Fortis™
The ultimate decision making tool

PRODUCT OVERVIEW

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Westbrook
technologies incorporated

Contents

Introduction

Fortis, a comprehensive document management software suite from Westbrook Technologies, provides superior document-handling solutions by leveraging the advantages offered by client/server technology and Microsoft's Open Database Connectivity (ODBC) architecture. Fortis operates as a true client/server system with the database engine installed on a dedicated database server, the client software installed on a shared network server, and client workstations configured to access both the shared-client server and the database server.

Fortis currently supports two back-end database engines: SQL Server by Microsoft and Oracle. Each back-end engine is integrated with Fortis using ODBC, Microsoft's database communication standard. Although the Fortis interface appears the same for each version, each back-end database is dramatically different.

Fortis captures a wide variety of documents and associated data and organizes them into a custom-designed structure. Fortis can capture documents from any source, such as scanned, faxed, and electronic files, including black and white, color, and common file types.

Fortis allows end users to efficiently organize and index documents that are then stored on your choice of storage media. Fortis retrieves documents instantly for editing, annotating, and/or integrating into your current business applications. Fortis also enables an organization to share or distribute documents via LAN, WAN, Internet/intranet, e-mail, fax, groupware, CD, or printed copy.

Additional Fortis options include a PowerWeb server that allows Web-based access to documents, an Inflo server that enables document-centric workflow, and an ERM (Electronic Report Management) component for managing print spool data and electronic reports.

Components

The Fortis document management system provides two components: Document Management and ERM (i.e., COLD). You can install one or both of these components. Using the Document Management component, users can capture documents into In Baskets by scanning, faxing, or importing them. In Baskets are logical receptacles in which Fortis stores documents before they are indexed and stored in a database. Users with appropriate permissions can index documents directly into a database Folder. Each document capture method can be automated by creating an Input Script and specifying a schedule for when each Script should run.

The ERM component facilitates the storage and retrieval of computer-generated documents without involving physical prints. These documents are typically forms (e.g., invoices or purchase orders) and reports (e.g., accounts receivable or inventory) generated from an organization's primary software applications, often running on host-based mid-range and mainframe computers. Fortis can run the ERM component separately or completely integrated with the Document Management component.

Stations

A basic Fortis system has a minimum of three station types:

- **System Administration Station**, where the Fortis administrator defines system users, assigns them to Groups, grants them access to specific databases, and sets up In Baskets (for Document Management systems). The Fortis system administrator must work closely with the database and network administrators when defining users and granting them database access to implement the Fortis system as planned. The system administrator also sets user and Group access for the functions users can perform on In Basket documents, assigns permissions allowing users to set various Preferences, and assigns permissions allowing users to perform certain administrative functions.

- **Database Administration Station**, where the Fortis database administrator creates and maintains Fortis databases. Creating a database entails defining its objects, specifying Group and user permissions for those objects, and defining mechanisms that control how document information is indexed to a Fortis database and subsequently retrieved. The database administrator also assigns user permissions for various functions performed on documents in the database and assigns permissions allowing users to perform certain administrative functions. The Database Administration Station also provides access to a variety of database maintenance tools and features.

- **View Station**, where users can retrieve and output documents. The View Station with Annotations option lets View Station users add annotations to documents.

Fortis Document Management systems have three additional stations:

- **Scan Station**, where users perform the bulk of the processing tasks associated with everyday document management. These tasks include capturing (by scanning, faxing or importing), indexing, editing, retrieving, and outputting documents.

- **Edit Station**, where users can perform all the tasks of Scan Station users except capturing documents by scanning.

- **Script Manager**, a program that monitors scheduled database-related Scripts (i.e., Scripts that send documents to a database Folder) and non-database Scripts (i.e., Scripts that send documents to an In Basket).

Fortis ERM systems have four additional stations:

- **ERM Setup**, where users (typically administrators) define the layout of ERM input files so that Fortis can automatically extract information from them. Setup users can define ERM Applications using a simple point and click interface.

- **ERM Process**, a batch program that imports ERM files into a Fortis database. Process imports production files from the Fortis ERM import directory.

- **ERM System Monitor**, which automates ERM Process, resides in the background watching for new files that have been written to the Fortis ERM import directory.

- **ERM Edit Station**, where users can retrieve and output documents as in a View Station. In addition, ERM Edit Station users can add annotations and delete documents.

If your Fortis system has both the Document Management and ERM components, you can install all ten stations. However, Fortis provides the flexibility to install as many or as few of these stations on the same workstation as required. For example, a database administrator may find it helpful to install the Edit Station and the Database Administration Station on the same machine to keep track of how changes to a database impact end users.

Options

In addition to the basic stations that make up the Document Management and ERM components, the Fortis suite of products also includes a variety of options that expand the power and capability of your Fortis system.

- **Fortis PowerWeb** enables your user base to access Fortis documents via the Internet or an intranet using Microsoft's Internet Explorer. The ActiveX Viewer control allows users to view Fortis documents within Internet Explorer. Users can search a Fortis database and view and print documents right inside their browser. Edit Station users can also import new documents, edit a document's index data, annotate documents, insert and delete pages from a document, and delete documents.

- **Fortis Inflo** uses a rule-based approach to enable administrators to automate some of the procedures required to process the documents in a Fortis database. Inflo monitors documents from their point of entry into a Fortis database through various stages until the Tasks defined for a Process are complete. An Inflo Process can execute five types of actions: moving documents to a specific Folder, setting the value of an index field, sending an e-mail, activating another Rule, and running an application.

- **Fortis CDExpress** lets administrators prepare a Fortis database, related document files, and Fortis View Station software for recording onto a CD or DVD using any recording software.

- Using **Fortis Office**, Scan and Edit Station users can send files from their Microsoft Office (97, 2000, or XP) Word, Excel, and Outlook applications directly to a Fortis In Basket or a Fortis database Folder.

- The Fortis Document Management component provides several options to assist in document capture: **Optical Character Recognition** (OCR), **Bar Code Recognition** (BCR), **Full Text**, and **Image Enhance**.

Fortis Database Structure

The Fortis document-management system is a powerful database application that can be used with a variety of database back ends. While actual document files are not stored in the Fortis database, the database contains user-provided information (i.e., index data) as well as the information necessary to retrieve the document associated with each database record. The process of creating a Fortis database also creates all the necessary tables and indices

within the database. There is no need for a database administrator to create any of these tables external to Fortis.

The structure of your Fortis databases is integral to how your end users actually control and use your documents. Each database uses database objects that both organize the information and determine how document information is entered into and subsequently retrieved from the database. The internal objects that organize the database are Folders, which form a hierarchy of Subfolders as a means of logically and visually organizing the documents in a database; Document Types, which define the properties of a single type of document; and Query Sets, which form a hierarchy of Subsets to organize the Queries available to search a database.

Each Document Type defines a set of index fields that determines how documents of this type are entered and retrieved. Internally, each Document Type is a table in the database. Index fields form the basis for how users can retrieve documents from the database. If a database contains ERM Application documents, Fortis creates the Document Type definition for these documents automatically based on the index fields defined during Fortis ERM Setup.

Fortis also enables users to index a document based not just on specific index fields but also on the actual textual content of the document. Users can perform Full Text indexing on text documents during capture and on image documents after performing OCR on them.

Note: The Full Text option is not applicable to ERM Application documents.

Creating a Fortis database involves:

- assigning a database name,

- specifying a physical directory location for the files associated with this database, such as Input Scripts and error logs, and

- specifying a file Archive Location in which to physically store the document files for this database.

The database administrator then creates the database structures and objects that control database access, content, and organization. Specific structures include:

- **Folders**

  Folders are an organizational tool; they are assigned names by users or the administrator, can contain Subfolders and/or documents, and display in a Document Explorer, shown in Figure 1, similar to the Windows Explorer. This capability provides a hierarchical storage mechanism and imparts a necessary structure that makes it easier to maintain and use a database.

  Database administrators can assign user and Group permissions to Folders so that only certain designated users or groups of users can access, modify, create, or delete the documents and Subfolders contained in them.
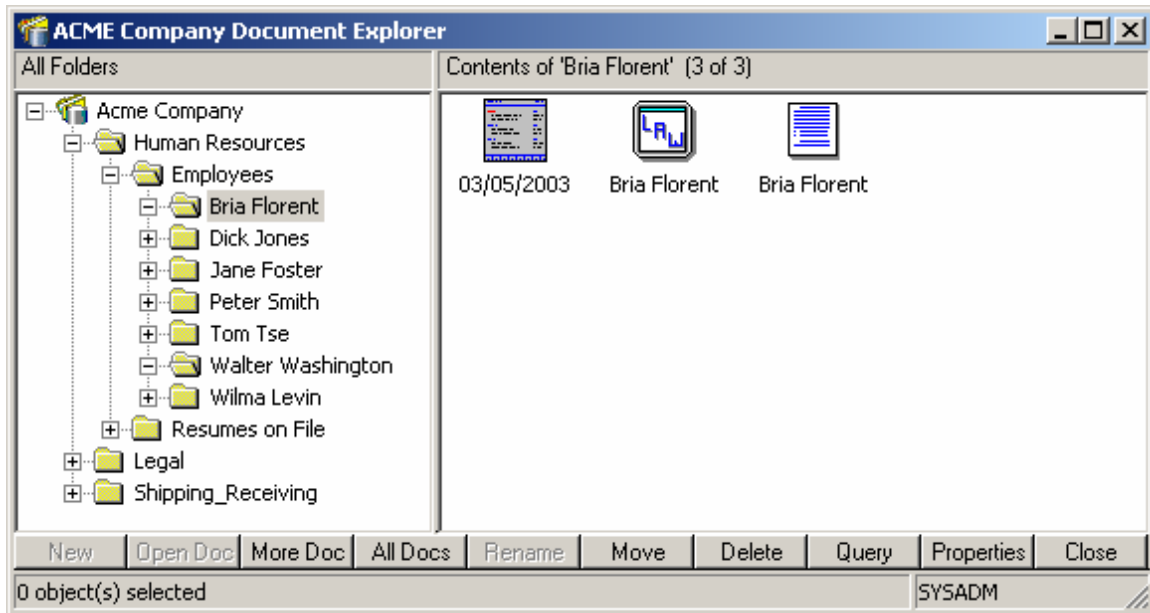
Figure 1: Document Explorer

- **Document Types**

  Document Types define documents that are similar in form or layout, or documents that should be indexed in a similar fashion. All documents of the same Document Type use a common set of index fields. Users can store documents of different types in the same Folder or Subfolders.

