
White Paper Integration

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1 Introduction

This White Paper explains the options for integrating the DocuWare System into the existing IT environment of a company.

Due to its web-based development, DocuWare is generally open for every kind of digital infrastructure. For example, a browser-based client is available to allow the user access to the file cabinets from anywhere at any time.

DocuWare's integration options go even further. DocuWare functions can also be called up directly from a third-party application or from a device like a network scanner or tablet. This way, users have the ability to use DocuWare in their normal working environment.

In addition, DocuWare can use server resources for document management that are already available in the company. This automatically includes database synchronization, importing mail servers, and integrating an external user administration, among other things.

The different integration options are introduced in an overview in the first chapter. The following chapters explain the integration options in detail. It concludes with a chapter outlining the general requirements for installing DocuWare – such as servers and operation systems.

This White Paper addresses customers' technical employees, consulting companies, IT magazines, and distribution partners. It assumes a certain level of technical knowledge about the structure of software applications, ideally of document management systems. Detailed knowledge of current or previous DocuWare systems is not required. The reader gets an idea to what extent customizations may be required to ensure maximum return on investment and minimum administrative costs (total cost of ownership).

- Simple URL integration

Special modules: Special modules connect a specific software or specific device to DocuWare and enhance these components with numerous document management functions. These special modules only work in combination with that one component.

- Windows Explorer Client app
- Connect to Outlook app
- Connect to SharePoint
- Connect to SAP
- Connect to MFP (inc. Sharp, Toshiba, Xerox, OKI, among others)

Programming: The integration options listed above are available when DocuWare is set-up or when the corresponding module is installed. Programming can also be used to integrate individual DocuWare resources and create individual programs that provide extended DocuWare functionality in any third-party applications.

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

2.1 Integration Options by Component

The following integration options are available for individual components. They are described in detail in the following chapters.

Multifunction printers (MFPs)

All multifunction printers	DocuWare Import/monitored folder	Automatically import documents from the file system
Selected MFPs from Toshiba, Sharp, and OKI, etc.	Connect to ...	Index and search documents directly in the device

Desktop scanner

Scanner with TWAIN or WIA interface	DocuWare Scan app	Import scanned documents
All scanners	Watched folder	Automatically import documents from the file system

Mobile devices

Smartphones and tablets with iOS, Windows 8,	DocuWare Mobile (HTML 5-Client)	Search in DocuWare file cabinets on mobile devices
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Android, and Blackberry		
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User software

Nearly every software, including Word, financial accounting, etc.	URL integration	Integrates parts of the Web Client
	Virtual printer driver	Can import printed documents, optionally also using control instructions in Control.
	Smart Connect app	Simplifies searching and indexing from the application
	Watched folder	Documents are automatically imported from the file system
	Programming	Integrates DocuWare resources into third-party programs
Windows Explorer	Windows Explorer Client app	Integrates file cabinets as a folder in Windows Explorer
Microsoft Outlook	Connect to Outlook app	Integrates DocuWare into the Outlook interface

Business solutions

SAP	Connect to SAP special module	Searching and storing in DocuWare
Microsoft SharePoint	Connect to SharePoint special module	Integration into SharePoint search/storage using Records Center
Other software	Programming	Integrates DocuWare resources into third-party programs

Mail server

IMAP-compatible servers (Gmail), Exchange Servers	Connect to Mail	Automatically imports emails from IMAP-compatible servers and Exchange Servers
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External databases

MySQL, Oracle, MSSQL	Autoindex DocuWare module	Data reconciliation with an SQL or Oracle database
MySQL, Oracle, MSSQL	Database connection	Integrates external select lists

External user administration

Windows Active Directory, LDAP	Synchronization workflow	Synchronizes DocuWare users with external user administration
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3 Multifunction Peripherals and Scanners

Connecting desktop and network scanners to DocuWare makes importing documents easier, as documents are directly imported when they are scanned and – depending on the integration option – also indexed and filed in the file cabinet.

3.1 Watched Folders

Large amounts of documents can be conveniently and automatically imported into DocuWare using watched folders. A folder in the network is specified for monitoring using the DocuWare Import app. The import module loads incoming documents into the DocuWare document trays or file cabinets and processes them using a predefined configuration. This allows you to automatically index documents, select the storage format, or set electronic signatures, and more.

