GS1 Finland Synkka Data Pool - AS2 Connection

Connectivity Guide

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Document Summary

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Document Description	This document describes the AS2 connection in the GS1Trade Sync-based environment.

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Table of Contents

1   Introduction

1.1   Purpose of Document

The GDSN Standard-specific FTP service is one of the three machine-to-machine interface technology[1] available for communicating with **GS1Trade Sync**.

Therefore, the **connectivity documentation** of GS1Trade Sync Data Pool is divided into three main parts.

This document specifies the connectivity details of **AS2-specific communication** of **GS1 Finland Synkka Data Pool** system.

GS1 Finland Synkka Data Pool is based on the GS1Trade Sync system.

1.2   Document Conventions

This document structure is partially based on the specification standard of Rational Unified Process (RUP) methodology.

Within this specification, the terms SHALL, SHALL NOT, SHOULD, SHOULD NOT, MAY, NEED NOT, CAN, and CAN NOT are to be interpreted as specified in [1]. When used in this way, these terms will always be shown in ALL CAPS; when these words appear in ordinary typeface they are intended to have their ordinary English meaning.

The following typographical conventions are used throughout the document:

- ALL CAPS type is used for the special terms from [1] enumerated above.
- `Monospace` type is used to denote programming language, UML, and XML identifiers, as well as for the text of XML documents.

This document uses several abbreviations which long forms are located in Appendix.

1.3   Target Audience

This document is intended for developers and testers who are operating the connection to Synkka Data Pool.

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[1] There are WS-, AS2-, FTP/SFTP-based interfaces in GS1Trade Sync Data Pool system.

2   About AS2

AS2 is an EDI-based specification[2] that uses a well-known standard using HTTP or HTTPS, to transport data. AS2 is a secure and reliable business communication standard developed by IETF.

The AS2 specification supports EDI or any other data transmittals over the internet using HTTP or HTTPS. AS2 is a specification about how to transport data, not how to validate or process data. AS2 specifies the means to connect, deliver, validate and reply to (receipt) data in a secure and reliable way. The data is then dispatched to the appropriate processor based upon its content-type. AS2 makes no specification about how that dispatch or subsequent processing is accomplished.

Security is achieved by the digital signature and/or encryption of the message, for which the usage of digital certificates is mandatory. Additionally, it can be done over HTTPS which add an additional encryption layer.

Reliability is achieved by the exchange of MDN, combined with retry and re-send mechanisms, allowing the full control of the interchanges performed or in error.

Technical overview of AS2:

- Uses HTTP/S to transmit data (real time)

- Point-to-point connection

- Provides an "envelope" for the data

- Can handle any kind of document

- Security, authentication, message integrity, and privacy are assured by the use of encryption and digital signatures

- Allows companies to continue to use existing internal processes, demanding changes only to the mechanisms actually used to exchange documents with partners.
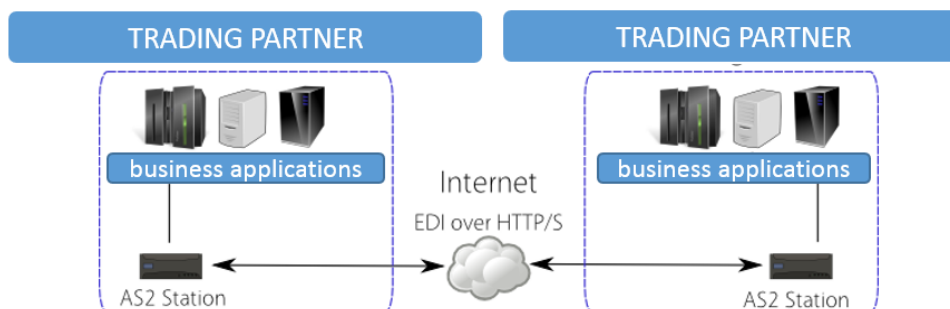

Fig. 2-1. AS2-based general process overview

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[2] The difference between AS2 and EDI, the in case of AS2 the receiving computer must be connected to the web at the time the document is sent (the message will be missed if your server is not available to take the call). AS2 operates only over networks running the TCP/IP protocol.

3 Overview

The AS2-based connection ensures the appropriate communication between various partners in GDSN network by using HTTP(S) protocol.

As you see on Fig. Fig. 3-1, the AS2-based communication can be performed between various web servers (through data pools) as well as between various data pools like GS1Trade Sync Data Pool (GS1 Finland Synkka Data Pool).

Two main roles are in the AS2 communication: message sender and message receiver. Both are web servers physically.

