



**InterAct and FileAct  
Messaging Interface**  
Conceptual Overview

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## **Intended Audience**

This document gives an overview of the Box for SWIFTNet FileAct and InterAct Messaging Interface. It is intended to be read by business managers, system administrators and systems architects. More detailed information on specific topics can be obtained by contacting Intercope through any of the addresses on the final page of the document

## Management Summary

### ***Rising importance of InterAct and FileAct***

In addition to the traditional FIN-service, InterAct and FileAct are becoming increasingly important for the exchange of financial messages between financial institutions via SWIFT. SEPA payments, Cash Management, and the handling of Exceptions and Investigations are just a few examples of the business areas where ISO20022 structured XML messages are processed by banks exploiting the InterAct and FileAct protocols.

### ***Multiple interfaces for business applications***

BOX for SWIFTNet includes a Messaging Interface for these protocols which extends the scope of functions mandated by SWIFT for these services in several areas. Firstly, all flavours of these protocols, such as store and forward or real-time transmission and push or pull mode, are supported and can be configured and used in a very flexible way. Secondly, the communication with business applications is not restricted to the most commonly used interfaces based on IBM WebSphere MQ, but for situations where these facilities are not available, or desired, alternative interfaces can be used where the information exchange is based on a relational database or simple files.

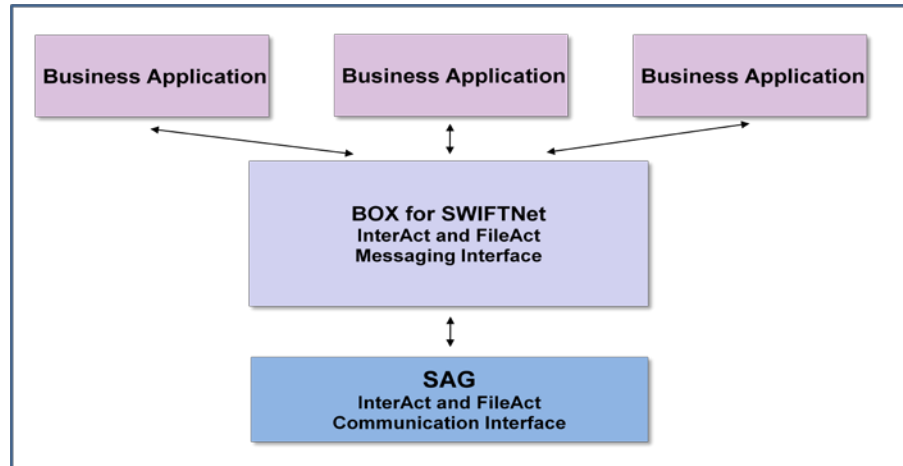
### ***Flexible format conversion and message mapping profiles***

Because of BOX for SWIFTNet's flexible conversion plugins all the many interfaces are capable of understanding virtually any type of message format and generating valid FileAct and Interact messages from these formats using different message mapping profiles. So the complexity of protocol related information in the InterAct and FileAct protocols is completely shielded for business applications.

### ***SWIFTNet 6.3 and 7***

The InterAct and FileAct Messaging Interface is provided for SWIFTNet 6.3 and for SWIFTNet 7.

## System Overview



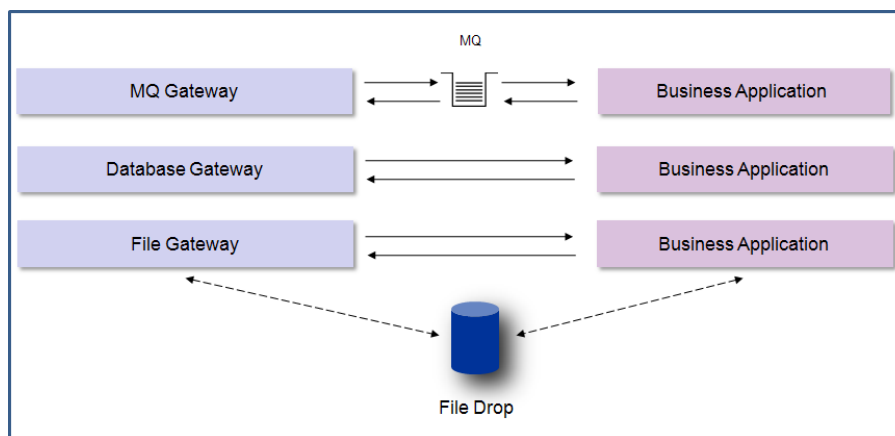
The major components for the Interact and FileAct message flow are:

