PiSA sales documentation:

Workgroup Fileserver

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Created by: PiSA sales GmbH
D-14050 Berlin, Fredericiastrasse 17–19
Tel.: + 49 (0)30/81 07 00 – 00
Fax: + 49 (0)30/81 07 00 – 99
E-mail: info@pisasales.de

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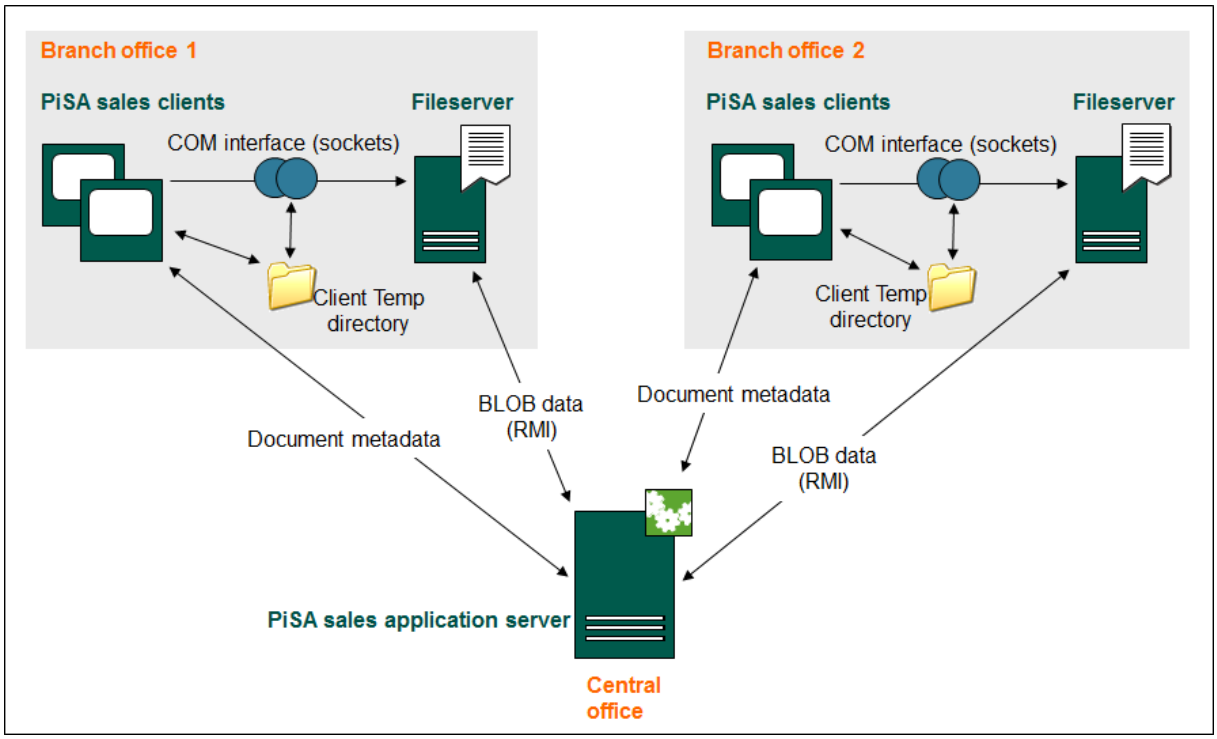
1. Workgroup Fileserver

1.1 Scenario

Employees in offices work with PiSA sales clients and are connected via VPN to the central application server. Checking-in of documents directly on the central server is subject to poor performance (due to the usually low upstreams of DSL connections). Workgroup Fileserver functionality is provided to optimize performance.



The communication between the central office and fileservers is realized using web services.

Each branch office works with a fileserver in the LAN (Derby). It stores all documents that are viewed, newly created, or edited by employees of the branch office. In addition, documents are stored on the fileserver that have been distributed from the central office to the branch office. The document inventory on the fileserver is a subset of the total portfolio managed by the application server.

The transfer of newly created or edited documents from the fileserver to the application server occurs asynchronously immediately after checking-in/saving of documents. This ensures that the user does not have to wait for completion of the file transfer. He can continue to work with the system immediately.

Synchronous operation is also possible, in which the changed documents are transferred to the application server in a batch process (such as once per night). This saves bandwidth during working hours and is useful when documents are edited only in a branch office.

