Witness or a Cloud Witness); otherwise, the cluster will cease to function if half of its nodes fail. For detailed instructions, see the [Configure the cluster quorum settings](#) section on [this page of the Microsoft website](#).

Detailed information about failover clustering is available on [this page of the Microsoft website](#).

Basic configuration of the failover cluster

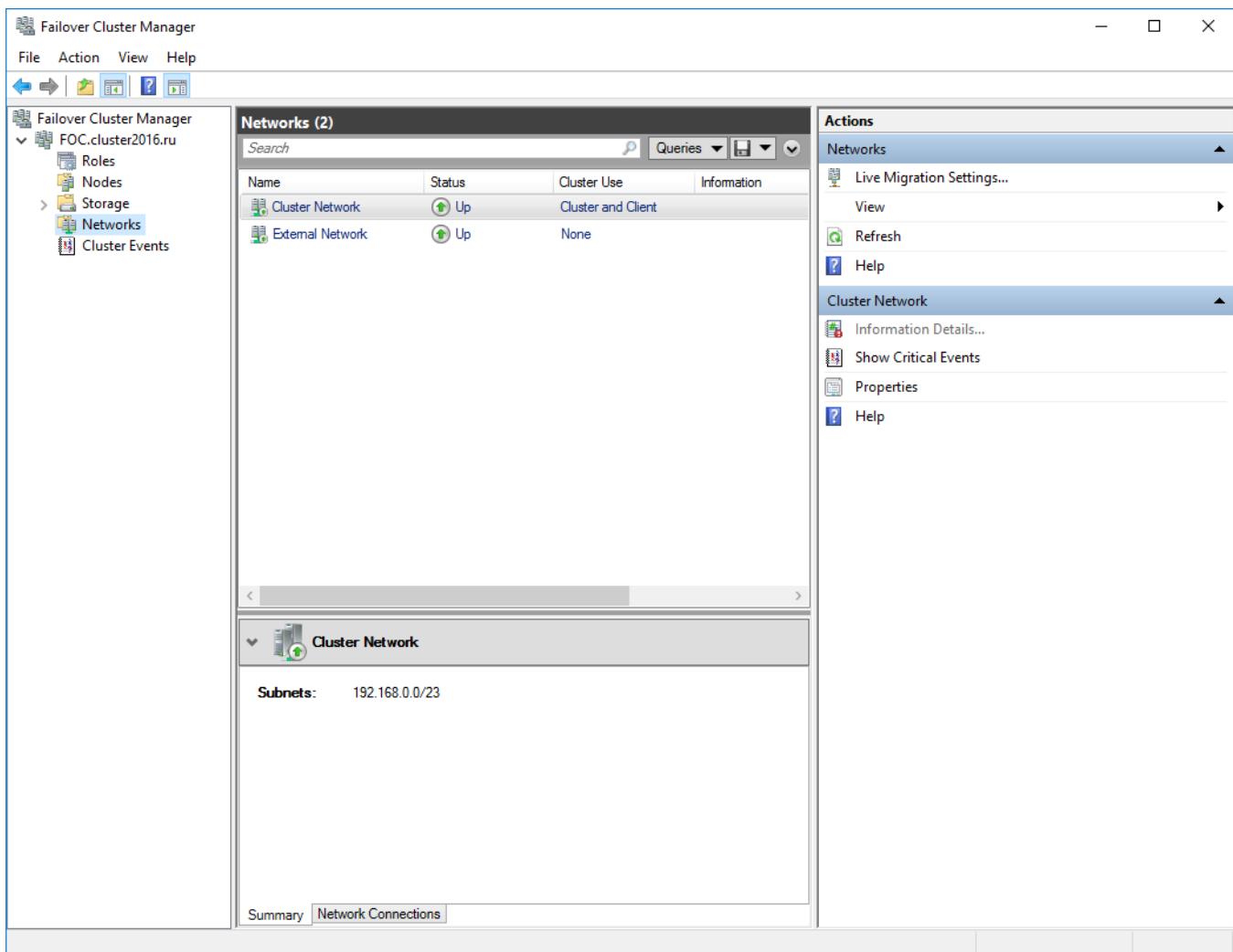
This example uses a previously created FOC cluster (FOC.cluster2016.ru), located in the 192.168.0.0/23 designated network in the cluster2016.ru domain.

The cluster consists of two nodes, Node1 and Node2.

Addressing in the cluster

The Node1 and Node2 nodes have two network interfaces. One of them belongs to the 192.168.0.0/23 network and the other may belong to a local area network (for example 10.0.2.0/24). The data storage only interfaces with the 192.168.0.0/23 network and is available only to the cluster nodes (i.e. Node1 and Node2).

Both networks are available to the cluster FOC.cluster2016.ru. Cluster traffic should only be allowed in the designated network 192.168.0.0/23 for security and workload balancing reasons. External users can access the data storage through requests to Node1 and Node2. In order to allow cluster traffic in the 192.168.0.0/23 network, open the **Failover Cluster Manager**, select **Cluster Network** in the **Networks** group, and choose **Cluster and Client** in the **Cluster Use** column (see the screenshot below).



Interfaces and their networks:

Interface	Network	Description
FOC	192.168.0.10/23	The cluster in the cluster2016.ru domain. Comprises two nodes.
FC12ProcServer	192.168.0.9/23	The address of the ABBYY FlexiCapture Processing Server service that runs in the cluster .
Storage	192.168.0.1/23	File storage .
Node1	192.168.0.11/23	First cluster node .
Node2	192.168.0.12/23	Second cluster node .

Domain users

To set up domain user accounts:

1. Create two domain users, e.g. cluster2016\Node1Admin and cluster2016\Node2Admin.
2. Give administrator rights to cluster2016\Node1Admin on Node1 and to cluster2016\Node2Admin on Node2.

Important!

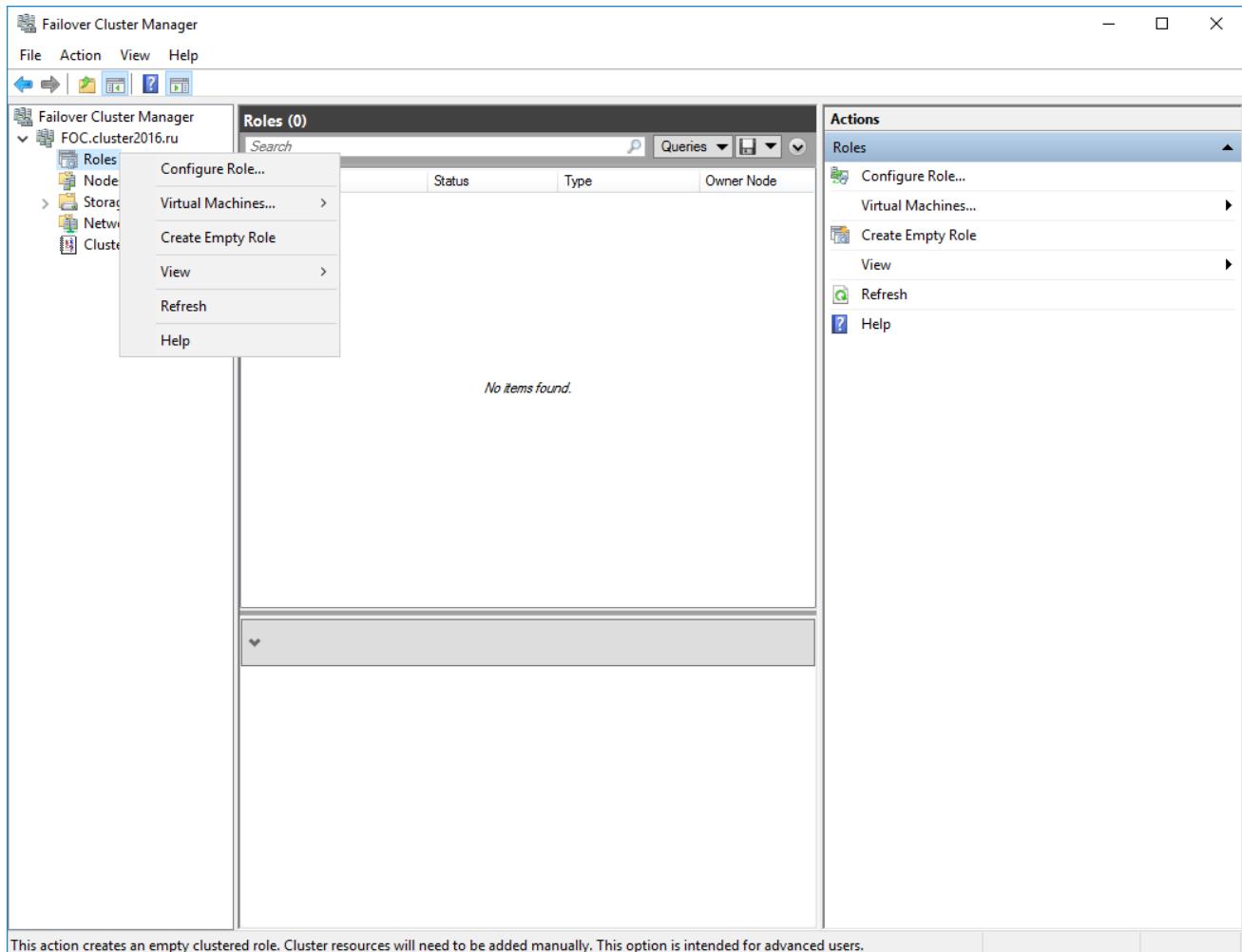
- These user accounts will only be used for working with ABBYY FlexiCapture in a failover cluster to ensure correct usage of shared network resources.
- Clustering requires the use of domain accounts. It is not possible to work under a local user account.

Adding the ABBYY FlexiCapture Processing Server service

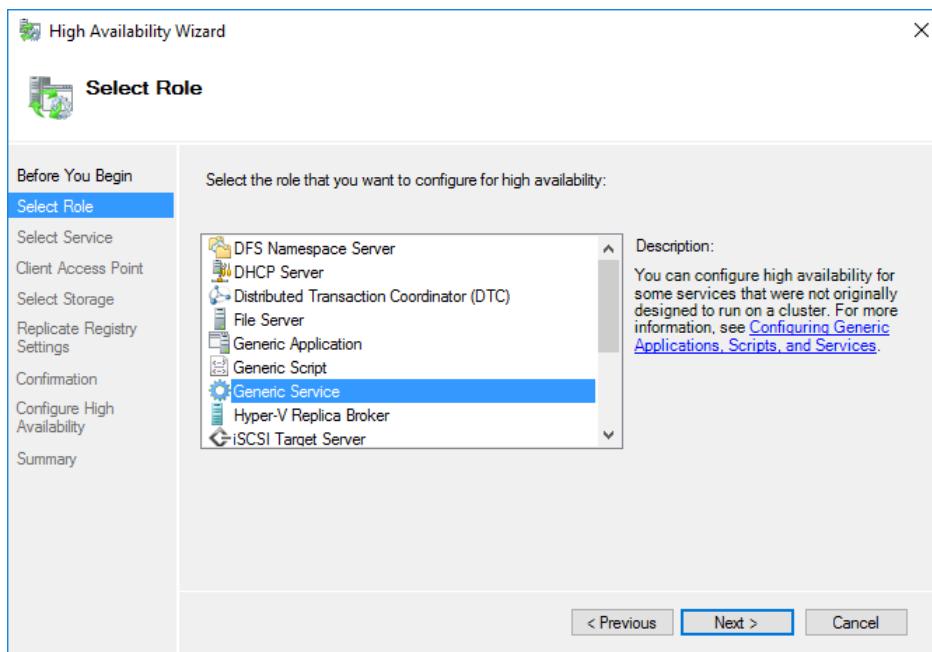
Install ABBYY FlexiCapture Processing Server on Node1 and Node2, then create a shared folder (see below) for the FlexiCapture service.

Complete the following steps to create the service:

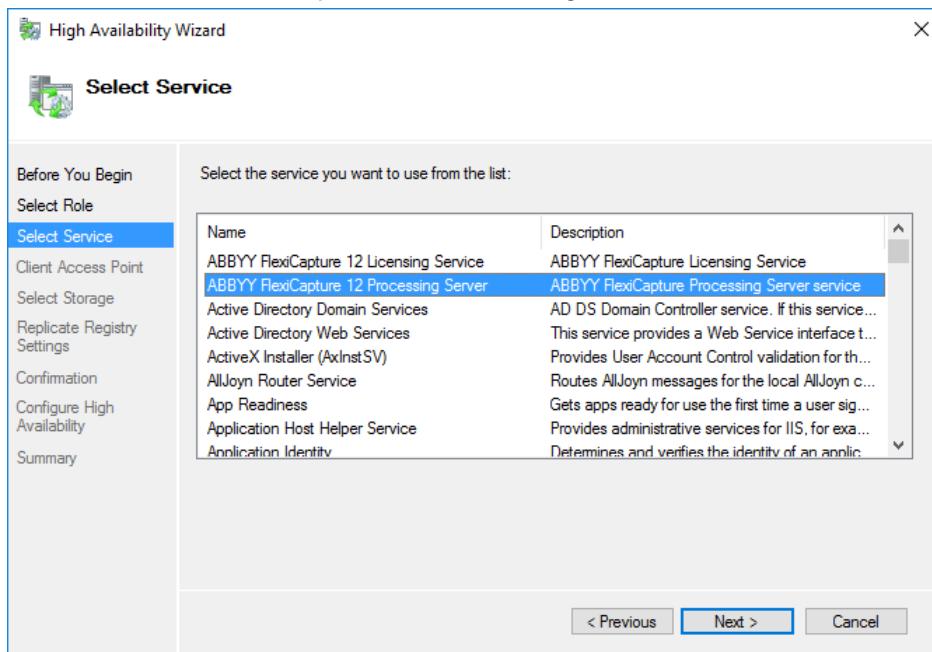
1. Right-click the **Roles** group and choose **Configure Role....**



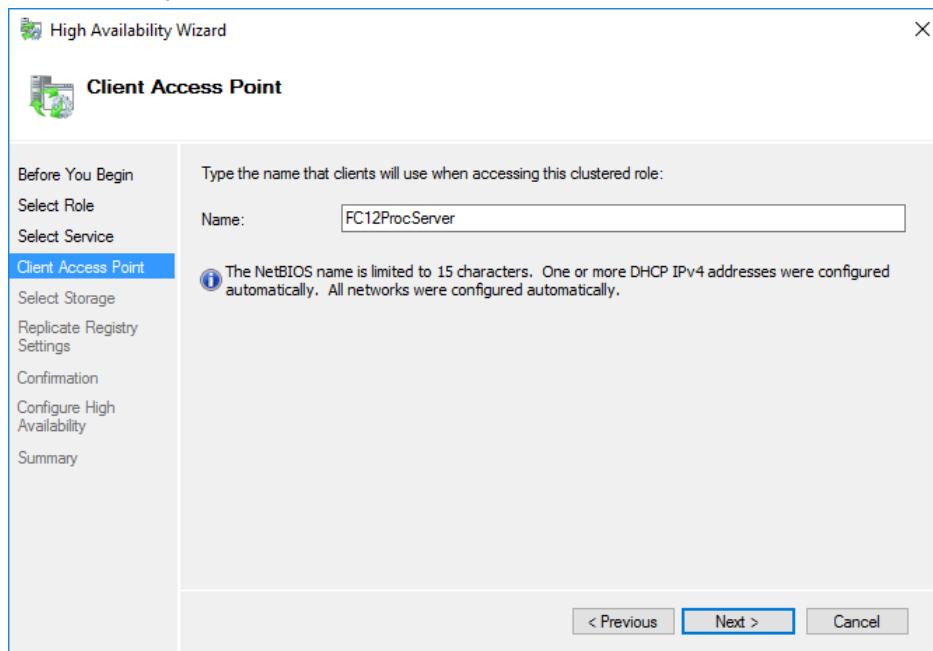
2. Select Generic Service from the list of services and click **Next.**



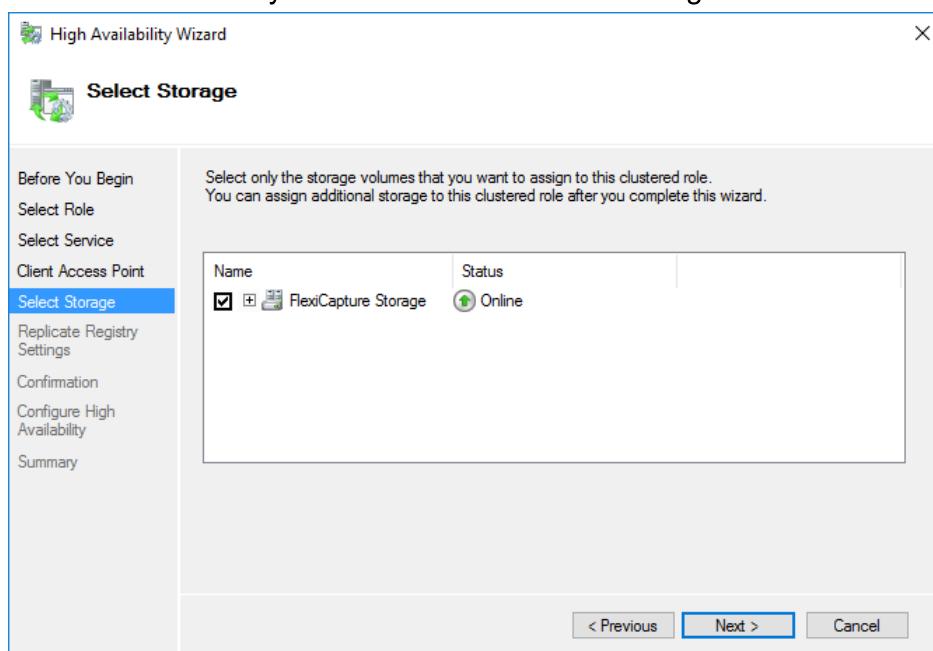
3. Choose ABBYY FlexiCapture 12 Processing Server from the list of available services and click **Next.**



4. Enter the name of the service (FC12ProcServer in this example). The IP address will be generated automatically. Click **Next**.



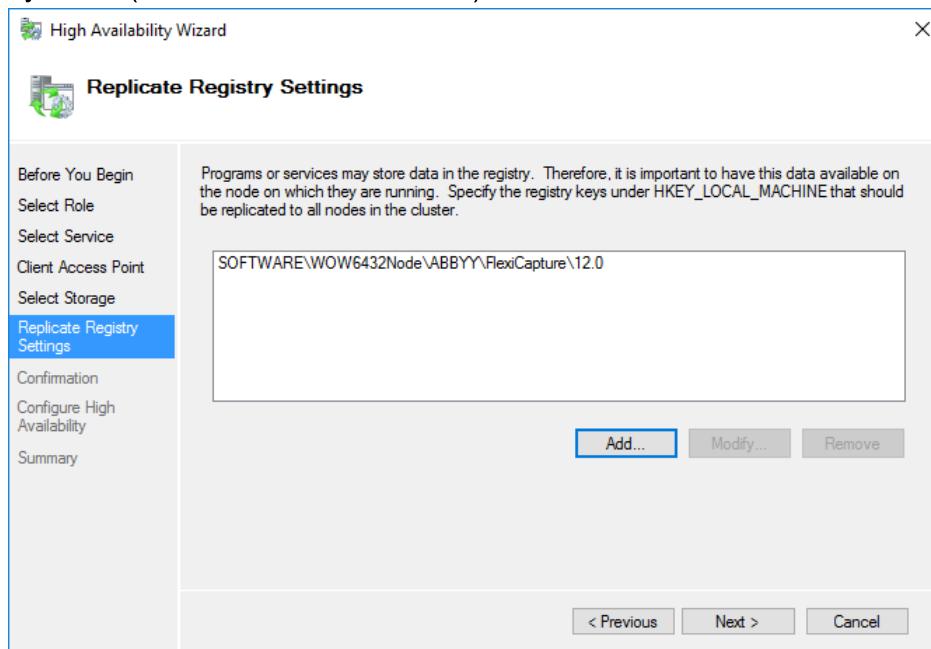
5. Choose the volume you created for centralized storage and click **Next**.



