



White Paper

System Architecture

DocuWare Version 7

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1 Objectives of this White Paper

This White Paper explains the whole architecture of the DocuWare system. You will find out which components and technologies DocuWare uses and how they interact in an on-premise system.

The paper is aimed at readers with an interest in technology, particularly technical staff at clients, sales partners, and consulting firms, as well as specialist media. It assumes a certain level of technical knowledge about the structure of modern software applications, ideally of document management systems. Detailed knowledge of current or previous DocuWare systems is not required.

The aim of the White Paper is to enable you to form a technologically well-founded opinion about the DocuWare system and to assess its capability in terms of flexibility, scalability and performance when handling current requirements.

If you would like to know more about other technical aspects of DocuWare, go to the DocuWare Knowledge Center to find additional White Papers on Integration (<http://help.docuware.com/en/#b57864t61253n56685>), Security (<http://help.docuware.com/en/#t59331>), Intelligent Indexing, (<http://help.docuware.com/en/#t59237>) and DocuWare Cloud (<http://help.docuware.com/en/#b57864t58812n56659>).

2 Introduction

DocuWare is a modern document management system for professional enterprise content management. DocuWare lets you access your documents and the important information they contain anytime, anywhere.

The DocuWare system architecture stands out due to full multi-client capability, its service-oriented structure and cutting-edge technology for web and mobile applications.

Document management with DocuWare

DocuWare is based on the normal office environment and familiar working procedures. Documents are first gathered in electronic document trays, a little like the in-tray on your desk. Then you edit the documents as usual – you sort them, clip them together if necessary, and add notes, comments, signatures, or stamps.

From the document trays, the documents are then stored in digital file cabinets. The file cabinets form what is known as the document pool. It is up to you how many file cabinets to create and how they are organized – you decide what makes sense for your company. Using the highly efficient index functions, all types of documents are always filed in the right place and displayed on screen with a few clicks.

These and many other functions such as workflow management make DocuWare a cutting-edge, highly capable software that helps you optimize your business processes in a targeted way. The comprehensive collection of DocuWare videos (<https://www.youtube.com/user/docuware>) tells you all about the different applications.

DocuWare is sold according to a licensing model that offers a basic solution and add-on solutions. Function bundles can be bought later as licensed modules. For historical reasons, some of the module names differ from the names of the related technical components.

2.1 Fit for the Future Thanks to Cutting-Edge Technology

The world of IT is undergoing a rapid transformation, with new and varied types of IT devices and technologies emerging nearly every day. Against this backdrop, DocuWare uses the latest technologies in programming and creating the architecture of its document management system, and offers its customers software that still will meet the varied user requirements of tomorrow.

To work with DocuWare you just need an internet-capable device with a browser, because the DocuWare Web Client works entirely on a browser. DocuWare can therefore be used across all platforms, because the system can be called up on Windows, Mac OS and Linux devices via the browser. Only in a few cases are local Windows applications needed; these are brought together in DocuWare Desktop Apps, which can easily be managed centrally.

The DocuWare Web Client is based on the latest HTML5 technology and thus supports all standard browsers, even for highly complex operating scenarios.

DocuWare works with open communication standards and uses HTTP/HTTPS between almost all components, mostly either based on the REST (Representational State Transfer) or SOAP (Simple Object Access Protocol) technology.

The mobile applications of DocuWare are available in iOS and Android, and thus on all key platforms. To install DocuWare, the latest Windows versions are always supported and for the databases, all key server technology in a large number of versions, namely MS SQL, MySQL, and Oracle.

And finally, DocuWare is not only available as an on-premise version, but can be used as a cloud solution with DocuWare Cloud without its own server being installed. This White Paper describes the on-premise version.

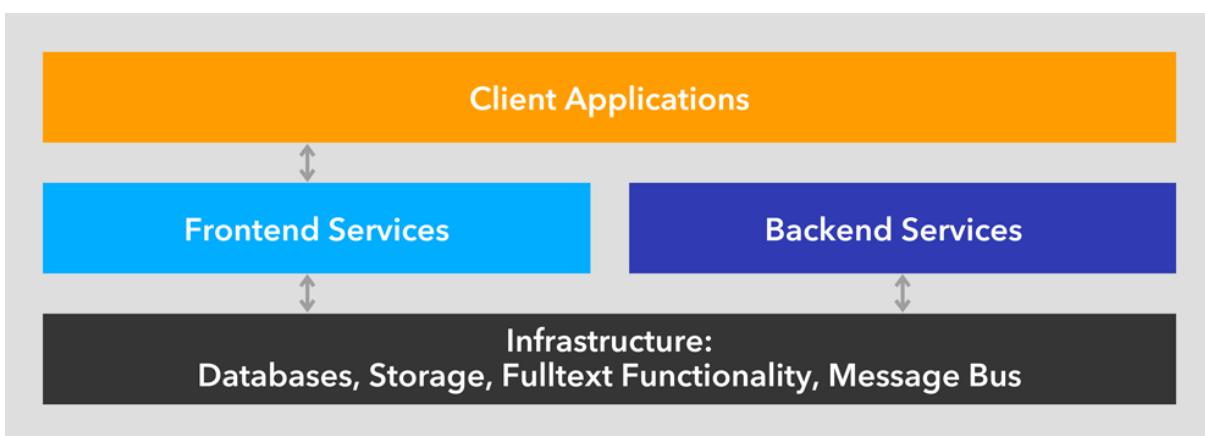
2.2 Three-tier Architecture

The DocuWare Server architecture is divided into three tiers:

- 1 Frontend services
A part of the application logic is found in several services of the frontend role.
- 2 Backend services
Another part of the application logic is found in several services of the backend role.
- 3 Infrastructure (storage locations, databases, fulltext functionality, message bus)
In principle, several servers share common resources on one or more central background servers.

The frontend and backend roles are installed with DocuWare setup.

The three layers of the DocuWare system architecture communicate with the client applications via the frontend services. All dialog-oriented functions run in the browsers of the workstation systems and mobile devices used in the client applications.



The term server here refers to a software service, not to a piece of hardware. A DocuWare system therefore invariably consists of several (software) servers, all of which can – as a minimal solution – simultaneously run on one hardware system.

2.3 System Requirements

DocuWare relies on sustainable technologies and the greatest possible compatibility between the system and a wide range of different hardware and software components from other manufacturers. System requirements are therefore adapted with each new version. This section gives you an initial overview; for the most recent details, see "System Requirements (<http://help.docuware.com/en/#b57853t55049n54067>)" in the DocuWare Knowledge Center.

Web Client

DocuWare supports the latest versions of Internet Explorer, Firefox, and Chrome browsers. The exceptions in Chrome are a few components based on Silverlight.

DocuWare servers

The servers of the DocuWare system are implemented on the basis of Microsoft's .NET architecture. They can therefore be run on all platforms that support a common version of Windows.

Infrastructure components

For databases, DocuWare supports the latest versions of Microsoft SQL Server, Oracle, and MySQL.

Terminal Server

The Microsoft Terminal Server and Citrix Metaframe can be used as extensions of the DocuWare system.

2.4 Using Client Licenses

DocuWare offers two types of client licenses: named client licenses and concurrent licenses.

New or newly enabled users automatically receive a free named client license. This is independent of how the user account was created – whether manually, via the platform API, via user synchronization or otherwise. If the user is deleted or disabled, the named client license can be assigned to other users again.

If you use both named client licenses converted from concurrent licenses and directly purchased named client licenses, the named client licenses converted from the concurrent licenses are used first.

A client license – regardless of whether it is named or concurrent – lets you use an instance of Platform, Web Client, Connect to Outlook, Windows Explorer Client, and Mobile at the same time. The following overview shows which DocuWare modules use which of these five components:

Component	Platform	Web Client	Connect to Outlook	Windows Explorer Client	Mobile
DocuWare module					
Web Client, Forms, URL Integration, Smart Search, Quick Search for Connect to Outlook					
Connect to Outlook			X		
Windows Explorer Client				X	
Mobile					X
PaperScan (for access to DocuWare)					X
SDK	X				
Connect to Ricoh	X				
Connect to SharePoint	X				
Connect to MFP	X				
Connect to Xerox	X				
Connect to SAP Version 2	X				

* In general, one application; if using platform .NET API, all applications on this machine.

** Per browser on one device. In terms of the license requirement, whether a tab within a browser is classified as a separate browser varies depending on the browser.

The following applications do not require any client license:

- Desktop Apps (Printer, Import, Scan)
- DocuWare Administration
- DocuWare Configuration
- Workflow Designer
- Web Client ReadOnly
- Additional function "Public form" (web forms in general, however, require client licenses)

Examples for the client licenses requirement

- 4 Parallel work with Web Client, DocuWare Configuration, DocuWare Administration, Connect to Outlook, and DocuWare Mobile => 1 client license
- 5 Web Client used in parallel in two different browsers => 2 client licenses
- 6 Web Client used in parallel with Windows Explorer Client on one device => 1 client license
- 7 Web Client used in parallel with Windows Explorer Client on two devices => 2 client licenses
- 8 DocuWare Configuration used in parallel in two browsers => 0 client licenses
- 9 Web Client with the same user used in parallel for a public form => 1 client license
- 10 Mobile used in parallel on two different devices => 2 client licenses

Once a user has logged off, the client license will remain open for a further two minutes. If the user closes the Web Client or the Platform just by closing the browser, but does not explicitly log off, the license will also stay open for two minutes. Only if the browser is closed unexpectedly will the license stay open for longer periods of time in certain circumstances.

2.5 Using Server Licenses

For all servers there is a single license with the name "DocuWare Server."

- In the organization area of DocuWare Administration > General > Licenses you can only see the total number of server licenses you have purchased:
 - 1x Business: 1 server
 - 1x Professional: 1 server
 - 2x Professional: 2 servers
 - 1x Enterprise: 2 servers
 - 2x Enterprise: 4 servers
- You may install each DocuWare server role once for each server license (frontend services, backend services, fulltext service).
 - 1x Business: 1x frontend services, 1x backend services, 1x fulltext services
 - 1x Professional: 1x frontend services, 1x backend services, 1x fulltext services
 - 2x Professional: 2x frontend services, 2x backend services, 2x fulltext services
 - 1x Enterprise: 2x frontend services, 2x backend services, 2x fulltext services
 - 2x Enterprise: 4x frontend services, 4x backend services, 4x fulltext services

3 Client Applications

The DocuWare system comprises three types of client applications:

- Web-based applications
- Windows-based applications
- Applications for mobile end devices

The following sections provide information about components in these various areas.

3.1 Web-Based Applications

The web-based applications include DocuWare Web Client and DocuWare Configuration. The following sections provide information about their system components.

3.1.1 DocuWare Web Client

The Web Client is at the heart of DocuWare's client applications from a user's point of view. It can be used to access your DocuWare system online without having to install a client application.

The Web Client offers all the possibilities of modern document management. You can store and search the documents in a file cabinet (among other places) and display and edit them in an HTML5 viewer. You can also perform many of the same actions as with paper storage, such as combining several documents into a single file.

The Web Client's feature set has more functions – such as the workflow task list or the Task Manager – depending on the modules, which can be licensed in addition to the standard DocuWare features.

Web Client is based on HTML5 technology. The component is integrated in the Platform Service (on page 26), which it uses to communicate with backend servers.

Web Client communicates with the DocuWare Desktop Apps components using the Desktop Service (on page 22).

3.1.2 DocuWare Configuration

DocuWare Configuration consolidates the configuration interfaces of various applications that are not managed in the DocuWare Administration within a DocuWare system. The applications are almost entirely based on HTML5, with only a few components still based on Silverlight technology, which will soon no longer be used in the system.

The DocuWare Configuration technically consists of two components: the user interface with the application plug-ins and the Settings Service (on page 27) for saving the settings.

The following sections show the individual plug-ins with the most important settings they deal with. You can find more information on the applications themselves in the Windows-based Applications (on page 20) section.

3.1.2.1 General

This section describes the following plug-ins:

- User administration
- Mail services
- Text recognition

3.1.2.1.1 User administration

With this plug-in you manage all users and rights within your DocuWare organization, including the functions:

- Create users and equip them with rights, dialogs, and stamps
- Modify user rights
- Unblock users blocked by failed login attempts
- Change password for users or send corresponding email to users
- Delete users

3.1.2.1.2 Audit Reports

With this plug-in you log the events within your file cabinet.

All audit reports can be downloaded in CSV format and used for evaluations in many programs.

Example of events logged at each level, including date, time, and user:

- Document: Store, index change with old and new value, display, print, send by email, annotate, etc.

3.1.2.1.3 Email services

For your email services, you can set up connections to IMAP and Exchange servers here.

3.1.2.1.4 Text Recognition

Here you create and manage configurations for OCR (optical character recognition) with the settings for OCR accuracy, text languages, and permissions.

3.1.2.2 Capture

This section describes all plug-ins to capture and process documents. These are:

- Document Processing
- DocuWare Forms
- Connect to Outlook
- Connect to Mail
- Connect to OKI
- Connect to Ricoh, Version 2
- Connect to Toshiba, Version 2
- Connect to Sharp, Version 2

3.1.2.2.1 Document Processing

With this plug-in, you create and edit configurations for processing your documents. These can be set up for different sources: scanner, folder, and DocuWare Printer.

