Air Cargo Digital Connectivity: Standard Procedures for Partner Registration and Distribution

Abstract:	To define the standard procedures for establishing digital connectivity among air cargo stakeholders
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Document Control

Version	Amendment Description	Date	By
01	Initial Draft	August 2018	Cargo Digital Connectivity Working Group
02	General Principles, XRCP Message	Sept 2018	Cargo Digital Connectivity Working Group
03	Review and Approval	Nov 2018	Cargo Digital Connectivity Working Group
04	Review and Approval	Nov 2018	Cargo Messaging Working Group

Intended Audience

Organization
IATA & Members
Freight Forwarders, Shippers, Cargo Handlers
Messaging Service Provider
IT Service Providers, IT System Providers

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1. Objective

The purpose of this document is to help simplify and standardize the digital connectivity procedures between airlines, freight forwarders and the messaging service providers. The guidelines provided in this document are intended to:

- enhance digital connectivity procedures
- facilitate swift flow of data
- expedite digital connectivity setups among various stakeholders
- improve visibility
- enable automation
- remove technical barriers

2. Context

Prior to exchange of data, digital connectivity must be established among various business partners. Historically, digital connectivity between the freight forwarders and airlines is managed by the 3rd party messaging service providers called CCSs (Cargo Community System Providers). As per the IATA Air Cargo Digital Connectivity white paper, 95% of air cargo digital connectivity is managed by the CCSs. While each CCS has its own practices and procedures, the lack of common standards & procedures makes it complicated for the end to end digital connectivity between airlines and freight forwarders. The situation becomes even more complex when a freight forwarder or airline partners with multiple CCSs due to business reasons. It is quite common that electronic messages are not relayed to intended recipients, messages are delayed, acknowledgements are not generated, errors are not processed etc.

For uninterrupted exchange of data, it is required that all partners must have updated connectivity setup information about each other. However, current practices are non-standardized resulting in labour-intensive manual activities phone calls, e-mails, excel sheets, reminders etc. In the current environment, it is difficult to ensure that all partners have updated connectivity information available.

Successful data exchange process across the industry is inevitable. Fueled by industry changes such as security, customs regulations and efficient operations, failures in data exchange process have a negative impact on the industry. Hence there is an utmost need to define standards in the digital connectivity to ensure that digital connectivity procedures are simplified and harmonized. Availability of relevant digital connectivity standards would also pave the foundation for further automation.

3. Stakeholders

Following stakeholders are generally involved in digital connectivity:

- CCS Providers
- Airlines
- Freight Forwarders
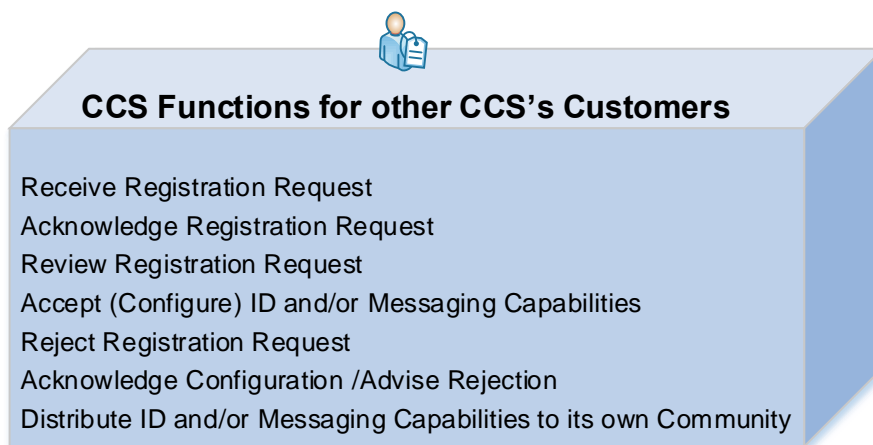- Ground Handlers
- IT Companies
- Customs
- Shippers

4. Stakeholders' Functions

Each stakeholder involved in the digital connectivity has a certain role to play. The section below defines the common functions performed by key stakeholders during the digital connectivity setup.

