

Service specification

Wholesale gas Allocation and Reconciliation message exchange

via central hub Nexus

Name: Wholesale gas A&R message exchange via
central hub Nexus

Code: BSCMF0056

Date: 01-06-2022

Version: 8.0

Status: Approved

Author: EDSN Business Integratie

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Version control

Version	Date	Changes	Author
0.1	10-01-2012	Setup document (TOC)	J. de Jong
0.2	24-01-2012	Add introduction and principles	J. de Jong
0.3	23-02-2012	Add XML message definitions	J. de Jong
0.9	24-02-2012	Version for review IC-WG	J. de Jong
0.95	28-03-2012	Add review remarks, version for internal review	J. de Jong
0.99	02-04-2012	Version for approval by ALV NEDU	J. de Jong
1.0	19-04-2012	Approved by ALV NEDU	EDSN
1.1	25-04-2012	Class diagram BALLNotification updated to support multiple connections	EDSN
1.2	11-06-2012	Status in BALLNotification optional Renumbering result codes for OVEXITAcknowledgement	EDSN
1.2a	02-07-2012	Gas components "CO2" and "N2" in MINFONotification changed from integer into decimal	EDSN
1.2b	02-10-2012	Limitation of MessageID added (paragraph 3.2)	EDSN
1.3	23-12-2013	User category "GMN" added in XML message definitions LALL, OVEXIT and RNINFO for "Netverlies gas".	EDSN
2.0	27-01-2014	Version for approval by ALV NEDU	EDSN
2.1	04-11-2014	Note added in §1.1 about not-valid user category "GMN". Column version XSD added in §2.1.	EDSN
2.6	14-11-2014	Version to inform IC WG and PAB	EDSN
2.9	05-01-2015	Version for approval by ALV NEDU	EDSN
3.0	14-01-2015	Approved by ALV NEDU	EDSN
3.1	19-11-2015	Note about not-valid user category "GMN" removed from this document due to IC180 "Net loss". "GMN" will be a valid user category as soon as IC180 will be in use.	EDSN
3.3	16-12-2015	Version to inform IC WG and PAB	EDSN
3.6	16-02-2016	Version to inform NEDU and PAB	EDSN
3.9	26-02-2016	Version for approval by ALV NEDU This version is on hold due to out of scope of IC180 Netverlies gas	EDSN
4.1	30-10-2017	Document renamed from "Wholesale gas Technical Specifications XML allocation and reconciliation messaging process" into "Service specification Wholesale gas Allocation and Reconciliation message exchange via central hub Nexus" Based on the approved v3.0 version SC002: phase out AS2 protocol for document exchange TC030: the use of AS4 for Wholesale gas message exchange TC034: the introduction of a Central Hub for the transition from AS2 to AS4	EDSN
4.3	08-11-2017	Version for review by working group AS2/AS4, PAB, EDSN and SI	EDSN
4.6	29-11-2017	Version to inform working group AS2/AS4, IC WG, PAB, EDSN and SI	EDSN
4.61	13-12-2017	Paragraph 4.5 Checks by Nexus, 4.9 Quality of service and Appendix C Version to inform EDSN and SI	EDSN
4.62	19-12-2017	Paragraph 4.7 Security setup for AS2 and 4.8 Security setup for AS4 Version to inform working group AS2/AS4, IC WG, PAB, EDSN and SI	EDSN
4.9	12-01-2018	Version for approval	EDSN
4.91	15-02-2018	Paragraph 4.7 Security setup for AS2 and 4.8 Security setup for AS4 Version for approval by ALV NEDU	EDSN
5.0	08-03-2018	Approved by ALV NEDU	EDSN
5.3	18-04-2018	Note about not-valid user category "GMN" removed from this document due to IC180 "Net loss". "GMN" will be a valid user category as soon as IC180 will be in use.	EDSN
5.6	02-05-2018	Version to inform IC WG and PAB	EDSN
5.9	14-05-2018	Version for approval by ALV NEDU	EDSN
6.0	29-05-2018	Approved by ALV NEDU	EDSN
6.1	01-07-2019	Document update as a result of IC220	EDSN
6.31	26-08-2019	Version for review by IC WG, CMF, EDSN and SI	EDSN
6.6	15-10-2019	Version to inform IC WG, CMF, EDSN and SI	EDSN
6.9	29-10-2019	Version for approval by ALV NEDU	EDSN

Version	Date	Changes	Author
7.0	06-11-2019	Approved by ALV NEDU	EDSN
7.6	03-05-2022	Version for review by CMF EDSN and SI - CDSO is applicable to wholesale gas - Document template adapted to new EDSN corporate design	EDSN
7.9	16-05-2022	Version for approval by BAS	EDSN
8.0	01-06-2022	Approved by MFF	EDSN

Referenced documents

	Name	Owned by	Date	Version
1.	UN/CEFACT Naming&Design Rules	UN/CEFACT	December 17, 2009	3.0
2.	NEDU/EDSN Ontwerpkeuzes	NEDU/EDSN	July 22, 2016	3.6
3.	Wholesale gas - Reconciliation messaging process	EDSN	May 29, 2018	4.0
4.	Wholesale gas - Allocation messaging process	EDSN	May 29, 2018	6.0
5.	ENTSO AS4 Profile	ENTSO-G	March 28, 2017	3.5 ¹
6.	AS4 Profile of ebMS 3.0 Version 1.0 OASIS Standard	OASIS	January 23, 2013	1.0
7.	SC002 - Uitsfaseren AS2	NEDU	January 18, 2017	1.0
8.	TC030 - AS4 protocol voor document gebaseerde berichtenuitwisseling	NEDU	December 5, 2017	0.9
9.	TC034 - Overgang van AS2 naar AS4 (Wholesale gas)	NEDU	December 14, 2016	1.0
10.	Note "Gegevens connectiviteit Nexus hub"	EDSN	January 30, 2018	1.0
11.	IC220 - Gesloten distributiesystemen (GDS)	NEDU	November 6, 2017	1.0