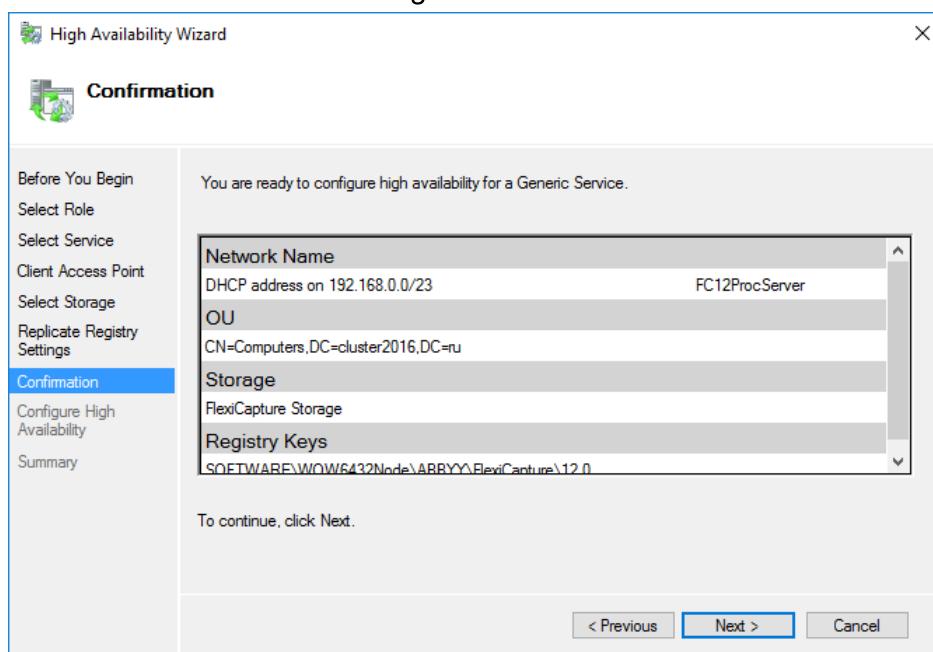
6. Specify the registry key:

- HKEY_LOCAL_MACHINE\SOFTWARE\ABBYY\FlexiCapture\12.0 for x32 systems

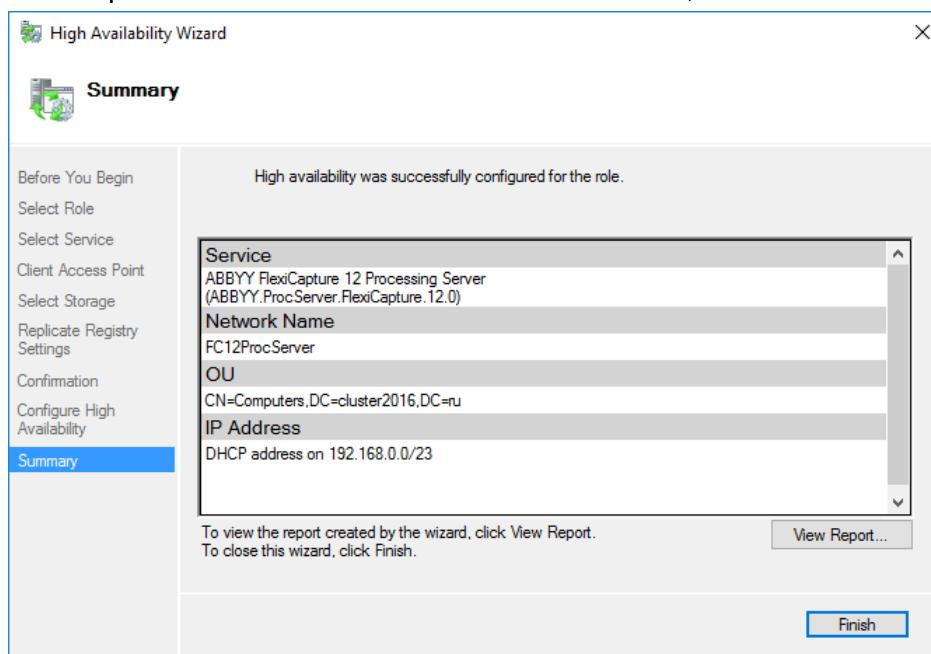
- HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ABBYY\FlexiCapture\12.0 for x64 systems (see the screenshot below)



7. Click **Next** to confirm the settings.



8. To complete the creation of the service in the cluster, click **Finish**.



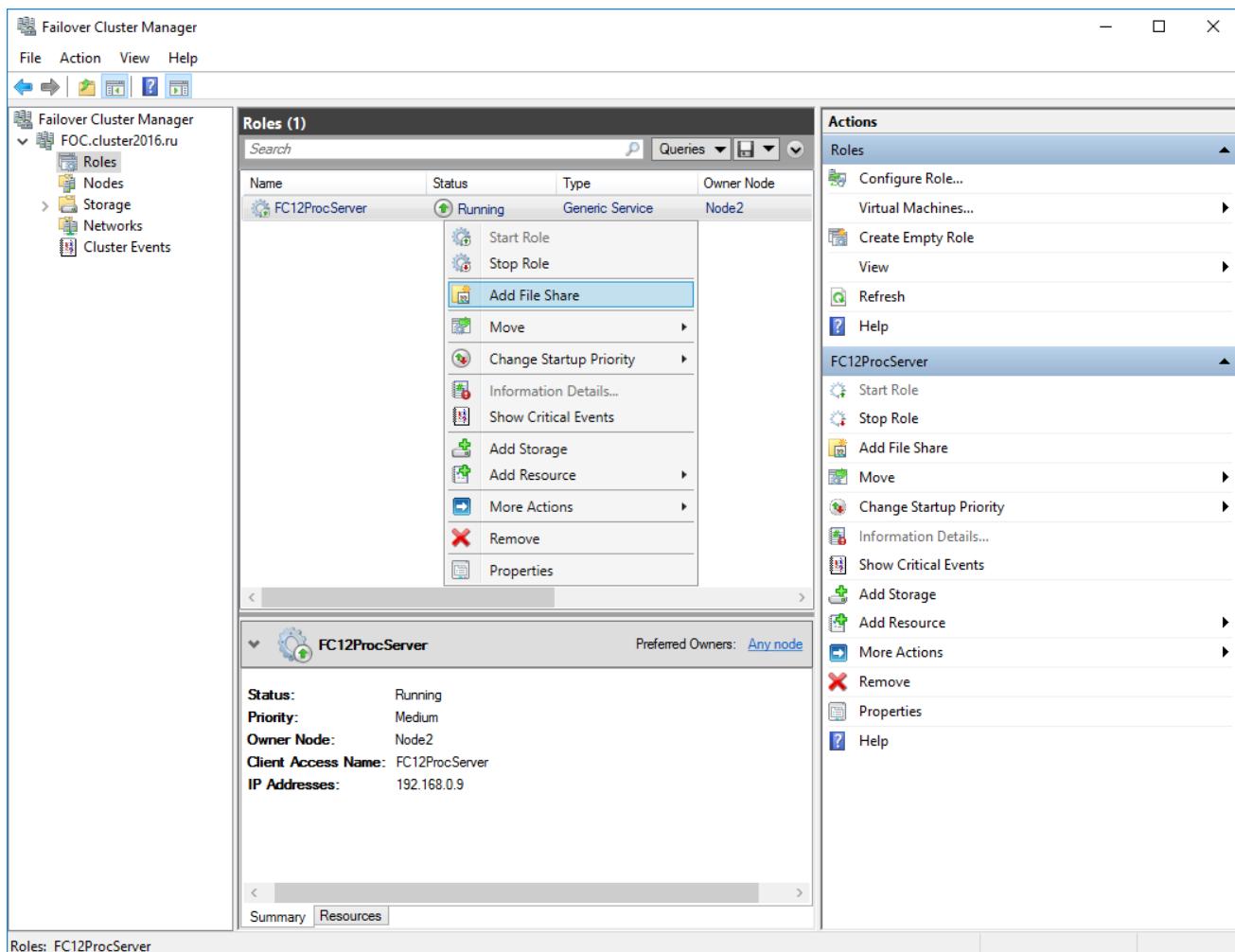
Creating a shared folder for the Processing Server service

Create a shared folder for the newly created service where Node1 and Node2 temporary files will be stored.

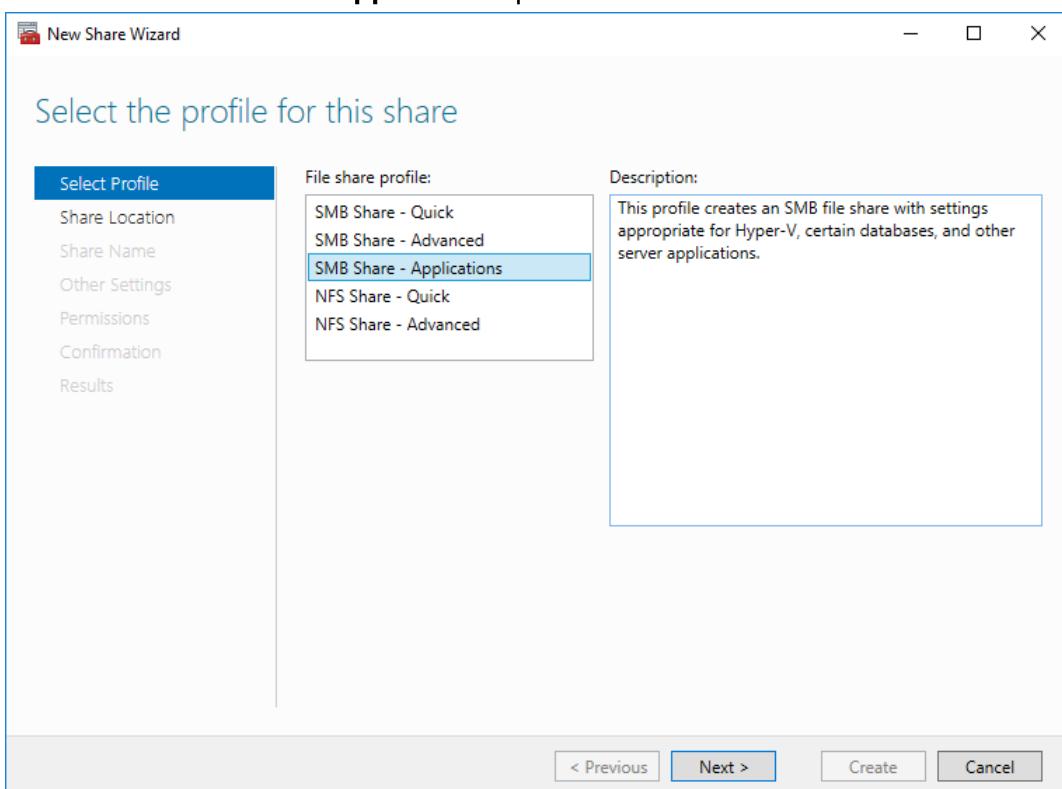
Important! The network folder configuration described here is not fail-safe: if the storage fails, the cluster will go down. To ensure continuous operation of the cluster, you need to make your file storage fail-safe. See [Setting up a distributed file system](#) for detailed instructions.

To create a shared folder:

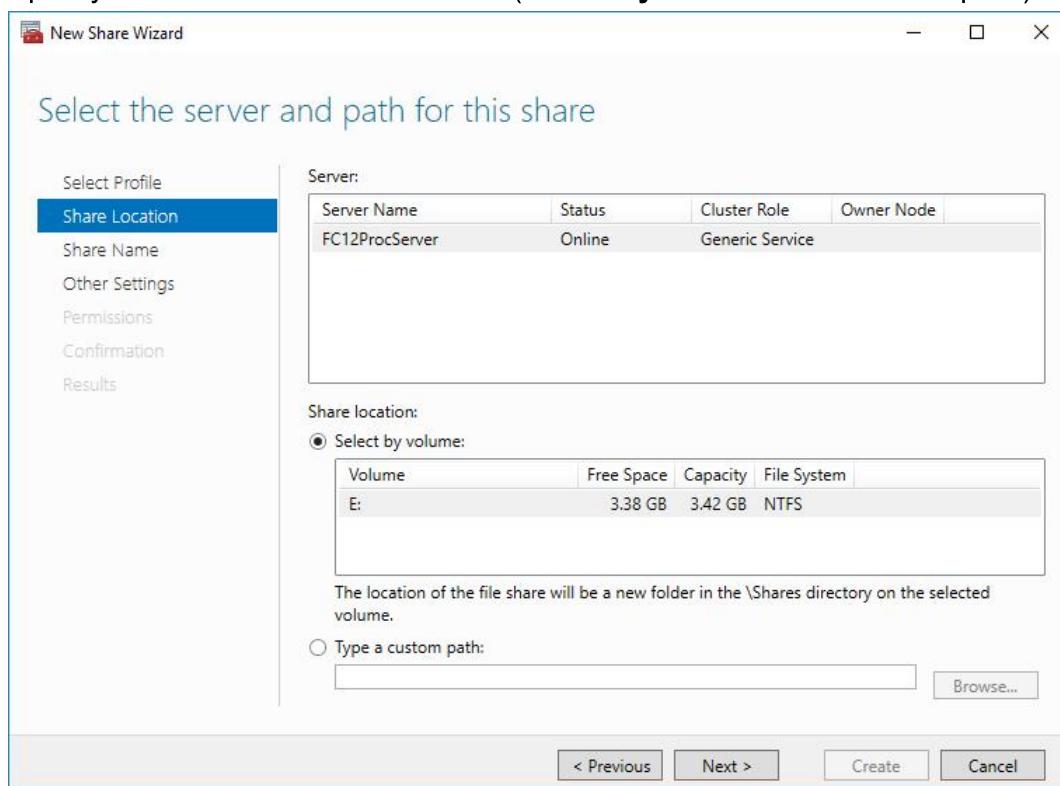
1. Select **Add File Share** in the local menu of the newly created service (**FC12ProcServer** in this example).



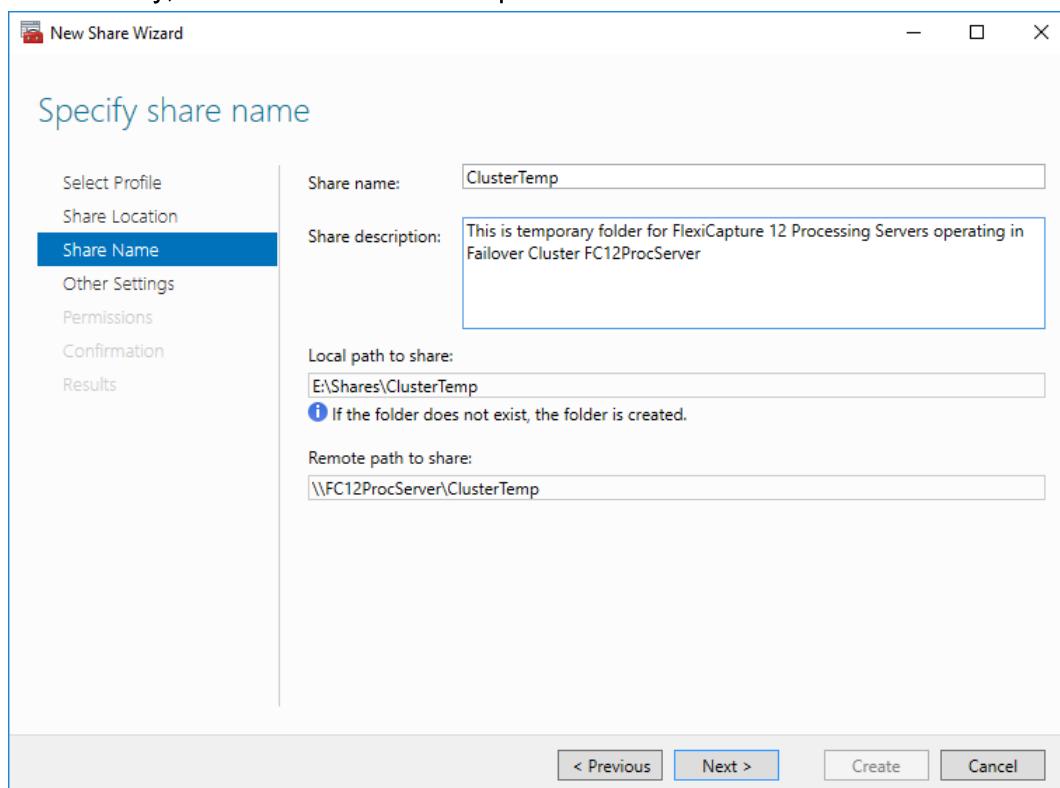
2. Select the **SMB Share – Applications** profile.



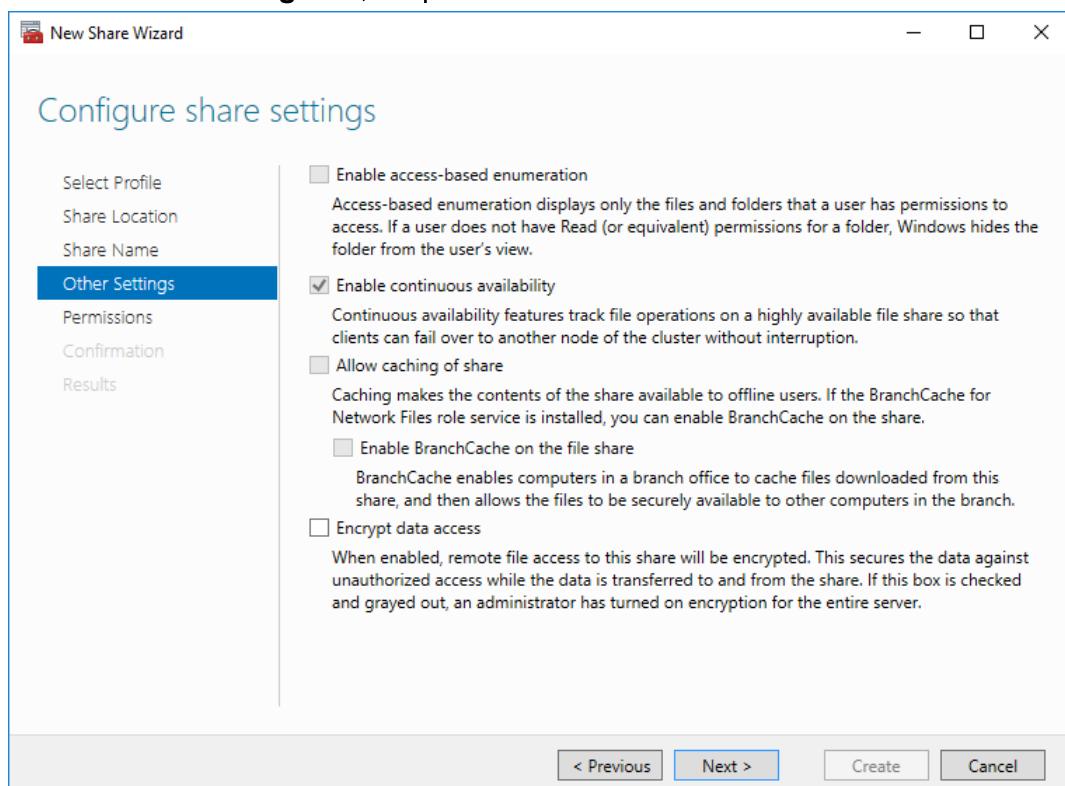
3. Specify a location for the shared folder (Select by volume** is the default option).**