4.1 CCS Functions

A CCS performs several internal functions to set up the digital connectivity for its direct customers, e.g. the airline, freight forwarder and CCS need to liaise with other CCSs to connect its direct customer with the wider community.

The general functions of a CCS are listed below:

CCS Functions for other CCS's Customers

Receive Registration Request
Acknowledge Registration Request
Review Registration Request
Accept (Configure) ID and/or Messaging Capabilities
Reject Registration Request
Acknowledge Configuration /Advise Rejection
Distribute ID and/or Messaging Capabilities to its own Community

CCS Functions for Direct Customers

Receive Registration Request
Review Registration Request
Assign ID & Configure Messaging Capabilities
Reject Registration Request
Transmit ID to Requestor/Advise Rejection
Distribute Registration details within my own Community
Distribute Registration details with Other Communities

Note: Details of each function are listed below in the business process section.

4.2 Carrier or Freight Forwarder Functions

A Carrier or a Freight Forwarder performs several internal functions to connect with their business partners (other carriers or freight forwarders) and need to perform certain other tasks to configure the business partners connected via other CCS(s).

The general functions of a Carrier or Freight Forwarder are listed below:

Carrier or Freight Forwarder Functions

Send Registration Request
Receive my ID
Configure myID in my system

Receive Partner Registration Details
Review Registration Request
Configure Partner ID and/or Messaging Capabilities
Acknowledge Configuration /Advise Rejection

5. Digital Connectivity Models involving CCS

In air cargo, the Freight Forwarder's digital connectivity business model involves a FF, a CCS and a Carrier. Practically, individual companies (FF or Carrier) may contract more than one CCS and therefore, the overall digital connectivity model could be very complex.

Generally, there are four different digital connectivity models possible involving CCSs. These are:

Digital Connectivity Model 1: FF has single CCS and Carrier has single CCS

Digital Connectivity Model 2: Freight Forwarder has multiple CCSs while Carrier has single CCS
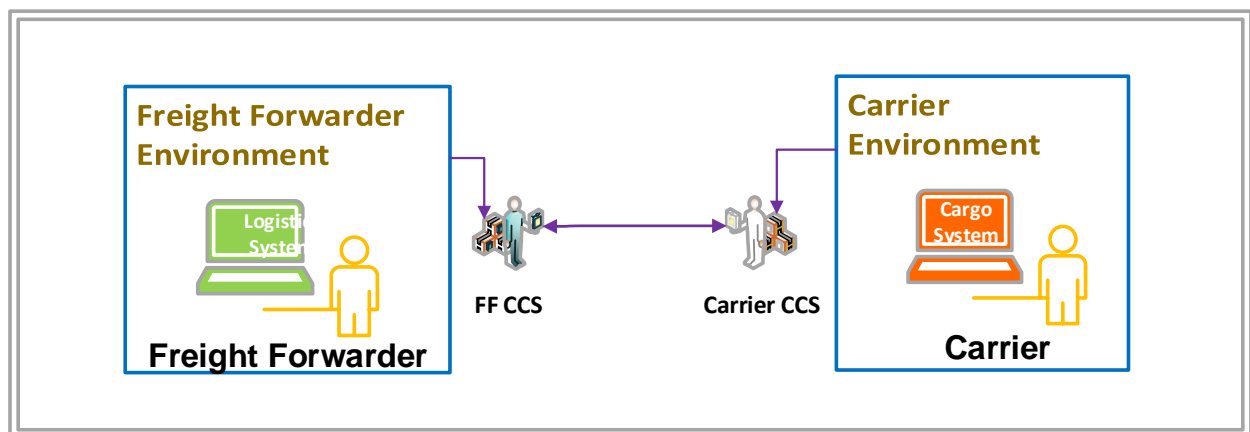
Digital Connectivity Model 3: Freight Forwarder has single CCS while Carrier has multiple CCSs

Digital Connectivity Model 4: Freight Forwarder has multiple CCSs and Carrier has multiple CCSs

Next section will take a deeper look at various digital connectivity models:

5.1 Digital Connectivity Model 1: FF -> single CCS, Carrier -> single CCS

This is the basic and simplest model of digital connectivity involving a CCS. Freight Forwarder, for all its branches, contracts a single CCS provider globally whereas Carrier also contracts a single CCS. The model is depicted in the figure below.

