



# Inbound Fax Routing

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# Routing Received Faxes

The FAXCOM solution provides numerous options for routing received faxes. These options allow you to specify on what criteria to determine the destination of a received fax, options for where to deliver the fax, and even multiple choices relating to the format of the delivery.

Delivery of received faxes involves:

- Criteria for routing received faxes
- Destination types for routing received faxes
- File format for routed faxes

## Criteria for Routing Received Faxes

Routing received faxes is a three step process:

1. The first step is to gather the data known immediately about the fax, such as the date and time it arrived and the number it was sent to.
2. The second step is to extract additional data from the fax image, perhaps through OCR or via barcodes.
3. The third step is perform a lookup in one or more data sources, referencing the data collected, for fax routing instructions.

**Data known about the fax when it arrives**

- **Fax Port (the fax line or phone line on which the fax arrives)** — whereby all faxes over a given port on a server or range of ports on multiple servers are routed to a specified destination type. For example, with the implementation of an eight channel fax server, you could assign ports 1-4 to destination 1, and ports 5-8 to destination 2, where each port is a fax channel (i.e. phone line.)
- **Dialed Digits** — whereby all faxes are routed to a specified destination type according to the phone number dialed. This option includes these variations:
  - **DNIS (Dialed Number Identification Service) on a Digital T1/PRI/E1/BRI Line**, where a range of fax phone numbers is provided on a lesser number of actual lines. For example, the range of fax phone numbers 978-555-1000 to 978-555-1099 includes 100 unique fax numbers, each with a normal 10 digit dial string. These 100 numbers could be assigned across a 24 channel T1 line. The benefit of this implementation is that you can assign numerous unique fax numbers without acquiring the full number of phone lines, much as a PBX allows you to assign unique phone numbers without acquiring the same number of phone lines. Digital lines are bidirectional – i.e. they can send and receive faxes, unless configured to only do one or the other.
  - **Analog Direct Inward Dial (DID)**, where a range of fax phone numbers is provided on a limited number of physical phone lines called DID Trunks. As with DNIS routing, you can assign numerous unique fax numbers without acquiring the full number of phone lines. DID Trunks are provided by the phone company, and are “receive only” phone lines.
  - **DTMF (Dual Tone Multi Frequency)**, where “tones” are passed after the regular 10 digit dial string.
- **TSID (Transmitting Subscriber Identifier)** — whereby all faxes received from the specified Transmitting Station Identifier (TSID) are routed to the specified destination type. Fax servers and fax machines are typically configured with an identifying TSID such as the organization name or fax number. Note that because the TSID is configured by the sender's organization, it is not always available or accurate.

- **Caller ID (ANI – Automated Number Identification)** — whereby all faxes received from the specified sending telephone number are routed to the specified destination type. The Caller ID, unless blocked, is provided by the telephone company completing the fax transmission. Note that Caller ID is not always provided on all phone line types and in all regions.
- **Date & Time** — whereby the date and time the fax arrived is used to determine fax routing instructions. For example, whether a fax arrives on a weekday versus a weekend, or whether a fax arrives during business hours or after business hours.

#### ***Additional data gathered from the fax image***

Additional data can be extracted from the fax image, for example:

- **OCR (Optical Character Recognition)** — whereby the fax image is converted to text by OCR, and thus is made searchable
- **Barcode** — whereby a barcode on the fax is scanned and interpreted

#### ***Determining where to deliver the fax***

Based on the information known about the fax when it arrives, and any additional information extracted from the fax image, fax routing instructions can be identified by querying a network resource such as:

- LDAP (Lightweight Directory Access Protocol) compatible server such as Active Directory, NDS, and Netscape
- ODBC (Open Database Connectivity) database such as SQL, MySQL, Oracle, and Access
- Text file
- FAXCOM tables

## **Destination Types for Routing Received Faxes**

After determining the criteria for routing a received fax, you then determine to where it should be delivered — i.e. one or more destinations. Destination types include:

- **Email** — faxes are delivered to an email user mailbox or an email folder, including:
  - Exchange
  - SMTP (Simple Mail Transfer Protocol)
  - Domino
  - GroupWise

The fax file can be delivered as an attachment to the email message or a notification that contains a UNC link to the fax file can be delivered instead. This allows the faxes to be stored in a central location to which recipients link to view faxes.

- **FAXCOM Client** — faxes are delivered to a folder or subfolder in Biscom's workflow-optimized fax client.
- **FAXCOM Web Client** — faxes are delivered to a folder in Biscom's Web Client.
- **Host application** — delivers faxes to a custom application using the FCL (FAXCOM Command Language) API (Application Programming Interface.)
- **Printer** — delivers faxes to a printer.
- **UNC (Universal Naming Convention)** — delivers faxes to a network directory.
- **FTP (File Transfer Protocol)** — delivers faxes to an FTP location.
- **SFTP (Secure FTP)** — delivers faxes to a Secure FTP location.
- **Quarantine** — delivers faxes to Biscom's Quarantine Doctor application, which is used for filtering Spam Faxes. For example, if a received fax has a blank TSID, it might be delivered to Quarantine for review.

- **Hang up** — terminates the fax phone call without completing delivery. For example, if a specific TSID or Caller-ID is known to you as a sender of junk faxes, that TSID or Caller-ID could be configured with a “Hang up” destination.
- **Image Indexing** — delivers the received fax to the FAXCOM Image Indexing application, Biscom’s fax workflow solution for data capture and image processing.
- **FileMarshal** — delivers the received fax to FileMarshal, Biscom’s secure email and file delivery solution. With delivery to FileMarshal, an email notification containing a URL is sent to the email destination, while the fax itself is encrypted and stored in a secure database.

