

---

# **White Paper System Architecture**

**DocuWare Version 6.10**

Copyright © 2016 DocuWare GmbH

All rights reserved

The software contains proprietary DocuWare information. It is provided under a license agreement containing restrictions on use and disclosure and is also protected by copyright law. Reverse engineering of the software is prohibited.

Due to continued product development this information may change without notice. The information and intellectual property contained herein is confidential between DocuWare GmbH and the client and remains the exclusive property of DocuWare. If you find any problems in the documentation, please report them to us in writing. DocuWare does not warranty that this document is error-free.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of DocuWare.

This document was created using AuthorIT™, Total Document Creation (<http://www.author-it.com>).

#### Disclaimer

The content of this guide is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by DocuWare GmbH. DocuWare GmbH assumes no responsibility or liability for any errors or inaccuracies that may appear in the informational content contained in this guide.

DocuWare GmbH  
Therese-Giehse-Platz 2  
D-82110 Germering  
[www.docuware.com](http://www.docuware.com) (<http://www.docuware.com>)

# Contents

<b>1</b>	<b>Change History</b>	<b>7</b>
<hr/>		
<b>2</b>	<b>Objectives of this White Paper</b>	<b>9</b>
<hr/>		
<b>3</b>	<b>Introduction</b>	<b>10</b>
<hr/>		
3.1	Fit for the Future Thanks to Cutting-Edge Technology.....	10
3.2	Multi-tier Architecture (N-Tier) .....	11
3.3	System Requirements.....	12
<hr/>		
<b>4</b>	<b>Client Applications</b>	<b>13</b>
<hr/>		
<b>4.1</b>	<b>Web-Based Applications .....</b>	<b>13</b>
4.1.1	DocuWare Web Client .....	13
4.1.2	DocuWare Configuration .....	13
4.1.2.1	File cabinets .....	14
4.1.2.2	User Administration .....	14
4.1.2.3	Select lists.....	14
4.1.2.4	Document Trays .....	14
4.1.2.5	Text Recognition.....	14
4.1.2.6	Email Notifications .....	14
4.1.2.7	Connect to Mail.....	15
4.1.2.8	Connect to Outlook.....	15
4.1.2.9	Smart Connect.....	15
4.1.2.10	Connect to OKI .....	15
4.1.2.11	Connect to Ricoh, Version 2.....	15
4.1.2.12	Connect to Toshiba, Version 2 .....	15
4.1.2.13	Connect to Sharp.....	16
4.1.2.14	DocuWare Printer .....	16
4.1.2.15	DocuWare Forms .....	16
4.1.2.16	DocuWare Request .....	16
4.1.2.17	Synchronization .....	16
4.1.2.18	Import Configurations .....	17
<b>4.2</b>	<b>Windows-Based Applications .....</b>	<b>18</b>
4.2.1	User Applications.....	18
4.2.1.1	DocuWare Desktop Apps .....	18
4.2.1.2	Connect to Outlook.....	20

4.2.1.3	Windows Explorer Client .....	20
<b>4.3</b>	<b>Administrative Applications .....</b>	<b>21</b>
4.3.1	DocuWare Administration .....	21
4.3.2	Workflow Designer .....	21
4.3.3	URL Creator .....	22
4.3.4	Index Cleaner .....	22
<b>4.4</b>	<b>Applications for Multifunction Printers .....</b>	<b>22</b>
4.4.1	Connect to Ricoh, Version 2 .....	22
<b>4.5</b>	<b>Mobile Clients .....</b>	<b>23</b>
4.5.1	DocuWare Mobile .....	23
4.5.2	DocuWare Mobile Plus II .....	23
4.5.3	DocuWare Hub .....	23
4.5.4	PaperScan Client .....	23
<b>5</b>	<b>Web Servers .....</b>	<b>24</b>
<b>5.1</b>	<b>Platform Service and Web Client .....</b>	<b>24</b>
<b>5.2</b>	<b>Settings Service .....</b>	<b>25</b>
<b>5.3</b>	<b>Desktop Server Component .....</b>	<b>25</b>
<b>5.4</b>	<b>Web-based Connectors .....</b>	<b>26</b>
5.4.1	Connect to SharePoint .....	26
5.4.2	Connect to Xerox .....	26
5.4.3	Connect to OKI .....	26
5.4.4	Connect to Sharp, Version 2 .....	26
5.4.5	Connect to Toshiba, Version 2 .....	26
<b>6</b>	<b>Backend Servers .....</b>	<b>27</b>
<b>6.1</b>	<b>Authentication Server .....</b>	<b>27</b>
<b>6.2</b>	<b>Content Server .....</b>	<b>28</b>
<b>6.3</b>	<b>Workflow Server .....</b>	<b>29</b>
<b>6.4</b>	<b>Notification Server .....</b>	<b>30</b>
<b>6.5</b>	<b>Thumbnail Server .....</b>	<b>30</b>
<b>6.6</b>	<b>Workflow Engine Server .....</b>	<b>30</b>
<b>6.7</b>	<b>Connect to SAP Server .....</b>	<b>31</b>
<b>6.8</b>	<b>Background Process Service .....</b>	<b>31</b>
<b>6.9</b>	<b>Administrative Applications and Services .....</b>	<b>31</b>
6.9.1	Service Control .....	31

6.9.2	Message Bus Administration .....	32
<b>7</b>	<b>Databases, Storage Locations, and Fulltext Index</b>	<b>33</b>
<hr/>		
7.1	Databases .....	33
7.1.1	Supported Database Systems .....	33
7.1.2	The Structure of the Databases .....	33
7.2	Supported Storage Locations for File Cabinets and Document Trays .....	35
7.3	Fulltext Index .....	36
<b>8</b>	<b>Intelligent Indexing</b>	<b>37</b>
<hr/>		
<b>9</b>	<b>Architecture of the File Cabinets</b>	<b>37</b>
<hr/>		
9.1	The "Disk" Concept .....	38
9.2	Document Structure .....	38
9.3	Header File .....	39
9.4	File Structure .....	40
9.5	Fulltext Functionality .....	42
9.6	Special Characteristics of Document Trays .....	42
9.7	Export-Import Synchronization .....	42
9.8	Autonomous File Cabinets .....	44
<b>10</b>	<b>Communication Technologies</b>	<b>45</b>
<hr/>		
10.1	Protocols .....	45
10.2	Client-Server Communication .....	46
10.3	Server-Server Communication .....	47
10.4	Message Bus .....	48
<b>11</b>	<b>External access</b>	<b>49</b>
<hr/>		
<b>12</b>	<b>Web Integration</b>	<b>50</b>
<hr/>		
<b>13</b>	<b>Setup</b>	<b>52</b>
<hr/>		
13.1	Server Setup .....	52
13.2	Client Setup and DocuWare Update .....	52
<b>14</b>	<b>Scalability</b>	<b>54</b>
<hr/>		
14.1	Scaling Forms of the System .....	54
14.1.1	Scaling Form 1 .....	55

14.1.2	Scaling Form 2.....	56
14.1.3	Scaling Form 3.....	57
14.1.4	Scaling Form 4.....	58
<b>14.2</b>	<b>Scaling Individual Components.....</b>	<b>60</b>
<b>14.3</b>	<b>Data Management.....</b>	<b>62</b>
<b>14.4</b>	<b>Load Balancing.....</b>	<b>62</b>
<b>14.5</b>	<b>Availability and fail-safety.....</b>	<b>63</b>
14.5.1	Geographically Dispersed Systems.....	63

# 1 Change History

Compared with the previous white paper on system architecture for DocuWare version 6.9, there are the following changes:

	Topic	Chapter
<b>New sections</b>	Text recognition, synchronization	Client applications > Web-based applications > DocuWare configuration
	DocuWare Mobile Plus II	Client applications > Mobile clients
	Background Process Service	Backend servers
	Scaling individual components	Scalability
<b>Modified sections</b>	Connect to Outlook: Supports 64-bit version of Microsoft Outlook	Client applications > Web-based applications > DocuWare configuration
	DocuWare Forms: Detail added	Client applications > Web-based applications > DocuWare configuration
	Workflow Server: Synchronization as peer-to-peer supplemented	Backend servers
	Special characteristics of document trays: Format change	Architecture of the file cabinets
	Export-Import Synchronization: Synchronization as peer-to-peer supplemented	Architecture of the file cabinets
	All scaling forms: simplistic changes; scaling form 4 changed: better load balancing	Scalability > Scaling forms
	<b>Sections removed</b>	OCR Templates
	HTML5 Mobile Client (V1, V2)	Client applications > Mobile clients
	Mobile Client for iOS	Client applications > Mobile clients
	Windows Phone 7/8 client	Client applications > Mobile clients

	Windows 8/RT Client	Client applications > Mobile clients
	Connect to Mail server	- Backend server - Scalability > Availability and fail-safety
	Geographically dispersed systems: Graphics	Scalability

## Previous versions

The System Architecture white paper for previous versions of DocuWare is available for download:

For DocuWare version 6.9

([https://www.docuware.com/main.asp?sig=dld&lan=en&loc=en&dwdblan=english&dwdbkat=do\\*&dwdbname=white+paper+system+architecture+V6.9](https://www.docuware.com/main.asp?sig=dld&lan=en&loc=en&dwdblan=english&dwdbkat=do*&dwdbname=white+paper+system+architecture+V6.9))

For DocuWare version 6.8

([https://www.docuware.com/main.asp?sig=dld&lan=en&loc=de&dwdblan=english&dwdbkat=do\\*&dwdbname=white+paper+system+architecture+V6.8](https://www.docuware.com/main.asp?sig=dld&lan=en&loc=de&dwdblan=english&dwdbkat=do*&dwdbname=white+paper+system+architecture+V6.8))

For DocuWare version 6.7

[http://www.docuware.com/main.asp?sig=dld&lan=de&loc=de&dwdblan=german&dwdbkat=do\\*&dwdbname=white+paper+systemarchitektur+V6.7](http://www.docuware.com/main.asp?sig=dld&lan=de&loc=de&dwdblan=german&dwdbkat=do*&dwdbname=white+paper+systemarchitektur+V6.7)

For DocuWare version 6.6

([http://www.docuware.com/main.asp?sig=dld&lan=en&loc=en&dwdblan=english&dwdbkat=do\\*&dwdbname=white+paper+system+architecture+V6.6](http://www.docuware.com/main.asp?sig=dld&lan=en&loc=en&dwdblan=english&dwdbkat=do*&dwdbname=white+paper+system+architecture+V6.6))

## 2 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/#t59260>), Intelligent Indexing, (<http://help.docuware.com/en/#t59237>) and DocuWare Cloud (<http://help.docuware.com/en/#b57864t58812n56659>).

## 3 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, anyplace.

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.

### 3.1 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 and Mac OS devices via the browser. Only in a few cases are local 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 very many components, mostly either together with REST (Representational State Transfer) or SOAP (Simple Object Access Protocol).

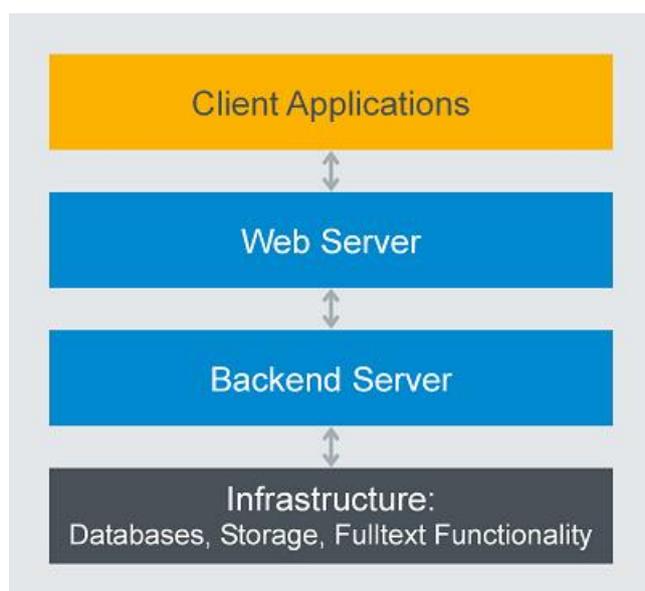
The mobile applications of DocuWare are available in iOS and Android, and thus on all key platforms. To install DocuWare, the latest Windows versions are always supported and for the databases, all key server technology in a large number of versions, namely MS SQL, MySQL, and Oracle.

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.

### 3.2 Multi-tier Architecture (N-Tier)

The DocuWare architecture corresponds to the N-tier model and is split into four layers:

- 1 Client applications:  
All dialog-oriented functions run in the browsers of the workstation systems and mobile devices used.
- 2 Web Servers  
One part of the application logic is localized on several DocuWare Web Servers.
- 3 Backend servers  
Another part of the application logic is localized on several DocuWare backend servers.
- 4 Infrastructure (databases, storage locations, fulltext functionality)  
In principle, several servers share common resources on one or more central background servers.



*The Four Layers of the DocuWare System Architecture*

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.

### 3.3 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.

## 4 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.

### 4.1 Web-Based Applications

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

#### 4.1.1 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 24), which it uses to communicate with backend servers.

Web Client communicates with the DocuWare Desktop Apps components using the Desktop Service (on page 20).

#### 4.1.2 DocuWare Configuration

DocuWare Configuration consolidates the configuration interfaces of various applications that are not managed in the DocuWare Administration within a DocuWare system. Some of these applications are based on HTML5 technology, others on Silverlight.

The DocuWare Configuration technically consists of two components: the user interface with the application plug-ins and the Settings Service (on page 25) 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 18) section.

#### **4.1.2.1 File cabinets**

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

The file cabinet administration in the DocuWare configuration has a limited scope of functions compared to DocuWare Administration and is also provided.

#### **4.1.2.2 User Administration**

You can set up small and middle-sized organizations here. Up to 200 users can be created this way and assigned rights for up to 50 roles.

This option is in addition to the options in DocuWare Administration, where you may continue to manage organizations with over 200 users and more than 50 roles.

#### **4.1.2.3 Select lists**

Here you can create fixed select lists and assign fields to them and you can import fixed select lists.

Furthermore, you can create dynamic select lists and assign fields to them.

The select lists in the DocuWare configuration have a limited scope of functions compared to DocuWare Administration and are also provided as an editing option in addition to DocuWare Administration.

#### **4.1.2.4 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).

The plug-in is based on Silverlight technology.

#### **4.1.2.5 Text Recognition**

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

The plug-in is based on HTML5 technology.

#### **4.1.2.6 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.

The plug-in is based on Silverlight technology.

#### **4.1.2.7 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.

The plug-in is based on HTML5 technology.

#### **4.1.2.8 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.

The plug-in is based on Silverlight technology.

#### **4.1.2.9 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.

#### **4.1.2.10 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.

#### **4.1.2.11 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.

The plug-in is based on HTML5 technology.

#### **4.1.2.12 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.

#### **4.1.2.13 Connect to Sharp**

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.

#### **4.1.2.14 DocuWare Printer**

In this plug-in, you create and manage configurations for the DocuWare Printer application with the settings: Specify store target; determine document identification, sharing, indexing, and processing; ensure electronic billing conforms to the German ZUGFeRD standard; store the form/letterhead for the document; assign permissions.

The plug-in is based on Silverlight technology. It uses the connections of DocuWare Desktop Apps.

#### **4.1.2.15 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.

The plug-in is based on HTML5 technology.

#### **4.1.2.16 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.

The plug-in is based on HTML5 technology.

#### **4.1.2.17 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). It is in addition to the option of predefined workflows as per the master-satellite principle. (Synchronization version 1). You can find more information in the section Export-Import-Synchronization (on page 42).

The plug-in is based on HTML5 technology.

#### 4.1.2.18 Import Configurations

In this plug-in, you create and manage configurations for document import with DocuWare Scan and DocuWare Import, with the following settings:

Specify store target; identification; determine details for importing, sharing, indexing, and processing documents; record the form/letterhead for the document; assign permissions.