**A dedicated messaging interface for InterAct and FileAct**

- Business applications generating and receiving ISO 20002 formatted financial messages and files
- BOX for SWIFTNet providing the protocol elements mandated by SWIFT for the messaging interface
- SAG providing the communications interface including the link to SWIFTNet

In this scenario BOX for SWIFTNet provides a dedicated messaging interface which implements the protocol specific requirements of InterAct and FileAct so that business applications do not need to handle this communication layer. This includes retry handling, handling of possible duplicates, security aspects, session monitoring etc.

## Business Application Interfaces



BOX for SWIFTNet offers several interfaces (gateways) for business applications to exchange FileAct and InterAct messages and delivery notifications with BOX for SWIFTNet including:

### **Multiple Integration Options**

- The MQ (IBM WebSphere MQ) Gateway
- The Database Gateway
- The File Gateway

The MQ gateway is the most commonly used interface to exchange messages between business applications and BOX for SWIFTNet as IBM WebSphere MQ has evolved into a de facto standard for the exchange of SWIFT messages. The sending business application puts a message to a MQ-queue, the MQ-manager forwards this to a queue which is read by the BOX for SWIFTNet MQ gateway and BOX processes the message. A highly customizable XSLT plugin of the MQ gateway allows the automatic translation of various flavours of message formats into valid FileAct and InterAct structures. This is a feature which is particularly useful for generating elements of the message header from data provided by the business applications.

### **The MQ gateway**

Delivery notifications and messages received from SWIFT are routed by BOX to specific business applications, put into a corresponding MQ queue, transferred by the MQ queue manager and processed by the business application. In addition for FileAct a file drop facility is provided which can be used in both directions, where the files to be sent to SWIFT or to be processed by the business application are stored in configurable file system directories, and the MQ messages mainly contain a pointer to that file and further delivery parameters.

### **The database gateway**

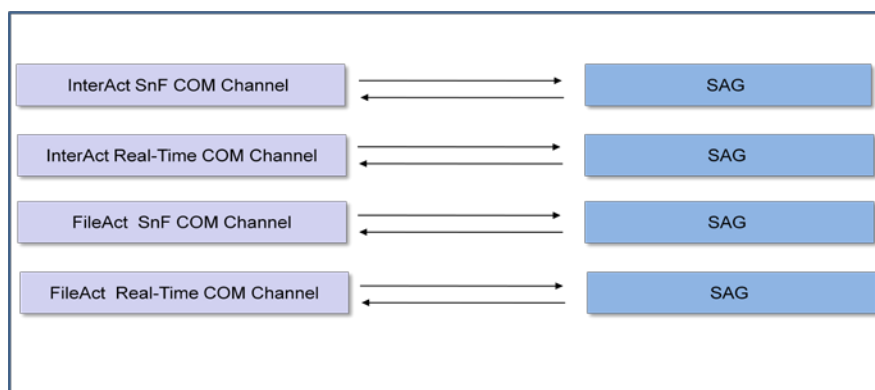
In addition or as an alternative to the MQ interface the BOX for SWIFTNet database gateway can be deployed for information exchange between business applications and BOX for SWIFTNet. In this case the data to be transferred is stored in the tables of an RDBMS such as DB2 or Oracle Database instead of a MQ queue. The structure of the database table – the format and the content of the table columns - can be different for different business applications as the BOX database gateway includes configuration options to map this data to BOX internal data structures. This is functionally equivalent to the XSLT plugins for the MQ gateway and the file gateway. In addition for FileAct a file drop facility can be used in both directions, where the

files to be sent to SWIFT or to be processed by the business application are stored in configurable file system directories and the database table mainly contains a pointer to that file and further delivery parameters.

### ***The file gateway***

A third option for exchanging messages between business applications and BOX is the file gateway. With this integration option the information is simply stored in files by either the business application (for messages to be sent to SWIFT) or by BOX (for messages and delivery notifications received from SWIFT) configurable file system directories.

## Communication Channels



SWIFT provides several options for the InterAct and FileAct protocol. Both protocols can be used in store and forward or in real-time mode and in addition a push or pull delivery mode can be selected, when a receiver opens a SWIFT queue.