Basic Model: FF has single CCS and Carrier has single CCS
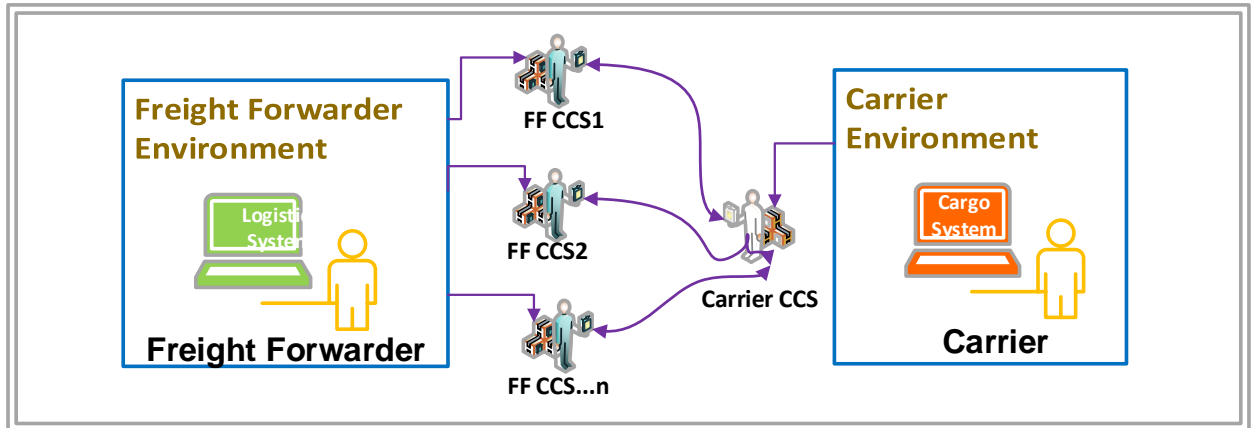
5.2 Digital Connectivity Model 2: Freight Forwarder -> multiple CCSs, Carrier -> single CCS

In this model, Freight Forwarder contracts more than one CCS mainly due to its multiple branches. Freight Forwarder uses different CCS for the data exchange for different branches (i.e. for Branch YYY, CCS1 is used and for Branch ZZZ, CCS2 is used).

There could be the case where Freight Forwarder contracts multiple CCSs for one Branch due to local requirements or market situation etc.

Challenge: Most Airlines cannot deal with multiple PIMA addresses for one branch. Therefore, they would just register one of the PIMAs and send all responses back to that one PIMA (i.e. to that one CCS). This means that some responses and status messages will end up in the wrong CCS.

The model is depicted in the figure below.

Freight Forwarder has multiple CCSs while Carrier has single CCS

5.3 Digital Connectivity Model 3: Freight Forwarder -> single CCS, Carrier-> multiple CCSs
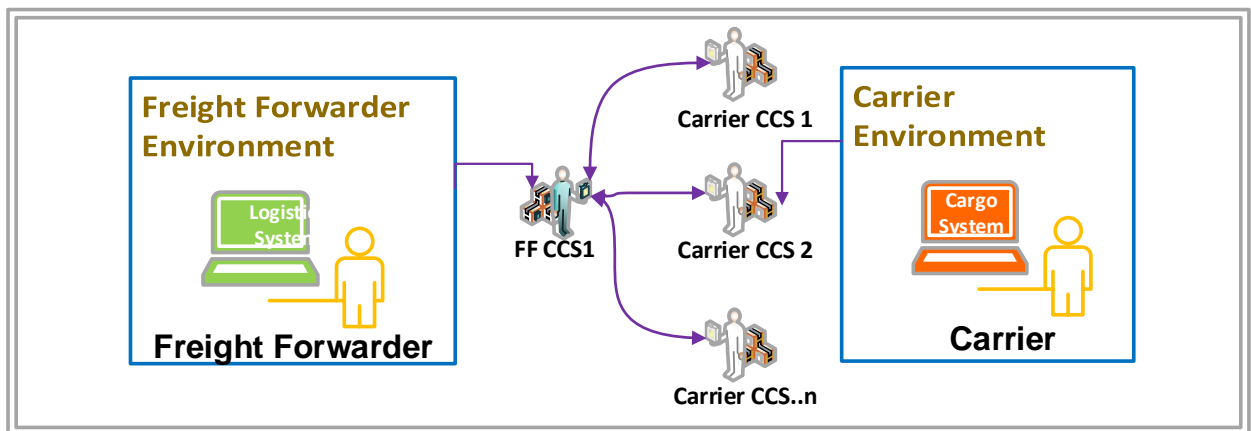
Freight Forwarder has single CCS while Carrier has multiple CCSs