Abbreviations

Abbreviation	Explanation
ALV	Algemene Ledenvergadering (NEDU), general assembly of the NEDU union
AS2	Applicability Statement 2
AS4	Applicability Statement 4
CCTS	Core Components Technical Specification
CDN	Closed Distribution Network
CDSO	Closed Distribution System Operator (operating on a Closed Distribution Network)
CPR	Contact Personen Register (register of contact persons in predefined contact groups)
DSO	Distribution System Operator
EAC	Estimated Annual Consumption
EAN	European Article Numbering
EDSN	Energie Data Services Nederland
GTS	Gasunie Transport Services, the Dutch TSO for gas
IC	Issues Commission
LDC	Local Distribution Company
NEDU	Nederlandse Energie Data Uitwisseling, a union of all market parties
TC	Technische Commissie NEDU
TSO	Transmission System Operator
TZD	Time Zone Designator (Z or +hh:mm or -hh:mm)
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UTC	Coordinated Universal Time
UUID	Universally Unique Identifier
W3C	World Wide Web Consortium
XSD	XML Schema Definition

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¹ After the update of Nexus as from October 26, 2019.

1 Introduction

1.1 About this document

This document describes the XML message definitions for the exchange of allocation and reconciliation information for Wholesale gas between LDC, CDSO, TSO (GTS), Shipper and Supplier via central hub Nexus.

The specifications in this document will be effectuated from March 19, 2018.

1.2 About the design and development

The following principles are used for design and development of the XML message for allocation and reconciliation gas:

- UN/CEFACT Naming&Design Rules;
- W3C Semantic Annotations;
- CCTS metadata;
- NEDU IC functional Issues;
- NEDU TC technical Issues;
- NEDU SC security Issues;
- NEDU/EDSN Ontwerpkeuzes (message design principles).

1.3 Basic assumptions

This section lists the basic assumptions that are defined for the XML message definitions:

1. EAN codes are used to identify market parties (EAN-13), network points and connection points (EAN-18);
2. Date/time for allocation, measurement, correction factor, temperature is in UTC and formatted as specified in the W3C Date and Time Formats (an ISO 8601 Profile) “yyyy-mm-ddThh:00:00Z” (example: 2012-06-01T10:00:00Z). This date/time has a specific pattern for whole hours only. The Z is the UTC TZD²;
3. Date/time in the message header (EDSNBusinessDocumentHeader) is formatted as specified in the W3C Date and Time Formats (an ISO 8601 Profile) “yyyy-mm-ddThh:mm:ssTZD” (example: 2012-06-01T07:20:34Z);
4. Year and month is formatted as “yyyymm” (example: 201206);
5. The standard unit for OV exit data is m3(35,17)/hr or m3(35,17). The unit is part of the XML message definition;
6. The standard unit for energy is MJ. This is described in the process documentation as referred in table “Referenced documents”. This standard unit for energy is not part of the XML message definition;
7. Temperature is in °C.
8. Wherever LDC (Local Distribution Company) is mentioned in this document, it can also be read as CDSO (Closed Distribution System Operator).

² This is not the Dutch time zone.

2 Overview Wholesale gas A&R message exchange

2.1 Naming

Wholesale gas message	Business term	From	To
LALLNotification	LALL	LDC/CDSO TSO	TSO/Supplier/Shipper Supplier/Shipper
LALLAcknowledgement	LCONF	TSO/Supplier/Shipper Supplier/Shipper	LDC/CDSO TSO
BALLNotification	BALL	LDC/CDSO/TSO	Supplier
BALLAcknowledgement	BCONF	Supplier	LDC/CDSO/TSO
MINFONotification	MINFO	TSO	LDC
MINFOAcknowledgement	MCONF	LDC	TSO
CINFONotification	CINFO	LDC	TSO/Supplier/Shipper
CINFOAcknowledgement	CCONF	TSO/Supplier/Shipper	LDC
TINFONotification	TINFO	TSO	LDC/Supplier/Shipper
TINFOAcknowledgement	TCONF	LDC/Supplier/Shipper	TSO
RNINFONotification	RNINFO	LDC	TSO/Supplier/Shipper
RNINFOAcknowledgement	RNCONF	TSO/Supplier/Shipper	LDC
RSINFONotification	RSINFO	TSO	Shipper
RSINFOAcknowledgement	RSCONF	Shipper	TSO
OVEXITNotification	OVEXIT	LDC	TSO/Shipper
OVEXITAcknowledgement	OCONF	TSO/Shipper	LDC

2.2 Transaction pattern

The transaction pattern “Notification / Acknowledgement” is adopted for the XML message definitions for the exchange of allocation and reconciliation information. Therefore, these XML message definitions have a name that ends with:

...Notification (= initiation by the sender)

Or

...Acknowledgement (= confirmation of receipt by the receiver).

This pattern is designed to be used as a formal information exchange between parties.