The DocuWare Import app is made available by DocuWare Desktop Apps. To be able to use the functionality of the watched folder, the "DocuWare Import" license is required.

3.2 DocuWare Scan App

The DocuWare Scan app is primarily suited for desktop scanners. The app accesses the TWAIN or WIA driver and controls the scan with settings such as contrast, resolution, and orientation. In a second step, the Scan app imports documents into the respective user's inbox or a file cabinet. If the app uses an Import configuration, an Import license is not required.

The Scan app is made available by DocuWare Desktop Apps.

3.3 Connector Modules

DocuWare offers special modules for certain multifunction printers (MFPs) that can be used to call up archiving functions on the printer. This includes among other things store dialogs for indexing or search dialogs that can be used to load documents to be printed from the file cabinet directly on the MFP.

This is enabled by an embedded Web browser on the multifunction printer. It uses HTTP to communicate with the DocuWare connector module, an ASP.NET application that runs within Microsoft IIS (Internet Information Services). To communicate with the DocuWare system, the connector module uses DocuWare's GAPI interface (General Application Programming Interface). The General Application Programming Interface directly accesses DocuWare servers using TCP/IP.

Devices by Sharp with OSA extension, or devices by Toshiba with e-BRIDGE OpenPlatform, as well as identically constructed printers by OKI have their own modules. There are special regulations regarding selected printers from HP, Kyocera, and MFPs operated by Ricoh Global Scan NZ or eCopy ShareScan V5 SP4/Quick Connect. These printers generate scan files and XML files with information on the scanned documents. The DocuWare Upload Service reads these XML files and uses the content as index words for the documents using the corresponding connector module. In this way documents can also be scanned to a DocuWare file cabinet directly from these printers. However, it is not possible to search directly in DocuWare file cabinets using these printers.

You can find an overview of versions of supported printers in the **DocuWare Knowledge Center** (<http://help.docuware.com/en/##59877>).

4 User Software

Employees use different software to create and edit documents within a company, such as Microsoft Office programs or financial accounting software. In contrast to complex business solutions like SharePoint or SAP, this "user software" is usually installed locally. The existing integration options make DocuWare functions available to the user by integrating them as buttons or menus in the local application. Most integration options can be used with nearly every kind of software. There is a special module for using with MS Outlook and one for Windows Explorer. It is also possible to integrate DocuWare resources into software via programming. However this kind of integration is more complicated, and is therefore described in its own chapter.

4.1 Watched Folders

The user stores the document from a software program in a folder monitored by the DocuWare Import app. The module imports and processes incoming documents as specified in the configuration. For more information on watched folders, see Chapter 2.1.

4.2 Virtual Printer Driver

The DocuWare Printer module sets up a virtual printer driver under Windows that can be used to automatically store and index documents in DocuWare at the same time as the print command is executed. For documents with the same structure, such as delivery notes and invoices, this occurs completely automatically.

First, the user selects DocuWare Printer from the printer list in the third-party application and enters the print command. An image is created from the printing data flow that is faithful to the original and corresponds to the physical printout. The document is stored in the PDF/A long-term archiving format.

The user specifies any further processing of the new documents in a printer configuration. This can be used to split documents after a certain number of pages, for example, or to create templates like company letterheads. DocuWare Printer recognizes the type of document using individual configurations, and can retrieve central terms as index data for systematic storage.

You can add or modify the processing of your documents directly from the application using DocuWare Printer with the "DocuWare Control" font. To do this, invisible text commands are written on documents or document templates. The commands are run if the document concerned is imported into DocuWare. The user can select a complete printer configuration to be run for the relevant documents by text command. Alternatively, individual commands can be applied according to DocuWare Printer functionalities.

The DocuWare Printer application is made available by DocuWare Desktop Apps. The DWControl (DWControl.ttf) font is installed automatically on the client computer when DocuWare Desktop Apps is installed.

4.3 Smart Connect

Smart Connect simplifies the indexing and search functions in DocuWare. The app reads words from the user interface of a third-party application and transfers them to the DocuWare Client. Here the words are used to search for documents already archived, or even as index words for documents to be archived or already archived. Search and index words do not have to be entered manually.