  Database administrators can assign user and Group permissions to Document Type files so that only certain designated users or groups of users can access, modify, add, or delete the document files of this type. Administrators can also define a model Document Type and use it as a template when creating new Document Types.

  Within each database, each Document Type is represented by a database table where the columns represent the index field names and each row represents a Fortis record.

  If the database contains ERM Application documents, Fortis creates the Document Type definition for these documents automatically based on the index fields defined during Fortis ERM Setup.

- **Index Fields**

  Index fields are defined for a Document Type and are used to index or describe each individual document of that type. The index data identifies the document in the database and enables users to retrieve documents by constructing search statements using this data.

  Database administrators can assign permissions for each index field of a Document Type so that only certain designated users or groups of users can view a field and the

data it contains, enter data into a field when indexing a document and modify index data in a field for a document already indexed to the database.

The administrator can define as many index fields as needed for a Document Type, some of which can be specified as Quick Find fields for faster searching and retrieval of document records. The database administrator can also define index fields for which Fortis automatically enters values during indexing (e.g., system-entered fields such as Date_Entered and Last_Modified). Index fields can also be specified as Unique or Required fields.

- **Query Sets and Queries**

  A Query is a search statement that users and administrators create, and optionally save, to search a database to retrieve any matching Fortis records. Queries can be static, with the search criteria pre-defined, or variable, where users enter the search criteria at run time. When users execute a Query, Fortis searches the open database for any records that match the search criteria. Any records returned also include pointers to the actual documents at their storage locations. Queries can be generic or quite specific.

  Administrators and end users can save Queries in a Query Set hierarchy, which is displayed in the Query Explorer, to enable themselves and other users to quickly access and run them. The database administrator can assign user and Group permissions to a Query Set so that only certain designated users or groups of users can access, modify, add to, or delete the Queries and Subsets stored in the Query Set.

- **Pick Lists**

  A Pick List eases data entry by providing a finite list of acceptable value choices from which users can select for a given index field. The Pick List values standardize the information that can be entered during indexing so that data is consistent in the database. Pick Lists offer the double benefit of increasing the speed of data entry while also ensuring uniform data to enhance searching and reporting.

- **Formats**

  A Format for Character, Numeric, and Date type index fields determines how a value displays for that index field in the database record. In addition, Formats force users to enter index data in a specific format. Fortis provides a list of pre-defined formats for numeric and date fields that can be added to, modified, or deleted.

- **User and Group Database Permissions**

  Only users granted access to a database by the system administrator can access that database. Database users and Groups are also assigned security permissions for various database structures and objects, which means they have different functional access to those items. Add, Modify, Delete and View permissions are at the Folder, Document Type file and Query Set levels. Set, Modify and View permissions are at the Document Type field level.

The database administrator and the system administrator also assign Fortis users and Groups feature access permissions that control the ability to perform various functions on documents in Fortis. See Fortis Security on page 18.

Capturing Documents

Fortis users can capture documents into a Fortis In Basket or directly into a Fortis database Folder as a specific Document Type using a variety of methods.

In Baskets store captured documents before they are indexed and stored in a database. An In Basket lets users view, edit, index and share documents with other users and network devices by forwarding them to another In Basket or by printing, faxing, e-mailing, and exporting them. In Baskets are either public or restricted.

- A public In Basket can be accessed by any Scan or Edit Station user.

- A restricted In Basket can only be accessed by those Scan or Edit Station users designated as the "owners" of that In Basket.

In Baskets are especially useful in high-volume applications where different personnel are dedicated to specific tasks, such as document preparation, scanning, quality assurance, and indexing. Restricted In Baskets work particularly well for departmental-based workgroups or task-based teams.

When capturing documents directly to a database Folder, users must specify the database Folder and the Document Type for each document or set of documents. If the Document Type includes the Full Text index attribute, Fortis creates an index of all the words in the document (except certain noise words) during the capture process.

Users can also specify the actual index data for each document or set of documents during the capture process. When capturing multiple documents, users can set an auto-increment value for numeric index fields. When a user enters a value for the first document, Fortis automatically increases this field value for each subsequent document by the increment value specified.

Fortis lets users save frequently used capture settings as Scripts so that users can quickly recall and use them to scan, fax in, or import documents. Scripts save time and reduce the need for user intervention. Users can run Input Scripts with the Script open or closed, and users can schedule Scripts to run automatically. Users or the administrator can set Script Manager to monitor all Input Scripts scheduled to run automatically.

Scanning Documents

Scan Station users can scan documents directly into a Fortis database Folder as a specified Document Type or into a public or restricted In Basket for later indexing and storing in a database. Users can set index data or specify that Fortis should perform OCR and Image Enhance operations on the scanned documents. (See Capture Options on page 9 for more information.)

Fortis lets users see a preview of a scanned image before saving it to Fortis. The Scan Preview operation lets users accept or re-scan a page and adjust scanner settings as required. If a user scans documents directly to a database Folder, the user must first open the target database and must have Add permission for the target Folder and Document Type.

Users can scan multiple pages into one Fortis document or scan multiple pages into separate documents using a page count, a blank page, or a bar code as a separator between documents. Users can save the scan settings as a Scan Script and schedule Scan Scripts to run automatically. A bar-code separator can contain the name of a Scan Script, thereby specifying all the settings to use in addition to document break information.

Fortis supports a wide variety of ISIS-compliant scanners and provides a variety of scanner options, including the deletion of blank pages, the use of a document feeder, and color storage quality.

Importing Documents

Scan and Edit Station users can import electronic documents into an In Basket for later indexing or directly into a Fortis database Folder as a specified Document Type. Users can import multiple pages into one Fortis document or import multiple pages into separate documents.

During the import process, users can set index data or specify that Fortis should perform OCR and Image Enhance operations on the imported documents. (See Capture Options on page 9 for more information.) Users can save the import settings as an Import Script and can schedule the Script to run automatically.

Fortis recognizes a variety of file types:

- black and white images, including PCX, TIFF, and BMP

- color images, including JPEG, GIF, PCX, TIFF, and BMP

- text-based documents, including more than 225 file formats such as Word, Excel, HTML, and PDF

Faxing In Documents

Scan and Edit Station users can import faxed documents directly into a Fortis database Folder as a specified Document Type or into a public or restricted In Basket. Fortis works with most standard fax software. Fortis recognizes any black and white PCX, DCX, TIFF, or WinFax (4.x, 7.x and 8.x) file formats. Any fax software that creates a supported black and white image file can be used for the Fax In process.

Users can fax in multiple pages into one Fortis document or fax in multiple pages into separate documents. During the Fax In process, users can set index data or specify that Fortis should perform OCR and Image Enhance operations on the faxed in documents. (See Capture Options on page 9 for more information.) Users can save the Fax In settings as a Fax In Script, and can schedule the Script to run automatically.

Setting up a fax to work with Fortis involves specifying a Fax In folder, which is typically the network location where the fax server stores all inbound faxes. A user can also specify an automatic backup location for imported faxes.

Importing Data and Documents

Scan and Edit Station users can import delimited ASCII files that contain record information directly into a Fortis database Folder as a specified Document Type. Users can specify that Fortis should perform OCR and Image Enhance operations on the imported documents. (See Capture Options on page 9 for more information.) Fortis captures each line in the ASCII file as a separate database record; multiple documents can be merged during the import process. Importing ASCII files is useful when converting from an existing imaging system, restoring an index, or automatically indexing documents.

This import feature provides many options:

- Users can specify that the database record should use a place-holder image, which allows users to manually insert the appropriate image later.

- When importing Fortis documents, users can specify that Fortis maintain the specified document path if they're importing a large quantity of data and files to increase the speed of the import process. Fortis will not move the files from their original archived location.

- Users can specify the ASCII-file delimiters and how Fortis should treat system-entered fields.

Users can save the import data and document settings as an Import Data and Documents Script and can schedule the Script to run automatically.

Print-To-MAG Documents

Users can convert text documents, or images in other formats, into the Fortis MAG document file format (See Document File Format on page 13 for additional information) by using a special Fortis print driver. Users can then insert these images as pages in new or existing Fortis documents or forward the newly created document files to In Baskets. By "printing" documents using this driver, Fortis converts the documents to the Fortis document file format. An administrator can install the Print-To-MAG driver using a procedure that adds the Fortis driver as a printer option in the Windows Print dialog.

Capture Options

Fortis provides several capture options to improve document quality, aid in data capture, and improve efficiency:

Fortis Office Option

Using the Fortis Office option, Scan and Edit Station users can send documents from Microsoft Office (97, 2000, or XP) Word, Excel, and Outlook applications directly into a Fortis database Folder as a specified Document Type or into a public or restricted In Basket.

After installing Fortis Office, the Fortis icon displays as a Send To option on the File menu in Word, Excel, or Outlook, enabling users to select either an In Basket or a Fortis database Folder and Document Type. Users can also display the Fortis icon as a separate toolbar within each application.

With Outlook 2000 and XP, users can send e-mail messages and attachments from the Outlook Inbox (or any Outlook folder), as well as Notes and Posts, directly to Fortis. Users can use the default Outlook editor and send unopened e-mail messages and attachments to Fortis.

Fortis can use the value of a Property field in a Word, Excel, or Outlook document (e.g., Title, Subject, Author, etc.) as the value for an index field. If the Document Type selected has an index field with the same name as one of the document Property fields, Fortis will insert the value in the Property field into the Fortis index field.

Optical Character Recognition Option

The Fortis Optical Character Recognition (OCR) option enables users to perform Zone or full-page OCR on a document, either during the capture process or at a later time.

Zone-based OCR involves the creation of an Index Template for Black & White documents of a specific Document Type. Using a Point & Shoot technique, users highlight certain Zones on the document and associate these Zones with specific index fields. When the Index Template and the OCR option are used together, Fortis automatically reads the data from the defined Zones into the associated index fields.

Full page OCR converts an image document into a text document that can then be Full Text indexed. Fortis merges the results of the full-page OCR process into the document in a specific file format. Users can save OCRed text at the beginning or end of a document or between specific pages. In addition to ASCII format, Fortis can also save text in a wide range of standard word-processing and publishing formats while retaining the precise layout and formatting characteristics present in the original.

The OCR option provides spell-checking operations on the text produced by the OCR process. The Fortis OCR process detects questionable characters and compares them with entries in its standard dictionary. If the original document contains any spelling or typing errors, Fortis can automatically detect those errors in the new text document.