The form of communication is the XML message corresponding to GS1 XML standard [3].
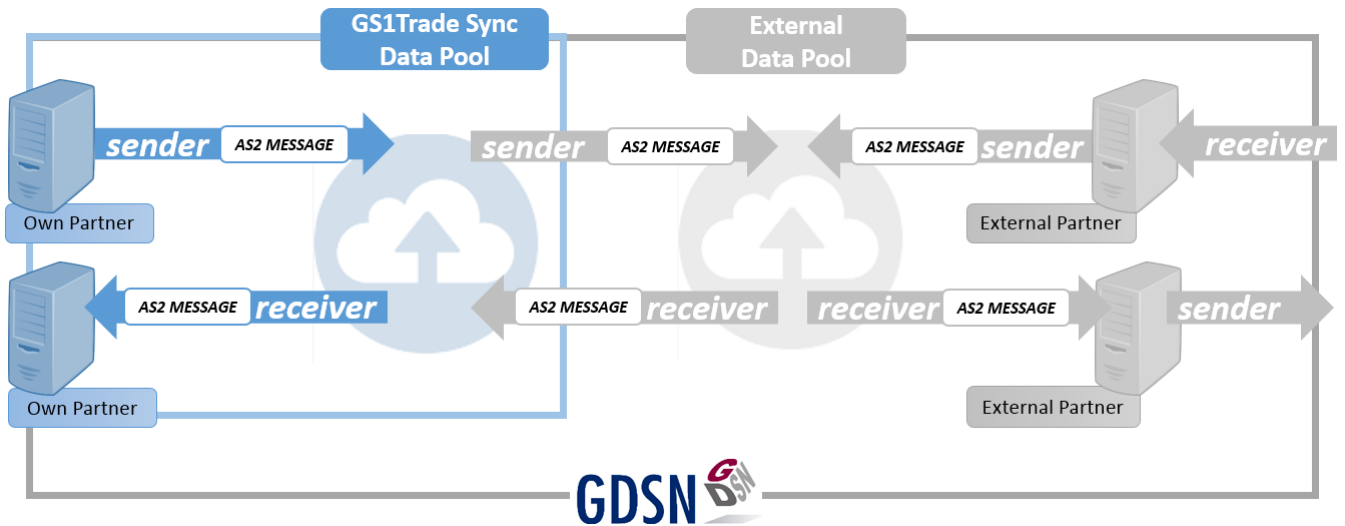

Fig. 3-1. Overview of AS2 communication in GDSN network (including GS1 Finland Synkka Data Pool)

4   Details of AS2 Connection

Next section describes the process of AS2-based connection between GS1Trade Sync partners (own partners) in the GS1Trade Sync environment (Fig. 4-1).

The XML-based AS2 messages are sent via HTTP(S) connection from one partner to another through GS1Trade Sync. (AS2 messages are sent by HTTP POST instructions programmatically.)

AS2-messages are encrypted[3] by senders and decrypted[4] by receivers. The sent encrypted messages have valid certifications.

AS2-messages request a MDN[5] back if message is received. MDN signature is verified by the original sender to ensure the initial recipient received the data.

MDN provides verification of the following:

- That the original message was successfully received by the receiving party
- That the integrity of the data exchanged was verified by the receiving partner
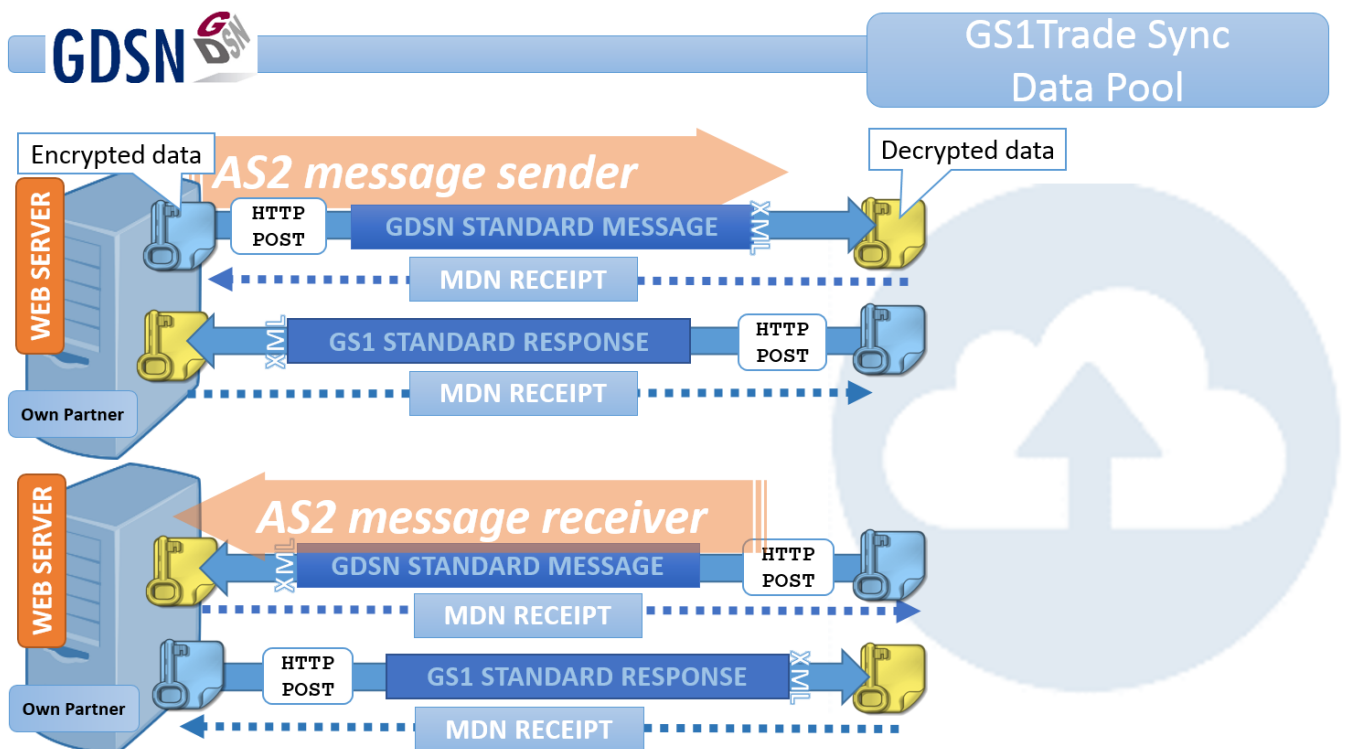- That there is a non-repudiation of receipt