Smart Connect is provided by DocuWare Desktop Apps. To be able to use DocuWare Desktop Apps, the associated components must be installed on the server.

More information on **Smart Connect** <http://pub.docuware.com/en/smart-connect#index>

4.4 Result List or Archived Document as Link

Documents archived in DocuWare or a result list can be added as a link or sent via email. The link opens the resource directly from the application in Web Client or in the Web Client Viewer. To create the link, simply click in the DocuWare Client.

4.5 Connect to Outlook

Microsoft Outlook has its own app: Connect to Outlook is an add-in that uses MAPI (Messaging Application Programming Interface) for searching and researching in DocuWare from Outlook by granting access to emails and inboxes, for example. Connect to Outlook is integrated into the start bar in Outlook, and also has its own menu bar. Storage and search configurations can also be called up using email context menus.

With quick search, the user can perform a search in DocuWare from a selected email. It uses a previously defined configuration that contains the search criteria. In this way, for example, all archived emails received from the same sender over the last 30 days can be shown from a single email with one click of a button. The emails found are displayed in a DocuWare result list in Outlook.

For storage, the email is marked and the corresponding configuration selected in the additional DocuWare menu bar. Such a configuration specifies, among other things, in which file cabinet and with which index words the email is archived.

More information on **Connect to Outlook** <http://pub.docuware.com/en/connect-to-outlook>

4.6 Windows Explorer Client

Windows Explorer also has its very own app: The DocuWare Windows Explorer Client integrates a DocuWare node in the Windows Explorer folder structure. The individual file cabinets appear in the tree structure with the index field entries from DocuWare represented as folder and document name. Documents can be stored, opened, copied, or moved by navigating in the Windows folder structure. When storing in Windows Explorer Client, the new document receives the folders as index words.

The programs installed under Windows like MS Office applications can also be accessed using the file cabinet structure shown in Windows Explorer. With "Save as..." in MS Word or

MS Excel, the desired file cabinets and folders can be selected in Windows as the user is accustomed to doing. New documents are thus archived in DocuWare, and the folders and subfolders are saved as index words. Documents that are already archived can be opened in the exact same way.

Windows Explorer Client is included with all versions of DocuWare.

5 Business Solutions

DocuWare expands complex business solutions such as SAP or Microsoft SharePoint to include document management and audit-proof archiving. This way, users can continue to work as usual in their trusted environment. The connection to DocuWare for research and storage runs in the background.

5.1 SAP

SAP provides a standardized interface, "Archive Link," which the DocuWare module Connect to SAP uses to connect to SAP applications and modules. DocuWare Connect to SAP is SAP-certified for integration via SAP NetWeaver.

Connect to SAP comprises the SAP HTTP server and SAP barcode transfer. The SAP HTTP server communicates with the content repositories using ArchiveLink, stores the documents in DocuWare, and requests documents to display. So that SAP and DocuWare can both identify incoming documents such as incoming invoices, barcodes function as a common reference. The SAP barcode transfer supplies SAP with tables containing the barcodes of archived documents. The tables contain both the document barcodes and the DocIDs. This creates links between SAP business objects and DocuWare documents that you can use to access documents archived in DocuWare from SAP. The barcode table is created by a predefined workflow and transferred to SAP by RFC (Remote Function Calls).

Since companies have different requirements concerning storage processes, SAP has defined different scenarios like "Early storage" or "Late storage," all of which are supported by DocuWare. It is also possible to scan and (pre)index documents from an external service provider. The documents can then be imported as "Batch" via the ArchiveLink interface in DocuWare. In addition, Connect to SAP supports the storage of print lists with links and archive data from SAP data archiving (REO data).

If a link between a document in the DocuWare file cabinet and the associated SAP business object (e.g. invoice) was created once, the SAP user can directly access the original document using the usual SAP transactions, that is, directly on the SAP business object via the service functions for object – attachment list.