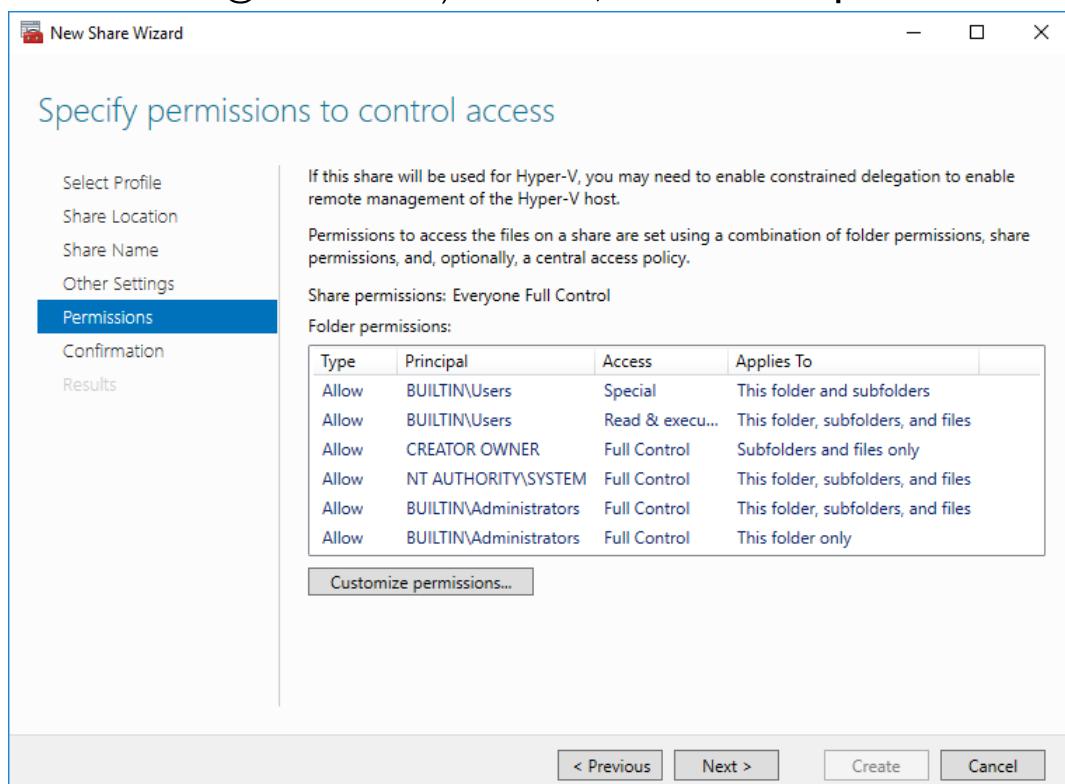
4. If necessary, enter a name and description for the shared folder and click **Next.**



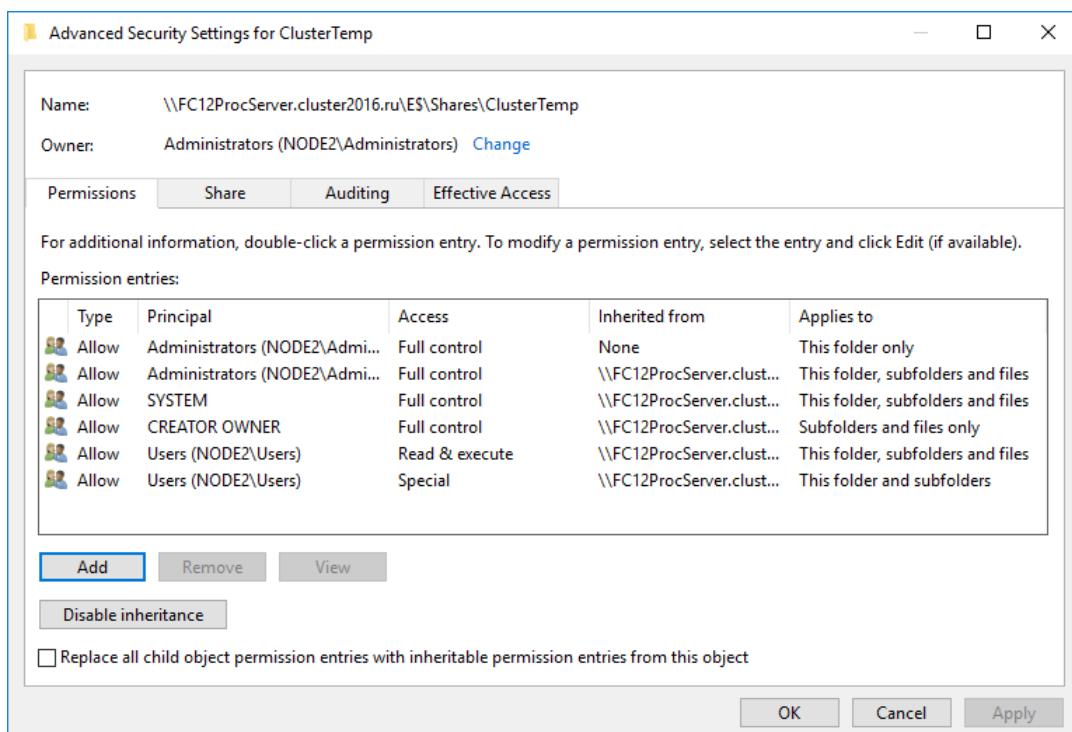
5. On the **Other Settings** tab, keep the default values and click **Next**.



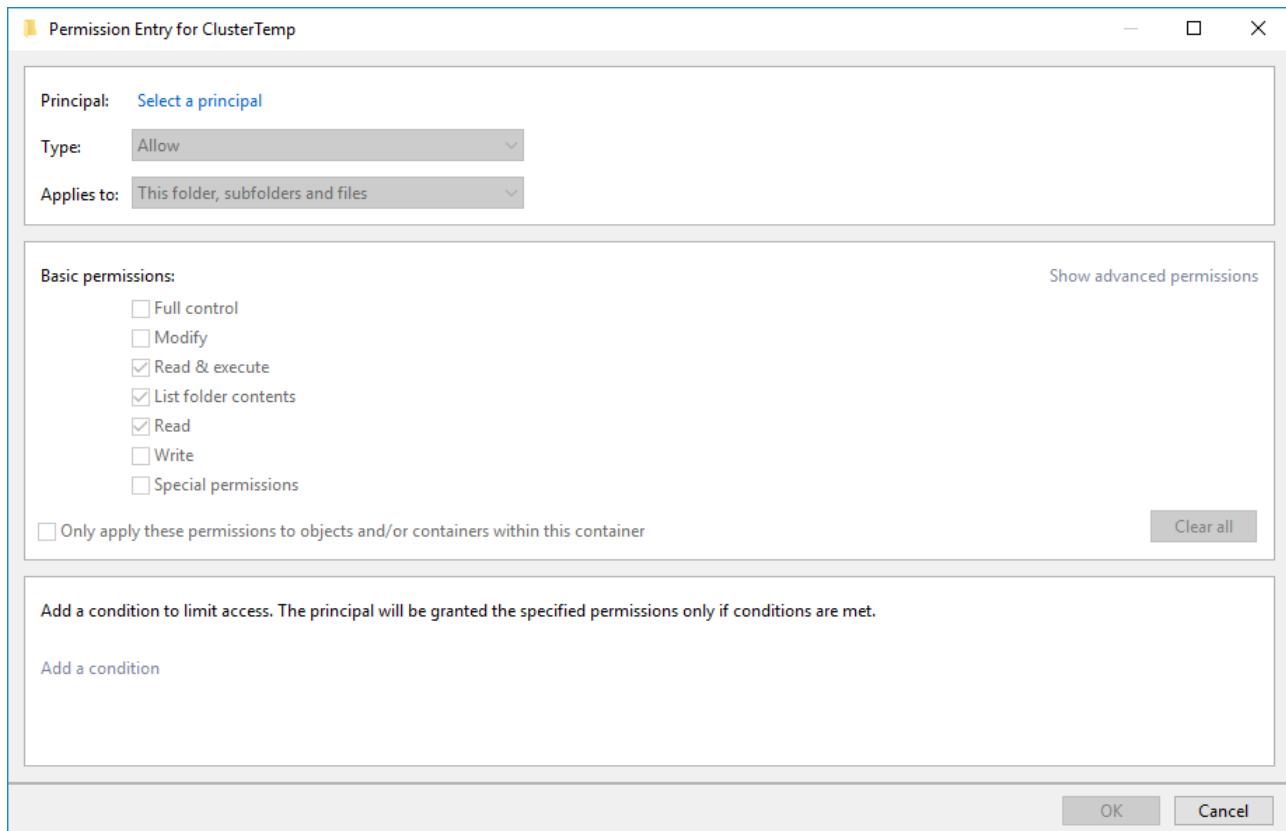
6. Specify folder permissions for the previously created domain users (node1admin@cluster2016.ru and node2admin@cluster2016.ru). To do this, click **Customize permissions....**



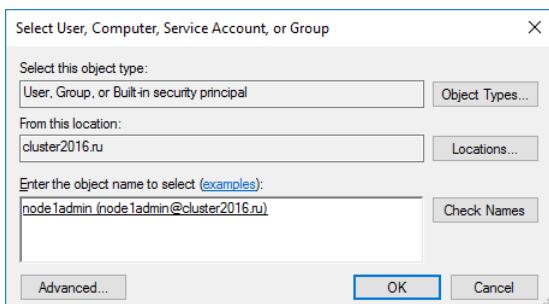
7. Click Add.



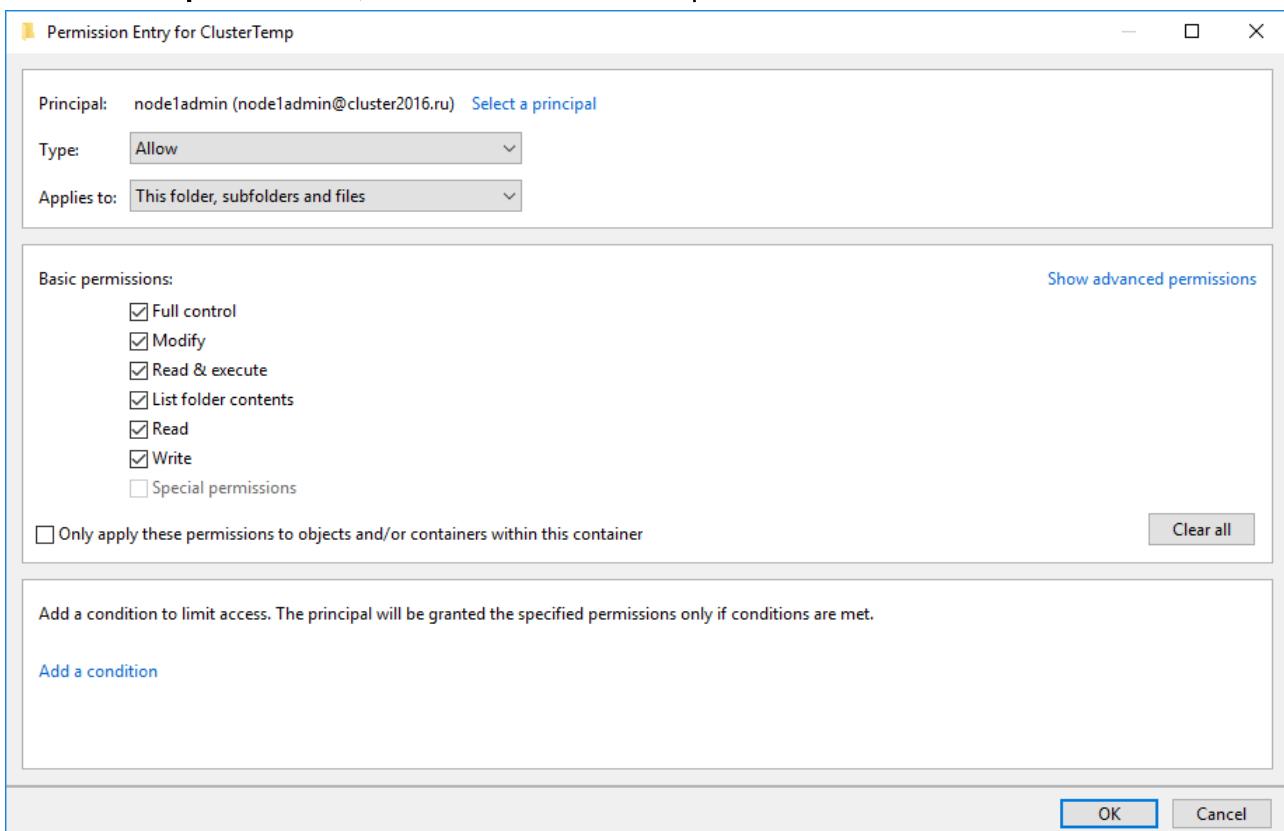
8. Click Select a principal.



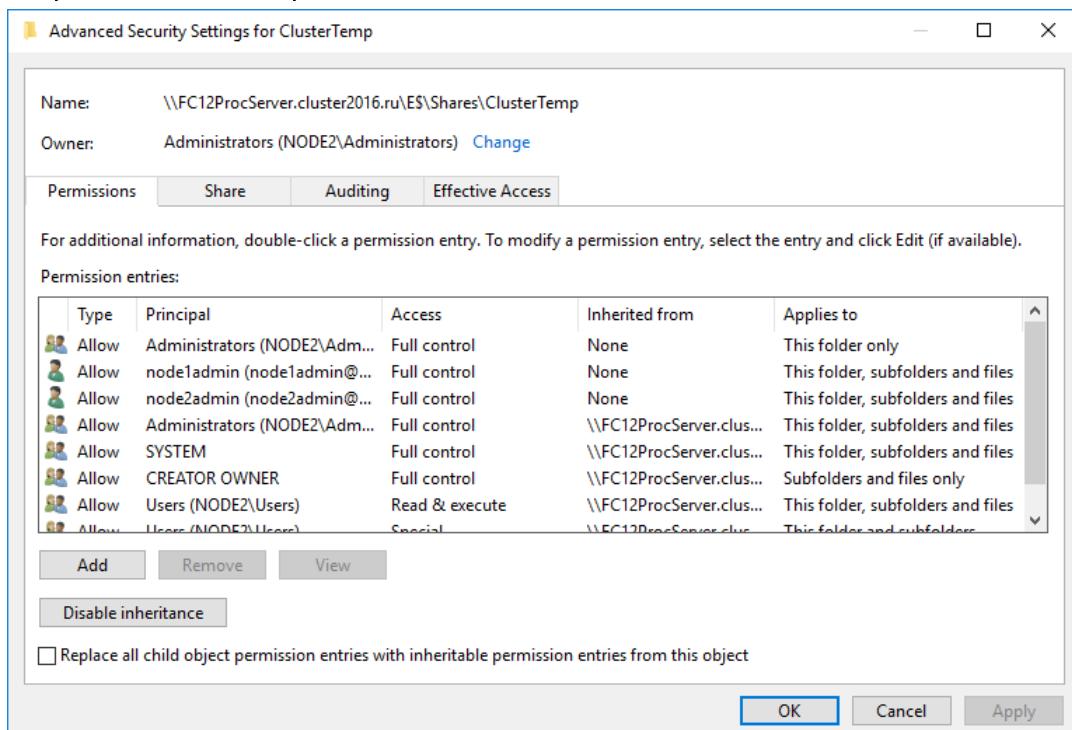
9. Select a user and click **OK**.



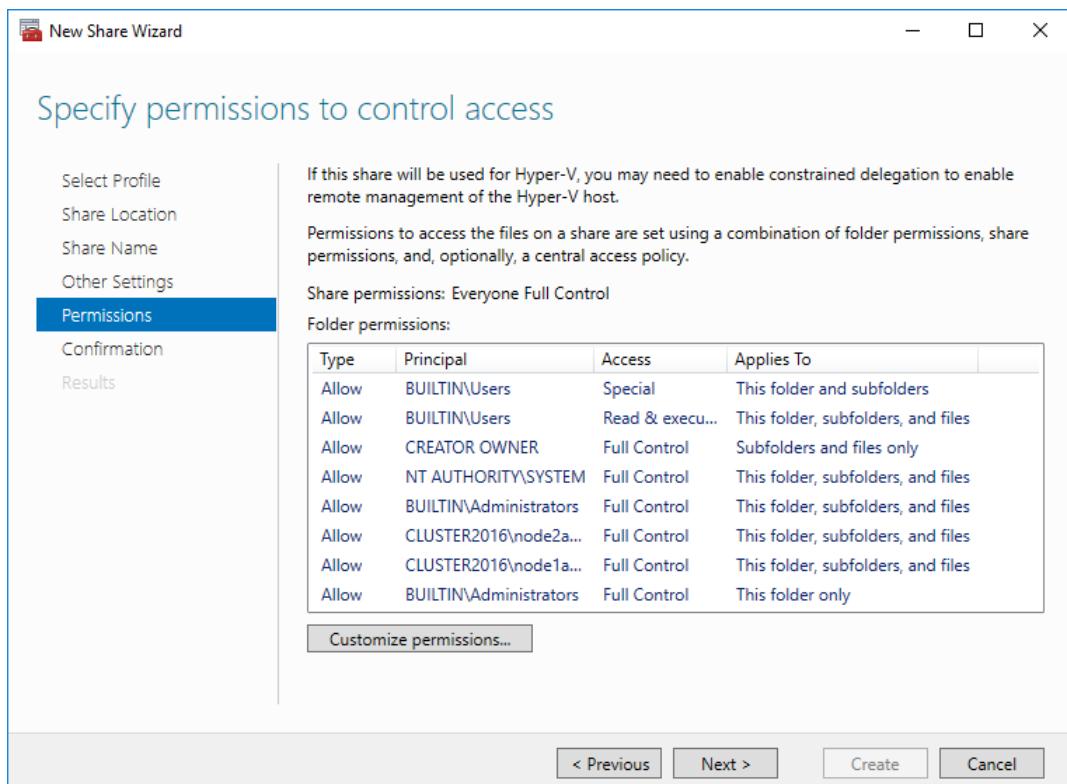
10. Under **Basic permissions**, select the **Full control** option and click **OK**.



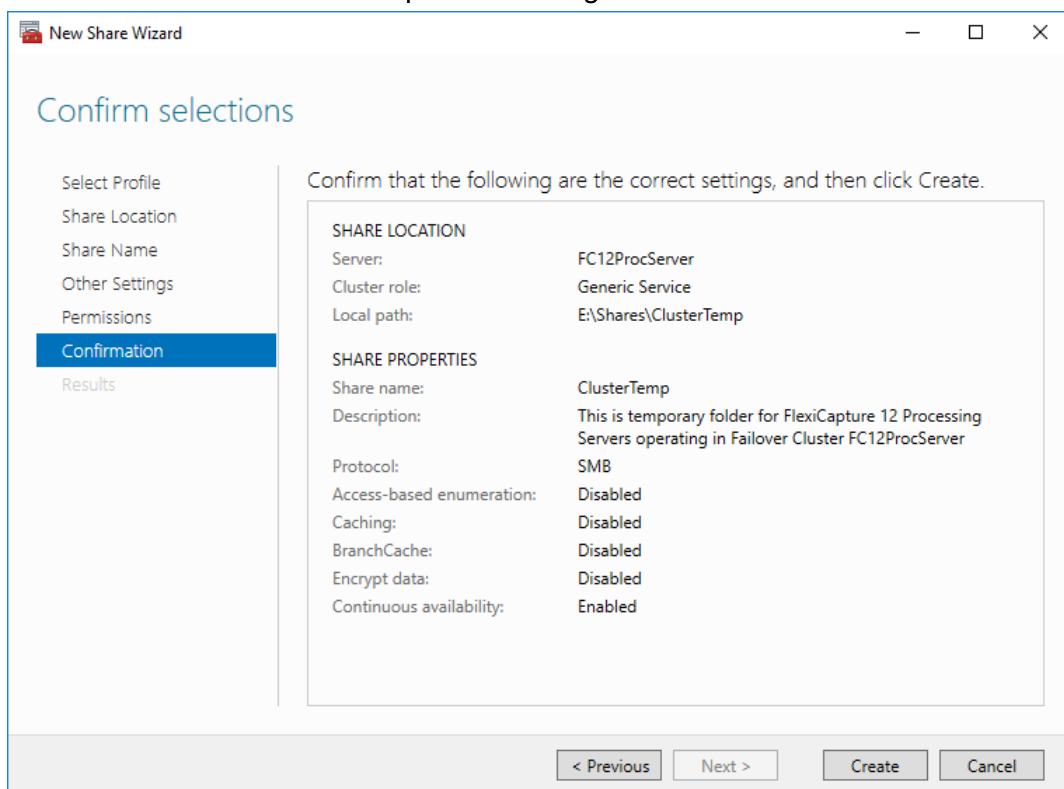
11. Repeat the above steps for the node2admin user and click OK.