Import configurations are also used to control the read-out of meta data generated for scanned documents by certain MFP devices or software solutions. When an import configuration is executed, these XML files are read out and the content is used as index entries for the documents. In this way, documents can be scanned directly to a DocuWare file cabinet.

The plug-in is based on Silverlight technology.

DocuWare offers the following formats for the import configurations.

##### 4.1.2.18.1 DWCONTROL

The *dwcontrol* format is used to store files that have been generated with DocuWare Printer using *dwcontrol* commands in DocuWare.

##### 4.1.2.18.2 ZUGFeRD

The ZUGFeRD format stores files in DocuWare that were generated with ZUGFeRD-compatible software solutions, e.g. DocuWare Printer. ZUGFeRD is the German standard format for exchanging electronic invoices. Standardized invoice data in XML format is embedded in a PDF document (PDF/A-3).

##### 4.1.2.18.3 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).

##### 4.1.2.18.4 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.

##### 4.1.2.18.5 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.

##### 4.1.2.18.6 Kyocera

The Kyocera format is used to store files that have been generated by Kyocera multifunction printers in DocuWare.

##### 4.1.2.18.7 Toshiba

The Toshiba format is used to store files that have been generated by Toshiba multifunction printers in DocuWare.

#### 4.1.2.18.8 PlanetPress

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

## 4.2 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.

### 4.2.1 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.

#### 4.2.1.1 DocuWare Desktop Apps

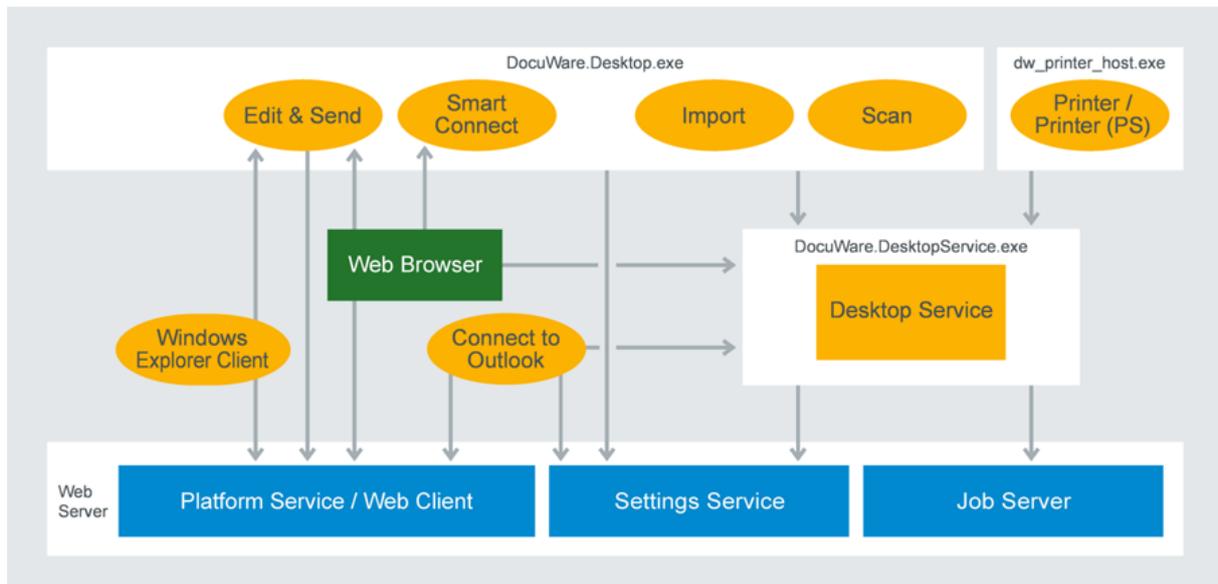
The DocuWare Desktop Apps component runs in the Windows notification field (tray area). It acts as a platform under which the following client plug-ins and functions are consolidated:

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

DocuWare Desktop Apps sends the entry data for these plug-in applications and functions to the Desktop Service (on page 20), which then forwards them to the Job Server.

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.

#### 4.2.1.1.1 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 a DocuWare file cabinet. Any scanner installed on the user's PC (which has TWAIN and WIA drivers) can be used for this.

Scan configurations for DocuWare Scan can be directly created by the user in the client application. In order to be able to store the documents in DocuWare, at least one Import configuration (on page 13) 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.

#### 4.2.1.1.2 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.

#### 4.2.1.1.3 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.

#### **4.2.1.1.4 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.

#### **4.2.1.1.5 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.

#### **4.2.1.1.6 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.

It forwards orders received on the client side within Desktop Apps to the Job Server (on page 25). It calls up the settings for processing orders using the Settings Service (on page 25).

The component is installed with the Setup.

#### **4.2.1.2 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 draws the connection information for the DocuWare system from DocuWare Desktop Apps. It is given the settings using the Settings Service.

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

#### **4.2.1.3 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.

## 4.3 Administrative Applications

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

### 4.3.1 DocuWare Administration

The DocuWare Administration is used 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
- Time stamp services
- Logging
- Backup
- Web connections
- Intelligent Indexing Service

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

- User administration
- File cabinets
- Predefined workflows (via Workflow Server)
- Signature types
- Logging

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 application. 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.

### 4.3.2 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 Workflow Engine Server (on page 30) and other backend servers using the Settings Service (on page 25).

Workflow Designer forwards all information for workflow task lists in the Web Client using the DocuWare Platform Service (on page 24).

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

### **4.3.3 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.

### **4.3.4 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.

## **4.4 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 server level (on page 26).

### **4.4.1 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).

## 4.5 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.

### 4.5.1 DocuWare Mobile

DocuWare Mobile allows you to access your DocuWare system using smartphones and tablets with Android, iOS, and Windows Phone. 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.

### 4.5.2 DocuWare Mobile Plus II

With DocuWare Mobile you can access your DocuWare system from your iPad. You can read documents on the screen or approve an invoice with the virtual stamp, for example. This lets you carry out many document management processes while you're waiting at the station or at the airport, or during breaks in conferences. The component accesses DocuWare using the Platform Service.

### 4.5.3 DocuWare Hub

Using the DocuWare Hub client you can connect any other apps to DocuWare mobile devices. This allows PDFs, images, and Office documents to be stored in a DocuWare file cabinet or document tray, including indexing, with the "Share" button.

### 4.5.4 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.

## 5 Web Servers

The DocuWare Web Servers are based largely on the Internet Information Services (IIS), a service platform by Microsoft. This allows the services to be easily operated with 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
- Desktop Server Components
- Web-based connectors

Information on installing and managing the Web Servers can be found in the Server Setup (on page 52) section.

### 5.1 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 all 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 SDK.

The Platform Service accesses the Authentication Server and the DWSYSTEM database directly.

Thanks to the modern communication mechanism 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. 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?](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 guaranteed to be 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 uses 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.

## 5.2 Settings Service

The Settings Service provides access to most DocuWare system settings. The DocuWare Configuration in particular relies heavily on the Settings Service.

The Settings Service calls up settings from the databases directly using the Authentication Server and delivers them to individual 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 and creates these using the Content Server. The Settings Service manages the request workflow using the Workflow Server.

## 5.3 Desktop Server Component

As the Desktop Server component, the Job Server ensures that import orders are transmitted to the server system. It stores import orders from DocuWare Desktop Apps, that is, from DocuWare Printer, the Scan App, and the Import App for documents to be imported. The orders are generated by DocuWare Desktop instances.

The Job Server also stores the documents generated in the DocuWare system. The remaining order processing occurs in the Desktop Service (on page 20).

The Job Server calls up the configurations for the import from the Settings Service (import configurations and DocuWare printer configurations).

It transfers the documents to be stored in the file cabinet to the Content Server. The fulltext generated by the DocuWare Desktop Apps is also stored at the storage location by the Job Server using the Content Server.

The Job Server runs in Microsoft Internet Information Services (IIS).

## 5.4 Web-based Connectors

The web-based connectors connect the SharePoint application as well as multifunction printers by Xerox, OKI, Sharp, Version 2, and Connect to Toshiba, Version 2 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.