2.3 Date/time period

All hour labels are implemented in the XML message definitions as a “valid from / valid to” period. This is done in order to commit to NEDU IC048 design principle. This design principle prevents possible misunderstanding about the mentioned hour.

The ValidFrom and ValidTo is used to define the hour:

- ValidFrom: hour from 2012-06-01T10:00:00Z;
- ValidTo: hour up to 2012-06-01T11:00:00Z.

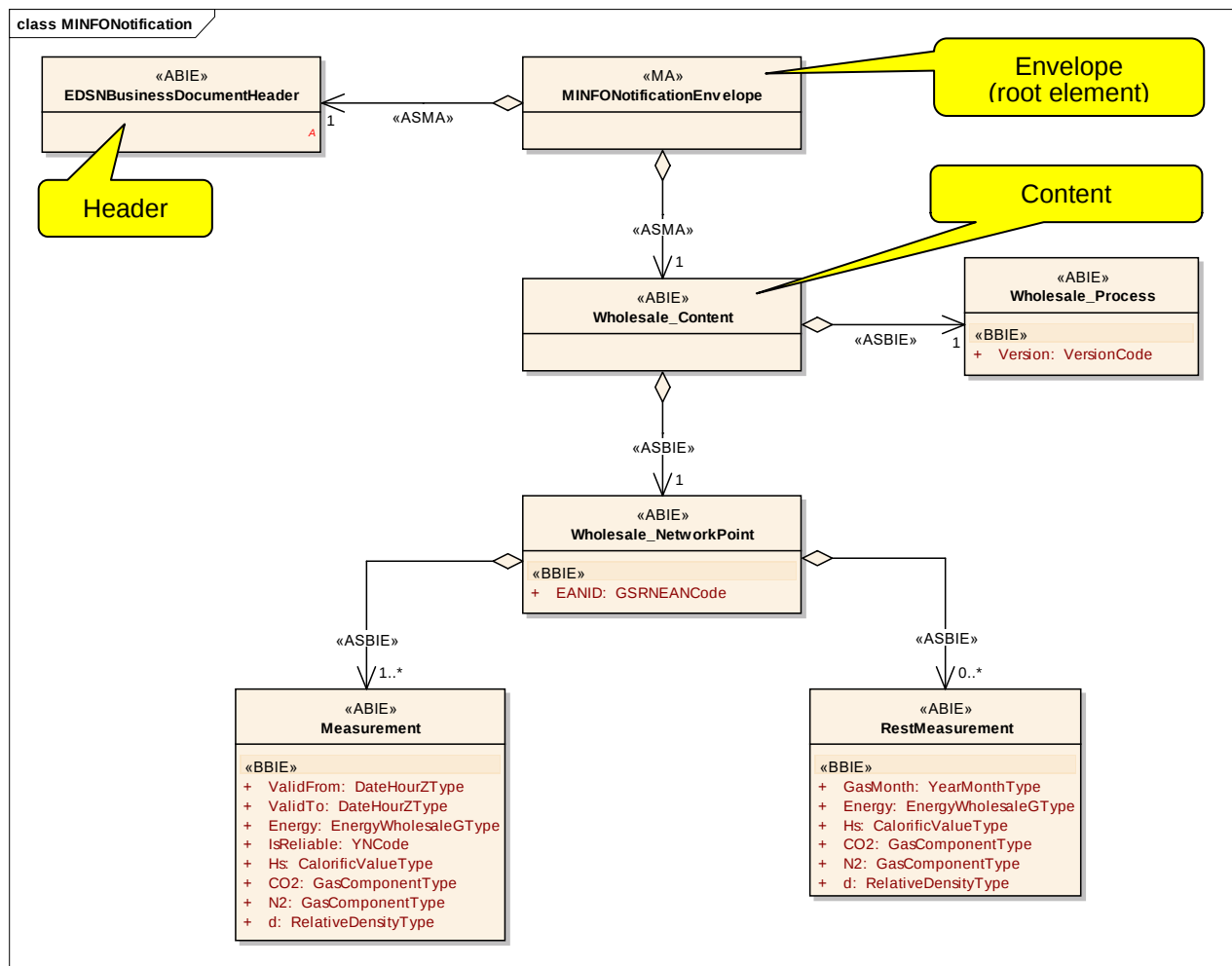
3 Setup XML message definition

3.1 Design principles

The XML message definition is split up into:

- Header segment (EDSNBusinessDocumentHeader);
- Content segment.

The envelope is the root element of the XML message definition. The class diagram below is an example of the MINFONotification.



3.2 EDSN Business Document Header

The EDSN Business Document Header is standardised for all EDSN XML messages definitions.

The following elements in the EDSN Business Document Header are required for the XML message definitions for the exchange of allocation and reconciliation information:

Identifier	Description
CreationTimestamp	Required date/time of the creation of the XML message. Formatted as W3C Date and Time Formats (an ISO 8601 Profile).
CorrelationID	Optional identifier to relate an Acknowledgment to the originating Notification.
MessageID	Required unique identifier to identify the XML message. Must be unique for the sender and is issued by the sender of the XML message. The MessageID must be limited by the sender to a maximum of 35 characters.
Source > SenderID	Required identifier market party (EAN ID).
Destination > Receiver > ReceiverID	Required identifier market party (EAN ID).

3.3 EDSN data types

Detailed information about the EDSN data types, as mentioned in the description of the UML class diagrams, is available on *mijnEDSN*:

- EDSN Enumeration Library (PDF document);
- EDSN Complex Data Type Library (PDF document);
- EDSN Logical Data Type Library (PDF document).