### ***Store and forward mode***

In store and forward mode the Messaging Interface opens an input channel and thereby establishes an input session with SWIFT. Messages are transferred via this input channel and safely stored by SWIFT. The delivery of the messages to the recipients, and of delivery confirmations to the sender, happens asynchronously and the sending of messages does not depend on the immediate availability of services with the receiving institution.

To receive messages from SWIFT, queues can be opened in either push delivery or pull delivery mode.

### ***Push mode***

In push mode SWIFT automatically delivers traffic to the receiver. Any traffic pending on the receiver's queue is automatically and immediately delivered. This mode thus guarantees that traffic is delivered without unnecessary delay as soon as the receiver has started a session for the relevant queue.

### ***Pull mode***

In pull mode SWIFT does not send anything automatically to a receiver, but the receiver has to send a pull request to SWIFT for each message he wants to retrieve from the queue. SWIFT then delivers one message (if available), the receiver acknowledges the receipt of the message and sends the next pull request. This mode is recommended by SWIFT only for low message volumes, and for use with manually operated messaging interfaces.

### ***Real-time mode***

In real-time messaging mode SWIFT establishes an online connection to the receiver of the message. The sender receives either an immediate acknowledgement from the receiver to indicate the message was received, or an error message. This mode requires both the sender and receiver to be connected at the same time to SWIFTNet ready to use InterAct during the exchange.

### ***Implemented in communication channels***

BOX for SWIFTNet supports the exchange of InterAct and FileAct messages in store & forward mode as well as in real-time mode together with push and pull mode to receive messages from SWIFT. The connectivity to SWIFTNet is implemented in BOX for SWIFTNET as communication channels and these different protocol options can be specified for each communication channel by means of configuration parameters.

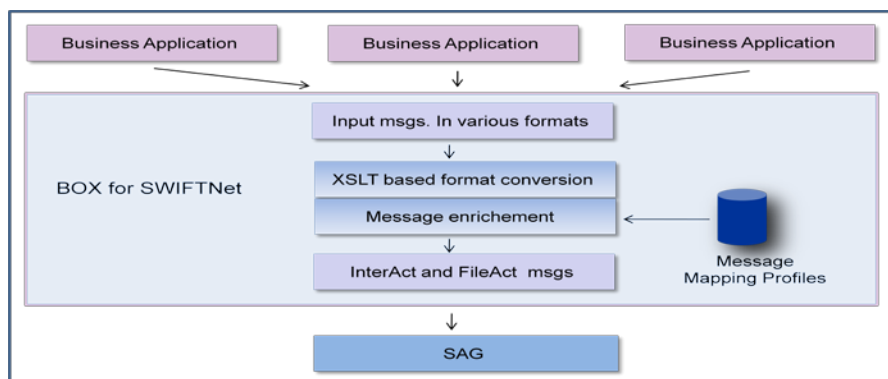
For FileAct this includes the following modes:

- Real-time
  - Send Files (Send PutFileRequest)
  - Receive Files (Receive PutFileRequest)
  - Send Files (Receive GetFileRequest)
  - Receive Files (Send GetFileRequest)
    - Scheduled transfer possible
  - Monitoring of File Transfers
  - Remote File Handler
- Store and Forward
  - Send Files
  - Receive Files

***Remote file handler***

In addition for FileAct the Remote File Handler, provided by SWIFT, is supported, thus avoiding the necessity to store confidential data outside of the DMZ.

**Message Enrichment**



Business applications typically provide and process only the business related parts of Interact or FileAct messages (the business payload). However, Interact and FileAct messages require in addition various header elements related to message routing, delivery instructions and security aspects of the SWIFT protocols. These elements are typically constructed by BOX for SWIFTNet based on different Fileact / Interact service profiles, which can be loaded and maintained within the BOX GUI.