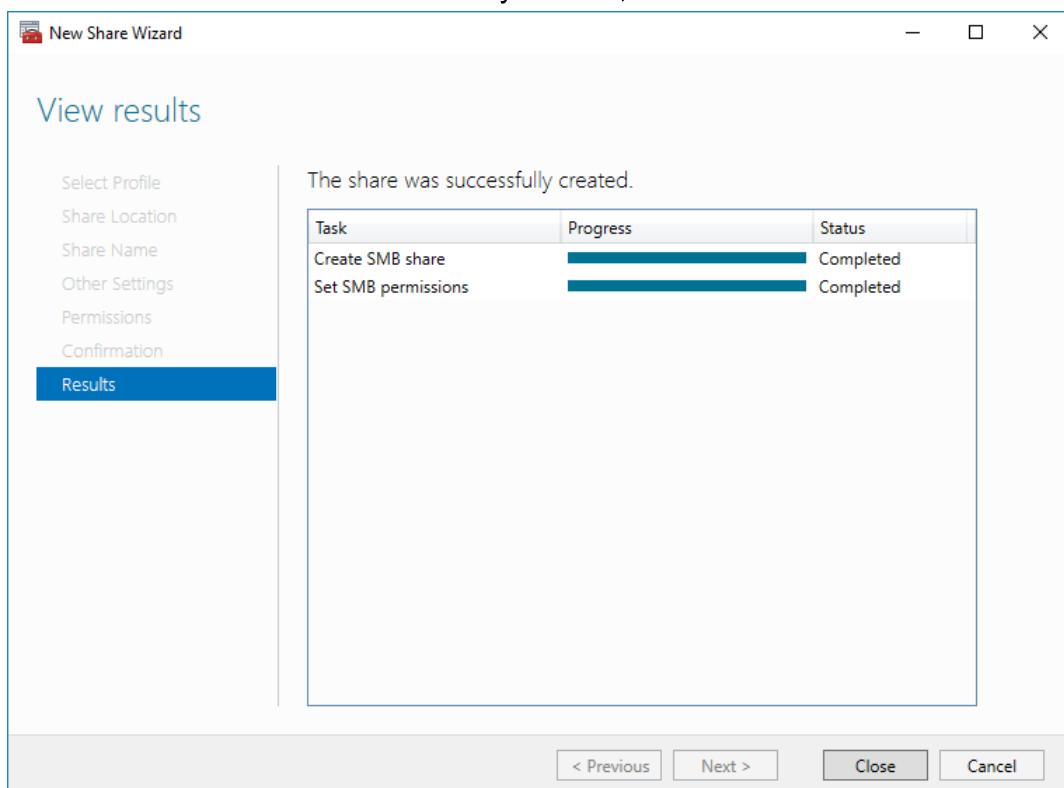
12. Click Next.



13. Check to make sure that the specified settings are correct and click **Create**.



14. Once the shared folder is successfully created, click **Close**.



Configuring the cluster nodes

Next you need to set up the Node1 and Node2 cluster nodes. The instructions that follow are for Node1. Node2 is set up identically.

Setting up the ABBYY FlexiCapture Processing Server service

To set up the service, complete the following steps:

- Enter the following command in the command line (cmd.exe):

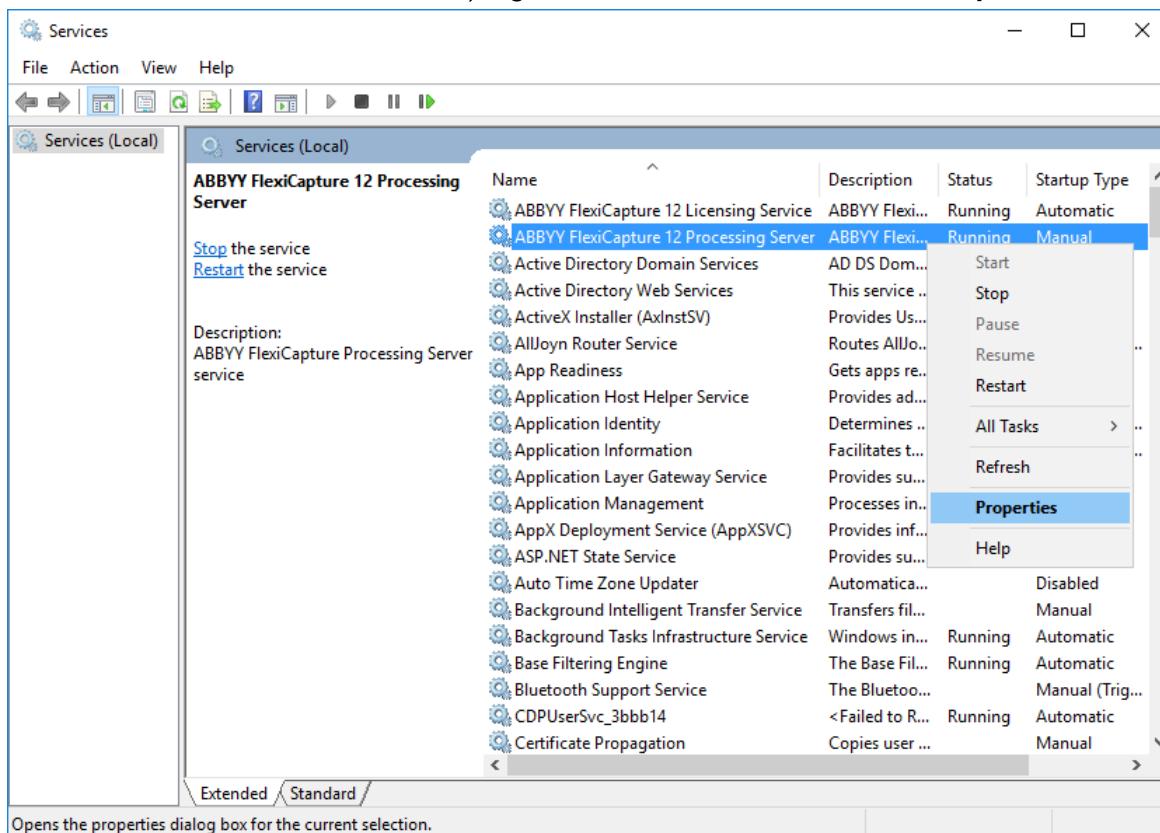
```
sc config ABBYY.ProcServer.FlexiCapture.12.0 binpath= "%systemdrive%\Program Files\ABBYY FlexiCapture 12 Servers\FlexiBRSvc.exe" \service -stationType:server -inifile:\FC12procserver\ClusterTemp\ServerSettings.xml
```

Important! Copying and pasting the above command may introduce redundant new line characters, resulting in an error. If this is the case, type the command manually.

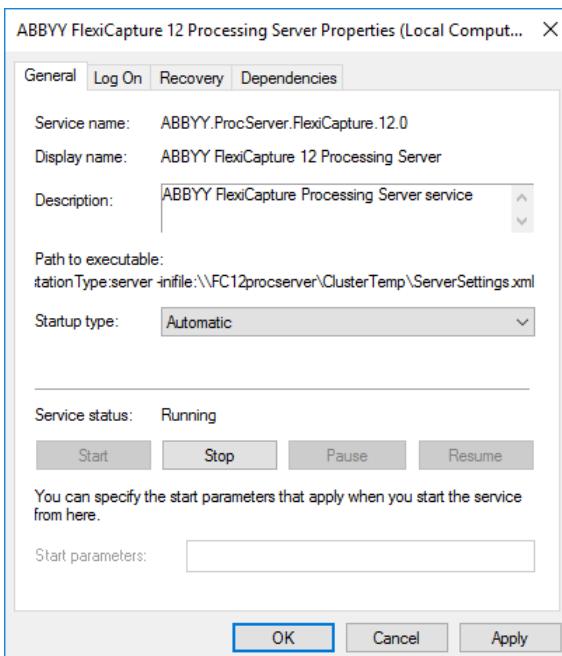
This command changes the default settings for the ABBYY.ProcServer.FlexiCapture.12 process, which is launched from the file "%systemdrive%\Program Files\ABBYY FlexiCapture 12 Servers\FlexiBRSvc.exe" and sets the path to the following file, which contains the settings for the Processing Server: \\FC12procserver\ClusterTemp\ServerSettings.xml. Now the ServerSettings.xml file will be stored in the shared folder and will be available to all nodes in the cluster.

Note: The ServerSettings.xml file contains the Processing Server settings. If this file is not found when you start the Processing Server, it will be started with the default settings and a new ServerSettings.xml will be created.

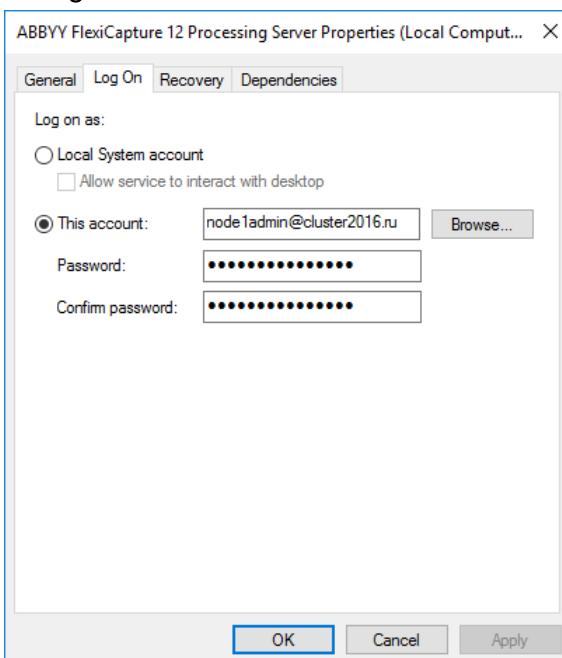
- Find the ABBYY FlexiCapture 12 Processing Server service in the list of services (**Start → Administrative Tools → Services**), right-click the service, and select **Properties**.



3. Make sure that the parameters you typed in the command line are displayed in the **Path to executable** field.



4. Click the **Log On** tab. For Node1, change the user NetworkService to node1admin. For Node2, change the user NetworkService to node2admin. Click **OK**.



Changing the %appdata% variable

The ABBYY.ProcServer.FlexiCapture.12.0 service creates and stores session data in the location referenced by the %appdata% variable. The node1admin and node2admin users must have the same folder specified for %appdata% in order for the service to switch between the cluster nodes.

Important! For the cluster2016\user1admin user, the %appdata% variable must be changed on Node1. For the cluster2016\user2admin user, the %appdata% variable must be changed on Node2. You can change the %appdata% variable via the command line or directly in the Windows registry.

To change %appdata% via the command line:

1. Enter the following command in the command line (cmd.exe):

```
REG ADD "HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\User Shell Folders" /v AppData
/t REG_EXPAND_SZ /d \\FC12ProcServer\ClusterTemp
```

where \\FC12ProcServer\ClusterTemp should be replaced with the path to your folder.

Important! Copying and pasting the above command may introduce redundant new line characters, resulting in an error. If this is the case, type the command manually.

2. Confirm that you want to change the AppData folder if it already exists.
3. Repeat steps 1 and 2 for Node2.

To change %appdata% directly in the Windows registry:

1. Find the key
HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\User Shell Folders in the registry.
2. If no such key exist, create a REG_EXPAND_SZ type variable with the name AppData in this key and set its value to \\FC12ProcServer\ClusterTemp.
3. Repeat steps 1 and 2 for Node2.

Connecting the Processing Server Monitor

To connect the Processing Server Monitor, select a node for the FC12ProcServer service, then open the Processing Server Monitor on any computer in your LAN and add the clustered Processing Server.

Setting up a distributed file system

When installed in a cluster, the Processing Server uses file storage to store temporary files. If the file storage fails, the entire cluster will go down. To ensure continuous operation of the cluster, you need to make your file storage fail-safe.

Below we describe one possible implementation of fail-safe file storage using DFS Namespaces and DFS Replication technologies. DFS Namespaces creates a virtual directory of multiple folders located on different servers, which will remain accessible even if one of the servers fails. DFS Replication automatically tracks changes in the ServerSettings.xml files and replicates them in a backup folder.

Note: In the step-by-step instructions that follow, we assume that a DCsrV computer is used as the host server, but you can use any computer where DFS roles have been set up.

To set up a distributed file system, you will need:

- a computer running Windows Server 2008/2012/2016, that is not itself used a cluster node or for file storage
- the DFS Namespaces and DFS Replication set up on the computer described above
- the DFS Namespaces and DFS Replication roles set up on all of the nodes
- a shared folder with full control permissions for the node1admin and node2admin users, which will function as a backup folder when the main shared folder becomes inaccessible.

To set up a distributed file system, complete the following steps:

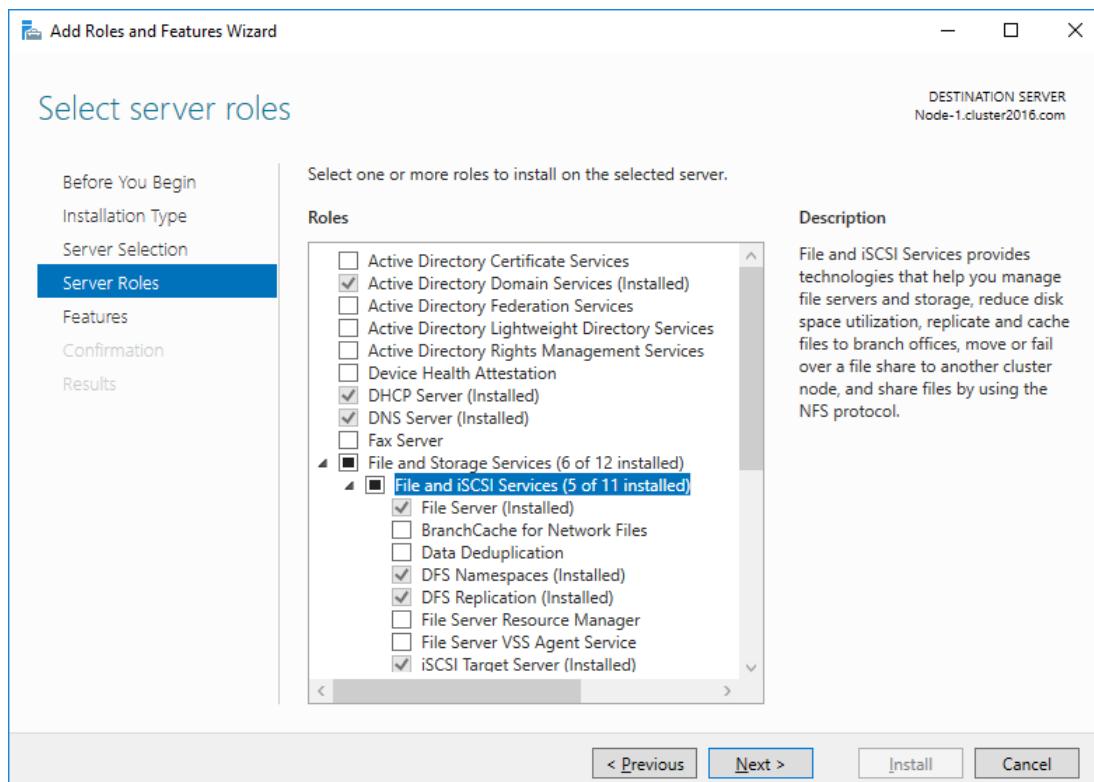
1. [Add the DFS roles.](#)

2. [Create shared folders.](#)
3. [Create a namespace.](#)
4. [Add the shared folders to the namespace.](#)
5. [Set up replication.](#)
6. [Set up priorities for the folder targets.](#)
7. [Configure the ABBYY FlexiCapture Processing Server service.](#)

Adding the DFS roles

To add the DFS roles:

1. Open **Server Manager** and click **Add Roles and Features**.
2. At the **Select server roles** stage, expand the **File and Storage Services** and select the **DFS Namespaces** and **DFS Replication** items.



Creating shared folders

Note:

- This folder must only be used to replicated data from the cluster.
- This folder must not be located on a cluster node or in the file storage.
- This folder must be accessible to all nodes.

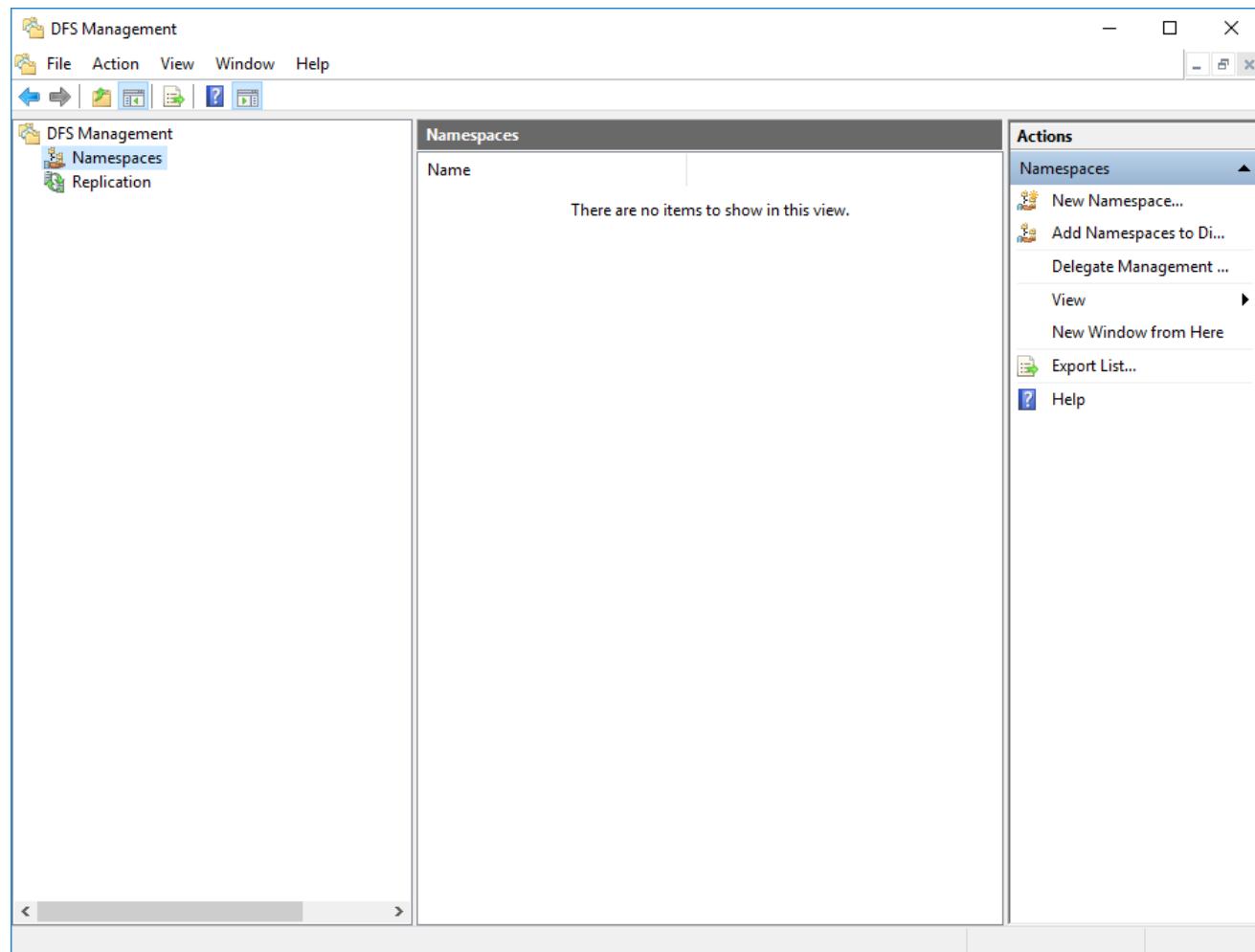
To create a shared folder, open **Server Manager**, click **File and Storage Services** → **Shares** and then click **Tasks** → **New Share**.... Next, complete steps 2 through 14 described in the [Creating a shared folder for the Processing Server service](#).