Please note that all three libraries are used for UML class diagrams of other processes as well. Therefore, all three libraries will contain data types that are not applied in the UML class diagrams in this document.

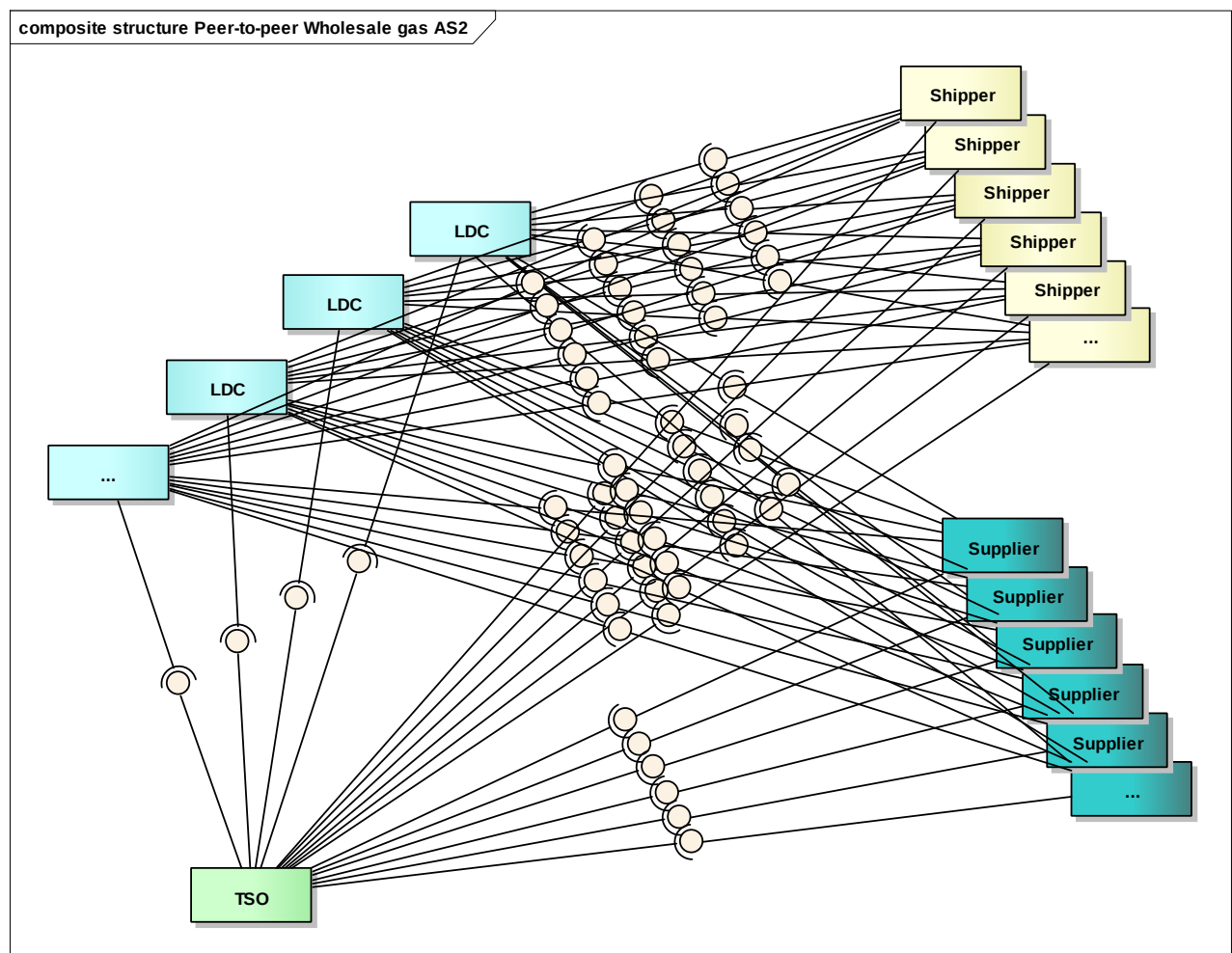
4 Central hub Nexus

4.1 Introduction

This chapter introduces the central hub Nexus. This central communication hub is introduced to guide the market parties to migrate from AS2 to AS4 communication and is designed for receiving, routing and sending Wholesale gas allocation and reconciliation messages. The central hub Nexus will reduce the amount of complexity for the transition from AS2 to AS4 and reduce afterwards the number of connections for market parties to only one.