In a configuration, you set the target file cabinet for the documents, make settings for indexing, and define details such as adding a metadata file or electronic signature. To store documents in a file cabinet, you need at least one processing configuration. Without a processing configuration, you can only store documents in your default basket, but not in a file cabinet.

In order to store documents in DocuWare using a scanner, from a folder or with a printer, you need the DocuWare Desktop Apps.

DocuWare offers the following formats for the processing configurations:

Format	Description
DWCONTROL	The <i>dwcontrol</i> format is used to store files that have been generated with DocuWare Printer using <i>dwcontrol</i> commands in DocuWare.
eCopy	The eCopy format is used to store files that have been generated by Canon multifunction printers in DocuWare (eCopy ShareScan V5 SP4 / Quick Connect).
Ricoh Global Scan NX (GSNX)	The GSNX format is used to store files that have been generated by Global Scan NX-compatible multifunction printers from Ricoh in DocuWare.
Hewlett-Packard (HP)	The HP format is used to store files that have been generated by Hewlett-Packard (HP) multifunction printers in DocuWare. HP Digital Sending software is required to generate XML meta data on HP devices.
Kyocera	The Kyocera format is used to store files that have been generated by Kyocera multifunction printers in DocuWare.

Format	Description
Toshiba	The Toshiba format is used to store files that have been generated by Toshiba multifunction printers in DocuWare.
PlanetPress	The PlanetPress format is used to store files that have been generated by Objectif Lune software solutions in DocuWare.

If you have set up several connections while working in the document processing configuration area, the active connection changes to the system currently in use under certain conditions. For example, a user has two connections in the Desktop Apps: one for system X and another for system Y. The connection for system X is the active one. If the user logs on to system Y and opens document processing, the connection automatically changes to system Y as soon as he opens an existing or new configuration that contains an example document.

3.1.2.2.2 DocuWare Forms

With this plug-in, you create and manage configurations for Web Forms and Merge Forms with the settings: Select and assemble form elements; Submission details; Store as form or template; Select store dialog; Indexing; Permissions. You can integrate Web Forms into the document workflow with DocuWare.

3.1.2.2.3 Connect to Outlook

In this plug-in, you create and manage storage configurations for the Connect to Outlook application with the settings: Determine archiving type, enable Automatic Invoice Detection, define store target, assign permissions. You can also create and manage quick search configurations with the settings: Set quick search details, determine search type, define search results and criteria, assign permissions.

3.1.2.2.4 Connect to Mail

In this plug-in, you create and manage configurations for the Connect to Mail application with the settings: Specify store target, assign permissions.

3.1.2.2.5 Connect to OKI

In this plug-in, you create and manage storage and search configurations and default settings for printing and scanning for the Connect to OKI MFP display application. You can also add and manage devices.

The plug-in is based on Silverlight technology.

3.1.2.2.6 Connect to Ricoh, Version 2

In this plug-in, you create and manage storage and search configurations and default settings for printing and scanning for the MFP display application Connect to Ricoh, version 2. You can also add and manage devices.

3.1.2.2.7 Connect to Toshiba, Version 2

In this plug-in, you create and manage storage and search configurations and default settings for printing and scanning for the MFP display application Connect to Toshiba, version 2. You can also add and manage devices.

The plug-in is based on Silverlight technology.

3.1.2.2.8 Connect to Sharp, Version 2

In this plug-in, you create and manage storage and search configurations and default settings for printing and scanning for the Connect to Sharp MFP display application. You can also add and manage devices.

The plug-in is based on Silverlight technology.

3.1.2.3 Indexing

This section describes all plug-ins used for indexing documents. This includes:

- Indexing help
- Intelligent Indexing
- Autoindex

3.1.2.3.1 Indexing assistance

This is where you create and manage select lists and field masks.

Select lists

Using this plug-in, you can create fixed select lists, assign fields to them and import fixed select lists. Furthermore, you can create dynamic select lists and assign fields to them as well.

Select lists in DocuWare Configuration have a limited scope of functions compared to DocuWare Administration and are provided as an editing option in addition to DocuWare Administration.

Field masks

Here you add individual field masks to the fields from the File Cabinets area. At each position of the index word, the user can only enter those characters that are specified in the mask definition.

3.1.2.3.2 Intelligent Indexing

Here you configure DocuWare's Intelligent Indexing service. Intelligent Indexing classifies documents and automatically searches for relevant index terms.

The plug-in is based on HTML5 technology.

3.1.2.3.3 Autoindex

With this plug-in, you can ensure that DocuWare also uses the metadata and search words that already exist in other existing systems for archiving documents. Autoindex transfers the data and adds it to the file cabinet as index entries.

The new index words are taken from an external data source. The external data source can be a DocuWare file cabinet, a database (table, view or SQL command) or a file. A "match code" is used to assign (match) the data records in the file cabinet and the external data source to one another.

3.1.2.4 Document Storage

This section describes all plug-ins that are used to store documents. This includes:

- File cabinets
- Document relation
- Deletion policies
- Synchronization
- Transfer

3.1.2.4.1 File Cabinets

Here you can create and manage file cabinets with different settings.

Index data can be validated with a separate web service. A standardized REST API lets you ensure both the plausibility of index entries and the correct spelling of index data. Other data sources available within the company, such as CRMs, can be used for the validation.

3.1.2.4.2 Dokumentverknüpfung

To set up document relations, you can create links here that will be used in the result list and in the viewer.

3.1.2.4.3 Deletion Policies

DocuWare lets you delete selected documents after a specific time period – for example once the legally required retention period is up. Here you set up rules for deletion processes.

3.1.2.4.4 Synchronization

In this plug-in, you manage the data exchange of various DocuWare systems with settings for mirroring and synchronizing data. It is particularly suited for data reconciliation of local organizations and Cloud organizations, as well as within hybrid Cloud systems: Documents can be mirrored or synchronized from the DocuWare Cloud, for example, into an on-premise system.

This synchronization option functions on the principle that all file cabinets involved are equivalent (synchronization version 2).

You can find more information in the section Export-Import-Synchronization (on page 48).

3.1.2.4.5 Transfer

With this plug-in, large volumes of documents can be moved or copied from one on-premises system to another file cabinet. The target file cabinet can be in another organization or DocuWare system.

As well as the index entries, the system entries for a document and the fulltext information are included in the transfer.

3.1.2.5 Collaboration

This section describes all plug-ins to support or enable the document-based collaboration between persons or authorities. The plug-ins are:

- DocuWare Request
- Email notifications

3.1.2.5.1 Email Notifications

In this plug-in, you create and manage configurations for email notifications with the settings: Specify file cabinet, determine triggers for events, define email properties, assign permissions, set up scheduling.

3.1.2.5.2 DocuWare Request

In this plug-in, you create and manage configurations for the DocuWare Request application with the settings: Determine storage locations, set filters, assign permissions.

3.1.2.6 Personal

This section describes the following plug-ins:

- Document trays
- Email accounts

3.1.2.6.1 Document Trays

This is where you create and manage document trays with the following settings: Define capacity, determine connection to file cabinet, enable Intelligent Indexing, assign permissions, create and edit document tray storage locations (Administrator).

3.1.2.6.2 Email accounts

Here you can create and edit user accounts for Connect to Mail.

3.1.2.7 Integrations

This section describes Smart Connect as a plug-in for integrating third-party applications into DocuWare.

3.1.2.7.1 Smart Connect

In this plug-in, you create and manage configurations for the DocuWare Smart Connect application. It reads content from the user interface of any application of your choice, and transfers this to DocuWare as a search or index entry. In a Smart Connect configuration, you determine, among other things, which content should be read from which applications and where the extracted content will be used in DocuWare: as search words in a search dialog (Smart Search) or as index words in a store dialog or info box (Smart Index).

Smart Connect is made available by DocuWare Desktop Apps and uses its connections.

The plug-in is based on Silverlight technology.

3.2 Windows-Based Applications

Windows-based applications in the DocuWare system include administrative applications and services, the Client Setup and DocuWare Update, all Windows-based user applications, as well as DocuWare Request. The following sections provide information about their system components.

3.2.1 User Applications

User applications comprise all applications that run under Windows on a user's client computer. An important portion of these are summarized under the DocuWare Desktop Apps.

3.2.1.1 DocuWare Desktop Apps

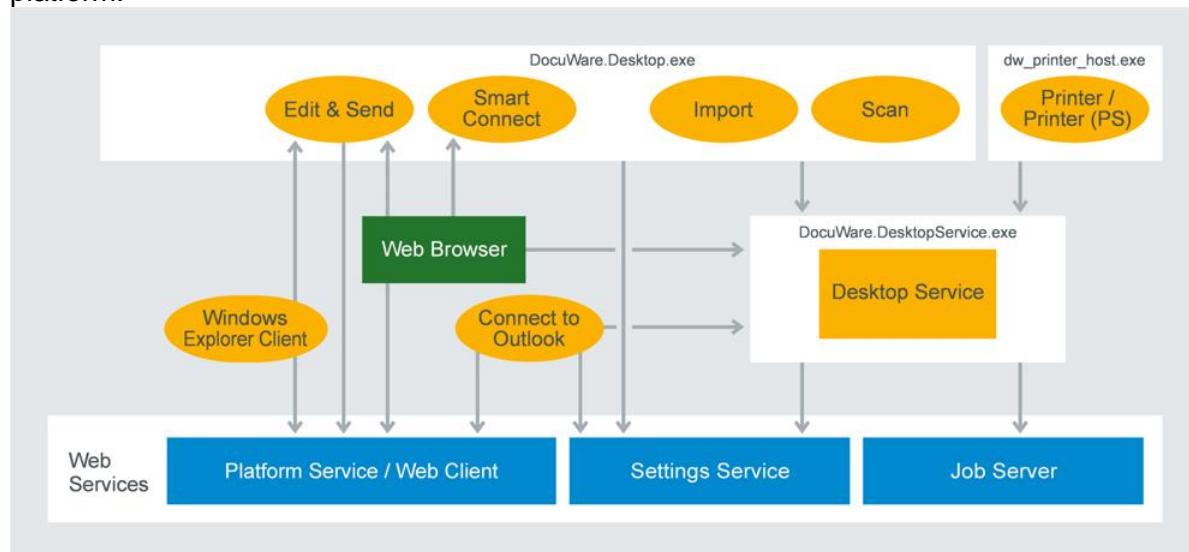
The DocuWare Desktop Apps component runs in the Windows notification field (tray area). It acts as a platform under which the following client plug-ins and functions are consolidated:

- Scan
- Import
- Printer
- Smart Connect
- Edit & Send

The entry data for these plug-in applications and functions are sent to the Platform Service and, respectively, to the Web Client (Smart Connect).

The DocuWare connections between the client and the DocuWare system are also established here. The connections can be used by DocuWare Desktop Apps as well as by the Connect to Outlook and Windows Explorer Client components.

Individual DocuWare Desktop Apps access the Platform Service using the .NET API platform.



The processes of the DocuWare Desktop Apps and other components that use these processes

DocuWare Desktop Apps are installed on the client PC via the DocuWare tray menu or directly from the Web Client.

3.2.1.1.1 Scan

With DocuWare Scan, the user can scan paper documents, import the document scans in DocuWare, and store them in the PDF/A long-term archiving format in his or her default document tray or in a DocuWare file cabinet. Any scanner installed on the user's PC (which has TWAIN and WIA drivers) can be used for this.

The use defines the settings for DocuWare Scan directly in the client application. In order to be able to store the documents in another DocuWare file cabinet, at least one processing configuration must have also been created in the DocuWare Configuration.

DocuWare Scan is a visual plug-in by DocuWare Desktop Apps, which provides it as standard.

3.2.1.1.2 Import

DocuWare Import monitors selected directories in the file system or network and moves the data stored there automatically to DocuWare document trays or file cabinets. Processing documents when importing, for example indexing, can also be controlled using configurations, which are determined in the DocuWare Configuration in the "Import Configurations" area.

The user or administrator created the configurations for DocuWare Import in the DocuWare Configuration in the Import Configurations (on page 13) area.

DocuWare Import is a visual plug-in by DocuWare Desktop Apps, which provides it as standard.

3.2.1.1.3 Printer

DocuWare Printer allows you to archive documents in DocuWare using the print function of your third-party applications. The documents can also be printed out on paper on a printer. Processing documents when printing, for example indexing, can also be controlled using configurations, which are determined in the DocuWare Configuration in the DocuWare Printer (on page 13) area.

The component technically consists of a virtual print driver that generates PDFs. DocuWare Printer only appears in the printer list of third-party applications and is not a visual plug-in by DocuWare Desktop Apps.

3.2.1.1.4 Smart Connect

You can use DocuWare Smart Connect to connect any Windows application you like with the DocuWare file cabinet without any programming. It helps the user search for documents in DocuWare and index documents from third-party applications. To do this, Smart Connect reads content from the user interface of any application of your choice, and transfers this to DocuWare as a search or index entry.

When you use Smart Connect, a previously defined configuration is always run in the DocuWare Configuration (on page 13).