***Message Mapping Profiles***

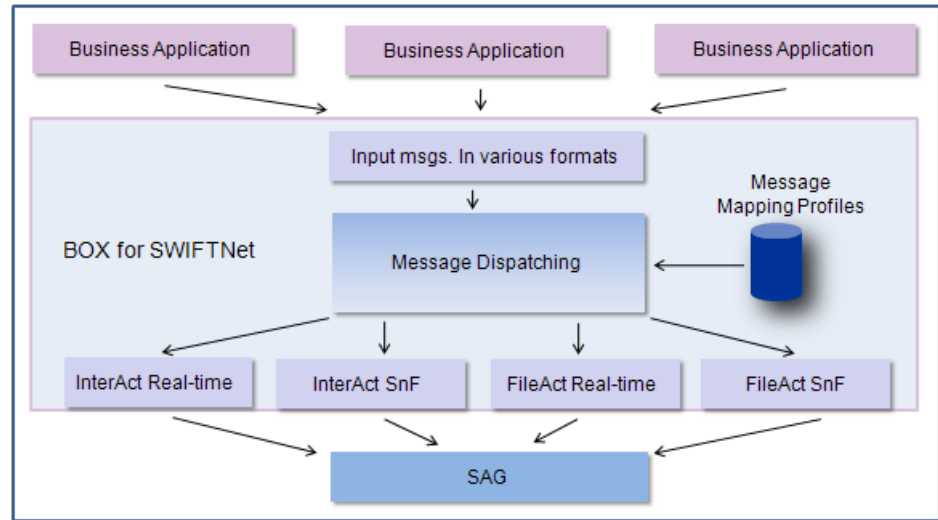
If a profile is to be used, it can be specified in the message generated by the business application or be determined by configuration data such as the receiving channel. The combination of highly flexible conversion tools for the input data stream based on XSLT technology and the flexible setup and access options of different profiles allow the construction of complete InterAct and FileAct messages in a very flexible way from virtually any input data format provided by the business applications.

***XSLT technology***

Similarly, when messages are received by SWIFT, BOX for SWIFTNet converts the InterAct or FileAct message into a business application specific format stripping protocol related information which is not needed for processing by the business applications.

It is important to note that these advanced data extraction and conversion options are an integral part of the product and do not require any additional external component and do not incur any additional license cost.

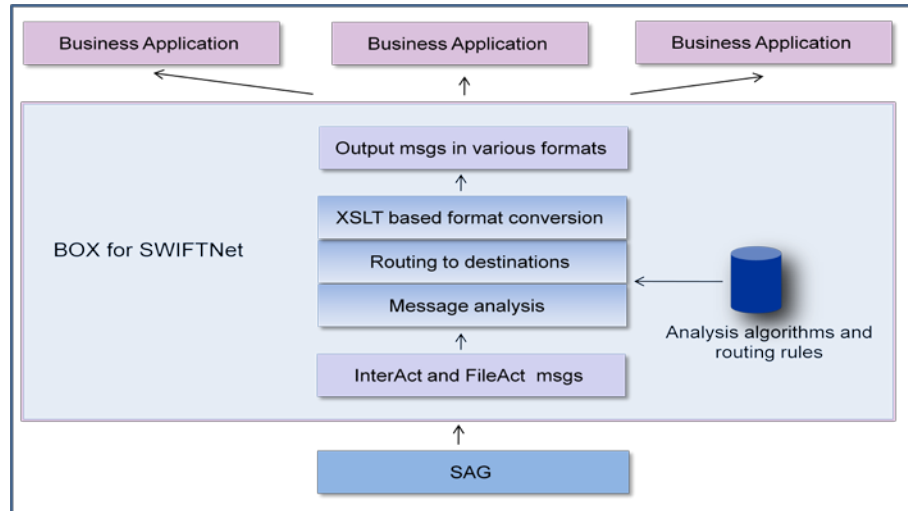
## Message Dispatching



### ***Flexible channel selection***

As described above the different flavours of the InterAct and FileAct protocols are implemented in BOX for SWIFTNet as communication channels. When a message is received from a business application and formatted by the message conversion layer BOX dispatches the message to an appropriate communication channel for delivery. Just as in message conversion, the dispatching criteria can be included in the message generated by the business application and / or be defined in a BOX profile. Furthermore the profile can be specified either in the message generated by the business application or constructed from configuration data.

**Message Routing**



***Advanced analysis features***

InterAct and FileAct messages received from SWIFT typically have to be delivered to business applications for further processing. In addition specific messages may require manual intervention or automatic printing. The criteria for these routing decisions may be complex and require the analysis of the content of the payload of the message as well as of various header fields. BOX for SWIFTNET provides sophisticated facilities for this purpose as part of the product and includes a graphical user interface to define these algorithms. All elements of a message can be analyzed, including substrings and the use of regular expressions, in arbitrary logical operations to determine any number of routing destinations for a message or delivery confirmation.