The comparison of different versions of documents between the fileserver and the application server is initiated by a batch process from the fileserver (cyclically, that is, once every night). The application server retrieves the BLOB data records of all documents stored on the fileserver. The application server compares these data records with the centrally stored BLOB data records. Depending on the result of the comparison, recent documents are transferred to the fileserver or documents are deleted on the fileserver.

Document access is always controlled by the document status managed by the application server. This central access management ensures across branch offices that employees cannot access documents that are being edited or whose transfer is not yet complete. However, it is possible to view or edit a document that has been modified within the same branch office and is still in the process of being transferred.

Errors that occurred during the transfer of the current document version from the fileserver to the application server (such as through aborting of the transmission) are handled during the cyclical batch process.

1.2 Central management objects (PiSA sales application server)

1.2.1 Fileserver management table

A fileserver management table is needed. It stores the connection data of all the fileservers that are used in the branch offices. Since it is usually the case that all internal employees of a branch office use the same fileserver, a local fileserver is defined for the employees of a department. If a department is assigned to a fileserver, they work directly on the application server (with correspondingly reduced performance when checking in documents).

Management table in the admin area with the attributes:

+ Logical name of the fileserver (such as the name of the branch office)
+ Computer name
+ Port
+ Fileserver status (connection active/inactive)
+ Free text

1.2.2 Fileserver definition for departments and employees

To select the fileserver, an “Own company / internal department” and “Internal employee” function is offered on the form.

+ The function “Workgroup Fileserver” opens a dialog in which the fileserver can be selected. In addition, in the dialog the configuration data from the fileserver table is displayed as read-only.

+ The fileserver configured for an employee takes precedence over the departmental fileserver. This makes it possible for individual employees to use any fileserver that differs from the higher-level departmental fileserver.

1.2.3 Document fileserver assignment

Documents that have been newly created or modified in the central office or a branch office must be promptly distributed to the branch offices. For this, in the document master form a sublist is offered, in which fileservers from the fileserver management table can be entered. Distribution of documents is automatic with the batch process.

If fileservers are entered for a document directory (element for document classification), distribution extends to all documents in this folder.

1.3 Fileserver

1.3.1 Apache Derby

As the fileserver, Apache Derby is used. Apache Derby is a project of the Apache Software Foundation, which is a Java-based relational database management system. It can function as a live cache, that is, operate completely in the main memory. Derby is very easy to install and only 2 megabytes upon delivery. The contents of the Derby databases are compatible across operating systems. For example, you can create a database on operating system A, copy the files to operating system B, and continue working there. With most conventional databases, however, only a “dump” of database A would have to be created, which would have to be imported with an import or recovery tool on B. In the development of Java applications, Derby is addressed via JDBC. Derby provides an embedded JDBC mode and a network JDBC mode. In the case of the latter, other Java applications can access a Derby database via TCP/IP. See also http://db.apache.org/derby/

1.3.2 Fileserver database

In the fileserver database, a copy of the BLOB table is set up. It contains the metadata of the document file. This metadata will be generated from the central PiSA sales application server and transferred to the fileserver. In this way, unique BLOB names/IDs are saved in the overall system.

Different file versions on the fileserver and the application server are identified by the BLOB modification date (PSC_UPD). After completion of a file transfer from the fileserver to the application server, the modification date is set in the BLOB table of the application server, transmitted to the fileserver, and entered in the fileserver database.

For error handling, a transfer table is introduced in the fileserver database. When a document needs to be transferred, the GID of the document is entered in the table. Once the transfer has been completed (PSC_UPD transferred to the fileserver database), the data record is deleted.