The OCR Text Editor enables users to correct and apply final formatting to text files created from the OCR process. The OCR Text Editor displays part or all of the recognition results for a page. Suspect or unrecognized words or phrases and rejected characters or marks are highlighted in contrasting colors. Users should edit these files before indexing the document.

Image Enhance Option

The Fortis Image Enhance option provides a full complement of image enhancement features that improve the appearance and readability of documents. The Image Enhance option can be applied to a document before and/or after performing OCR, and can be used on documents being capturing and on document images already stored in an In Basket or

indexed to a database. In both instances, these enhancement options yield a cleaned up, visually improved document image.

The Image Enhance option provides the following features:

- During capture, users can invoke the Image Enhance options to: improve the quality of the stored document, improve the image simply for purposes of better OCR results, or improve both OCR results and the quality of the stored document.

- On captured documents, users can apply Image Enhance options to documents stored in either an In Basket or a Fortis database Folder. Users can enhance the documents either while viewing them or by selecting them from a list in an In Basket or the Query Results window.

- Users can apply different Image Enhance settings for OCR needs and for document storage needs. With printed forms, for example, users can specify one set of options to customize each document image for maximum OCR clarity. A second set of options can help maintain the original image format and maximize it for storage in the database.

The Image Enhance option provides the following sets of options:

- De-Skew: Minimum Detect Length, Maximum Acceptable Skew, and Character Protection
- Inverse Text: Minimum Area Height, Minimum Area Width, and Minimum Black on Edges
- Horizontal Registration: Resultant Left Margin, Central Focus, Add Only, Ignore Holes, and Find Line for Register
- Vertical Registration: Resultant Upper Margin, Central Focus, Add Only, and Find Line for Register
- Dot Shading Removal: Minimum Area Height, Minimum Area Width, Maximum Dot Size, Horizontal Size Adjust, Vertical Size Adjust, and Character Protection
- Speck Removal: Horizontal Speck Removal, Vertical Speck Removal, and Isolated De-Speck
- Horizontal Line Removal: Minimum Line To Detect, Maximum Line Thickness, Maximum Line Gap, Edge Cleaning Factor, and Reconstruction Width/Height
- Vertical Line Removal: Minimum Line To Detect, Maximum Line Thickness, Maximum Line Gap, Edge Cleaning Factor, and Reconstruction Width/Height
- Miscellaneous: Sand and Fill Smoothing, Grow, Erode, Intelligent Crop Black, and Intelligent Crop White

Bar Code Recognition Option

The Bar Code Recognition (BCR) option enables Fortis to automatically read and index bar code data on captured image documents. Users define the input data as a bar code, and then specify the bar code type.

Fortis also supports the use of bar codes as document separators during the scanning operation. The bar code can appear on a separate sheet of paper or on the first page of a document set. The bar code can contain the name of a Scan Script to automatically load a predefined set of scanner settings for the document(s) to be scanned.

Fortis recognizes the following bar code types:

- Autodetect (distinguishes all barcode types in the list except Postnet)
- Codabar
- Code 39 and Code 39 EXT
- Code 93
- Code 128
- Code 2 of 5 and Code 2 of 5 Interleaved
- UPC-A and UPC-E
- EAN-8 and EAN-13
- Postnet

Full Text Option

A Full Text index is a database that stores the locations of all of the words (except such noise words as *but* and *if)* in Full Text indexed documents. Fortis can Full Text index any text-based document that can be viewed in Fortis.

When a database administrator creates a Full Text Document Type, Fortis creates the Full Text index. Fortis then uses this index to perform fast searches using a Full Text Query. A Full Text Query statement can consist of a single term (word or phrase) or multiple terms. Users can also combine Full Text Queries and index field Queries to search for specific terms or phrases, as well as specific index field values, in documents of a Full Text Document Type.

The Advanced Query features let users apply logical grouping to the index field Query search criteria and the Full Text Query search criteria. In addition to searching for specific terms, Full Text Query statements can have other operators that define relationships between terms or impose limits upon them.

A wide range of techniques makes it possible to construct almost any kind of Full Text search:

- Stemming searches find other grammatical forms of the words in a Full Text Query statement.

- Phonic searches find words that sound similar to words in a Full Text Query statement.

- Fuzzy searches sift through scanning, OCR, and typographical errors. Fuzzy searches adjust from one to nine degrees, depending on the degree of misspellings.

- Numeric-range searches find integers between two values.

- Regular-expression searches find a pattern of text.

Document File Format

Fortis stores all documents in Westbrook Technologies' proprietary MAG file format, which was created a decade ago to enable secure transfer of information across networks and the Internet. Each document, regardless of the number of sections it contains or the number of sources, is stored as a single document file.

Fortis uses three different compression techniques to attain optimal compression, resulting in small, portable, and secure multi-page document files. Black and white data is typically input via a scanner or fax, or imported from other formats such as TIFF or BMP, and is compressed using a Group 4 (i.e., G4) compression technique. Color images are created via scanning or importing from several different color formats and are compressed using a JPEG technique. Text-based documents are stored in appropriate formats, such as Word, Excel, HTML, or PDF, and are compressed using PKZIP.

Westbrook Technologies developed the MAG file format prior to the introduction of the multi-page TIFF format, but its internal construction is similar to a multi-page TIFF file in that it contains a header, image data in G4 format, and a footer.

The MAG file format is a proprietary format, like Microsoft Word or Adobe's PDF format, and requires special software to view, modify, or annotate the document files. Fortis includes a mechanism for converting or exporting MAG documents to other formats, including multi-page TIFF and PDF. In addition, system integrators can embed MAG file-viewing capabilities within other applications by using a MAG file viewer provided as an ActiveX control.

Retrieving Documents

Scan, Edit, and View Station users can retrieve documents from a Fortis database by using the Document Explorer, by executing a Query, or by running a Document Type Browse.

The Document Explorer, a two-paned window, displays the architecture of the database. Patterned on the Windows Explorer, the left pane displays the Folder hierarchy of the database and the right pane displays the contents of the open Folder, which can include Subfolders, documents or both. Fortis displays documents using the icon associated with the Document Type and the Label associated with a specific index field.

For small databases, users can traverse the Folder hierarchy to find documents and open them in the Document Viewer by double-clicking the document icon. For large databases with a significant number of documents, users can use the Document Explorer to become familiar with the database structure but will typically use a Query to find specific documents. Database permissions apply to the Folder hierarchy. Fortis only displays the contents of those Folders and Subfolders for which the user has at least View permission.

A Query is a set of search criteria that, when executed, searches the database for documents that match the criteria. Each Query is associated with a specific database Folder or Folder tree and at least one Document Type. Fortis supports two types of Queries: static and variable. A static Query always searches for the specific values defined in the Query, while a variable Query lets the user enter the search criteria values at run time. Typically a variable

Query has a user prompt defined for certain index fields, such as "Enter the name of an employee."

Users can save individual Queries in a Query Set hierarchy that displays in the Query Explorer, shown in Figure 2. A Query Set can contain Subsets, Queries, or both.
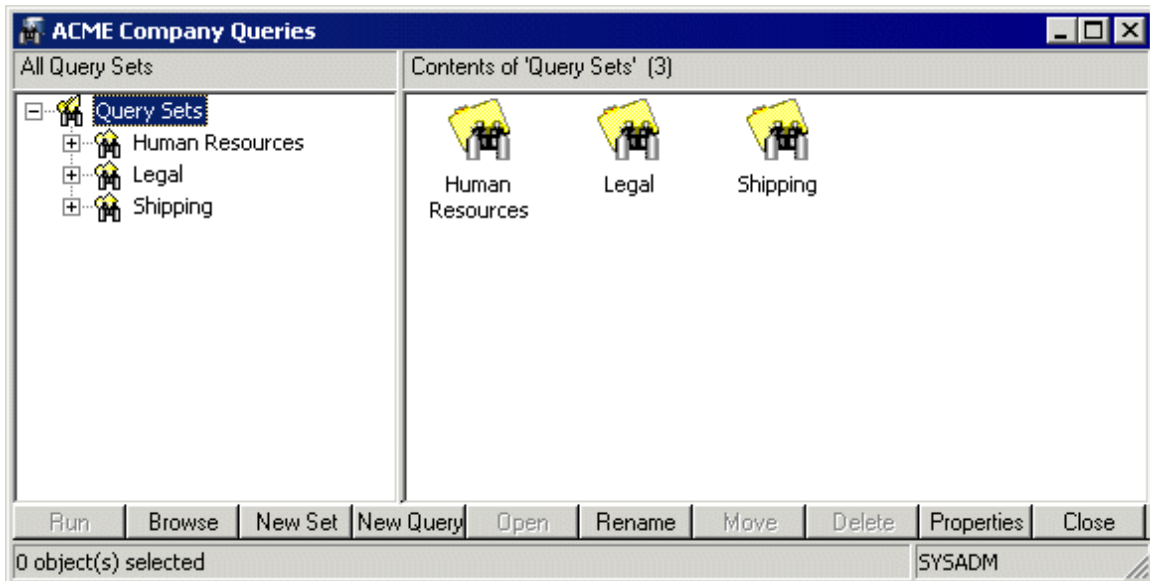

Figure 2: Query Explorer

Database permissions apply to the Query Explorer. Fortis only displays the contents of those Query Sets for which the user has at least View permission. If the user runs a Query that involves a Folder for which the user does not have View permission, no results are displayed. If the user runs a Query that involves a Document Type or Document Type index field for which the user does not have View permission, Fortis displays a security violation message.

A Document Type Browse is a generic Query that enables a user to search for all documents of a specific type, either in a specific Folder or in the entire database. Users run a Browse from the Query Explorer; a Browse emulates the Query by Example (QBE) interface that is familiar to many users.

Query Operators

Defining a Query involves specifying a starting Folder and a Document Type, and selecting at least one index field. The user must then define the operator or condition that must be met (or not met) with respect to the specified field.

Valid operators include:

- Contains
- Does Not Contain
- Equal to
- Greater Than

- Greater Than or Equal To
- Is Empty
- Is Not Empty
- Less Than
- Less Than or Equal To
- Not Equal

Most operators require that users define a value, which is what Fortis uses to determine whether or not the data contained in a database record meets the search criteria. The Is Empty operator finds any document (in the specified Folder and of the specified Document Type) that contains the specified index field but does not contain any data in that field.