### 5.4.1 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.

### 5.4.2 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.

### 5.4.3 Connect to OKI

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

### 5.4.4 Connect to Sharp, Version 2

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

### 5.4.5 Connect to Toshiba, Version 2

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

## 6 Backend Servers

Backend servers 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 servers in the following:

- Authentication Server
- Content Server
- Workflow Server
- Notification Server
- Thumbnail Server
- Workflow Engine Server
- Connect to SAP Server

Information on installing and managing the backend servers can be found in the Server Setup (on page 52) section.

### 6.1 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
- Administration of user-specific settings

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
- Logging

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 48). The Authentication Server logs all processes in the logging database.

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 54) chapter.

The Authentication Server is managed in DocuWare Administration.

## 6.2 Content Server

The Content Server is used to access all client applications on DocuWare file cabinets and document trays, both for storage and for searching and retrieving documents. Client applications cannot directly access archived documents.

The Content Server manages the logical file cabinets where the documents are stored and logs all file cabinet access in the logging database. It manages the index and meta data of the stored documents in one or more databases.

The Content Server is also responsible for extracting fulltext (on page 42) 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 Content Server stores the fulltext in the data store and forwards it to the Fulltext Server at the same time.

The Content Server calls up information on licenses, user rights, and settings for processing documents from the system database using the Authentication Server. This occurs with every document that the Content Server processes. According to the settings, it passes on different information to other components or calls it up.

If there are trigger settings stored in the system database for an email notification or workflow (of Workflow Manager), the Content Server generates an entry in the database table (DWSYSTEM.DWTASKS).

If there are conditions saved for the hosted Intelligent Indexing Service, the Content Server starts the document indexing order, creates structure data, and sends it to the service. After indexing, the service returns the meta data, which the Content Server stores in the data store after the suggested index data has been corrected by the user. Finally, the Content Server sends the corrected data to the Intelligent Indexing Service (on page 37), which takes it into account for future prompts.

The Content Server also communicates with other components via Message Bus.

If file cabinets and index fields are allocated to user-specific validators, the Content Server executes these checks.

At least one Content Server must be installed in a DocuWare system. The various organizations that use a DocuWare system can simultaneously use different Content Servers.

The Content Server uses remoting to provide information. It is managed in DocuWare Administration.

## 6.3 Workflow Server

The Workflow Server controls predefined workflows, i.e. (sub)processes that can be automated, in DocuWare. They include:

- Adding index information from external data sources (DocuWare Autoindex module)
- Migrating data
- Exporting archives and sub-archives
- Index restores
- Deleting documents that are defined via filters
- Generating autonomous file cabinets (DocuWare Request (on page 16) module)
- Synchronizing file cabinets (also see Export-Import-Synchronization) (on page 42):
  - Synchronization as master and satellite (synchronization version 1)
  - Synchronization as equivalent file cabinets (synchronization version 2)
- Barcode transfer for the Connect to SAP module

Predefined processes can be implemented during the initial DocuWare installation or during a subsequent installation of additional modules.

The Workflow Server calls up settings for individual workflows from the system database using the Authentication Server.

The Workflow Server receives the documents stored in the file cabinets from the Content Server and also writes them back on the same path.

For DocuWare Request, the Workflow Server calls up the workflow history of a document (which is part of a Workflow Manager module workflow) from the Workflow Engine Server.

The Workflow Server writes the logging information in the logging database.

If predefined workflow processes in a DocuWare system are used, the Workflow Server must be installed there at least once. If several Workflow Servers are installed, the individual workflows are each allocated to a specific Workflow Server. More information on scaling individual servers can be found in the Scalability (on page 54) chapter.

The Workflow Server is managed in the DocuWare Administration.

---

It is important to distinguish between the Workflow Server and the Workflow Engine Server (on page 30) described further below. The Workflow Server is responsible for all processes outside of the Workflow Manager that can be automated, and the Workflow Engine Server is responsible for all workflows within the Workflow Manager.

---

## 6.4 Notification Server

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

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

The Content Server generates 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 rather by the Workflow Engine Server (on page 30) itself.

---

## 6.5 Thumbnail Server

The Thumbnail Server is for saving and requesting thumbnails for individual documents.

In Web Client, documents can be displayed in the Viewer and in the document tray as thumbnails. For better performance, the thumbnails are not recreated each time they are loaded, but saved in a thumbnail database and made available from there when needed for display.

Whether or not thumbnails are saved or requested is controlled by the components that use the thumbnails. The Thumbnail Server received this information from the Authentication Server.

The Thumbnail Server is allocated file cabinets and document tray storage locations. The Thumbnail Server is managed in DocuWare Administration.

## 6.6 Workflow Engine Server

The Workflow Engine Server 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.DWTASKS table.

The workflow configurations and workflow instances are stored by the Workflow Engine Server in the DWORKFLOWENGINE database (on page 33) and called up from there.

All settings that affect permissions and other sensitive data are called up by the Workflow Engine Server from the Authentication Server.

The Workflow Engine Server accesses documents using the Content Server.

At least one Workflow Engine Server must be installed in order to use the Workflow Manager module. The Workflow Engine Server is managed in the DocuWare Administration.

The workflow configurations are created in the Workflow Designer (on page 21) application.

## 6.7 Connect to SAP Server

The SAP HTTP server DocuWare component uses the ArchiveLink 4.5 SAP component. This OLE component enables you to scan, display, print, and store documents directly from the SAP interface. SAP controls the DocuWare Viewer for displaying the scanned document via OLE automation.

## 6.8 Background Process Service

The Background Process Service is a host designed for scalability for background processes.

The server processes of Connect to Mail run in it. The component integrates email accounts based on Google Mail or Microsoft Exchange servers. It monitors folders in IMAP-based mailboxes in order to store the documents there in DocuWare.

The Connect to Mail server component accesses settings for processing the documents from the Settings Service.

The Connect to Mail server component sends documents to the Platform Service for storage, where they are then forwarded to the Content Server.

## 6.9 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.

### 6.9.1 Service Control

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

The component is installed with the Server Setup (on page 52) as standard.

## 6.9.2 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 52) as standard.

## 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 52).

#### 7.1.2 The Structure of the Databases

A DocuWare system contains the following databases:

- **Data store (DWDATA)**  
This database contains all internal system information for searching and finding documents. You can create several data stores. For more details, see the "Data Store" section below.
- **System database (DWSYSTEM)**  
All data on rights, licenses, and settings are stored in this database.
- **Logging database (DWLOGGING)**  
The Content Server, Authentication Server, and Workflow Server store their log data in this database.

- Thumbnail database (DWTHUMBNAIL)  
This database contains all information regarding thumbnails created or called up by the Thumbnail Server.
- Notification database (DWNOTIFICATION)  
This is where the Notification Server stores all events received from the Content Server.
- Workflow Engine database (DWORKFLOWENGINE; optional database)  
This database contains all information required by the Workflow Engine Server for creating, editing, and executing workflow configurations and workflow instances.

## Data store

Searching and finding documents stored in DocuWare always occurs in the data store. This is where the Content Server stores 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 characteristic that uniquely defines 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.

Essentially, the data store contains the following tables:

Description	Significance	Table name
File cabinet main table	Describes the documents per file cabinet by mandatory system fields, e.g. page count, disk number, storage date, version number, access protocol information, synchronization information (only for satellite file cabinets), and user-defined fields with field types: <ul style="list-style-type: none"> <li>▪ Text</li> <li>▪ Date/time</li> <li>▪ Numeric</li> <li>▪ Memo</li> </ul>	<File cabinet name>
System table	Occurs exactly once for each database. Describes all managed file cabinets by their name, ID, and current storage medium (Disk ID).	DWSYS
Section table	Describes a document's files using its file extension, size, and page count.	<File cabinet name>_sect

Description	Significance	Table name
Page table	Describes a file's pages and contains the extracted text with its position on the corresponding page, its fulltext status, and the size of the text area.	<File cabinet name>_page
Keyword tables	For each keyword field in a file cabinet, a table is created which links the keyword to the DOCID.	<File cabinet name>_<Name of keyword field>
Locking table	Describes the documents of a file cabinet that are locked against modification – by date/time, user, and computer on which the document is being edited, as well as information about checkin/checkout status.	<File cabinet name>_LOCK
Disk table	Describes the disks in the system, i.e. all disks of all file cabinets by their numbers and other capacities.	<File cabinet name>_DISKS

## 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 directly supports jukeboxes and 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**

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**

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 42) 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.
- Content Server or Servers that can be used to access the file cabinet.  
A file cabinet is accessed via all installed Content Servers as standard. Allocation takes place at user login and is controlled by the Authentication Server.
- 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 takes on 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.