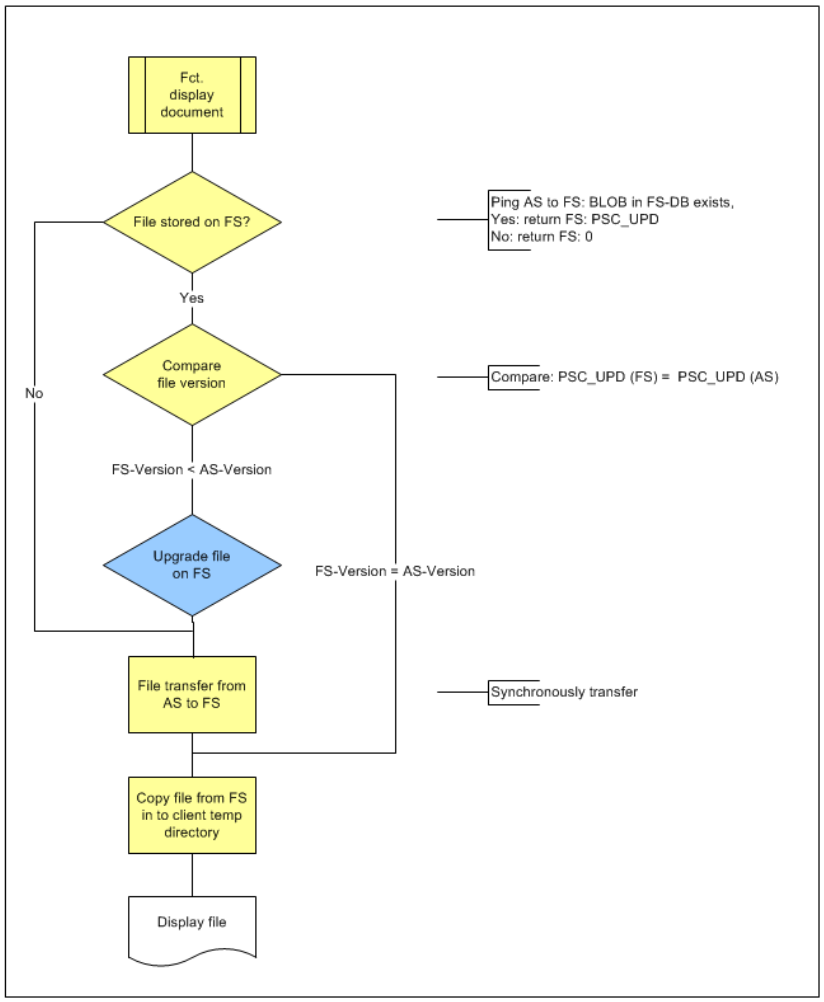
1.4 Processes

1.4.1 Viewing the document in the branch office

When documents are viewed by employees in branch offices, a distinction must be made between the following cases:

+ The file version on the fileserver is identical to the file version on the application server
+ The file version on the fileserver is no longer current
+ The file is not stored on the fileserver

If the file does not exist on the fileserver, or is older than the one on the application server, it is synchronously transferred from the application server to the fileserver.