**Message Audit Log and Monitoring**

Event ID	Chnl Name	Event Type	Created	Sess Type	Sess Ref	Msg Seqno	Msg Type	Msg Type Name	Op Res	Msg Proc Stat
439	PTSADSS	CHANNEL_STOPPED	20.02.11 19:53:59			0	No Data	CHANNEL MON STOPPED	0	Processed
438	PTSADSS	CHANNEL_SHUTDOWN_REQ	20.02.11 19:53:59			0	No Data	CHANNEL MON SHUTDOWN	0	Processed
427	PTSADSS	PHLR_STOPPED	20.02.11 19:53:57			0	No Data	PH STOPPED	0	Processed
426	PTSADSS	PFTFILERESP	20.02.11 19:53:46	SNF QUEUESESSION	ptsadess_generich:p:000418	0	IACKRESP	ReleaseSnf TODO	0	Reception
425	PTSADSS	PFTFILERESP	20.02.11 19:53:44	SNF INPUTCHANNEL	MFTY2Bq4eLd4H42v8F6U8U2PMEXVCYQ9Id3o=	0	IACKRESP	TODO CloseInput	0	Reception
424	PTSADSS	PFTFILEREQ	20.02.11 19:53:42	SNF QUEUESESSION	ptsadess_generich:p:000418	0	IACKREQ	ReleaseSnf TODO	0	Submitted
423	PTSADSS	PFTFILEREQ	20.02.11 19:53:42	SNF INPUTCHANNEL	MFTY2Bq4eLd4H42v8F6U8U2PMEXVCYQ9Id3o=	0	IACKREQ	TODO CloseInput	0	Submitted
422	PTSADSS	CHANNEL_SHUTDOWN_REQ	20.02.11 19:53:42			0	No Data	CHANNEL SHUTDOWN	0	Processed
421	PTSADSS	PFTFILERESP	20.02.11 19:53:30	SNF QUEUESESSION		0	IACKRESP	AcquireSnf TODO	0	Reception
420	PTSADSS	PFTFILERESP	20.02.11 19:53:28	SNF INPUTCHANNEL		0	IACKRESP	TODO OpenInput	0	Reception
419	PTSADSS	PFTFILEREQ	20.02.11 19:53:27	SNF QUEUESESSION		0	IACKREQ	AcquireSnf TODO	0	Submitted
418	PTSADSS	PFTFILEREQ	20.02.11 19:53:27	SNF INPUTCHANNEL		0	IACKREQ	TODO OpenInput	0	Submitted
417	PTSADSS	PHLR_STARTED	20.02.11 19:53:27			0	No Data	PH STARTED	0	Processed
416	PTSADSS	CHANNEL_STARTED	20.02.11 19:53:27			0	No Data	CHANNEL MON STARTED	0	Processed
415	PTSADSS	CHANNEL_STARTED	20.02.11 19:53:27			0	No Data	CHANNEL STARTED	0	Processed

**Complete message audit log**

In BOX for SWIFTNet the status and complete history of all messages is stored in a single database avoiding the need to perform laborious searches in several data sources followed by reconciliation between these data sources. This data can be accessed under various filter criteria within a customizable graphical user interface which allows searching for specific messages under various filter criteria including "Quick Search", "Standard Search" and "Advanced Search" modes. With the help of these tools, frequently occurring queries can be easily initiated with just a few clicks, while complex analyses can be carried out using combinations of logical operators including AND, OR, NOT, EQUAL, and GREATER THAN criteria similar to those used in SQL statements.

**Real-time monitoring**

For real-time monitoring of the communications layer and the tracing of all messages sent and received via FileAct and Interact the following tools are included in the product:

- The "Session Layer Channel Monitor" provides status information and various other data from the SWIFT communication layer in real-time for each LT session.
- In addition the "Channel Session History" provides comprehensive information about all messages exchanged through a search facility using various criteria.

## **Planned Additional Functionality**

In a subsequent release of BOX for SWIFTNet INTERCOPE plans to provide additional functionality for bulking and debulking, in particular for the FileAct interface. This feature includes options to:

### ***Bulking and Debulking***

- Collect messages of the same type within an application queue
- Use of scheduling to trigger the bulking process
- Modules to calculate a checksum ( e.g. SEPA )

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V.1