Users can specify that Fortis should validate the values used in defining the Query search criteria, meaning that the value specified for the Query must conform to all of the defined attributes for the target index field.
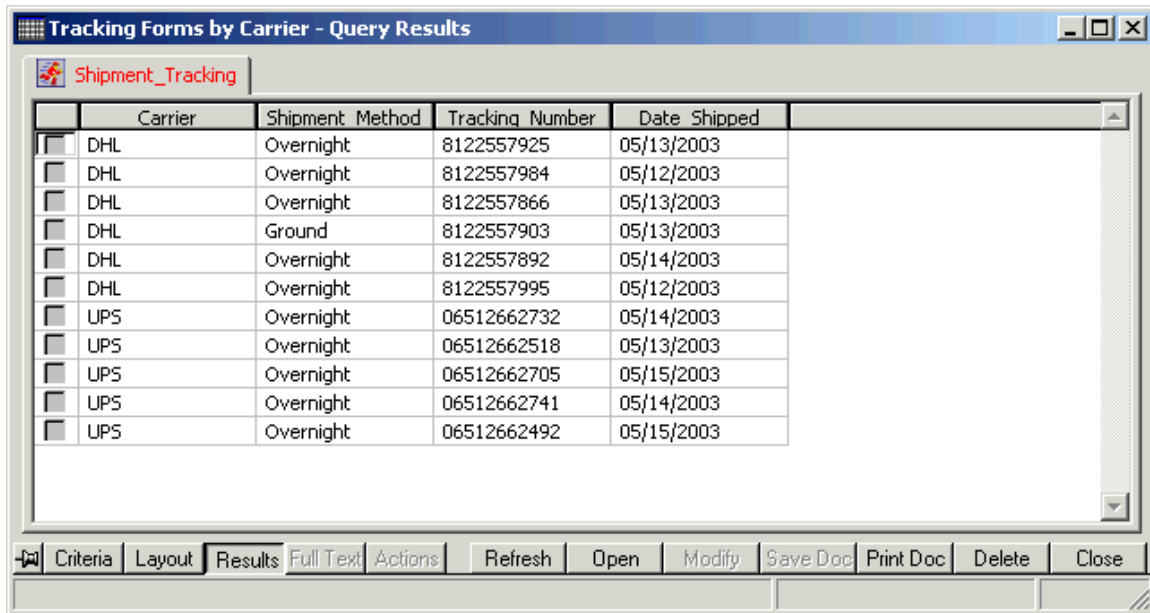
Boolean Logic Operands

Queries can also define multiple search conditions using the AND/OR Boolean logic operands. The OR operand means that either or both of the conditions specified in the Query must be satisfied. OR logic tells Fortis to retrieve records from the database if they satisfy either one condition statement or the other, or both.

The AND operand means that both of the search conditions specified must be satisfied. AND logic tells Fortis to retrieve records from the database if they satisfy all of the condition statements linked by the AND argument(s). Using AND logic, users can search for documents of a specific Document Type that match all the search criteria specified in the Query.

Query Results

Fortis displays information about the documents retrieved by a Query in the Query Results window. A Query can contain instructions regarding the presentation of these search results, including which index fields to display and the Layout of those fields, the index field on which to sort the Query Results, and the Sort order. Users can quickly change the Layout and rerun the Query, or users can select documents and open them in the Document Viewer.

Users can also print the contents of the Query Results window (i.e., a list of the documents retrieved by a Query). See Figure 3.

Figure 3: Query Results Window

Advanced Query Features

Fortis provides several advanced features to enable users to construct complex Queries. A Query Preference turns on the advanced features, which include parentheses for grouping clauses of complex Queries, additional Boolean operands (i.e., Equal To, Not Equal To, Then, and Else), and additional Full Text index continuation operators (i.e., Full Text Then Index, Index Then Full Text).

Working with Documents

End users can view and edit documents in the Document Viewer. The process for viewing documents located in an In Basket differs only slightly from the process for viewing documents stored in a database. In Basket documents have not yet been indexed, while documents in databases have been at least partially indexed and thus have index data associated with them.

Viewing Documents

The Fortis Document Viewer provides complete functionality for accessing and viewing all types of documents. The Viewer provides several visual options:

- Document only, with or without thumbnails of the pages of the document

- Index data only

- Both the document and the index data in panes that can be split horizontally or vertically. Page thumbnails can also be included in a third pane.
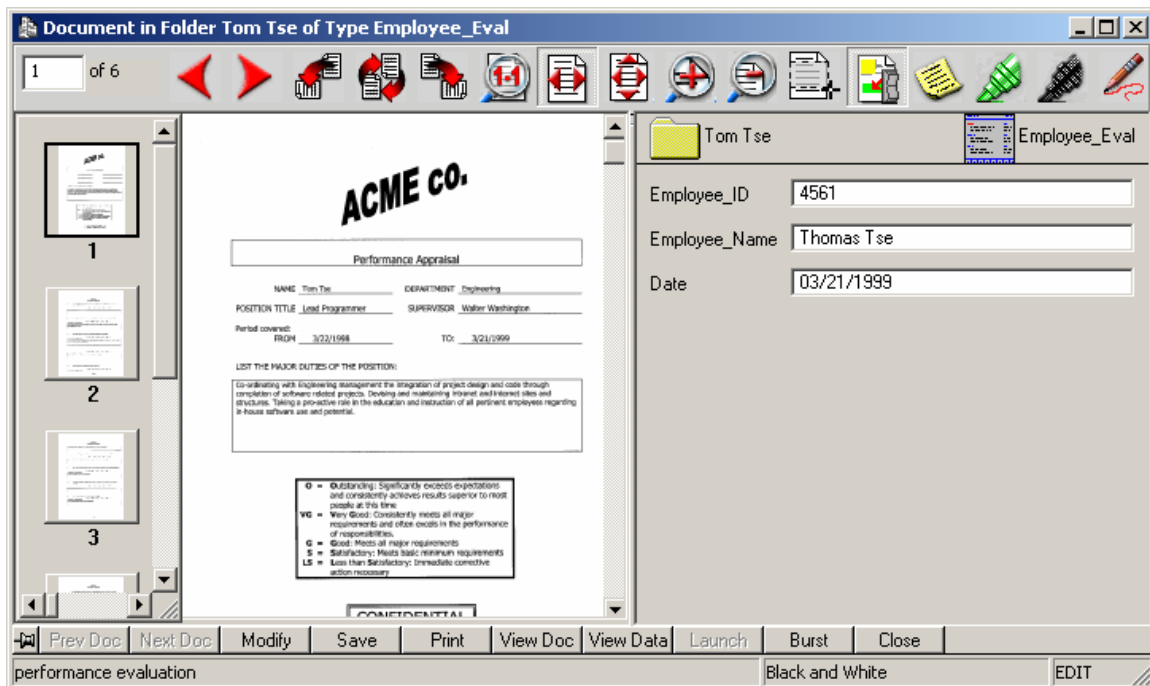
Figure 4: Document Viewer

Any Fortis user (with the proper permissions) can open documents in the Viewer from an In Basket, from within the Document Explorer, or from the Query Results window. Users can load one document at a time or load multiple documents into the Viewer. Using the toolbar buttons, users can quickly page through a single document, or move through multiple documents loaded in the Viewer. Double-clicking a page thumbnail in the Viewer displays the corresponding page.

Documents can be rotated and flipped or displayed full size or full width. Users can zoom in or out, or zoom into a section of a document, adjust the contrast, and use a scale to gray option. Users can open multiple Viewers by "pinning" a document in an open Viewer, and can copy a document into multiple Viewers. The Viewer also has a textual Find function for text-based and ERM documents.

Database administrators can define a Related Query as part of a Document Type definition. A Related Query will retrieve one or more documents associated with the currently opened document. Users can access these related documents by executing a simple menu command. Administrators can also insert links to related documents on a template for a specific Document Type. When a user opens a document of this type in the Viewer, these links display as either a solid or outline rectangle on the document. Visual links only appear on Black & White documents.

Editing Documents

Scan and Edit Station users can perform a variety of operations on documents in the Viewer. Users (with the proper permissions) can cut, copy, paste, delete, or enhance pages within a

document. Users can also insert, replace, burst or reorder pages, remove blank pages, and rotate an entire document.

With the proper permissions, Scan and Edit Station users, as well as View Station users with the Annotations for View Station option, can add a variety of annotations to documents. The Document Viewer toolbar contains buttons for all the annotation tools, and users can set a variety of preferences for Fortis annotations.

Users can attach notes, freehand drawings, lines, and stamps (e.g., SET UP INTERVIEW or URGENT) to a page, and highlight or redact sections of pages. Users can also include OLE objects from other applications as annotations. Users can quickly hide or show annotations, and can specify whether to print, fax, or e-mail them. Security features include an Always Visible attribute, so a user cannot hide an annotation, and a Protected attribute, so that only the author of the annotation or the administrator can modify or delete it.

Fortis Security

Fortis' security capabilities provide a powerful yet flexible blend of user access management and control for any Fortis installation. This security is provided by assigning Fortis users a password and personalized database access privileges and by varying their functional permissions. In essence, the security of your Fortis system can be separated into two general levels: the system level and the database level. (Your network security provides an additional level of security but is not controlled from within Fortis.)

System-Level Security

The Fortis system administrator creates system-wide user accounts, assigns users to Groups, and defines which users have access to which databases. In addition, the system administrator creates In Baskets, both public and restricted, and specifies which users and/or Groups can access those In Baskets.

The system administrator also specifies individual user and Group permissions that control access to several functions and features, known as feature access permissions. Feature access permissions provide a fine grain of control so that the system administrator determines whether users can capture documents to In Baskets, which functions users can perform on In Basket documents, whether users can create, modify and use Scripts to capture documents to In Baskets and whether users can set General and Annotation Preferences. The system administrator can, for example, permit a user to add documents to In Baskets but not export or print In Basket documents.

The system administrator can also provide administrative access so that a user or group of users can, for example, create In Baskets or add a user account. Designated users can then perform certain administrative functions within the Fortis system.

Database-Level Security

The Fortis database administrator assigns individual user and Group database object permissions and feature access permissions, which dictate what tasks users can perform while accessing a database at a Scan, Edit, or View Station.

The database administrator sets user and Group permissions at the Folder, Query Set and Document Type file and field level to specify which Queries, documents and index fields each database user can access, and what each user can do with those Folders, Queries, documents and index fields once they've accessed them. Database object permissions for Folders, Document Type files and Query Sets are of four types – Add, Modify, Delete, and View. Permissions for Document Type index fields are of three types – Set, Modify, and View.