Creating a namespace

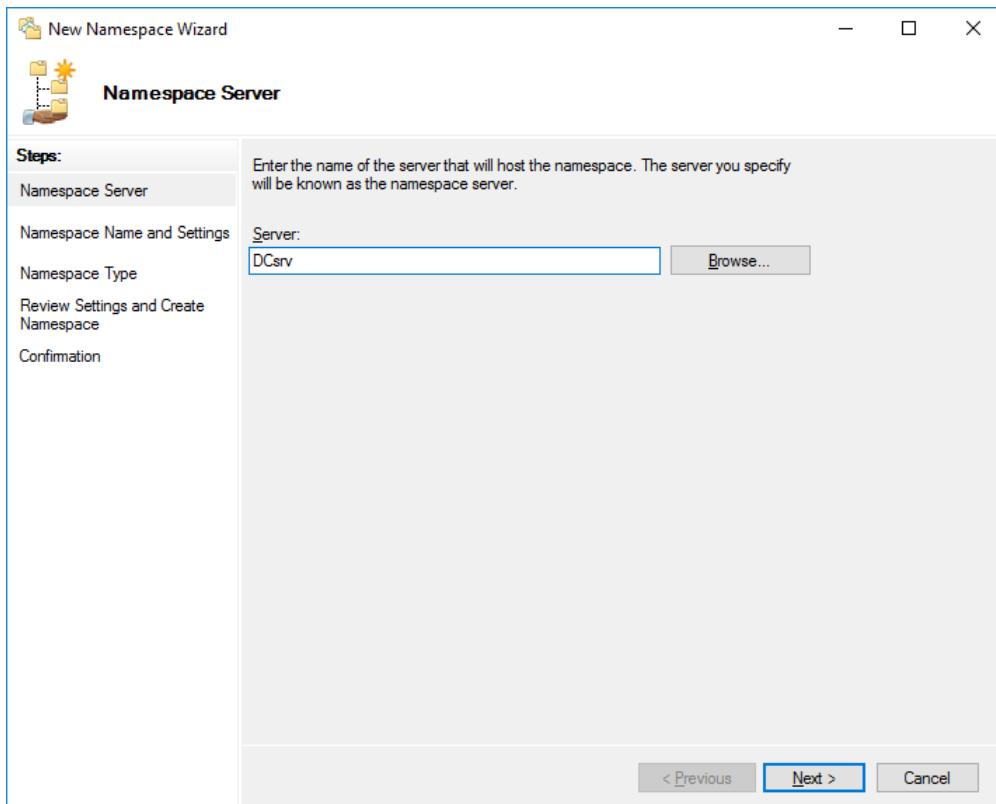
Namespaces can be created and configured using the **DFS Management** console. You will need to select a server, grant access permissions to users, and specify the type of the namespace.

To create a namespace:

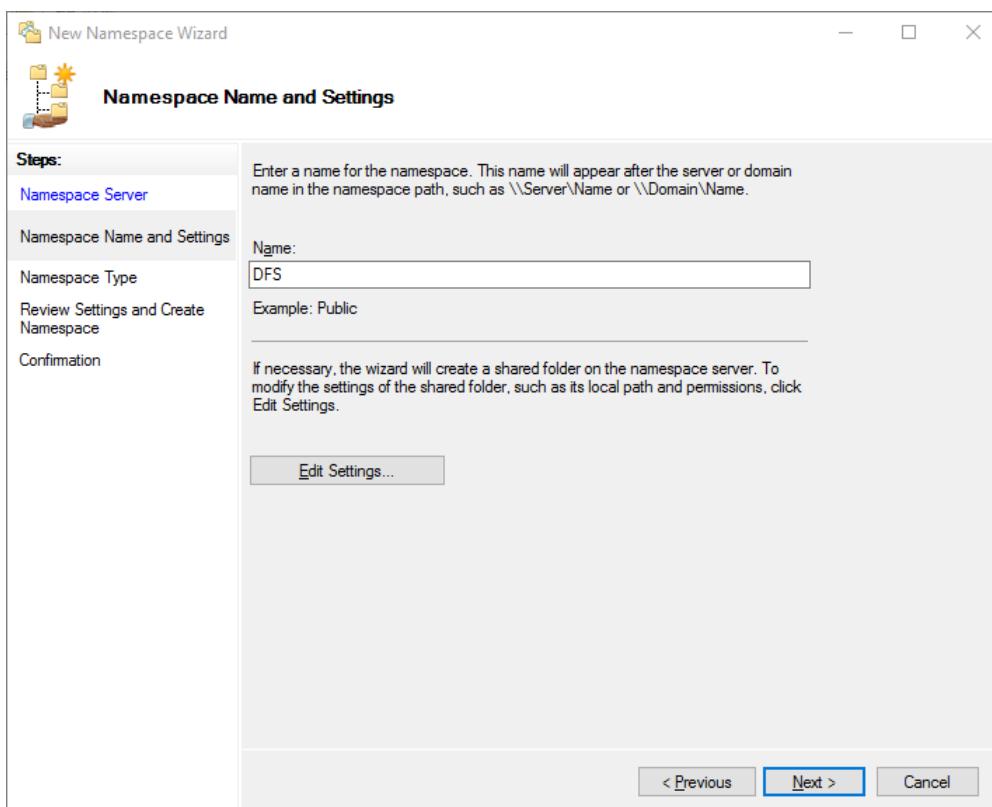
1. Open **Server Manager** and click **Tools** → **DFS Management**. In the DFS Management snap-in that opens, click **New Namespace**....



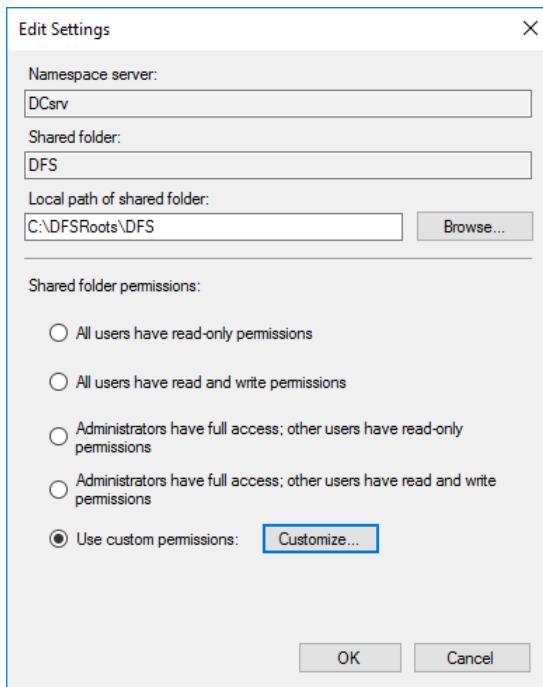
2. Specify the name of the server that will host the namespace and click **Next**.



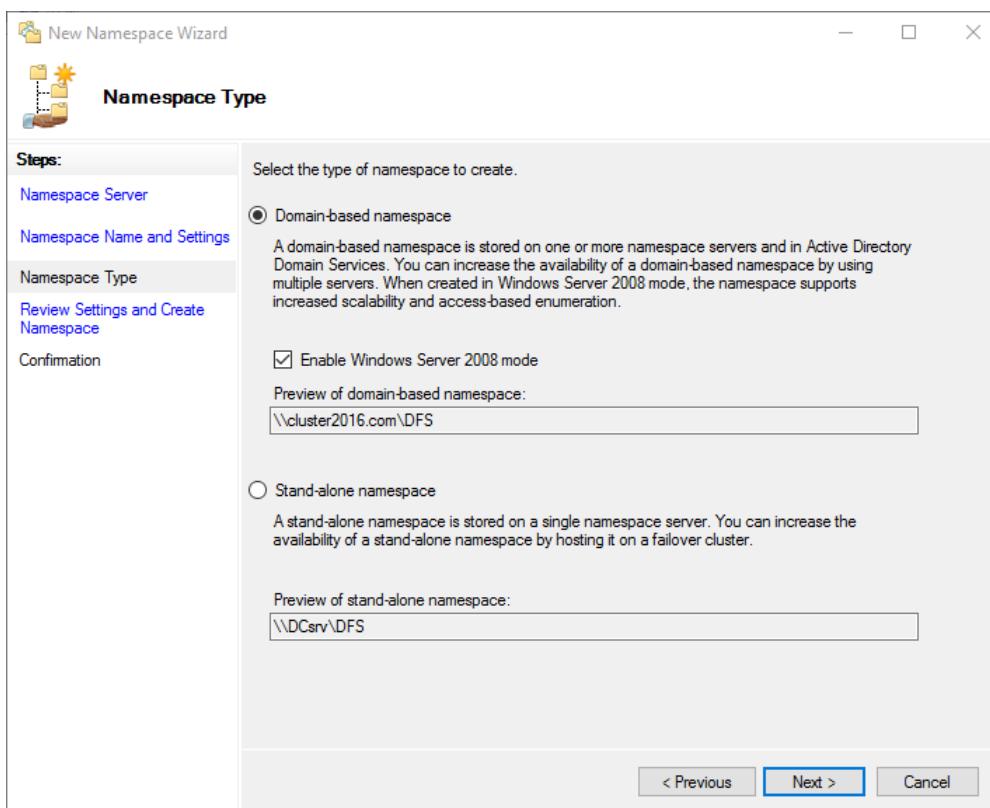
3. Specify a name for the namespace and click **Edit Settings....**



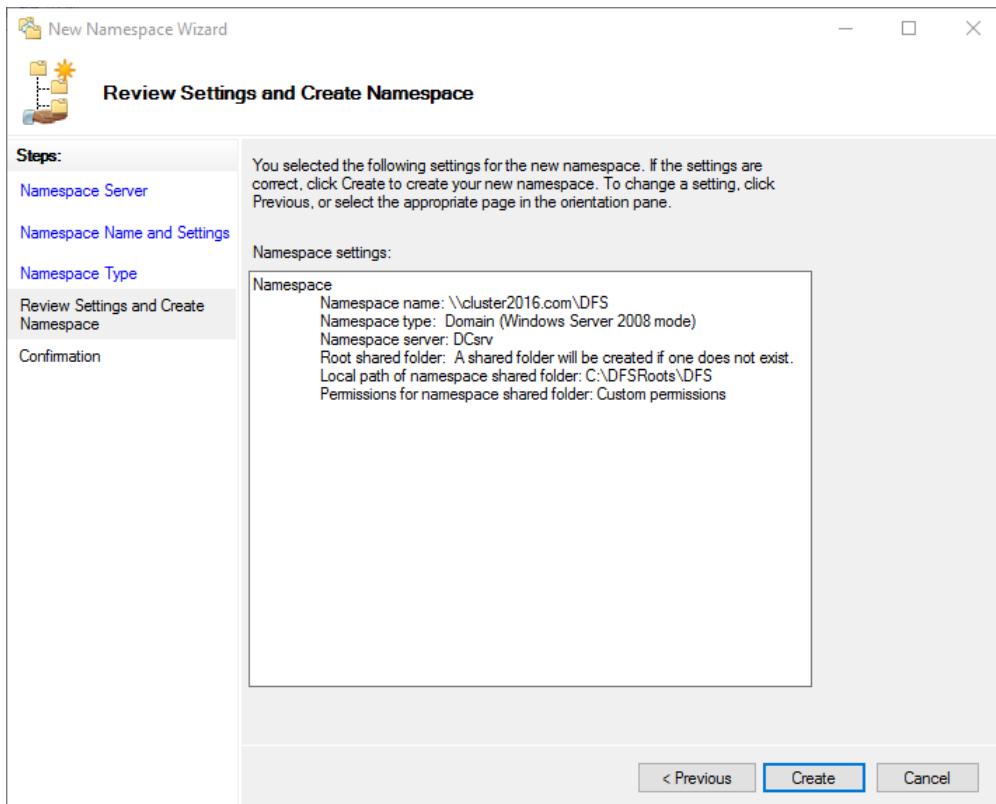
4. In the **Edit Settings** dialog box, select the **Use custom permissions** and click **Customize....** Next, grant full control permissions for the shared folder to the node1admin and node2admin users.



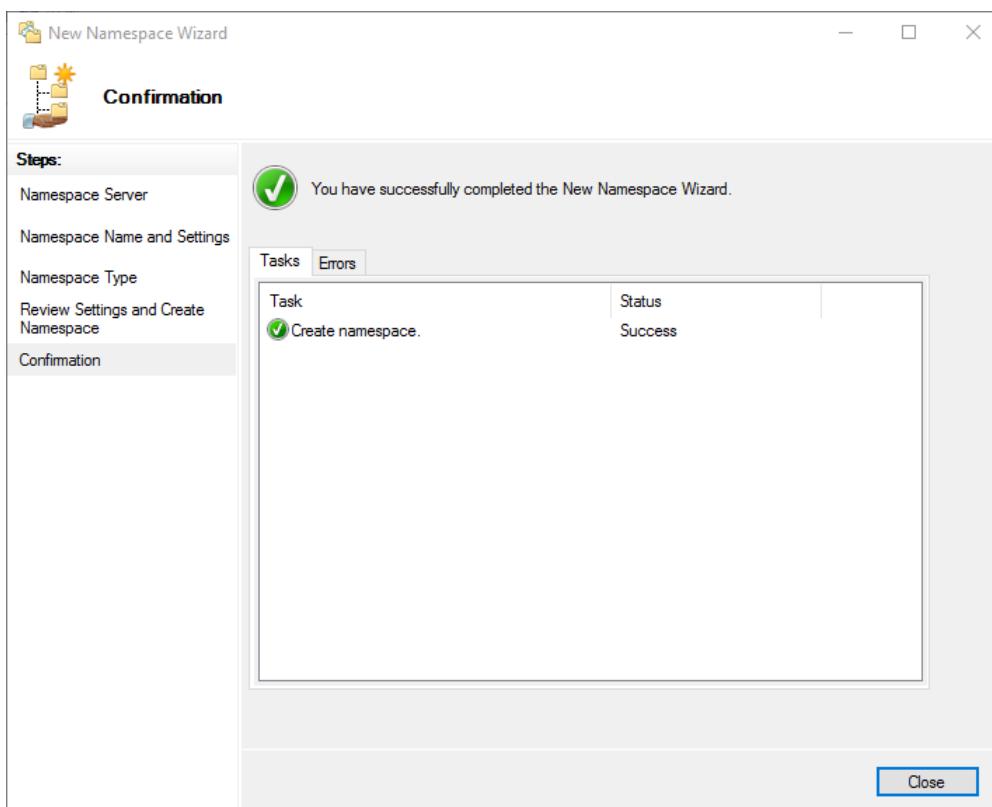
5. At the **Namespace Type** stage, select **Domain-based namespace**, then select the **Enable Windows Server 2008 mode** option and click **Next**.



6. Check to make sure that the specified settings are correct and click **Create**.



7. Click **Close** to close the wizard.

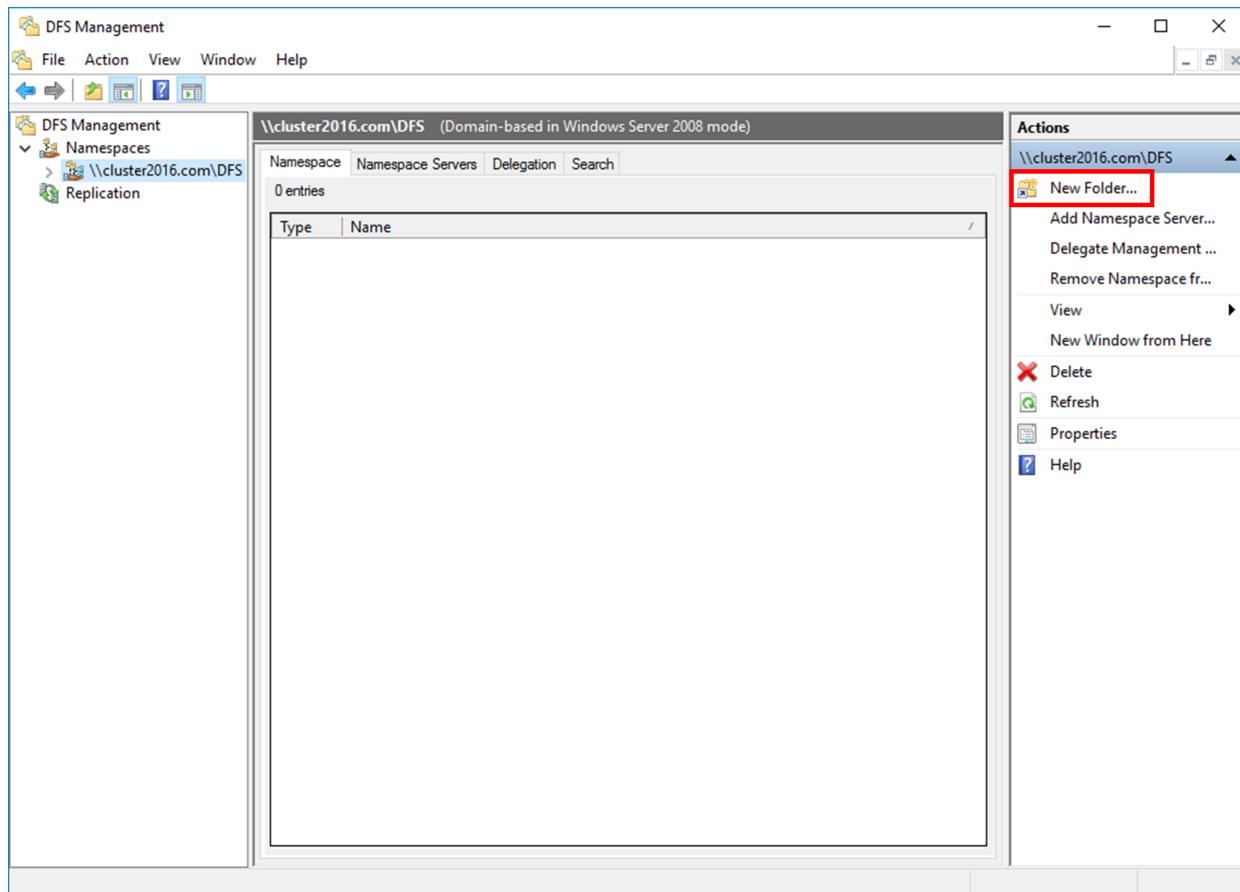


Adding the shared folders to the namespace

In this step, you need to add the main and backup shared folders to the namespace.

To do this:

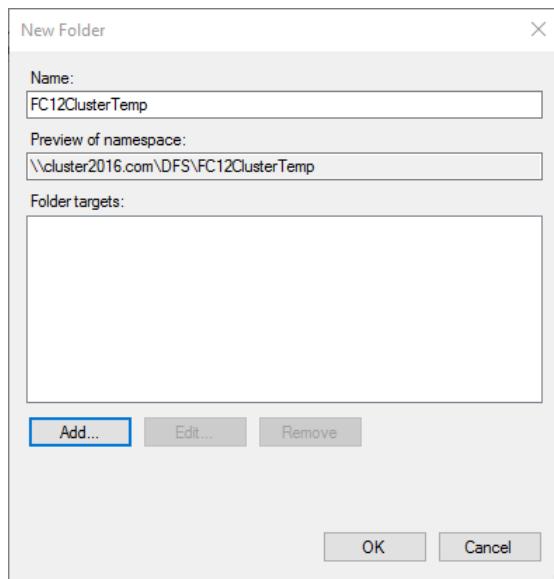
1. In the DFS Management snap-in, click **New Folder....**



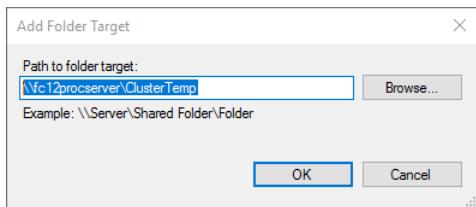
2. In the dialog box that opens, specify a name for the folder. This name will be displayed in the namespace of the distributed file system.