Outside of SAP, each authorized DocuWare client can access documents from SAP that have been archived in DocuWare. Since no meaningful index criteria are normally available for sensible searching after storage in DocuWare, these criteria must be added to the file cabinet. The index criteria are transmitted to DocuWare from SAP databases. Application-specific ABAP programs are created for this purpose, which extract the index criteria and write them to a transfer file. DocuWare can read this file and copy the data as additional index words to the respective document in the database of the DocuWare file cabinet with the Autoindex module. This post-indexing allows users to search in a file cabinet independently from SAP.

More information on **Connect to SAP** <http://pub.docuware.com/en/connect-to-sap>

5.2 Microsoft SharePoint

The DocuWare Connect to SharePoint module consists of the "Records Center," "Search Federation Server," and administration components. The components are installed using a "Connect to SharePoint Web Services" Web instance in the IIS and can be called up by URL. The URLs are recorded in the SharePoint Central Administration for search and storage.

A document can be copied or moved in its original format from SharePoint to DocuWare. When moving a document, it is possible to leave behind a link to it in SharePoint. Connect to SharePoint automatically indexes documents during storage.

Routing types in Connect to SharePoint's administration are used to link to databases. In SharePoint, each document is assigned a content type. A DocuWare file cabinet is assigned to several SharePoint content types using a routing type so that a document is linked to a file cabinet. Indexing also takes place using the content type. One of the characteristics of a content type is a string to index fields that can also be linked with DocuWare file cabinet fields in the routing type.

With Connect to SharePoint, DocuWare acts from the perspective of SharePoint as an integrated search source. This is called a Result Source in SharePoint terminology. Using "Open Search" you can look for matching documents in the full text and in the index data of DocuWare file cabinets. A configurable results area in SharePoint displays the results from the DocuWare file cabinets separately and also enables you to display the documents directly in DocuWare Web Client.

The assigned authorizations are taken into account when searching and displaying items so that there is no unauthorized access to documents.

The file cabinet approval for the SharePoint search and search configuration also takes place in the Connect to SharePoint administration.

More information on **Connect to SharePoint** <http://pub.docuware.com/en/connect-to-sharepoint>

6 Programming

It is possible to integrate DocuWare resources into a wide array of environments and applications using programming. Due to its complexity, this subject is covered later in its own chapter. In addition, index entries with customer validation libraries can be checked. It is also possible for clients to write their own applications for using DocuWare. These can then be certified by DocuWare.

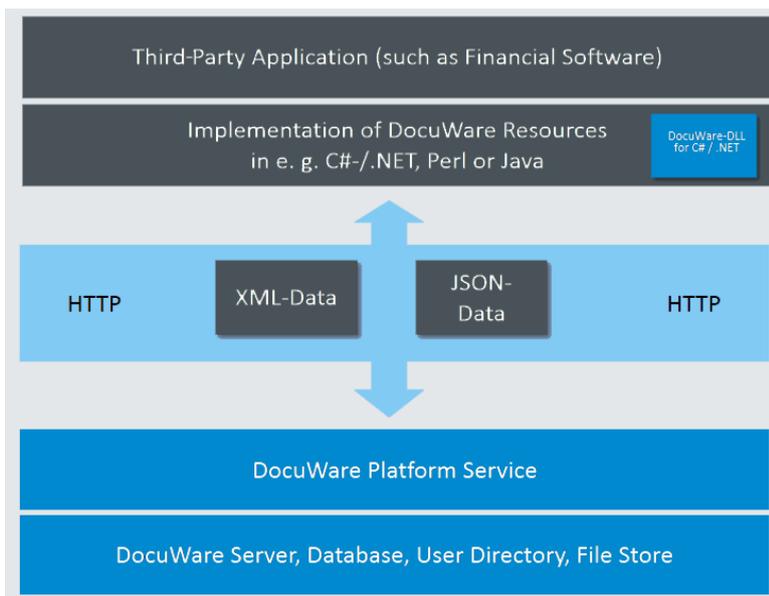
6.1 URL Integration

Individual DocuWare elements can be integrated into any program using a URL. For this purpose, the standard URL for DocuWare is extended to include more parameters. This can be done manually or with the aid of the UrlCreator tool, which also handles coding and encrypting the URLs. Task list, result list, document, download, version overview, or search dialog are all available as integration types. The completed URL can also be integrated into a third-party application if desired. The resource opens in a browser or browser control element as usual.