## File Format for Routed Faxes

The final consideration with respect to routing received faxes is the file format. Faxes are received in the TIFF image file format that is the standard for fax communications.

### File format options include:

- **TIFF** — The TIFF image file format is the format in which faxes are sent and received by fax devices. Routing faxes in TIFF formats delivers the exact faxed image to the final designation. TIFF is a widely supported file format, and most PCs include a TIFF viewer by default. Note that TIFF is an image file format, and thus its content is not searchable.
- **PDF** — whereby FAXCOM converts the TIFF image to PDF file that can be viewed with Adobe Acrobat. Note that the PDF Option, unlike the Searchable PDF option, does not produce a file with searchable content.
- **Searchable PDF** — whereby FAXCOM performs an OCR process on the TIFF file and then converts the OCR results into a Searchable PDF file that can be viewed with Adobe Acrobat and whose contents can be searched.
- **Searchable TIFF** — whereby FAXCOM performs an OCR process on the TIFF file and then converts the OCR results into a Searchable TIFF file that can be viewed with the Biscom Fax Viewer and whose contents can be searched.
- **Text** — whereby FAXCOM performs an OCR process on the TIFF file and then converts the OCR results into a text file whose contents can be searched.
- **Data** — whereby the final delivery includes the additional data, such as the text extracted by OCR and any additional data captured by a query to a network resource, with the fax in a format that can be easily read, such as keyword value pairs, .csv files, and .xml files. A record of the fax and corresponding data can be written to an ODBC database.

## \* ADVANCED FAX ROUTING \*

**Advanced Fax Routing extends fax routing capabilities to enable fax processing to be included in business workflows. These capabilities include extracting data from received faxes, making queries to network resources, splitting a received fax into multiple fax documents, determining one or more destinations for each fax, and then delivering the fax and its associated data.**

### The steps in implementing Advanced Fax Routing include:

- **Extract information from a received fax**
- **Act on the extracted information**
- **Deliver the received fax**

## Extract Information from a Received Fax

Automatically extracting data from a received fax enables dynamic decision making for fax routing, and also improves the efficiency of fax delivery. Some of the data that can be extracted from a fax includes:

- **Text captured by an OCR of the fax**

- For example: A received fax might be an insurance claims form, where the claim number is printed in one of the boxes on the form.

- **Barcodes on the fax are scanned and interpreted**

- For example: A received fax might be a Purchase Order that includes a barcode on the cover page, where the barcode is unique to a specific customer.

- **Fax header details such as Caller-ID, TSID, and DID**

- For example: A received fax might be an invoice delivered to a specific DID number, where each DID number in the organization is assigned to a specific user. For example, it could be assigned to the Accounts Payable contact.

## Act on the Extracted Information

Based on the data extracted from the fax, a number of additional steps may take place to determine the routing path of the received fax. Based on the data extracted from a received fax, next steps could include:

- Extract additional data from a secondary source, such as an LDAP server, an ODBC database, or a network text file.

- For example: After extracting the claim number from an insurance claims form received by fax, a second step could be to perform an LDAP lookup matching the claim number with a customer service representative. The received fax could then be forwarded to the customer service representative for review.

- Split the received fax into multiple fax documents.

- For example: Multiple Purchase Orders are received in a single fax. After reading a barcode on each Purchase Order, a second step could be to split each order into its own document. A third step could be to read a network data file to assess which product lines each Purchase Order is for, and then deliver each Purchase Order to an email address assigned to each product line.

## Deliver the Received Fax

The information that is extracted from the received fax and the additional data that is retrieved from a network resource are used to determine the destination, or perhaps multiple destinations, of each received fax. Destinations for received faxes include:

- UNC locations
- Email addresses
- Printers
- FAXCOM Client folders and subfolders

In addition to delivering each fax to one or more destinations, the final delivery can also include the additional data — such as the text extracted by OCR and any additional data captured by a query to a network resource — and include this additional data with the delivery in a format that can be easily read. This enables seamless integration with the next stage of the fax workflow. These formats include:

- Keyword value pairs
- .csv files
- .xml files

Naming of the fax image can also be controlled. A record of the fax and corresponding data can be written to an ODBC database.

## Design & Implement Workflows for Received Faxes

Each FAXCOM Queue can handle one or multiple workflows for processing received faxes. The workflow integration is accomplished by defining a set of criteria that trigger actions based on certain conditions. Examples of conditions include:

- Data extracted from the fax or from other data sources such as a network resource.
- The current date, time, or day of the week.
- Whether the user is in or out of the office when the fax is received.

Examples of **basic workflows** include:

- Deleting or forwarding faxes to specified subfolders when they are detected as spam based on the TSID.
- Routing faxes to users based on text extracted from the fax cover page.
- Automatically redirecting faxes when users are out of the office.

A sample **intermediate-level workflow** is to:

- First, convert a received fax to a text data file.
- Second, deliver the data file to an application for automatic processing.

A sample **advanced workflow** is to:

- First, separate a multi-page received fax into multiple documents.
- Second, search a network resource for the owner of each document based on extracted transaction IDs.
- Third, deliver each document to the correct owner with an attached .xml file that enables the document to be automatically indexed according to data extracted from the fax image included in the .xml file.

Advanced Fax Routing offers a number of capabilities that can be used in any number of combinations to satisfy the requirements of any Fax Workflow. For more information on using Advanced Fax Routing to design and implement a Fax Workflow, Biscom's Application Engineers are available for consultation.

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