Smart Connect is a visual plug-in by DocuWare Desktop Apps.

3.2.1.1.5 Edit & Send

The Edit & Send application allows DocuWare Web Client to open and edit documents and transfer them to the standard email client.

The application runs in the background and is not a visual plug-in of DocuWare Desktop Apps.

3.2.1.1.6 Desktop Service

Desktop Service is required for operating DocuWare Desktop Apps. It runs once per system and establishes the connection between DocuWare Desktop Apps and DocuWare servers. The service serves as host for various local services and allows them to access interfaces.

The Desktop Service retrieves the processing configurations for importing, processing, and storing documents in DocuWare from the Settings Service.

The Desktop Service transfers the documents to the Platform Service (on page 26) for storage in the file cabinet. The fulltext generated by the DocuWare Desktop Apps is also stored at the storage location by the Desktop Server using the Platform Service.

The component is installed with the setup.

3.2.1.2 Connect to Outlook

Use Connect to Outlook to archive your emails directly in DocuWare from Microsoft Outlook and use quick search to access stored emails.

Create and edit configurations for Connect to Outlook in the DocuWare Configuration section.

The component accesses the DocuWare servers using the Platform Service.

Both the 32 and 64-bit versions of Microsoft Outlook are supported.

3.2.1.3 Windows Explorer Client

The Windows Explorer Client integrates all the DocuWare file cabinets into the Windows file directory and shows the file cabinets in the folder file structure that users are accustomed to. The Windows Explorer Client is implemented as a Windows Explorer name range enhancement and loaded with this process.

The component draws the connection information for the DocuWare system from DocuWare Desktop Apps.

Windows Explorer Client accesses the DocuWare servers using the Platform Service.

3.3 Administrative Applications

The administrative applications are DocuWare Administration, Workflow Designer, User Synchronization, URL Creator, and IndexCleaner.

3.3.1 DocuWare Administration

Use the DocuWare Administration to set up your DocuWare system and manage functions. The application calls up the required information directly from the backend servers, especially from the Authentication Server. Administration is divided into two areas:

Under "DocuWare System," you can find all the general settings for the items:

- DocuWare Server
- Database connections
- Document storage locations
- External user directories
- Logging (destinations; read only)
- Backup
- Web connections
- Intelligent Indexing Service

Under "Organizations," you can find settings for the items:

- User administration
- File cabinets: Disk management
- Predefined workflows (via Workflow Server)
- Audit report

DocuWare Administration can run on any computer which has access to the backend servers. Every user with access to the .exe file can start the program. However, depending on the permissions a user has been granted, certain nodes, menus, and dialog boxes may not be visible. Data that is being edited by one user is locked for other users and can only be accessed in read-only mode.

3.3.2 Workflow Designer

The Workflow Designer component allows you to create, edit, and publish workflow configurations for the Workflow Manager module. When you use Workflow Manager, a previously created configuration is always run and a new instance of the workflow is therefore created each time.

Among other things, which task is to be completed and which decisions are to be made in it are specified in a workflow configuration. In addition to a user or role, a task may also be assigned to a substitution rule. This substitution rule can assign responsibilities for abstract jobs such as cost centers, which include a group of people. The task then automatically goes to the first of these employees who is shown as "in the office." In escalation levels, you set deadlines for completing tasks and determine what should happen if an employee spends too long on a task.

The Workflow Designer calls up the settings from the Background Process Service (on page 29) and other backend services using the Settings Service (on page 27).

Workflow Designer forwards all information for workflow task lists in the Web Client using the DocuWare Platform Service (on page 26).

The component draws the connection information for the DocuWare system from DocuWare Desktop Apps.

3.3.3 User Synchronization

With this component, you automatically synchronize users and groups from your domain with your DocuWare system via LDAP (Lightweight Directory Access Protocol).

The user synchronization draws the connection information for the DocuWare system from DocuWare Desktop Apps.

3.3.4 URL Creator

The DocuWare URL Creator is a wizard for creating URL integration. The tool automatically compiles the URL and adopts the Base64 coding required for certain parameters and the encryption.

3.3.5 Index Cleaner

Index Cleaner is a wizard for cleaning file cabinet index entries for which various spellings have accumulated.

The component draws the connection information for the DocuWare system from DocuWare Desktop Apps.

3.4 Applications for Multifunction Printers

This section describes Connect to Ricoh, Version 2, as a client application.

Other applications for multifunction printers are implemented as connectors at web services level (on page 34).

3.4.1 Connect to Ricoh, Version 2

Connect to Ricoh, Version 2, connects the Ricoh multifunction printer with DocuWare. Both the installation and all settings for this client application are completely managed by the DocuWare configuration (on page 13).

3.5 Mobile Clients

Directly access DocuWare from mobile device using the mobile DocuWare Clients, also called Apps. The following sections provide information about their system components.

3.5.1 DocuWare

The mobile version of DocuWare allows you to access your DocuWare system using smartphones and tablets with Android and iOS. You can load documents, view them on-screen, and forward them in the workflow. A special stamp feature has also been integrated.

The component accesses DocuWare using the Platform Service.

3.5.2 PaperScan Client

PaperScan Client transforms your iPhone, iPad, or Android smartphone or tablet into a mobile document scanner. The app photographs documents and saves the scans to the desired location, where they can be further processed. It can be directly connected to Dropbox and Google Drive to store the documents there. If documents are stored in the DocuWare system, PaperScan accesses them using the Platform Service.

4 Frontend Services

The DocuWare Frontend Services are based largely on the Internet Information Services (IIS), a service platform by Microsoft. This allows the services to be easily operated with TLS/SSL encryption by adjusting the IIS configuration.

The following sections provide information about all components associated with the DocuWare Web Servers:

- Platform Service and Web Client
- Settings Service
- Connectors

Information on installing and managing the Web Servers can be found in the Server Setup (on page 57) section.

4.1 Platform Service and Web Client

The DocuWare Platform Service bundles access to all DocuWare services in an efficient interface open for all programming languages. In addition, all third-party applications can be very easily connected to DocuWare for access to the DocuWare resources.

The Platform Service is automatically installed during setup and can be accessed in the Internet Information Services (IIS) on the used Web Server under the address <http://<Servername>/DocuWare/Platform>. It enables uniform access for all clients and to any device. This works both with DocuWare applications and with third-party applications based on the DocuWare .NET SDK.

The Platform Service accesses the Authentication Server and the databases directly.

Thanks to the modern architectural style Representational State Transfer (REST), the Platform Service is extremely efficient and acts as a uniform interface for very different connections. Resources are embedded into the third-party application through XML or JSON. The Platform Service contains an overview of the available resources and documentation about how to use them. An annotated XML Schema Definition (XSD) is attached to all data formats, from which documentation is automatically created and which is always up-to-date. Thanks to XSD, libraries to simplify programming can be automatically created for various target platforms. The libraries can easily be updated to ensure that data formats remain up to date. DocuWare provides a .NET API on NuGet for .NET developers to guarantee user-friendliness. Please contact DocuWare Support (http://docuware.com/support_faq/index.php?) for more information.

You can also directly log into a DocuWare system from the Platform Service in order to see information such as search dialog IDs or file cabinet GUIDs. URI templates for integrating resources also save the developer time.

Applications that use the Platform Service are also compatible with future versions of DocuWare. This means that when DocuWare is upgraded to a new version, client applications do not necessarily have to be updated.

The Platform Service supports a diverse array of procedures which speed up HTTP-based web applications. HTTP caching methods bring a significant increase in speed across many scenarios. The platform also supports transparent compression and works behind proxies.

Web Client

Web Client, which provides DocuWare's graphic user interface for working with documents (see also the section Web Client (on page 13) in the chapter "Client Applications"), is integrated in the Platform Service.

The Web Client can be accessed under the address *http://<Server name>/DocuWare/Platform/WebClient* and uses the same services provided by the Platform Service.

Workflows for Workflow Manager

This platform service processes for Workflow Manager the data that is generated by user interaction in DocuWare Client, for example inputs like confirmation of tasks.

4.2 Settings Service

The Settings Service provides access to most DocuWare system settings. The DocuWare Configuration runs in the Settings Service.

The Settings Service calls up settings directly from the databases and delivers them to client applications. The interface is not approved for in-house programming.

The Settings Service transmits the storage capacities for administration of the DocuWare document trays. The Settings Service manages the request workflow using the Background Process Service.

5 Backend Servers

Backend services are the servers in a DocuWare system that are managed via DocuWare Administration. They are used to run all background processes and access document storage locations as well as databases.

You will find information on backend services in the following:

- Authentication Server
- Notification Server
- Background Process Service
- Workflow Server

Information on installing and managing the backend services can be found in the Server Setup (on page 57) section.

5.1 Authentication Server

Authentication Server manages all users and resources of a DocuWare system. Before you can use the system, you must always log in to the Authentication Server.

It handles the following tasks:

- User login
- License management

In order for DocuWare to be multi-client enabled, users are allocated to "organizations," which are managed by the Authentication Server. An organization thus comprises the following as a logical structure:

- Users and user groups
- File cabinets, including their associated disks
- Processes
- Templates for stamps, formats for recognizing text and barcodes (OCR), select lists
- Audit report

DocuWare uses a role concept for permissions. A role for user groups or individual users on one side connects to permissions profiles or individual permissions on the other. Individual users can be assigned individual permissions independently from this process.

Authentication Server is therefore used by:

- One or more organizations each with
- At least one or more users

Additional information on the permissions concept can be found in DocuWare's Security White Paper (<http://help.docuware.com/en/#t59260>).

The Authentication Server stores the settings in the DWSYSTEM database. The Authentication Server transmits changes in settings to other components via Message Bus (on page 53).

At least one Authentication Server must be installed for each DocuWare system that can also operate across organizations. To avoid down times or to better serve a very large number of user requests, the Authentication Server may be installed multiple times. Additional information on scaling options can be found in the Scalability (on page 59) chapter.

The Authentication Server is managed in DocuWare Administration.

5.2 Background Process Service

The DocuWare system runs various background processes, the following of which are hosted in the Background Process Service:

- Structure of the full text
- Autoindex
- Connect to Mail
- Customer Experience Improvement Program (CEIP)
- Intelligent Indexing
- Deletion policies
- Creating and importing self-supporting file cabinets (DocuWare Request (on page 19) module)
- Control of workflows
- Transfer

5.2.1 Structure of the Full Text

The Business Process Service is also responsible for extracting fulltext in the event that this data is not included by the client during the storage process. This is the case for several DocuWare Desktop Apps. The Business Process Server stores the fulltext in the data database and forwards it to the Fulltext server at the same time.

5.2.2 Autoindex

The process re-indexes documents within a file cabinet. Internal or external data sources can be used as a basis.

Autoindex checks the saved user ID against the Authentication Server, calls up data from configured sources, and communicates with the Platform Service for indexing.

The automatic start of Autoindex at a defined file cabinet event, for example the storage of a new document, also takes place here.

The component is managed in DocuWare Configuration.

5.2.3 Connect to Mail

This process creates an integration with email accounts based on Google Mail or Microsoft Exchange Server. It monitors folders in IMAP-based mailboxes to file the documents it contains in DocuWare.

For storage, the server component sends the documents to the Platform Service.

The component is managed in DocuWare Configuration.

5.2.4 Customer Experience Improvement Program (CEIP)

By participating in DocuWare's Customer Experience Improvement Program (CEIP), you, the customer, can contribute to further improving the quality, reliability, and performance of DocuWare. For this, statistical information about use of the software is collected and transferred to DocuWare at regular intervals. All procedures take place automatically and in the background – participants are never interrupted while working and there is no impact on the system performance.

You can give your consent to the collection of these data at the end of the DocuWare setup.

The reports sent to DocuWare from your DocuWare system only with your consent (which you can give during setup) contain, for example, information on which browser version and language are used, which DocuWare components have been installed, how many file cabinets, document trays, and store dialogs are created in the system, or how many documents are stored on average. This is purely statistical information. No personally identifiable user information or document content whatsoever are transferred.

The component is managed in DocuWare Administration.

5.2.5 Intelligent Indexing

If there are conditions saved for the hosted Intelligent Indexing Service, the Business Process Service starts the document indexing order, creates structure data, and sends it to the Intelligent Indexing Service.

After indexing, the Intelligent Indexing Service returns the meta data, which the Business Process Service stores in the data store after the suggested index data has been corrected by the user.

Finally, the Business Process Service sends the corrected data to the Intelligent Indexing Service (on page 41), which takes it into account for future queries.

The component is managed in DocuWare Configuration.

5.2.6 Deletion policy

The process manages the rules for deleting documents. These rules are defined through filters.

The component is managed in DocuWare Configuration.

5.2.7 Request

DocuWare Request creates and imports self-supporting file cabinets (DocuWare Request (on page 19) module). Here the Workflow Server also calls up the workflow history of a document from the Platform Service. The workflow to which such a document belongs is based on the Workflow Manager module.

The component is managed in DocuWare Configuration.

5.2.8 Control of workflows

The Business Process Service stores and manages workflow configurations and workflow instances from the Workflow Manager module. Workflow Manager controls working processes using document-based workflows, which are implemented with the DocuWare system.