The database administrator also specifies user and administrative feature access permissions for individual database users and Groups. While these permissions also provide a fine grain of control, they are separate from those assigned by the system administrator and control access to functions and features related to documents in the database and certain database-related administrative tasks.

The database administrator can, for example, permit a user to e-mail or print documents but not export documents from the database. The database administrator can allow a user to burst pages in documents in the database but restrict the user from launching documents for editing. Likewise, the database administrator can provide administrative access so that a user or group of users can, for example, create Document Types and add Pick Lists. Designated users can then maintain certain administrative aspects of the database.

Feature access permissions work in combination with database object permissions to ensure document integrity. For example, assigning a feature access permission allowing a user to e-mail documents permits that user to only e-mail documents for which they have the appropriate permissions on the Document Type files and Folders.

Fortis System Architecture

Fortis is a 32-bit, two-tiered client/server, ODBC-compliant application, and operates as a true client/server system. The structure of client/server technology comprises three basic components:

1. The desktop computer – the client
2. The file server – the shared-client server or application server
3. The database server or back-end engine

The two-tiered architecture is what defines Fortis as a client/server system, although all three of the above components are required to run Fortis. The power of a client/server application is derived from its ability to distribute the workload to servers that are dedicated to special purposes. This distribution limits the amount of information traveling back and forth through the network, which improves system performance.

The database is the most important component of the system and grows in value with every record that is added to it. A powerful database server can quickly process thousands of requests per second. Typically, the database server is the most powerful machine in the entire enterprise and is equipped with fast SCSI drives, as well as large amounts of memory for caching records. For this reason, the database server must be a dedicated server-class machine.

A basic Fortis installation involves two servers: the database server, running Microsoft's SQL Server or Oracle, and the shared-client server, on which the Fortis program files reside. The shared-client server also contains the site license files, the Fortis In Baskets, and possibly the document files. A basic installation supports as many client workstations as needed, but the number of concurrent users is limited by the number of station licenses purchased.

The database server (the back-end engine) and the shared-client server (with the Fortis application files) must be two separate machines. Additionally, the PowerWeb server also requires a dedicated server-class machine. Under no circumstances should the Fortis shared-client software or the PowerWeb server software be installed on the database server.

The shared-client server can be used to store document files, but many installations store document files on separate devices, such as a mass storage solution like RAID or an optical jukebox.

Figure 5 illustrates a basic Fortis installation, with two servers, several client workstations, and a separate storage device for document files.
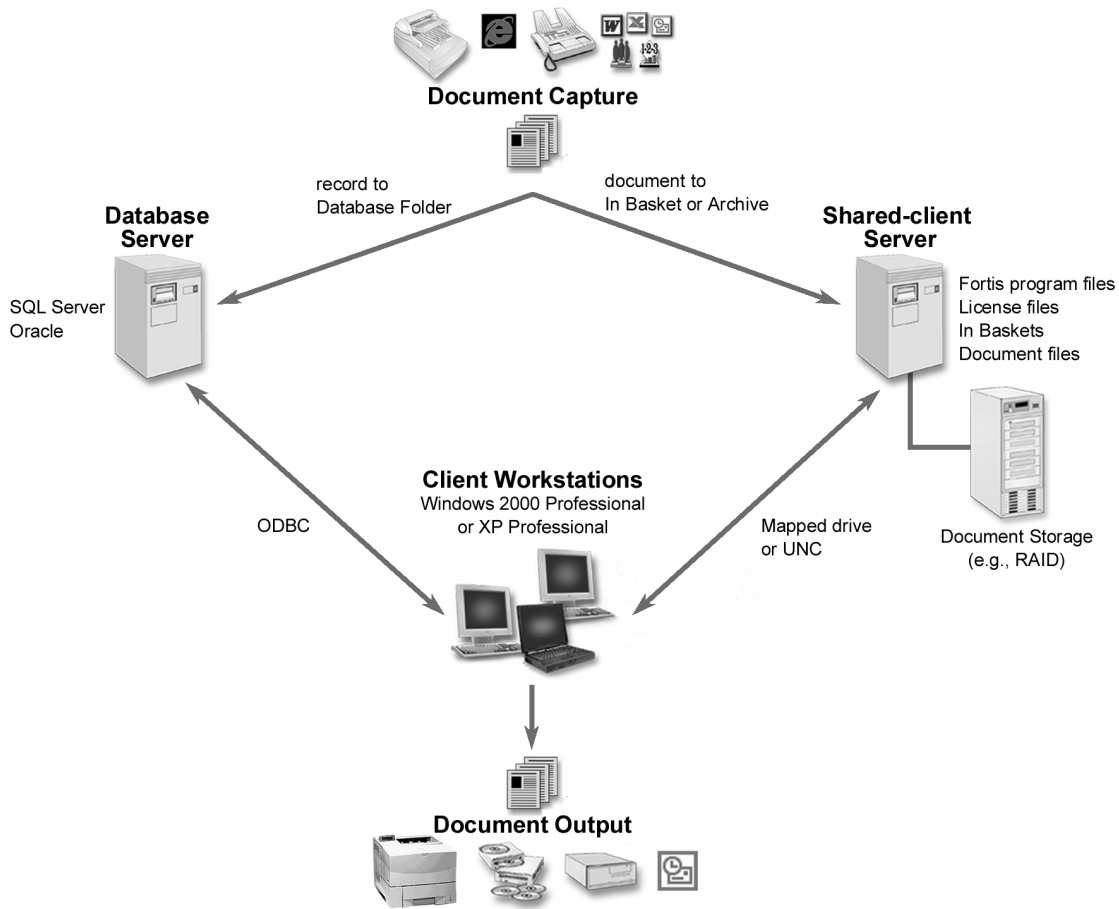
Figure 5: Basic Fortis Configuration

Depending upon an installation's network and Fortis configuration, and the volume of traffic, additional servers may be necessary to run Fortis optimally. Many installations include dedicated servers for archive/storage and for running automatic processes and options (i.e., Inflo or Script Manager server applications, and/or the Fortis ERM processes).

While the database server and the PowerWeb server must run on dedicated server-class machines, the Inflo and Script Manager server applications and the Fortis ERM Monitor process can be installed on server-class machines that are not dedicated to their processes.

Depending on your transaction volume and the required reliability of the system, you can have multiple database servers, even mixing and matching database engine types within the network. See Figure 6.
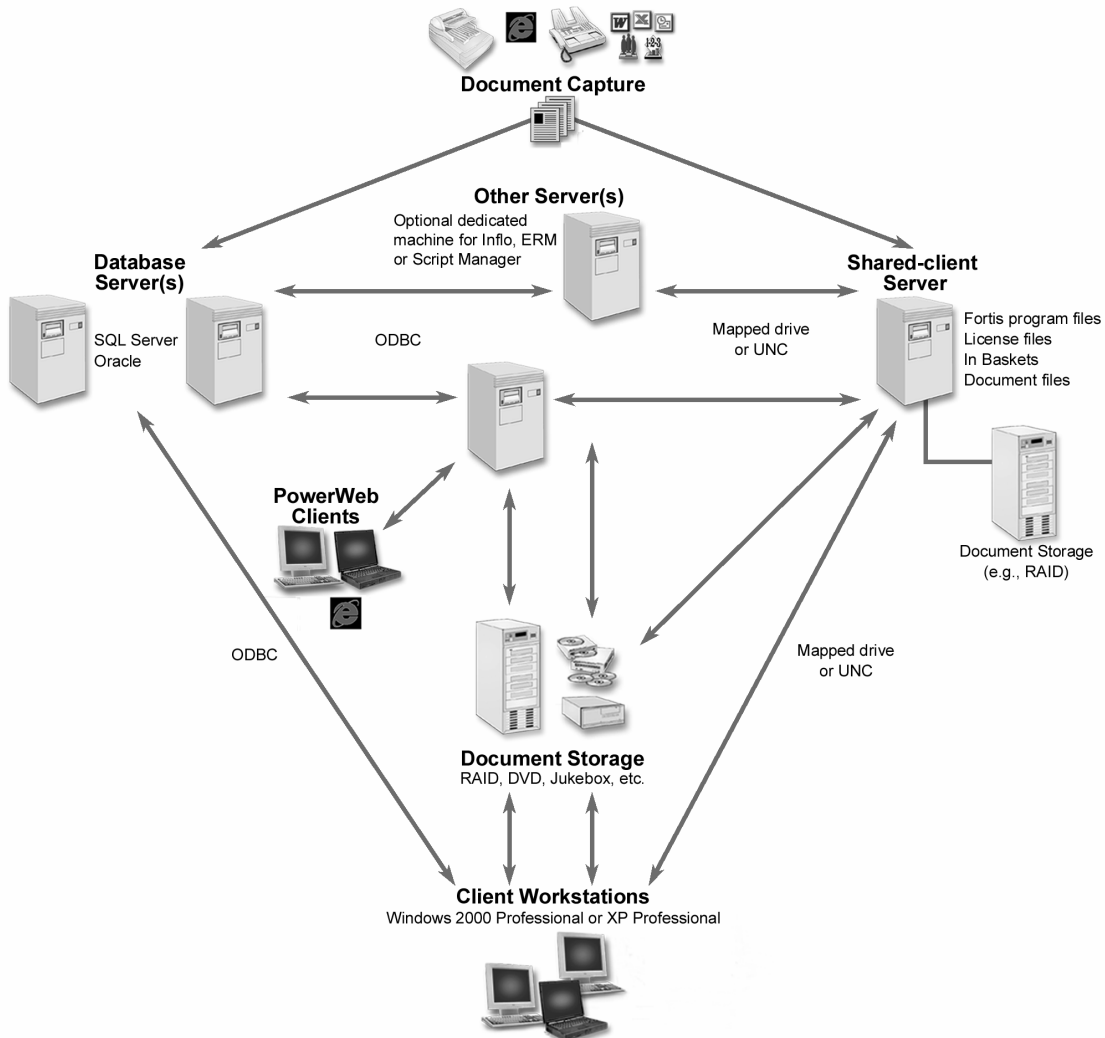
Figure 6: Complex Fortis Configuration