### 9.3 Header File

Each document to be managed in DocuWare 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 is thus duplicated: it appears 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.

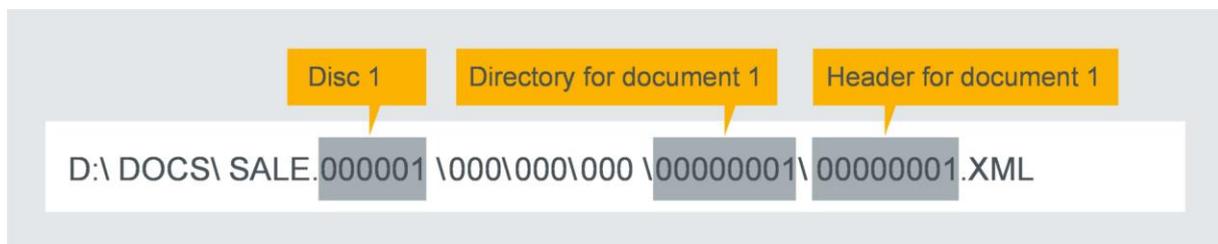
## 9.4 File Structure

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  $(2^{31}-1) = 2,147,483,647 \sim 2.15b$ ). 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 pages are always called *F* (File), followed by a sequential number starting with 1, and the file extension (e.g. doc, xls, pdf), so for example *F1.doc*. A document that consists of several parts would therefore be represented like this:

```
\000000001\00000001.XML
  \ F1.pdf
  \ F2.docx
  \ F3.xlsx
```