Here, one new workflow instance is generated per edited document. These workflow instances are controlled by entries in the DWSYSTEM.DWTasksWFE table. The workflow configurations and workflow instances are stored by the Business Process Service in the DWWORKFLOWENGINE database and called up from there.

All settings that affect permissions and other sensitive data are called up by the Business Process Service from the Authentication Server.

The workflow configurations are created in the Workflow Designer (on page 23) application.

5.2.9 Transfer

The transfer process exports file cabinets or partial file cabinets by creating a copy of a file cabinet or individual documents. A DocuWare file cabinet transfer includes both the documents and the database entries. File cabinets within the DocuWare system are the target of the transfer. You can transfer into new or existing file cabinets within the DocuWare system.

The component is managed in DocuWare Administration.

5.3 Workflow Server

The following background processes are hosted on the Workflow Server:

- backup and restore of data
- user synchronization
- export of documents
- file cabinet synchronization

5.3.1 Backup and Restore Data

The backup and restore process saves the file cabinet settings, the users and permissions of your DocuWare system, and also the Workflow Manager configurations.

The component is managed in DocuWare Administration.

5.3.2 User synchronization

DocuWare permits the synchronization of its users and groups, both with Windows directories and through LDAP. Configurations for the synchronization with external user directories are specified on the system level and can be made available to the individual organizations.

The configurations set up on the system level are used to set up the workflows. The scheduling for the Synchronization workflow is also set on this level. The organization administrator also assigns DocuWare groups and users of his organization to external groups and users as the basis for the synchronization.

The component is managed in DocuWare Administration.

5.3.3 Document export

The process exports file cabinets or partial file cabinets by creating a copy of a file cabinet or individual documents. A DocuWare file cabinet export includes both the documents and the database entries.

The target of the export are file cabinets within the DocuWare system. You can export into new or existing file cabinets within the DocuWare system.

The component is managed in DocuWare Administration.

5.3.4 File Cabinet Synchronization

This process exists in synchronization as equivalent file cabinets (synchronization version 2).

File cabinets with enabled version management cannot be synchronized. To transfer file cabinets with enabled version management, use the DocuWare Transfer module.

The component is managed in DocuWare Configuration.

For more information, see the section Export-Import Synchronization (on page 48).

5.4 Notification Server

The Notification Server manages email notifications for the Task Manager module. If a trigger setting is set for a processed document, the DocuWare servers generate an event. There are two possible trigger settings:

- A document is stored.
- A document's index data changes.

The DocuWare server generate an entry in the database table (DWSYSTEM.DWTASKS). The Notification Server reads the task from there and processes it.

Depending on which database subscriptions have been set up, the Notification Server multiplies the events for email notifications and sends the notification using its SMTP connection.

Two Notification Servers can run alongside each other in one DocuWare system to achieve greater fail-safety. However, both servers must use the same database.

The Notification Server is managed in DocuWare Administration.

Workflow Manager module email notifications are not generated by the Notification Server, but by the Background Process Service (on page 29).

5.5 Administrative Applications and Services

The administrative applications and services in the backend servers include Service Control and Message Bus Administration. The following sections provide information about their system components.

5.5.1 Service Control

As a Windows administrator you can start and stop individual backend services in the DocuWare Service Control.

The component is installed with the Server Setup (on page 57) as standard.

5.5.2 Message Bus Administration

DocuWare services use Message Bus for communication through use of the Message Bus Administration.

The component is installed with the Server Setup (on page 57) as standard.

5.5.3 Migration of Documents

With a command line tool you can migrate documents within a file cabinet to another disk with another disk number. As a rule, a migration is started in order to reduce the disk sizes within a file cabinet or to combine disks. For example, a file cabinet can be saved to disks in the same size as a CD/DVD in order to prepare the transfer to external media.

5.5.4 Index Restores

With a command line tool, you can restore the index entries of a DocuWare file cabinet in the database from the stored documents. The database structure must be available in order to restore the database information using the saved document.

6 Connectors

The web-based connectors connect the SharePoint application as well as multifunction printers by OKI, SharePoint, Sharp, Toshiba and Xerox with DocuWare.

The connectors are set up using DocuWare Administration in the form of web instances. They then access the Settings Service and the Platform Service.

The following sections provide information about connector system components. They are not valid for DocuWare Cloud.

6.1 Connect to OKI

Connect to OKI connects OKI multifunctional digital copiers and scanners with DocuWare.

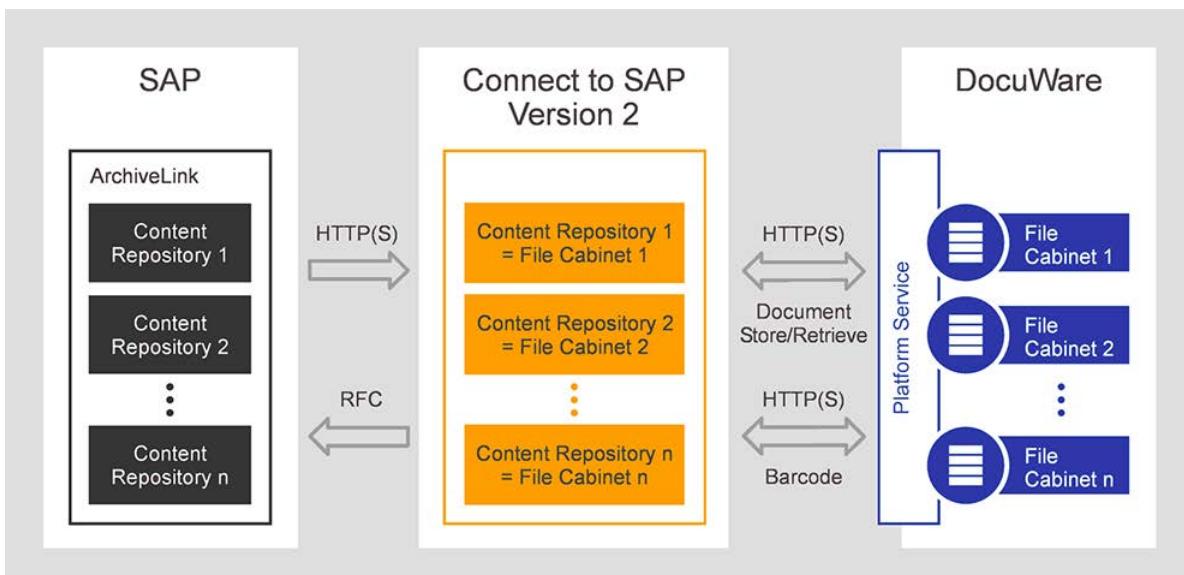
6.2 Connect to SAP, Version 2

Connect to SAP, Version 2 extends SAP with functionalities for archiving documents and data, and uses DocuWare interfaces.

The SAP component ArchiveLink 4.7 is an OLE component facilitating scanning, viewing, and printing, as well as storing documents directly from the SAP interface. SAP controls the DocuWare Viewer using OLE automation to display the scanned document.

It works with extension modules developed by Varelmann Beratungsgesellschaft mbH.

The connector module is not installed through DocuWare setup, but made available by DocuWare Professional Services as a separate application.



6.3 Connect to SharePoint

Connect to SharePoint connects Microsoft Office SharePoint with DocuWare. To do this, DocuWare is integrated into Microsoft Office SharePoint as a Records Center. The Records Center is designed as the central storage location for documents and for the standard connection of document management systems.

In SharePoint you can run search queries in different sources using Search Federation. The Connect to SharePoint service returns the search results to SharePoint in the correct format.

The component features a web-based administration tool.

6.4 Connect to Sharp, Version 2

Connect to Sharp, Version 2, connects Sharp multifunctional digital copiers and scanners with DocuWare.

6.5 Connect to Toshiba, Version 2

Connect to Toshiba, Version 2, connects Toshiba multifunctional digital copiers and scanners with DocuWare.

6.6 Connect to Xerox

Connect to Xerox connects Xerox multifunctional digital copiers and scanners with DocuWare.

The DocuWare server and the Xerox multifunction printer should be installed in the same network. Otherwise, the two networks in use must be connected by a router, as manual routing is not possible on most multifunction printers.

7 Databases, Storage Locations, and Fulltext Index

DocuWare requires several databases and at least one file storage (file cabinet). Installing the fulltext functionality is optional.

The following sections provide information about these components and functionalities.

7.1 Databases

For its operation, DocuWare requires several relational databases, which it uses both for storing and for performing searches within the structured index data of the documents and for the fulltext index. In addition, DocuWare stores all essential system information (such as Authentication Server data) in a database or saves workflow information there.

The following sections provide information about supported database systems and the structure of individual databases.

7.1.1 Supported Database Systems

All market-leading database systems can be coupled with a DocuWare system – MS SQL Server, Oracle Server, and MySQL Server. However, the administrator has the option of specifying a particular database to be used for each file cabinet. A cluster system can also be connected. Databases may reside on autonomous servers outside the DocuWare server area. DocuWare can work with several database connections simultaneously, and use different servers and different databases. Several simultaneous connections can be established to one database. As an alternative, you can also connect an Oracle database.

Internal Database Server

In the event that no external database server is provided or can be set up, DocuWare also offers an integrated database server as part of the standard feature set (Internal Database). This MySQL server can be optionally installed with the Server Setup (on page 57).

If an MSSQL database is used, the archive name can be up to 128 characters long, with MySQL up to 64 and with Oracle up to 23 characters.

7.1.2 The Structure of the Databases

A DocuWare system contains the following databases:

- System database (DWSYSTEM)
All data on rights, licenses, and settings are stored in this database. Auditing data at system and organization level can also be found here.
- Database for document data (DWDATA)
This database contains all internal system information for searching and finding documents. You can create several such databases. For more details, see the "Database for document data" section below.

- Notification database (DWNOTIFICATION)
This is where the Notification Server stores all events received from the Platform Service.
- Workflow Engine database (DWWORKFLOWENGINE)
This database contains all information required by the Background Process Service for creating, editing, and executing workflow configurations.

The database for document data (DWDATA)

Searching and finding documents stored in DocuWare always occurs in the database for document data (DWDATA). This is where the DocuWare services store the index data of each document in a structured form (relational) and optionally also in the form of a fulltext index.

The database not only manages the search criteria that are relevant for the user, but also the system-internal information needed for storing and retrieving the documents in the file cabinets. The key characteristic of a document is its DOCID, a number for a document that may consist of various files and is unique within each file cabinet.

The user-defined fields specify the keywords and categories by which documents are stored and retrieved.

Thanks to separate keyword tables, it is theoretically possible to have an unlimited number of keywords for each document. Moreover, it is possible to create several keyword fields in one file cabinet. The speed for searching in keyword fields is very high since the keyword column in the table is indexed. As soon as the corresponding entry is found, the DOCID allows direct access to the database entries of the associated documents.

The database for document data contains the following tables:

Name	Mandatory	Usage	Counterpart in DocuWare Versions up to 6.12
<FCName>	X	File cabinet main table	<FCName>
<FCName>_SEC	X	Section table	<FCName>_SECT
<FCName>_PAG	X	Page table	<FCName>_PAGE
<FCName>_PGT	X	Page textshots	
<FCName>_VRS	X	Old versions (not current version)	<FCName>_VER
<FCName>_AUD	X	Protocol table	
<FCName>_DSK	X	Disk table	<FCName>_DSKS
<FCName>_LCK	X	Locking table	<FCName>_LOCK
<FCName>_IDT	X	Document ID table	

Name	Mandatory	Usage	Counterpart in DocuWare Versions up to 6.12
<FCName>_DEL	X	Table of deleted documents (Sync)	<FCName>_RD
<FCName>_<KeywordFieldName>[nn]	Per keyword field	Keyword table	Remained the same
<FCName>_V5		Old documents (created with DocuWare up to Version 6.12; not processed with DocuWare Version 7)	
<FCName>_V5S		Old sections (created with DocuWare up to Version 6.12; not processed with DocuWare Version 7)	
<FCName>_V5P		Old pages (created with DocuWare up to Version 6.12; not processed with DocuWare Version 7)	
<FCName>_V5V		Old versions (created with DocuWare up to Version 6.12; not processed with DocuWare Version 7)	
<FCName>_<KeywordFieldname>[nn]V5		Keyword fields for old versions (created with DocuWare up to Version 6.12; not processed with DocuWare Version 7)	
<FCName>_EVNT	X	Workflow Manager: Event sources	
<FCName>_HTRY	X	Workflow Manager: History	

Name	Mandatory	Usage	Counterpart in DocuWare Versions up to 6.12
<FCName>_SHOT	X	Workflow Manager: Snapshots	
<FCName>_STTR	X	Workflow Manager: Read status	
<FCName>_STTW	X	Workflow Manager: Write status	
<FCName>_W[nnn]	Per workflow configuration	Workflow Manager: Task list	

7.2 Supported Storage Locations for File Cabinets and Document Trays

DocuWare supports a broad spectrum of storage media for storing documents. This includes local hard disks, (virtual) network storage media, and external storage systems. Which media actually come into use depends on the volume of the documents to be stored and requirements concerning access and safeguarding. As long as conventions for Windows file systems are complied with, the technological basis of these systems is irrelevant. You can also use storage procedures such as RAID systems (RAID = Redundant Array of Independent Disks) or NetApp storage solutions, provided that these can be incorporated into the Windows file system as a virtual system drive.