Information on the **URL Integration Manual** <http://help.docuware.com/en/#t60395>

6.2 Software Development KIT (Platform Service)

Software solutions for customer-specific tasks are often created on different platforms using different programming languages. DocuWare's Platform Service provides a central programming interface for all development environments. Resources such as DocuWare file cabinets, task lists, or search queries can be used on a platform-independent basis via XML or JSON in the program code of a third-party application. The task list can be integrated into whatever financial accounting software the customer uses. All resources also available to the Web Client can be controlled and retrieved. In contrast to URL integration, however, the resource is called up without integration in the Web Client components. The user interface must also be individually developed as appropriate.



Resources are embedded through XML or JSON into the third-party application and transferred by HTTP.

The Platform Service is based on REST architecture. One of the principles of REST is that all resources have a URL. This means that data can be retrieved independently of the device used – as long as it's HTTP-compatible – and independently of the operating system.

6.3 Validating Index Entries

The validity of the index values assigned to a document is crucial if they are to be retrieved within a document management system. To identify typing errors or incorrect assignments at input, you are advised to run validations. At field level this can be done from the field entry mask, which specifies which values are allowed. However, as soon as dependencies between fields need to be taken into account, more complex check routines are required. Here DocuWare provides the option to carry out plausibility checks on server index entries using customer-specific validation libraries.

Whenever an index entry is written or updated, the system calls the customer-specific validation library and validates the entries. The user still has the opportunity to correct his or her entries. The validations apply to all file cabinets and index changes, including cases where setting a stamp causes index entries to change. For example, a field validation can check whether a date is older than the current date or that a value does not exceed a certain limit. An index validation might use an external data source to check, for example, whether a customer number entered actually matches the customer name.

The plausibility check is implemented using Microsoft .NET DLLs that can contain any number of checks. DLLs are program parts that are used by multiple applications and which are therefore only stored and maintained once outside the application. These are written by a sales partner or by the customer themselves and can therefore be tailored to users' requirements. Both entries in a field (field validation) and entries in combined fields (index data validation) can be checked.

DocuWare supplies one DLL with base classes. The partner/customer then uses this DLL to create their own specific DLLs. These DLLs are registered in DocuWare Administration and are allocated to file cabinets and/or index fields.

6.4 Certifying Customer-Specific Modules

With its open architecture, DocuWare enables third parties to adapt their components to the DocuWare system or to optimize them for use with it. Any supplier of complementary hardware and software for DocuWare can have their products checked and certified by DocuWare Quality Assurance. Certification involves testing the product's functional capability in combination with DocuWare, the installation routines, and the documentation. Which products are certified can be found on the DocuWare Web site under Products and Solutions "Certified Products" <http://www.docuware.com/node/7348?region=AMRS&language=en>.

7 Mail Servers

The Connect to Mail module can monitor mail servers and automatically import emails into DocuWare. The transmission protocol IMAP (Gmail) is supported. Emails are imported securely via SSL. The connection to Gmail is stored as the default.

Connect to Mail also supports Microsoft Exchange Server 2007 SP1, 2010, and 2013. In addition, the module supports self-signed certificates. The Exchange Server is accessed using an Exchange Impersonation user so that it is not necessary to store individual passwords of domain users.

Configurations with criteria for importing and indexing are created for Connect to Mail.

More information on **Connect to Mail** (<http://pub.docuware.com/de/connect-to-mail>)

8 Reconciliation with External Databases

Many of the documents you need to archive will already have existing categorization criteria and search words in the company's IT system. DocuWare can use the existing database with two methods: Autoindex and external select lists.