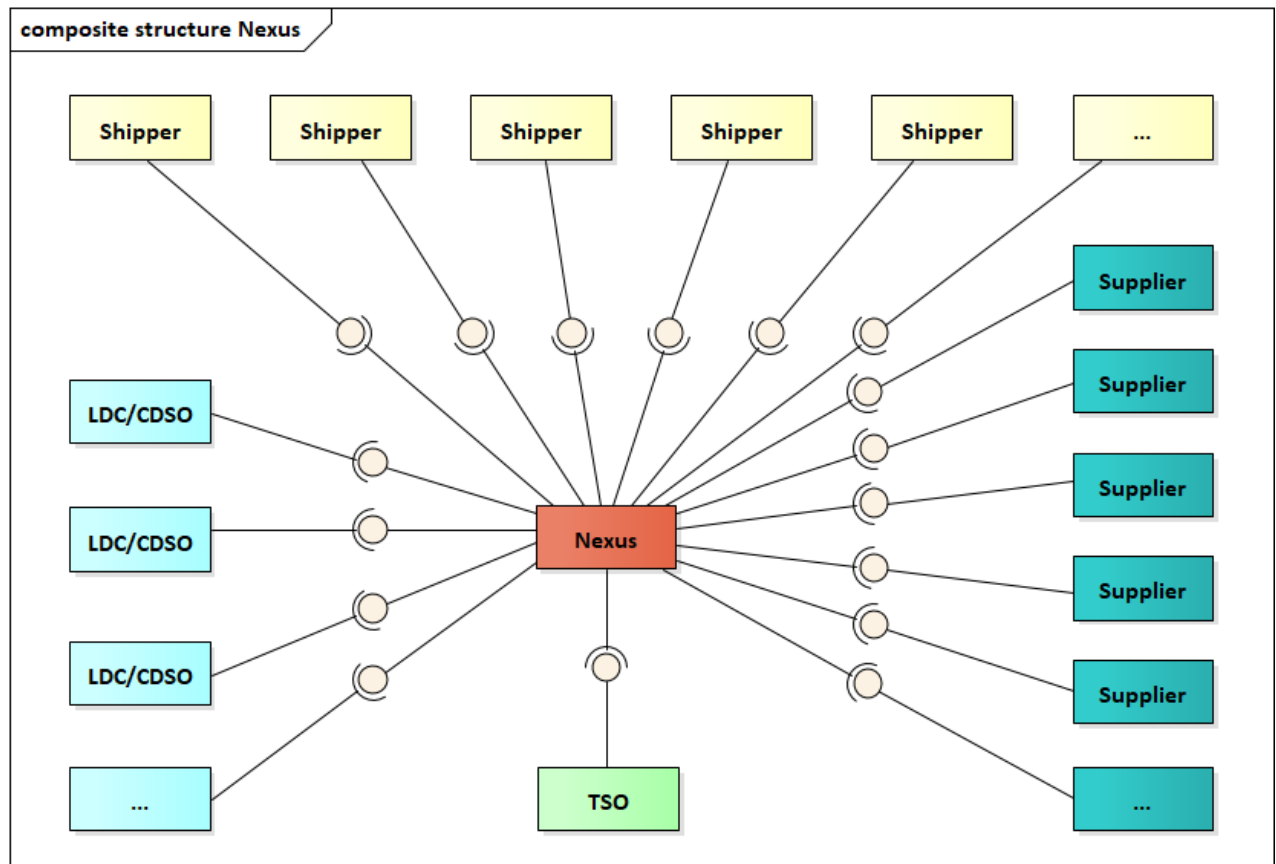
4.2 Peer-to-peer Wholesale gas via AS2

Up to the activation of SC002, TC030 and TC034, the market parties use the AS2-protocol and exchange the Wholesale gas messages peer-to-peer.



4.3 Central hub Nexus for Wholesale gas

As from the activation of SC002, TC030 and TC034 onwards, the market parties shall use the central hub Nexus in order to exchange the Wholesale gas messages either using the AS2- or AS4-protocol.



4.4 Characteristics of Nexus

The central hub Nexus has the following characteristics:

1. supports the AS2- and the AS4-protocol;
2. has an inbound and an outbound port for AS2 and for AS4;
3. has the ability for protocol conversion from AS2 into AS4 and visa-versa;
4. receives, reroutes and sends messages;
5. handles the Wholesale gas messages without changing the content incl. de header³;
6. performs no XML Schema validation for the Wholesale gas messages;
7. performs a limited number of checks (see paragraph 4.5 for an overview of these checks);
8. uses certificates (also from market parties) for secure transport, signing and content encryption;
9. uses IP-whitelisting (also from market parties);
10. uses TLS1.2 (or higher) to secure the connection;
11. sends only messages to market parties that are registered in the market party administration within the central hub Nexus;
12. knows the protocol (AS2 or AS4) a registered market party is using;
13. uses agreements to exchange Wholesale gas messages between sender and receiver;
14. supports monitoring and reporting functionality for operational tasks of EDSN.

³ Market parties must fill the Sender EAN13 and Receiver EAN13 in the EDSN Business Document Header identical to the peer-to-peer situation. Nexus will use this EAN13 information to reroute the Wholesale gas message to the designated receiver. Nexus will **not** change the Sender EAN13 and Receiver EAN13 in the EDSN Business Document Header.

The AS2-From or AS2-To in the AS2 envelope must be the EAN code assigned to the central hub Nexus. Also, the AS4 Party identifier for Sender (From) or Receiver (To) must be the EAN code assigned to the central hub Nexus. See paragraph 4.9.

4.5 Checks by Nexus

Each received Wholesale gas message will be checked by Nexus according the following rules:

1. Is it XML? This is done by checking the presence of the XML declaration as the first line of the XML Wholesale gas message;
2. Is it a registered receiver? This is done by checking the EAN13 in element ReceiverID of the EDSN Business Document Header against the market party administration within the central hub Nexus.