DocuWare also supports special storage systems. DocuWare delivers software that can be used to incorporate storage systems as DocuWare file deposits in the same way as in a file cabinet, as is possible with Windows file deposits. You can set specific options to determine whether files will be written directly to the target medium, which in the case of WORM for example will ensure maximum security, or whether to go via the intermediary of the virtual disk, because CD/DVDs cannot be burnt in succession.

Storage systems certified by DocuWare can be found in detail on the DocuWare website (<http://www.docuware.com/en/dokumenten-management-produkte-und-services/certified-products>).

Hard disks, RAID

In addition to the ability to use individual hard disks, you have the option of combining several hard disks in a "Disk Array." These arrays are the ideal solution for an archiving system where magnetic storage technology does not present a problem. If a RAID is selected, it increases security against loss of data in the event of hard disk failure thanks to redundancy. This way you can swap a hard disk – depending on the RAID level – during running operation.

EMC Centera

(This storage solution will be supported again in one of the next DocuWare versions.)

EMC Centera is a special content-addressed storage procedure (CAS) on hard disks where stored information is accessed not via its location on the physical medium but via the content of the information. This ensures that documents with identical content are physically stored only once. The procedure allows access to individual documents and simultaneously ensures the immutability of the stored information.

NetApp storage

(This storage solution will be supported again in one of the next DocuWare versions.)

The NetApp storage solutions are based on NetApp's own operating system and can be integrated in various storage area networks similarly to hard disks (NAS, SAN, iSCSI). They are especially intended to manage large volumes of data and for the long-term archiving of WORM documents. NetApp Storage can be used with DocuWare for storing documents.

7.3 Fulltext Index

During a fulltext search, the Fulltext Server lists the occurrences as well as the context strings for the individual search terms in a fulltext index. At the same time, the estimated relevance of a term is evaluated. The result list of a fulltext search is sorted according to this relevance. For more information, see the Fulltext Functionality (on page 48) section.

8 Intelligent Indexing

Intelligent Indexing is an application that automatically records the most important meta data from your scanned documents and suggests them as index entries. At the same time, the system learns with each process: If the system is familiar with a document type, suggested index words are automatically and reliably assigned. The user only has to confirm the suggestions or improve them. These confirmations or corrections automatically feed into the self-learning system, which can use this feedback to independently assign the index words after a brief learning period.

There are two different options for using Intelligent Indexing: the hosted service and the application within the organization.

Intelligent Indexing Service

The Intelligent Indexing Service is a web-based service hosted by DocuWare that allows you to also benefit from the keywords suggested by other users also using the service (Crowd Learning). Intelligent Indexing is installed on an SQL Azure Server.

Intelligent Indexing within an organization

However, you can also use Intelligent Indexing as a local application within your organization. Here, Intelligent Indexing is installed as a part of your DocuWare system.

9 Architecture of the File Cabinets

DocuWare stores all documents in file cabinets where they can be saved long-term. Each file cabinet is assigned to a DocuWare organization. Users access documents in the DocuWare interface using a search query in the respective file cabinet.

Every organization has at least one file cabinet for storing documents. Under file cabinet settings, you can determine:

- General file cabinet characteristics, e.g. name, etc.
- The database to be used with the documents' index information and any additional database-related settings
- The storage location to be used for the documents and (if applicable) their subdivision into logical disks with associated capacity limits
- Access rights and file cabinet profiles for the archive or for individual fields
- The user dialogs for file storage, searches, and results list
- Additional functionalities, e.g. availability of a fulltext index, type, and extent of the stamps that are available for document processing as well as electronic signatures

The following sections provide information about various aspects of the file cabinet architecture.

9.1 The "Disk" Concept

The documents of a file cabinet are stored on "DocuWare disks." DocuWare disks are generally directories in the file cabinet identified by a name that DocuWare has assigned them. The subdivision of the file cabinet into logical disks is a means of organizing the storage media.

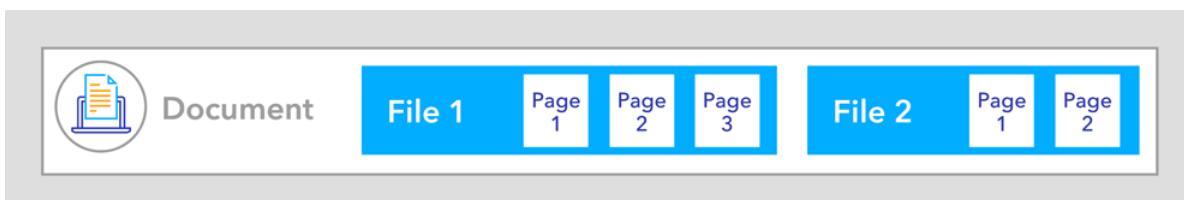
You can transfer these logical disks to another medium at any time you choose, for example when they reach a certain size. Document management with DocuWare has the advantage that documents can be swapped out either by pre-defined rules or automatically. DocuWare offers features for conveniently automating the corresponding steps.

The concept of logical disks and the open file structure gives the administrator a high degree of transparency and flexibility when managing the DocuWare system.

9.2 Document Structure

A document in DocuWare can consist of one or more files. In addition, a document can be composed of a combination of various file formats, e.g. PDF/A, PDF, MS Excel, for instance if DocuWare accepts an email with several attachments as an associated document.

Again, each file comprises one or more pages:



The structure of a document that contains two files: one with three and one with two pages

Example 1:

A 3-page paper document that was scanned into DocuWare consists of a 3-page PDF/A file.

Example 2:

For one document, a PDF/A file generated by DocuWare, a 3-page Word file, and a 2-page PDF file are linked together. The document then consists of three files:

1. File of document: PDF/A file with page 1
2. File of document: Word file with pages 1, 2, and 3
3. File of document: PDF file with pages 1 and 2

Annotations can be made on every page of a file within a document, on multiple annotation levels if required. Annotations are stored with their characteristics and additional attributes and reproduced for the duration by the DocuWare Viewer.

Each document in DocuWare can have a maximum of 999 document files.

Documents scanned and printed with DocuWare applications are stored in the DocuWare file cabinets as PDF/A files. All other documents that are read into DocuWare, such as PDF and MS Office files, are stored in their original formats.

All additional metadata such as stamps, index data, and annotations are automatically stored in the file cabinet database. Copies of these data can optionally be saved in a ZIP-based file format (extension.DWX) in the file cabinet location. They are updated asynchronously, not as part of the document change. After upgrading to DocuWare Version 7, this redundant storage option for on-premises is set to ON. This also applies to new file cabinets.

A command line tool is available for restoring database entries from the file cabinet location.

Each document file has a unique name (GUID).

When a document file is updated, the file in the memory is not overwritten. Instead, a new unique name (GUID) is generated. After the new file is created, the old one is deleted.

The file structure of documents stored with DocuWare Version 6.x or earlier is not changed and their header files are still used. If such a document is changed in DocuWare Version 7 (e.g. if a comment is added in the viewer), the document's metadata is copied to the database and the header file existing in previous DocuWare versions is deleted. When a document file is updated, it uses the new file naming convention (GUID).

9.3 File Structure

In the file structure of your documents, it is important to consider whether your organization:

- purchased DocuWare Version 7: Then your organization only handles documents stored in DocuWare Version 7.
- uses DocuWare Version 6.12 or earlier and upgraded to Version 7: Then your organization also handles documents stored in DocuWare's earlier file structure.

DocuWare Version 7		Up to DocuWare Version 6.12
Document file name	GUID	Continuous number
Index data and annotations	DWX file (optional)	Header file

In DocuWare Version 7, the (double) storage of additional metadata in a DWX file per document file is optional. If it is not used, this can result in a performance gain.

9.3.1 Documents Stored with DocuWare Version 7

All additional metadata such as index data, stamps, and annotations are automatically stored in the file cabinet database.

Copies of these data can optionally be saved in a ZIP-based file format (extension.DWX) in the file cabinet location. They are updated asynchronously, not as part of the document change. When reinstalling DocuWare Version 7 or after updating to this version, this redundant storage option is set to ON. This also applies to new file cabinets.

To restore database entries from the file cabinet location, use a command line tool.

The document files have unique names (GUIDs).

When a document file is updated, the file in the memory is not overwritten. Instead, a new unique name (GUID) is generated. The old file is not deleted until the new file is created.

The index data and annotations of documents are stored twice in DocuWare Version 7: in the database and in the document memory, from DocuWare Version 7 in a DWX file, up to DocuWare Version 6.12 in a header file per document. This guarantees the greatest possible amount of security, as in the event of a failure the documents and their index data will still be accessible without backing up.

9.3.1.1 DWX File

A metadata file in DWX format can be created for each document stored with DocuWare Version 7 or higher. To do this, the option Index data backup in the storage location for the file cabinet must be enabled in the DocuWare configuration under File Cabinets.

The DWX file contains the index data assigned for the document, as well as annotations, stamps, signatures, and more.

For each file that is part of a DocuWare document, the DWX file contains a separate section.

Within the DWX file, the elements "Document description," "Meta data," and "Page information" can be fundamentally distinguished:

- Document description: Information relating to the whole document, e.g. signatures, versions, and encryption
- Meta data (Document meta data):
 - System properties: All described data required by DocuWare for management from the system's point of view e.g. DWDOCID
 - User data All described data required from the user's point of view, e.g. index data, field properties
 - Store Properties: Information about the history and the logical file cabinet of the file.
 - Application Properties: Information required for integration with other applications.
- Page information: Page-specific additions, e.g. text annotations, stamps, etc.

All data are identical to the data in the database and are therefore stored twice. This guarantees the greatest possible amount of security, as in the event of a failure the documents and all their information will still be accessible without backing up.

However, restoring can take a lot of time and therefore is not a replacement for conventional database backup.

The DWX files are created asynchronously to the document operations in the DocuWare system. This means that the processes in DocuWare (e.g. storing a document and creating the DWX file) do not take place at the same time, but independently of each other.

9.3.2 Documents Stored with DocuWare Version 6.12 or Earlier

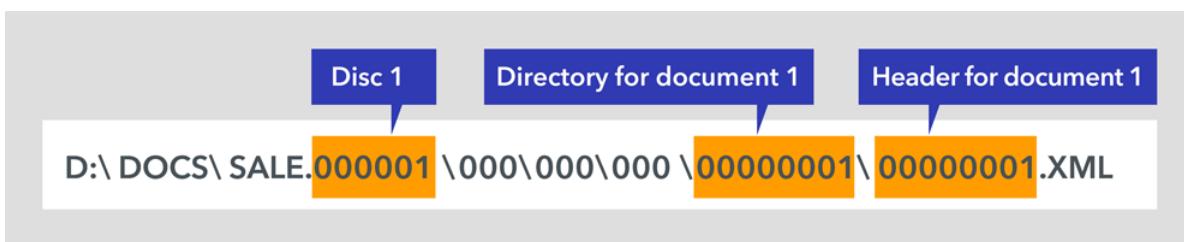
The structure of documents stored with DocuWare version 6.12 or earlier (and not processed with DocuWare version 7) is as follows.

Under the file directory allocated by the administrator, the DocuWare directory is addressed by file cabinet names, disk numbers, three directory levels, and the document level. A maximum of around 2.15 billion documents may be stored in one file cabinet.

DocuWare creates a separate directory for each file cabinet in the selected storage location on each disk. Each file cabinet directory is named with *<file cabinet name>.<disk number>*. Here, the file cabinet name has a maximum of 8 characters and the disk number is always 6 digits. The first disk of the document pool file cabinet is thus called *Document.000001*.

On the three underlying directory levels, each directory has a 3-digit sequential number, starting with 000. On the first of the three levels, a maximum of 128 folders are possible (000 to 127), while the second and third levels each have a maximum of 256 (000 to 255).

The document directories can be found under these three directory levels. If for example you allocate the directory D:\DOCS and the name SALE to the file cabinet, the documents of the first disk will reside in the following subdirectory:



Each of these document directories contains all pages (files) of a document, and the header file in XML format. The document directories are given the name of the DocID (a 10-digit document number which is unique within the file cabinet), which is also sequential (from 0000000001 to (2 high 31)-1 = 2,147,483,647 ~ 2.15b). With the DocID, each document receives a unique sequential number which increases automatically by 1 for each new document.

The header file is always called *<Document number>.XML* and has no size restriction.

The document files are always called F (File), followed by a sequential number starting with 0, and the file extension (e.g. docx, xlsx, pdf), so for example *F0.doc*. A document that consists of several parts would therefore be represented like this:

```
\00000001\00000001.XML
\ F0.docx
\ F1.xlsx
\ F2.pdf
\ F3.pdf
```

You can create up to 999,999 DocuWare disks, though not within one directory, since Windows limits the number of sub-directories within each directory.

The example below shows the file structure within a DocuWare file cabinet. Here it is assumed that all documents are stored on a single DocuWare disk.