Note: The name you provide for the shared folder must not be the same as the name of any replicated folders.

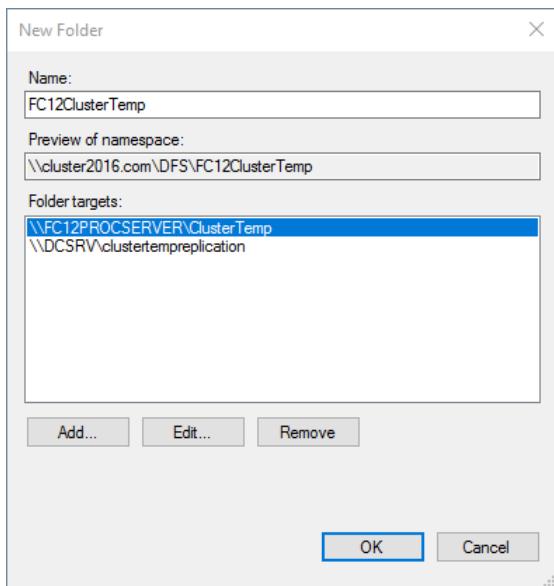
Click **Add...**



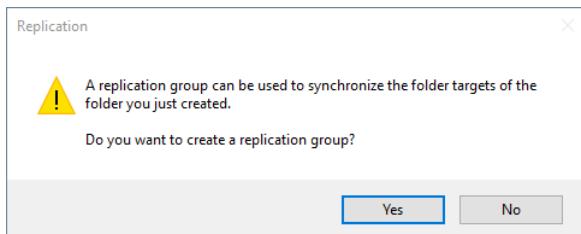
3. Specify the path to the shared folder and click **OK**.



4. Repeat steps 1 through 3 to add the backup folder to the namespace. The added folders will appear in the **Folder targets** list. When you are done, click **OK**.



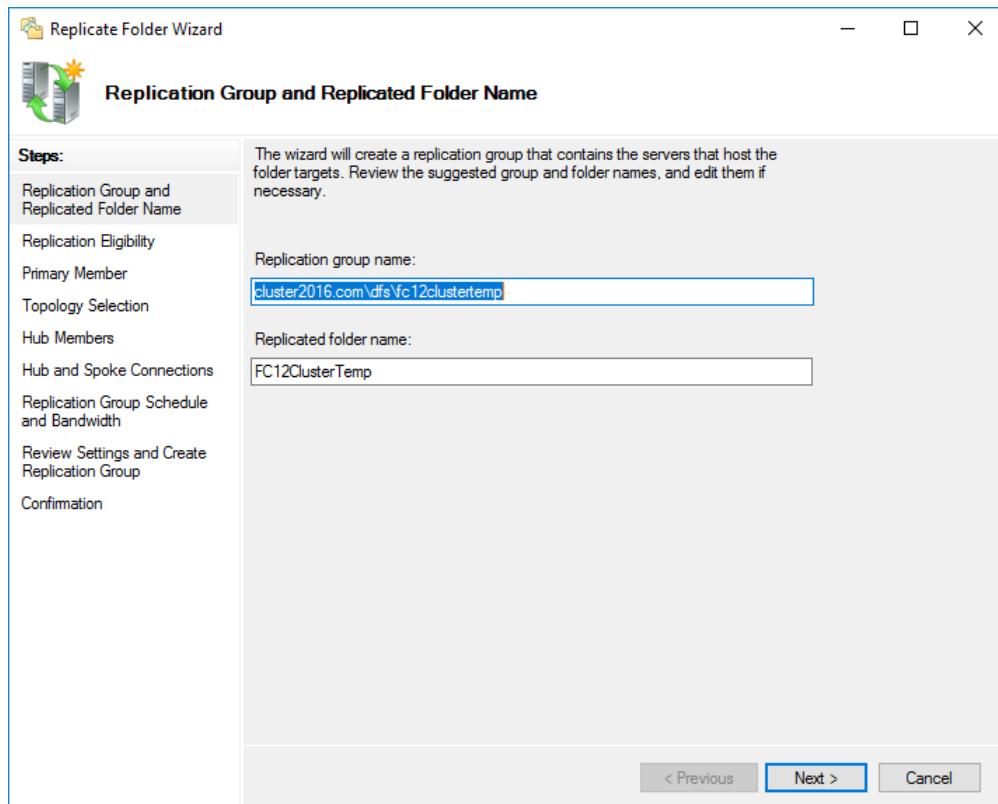
5. A message will appear saying that you can create a replication group. Click **Yes** to create a replication group and start setting up replication.



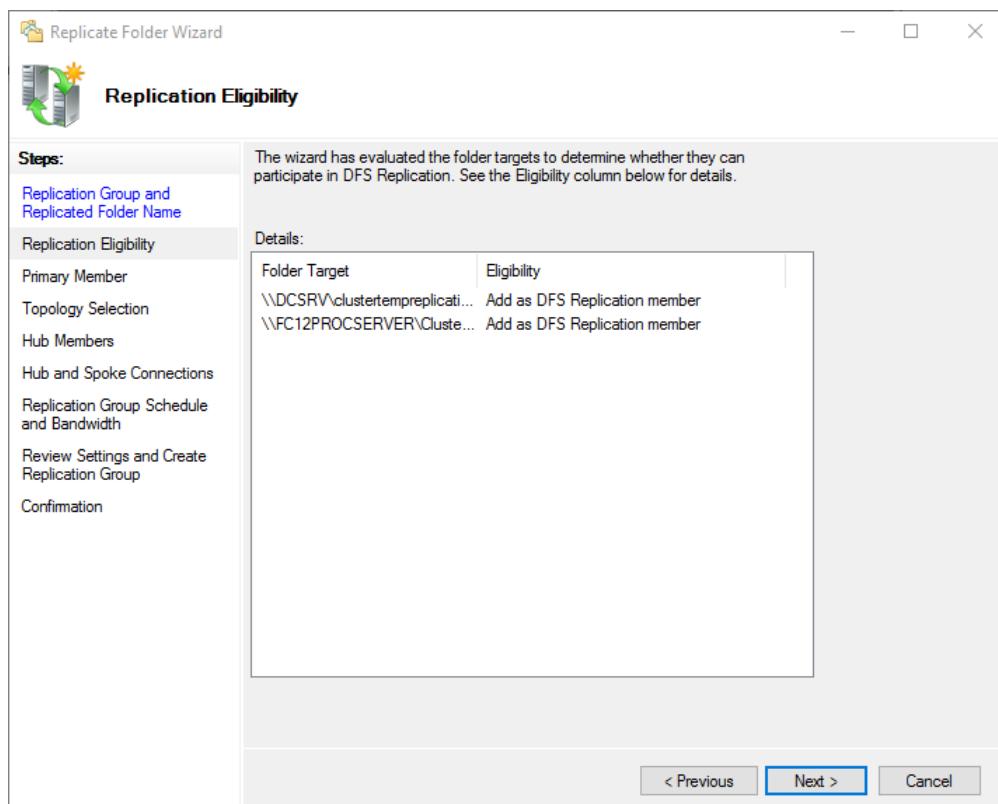
Setting up replication

To set up replication, you need to create a replication group, specify a server, select a topology of connections among group members, select a replication schedule, and specify replication bandwidth. All of the above can be specified via the **Replicate Folder Wizard**:

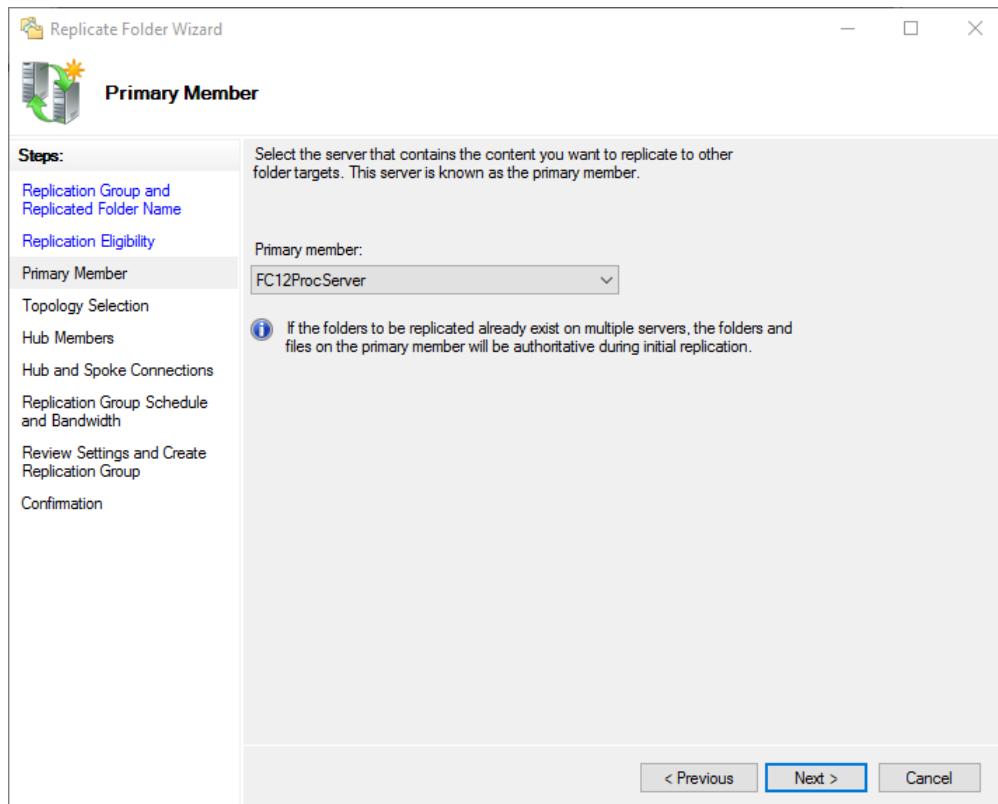
1. The wizard will suggest the names of the replication group and replicated folder. Edit these names if necessary or keep the default names and click **Next**.



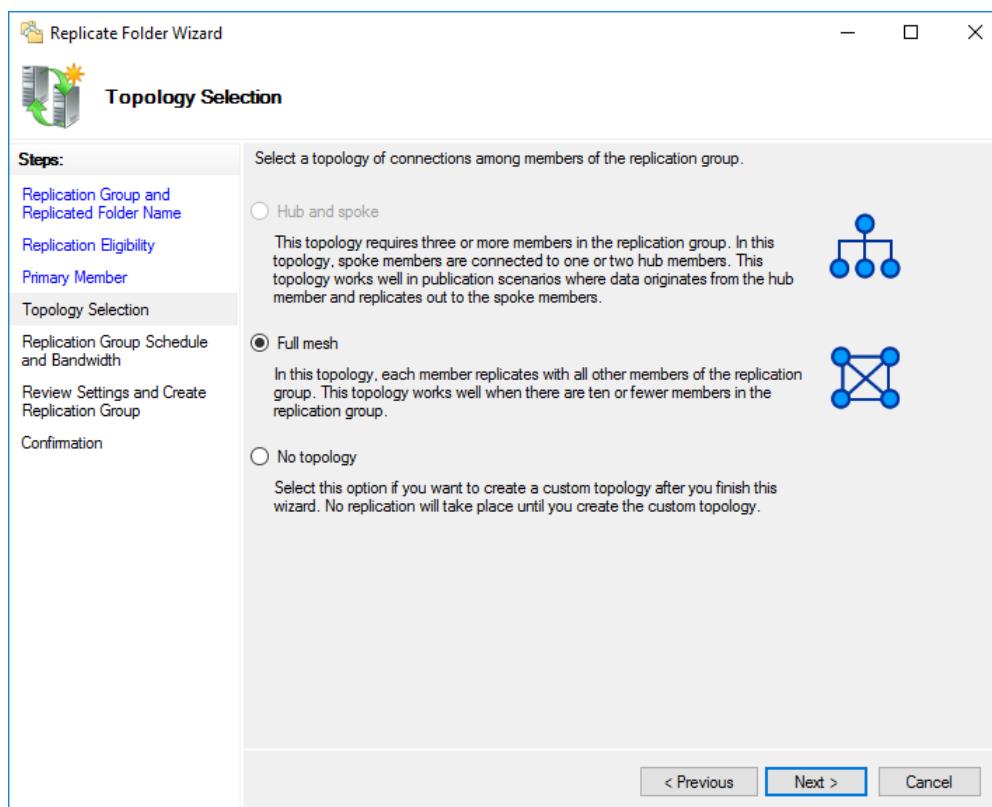
2. The wizard will inform you if the folder targets can participate in replication. Review the information in **Eligibility** column and click **Next**.



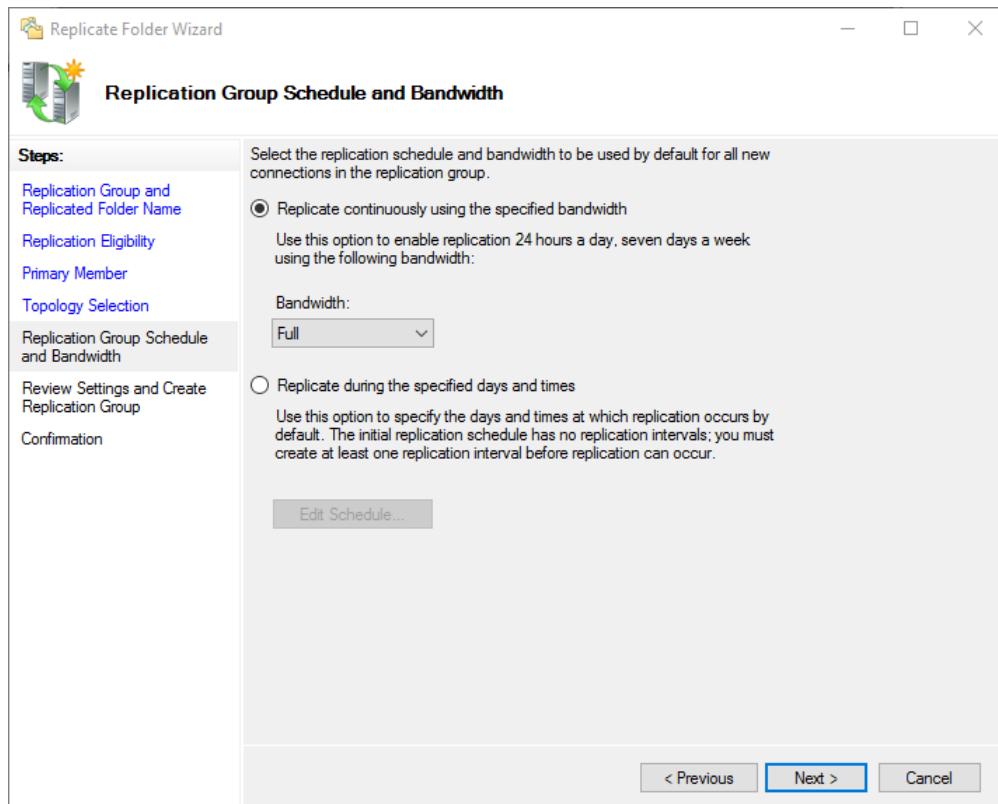
3. Select the server that contains the data to be replicated to folder targets and click **Next**.



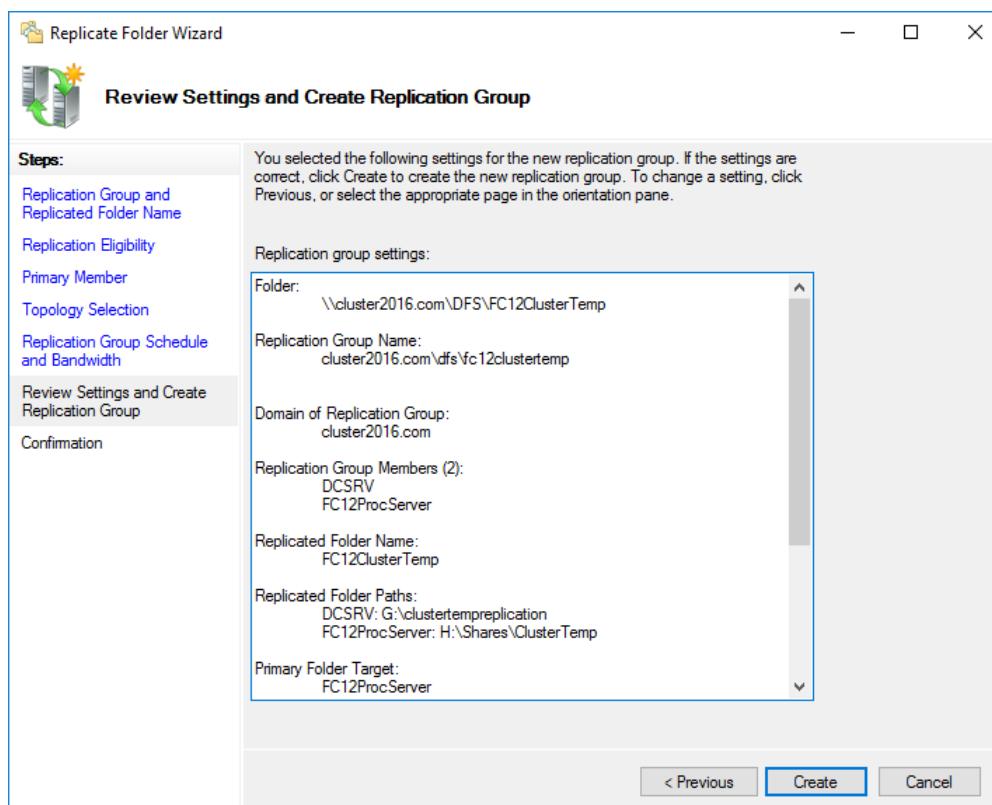
4. For the topology to be used, select **Full mesh** and click **Next**.



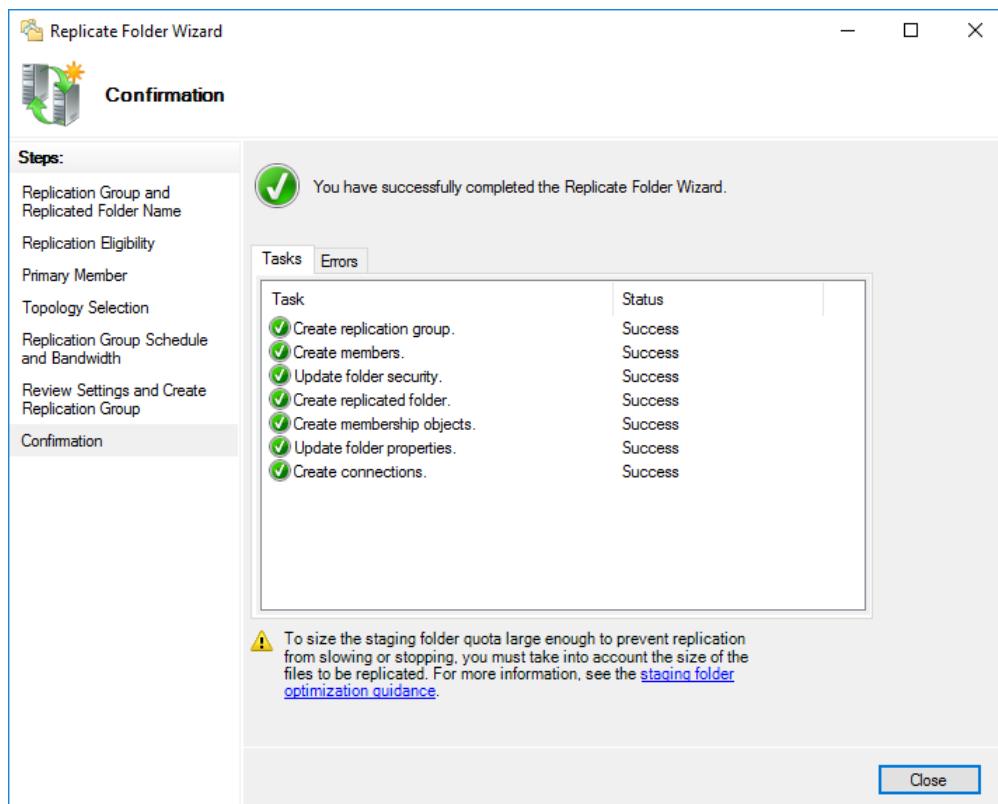
5. For the replication schedule, select **Replicate continuously using the specified bandwidth**. From the **Bandwidth** drop-down list, select **Full** and click **Next**.