8.1 External Select List

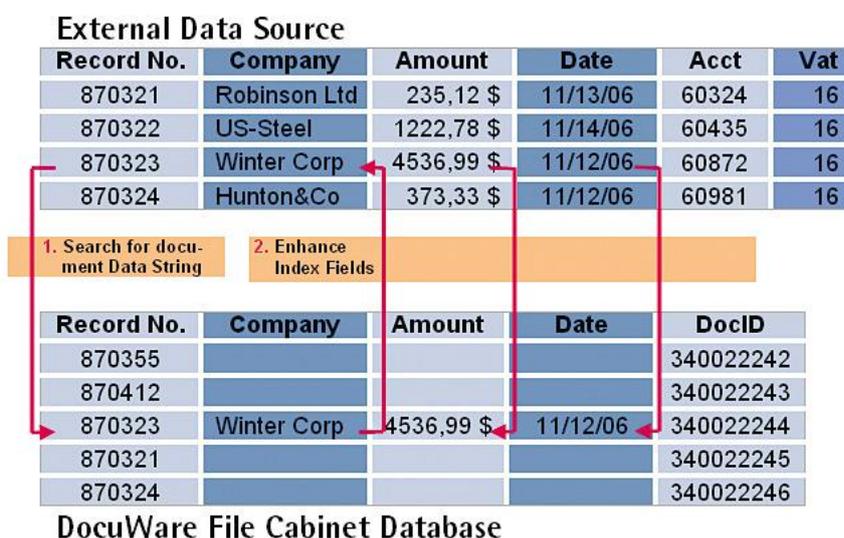
If an external list is integrated into DocuWare, its entries are available as field entries for searching or storage. This way, the user can directly transfer customer names from the CRM to the store dialog without the risk of spelling something incorrectly.

An external select list can have various sources, from an SQL table to a simple text file. Data is integrated using a database connection specified in DocuWare Administration. DocuWare can store the external select list as fixed or dynamic. A fixed list is stored internally. Access to the list will then be very fast, but the list will not be updated automatically. As a dynamic list, DocuWare always re-accesses the external data source to stay up-to-date.

8.2 Autoindex

DocuWare can use external data as index words and add archived documents as index words using the Autoindex license. The index data cannot be entered manually. Autoindex preparation also provides good services for research. Autoindex reconciles the external database with the documents in the DocuWare file cabinet so that related documents can be displayed.

The data records are assigned based on a match code that must appear in both the external database and the DocuWare file cabinet as an index word. Autoindex uses the match code of a document in the DocuWare file cabinet in order to find the related data record in the external database. Elements such as company or invoice amount are transferred into DocuWare as index words from this data record.



Autoindex functionality: A document is archived in DocuWare. The document number is defined as the match code here. As soon as the Autoindex workflow is started, DocuWare searches for this match code in the external data source and transfers the remaining fields of the data record such as company, amount, and date into the file cabinet.

Autoindex supports a range of formats for tabular data. This includes both database tables and views and files with fixed field lengths or delimiters, e.g. Comma Separated Values (CSV) or DocuWare file cabinets. It is also possible to access external database tables using SQL commands.

More information about **Autoindex** <http://pub.docuware.com/en/autoindex>.

9 Smartphones and Tablets

9.1 DocuWare Mobile

The DocuWare Mobile app is available for using DocuWare on mobile devices with iOS, Windows 8, or Android. This makes it possible to search DocuWare file cabinets, display task lists, stamp things, or edit documents from a smartphone or tablet. The user's authorized search dialogs and task lists are shown.

The DocuWare Platform Service is the interface for mobile access. On all devices with iOS like iPad or iPhone, the app is installed via the iTunes Store. For users with devices with Windows 8, the app is available in the Windows App Store. In contrast, DocuWare provides a server installation for devices with Android and Blackberry, that users can access via URL.

More information on *DocuWare Mobile* <http://pub.docuware.com/en/docuware-mobile>

9.2 PaperScan

To scan documents from a mobile device, DocuWare offers the PaperScan app for iOS and Android. PaperScan takes the photo automatically when the document is in focus. In this way, easily readable documents are compatible with further processing such as OCR or Intelligent Indexing. PaperScan can upload the scans to a DocuWare file cabinet activated for mobile use.