Example file structure of a DocuWare file cabinet on the file system level

```
D:\File_cabinets\Document.000001\  
D:\File_cabinets\Document.000001\000\  
D:\File_cabinets\Document.000001\000\000\  
D:\File_cabinets\Document.000001\000\000\000\  
D:\File_cabinets\Document.000001\000\000\000\0000000001 (first document in file cabinet)  
D:\File_cabinets\Document.000001\000\000\000\0000000001\0000000001.XML  
D:\File_cabinets\Document.000001\000\000\000\0000000001\F0.doc  
D:\File_cabinets\Document.000001\000\000\000\0000000001\F1.xls  
D:\File_cabinets\Document.000001\000\000\000\0000000001\F2.pdf  
...  
D:\File_cabinets\Document.000001\000\000\000\0000000002 (second document in file cabinet)  
D:\File_cabinets\Document.000001\000\000\000\0000000002\0000000002.XML  
D:\File_cabinets\Document.000001\000\000\000\0000000002\F0.xls  
...  
...  
D:\File_cabinets\Document.000001\000\000\000\0000000256 (last document in 000\000\000)  
D:\File_cabinets\Document.000001\000\000\000\0000000256\0000000256.XML  
D:\File_cabinets\Document.000001\000\000\000\0000000256\F0.pdf  
...  
D:\File_cabinets\Document.000001\000\000\001\  
D:\File_cabinets\Document.000001\000\000\001\0000000257 (first document in 000\000\001)  
D:\File_cabinets\Document.000001\000\000\001\0000000257\0000000257.XML  
D:\File_cabinets\Document.000001\000\000\001\0000000257\F0.doc  
...  
...  
D:\File_cabinets\Document.000001\000\000\002\  
D:\File_cabinets\Document.000001\000\000\002\0000000512 (first document in 000\000\002)  
...  
...  
D:\File_cabinets\Document.000001\000\000\255\  
D:\File_cabinets\Document.000001\000\000\255\0000065535 (last document in 000\000\255)  
...  
D:\File_cabinets\Document.000001\000\001\000\  
D:\File_cabinets\Document.000001\000\001\000\0000065536 (first document in 000\001\000)  
...  
...  
D:\File_cabinets\Document.000001\000\255\255\  
D:\File_cabinets\Document.000001\000\255\255\0016777215 (last document in 000\255\255)  
...  
...  
D:\File_cabinets\Document.000001\001\000\000\  
D:\File_cabinets\Document.000001\001\000\000\0016777216 (first document in 001\000\000)  
...  
...  
D:\File_cabinets\Document.000001\127\255\255\  
D:\File_cabinets\Document.000001\127\255\255\2147483647 (last document in file cabinet)
```

9.3.2.1 Header file

Every document stored with a DocuWare Version up to 6.12 and not modified after storage has a header file in XML format. The header contains the meta and index data assigned for the document, as well as annotations, stamps, signatures, etc.

The index data are thus duplicated: they appear once in the database and once in the document header file. This guarantees the greatest possible amount of security, as in the event of a failure the documents and their index data will still be accessible without backing

up. However, this process can take a lot of time and therefore does not represent a replacement for conventional data backup procedures.

For each file that is part of a DocuWare document the header file contains a separate section.

Within the header file, the elements "Document description," "meta data," and "page information" can be fundamentally distinguished:

- Document description:
Information relating to the whole document, such as signatures and encryption
- Meta data (Document meta data)
 - All described data required by DocuWare for management from the system's point of view (system properties), e.g. the Document ID. This data is identical to the index data which the database maintains for every file.
 - All described data on the document required from the user's point of view: index data, field properties
 - Store Properties contains information about the history and the logical file cabinet of the file.
 - Application Properties are information that is required for integration with other applications, for example with SAP.
- Page descriptions:
Page-specific information, such as written or spoken annotations, levels, stamps, etc.

9.3.2.2 Write Access Conversion

The file structure of documents stored with DocuWare Version 6.x or earlier is not changed and their header files are still used. If such a document is changed in DocuWare Version 7 (e.g. if a comment is added in the viewer), the document's metadata is copied to the database and the header file is deleted. When a document file is updated, it uses the new file naming convention (GUID).

9.4 Fulltext Functionality

DocuWare provides its own fulltext functionality, which allows you to run an effective search in the fulltext of documents and their index entries. The application is optional for the user. The fulltext functionality operates as follows.

The Background Process Service (on page 29) extracts text shots from the document and stores these in the data store. The search terms of a document page and their position is marked in the text shots. This allows the results to be marked in the document.

At the same time, the Backgournd Process Service transfers the text shots to the Fulltext Server. This stores the text shots again in catalog files (index files) and uses them for the search requests. The catalog files are created per DocuWare file cabinet. They are stored on the computer where the Fulltext Server is installed by default.

If an error occurs during indexing for the fulltext search, for example if a server is not accessible, the indexing of these documents is automatically repeated at a later time.

9.5 Special Characteristics of Document Trays

From the user's point of view, the DocuWare document trays correspond to physical document trays at the workstation. Document trays include documents imported to that location. These are documents that have not yet been archived or copies of documents already in the file cabinet. However, unlike file cabinets, document trays do not have a structured or fulltext search, a sophisticated permissions concept, or similar functions.

The document trays have a technical design similar to the file cabinets and the data are stored in a simplified format.

The document trays are generated and managed in the DocuWare Configuration (on page 13).

9.6 Export-Import Synchronization

Two file cabinets can be synchronized with each other using DocuWare (documents and database). This synchronization as equivalent file cabinets (synchronization version 2) is managed in the DocuWare configuration. For more information, please go to Synchronization (<http://help.docuware.com/en/#t62883>).

In this synchronization, both file cabinets to be synchronized are equivalent partners. The two documents are matched using globally unique GUIDs. The corresponding functions are made available from the Platform Service interface from DocuWare version 6.10. They are not available for earlier DocuWare versions.

Synchronization version 2 can either involve a local and a remote file cabinet or two local file cabinets. It is not possible to synchronize two remote file cabinets.

The comparison between the file cabinets simply takes place in a text field column and so it also only takes a short amount of time.

The synchronization process takes place through Cloud-compatible HTTP/HTTPS.

The synchronization option as master and satellite (Version 1) no longer exists.

9.7 Autonomous File Cabinets

Autonomous file cabinets make it possible to copy a (sub)archive to an external mass storage medium. The DocuWare Request component makes available complete file cabinets or selected documents available on external media (USB stick, CD/DVD, etc.) as a ZIP file.

A request file cabinet is an independent component that can operate without installing DocuWare. It comprises the document, an SQLite database, and a QtWebKit browser. The browser offers a search function and a PDF viewer.

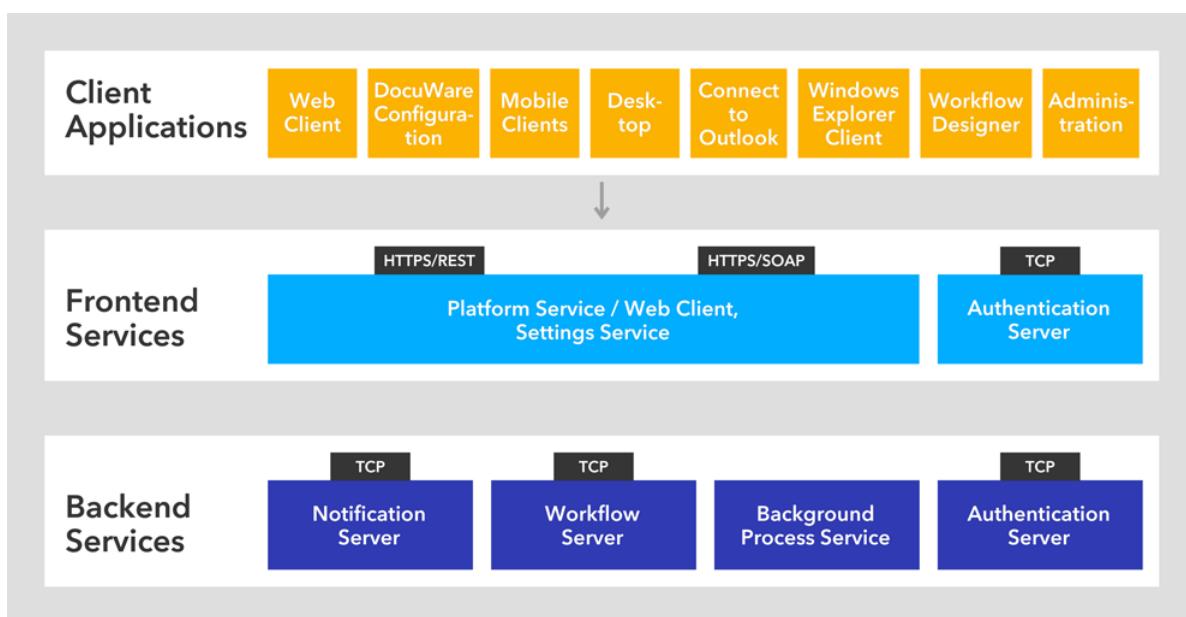
10 Communication Technologies

The DocuWare System components communicate with each other according to the latest standards. The following sections tell you about the protocols used and which individual components exchange information about which standards.

10.1 Protocols

DocuWare uses the following TCP-based protocols for communication among the individual software components.

- **HTTP/HTTPS (transmission of HTML or binary data)**
HTTP is unencrypted by default. To communicate securely over the internet, you should encrypt it with TLS/SSL (HTTPS). To do so, a certificate on the server with the IIS (Internet Information Services) is required.
- **HTTP/HTTPS with REST (Representational State Transfer)**
In particular, the DocuWare Platform Service is fully REST-based.
- **HTTP/HTTPS with SOAP (Simple Object Access Protocol)**
SOAP is for sharing messages based on the XML Information Set. In the DocuWare System, SOAP is used by various Frontend Services for communication with client applications.



Communication between the layers of client applications, Frontend Services, and Backend Services

10.2 Client-Server Communication

The matrix shows you which server communicates with which client applications. The protocols used are indicated in brackets, and the ports used are indicated in a separate line. Standard ports are used for all client applications. The only exception is DocuWare Administration.

	SERVER						
	8090/8091	80/443	80/443	80/443	9000	9002	9005
CLIENT APPLICATIONS	Local Desktop Service (HTTP/HTTPS)	Platform Service/Web Client (HTTP/HTTPS)	Settings Service/DocuWare Configuration (HTTP/HTTPS)	Authentication Server (TCP)	Workflow Server (TCP)	Workflow Server (TCP)	Notification Server (TCP)
Web Client	X	X					
DocuWare Configuration	X	X	X				
Scan			X				
Import			X				
DocuWare Printer			X				
Smart Connect		X	X				
Edit & Send		X					
Desktop Service		X	X				
Connect to Outlook		X	X				
Windows Explorer Client		X					
Workflow Designer		X	X				
DocuWare Administration				X	X	X	
Connect to Ricoh (V2)		X	X				
Index Cleaner		X					
Mobile Client		X					
PaperScan Client		X					

10.3 Server-Server Communication

In the matrix you can see which servers communicate with each other through which protocols, and which databases they access. If you use several server machines for the Frontend Services and Backend Services, please make sure that all necessary communication ports are available for other server machines.

	SERVER								DATABASES				
	8090/8091	80/443	80/443	80/443	9000	9002	9005	9012	443	DWDATA	DWSYSTEM	DWNNOTIFICATION	DWWORKFLOWENGINE
SERVER													
Platform Service / Web Client			X			X	X	X	X	X	X	X	X
Settings Service			X	X		X	X	X	X	X	X	X	X
Connect to SharePoint	X	X											
Connect to Xerox	X	X											
Connect to OKI	X	X											
Connect to Sharp, V2	X	X											
Connect to Toshiba, V2	X	X											
Authentication Server											X		
Workflow Server	X		X								X		
Notification Server			X								X	X	
Connect to SAP	X												
Background Process Service	X	X				X	X	X	X	X	X	X	X
Client Setup/DocuWare Update	X												
External DocuWare system via synchronization (synchronization version 2)	X												

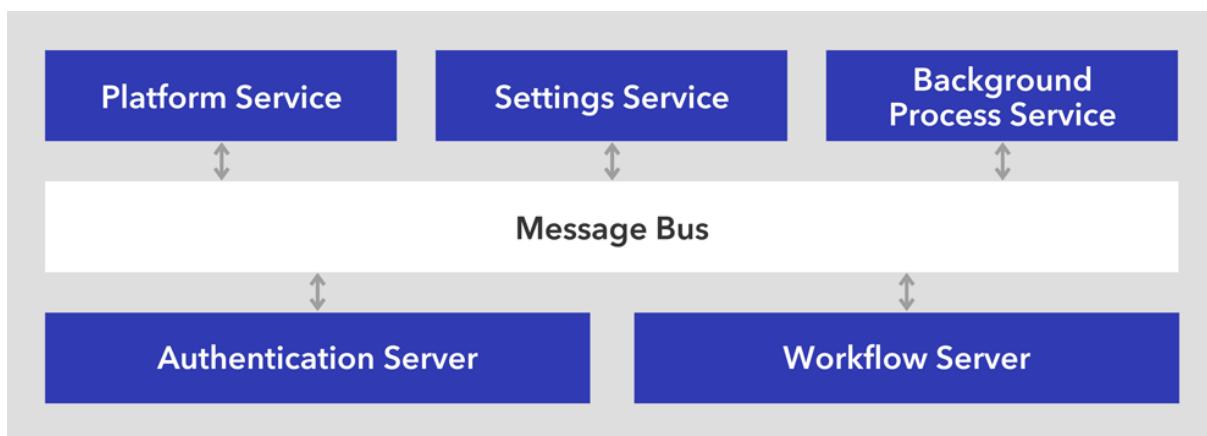
10.4 Message Bus

The Message Bus is the central platform for exchanging messages between the Web Servers and most backend servers. It uses the Microsoft Message Queuing (MSMQ) protocol. The Message Bus is responsible for sharing changes between server components.