For installations with networks configured as a Wide Area Network (WAN), the Fortis architecture is slightly different. See Figure 7. The Fortis program files can be installed on a remote shared-client server to improve performance, as can local document storage. However, the client workstations must access the main shared-client server when logging on to validate system licenses and user profiles for security clearances.
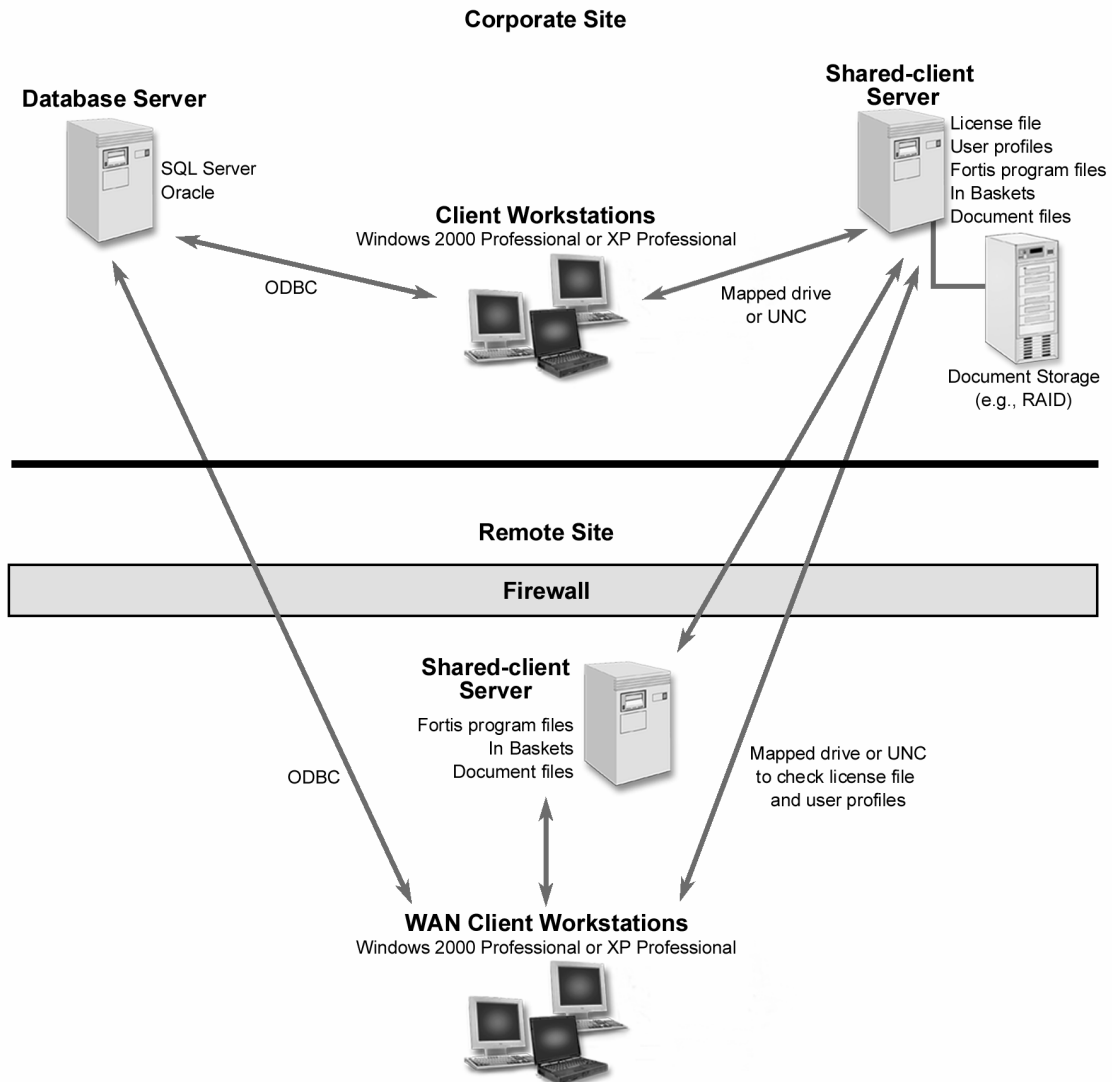
Corporate Site

Figure 7: Fortis WAN Configuration

Communications and Protocols

All Fortis servers communicate with each other with certain protocols using an Ethernet topology. The client workstations communicate with the database server using ODBC over TCP/IP, while the workstations communicate with the shared-client server and the storage server using either a mapped drive or UNC.

The PowerWeb server and any additional servers (i.e., machines running the Inflo or Script Manager server processes) communicate with the shared-client server using a mapped drive or UNC and communicate with the database server using ODBC over TCP/IP. Thin client browsers accessing the PowerWeb server require no special software other than a standard ActiveX control for document viewing.

Fortis can function with a mixed network infrastructure. Certain components may require Microsoft operating systems, but all database communication must use TCP/IP.

Depending upon your bandwidth and machine resources, each server can only support a fixed number of connections. Thus Fortis supports the use of a bank of servers within a WAN environment, with each server typically performing the same function for a different team or department (e.g., accounting, sales, marketing, etc.). You can configure multiple servers to share data but perform separate functions, or you can string them together using cluster technology, enabling multiple machines to work as if one but with enhanced fault tolerance and load balancing.

If you have an environment that must be highly reliable, clustering servers may be more advantageous than using multiple parallel servers because it is fail-safe. When you cluster multiple machines and communicate with the client machines via ODBC, if one machine fails, the clustered system can still provide full operations.

Storage devices can use multiple servers and/or cluster technology in addition to optical (e.g., CD, jukebox, and DVD) and magnetic (e.g., RAID) storage.

Fortis can support any number of users, and any number of users per database server, depending upon the traffic limitations recommended for your server. Westbrook Technologies' Consulting Services Department can help you assess your traffic and server requirements when you are planning your system architecture.

Storage Requirements

The storage requirements for a Fortis installation involve two areas of consideration: the size of the database and the size and volume of documents to be stored (archived).

Each database record represents a single document stored in the system. A Fortis document can contain thousands of sections (typically pages) and consequently, can be very large. The document itself is not stored in the database. Instead, each database record contains a pointer to an external file (e.g., P:\DATA\DOCUMENTS\WTI0\0000123A.MAG).

Database

The database growth rate and total size is dependent upon the particular database engine used and the complexity of database record information. The actual overhead per Fortis record is about 54 bytes. Add to this the actual amount of data being stored to arrive at the total amount of space per record that is being used. On average, Fortis databases grow at a rate of 100 - 1000 bytes per record.

Archive

The Archive is common shared storage consisting of RAID, Optical, CD, and/or a standard network volume. Each database can store documents in a variety of locations based on security needs, accessibility requirements, and document lifecycle. Because Fortis documents

can be very large, the Archive Location can fill rapidly. Typical documents are between 2-5 pages, with each page occupying 30-50 KB of space.

To make a rough estimate of the storage space required for your installation, calculate the number of documents to be stored and multiply that number by 50 KB for each 8.5″ x 11″ document. Or you can scan 100 typical documents, view the total space required, and then divide by 100 to estimate the size per document. The annual growth equals the number of documents added per day x the size of each document x the number of working days per year. When estimating storage needs, it's important to include a buffer and increase the volume over the years, as your business will undoubtedly increase as time goes by.

Fortis ERM Component

Fortis ERM (Electronic Report Management) is a Windows-based system that facilitates the storage and retrieval of documents in a business office environment. These documents are typically forms (e.g., invoices or purchase orders) and reports (e.g., accounts receivable or inventory) generated from an organization's primary software application as print spool data intended for a printer.

ERM serves as a warehouse that stores and retrieves these computer-generated documents. It provides full support for document annotations, CDExpress, and PowerWeb, and ERM documents can be printed, faxed, e-mailed, etc. ERM does not allow users to modify or edit stored data, except to add annotations to ERM reports.

The host computer generates print output, usually with form controls, that instructs the printer how to format the pages. Each unique report or type of document is defined as an Application.

ERM takes the output file for a specific Application and within ERM Setup lets the administrator select the Fortis database in which to store the documents for this Application. A Fortis database can store documents for one or more Applications. Setup then automatically creates the Document Type definitions for each Application. The index fields defined for the Application in Setup automatically become part of the Document Type definition.

An administrator can complete this Document Type definition using the Database Administration station but must use the Setup program to modify the definition itself. Then ERM Process compresses the data and populates the database and indexes. Finally, the Fortis View Station lets end users retrieve ERM documents from the Fortis database(s) and optionally add annotations to those documents.

ERM Stations

ERM Setup is the software used by administrators to define the layout of computer-generated documents. The resulting template allows ERM to intelligently extract information from the documents to enable flexible and easy retrieval. Additionally, Setup lets the administrator define new Applications for ERM, using a simple point-and-click interface.

Typical ERM reports include a header area, a detail area, and may have a footer. Using Setup, Administrators can define the Regions that comprise a document. A Region is one or more lines of fixed format that contain data that should be searched when running Queries. Setup determines Region placement using Signatures. A Signature is one or more constant values or patterns, in a fixed location on a document, that can uniquely identify a Region. Administrators then define index fields within each Region that represent specific data within the document, and set index field attributes.

Administrators can also create Form Overlays for an Application. A Form Overlay is a background form, used when viewing a document in the View Station, that lets users view Application documents online just as they appear in hard copy.

When an administrator defines an Application using ERM Setup, ERM automatically creates the corresponding Document Type definition necessary to retrieve documents from the Fortis database. The Application Setup procedure consists of:

- Analyzing the users' requirements based on document analysis

- Defining the input paging

- Defining the document's Regions

- Defining the unique fields (Signatures) used to identify Regions

- Defining the index fields to be used for document retrieval

- Adding applicable Form Overlays

- Completing the Document Type definitions for the Fortis database and setting user and Group permissions, if necessary

ERM Process is a batch program that imports ERM reports into the Fortis database. Process imports production documents from the ERM import folder. Process names the compressed file it creates according to the Application Name and after Process runs, it writes a log file.

ERM Process can be run on one workstation while other workstations across the network run the Fortis View Station software, so that there is no impact on the retrieval of documents. Typically ERM Process and ERM System Monitor reside on a dedicated processing machine.

ERM System Monitor automatically imports data into ERM. It resides in the background, watching for new import files that have been written to the Fortis ERM import directory. When System Monitor finds a new import file, it starts ERM Process, which imports all the data files it finds in the import directory. System Monitor will not start a second import operation until the current Process import is complete.

System Monitor lets administrators set up a series of imports, even of differing Document Types, that can run unattended, during the day or overnight. Users can still access the Applications from other workstations while imports are in process.

ERM Edit Station allows users to retrieve and output documents as in a View Station. In addition, ERM Edit Station users can add annotations and delete documents.