More info about *PaperScan* <http://www.paperscanapp.com>

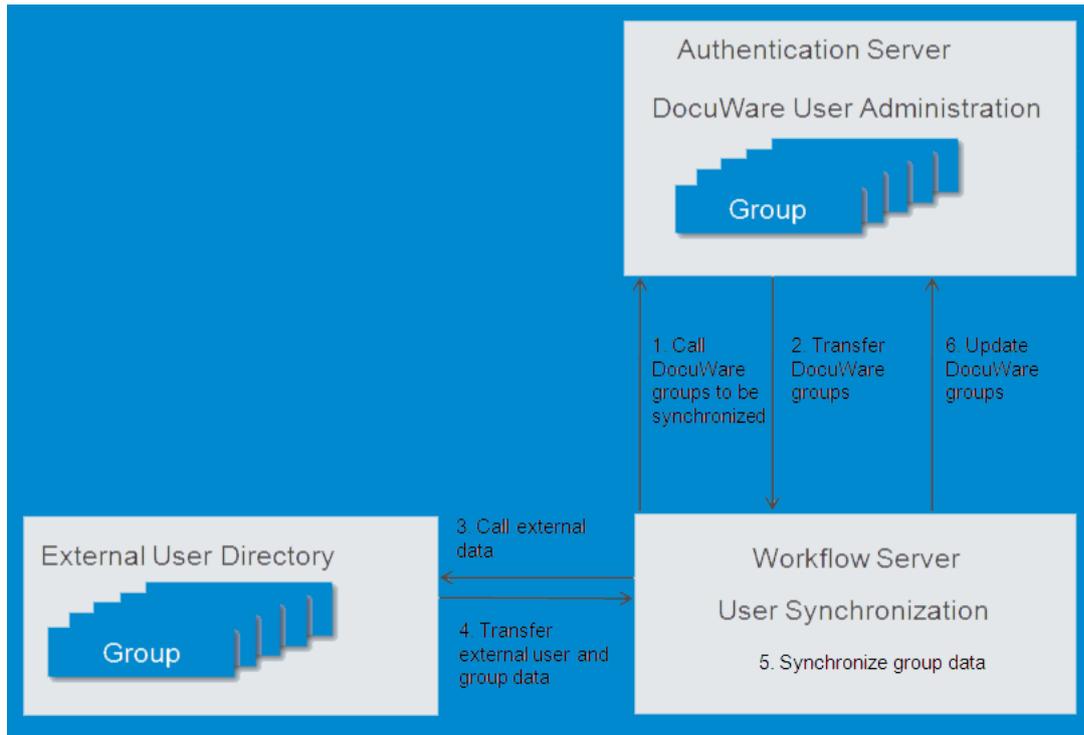
10 External User Administration

As a company-wide infrastructure, a file cabinet system can contain sensitive information that must not be made uniformly available to all employees. That means you need user administration, but this requires the authorized user to supply an ID (authentication), which can be seen as a nuisance in view of the number of systems people have to deal with.

That's why DocuWare allows synchronization with external user directories. External users can be Windows users and groups (with or without Active Directory), or users and groups in other directories which support the LDAP protocol. New users or changes in the group assignments in the external directories are automatically applied to the DocuWare directory. The synchronization of external user directories with DocuWare users and groups is done by the Workflow server.

Rights assignment and the user-specific settings (e.g. menu settings) must still be defined within DocuWare, because the external directory cannot know the DocuWare resources. You can choose from the following functions:

- Use of Windows directories (incl. Active Directory) or external directories based on the LDSP standard
- Import and continual synchronization in the event of changes to users and groups in external directory services with those in the DocuWare system
- Optional aggregation of users into groups
- Direct assignment of individual rights, profiles, and roles to individual users
- Assignment of roles to groups



Function of user synchronization

The technical information for the synchronization workflow is entered by the DocuWare system administrator. The time at which synchronization takes place for a particular DocuWare organization is determined by the DocuWare organization administrator.

11 Embedding the DocuWare System in Existing IT Infrastructure

This chapter creates an overview of the requirements for installing DocuWare in an existing IT system. This includes operating system, database server, and storage systems.

11.1 Operating Systems and Environments

The DocuWare servers are implemented based on Microsoft architecture. However, DocuWare can be integrated with infrastructures based on other technical architectures, so that DocuWare file cabinets can also be used as a "black box" in non-Microsoft environments and interact with these environments. This of course also applies for Linux systems, which are often used at server level.