The Message Bus follows the publish-subscribe pattern. It implements a fire-and-forget pattern that, for reasons of speed, requires the message to be delivered directly or it will be lost. One typical application would be notification about newly arrived documents or modified settings.

The messages are always sent to all subscribers. The subscribers decide whether they want to reuse the messages or not.

The Message Bus is managed in the management console on the "Message Queuing" node and can be installed multiple times in one DocuWare system.



The Message Bus is used for communication between the Frontend Services and a part of the Backend Services.

11 External access

To access your DocuWare system externally, for example via the Internet, you should note of the following points.

Required ports

If you set up external access to your DocuWare system, only the ports of the Web Client (by default port 80 or 443) need to be approved in the firewall of your DocuWare system. More information about ports can also be found in the "Server-Server Communication" matrix (on page 51) in the "Communication Technologies" chapter.

HTTPS (TLS/SSL)

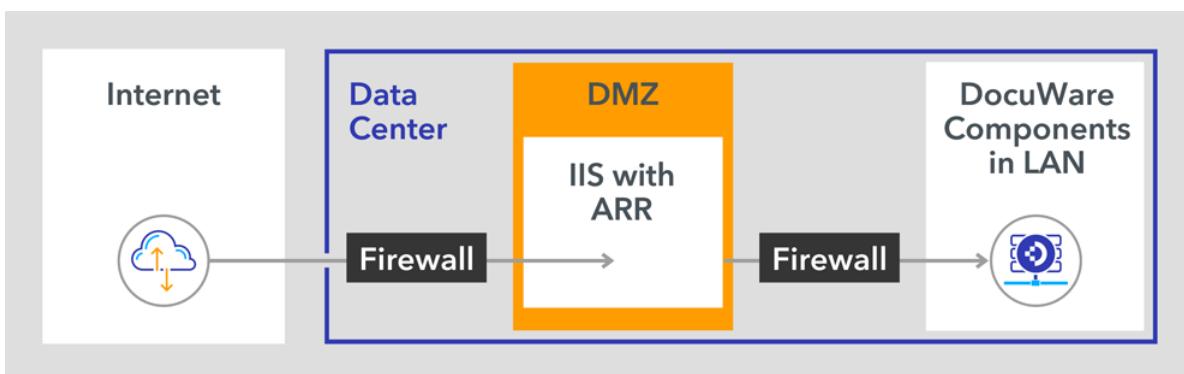
The DocuWare Web Client and the DocuWare Desktop Apps support all current HTTPS. To configure the DocuWare Web components for HTTPS (TLS/SSL), you must carry out the following steps in IIS manager:

- Import the certificate or certificates ("server certificate", "Import" action)
- Adapt the website link and make it accessible via TLS
- If necessary, remove the HTTP link for security reasons (optional)

If you use a self-signed certificate, you must also ensure that your certification center is defined as a trusted certification center on all clients. To do so, import the certificate into the certificate store of all computer and user accounts in your domain, for example using a Group Policy Object (GPO) from Microsoft.

Demilitarized Zone (DMZ)

From DocuWare Version 6.7 the DocuWare Web components connect directly with the database. It is therefore no longer recommended to install the DocuWare Platform Service in a DMZ, for example. All components, including the Web components, should only be installed within the LAN. The Web Server in the DMZ should route requests accordingly to the internal Web Server, for example, using Application Request Routing (ARR). More information about ARR can be found in the Load Balancing (on page 64) section.



12 Web Integration

DocuWare sets up its servers, web applications, and databases on the company's infrastructure. Software services take on different user administration tasks within DocuWare, from searching and document management to accessing databases and the file system. Communication with the DocuWare system is primarily conducted using the Platform Service. HTTP/HTTPS-capable devices such as network printers and smartphones can also be used to access databases, servers, and programmed third-party applications via the Platform Service.

The individual integration options make various functions available for archiving, searching, synchronization, and importing. There are generally three integration options:

Generic or universal integration

This group includes integration options for multiple programs or device types:

- Virtual printer driver
- Monitored folder
- DocuWare Smart Connect app
- Autoindex (database synchronization)
- External select lists
- Connect to Mail
- DocuWare Scan app
- URL integration

Connectors

They connect a specific software or specific device to DocuWare and enhance these external components with numerous document management functions. These connectors only work in combination with this one external component.

- Windows Explorer Client app
- Connect to Outlook
- Connect to SharePoint
- Connect to SAP, Version 2
- Connect to Sharp, Version 2
- Connect to Toshiba, Version 2
- Connect to OKI
- Connect to Xerox

For more information, see the "Connectors (on page 34)" chapter.

Programming

Programming can be used to integrate individual DocuWare resources and create individual programs that provide extended DocuWare functionality in any third-party applications, via:

- URL integration
- Platform/Platform .NET API
- Validating index entries and form entries

The DocuWare "Integration" White Paper (<http://help.docuware.com/en/#t61253>) provides detailed information about all options for the web integration of applications in DocuWare.

13 Setup

The setup of the individual DocuWare components is split into Server Setup and Client Setup. In addition to the Client Setup, DocuWare Update is available to update client applications.

13.1 Server setup

Use the server setup to install, update, and uninstall all frontend services and backend services.

The Connect to SAP server is not installed through DocuWare setup, but made available by DocuWare Professional Services as a separate application.

The administration and administration Power Tools are installed as client applications.

The server setup creates the databases and updates them during an upgrade. It also creates configuration files for individual components and a machine-wide configuration file (storage location: %programdata%/docuware/serverconfig/dwmachine.config).

13.2 Client Setup and DocuWare Update

Use the Client Setup to install, update, and uninstall all applications required on the client side. The applications in the Client Setup are not available via the DocuWare Setup except for DocuWare Administration.

The Client Setup uses Windows Installer. The client components can be installed via Client Setup or via DocuWare Update.

The following components are installed with the Client Setup:

- DocuWare Administration
DocuWare Administration can be used by regular users too, not just by administrators. It is therefore the only component available both in Client Setup and DocuWare Server Setup.
- User synchronization, Version 2
- Connect to Outlook
- DocuWare Desktop Apps
- DocuWare Update
- Upload Service
- Windows Explorer Client (32- and 64-bit)
- Workflow Designer

DocuWare Update

DocuWare Update automatically checks whether updates or hotfixes are available for the applications installed on a client and reports the result to the user. If required, the client setup

opens so the user can install updated versions. In the update, the version numbers are compared with the locally installed version numbers.

Command-line interface for software distribution

For information about this tool, please refer to go.docuware.com/ClientSetupCmd
<http://go.docuware.com/ClientSetupCmd>.

14 Scalability

The DocuWare system is highly scalable and can be tailored to many different requirements. In a small company, DocuWare can be installed as a standalone system with all servers, databases, and storage locations on a single computer. By contrast, in a very large company the whole system can exist in duplicate except for certain areas.

The following factors play a role in determining which form the DocuWare system should be scaled in:

- Number of simultaneously active users
- Availability requirements
- Number of business processes covered by DocuWare and of document types
- Number of "living documents", i.e. documents that are simultaneously used in workflows

The extent to which the DocuWare system scaling and load balancing measures described in this chapter can be realized depends on the server edition bought.

14.1 Scaling Forms of the System

The DocuWare system can be scaled differently according to requirements. The following sections provide information about five basic scaling forms. When installing your DocuWare system, it is best to use one of these forms as a guide. Depending on requirements and licenses bought, there may be differences in each individual installation.

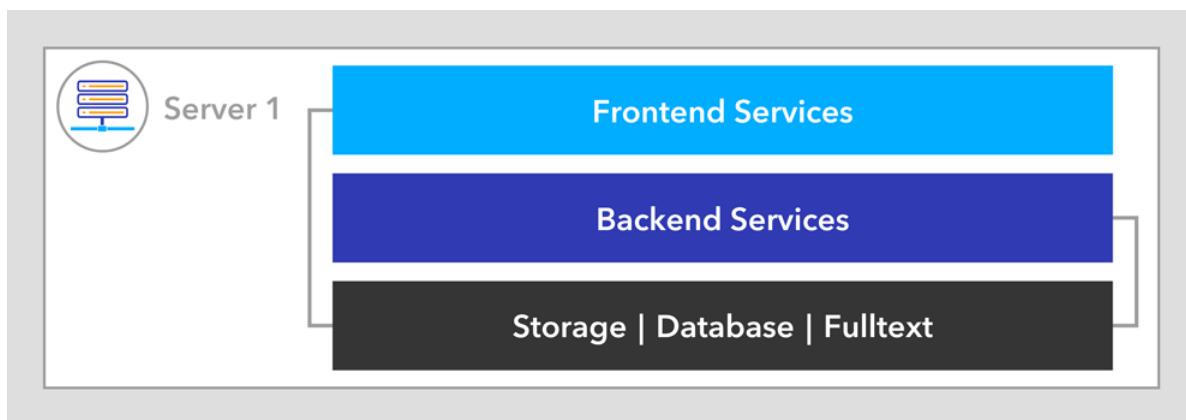
Depending on the extent of use, we recommend one of the following five scaling forms (XS-XL).

	XS	S	M	L	XL
Users active at the same time: up to 50	X	X			
Users active at the same time: up to 250		X	X		
Users active at the same time: up to 500			X	X	
Users active at the same time: up to 1000				X	X
Users active at the same time: more than 1000					X
Fail-Safety			X	X	X

14.1.1 Scaling Form XS

In this simplest form of scaling, the entire DocuWare system is installed on one server with the frontend services, backend services, databases, and storage locations, as well as the fulltext functionality.

You need one server license (Business, Professional or Enterprise).

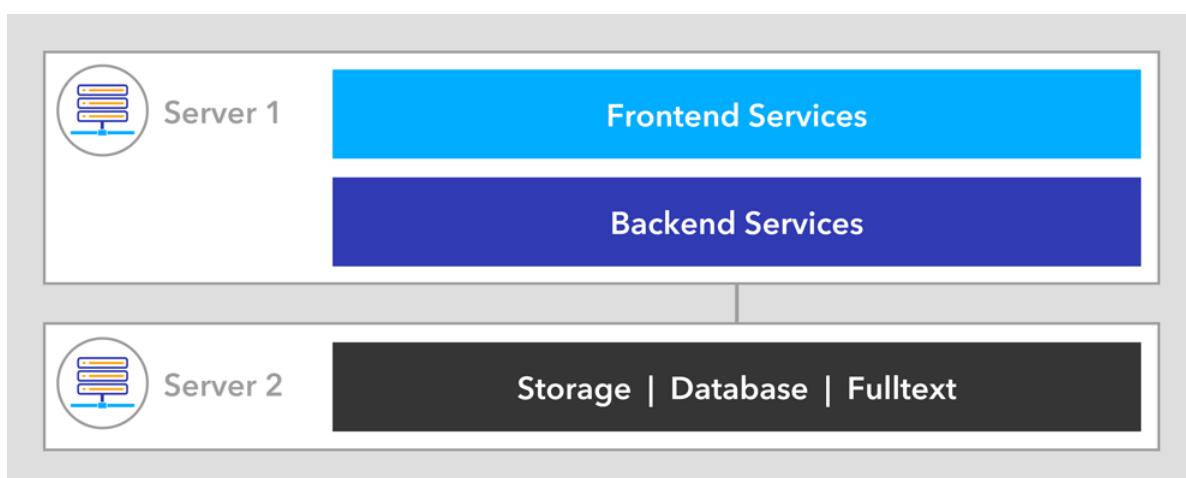


DocuWare system on a server

14.1.2 Scaling Form S

In this scaling form, the DocuWare system is installed on two different servers. The frontend services and backend services are installed on one server, while the databases, storage locations, and fulltext functionality are installed on the other one.

You need a server license (Business, Professional or Enterprise).



DocuWare systems on two servers: Databases, fulltext functionality, and storage locations are outsourced

14.1.3 Scaling Form M

With this scaling form, the frontend services and the backend services are each installed once on Server 1 and Server 2. Servers 1 and 2 can therefore be accessed in the same way.

The databases, the storage locations, and the full text functionality are installed on Server 3.

A load balancer is connected upstream of the complete DocuWare system. This can be installed on separate machines or on the front-end machines Server 1 and Server 2. The balancing can take place on Layer 7 (e.g. through Application Request Routing, ARR) or on Layer 4 (e.g. through Network Load Balancing Services, NLBS).