5.4 Digital Connectivity Model 4: Freight Forwarder->Multiple CCSs, Carrier->multiple CCSs

Freight Forwarder has multiple CCSs and Carrier has multiple CCSs

6. General Principles
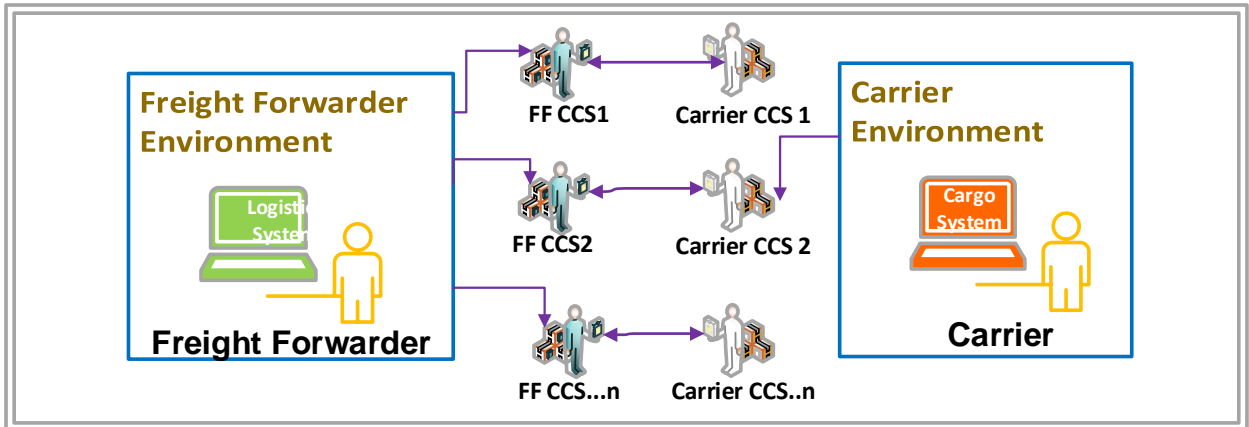
The following general principles are applicable:

i. Parties involved in data exchange should be agreed about the communication channels in advance and must always adhere to these agreements.
ii. All parties involved in the transmission of messages should be agreed prior to commence the transmission.
iii. Recipient party must respond (acknowledge/rejection) & execute the request (e.g. Issue new ID, setup/remove partner ID) within 24 hours during the business days.
iv. Recipient party should include detailed reason(s) for rejecting a request.
v. Parties involved in digital connectivity process should support applicable Cargo-XML messages listed below.
   a. XML Registration for Cargo Partner (XRCP) message
   b. XML Response (XFNM) message
   c. XML Generic Request (XGRQ) message
      Note: the above standards to be supported as needed e.g. transmit, receive or both.
vi. Original sender should be informed if the messages received are for unknown recipient(s).

7. Business Processes

The [IATA Cargo Digital Connectivity Working Group](#), which is comprised of several industry digital connectivity and data exchange experts, has discussed and agreed on several business processes. It is recommended that all parties should adopt these business processes. The following business processes are depicted and addressed in this document.