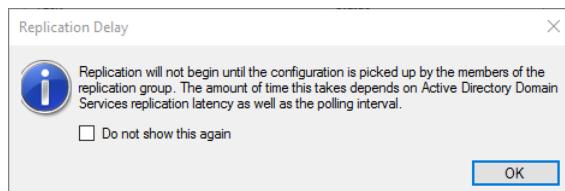
6. Check to make sure that the specified settings are correct and click **Create**.



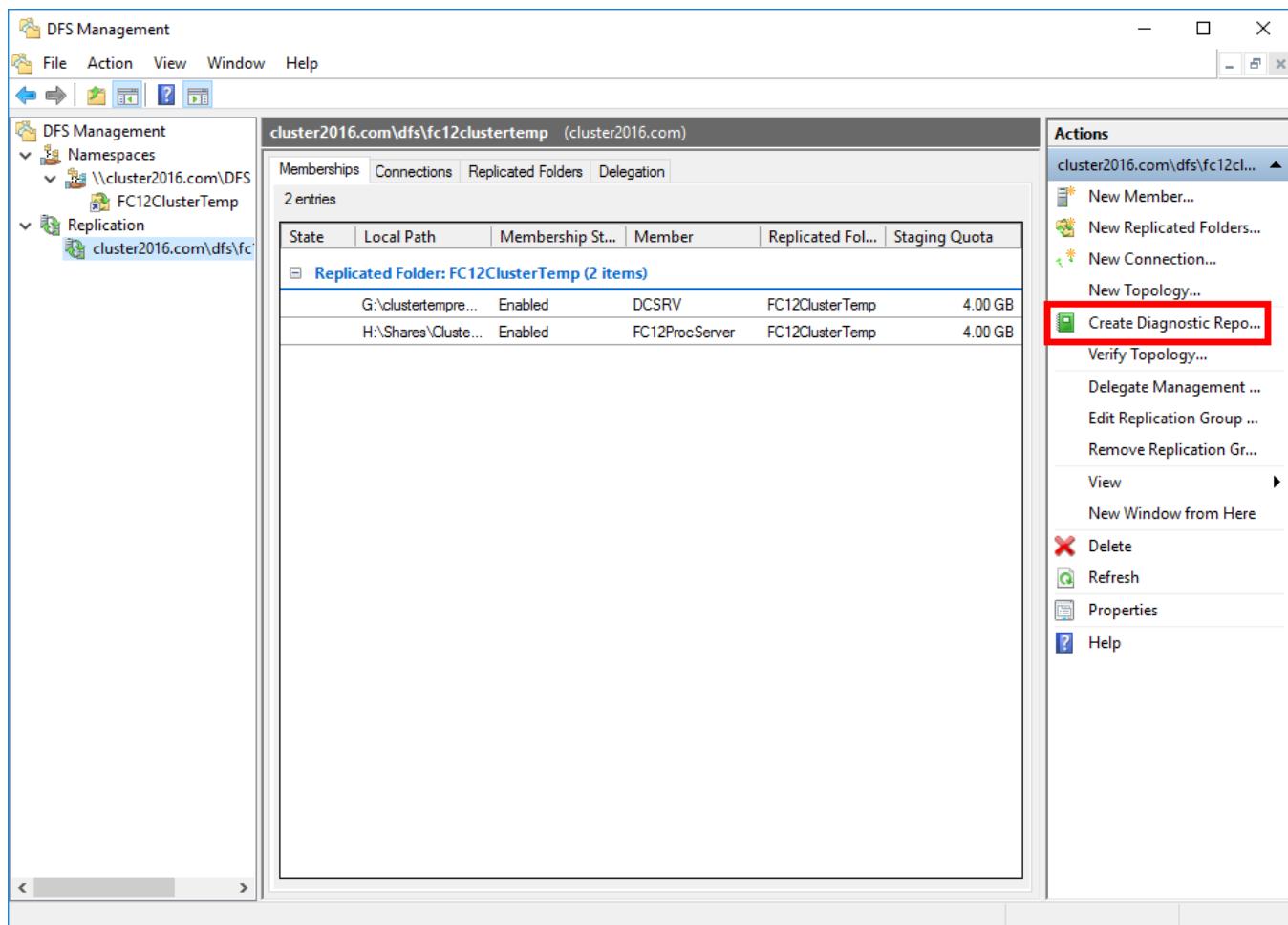
7. Once the replication group is created, click **Close**, to close the wizard.



8. If a **Replication Delay** warning appears, click **OK**.



After you have set up replication, we recommend testing it to make sure that it works correctly. To do this, open the **DFS Management** snap-in, select the newly created replication group and click **Create Diagnostic Report**:



In the **Diagnostic Report Wizard** that opens, select the **Propagation test** option and follow the instructions of the wizard (we recommend keeping the default settings).

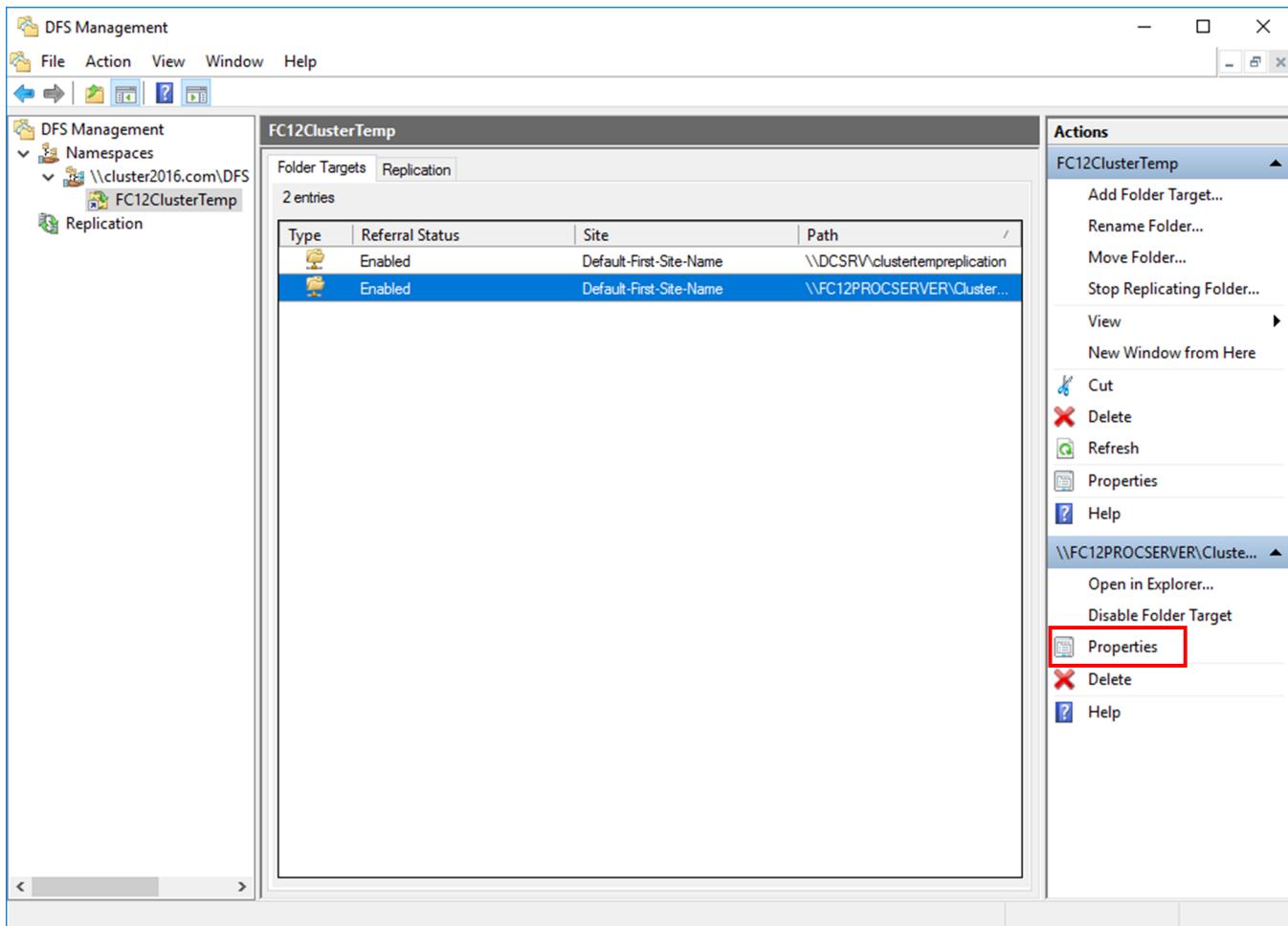
Once the diagnostic is complete, the **Diagnostic Report Wizard** will display a diagnostic report.

Setting up priorities for the folder targets

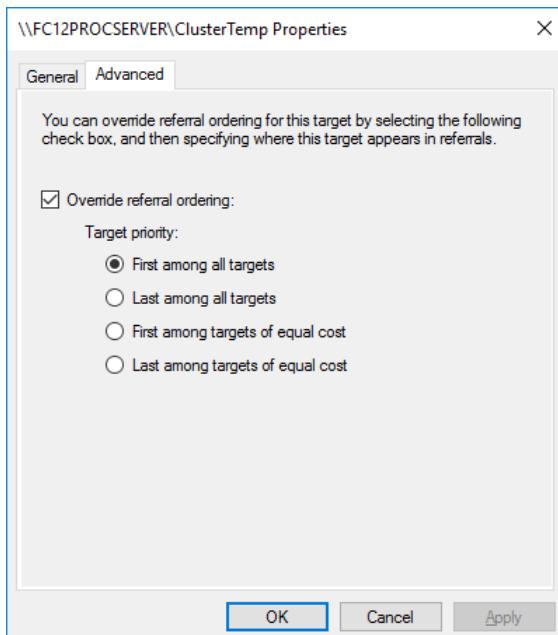
To minimize risk of malfunction, we recommend setting up priorities for the folder targets.

Note: Below we describe one possible priority set-up for the folder targets. Other set-ups are possible depending on your needs. For detailed instructions on setting up target priorities, please refer to [this page on the Microsoft website](#).

1. Open your namespace and then open the properties of the shared folder.



- Click the **Advanced**, select the **Override referral ordering** option, and then select **First among all targets**. The last option indicates that users will always be directed to the selected folder target, if it is accessible.



Configuring the ABBYY FlexiCapture Processing Server service

To enable continuous operation of the cluster hosting the **ABBYY FlexiCapture** Processing Server service even if the file storage fails, complete the following steps.

Important! If the file storage fails, the data about the sessions that are open at the time of failure may

be lost.

1. Complete the steps 1 through 4 described in [Setting up the ABBYY FlexiCapture Processing Server service](#), but in step 1, change the path to the file that contains the Processing Server settings. The command in step 1 should be as follows:

```
sc config ABBYY.ProcServer.FlexiCapture.12.0 binpath= "%systemdrive%\Program Files\ABBYY
FlexiCapture 12 Servers\FlexiBRSvc.exe \service -stationType:server -iniFile:\
\cluster2016.com\DFS\FC12ClusterTemp\serversettings.xml"
```

Important! Copying and pasting the above command may introduce redundant new line characters, resulting in an error. If this is the case, type the command manually.

2. Complete the steps required for changing the value of the %appdata% value directly in the Windows registry (see [Changing the %appdata% variable](#)), changing the value of the %appdata% variable to \cluster2016.com\DFS\FC12ClusterTemp.

Setting up the Licensing Server

The Licensing Server service can be added to the cluster identically to the Processing Server service.

The same serial number should be activated (the serial number must support at least two activations). The serial number must not change depending on the node provided by the Licensing Server.

The stations must be restarted after the service switches between the cluster nodes. The Processing Server stops and automatically starts in 5 minutes. The remote stations continue working with their tickets if the same serial number is used for all of the cluster nodes.

A separate log file with page use statistics is created on each cluster node in the folder %alluserspro-file%\ABBYYFlexiCapture\12\Licenses. To obtain summary statistics, the values from all of the nodes must be added. If a serial number which allows two activations is activated on the nodes Node1 and Node2, then pages are counted for the Node1 license when Node1 is running and for Node2 license when Node2 is running. If the page limit specified for the serial number is 100 pages, then, besides the main 100 pages, 100 more pages are added to be used when working on the other node.

Setting up the Application Server

Important! The Administration and Monitoring Console and the web stations are clustered together.

An NLB (Network Load Balancing) cluster is used to install the Application Server as well as the Administration and Monitoring Console and web stations that use the IIS (Internet Information Services) service. To balance the workload and improve request processing speed, the Application Server can be deployed in an NLB cluster.

Detailed information about the Network Load Balancing feature is available on [this page of the Microsoft website](#).

Setting up an NLB cluster for the Application Server

In this section, you will find step-by-step instructions for setting up an NLB cluster for the Application Server.

The Administration and Monitoring Console and the web stations are clustered together with the Application Server.

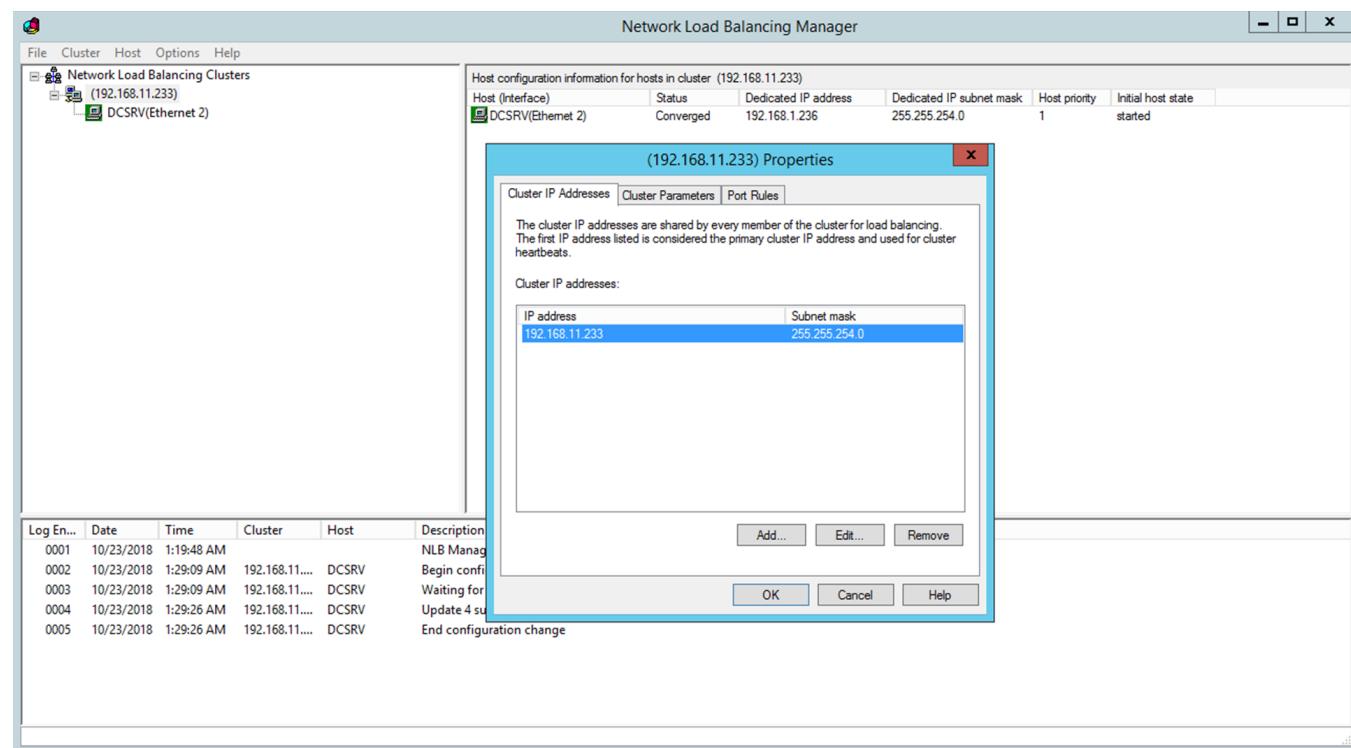
A detailed overview of NLB cluster settings can be found on the Microsoft website.

Note: The addresses, computer names, domain names, etc. used below are not mandatory and may be changed by the administrator.

Setting up the cluster

To set up the cluster, complete the following steps:

1. Install the Application Server on each cluster node. The database, file storage folder, Processing Server, Licensing Server, and Application Server clients must be located on a different computer, which must be accessible to all nodes in the cluster.
2. In Windows Features, add Network Load Balancing to each node in the cluster. This is done by clicking the **Add Features** link in the main window of the Server Manager (click **Start** → **Administrative Tools** → **Server Manager**).
3. Assign an IP address to the cluster via which the cluster can access the nodes as a unit (this will be a virtual cluster address). To do this, open the **Network Load Balancing Manager** on any of the nodes (click **Server Manager** → **Tools** → **Network Load Balancing Manager**) right-click the cluster and select the **Cluster Properties** item on the shortcut menu.



If a single network interface is used for client/cluster traffic and other network traffic on the nodes (as is usual in Multicast mode), each host in the cluster must have a dedicated IP address (in addition to the virtual address, which is common to all cluster nodes). A host will use its dedicated IP address instead of the virtual cluster address for incoming connections to the cluster nodes over Telnet, SSH, and other protocols, and for outbound connections from the cluster nodes. All cluster nodes must receive all incoming cluster traffic. The balancing algorithm determines which cluster node should respond to a given query. The choice between Unicast and Multicast depends on your network configuration.

4. You can use the Performance Monitor for IIS (accessible through the toolbar of the Microsoft Management Console) to monitor node activity. In the Web Service object, for each node, add the ISAPI Extension Requests/sec counter for Default Web Site (this is the location of the Application Server in the IIS).

Operating mode of the cluster

The choice between the Unicast and Multicast methods depends on your network configuration. A detailed description of the two methods can be found on [this page on the Microsoft website](#).

Balancing workload in the cluster and setting up hosts

You can set up cluster traffic to be balanced and filtered by port.

ABBYY FlexiCapture requires the TCP protocol for its operation. There are two filtering modes, single host and multiple host.

- **Single host**

This mode provides fault tolerance but does not allow workload balancing. Only one cluster node is active at a time.

- **Multiple host**

Traffic from a predefined range of ports is handled by the node with the highest priority in the cluster. All cluster nodes function simultaneously. This mode provides both workload balancing and fault tolerance.

Traffic from a predefined range of ports is balanced among the nodes. Additionally, you can set the Affinity parameter to:

- **None** (not recommended)

If this option is selected, multiple connections (TCP sessions) from a single client can be handled by different nodes.

- **Single** (recommended)

If this option is selected, all connections from a single client are handled by one node.

- **Network (Class C)** (recommended)

If this option is selected, all queries from the TCP/IP Class C address space are handled by one node. This may be necessary if there is a proxy server between the client and the cluster.

Setting up the Application Server

Complete the following steps to set up the Application Server:

1. Create a shared folder that can be accessed by all of the nodes in the cluster.
2. Install Microsoft SQL Server, an Azure server, or an Oracle server. The server must be available to all cluster nodes.
3. Install the Application Server on all cluster nodes.
4. On the first cluster node, run the Administration and Monitoring Console and create a database and specify a shared folder for file storage.
5. On each of the remaining cluster nodes, run the Administration and Monitoring Console and connect to the database you created.