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\001\0000000511\ (last document in 000\000\001)
          ...
      ...
    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)
  
```

## 9.5 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 Content Server 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 Content Server (on page 28) 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.

## 9.6 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 in them is stored in a simplified format from DocuWare version 6.10 (the directory levels with three-digit numbers are removed). A conversion of this format takes place in the upgrade to version 6.10.

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

## 9.7 Export-Import Synchronization

Two file cabinets can be synchronized with each other using DocuWare (documents and database). There are two ways of doing this:

- Synchronization as master and satellite (synchronization version 1) is managed through DocuWare Administration.
- 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>).

Jobs from one version are not shown in the management tool of the other version. Synchronization version 2 should preferably be used for new systems, as version 1 will no longer be available in the foreseeable future.

Both synchronization forms are executed by the Workflow Server.

## Synchronization as master and satellite (version 1)

The starting point for this synchronization form is always the source file cabinet, i.e. the master file cabinet. The destination is always a "satellite" file cabinet. This may be a DocuWare file cabinet on a laptop that needs to be able to work with the latest documents in a master file cabinet without having access to the network.

The master and satellite file cabinets can have different structures. You can assign the database fields when defining the workflow. All the documents or only a few selected documents can be copied from a file cabinet into the satellite file cabinet. Filters are used to limit exactly which documents are to be synchronized.

Basically, synchronization works in both directions: Documents in the master file cabinet can be transferred to the satellite file cabinet. In the other direction, changes to documents or new documents in the satellite file cabinet can be transferred to the master file cabinet. The documents in the satellite file cabinet are given their own DocID, which corresponds to the logic of the file cabinet. However they also receive the master file cabinet Doc ID, which makes synchronizing satellites with the master file cabinet easier.

Satellite archives have architectures with the following characteristics:

- There may be many satellite archives for one master.
- A satellite archive can itself be the master for other satellite archives, but it only ever has one master.

You can use full DocuWare functionality, including transferring any document, at both locations (that is, both the master and satellite file cabinet). If a document was modified on both sides between two synchronizations, the rules set up in the pre-defined workflow are applied. These specify exactly how to proceed with deleted, modified, and newly created documents on both sides. If changes have been made to the document and/or the index entry, the following rules may apply:

- Master overwrites satellite.
- Satellite overwrites master.
- Last modification overrides any others.
- No action, but add to log file (manual post-editing possible).

## Synchronization as equivalent file cabinets (version 2)

In this synchronization option, 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 is much faster in synchronization version 2 than in version 1. Filtering 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.

## 9.8 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 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 viewer based on HTML5 and JavaScript for the documents.

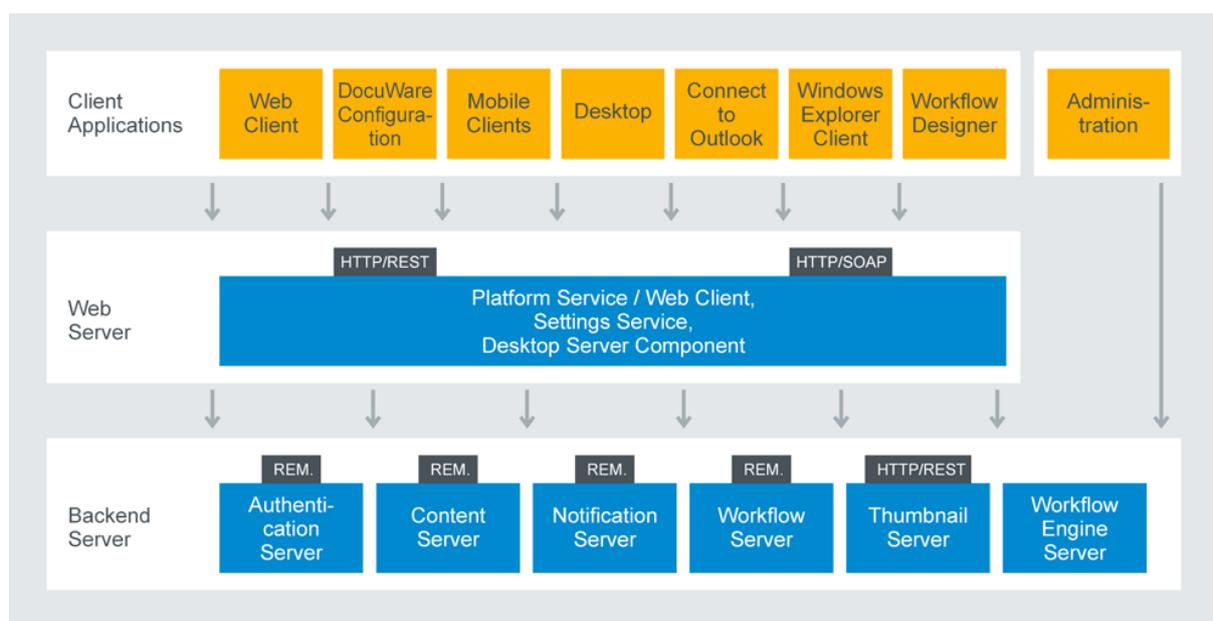
## 10 Communication Technologies

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 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 web servers for communication with client applications.



*Communication between the layers of client applications, Web Server, and backend server*

## 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	80/443	9000	9001	9002	9005	9006	8080	9012	443
	Local Desktop Service (HTTP/HTTPS)	Platform Service/Web Client (HTTP/HTTPS)	Settings Service/DocuWare Configuration (HTTP/HTTPS)	Desktop Server Component (HTTP/HTTPS)	Authentication Server (Remoting)	Content Server (Remoting)	Workflow Server (Remoting)	Notification Server (Remoting)	Thumbnail Server (Remoting)	Connect to SAP (HTTP/HTTPS)	Fulltext Server (HTTP)	Intelligent Indexing (HTTP/HTTPS)	
CLIENT APPLICATIONS													
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	X	X	X			
Connect to Ricoh (V2)		X	X										
Index Cleaner		X											
HTML5 Mobile Client		X											
Mobile Client		X											
DocuWare Hub		X											
PaperScan Client		X											
Windows Phone 7 Client		X											
Windows 8/RT 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 DocuWare Web Server and Backend Server, please make sure that all necessary communication ports are available for other server machines.

	SERVER											DATABASES							
	8090/8091	80/443	80/443	80/443	80/443	9000	9001	9002	9005	9006	8080	9012	443						
	Local Desktop Service (HTTP/HTTPS)	Platform Service/Web Client (HTTP/HTTPS)	Settings Service/DocuWare Configuration (HTTP/HTTPS)	Desktop Server Component (HTTP/HTTPS)	Authentication Server (Remoting)	Content Server (Remoting)	Workflow Server (Remoting)	Notification Server (Remoting)	Thumbnail Server (Remoting)	Connect to SAP (HTTP/HTTPS)	Fulltext Server (HTTP)	Intelligent Indexing (HTTP/HTTPS)	DWDATA	DWSYSTEM	DWLOGGING	DWTHUMBNAIL	DWNOTIFICATION	DWWWORFLOWENGINE	