PowerWeb Option

The Fortis PowerWeb option provides your user base with access to Fortis documents using the World Wide Web. Once you have set up PowerWeb, users can access Fortis documents using the Microsoft Internet Explorer Web browser. The ActiveX Viewer control allows users to view Fortis documents within Internet Explorer. Users can search a Fortis database and view and print documents right inside their browser. Edit Station users can also import new documents, edit a document's index data, annotate documents, insert and delete pages from a document, and delete documents.

The PowerWeb administrator has complete control over the layout of the PowerWeb Web pages. The administrator can customize the Fortis Web site using standard HTML editing tools. PowerWeb provides three Web site template sets that can be adapted to suit any business needs, and a set of Fortis HTML tags that provide control over the functionality, as well as the look and feel, of the Web site. The administrator can adapt any of these templates as required, or use the templates exactly as they are delivered.

Using the PowerWeb template sets and the Fortis tags, the administrator can present one of four initial views to PowerWeb users, once they have opened a database:

- Explore or Documents view – the Folder hierarchy

- Searches or Queries view – the Query Set hierarchy

- Find By view – a list of Document Types

- Import view – for importing a document and index data into the open Fortis database (Edit Station users only)

Regardless of the view presented initially, users can access any of the four views to locate or import documents. Users find documents just as in a regular Fortis system by executing a Query, running a Find for documents of a certain Document Type, or traversing the Folder hierarchy. Once they've located a document to view, the ActiveX Viewer control enables users to open the familiar Fortis Document Viewer within their Web browser.

PowerWeb is delivered with the PowerWeb server software, two sample template sets plus the more complex default template set to enable the PowerWeb administrator to create the Fortis Web site.

PowerWeb Architecture

The architecture of PowerWeb involves three components:

1. a Web server. You can use either

   - the PowerWeb server running on a server-class machine, or

   - Microsoft's IIS server, which is included with Windows 2000 and XP.

2. a set of customizable HTML pages, with Fortis tags embedded, that constitutes the Fortis Web site.

3. an ActiveX control that automatically downloads and allows users to view Fortis documents within their Internet browser.

PowerWeb Server

PowerWeb uses its own Web server software or runs on the Microsoft IIS Web server. The PowerWeb server is a fully functional HyperText Transfer Protocol (HTTP) Web server, compatible with Java Script, ActiveX, HTML, and Dynamic HTML applets, for Windows 2000 and Windows XP. In addition to processing standard HTTP requests, the PowerWeb server also recognizes "extended" URL commands to perform actions on a Fortis database. The actions requested by the user dictate which template the PowerWeb server uses to create an HTML page to send to the user's browser. The Fortis tags embedded in the template are replaced with data from the open Fortis database. This capability enables the PowerWeb server to present Fortis database structures and documents in HTML format, thereby letting users view Fortis documents with a standard browser.

The PowerWeb server provides the following features:

*   standard NCSA logging to the server's hard drive to track the user base and gather site statistics.

*   support for cgi-bin extensions to extend the PowerWeb server by adding server processing functionality, including Perl Scripts, batch files, or standard executables.

*   automatic MIME-type mapping.

*   virtual directories – mapping directories on the server machine to simple aliases.

*   user timeouts – configuring the PowerWeb server to "timeout" and disconnect a user if a new request isn't received within a specified time period.

*   connection limits – configuring the maximum number of connected sockets to maintain peak performance.

*   redirection – configuring the PowerWeb server to redirect additional users to another machine when the maximum number of sockets is connected.

PowerWeb for IIS provides complete PowerWeb functionality for the Microsoft IIS server while taking advantage of such IIS server capabilities as enhanced Secure Socket Layer (SSL) security, Active Server Pages (ASP), and centralized administration for multiple servers.

For more information about the PowerWeb option, see the "Fortis PowerWeb: Product Overview" white paper.

Inflo Option

Using a rule-based approach, the Fortis Inflo option lets database administrators automate the procedures used to process documents in a Fortis database. Inflo monitors documents from their point of entry into the database through various stages until the business process is complete. For example, you can automatically route documents to the proper Folders, set the

value of index fields at various stages of the process, and send e-mail notifications whenever new documents arrive in certain Folders.

Setting up the Fortis Inflo option involves defining a new database object called a Process. Before defining a Process, administrators must analyze your business and the way in which your organization processes documents manually. Once they've defined the steps involved in assigning work to various individuals and/or teams, and what happens to documents as they are processed, they can begin to define the Tasks and Rules required to define a Process.

The two main components of Inflo are the Process Designer and the Inflo Server software. Database administrators define the business process graphically as a Process Map using the Process Designer, shown in Figure 8. This tool lets administrators specify various Tasks within a business process, along with the Rules that determine the flow of documents through that process, and graphically illustrate how everything is connected, using lines, symbols, and text labels.

The Inflo server monitors a Fortis database and executes the Rules defined in the Process. This Rule execution results in the automated flow of documents throughout the system.

The Inflo Process definition begins with the specification of the business process using the Process Designer tool.
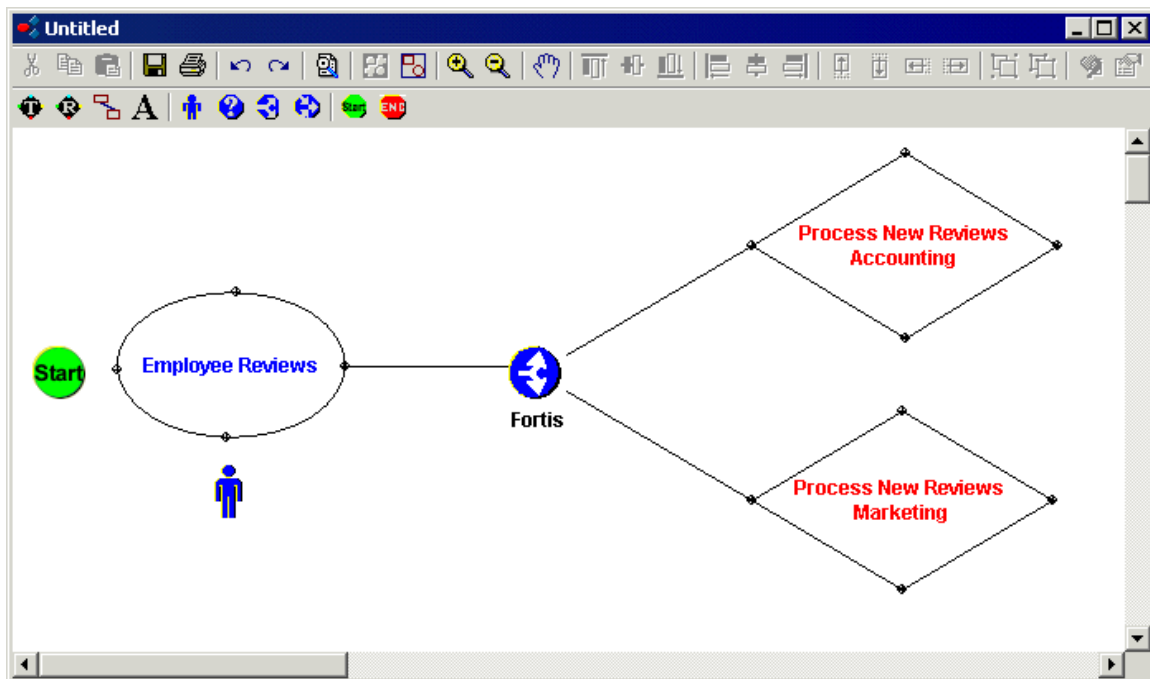

Figure 8: Inflo Processor Designer

Tasks are the building blocks of a Process and identify a piece of work that forms one logical activity within a Process that will be completed by a user. Each Task is represented by an elliptical shape within the Process Map. Tasks may contain an overall description as well as a

list of steps to be performed by the user. Tasks are logically connected to Rules and to other Tasks to graphically illustrate the workflow within the Process.

Rules model business decisions so that the workflow is fully automated. Each Rule is represented by a diamond shape within the Process Map and is comprised of criteria, actions, and scheduling information. Rules are run by the Inflo Server to automate the movement of documents through the system.

You must define a Rule Query for each Rule in the Process. A Rule Query is a Query with one or more Actions associated with it. Rule Queries use the familiar Fortis Query format, but add the concept of an Action that is to be executed on the documents that meet the search criteria of the Query. See Figure 9.
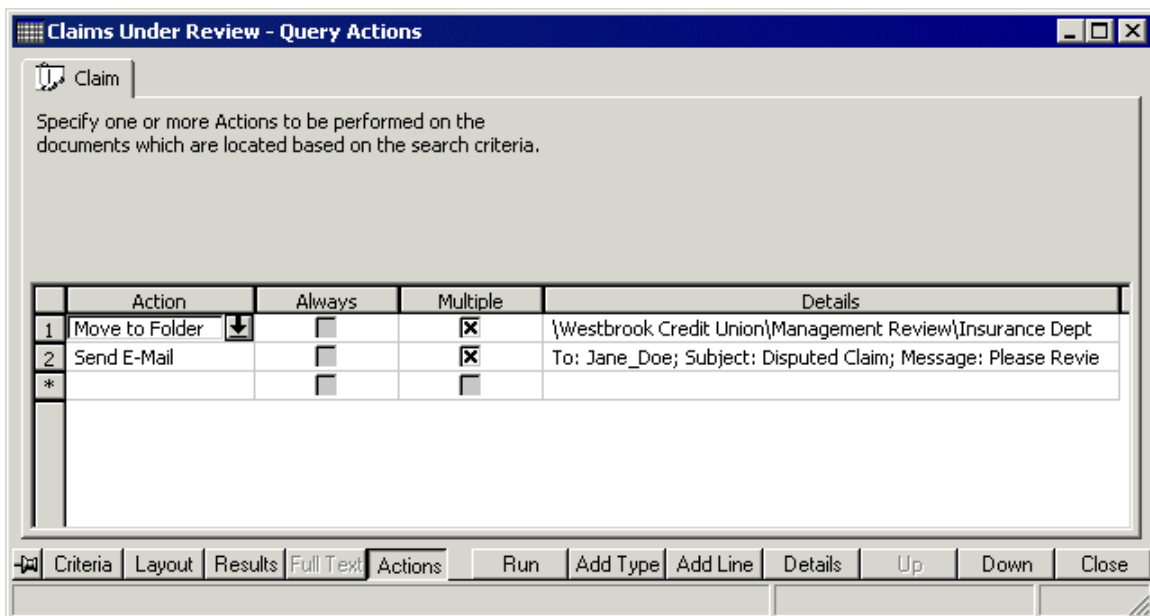
Figure 9: Inflo Rule Query Actions

Fortis Inflo Rule Queries support five types of actions for the resulting documents: moving a document or set of documents to a specific Folder, setting the value of an index field, sending an e-mail, activating another Rule, and running an external application.