Complete overview of all checks performed by Nexus and the returned error message:

Checks	Explanation	Technical error messages			Functional error messages
		Error message AS2	Error message AS4		Wholesale gas error message
			Error code	Explanation	
A. Authentication	Can the sender be identified via the signing certificate?	error: authentication-failed	EBMS:0101	Failed Authentication	
B. Confidentiality	Is the content of the message encrypted (using the appropriate encryption/decryption certificate)?	error: decryption-failed	EBMS:0102	Failed Decryption	
C. XML	Is the message an XML file?				Wholesale gas Acknowledgement, result code 40G (see Appendix C)
D. Document type	Is the message a known Wholesale gas message type?	error: unexpected-processing-error	EBMS:0008	FeatureNot Supported	
E. Sender registered	Is the sender registered in the market party administration? This sender check is currently done by check A. This particular check E will be added in the next development stage of Nexus.				
F. Receiver registered	Is the receiver registered in the market party administration?				Wholesale gas Acknowledgement, result code 44G (see Appendix C)
G. AS2/AS4 registration	Is the sender using AS2 or AS4 according to their registration in Nexus?	error: unexpected-processing-error	EBMS:0005	Connection Failure	

4.6 Market party administration

The Nexus service to receive, reroute and send messages is limited to pre-registered market parties only. The registration of market parties in the central hub is handled by EDSN Operations. EDSN Operations can be reached via:

1. Phone +31 (0)900 235 3376;
2. Mail: servicedesk@edsn.nl.

The central hub Nexus uses firewalls to restrict incoming or outgoing message flow to specific IP addresses, or address ranges. This prevents unauthorised parties from connecting to the central hub. Market parties must use static IP-addresses for inbound and outbound AS2 and AS4 connections. This IP-whitelisting is part of the market parties registration in the central hub Nexus.

The following market party information is registered in Nexus:

- a. EAN13 market party;
- b. Name market party;
- c. Role market party;
- d. IP-address;
- e. Public keys certificates;

- f. Endpoint (either AS2 or AS4).

This information is used by Nexus to receive, reroute and send messages.

The contact persons and contact details of the market parties involved in Wholesale gas are registered in the Wholesale gas group in CPR (register of contact persons):

- a. EAN13 market party;
- b. Name market party;
- c. Role market party;
- d. Contact persons;
- e. Contact details.

This information is available for the market parties that are registered in this Wholesale gas contact group in CPR. Market parties can edit their contact person information in CPR themselves.

4.7 Nexus security setup for AS2

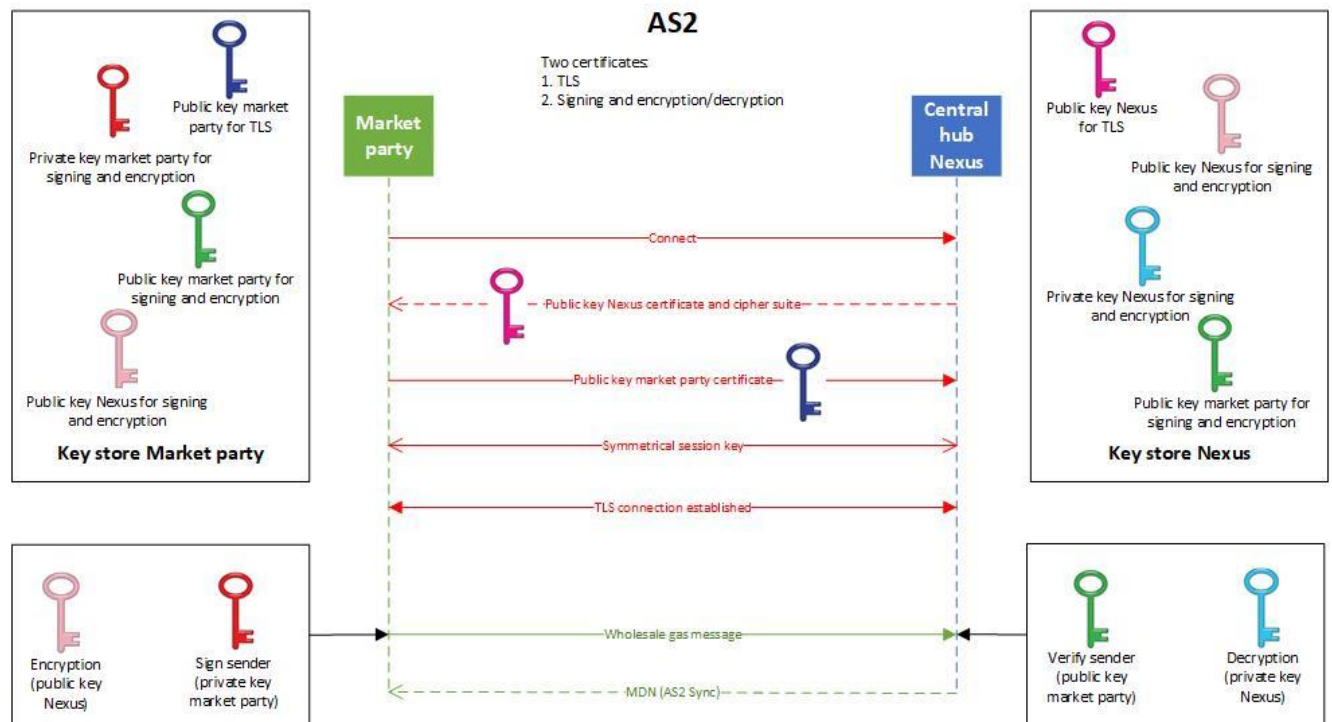
Central hub Nexus provides security of the communication channel using Transport Layer Security (TLS version 1.2). TLS handles the secure communication between the market party and Nexus. The Nexus security setting for AS2 is in accordance with the security settings for the current peer-to-peer Wholesale gas message exchange. Nexus uses mutual TLS authentication: both market party and Nexus need to authenticate each other using certificates.