Thanks to the ability of DocuWare servers to interact with other systems via defined protocols and interfaces, functionalities required can be realized in non-Microsoft environments. Functionalities that can be based on other architectures but which can be used by DocuWare include:

- SAP R/3 or NetWeaver for the connection with CONNECT to SAP
- Other third-party applications from which documents and data are transferred from a file system or Web services and/or for which documents and data are made available via these routes
- Supported database systems for DocuWare (MySQL, Oracle, MS SQL)
- Any ODBC databases for indexing and database update
- LDAP user administration

Documents can in principle be accessed from the Web Client in any supported browser and on any operating system – including Linux and MacOS. In Linux and non-Microsoft environments some functions are however restricted; here documents cannot be sent directly from Web Client. The full functionality is available in Microsoft Internet Explorer, Google Chrome, and Mozilla Firefox for Windows.

However, the desktop apps may only be installed in Windows.

11.2 Database Server

DocuWare must have a relational database to store its own settings and for index data. This can be a dedicated database for DocuWare only. However, many companies already have a central database server which will also have to be used by DocuWare.

One easy method of integrating DocuWare is with the Microsoft SQL Server. In addition to Microsoft SQL, MySQL and Oracle are supported for the DocuWare server.

MySQL and Oracle can be used on other operating systems like SUN or Linux. Other databases (e.g. DB2 and Informix) cannot be used for storage but can be addressed via an ODBC connection.

11.3 Storage

DocuWare file cabinets store documents throughout their life cycle: from the moment they are imported or created, through editing and processing to long-term archiving.

Audit compliance in Germany

DocuWare software complies with the standards of archiving in a tamper-proof format, as stipulated in the German Civil Code.

More on audit compliance can be found in the corresponding *White Paper*
http://www.docuware.com/main.asp?sig=dld&lan=de&loc=de&dwdblan=german&dwdbkat=do*&dwdbname=white+paper+rechtssicheres+scannern

Protection of the physical document storage varies depending on company structure and is accordingly liable to different requirements. At DocuWare, all current storage technologies are supported: ranging from simple hard disk and RAID systems, DVD, and WORM (Write Once Read Many) in manual or Jukebox operation, through Storage Area Network (SAN) solutions and virtual WORMs to Content Addressed Storage (CAS).

The use and integration of the main storage options are discussed briefly below.

11.3.1 Content Addressed Storage

Identical copies of documents can frequently arise in different directories, and a simple archiving procedure would archive these documents a multiple number of times. Storage systems that use the Content Addressed Storage (CAS) procedure ensure that documents with identical content are physically stored only once.

CAS is a special storage procedure for hard disks that enables direct access to individual objects whilst simultaneously ensuring that the stored information cannot be modified. With the Content-Addressed-Storage system stored information is accessed not via its location on the physical medium but via the content of the information. Via a hash procedure, as used in signatures, a "fingerprint" is created that represents the content and is used for addressing. The procedure is therefore suitable for data that should not be modified.

This fixed content relates to documents that are written once to the storage system and then never modified, e.g. business documents, receipts, billing data, etc. in electronic form. These systems are therefore an ideal solution for use in DMS systems with the requirement these have for tamper-proof archiving. With this procedure, the write-once property referred to here (which can be written once only), which in terms of hardware was previously possible only in connection with optical storage disks, is created on the software side.

Nowadays CAS systems are offered by several leading manufacturers. Since the integration and use of the full functionality may require the modification of manufacturer-specific interfaces, the integration option in DocuWare must be checked on a case-by-case basis. For some time now, DocuWare has supported systems from EMC, the leading provider.

11.3.2 Other Hard Disk-Based Storage Systems

Similar functionality to that offered by CAS can be found in the storage solutions of other companies. Special software is used to generate WORM (Write Once Read Many) volumes on hard disks.

To preclude attempts at modification or deletion even by the system administrator, the software prevents all write-delete activities in the hard disk-based storage system. Storage periods protect the database in the long term, although they can be limited in time. The WORM status expires at the end of the predefined expiration period.

These solutions extend the benefits of DocuWare, e.g. the archiving of different document types from a range of sources in a central document pool, with the high access speed of a hard disk, and combine them with the security of a WORM medium.

DocuWare supports seamless integration with the SnapLock software from storage provider NetApp. NetApp storage can then be selected as a document storage location directly from within DocuWare. Other companies also offer certified interfaces to their hard disk-based storage systems from DocuWare.

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