Using Fortis Inflo, users process documents with the standard Fortis Scan or Edit Stations. Users can also process documents over the Internet or an intranet using PowerWeb and its browser-based Edit Station. Either way, users can be notified via e-mail of work to be performed on various documents, and the e-mail can include a hyperlink to the document.

CDExpress Option

The Fortis CDExpress option lets database administrators prepare a Fortis database, related document files, and Fortis View Station Software for recording onto a CD or DVD. Administrators can also prepare to record the documents found from running a Query.

CDExpress copies the necessary program and document files into a specified folder so that administrators can record this data using any CD or DVD recording software.

The purpose of CDExpress is to create a Fortis CD or DVD that can be delivered to users who do not have access to a Fortis View Station. Because CDExpress includes the Fortis View Station software, users can access the documents by installing the View Station software right from the CD or DVD. CDExpress can be used with both the Fortis Document Management and ERM components.

Transferring a Fortis database and related documents to a CD or DVD is often done for archival purposes and is particularly useful for service bureaus and enterprises with off-site end users. CDExpress also lets the administrator prepare updates to a Fortis database so that those documents that have been added to the database since the last time it was recorded are included.

CDExpress supports spanning multiple CDs or DVDs for databases with large quantities of document files. If the total size of the database, View Station software, and document files is too large to fit on one CD or DVD disc, CDExpress will automatically span the document files onto additional CDs or DVDs as needed.

Audit Trail Option

The Audit Trail option enables administrators to set up an audit log file so that Fortis tracks a variety of user activities performed on documents. Fortis performs audit logging for a document on a function-by-function basis; administrators can select exactly which functions to track in the audit log. The Audit Trail option is disabled by default and must be specifically turned on to commence logging. Administrators can search the audit log for specific activities or users by executing a Query using the Audit Log Document Type.

Fortis can track the following document-related user activities:

- indexing a new document to a database
- modifying a document's index data
- deleting a document from a database
- viewing a document
- printing a document
- faxing a document
- exporting a document
- e-mailing a document
- forwarding a document
- moving a document to a new Folder

Integrating Other Applications and Web Sites with Fortis

Software applications can interface with Fortis in three ways:

- Enabling solutions provide a direct connection between the primary application and Fortis, or use middleware to enable the primary application to communicate directly with Fortis. Enabling integration solutions usually involve document-enabling an application to allow end users to quickly retrieve the Fortis documents that pertain to a record in the primary application.

- Add-on solutions involve middleware or a database tool such as a trigger that interfaces between the primary application and Fortis and enables automatic updates of Fortis index data. Add-on solutions are typically data-related, while enabling solutions are document-related.

- Core solutions involve changes to the Fortis application itself and can only be performed by Westbrook Technologies personnel.

Enabling Integration Solutions

A direct connection between your application and Fortis often takes the form of a button, a menu option, or a floating toolbar in the primary application. When an end user activates the linked object, the code behind the object logs the user on to Fortis, opens a database, runs a variable Query, selects the Query Results, and opens the document(s) in the Document Viewer.

The basic requirement for creating a direct connection to Fortis is that your primary application must support some level of customization so that the application is able to call Fortis. Interacting with Fortis can be done using one of the integration techniques supported by Fortis: COM, ODBC, the Web, database tools, or DDE.

If your primary application does not have scripting or other integration capabilities built in, a second type of enabling solution involves writing a piece of middleware, typically in Visual Basic, that acts as the go-between the primary application and Fortis. When an end user activates an access key or floating toolbar, the middleware VB program extracts the necessary field value from the primary application and then performs the steps required to log on to Fortis and retrieve the related document(s).

A third enabling solution involves the use of an HTML URL link to access Fortis documents. If your primary application supports HTML, it can use the Web to access Fortis. If your primary application supports the integration of such controls as ActiveX, then users can view Fortis documents right inside your primary application without needing to open a browser. Another advantage of using a Web link to Fortis is that users are already familiar with how to navigate within a browser.

Add-On Integration Solutions

Add-on solutions use middleware code or database tools such as triggers to perform data-related actions. For example, you can update the index data in a Fortis database record based on the data in the fields in a record in your primary application.

Middleware solutions let you create a data file using your primary application or some other application, and update the index data in a Fortis database automatically. Users need only minimally index Fortis documents, thereby creating a unique document ID. The add-on middleware solution finds the correct Fortis document and populates the index fields using the index data in the interim file.

Another type of add-on solution involves the use of database triggers to verify index data, or update and delete data. Triggers execute a specified set of code when certain actions are performed on a Fortis database table.

Core Integration Solutions

A core integration solution involves a change to the code of the Fortis application; only Westbrook Technologies personnel can make such a change to Fortis. Core solutions usually involve a Software Engineer and Quality Assurance Analyst or Technician spending at least a week designing, coding, and testing the enhancement. While not inexpensive, a core solution can be exactly the custom solution required to make the most efficient use of your information.

Integration Techniques

Fortis provides a variety of methods that enable you to integrate Fortis with your other applications or with a Web site.

- Microsoft's COM (Component Object Model) is a widely-used component software model that provides a powerful yet easy-to-use platform for building distributed applications. Fortis supports a COM toolkit to enable access to standard Fortis objects.

- PowerWeb is a robust Web server that supports practically limitless customization and integration possibilities. Customizing PowerWeb is as simple as editing the PowerWeb template files, using any standard text editor or HTML authoring tool.

- ODBC (Open Database Connectivity) is an industry-standard API that enables applications to communicate with different database engines using the same source code. Fortis supports several database engines that are ODBC-compliant.

- SQL (Structured Query Language) is the standard communication language for Database Management Systems (DBMS).

- The DDE (Dynamic Data Exchange) protocol enables a conversation between two software applications. Fortis supports an extensive set of DDE commands.

COM Integration

Microsoft's COM is a widely used component software model that provides a powerful yet easy-to-use platform for building distributed applications. COM has become the component standard in the past decade, and offers a considerable amount of stability in processing high volume data.

Fortis includes a COM toolkit that is accessible using any programming interface (e.g., C++, Delphi, VB, VBA, etc.). The COM API is typically used for batch importing and batch updating large amounts of data. Using COM, an external application can examine a list of Fortis databases, open a Fortis database, navigate the Folder and Query Set hierarchy, run Queries, view documents using an OCX viewer, and log into different Fortis workstations.

Web Integration

PowerWeb is a robust Web server that supports practically limitless customization and integration. Customizing PowerWeb is as simple as editing the PowerWeb template files, using any standard text editor or HTML authoring tool.

You can also easily image-enable an application using the PowerWeb option. Users access PowerWeb using a Web browser, not a Fortis client station. Therefore, the only requirement for a third-party application to access PowerWeb documents is to construct a URL containing the path to the PowerWeb server and the necessary Fortis Query information to retrieve a specific document. The PowerWeb server then logs the user on to Fortis, runs the Query, and displays the document(s) found in the PowerWeb viewer in the user's browser.

If the third-party application is not capable of dynamically calculating the necessary URL, middleware can be designed to perform this function.

ODBC Integration

ODBC is an industry-standard method for applications to communicate with different database engines using the same source code. The goal of ODBC is to make it possible to access any data from any application, regardless of which database management system (DBMS) is handling the data. ODBC achieves this access by inserting a middle layer, an ODBC driver, between an application and the DBMS. Function calls made to the ODBC interface are then passed to the ODBC driver for a specific database engine. Because Fortis supports ODBC-compliant databases, the data stored within a Fortis database can be accessed via standard functions and ODBC applications.

ODBC communications can take advantage of Data Sources to integrate Fortis with another application. For example, the Fortis Data Entry Assistant, which lets an end user automatically populate the index fields for a document using an external data source, makes use of Data Sources that store information about how to connect to the indicated data provider. Data Entry Assistant is designed to keep Fortis index data in sync with an external ODBC-compliant data source.

Database Integration

In addition to the functionality provided by ODBC and DDE, each individual database engine can provide extended functionality specific to that database engine. SQL is the standard communication language for database management systems. All of the database engines supported by Fortis (SQL Server and Oracle) use SQL. Not all database engines support the same functionality, but for the most part, core functionality remains intact across engines.

SQL triggers enable code to be executed every time a row in a relational database is modified. Administrators can use triggers to implement sophisticated business logic, to calculate derived fields, or to perform extra data validation. A common example is maintaining an audit trail of when a row changed and who changed it.

Fortis databases support three types of triggers: Insert, Update, and Delete. Triggers can be defined to run immediately Before or After the change is written to the database; Before and After commands can be applied to each of the three types of triggers. Administrators can define multiple triggers for the same condition and specify the order in which they should execute.

DDE Integration

The DDE protocol is a set of messages and guidelines that enables a conversation between two software applications. DDE can request an item of information from one application and display that information on a form or report in another application.

Fortis functions as a DDE server application, enabling external applications to remotely control Fortis. The capabilities of the Fortis DDE API let external applications quickly and efficiently use the Fortis import, index, and retrieve functionality. These capabilities enable the administrator to customize and streamline the Fortis interface, or automate certain processes. Also, by controlling the output of Fortis documents using the Print, Fax Out, Export, etc. functions, DDE enables data to be more effectively distributed.

Fortis provides a free utility, DDE Professor, that serves as a diagnostic test and development utility. Administrators can verify that DDE commands used in a custom application are working properly before integrating the application with Fortis. The DDE Professor utility enables step-by-step command testing and performs diagnostic testing prior to application integration.

Summary

Fortis is a comprehensive, feature-rich document management system that lets users capture and retrieve paper-based, electronic, faxed, and ERM documents. Fortis uses client/server technology and ODBC architecture to provide a superior document-handling solution. Fortis currently supports two back-end database engines: SQL Server and Oracle.

Fortis allows users to capture a wide variety of documents by scanning, importing, and faxing. Once documents are captured, users can retrieve documents for editing, annotating, and/or

integrating with other business software applications. In addition, users can share or distribute documents via LAN, WAN, Internet/intranet, e-mail, fax, groupware, CD, or printed copy.

Additional options such as PowerWeb, Inflo, CDExpress, and Fortis Office allow you to expand the power and capability of Fortis.

For additional information about Fortis or other Westbrook Technologies products, go to www.westbrooktech.com/about/want_to_know_more.htm.

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