<b>SERVER</b>																			
Platform Service / Web Client					X	X			X					X					X
Settings Service					X	X	X							X					
Desktop Server Component			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	X				
Content Server					X				X		X	X	X	X	X				
Workflow Server					X	X									X				
Notification Server					X									X			X		
Thumbnail Server					X											X			
Workflow Engine Server					X	X								X					X
Connect to SAP Server					X	X								X					
Connect to Mail Server		X	X																
Server Setup					X	X							X	X					X
Client Setup/DocuWare Update		X																	
<b>External DocuWare system via synchronization workflow or export</b>					X	X													

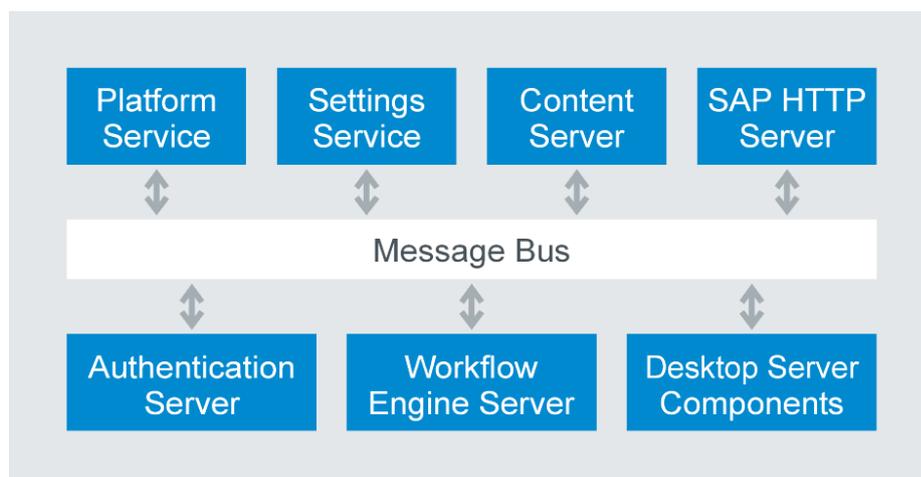
## 10.4 Message Bus

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 Web Servers and most backend servers*

## 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 47) in the "Communication Technologies" chapter.

### HTTPS (SSL)

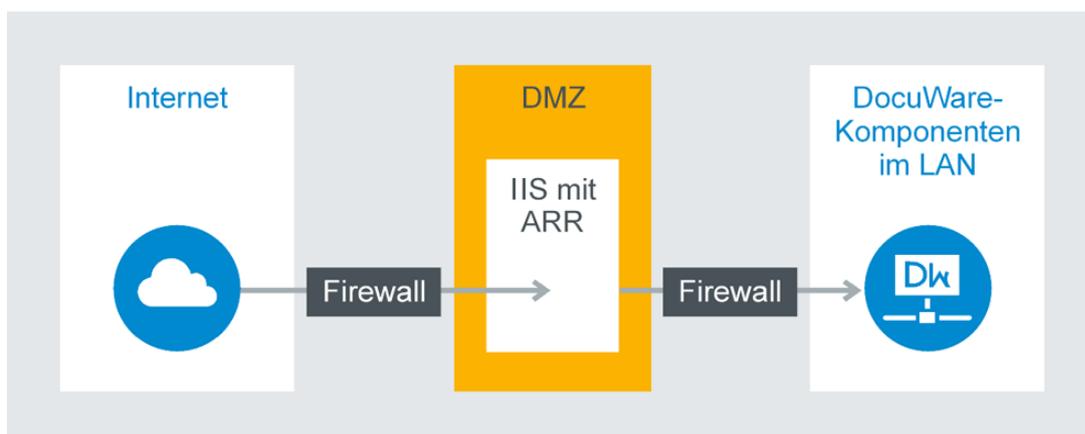
The DocuWare Web Client and the DocuWare Desktop Apps support all current HTTPS. To configure the DocuWare Web components for HTTPS (SSL), you must carry out the following steps in IIS manager:

- Import the certificate or certificates ("server certificate", "Import" action)
- Adapt the website link and make it accessible via SSL
- 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 62) 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-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 app
- Connect to SharePoint
- Connect to SAP
- Connect to Sharp, Version 2
- Connect to Toshiba, Version 2
- Connect to OKI
- Connect to Xerox

## 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

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 Client Setup to install, update, and uninstall all Web Servers and backend servers. The individual components are as follows:

- Platform Service and Web Client
- Settings Service
- Desktop Server Component
- DocuWare MFP und SharePoint Web Connectors
- Content Server
- Workflow Server
- Notification Server
- Thumbnail Server
- Workflow Engine Server
- Connect to SAP Server

Client applications:

- Administration
- Administration Power Tools

The Server Setup creates databases and updates these databases during a system upgrade. It creates configuration files for specific components as well as 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.

- 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 four 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.

#### Requirements and scaling forms

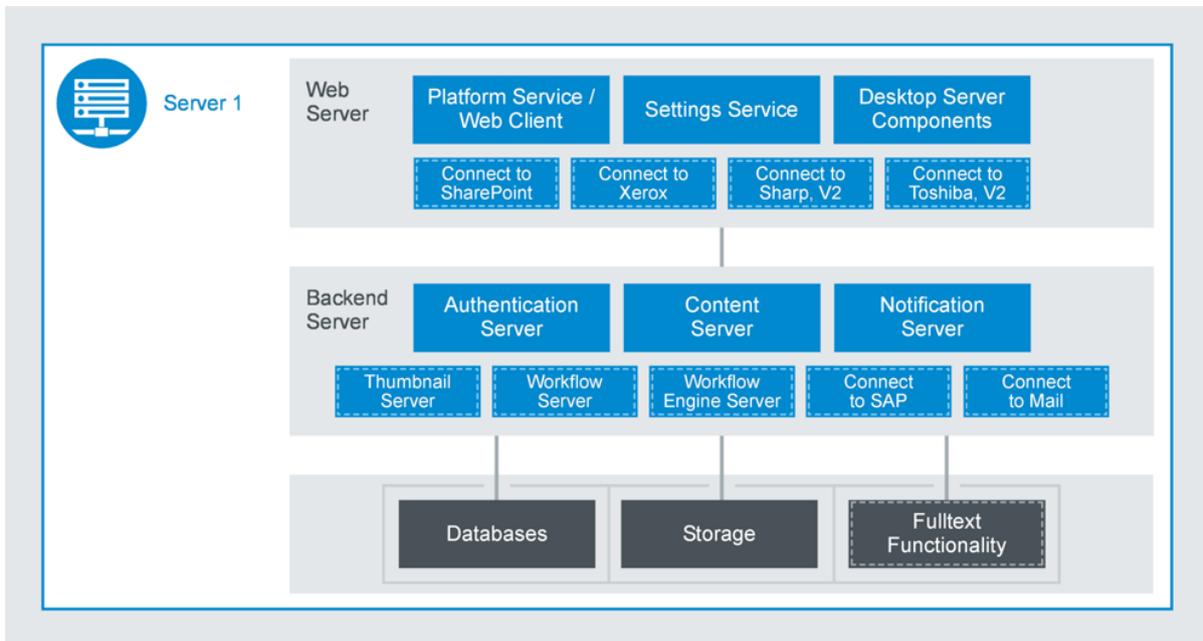
The following table gives an overview of the different requirements for the four recommended solutions.

	<b>S 1</b>	<b>S 2</b>	<b>S 3</b>	<b>S 4</b>
<b>Users active at the same time: 0-50</b>	X	X		
<b>Users active at the same time: 50-200</b>		X	X	X
<b>Fail-Safety</b>			X	X
<b>Multiple server locations</b>				X

*S = Scaling form*

### 14.1.1 Scaling Form 1

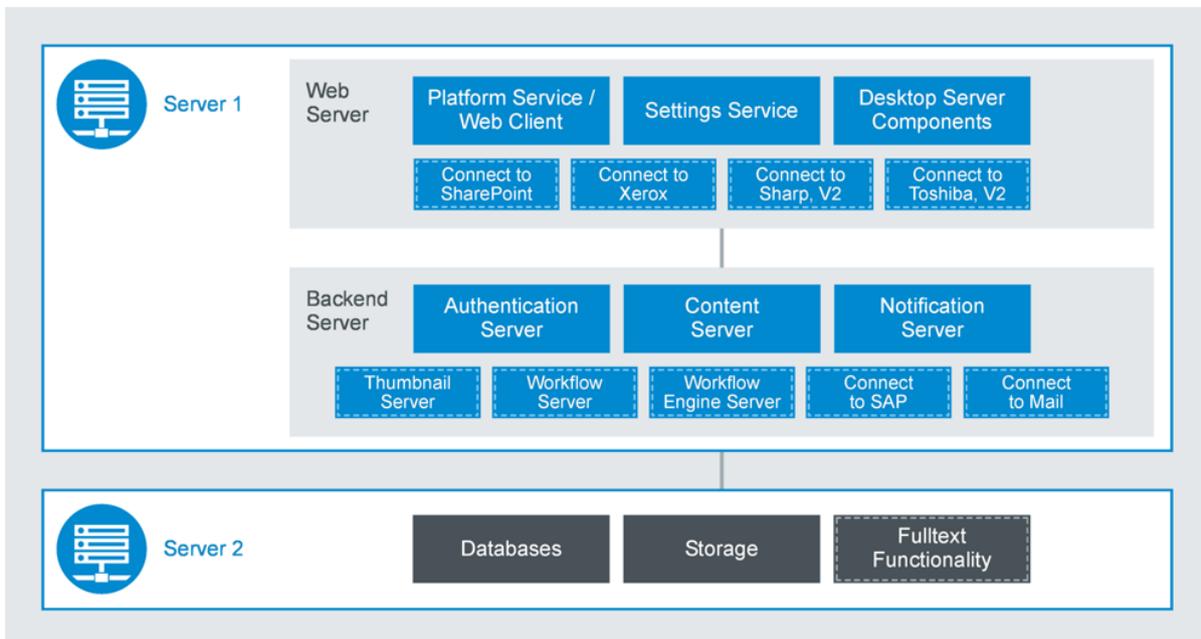
In this simplest form of scaling, the entire DocuWare system is installed on one server with the Web Servers, backend servers, databases, and storage locations, as well as the fulltext functionality.



*DocuWare system on a server*

### 14.1.2 Scaling Form 2

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

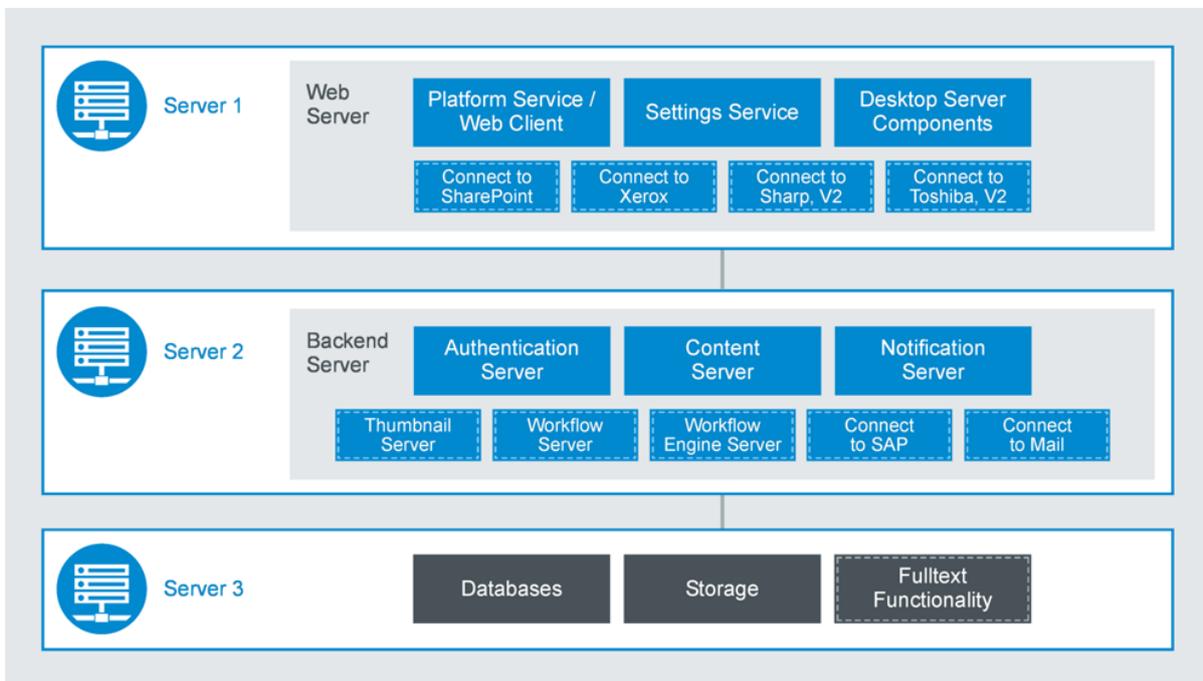


*DocuWare systems on two servers: Databases, fulltext functionality, and storage locations are outsourced*

### 14.1.3 Scaling Form 3

In this scaling form, the DocuWare system is installed on three different servers. The Web Servers are installed on the first server, the backend servers on the second, and the databases, storage locations, and fulltext functionality are installed on the third.

This scaling form provides for more load balancing, however not for sufficient fail-safety.



*DocuWare system with separate machines for the backend servers and for databases, fulltext functionality, and storage locations*

#### 14.1.4 Scaling Form 4

In this scaling form, the main server of DocuWare Web Server (in the IIS), i.e. the Platform Service/Web Client and the Settings Service, together with the background servers Authentication Server and Content Server, is installed on both a server 1 and a server 2. This means that server 1 and server 2 can be accessed in the same way.

The Desktop Server Components and the Settings Service, as well as all further backend servers, are installed on a server 3 as the Web Server. The databases, storage locations, and fulltext functionality are installed on server 4.

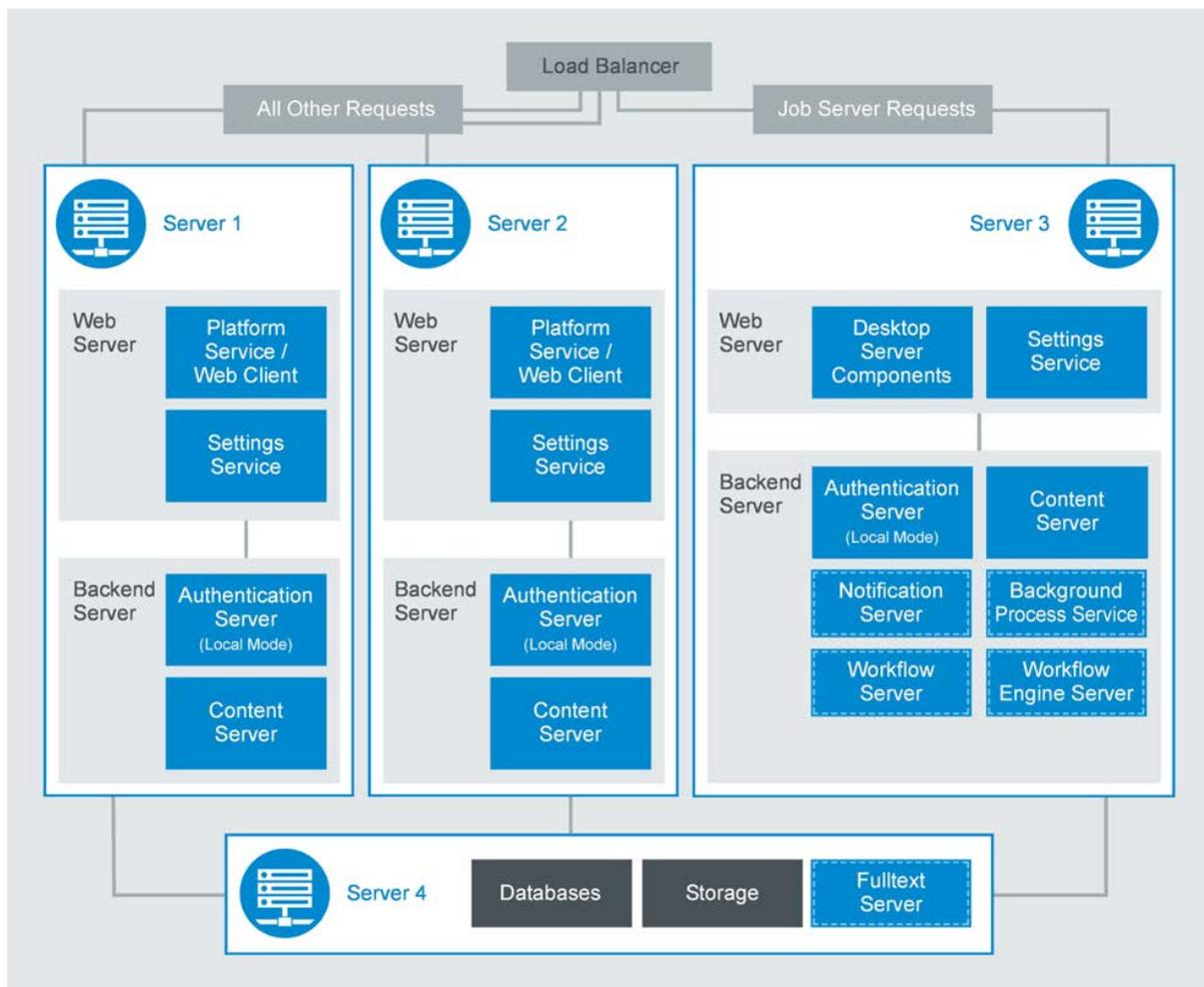
A load balancer is upstream from the whole DocuWare system. This can be installed on a separate machine (as in Application Request Routing or ARR) or the machines with IIS installed together take over the load balancing (as in Network Load Balancing Services or NLBS).

So that the servers 1-3 can act independently of each other and can also be restarted, all Authentication Servers run in "local mode." This means that load balancing for the Authentication Servers is almost switched off.

To activate local mode, in the configuration folder of each Authentication Server, set the value to *true* as follows:

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

With this setting, there is no longer direct communication between servers 1, 2, and 3 (except through the message bus).



*This scaling form requires four servers and a load balancer.*