Nexus has two certificates for AS2:

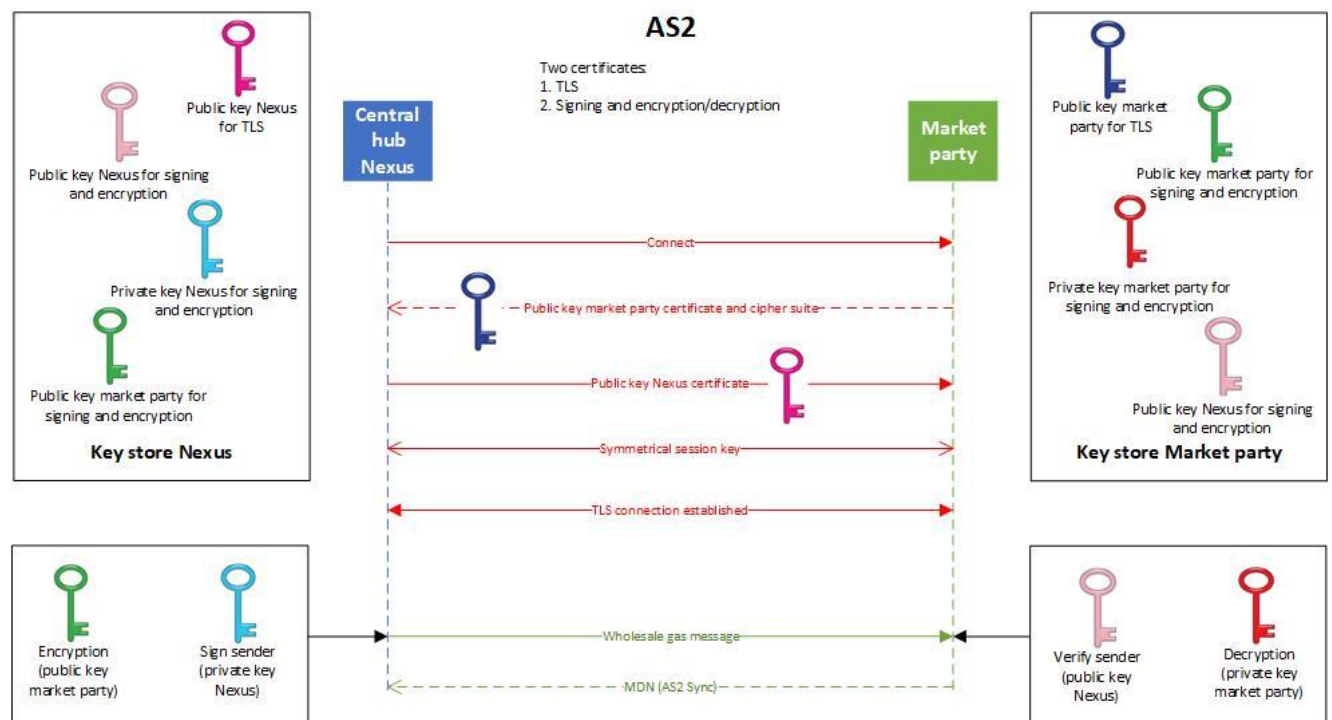
1. TLS;
2. Signing and encryption/decryption.

Market parties need the public keys of these certificates to exchange Wholesale gas message via Nexus.

4.7.1 Exchange messages from market party to Nexus



4.7.2 Exchange messages from Nexus to market party



4.8 Nexus security setup for AS4

Central hub Nexus provides security of the communication channel using Transport Layer Security (TLS version 1.2). TLS handles the secure communication between the market party and Nexus. The Nexus security setting for AS4 is in accordance with the AS4 Profile of ebMS 3.0 [6] and ENTSOG AS4 Profile [5]:

- Signing: SOAP Header, SOAP Body and SOAP Attachments must be signed. The empty SOAP Body needs to be signed too;
- Encryption: concerns the encryption of “user messages”. This could be an “user message” in the SOAP Body or an "user messages" as SOAP Attachments. Only the "user messages" have to be encrypted, the empty SOAP Body not. In accordance with ENTSOG AS4 Profile [5] an “user message” in the SOAP Body is not allowed.