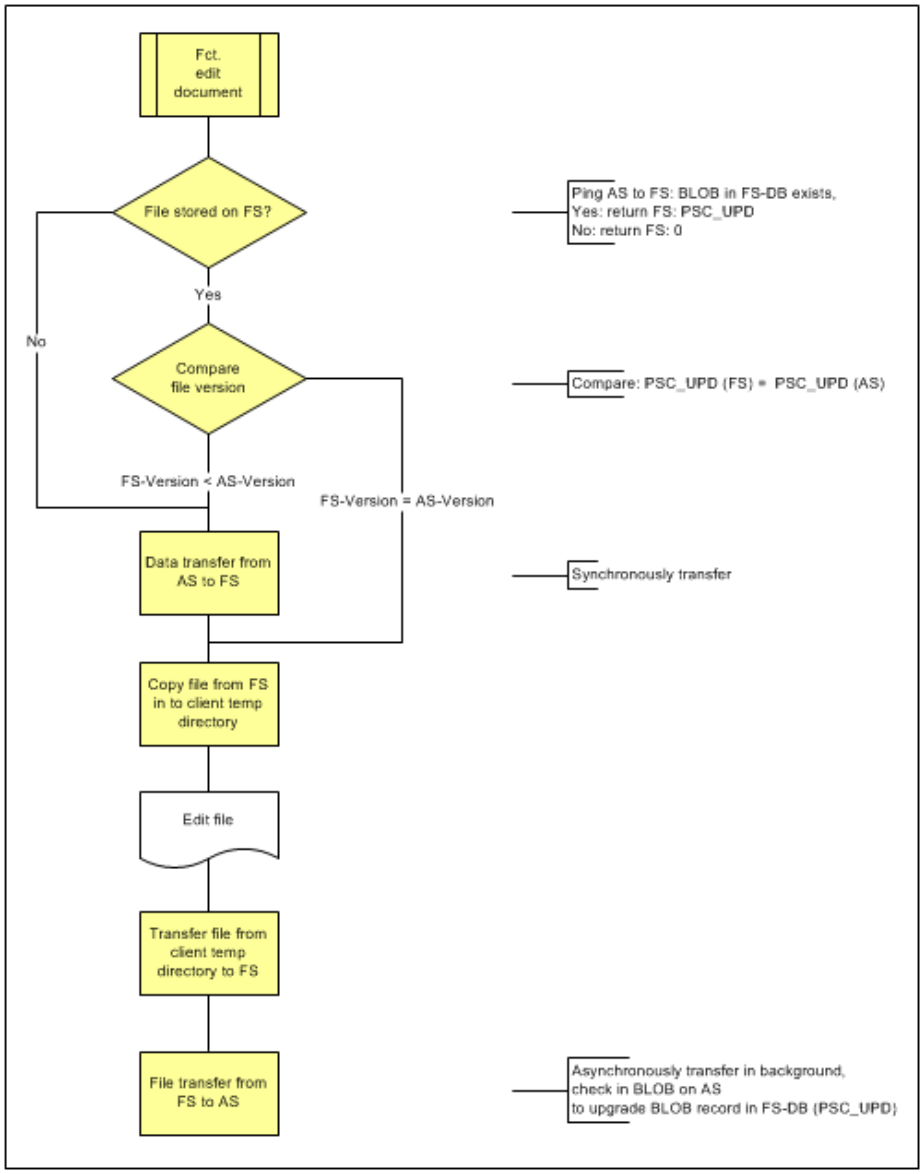


1.4.2 Editing the document in the branch office

When documents are edited by employees in branch offices, a distinction must be made between the following cases:

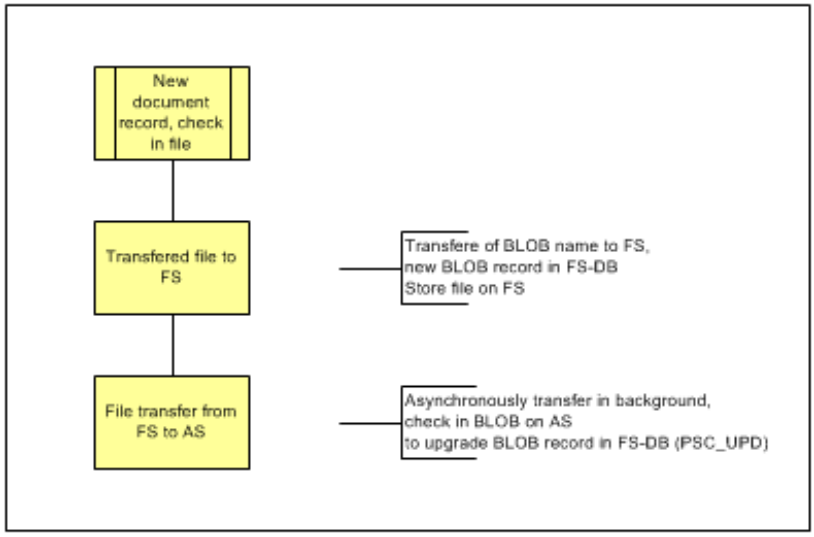
+ The file version on the fileserver is identical to the file version on the application server
+ The file version on the fileserver is no longer current
+ The file is not stored on the fileserver

If there is a file update on the fileserver, the system ensures that the new version of the file is immediately transferred to the central application server after editing.



1.4.3 Creating a new document in the branch office

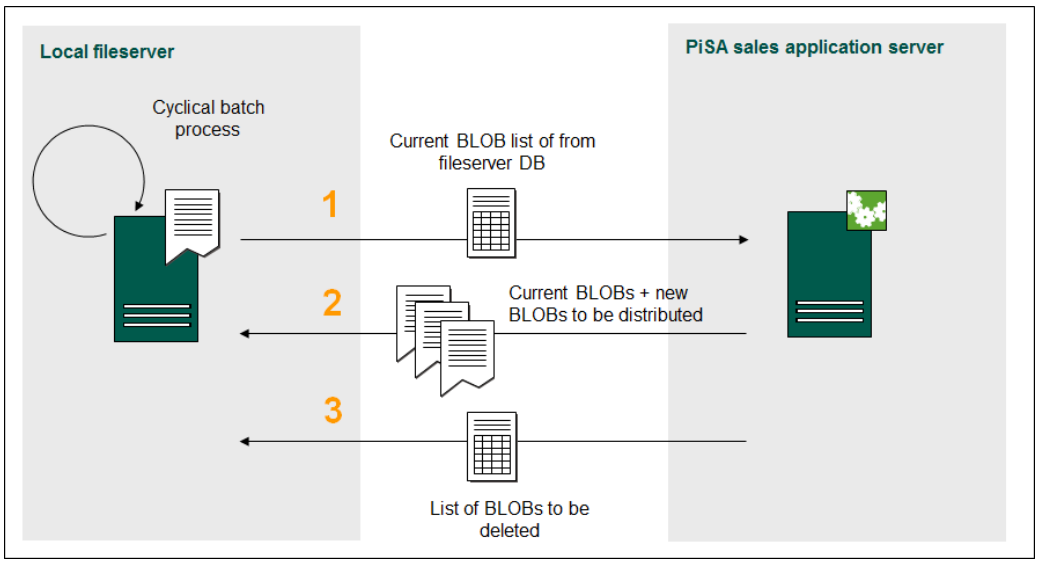
After saving of a new file on the fileserver, the system ensures that it is then transferred directly to the central application server.