Fig. 4-1. AS2-based communication process in GS1Trade Sync (including GS1 Finland Synkka Data Pool) environment

Necessary configuration parameter at partner:

- AS2 Identifier (GLN)
- URL
- Connection information (signing, encrypting outgoing data etc.)
- MDN receipt information (request, security, delivery etc.)

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[3] Both the signature and the data are encrypted for secure transport.
[4] Data and digital signature decrypted to create the unencrypted document and the sender's original hash.
[5] MDN is created from the signed receipt and notification and returned to the sender, acknowledging successful (or unsuccessful) receipt of the data by the receiver.

5   Security

5.1   Security Aspects

Security is achieved in AS2-based environment by using digital certificates and encryption.

Note: AS2 enables the using of two single certifications for signing and encryption. However, GS1Trade Sync recommends to use the same one for both authentications.

6 Connection Parameters

6.1 User Acceptance Test Parameters

Parameter name	Value
AS2 URLs	http://pp-synkka.gs1.fi:9080/Receiver https://pp-synkka.gs1.fi:9081/Receiver
AS2 Name/GLN	6400001000049
AS2 IP	13.81.15.173
AS2 Certification	Trade_Connectors_AS2_UAT.cer (256)
Request MDN	true
Signed MDN	true
MDN Receipt	synchronous

6.2 Live Parameters

Parameter name	Value
AS2 URLs	http://as2-synkka.gs1.fi/Receiver https://as2-synkka.gs1.fi/Receiver
AS2 Name/GLN	6400001000063
AS2 IP	52.233.171.11 40.68.207.108
AS2 Certification	TC_GdsnClientSign.cer (256)
Request MDN	true
Signed MDN	true
MDN Receipt	synchronous

NOTE: The MDN parameters above are the system's requirements not recommendations.

7 Appendix

7.1 Abbreviations

Abbreviation	Term
AS2	Applicability Statement 2
CIC	Catalogue Item Confirmation
CIHW	Catalogue Item Hierarchy Withdrawal
CIN	Catalogue Item Notification
DP	Data Pool
DR	Data Recipient
DS	Data Source
EDI	Electronic Data Interchange
HTTP	Hypertext Transfer Protocol
MDN	Message Disposition Notification
TCP/IP	Transmission Control Protocol/Internet Protocol
UAT	User Acceptance Test
XML	eXtensible Markup Language

7.2 Glossary

AS2 – A specification about how to transport data securely and reliably over the Internet. Security is achieved by using digital certificates and encryption. The AS2 protocol is based on HTTP and S/MIME.

DR (Data Recipient) – It represents the demand side data. It can be a company that receives product information from a data source. This "company" could be a retailer, hospital, distributor, wholesaler, foodservice operator, group purchasing organization, government, etc.

DS (Data Source) – It represents the supply side data. It can be a company (supplier, manufacturer, distributor etc.) that enters product information into GDSN-based synchronisation systems that are sent to DRs.

MDN – MDN is the acknowledgment sent in response to an AS2 message. If an MDN is enabled, the AS2 transmission is not complete until the MDN has been received and verified.

7.3 References

[1] ISO/IEC, "ISO/IEC Directives Part 2 - Rules for the structure and drafting of International Standards," ISO/IEC, 2011.

[2] About AS2, "AS2" *https://en.wikipedia.org/wiki/AS2*, Wikipedia, 2016.

[3] GS1 "XML Transport Instruction and Response", Implementation Guide, GS1 GO, 2012.

7.4 List of Figures