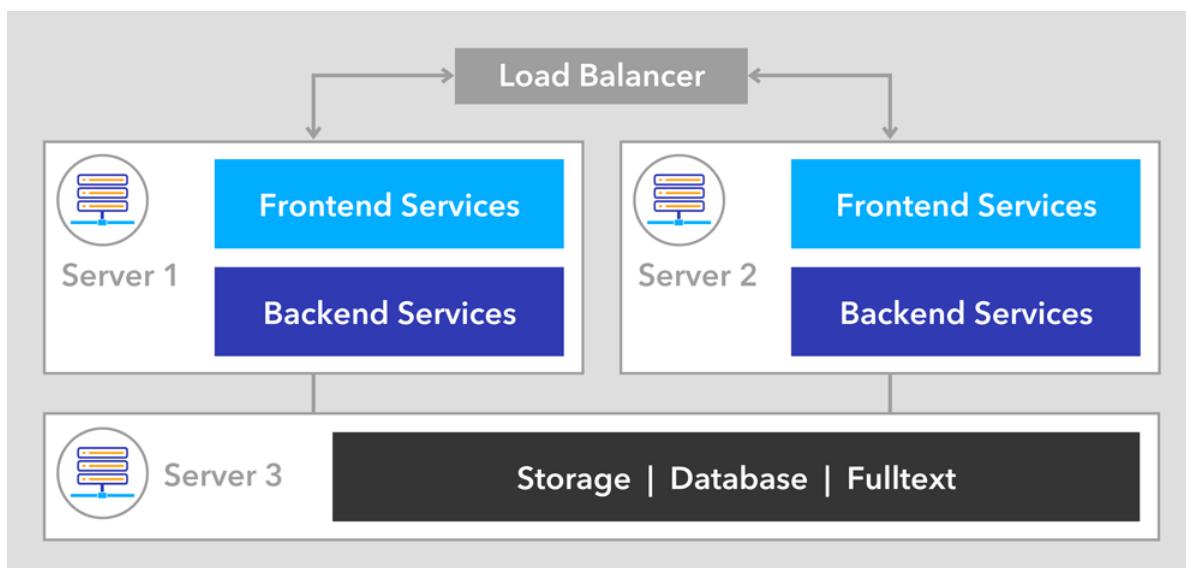
To ensure that Servers 1-3 work independently of each other and can also be restarted, all Authentication Servers work in "Local Mode." There is no further inter-machine communication.

To enable Local Mode, in the configuration file of each Authentication Server, add the value true to the element `AuthenticationServerSettings` as follows:

```
<DWConfig>
  <AuthenticationServerSettings LocalServersOnly="true" />
</DWConfig>
```

Server 1 and Server 2 handle both user requests and background tasks. Therefore, the processing of user requests may be delayed if there are many background tasks (e.g. many incoming documents, rebuilding the full text).

For this scaling form you need either an ENTERPRISE server license or two PROFESSIONAL server licenses.



This scaling form requires three servers and a load balancer.

14.1.4 Scaling Form L

With this scaling form, the frontend services are installed once each on Server 1 and Server 2, and the backend services are installed once each on Server 3 and Server 4. Server 1 to Server 4 can therefore be accessed in the same way.

The databases, the storage locations, and the full text functionality are installed on Server 3.

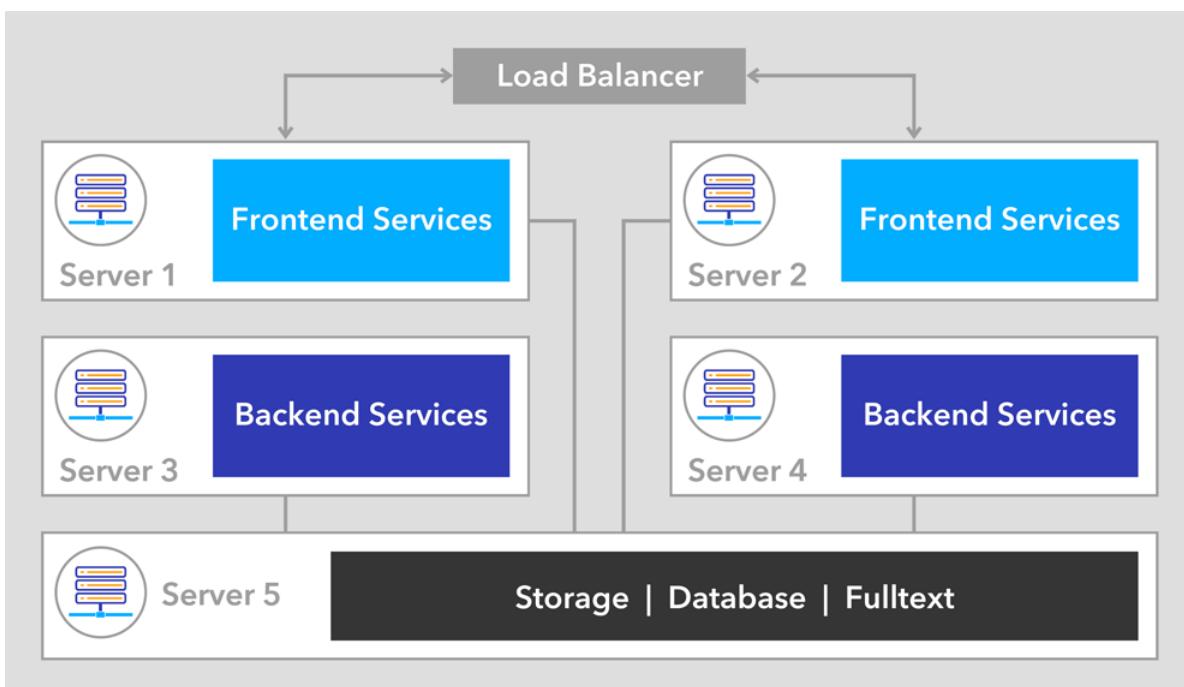
A load balancer is connected upstream of the complete DocuWare system. This can be installed on separate machines or also on the frontend machines Server 1 and Server 2. The balancing can take place on Layer 7 (e.g. through Application Request Routing, ARR) or on Layer 4 (e.g. through Network Load Balancing Services, NLBS).

To ensure that Servers 1-5 work independently of each other and can also be restarted, all Authentication Servers work in "Local Mode." There is no further inter-machine communication.

To enable Local Mode, in the configuration file of each Authentication Server, add the value "true" to the element `AuthenticationServerSettings` as follows:

```
<DWConfig>
  <AuthenticationServerSettings LocalServersOnly="true" />
</DWConfig>
```

For this scaling form you need either an ENTERPRISE server license or two PROFESSIONAL server licenses.



14.1.5 Scaling Form XL

With this scaling form, the frontend services are installed once on each of four servers (1-4).

On four additional servers (5-8) the backend services are installed once each.

Servers 1 to 4 can therefore be accessed in the same way.

The databases, the storage locations, and the full text functionality are installed on Server 9.

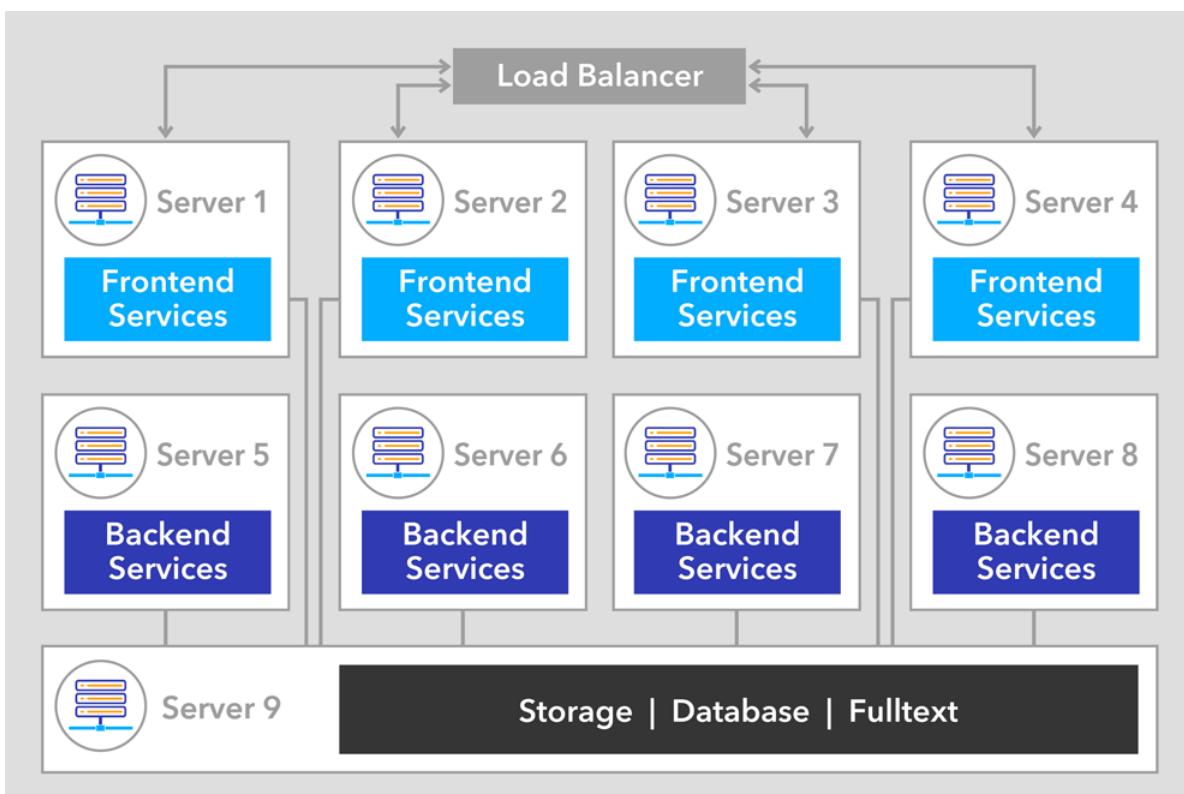
A load balancer is connected upstream of the complete DocuWare system. This can be installed on separate machines or also on the frontend servers 1-4. The balancing can take place on Layer 7 (e.g. through Application Request Routing, ARR) or on Layer 4 (e.g. through Network Load Balancing Services, NLBS).

To ensure that Servers 1-8 work independently of each other and can also be restarted, all Authentication Servers work in "Local Mode." There is no further inter-machine communication.

To enable Local Mode, in the configuration file of each Authentication Server, add the value true to the element `AuthenticationServerSettings` as follows:

```
<DWConfig>
  <AuthenticationServerSettings LocalServersOnly="true" />
</DWConfig>
```

For this scaling form you need either two ENTERPRISE server licenses or four PROFESSIONAL server licenses.



This scaling form requires nine servers and a load balancer.

14.2 Data Management

Databases, fulltext functionality and storage should be scaled by measures recommended by the particular producer. For selecting the database server see section Supported Database Systems (on page 36).

14.3 Load Balancing

Once you have installed your DocuWare system based on one of the five recommended scaling formats, it may make sense to take further individual scaling measures in certain cases where there is a heavy load. However, you should always pay attention to the root cause of the load: Three different scenarios that address the most important causes are described below.

Three different technologies can be implemented for load balancing:

- Application Request Routing (ARR): this is an Internet Information Services (IIS) module from Microsoft that is installed separately upstream from the DocuWare system. The ARR module acts as a reverse proxy and distributes HTTP requests to underlying application servers. You can download <https://www.iis.net/downloads/microsoft/application-request-routing> the module from the Microsoft website.
- Network Load Balancing Services (NLBS): NLBS is a component of Windows Server. The idea is that various servers form a cluster. Machines acting as load balancers distribute the requests to the application servers based on TCP. You can find more information on the Microsoft website [https://technet.microsoft.com/en-us/library/cc725691\(v=ws.11\).aspx](https://technet.microsoft.com/en-us/library/cc725691(v=ws.11).aspx).
- Hardware Load Balancer

In all three load balancing options, users should always be routed to the same server for performance reasons.

Scenario 1

Many DocuWare users are accessing the system at the same time, e.g. conducting searches or processing tasks.

In this case, you need a scaling form with more frontend services and you should increase the number of machines.

Scenario 2

Many predefined or some very extensive workflows run simultaneously, or many documents that need to go through the fulltext are being filed at the same time. This may apply to a system migration, for example.

In this case, you need more backend services and the workflow server should be installed multiple times. See also the notes on fail-safety <http://help.docuware.com/en/#t61324>.

These are workflows specified in DocuWare Administration, not workflows from the Workflow Manager module.

14.4 Availability and Fail-safety

Most components can be installed multiple times in each DocuWare system for greater fail-safety.

The tasks of the Workflow Server are an exception: user synchronization, backup, and restore as well as synchronization of file cabinets (synchronization version 2). This situation will be resolved with one of the next DocuWare versions.

Several Workflow Servers can be installed, but the workflows are assigned to fixed individual Workflow Servers. If a Workflow Server fails, the workflows must be manually configured for another server.

These limitations should be taken into account for workflows.

14.4.1 Geographically Dispersed Systems

A geographically dispersed solution requires a lot of effort to implement and is therefore only recommended with the close support and guidance of DocuWare Professional Services (<http://pub.docuware.com/de/professional-services>).