1.4.4 Cyclical synchronization between fileservers and application servers (batch process)

The comparison of different file versions between the fileserver and the application server is triggered by a job (cyclical, such as once every night), which initiates a batch process. The job control is part of the fileserver configuration. The application server retrieves from the fileserver a list of BLOB data records from the fileserver database. The application server compares the BLOB data records with the centrally stored BLOB data records and triggers the following actions.

+ All BLOBs with PSC_UPD (on the fileserver) < PSC_UPD (on the application server) are transferred to the fileserver and automatically overwritten there. The PSC_UPD is updated in the fileserver database
+ All BLOBs with PSC_UPD (on the fileserver) = PSC_UPD (on application servers) are not re-transferred to the fileserver.
+ All fileserver BLOBs that no longer exist on the application server are deleted on the fileserver. The corresponding entry in the fileserver database is removed.
+ If a document is intended for distribution, that is, there is an entry in the fileserver list on the document, the associated BLOB will be transferred to the fileserver and a new entry written to the fileserver



1.5 Installation of the fileserver

The following jar files are available:

+ PsaFilSrv_0.0.4.jar (server). The current PiSA sales server fetches the fileserver-jar per manifest.
+ PsaFilSrvCli_0.0.4.jar (client)

(PiSA/internal information) In the develop branch, there is the sub-project PsaFilSrv. Here the necessary client DLL and the fileserver can be found. The client DLL needs to be later copied to each client which wants to use the fileserver, and registered using regsvr32.exe. In the java branch of PsaFilSrv, there is a sample script for starting the fileserver. Everything is brought together under Aktueller Stand\PsaFilSrv.

1.6 Configuration of the fileserver

In the property file “fil_srv.prop,” the following information must be maintained:

+ Paths to the database and where the files are to be adapted.
+ Under which port the client and the application server can reach the fileserver, incl. password.

The Workgroup Fileserver management is opened with “Development -> Other -> Workgroup Fileserver”. Here the server and its connection data is entered.

On “Internal person / department” and under “My data”, you can select a fileserver in the toolbar using “Configuration -> Workgroup Fileserver”.

There are the following environment variables and jobs:

+ The variable PSA_SFR_FIL_SRV enables or disables the Fileserver feature.
+ The job “Workgroup Fileserver” (identifier = PSA_WFS_JOB) takes care of synchronization. It needs to be activated. The job parameters are documented directly in the job management in the description field.
+ The variable PSA_FIL_SRV_CIN_IMM controls:
  1. Whether checked-in files are immediately transferred from the fileserver to the application server in the background (y) – or –
  2. Whether this task is assumed by the batch process (n, default). In the second case, job parameter TRN must be set to y.
+

After configuration, all document access of the configured clients must be through the fileserver.

In the “in fil_srv.prop” folder specified under “fil.pth”, all documents are stored which are accessed or newly created.

The fileserver database can also be started in network mode. This makes it possible to monitor the fileserver activities in parallel – with DBVisualizer, for example. Which fileserver and e-mail messages are to be logged can also be set in log4j.prop and on the job-per-log level.

1.7 Glossary

For understanding the key concepts:

+ **Document metadata:** Administrative data of the document in the PiSA sales document database. Each administrative data record references a BLOB data record.
+ **BLOB data record:** Administrative data record of the document file; contains attributes such as creation date, modification date, save location, file type,
+ **BLOB, BLOB data:** File, such as Word or PDF document