 **Important!** For this operation, SQL authentication must be used.

6. On the SQL Server, the Azure server, or the Oracle server, give full access permissions for the database to all users on all of the cluster nodes under whose accounts IIS is running (the World

Wide Web Publishing Service must be running in the service list). Permissions for the first node are given automatically when the database is created. Other permissions must be given manually. By default, IIS runs under the user Network Service. In this case, assuming IIS is running on a computer named NodeN, you must give full access permissions to the user DomainName\NodeN\$ on the server.

7. If the Application Server is not available in the cluster, but PING requests still reach the cluster, check if IIS is available in the cluster. To do this check, place a static *.html file in the folder %systemdrive%\inetpub\wwwroot (typically this folder will already contain an iisstart.htm file) and open this file in a browser: \\ClusterAddress\iisstart.htm. Check the proxy server settings in your browser when opening the file.

Running Application Server clients

We recommend that you place all cluster nodes in one domain and run Application Server clients under domain user accounts.

Running Application Server clients under local user accounts is not recommended for the following reason.

In the usual (i.e. non-clustered) configuration of the Application Server, the following authentication method may be used: on the computer where the Application Server is installed, a local user is created, with its own user name and password; then any client will be able to connect to the Application Server under this user's account.

In a clustered configuration, the Application Server that processes client requests may be placed on different computers, and the actual user name will change accordingly: on the node1 computer, the user name will be node1\User, while on the node2 computer, the user name will be node2\User. This may disrupt the operation of the system.

Running Application Server clients under domain users avoids this problem.

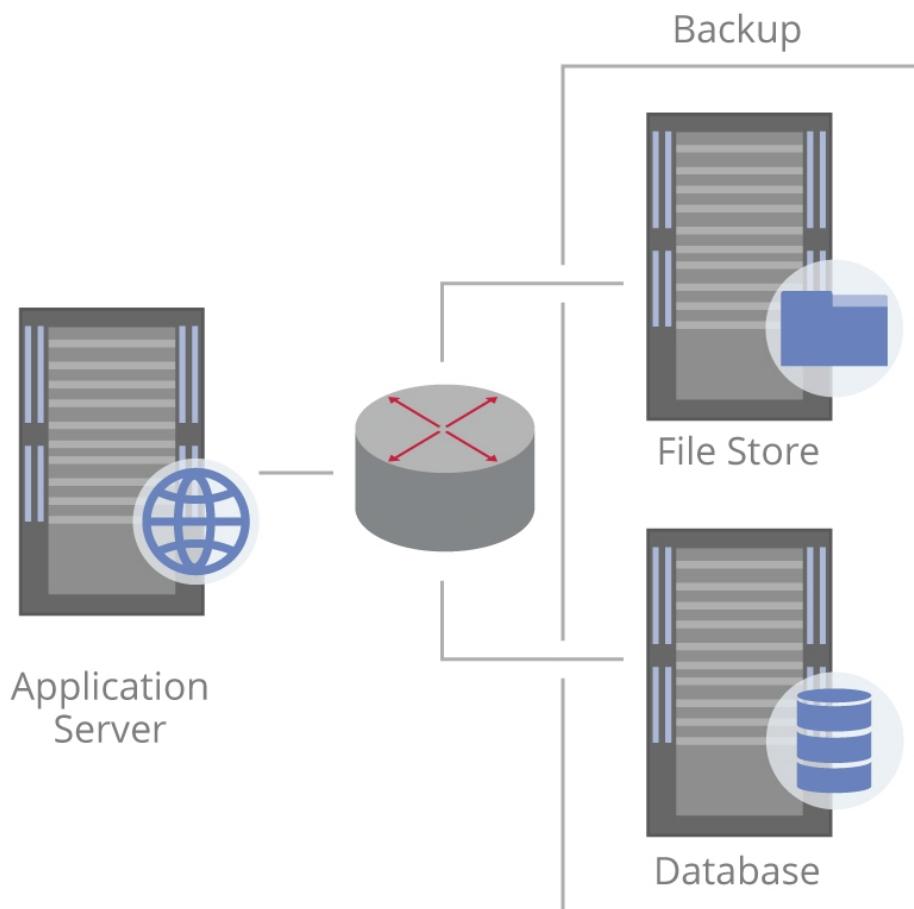
To connect clients on remote computers which are not in the domain, you can use basic authentication and a user account in the domain to which the cluster belongs. Suppose the clustered Application Server is in the cluster domain and the computer of the verification operator is not in this domain. All you need to do is create in the cluster domain an account for the user cluster\VerificationOperator and communicate the account name and password to the verification operator. Now the verification operator will be able to connect to the Application Server using this account and basic authentication on the Verification Station.

 **Note:** To use basic authentication for clients, be sure to enable basic authentication for the folder FlexiCapture12\Server in IIS. Otherwise, users will get an HTTP 401 error when attempting to connect.

Creating an ABBYY FlexiCapture backup

ABBYY FlexiCapture stores data in a database and in a file storage. The data stored in the database must always match the data stored in the file storage, otherwise you may not be able to recover cleanly from an unexpected crash. Possible consequences of mismatched data are:

- partial loss of data
- inability to resume processing from where it stopped



These consequences may be avoided by creating a system backup as described below.

Backing up your system

Important! The steps below should not be carried out at heavy system loads, as they will take too much time to complete.

To back up your system:

1. For the Application Server, set the `FileRemovingDisabled` key to *true*. This will prevent old files from being deleted from the file storage. Wait at least five minutes for your changes to take effect.
 2. Create a backup copy of the database using the backup tools indicated by the manufacturer.
 3. Using a backup utility like [nnBackup](#), create a backup copy of the data stored in the file storage.
 4. Set the `FileRemovingDisabled` key to *false*. Now the system will delete any old files when batches are deleted.
- ❑ How to back up your system using a Windows PowerShell script

```

# Change Application Server settings to stop deleting old files from file storage

Add-WebConfigurationProperty -pspath 'MACHINE/WEBROOT/APPHOST/Default Web
Site/FlexiCapture12/Server' -filter "appSettings" -name "." -value
@{key='FileRemovingDisabled';value='false'}

Set-WebConfigurationProperty -pspath 'MACHINE/WEBROOT/APPHOST/Default Web
Site/FlexiCapture12/Server' -filter "appSettings/add[@key='FileRemovingDisabled']" -name
"value" -value "true"

# Timer for setting to apply

Start-Sleep 5 # in seconds

# Back up SQL databases

$backupFolder = 'D:\SQLBackUps'

$user = 'user'
$pass = 'password'
$instance = 'SQL_Server_Instance_Name'
$db = 'DB_Name'
$file = "$backupFolder\$db.bak"

$secpasswd = ConvertTo-SecureString $pass -AsPlainText -Force
$cred = New-Object System.Management.Automation.PSCredential ($user, $secpasswd)

Backup-SqlDatabase -ServerInstance $instance -Database $db -Credential $cred -BackupFile $file -
Initialize

# Back up file storage

C:\Windows\System32\wbadmin.exe start backup -backuptarget:f: -include:d:\filestorage -quiet -
vssCopy

# Change Application Server settings to resume deleting old files from file storage

Set-WebConfigurationProperty -pspath 'MACHINE/WEBROOT/APPHOST/Default Web
Site/FlexiCapture12/Server' -filter "appSettings/add[@key='FileRemovingDisabled']" -name
"value" -value "false"

```

 **Note:** This example uses the Windows [wbadmin](#) command to back up the file storage.

Restoring your system

To restore your system after a crash:

1. Prepare the computers for installation and install the system. First, install the external components, then the servers and the stations.
2. Connect your license key or activate your software license.
3. Restore the database on the server.
4. Restore the file storage.
5. Open the Administration and Monitoring Console and establish a connection to the existing database. Then provide the path to the restored database and the path to the restored file storage.

 **Note:** To migrate the system, administrative privileges are required. It is recommended that all system migration operations are performed by the person who created the database. If migration operations are performed by another person, make sure that this person has permissions to connect to the new server and to access the database on the server.

Updating ABBYY FlexiCapture 12

To update your current version of ABBYY FlexiCapture 12:

1. Finish the processing of all of your current documents.
2. [Install](#) the latest version of ABBYY FlexiCapture 12 on a new set of servers.
3. [Back up](#) your database and file storage.

 **Note:** You can always [restore your system](#) from the backup created in step 3.

4. Connect your existing database to the newly installed version of ABBYY FlexiCapture 12:
 - a. Start the Administration and Monitoring Console of ABBYY FlexiCapture 12, select **Settings** → **Application server**, and click the **Connect to Existing Database** button.
 - b. Specify the name of the database server, the name of the database, and the path to the file storage location that were used by your earlier version of ABBYY FlexiCapture 12 and click **OK**. See [Connecting to an existing database](#) for more information about connecting to an existing database.
5. One by one, open each of your projects from the Application Server either on the ABBYY FlexiCapture 12 Project Setup Station or in [FCAdminTools](#). When you open a project, it will be upgraded to the latest version of ABBYY FlexiCapture 12.

Once the new version of ABBYY FlexiCapture 12 is installed, you can resume processing your tasks even while some of your projects are still being updated. The program will first get tasks from projects that have been fully updated.

You can use [FCAdminTools](#) to find out which projects are still waiting to be updated. For details, please refer to the description of the [CheckProjectsVersion](#) command in the Administrator's Guide.

 **Note:** If you do not encounter any errors while working with the latest version of ABBYY FlexiCapture 12, you can remove your earlier version of ABBYY FlexiCapture 12 from the old set of servers.

Updating your demo version of ABBYY FlexiCapture 12

To update your demo version of ABBYY FlexiCapture 12:

1. Finish the processing of all of your current documents.
2. Download your project from the ABBYY FlexiCapture 12 Application Server into your file system.
To do this, open your project on the Project Setup Station and click **Project → Export Project**.
3. Install the latest demo version of ABBYY FlexiCapture 12 on the same computer. The latest version will replace the earlier version.
4. Launch the newly installed demo version of ABBYY FlexiCapture 12 and open your project on the ABBYY FlexiCapture 12 Project Setup Station or in [FCAdminTools](#). When you open your project, it will be upgraded to the latest version of ABBYY FlexiCapture 12.

Note: If you do not encounter any errors while working with the latest version of ABBYY FlexiCapture 12, you can remove your earlier version of ABBYY FlexiCapture 12 from your file system.

Note: You can always reinstall your earlier demo version of ABBYY FlexiCapture 12 by completing the steps 1 through 4 above.

Upgrading from ABBYY FlexiCapture 10 and 11

You cannot use the setup wizard to upgrade your ABBYY FlexiCapture 10 or 11 to version 12. However, you can install ABBYY FlexiCapture 12 as a separate installation on the same machine that already has ABBYY FlexiCapture 10 or 11 installed.

Before installing ABBYY FlexiCapture 12, do the following:

1. Finish the processing of all documents that have been uploaded to your previous version of ABBYY FlexiCapture. Please note that any unprocessed documents that are currently being stored in your system will not be saved.
2. Make sure that there are no active tasks (for more information, see [Monitoring tasks](#)).
3. Stop the Processing Server.
4. Create backup copies for your local ABBYY FlexiCapture projects. For distributed projects, carry out a database and file storage [backup](#).

Next, download the ABBYY FlexiCapture 12 [installation package](#) and use the **Autorun.exe** executable file to install the FlexiCapture servers and workstations.

Note: You cannot use your ABBYY FlexiCapture 10 and 11 serial numbers to run ABBYY FlexiCapture 12.

You can use ABBYY FlexiCapture and ABBYY FlexiLayout Studio projects and FlexiLayouts created in earlier versions of the program. After you install ABBYY FlexiCapture 12, it will become the default application for all ABBYY FlexiCapture and ABBYY FlexiLayout Studio projects (*.fcproj and *.fsp files respectively), even if ABBYY FlexiCapture 11 or 10 is installed on your computer.

Note: When you open an ABBYY FlexiCapture or ABBYY FlexiLayout Studio project created in an earlier version of the program, it will be converted to the ABBYY FlexiCapture 12 format. Once a project is converted, it can no longer be opened in the earlier versions. To open a project in ABBYY FlexiCapture 11 or 10, launch ABBYY FlexiCapture or ABBYY FlexiLayout Studio via the Windows **Start** menu and

click **File → Open Project....**

Once ABBYY FlexiCapture 12 has been installed, update your database to the FlexiCapture 12 version using the Administration and Monitoring Console, and launch the Processing server. For more information about updating your database, see Importing databases and projects from earlier versions of ABBYY FlexiCapture.

Once ABBYY FlexiCapture 12 is installed, you can resume processing your tasks even while some of your projects are still being updated. The program will first get tasks from projects that have been fully updated.

You can use [FCAdminTools](#) to find out which projects are still waiting to be updated. For details, please refer to the description of the [CheckProjectsVersion](#) command in the Administrator's Guide.

 **Important!** If any errors occur during your installation, make that you have Microsoft .NET Framework is 4.7.2 or newer installed. If errors still occur during your installation even if your hardware satisfies all software requirements and all required permissions have been provided, analyze the installation wizard error logs. For more information about collecting and analyzing logs, see Installation problems.

Updating projects created in ABBYY FlexiCapture Standalone (*.fcproj)

Projects created in a standalone edition of ABBYY FlexiCapture are stored in the file system. You can open projects created in ABBYY FlexiCapture 10 or 11 (.fcproj) and use them in ABBYY FlexiCapture 12. Please note the following:

1. After you open an .fcproj in ABBYY FlexiCapture 12, you will no longer be able to open it in ABBYY FlexiCapture 10 or 11. If you think you will need to open an .fcproj in ABBYY FlexiCapture 10 or 11 in the future, create a copy of that project before opening it in ABBYY FlexiCapture 12.
2. When you open an ABBYY FlexiCapture 10 or 11 project in ABBYY FlexiCapture 12, you may need to delete all the processing results and analyze all the pages once again.

 **Note:** You may continue using old projects without recognizing the documents again, but some data may be displayed incorrectly. For instance, if there are format errors in an ABBYY FlexiCapture 10 or 11 project, they will not be displayed in the document window in the same way as such errors are displayed in ABBYY FlexiCapture 12.

Updating databases and projects created in ABBYY FlexiCapture Distributed

A distributed edition of ABBYY FlexiCapture works with projects that are stored in the database on the Application Server.

There are several ways to migrate from an earlier version to ABBYY FlexiCapture 12:

- [Connecting to a database](#) created in an earlier version of ABBYY FlexiCapture;
- [Moving projects](#) created in an earlier version of ABBYY FlexiCapture to a new database (recommended).

 **Important!** Before upgrading to ABBYY FlexiCapture 12, be sure to complete the processing of any documents that are still being processed by your previous version of ABBYY FlexiCapture, otherwise all these documents will be lost.

Connecting to a database created in an earlier version of ABBYY FlexiCapture

Once ABBYY FlexiCapture 12 servers are installed, you can use the Administration and Monitoring Console to connect to the database and file storage location that were used by your earlier version of ABBYY FlexiCapture. Then update the database to the new version and continue working with it. If you choose this method, you will no longer be able to work with your earlier version of ABBYY FlexiCapture.

Note: After you complete the steps described in this section, you will no longer be able to use your earlier version of ABBYY FlexiCapture. For this reason, we recommend that you back up your old database and file storage location before you proceed with these steps. You can then use these backup copies to restore the operation of your earlier version of ABBYY FlexiCapture if any problems occur. For details, see [Creating an ABBYY FlexiCapture backup](#).

To connect to the old database:

1. Complete the processing of documents with your earlier version of ABBYY FlexiCapture:
 - a. Complete the processing of all the batches that have already been registered in the system.
 - b. Start the Administration and Monitoring Console.
 - c. In the Administration and Monitoring Console, select **Settings** → **Cleanup** to remove any redundant data.
 - d. Select **Monitoring** → **Sessions** to make sure there are no open sessions. If you see any open sessions, close the clients where these sessions are running.

Note: If, for some reason, you cannot close all of the clients with open sessions, disconnect the Application Server from the database. To achieve this, clear the value of HKEY_LOCAL_MACHINE\SOFTWARE\ABBYY\FlexiCapture\10.0 (or 11.0)\WebServices "DBConnectionString" in the Windows registry and restart the World Wide Web Publishing Service in the services.msc snap-in. Once you complete this step, you will no longer be able to use your earlier version of ABBYY FlexiCapture.

2. Connect to the database of your earlier version of ABBYY FlexiCapture:
 - a. Start the Administration and Monitoring Console of ABBYY FlexiCapture 12, select **Settings** → **Application server**, and click the **Connect to Existing Database** button.
 - b. Specify the name of the database server, the name of the database, and the path to the file storage location which were used by your earlier version of ABBYY FlexiCapture and click OK. See [Connecting to an existing database](#) for more information about connecting to an existing database.
3. Update the database to the version used by ABBYY FlexiCapture 12:
 - a. After you connect to the database of your earlier version of ABBYY FlexiCapture, you will see an **Upgrade** link next to the name of the database on the page **Settings** → **Application server**. Click this link. The database will be updated to the version used by ABBYY FlexiCapture 12. Once you complete this step, you will no longer be able to use the database in earlier versions of ABBYY FlexiCapture.
4. Update the projects on the Application Server of ABBYY FlexiCapture 12:

- a. Start the Project Setup Station of ABBYY FlexiCapture 12 and open all of the projects on the Application Server, one by one. When you open an old project, it will be updated to the version used by ABBYY FlexiCapture 12.

Moving projects created in an earlier version of ABBYY FlexiCapture to a new database

If you wish to keep your earlier version of ABBYY FlexiCapture and at the same time use its projects in ABBYY FlexiCapture 12, you need to create a new database in ABBYY FlexiCapture 12 and move the required projects to this database.

Proceed as follows:

1. Export the projects created in your earlier version of ABBYY FlexiCapture from the Application Server to the file system:
 - a. On the Project Setup Station of your earlier version of ABBYY FlexiCapture, open the projects on the Application Server, one by one, and use the **Project → Export Project** command in the main menu to export the projects to the file system. This will only export the projects, the documents will not be exported. Therefore, be sure to complete the processing of the documents in your earlier version of ABBYY FlexiCapture;
2. Create a new database in ABBYY FlexiCapture 12:
 - a. In the Administration and Monitoring Console of ABBYY FlexiCapture 12, create a new database and specify the path to the new file storage location (see [Creating a database](#) for detailed instructions);
3. Update the projects to the version used by ABBYY FlexiCapture 12 and upload them onto the Application Server:
 - a. On the Project Setup Station of ABBYY FlexiCapture 12, open the exported *.fcproj projects, one by one. When you open an old project, it will be updated to the version used by ABBYY FlexiCapture 12.
 - b. Once a project has been updated, upload it onto the Application Server by selecting **File → Upload Project to Server** in the main menu of the Project Setup Station. For more information about uploading projects to the Application Server, see the [Creating and opening projects](#) section.

Updating projects created in ABBYY FlexiLayout Studio 10 or 11 (*.fsp)

All FlexiLayout Studio 10 or 11 projects can be opened in FlexiLayout Studio 12. Please note the following:

1. It is impossible to open an .fsp-project in ABBYY FlexiLayout Studio 10 or 11 once it was opened in ABBYY FlexiLayout Studio 12, so you should create a copy of the project before opening it in ABBYY FlexiLayout Studio 12 if you still need to open it in ABBYY FlexiLayout Studio 10 or 11.
2. After opening a FlexiLayout Studio 10 or 11 project in ABBYY FlexiLayout Studio 12 you may need to delete all processing results and analyze all pages once again.
3. Due to changes in FlexiLayout language some compilation errors may occur. In this case you will need to correct errors and re-compile FlexiLayouts.

Using FlexiLayouts (*.afl) created in ABBYY FlexiLayout 10 or 11

FlexiLayouts compiled in ABBYY FlexiLayout 10 or 11 can be loaded into ABBYY FlexiCapture 12.

Sometimes due to changes in FlexiLayout language some compilation errors may occur. In this case open the *.fsp project in ABBYY FlexiLayout Studio 12, correct the errors and re-compile FlexiLayouts. See [Updating ABBYY FlexiLayout Studio 10 or 11 projects \(*.fsp\)](#) for detailed instructions.

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