## 14.2 Scaling Individual Components

In addition to the scaling of the entire DocuWare system, depending on the installation there is also the option to scale individual DocuWare components. You can see the various options in the table below. Their terms are explained first:

- **Multiple instances:** This component permits several instances to run in a system at the same time.
- **Cluster:** Instances divide the computing work among themselves. If an instance fails, the work is automatically sent to another cluster without the user knowing.
- **Automatic scaling:** If another instance is added to the cluster, the work is automatically distributed to this new instance without reconfiguration.
- **Automatic fail-safety:** If an instance fails, the work is automatically transferred to another instance.

COMPONENT / FUNCTION	MULTIPLE INSTANCES	CLUSTER	AUTOMATIC SCALING	AUTOMATIC FAIL-SAFETY
<b>Web Server</b>				
Platform/Web Client	Yes	Yes	Yes	Yes
DocuWare Configuration	Yes	Yes	Yes	Limited
Desktop Server Components	Yes	Yes (specific configuration and MSSQL server required)	Yes (specific configuration and MSSQL server required)	Yes (specific configuration and MSSQL server required)
SAP HTTP Server	Yes (only for separate content repositories)	No	No	No
<b>Web-based connectors</b>				
Connect to Xerox	Yes	No	No	No
Connect to OKI	Yes	No	No	No
Connect to Sharp, Version 2	Yes	No	No	No
Connect to Toshiba, Version 2	Yes	No	No	No

COMPONENT / FUNCTION	MULTIPLE INSTANCES	CLUSTER	AUTOMATIC SCALING	AUTOMATIC FAIL-SAFETY
<b>Backend server</b>				
Authentication Server	Yes	No	Yes	No
Content Server (access to documents)	Yes	Yes	Yes	Yes
Content Server (background tasks)	Yes	No	Yes	No
Workflow Server	Yes	No	No	No
Notification Server	Yes	Yes	Yes	Yes
Thumbnail Server	Yes	Yes	Yes	Yes
Workflow Engine Server	Yes	Yes	Yes	Yes
Imaging Workers	Yes (automatically instantiated)	Yes	Yes	No
Background Process Service	Yes	Yes	Yes	Yes
<b>Fulltext index, databases, storage locations</b>				
Fulltext Server (SolR)	Yes (only for separate file cabinets)	No	No	No
Databases	External solutions available	External solutions available	External solutions available	External solutions available
Document storage locations	External solutions available	External solutions available	External solutions available	External solutions available

## 14.3 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 33).

## 14.4 Load Balancing

Once you have installed your DocuWare system based on one of the four 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:

### Scenario 1

Many DocuWare users are accessing the system at the same time, e.g. conducting searches or processing tasks. In this case, you should choose the S4 scaling format (with load balancing) and increase the number of machines.

Three different technologies can be implemented for load balancing:

- *Application Request Routing (ARR)*: An ARR module is an Internet Information Services (IIS) module from Microsoft that is installed separately upstream from the DocuWare system. The ARR module is connected to all servers and routes requests onwards.
- *Network Load Balancing Services (NLBS)*: NLBS is a component of Windows Server. The idea is that various servers form a cluster, which enables them to take on load balancing.
- *Hardware Load Balancer*

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

### Scenario 2

Many predefined workflows are running at the same time or some workflows are creating a heavy load. These are workflows specified in DocuWare Administration, not workflows from the Workflow Manager module.

In this case, the workflow server should be installed multiple times.

### Scenario 3

Many documents that need to go through the fulltext are being filed at the same time, e.g. during a system migration.

In this case, several Content Servers should be installed that automatically split the load between them.

## 14.5 Availability and fail-safety

As mentioned in the sections on scaling individual components <http://help.docuware.com/en/#t62902> and load balancing (on page 62), most components needed for greater fail-safety are installed multiple times in each DocuWare system.

The Workflow Server is an exception. Several Workflow Servers can be installed, but the workflows are assigned to fixed individual Workflow Servers. If a Workflow Server fails, the workflows must either be manually configured for another server, or a copy of the Workflow Server is available to take over the tasks of the failed machine (switchover).

The easiest thing to do is to install these components together on one server and keep a copy of the machine, e.g. in virtual form. If the whole server fails, the copy must be started up as a replacement (switchover).

These limitations should be taken into account for workflows.

### 14.5.1 Geographically Dispersed Systems

If an organization has two or more locations, there are several different solutions for installing DocuWare. In the simplest case, all DocuWare servers are hosted in one location and users access it via their browser from any other location.

If servers need to be available at several locations, it must be checked whether a DocuWare system can be installed at each location. File cabinets can be synchronized to enable access to shared documents.

Nevertheless it is also possible to install DocuWare as a geographically dispersed system. In this solution, individual file cabinets are installed in geographically dispersed locations. This way, a VPN connection should be created between the servers, through which access may also be possible from all servers directly to all databases and storage locations. However, 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.