A.   Partner Registration Process, i.e. Request a New ID (PIMA)
B.   Distribute ID (PIMA) & Messaging Capabilities Process
C.   Inquiring ID (PIMA) & Messaging Capabilities Process

The above use cases are depicted below in detail. These use cases are based on the XML Registration for Cargo Partner (XRCP) Message which is published in the [IATA Cargo-XML Manual Toolkit](#), 7th Edition & above. For further information about XRCP, please refer to section 8.

A. Partner Registration Process, i.e. Request a New ID (PIMA)

Definition: The Partner Registration Process details the guidelines for how to acquire a new ID.

Applicable To: This Process will be applicable to any party who is interested in getting an ID to be part of air cargo digital exchange, for example, a Freight Forwarder or Airline getting an ID from its CCS partner. It is quite possible that Airline or Freight Forwarder needs to be represented by a 3rd party IT Service Provider.

Process: The process is depicted below:
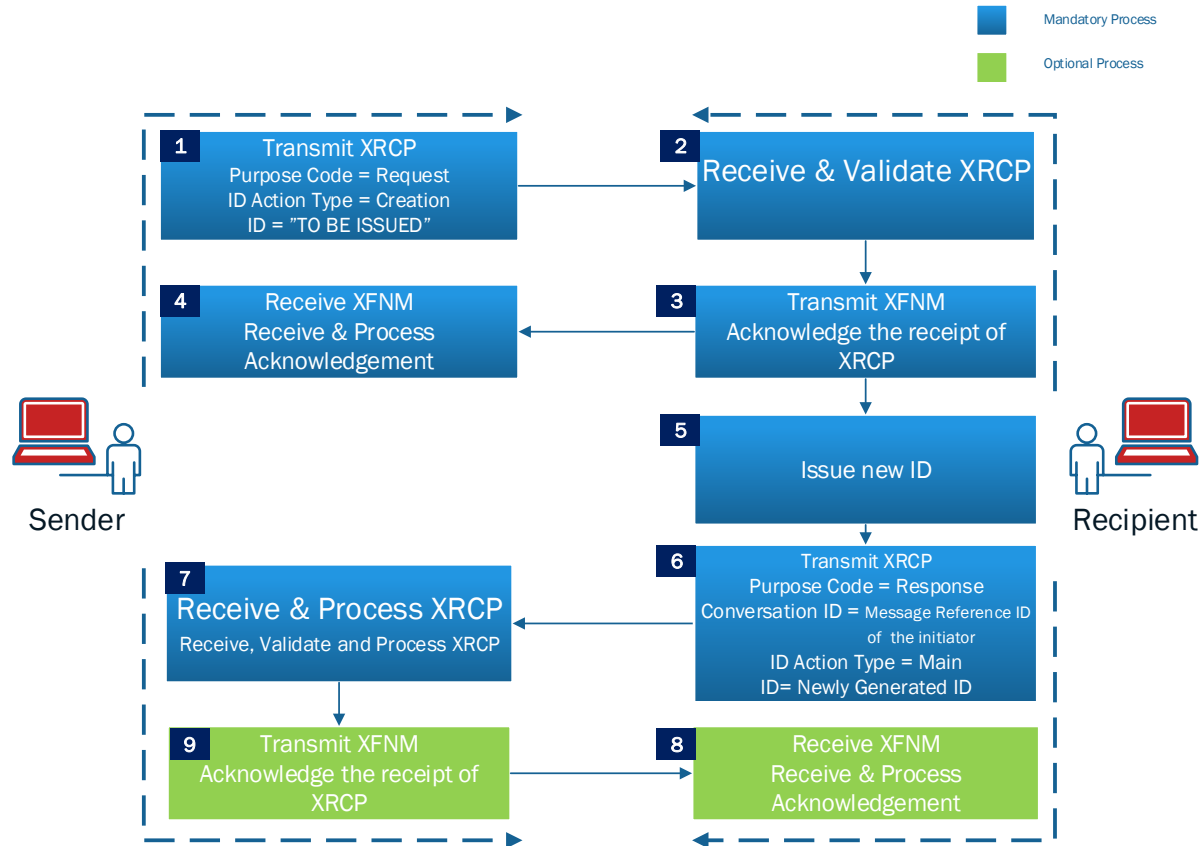
Process Description:

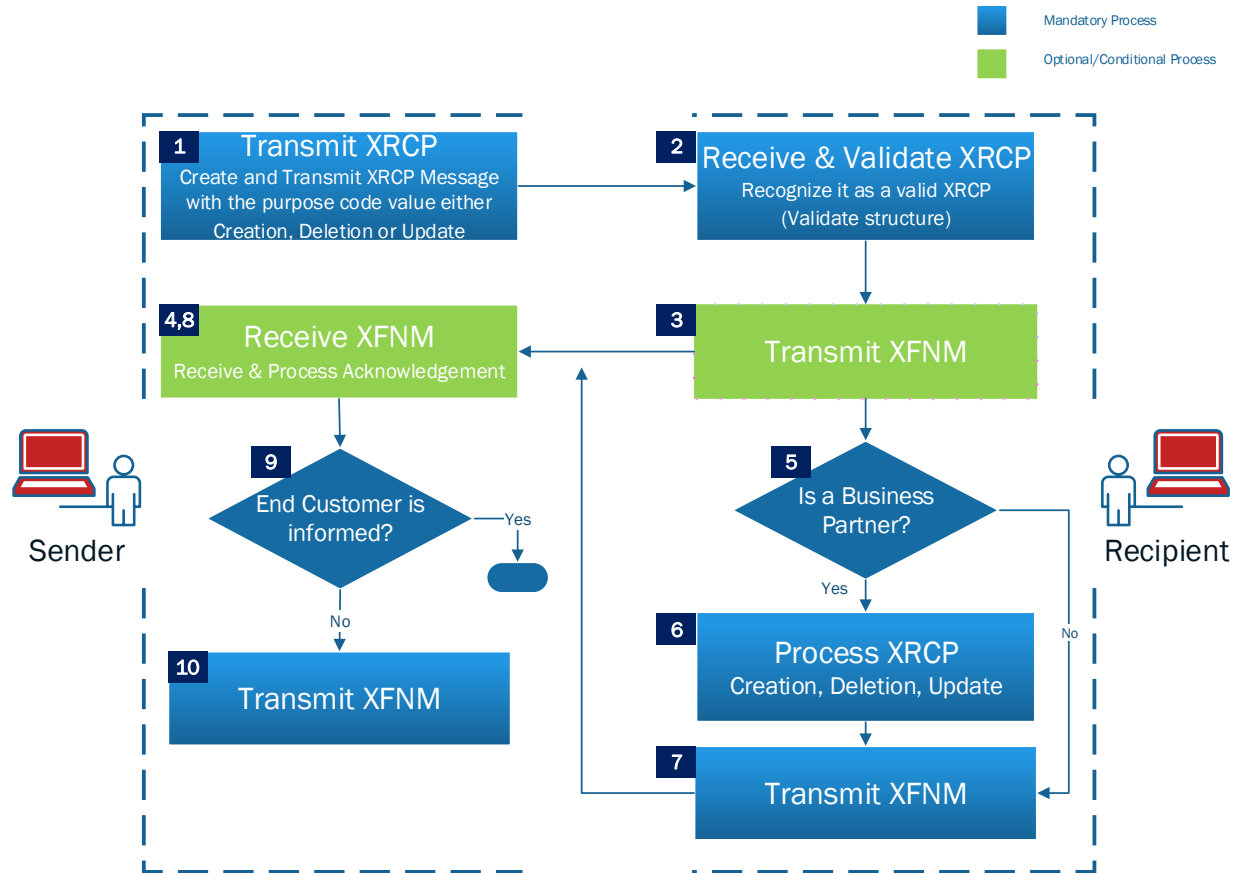| Steps	Presence	Description
Step 1	Mandatory	Sender transmits XML Registration for Cargo Partner (XRCP) Message. Following parameters must be set: Purpose Code = Request ID Action Type = Creation ID= "TO BE ISSUED"
Step 2	Mandatory	Receiving Party must validate the contents of XRCP Message.
Step 3	Mandatory	If the XRCP contents are valid, the Recipient must send an acknowledgement to the original sender using XFNM message.
Step 4	Mandatory	The original sender must receive and process XFNM message.
Step 5	Mandatory	Recipient issues an ID as requested by the Sender.
Step 6	Mandatory	Recipient transmits ID back to original sender using the XRCP message. The following parameters must be set:

		Purpose Code = Response Conversation ID = Message Reference ID of the initiator ID Action Type = Main ID= Actual ID issued
Step 7	Mandatory	The Original Sender must receive and process XRCP message.
Step 8	Optional	The Original Sender may issue XFNM message
Step 9	Optional	The Recipient may receive and process XFNM message

B. Distribute ID (PIMA) & Messaging Capabilities Process

Definition: Sharing ID & messaging capabilities with the partner.

Applicable To: This Process will be applicable to any party who is interested in sharing their ID and/or messaging capabilities with their partner. Distribution is normally needed when you engage a new CCS as messaging partner. This information needs to be cascaded to your business partners (airlines, FFs etc.) as well as other CCSs. Distribution is normally determined by the freight forwarder and/or its CCS partner.

Process: The process is depicted below:

Process Description:

Steps	Presence	Description
Step 1	Mandatory	Sender transmits XML Registration for Cargo Partner (XRCP) Message with the Purpose Code value either Creation, Deletion or Update
Step 2	Mandatory	Receiving Party must validate the contents of XRCP Message.
Step 3	Optional	Recipient may issue an acknowledgement to the Sender.
Step 4	Optional	The Original Sender may receive XFNM message
Step 5	Conditional	The Recipient initiates some internal processes to validate if it is a valid request and ID need to be configured in the system. If yes, then Step 6; otherwise Step 7 will be applicable.
Step 6	Mandatory	The Recipient will process the request and configure its Cargo/Logistics Management System accordingly.

Step 7	Mandatory	Recipient must transmit XFNM message to original sender informing the status of request (acceptance or rejection).
Step 8	Optional	The Original Sender may receive & process XFNM message
Step 9	Conditional	Sender needs to determine if the end customer is informed e.g. a CCS needs to inform its Freight Forwarder partner that airline has completed the setup etc.
Step 10	Mandatory	End Customer (Airline/FF) must be informed that its partner has completed the digital connectivity setup.

C. Inquiring ID (PIMA) & Messaging Capabilities Process

Definition: Inquire your partner ID & messaging capabilities

Applicable To: This Process will be applicable to any party who is interested in inquiring their partner ID and/or messaging capabilities.

Process: The process is depicted below:
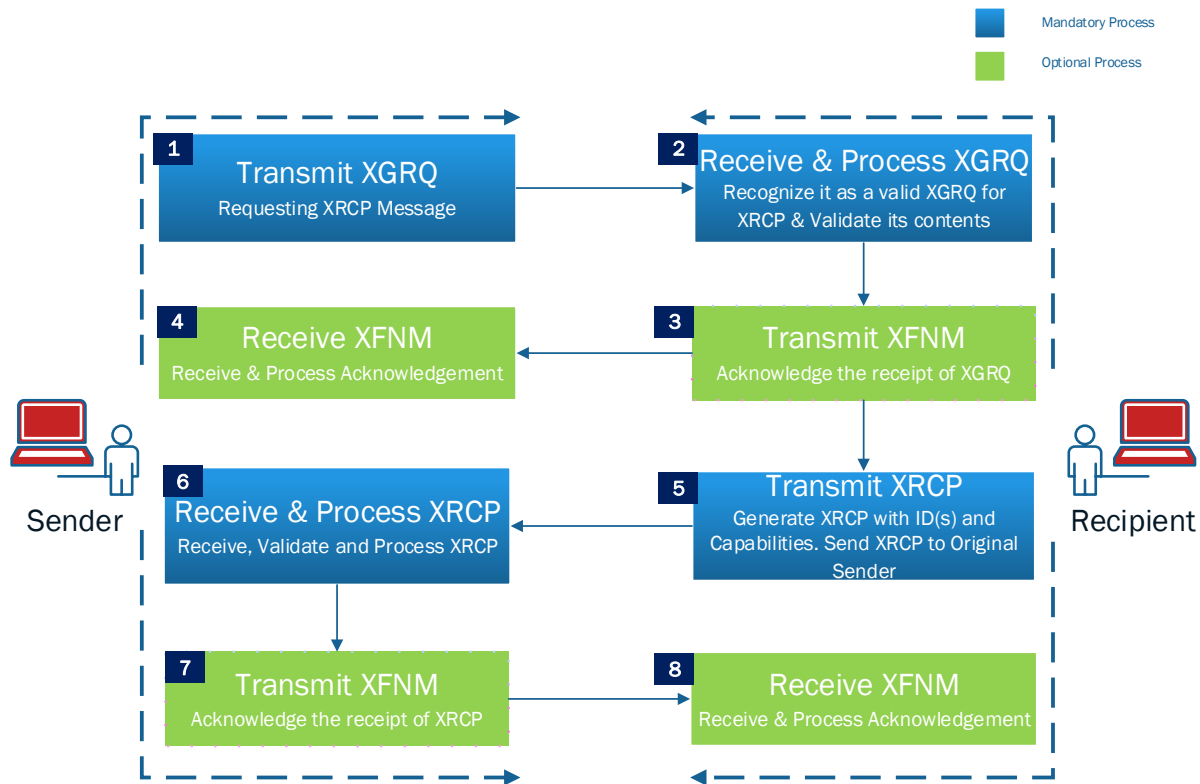
Process Description:

Steps	Presence	Description
Step 1	Mandatory	Sender transmits XML Generic Request (XGRQ) Message with the Partner Information demanding its ID and/or messaging capabilities.
Step 2	Mandatory	Receiving Party must receive and validate the contents of XGRQ Message.
Step 3	Optional	Recipient may issue an acknowledgement to the Sender.
Step 4	Optional	The Original Sender may process XFNM message.
Step 5	Mandatory	The Recipient initiates some internal processes to validate if it is a valid request. If yes, then Recipient generates XRCP message with the necessary details.
Step 6	Mandatory	The Sender will receive and process the XRCP message and configure its Cargo/Logistics Management System accordingly if needed.
Step 7	Optional	Sender may issue an acknowledgement to the Recipient.
Step 8	Optional	The Recipient may process XFNM message received from

8. XML Registration for Cargo Partner (XRCP) Message

8.1 Purpose of XRCP Message

The XRCP message accommodates all necessary information required for registering a partner for electronic message exchange including IDs, supported messaging standards with respective versions. It enables air cargo stakeholders to implement the partner registration process electronically in an efficient way.

The XRCP provides visibility and transparency during the registration process and ultimately drives & facilitates adoption of digital cargo initiatives.

8.2 Intended user of XRCP

The XRCP message will be used by airlines, freight forwarders, CCSs and IT/Messaging System providers.

8.3 XRCP Sample

Below is one sample of XRCP message. Please refer to IATA Cargo-XML Manual and Toolkit for more XRCP samples.

```
<?xml version="1.0" encoding="UTF-8"?>

-<rsm:CargoDigitalConnectMessage xmlns:rsm="iata:cargodigitalconnectmessage:1"
xmlns:ccts="urn:un:unece:uncefact:documentation:standard:CoreComponentsTechnicalSpecific
ation:2" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:ram="iata:datamodel:3"
xmlns:qdt="urn:un:unece:uncefact:data:standard:QualifiedDataType:7"
xmlns:udt="urn:un:unece:uncefact:data:standard:UnqualifiedDataType:8">-
<rsm:MessageHeaderDocument><ram:ID>01111110012</ram:ID><ram:Name>Registration
document</ram:Name><ram:TypeCode listVersionID="D09A"
listID="1001">101</ram:TypeCode><ram:IssueDateTime>2018-03-
02T13:17:56.1302163Z</ram:IssueDateTime><ram:PurposeCode>Creation</ram:PurposeCode>
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>-<rsm:DigitalConnectHeaderDocument><ram:ID>HEAD0001</ram:ID>-
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