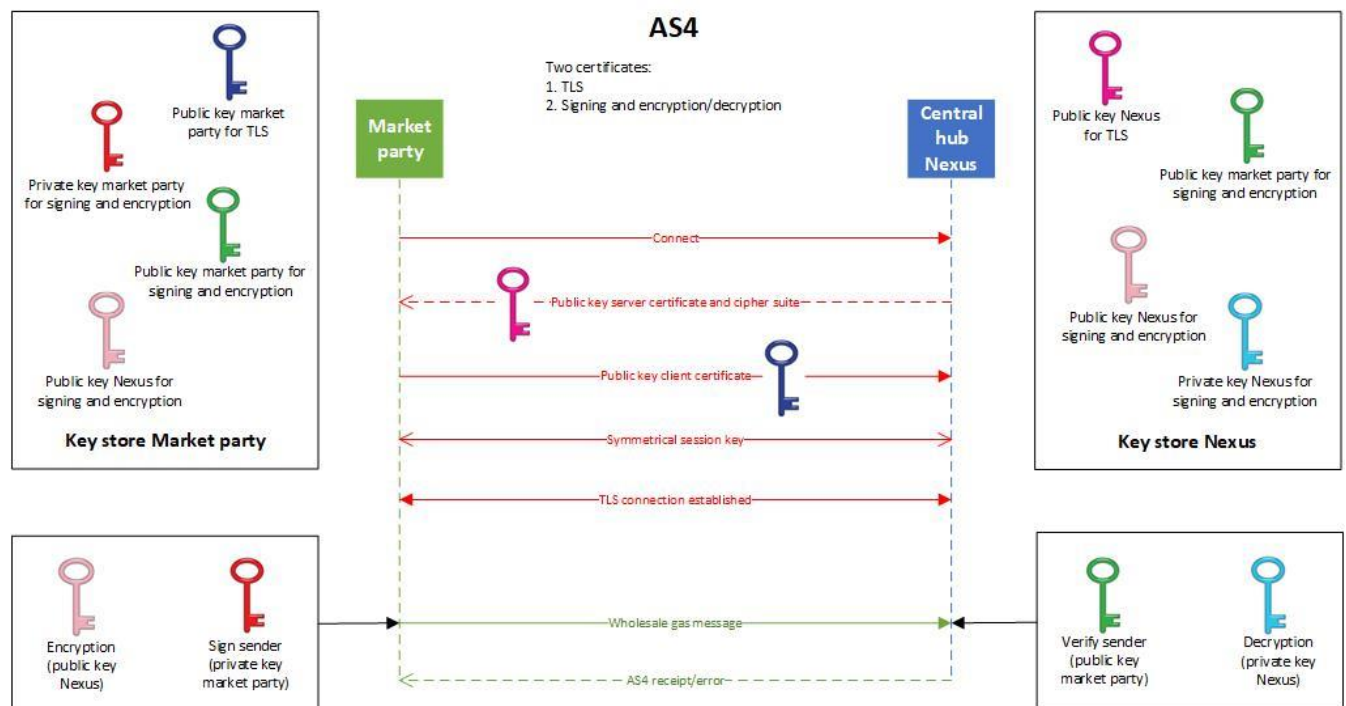
Nexus uses mutual TLS authentication: both market party and Nexus need to authenticate each other using certificates.

Nexus has two certificates for AS4. The certificate for signing and encryption/decryption is the same:

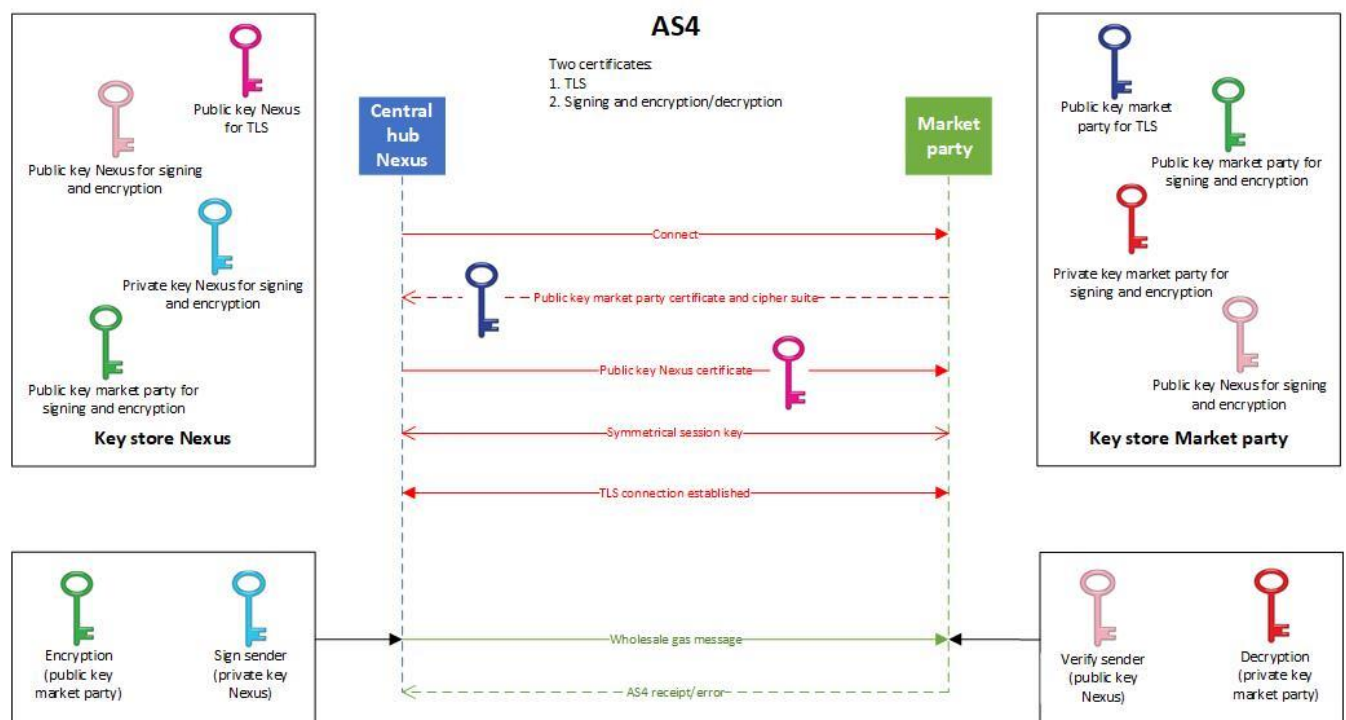
1. TLS;
2. Signing and encryption/decryption.

Market parties need the public keys of these certificates to exchange Wholesale gas message via Nexus.

4.8.1 Exchange messages from market party to Nexus



4.8.2 Exchange messages from Nexus to market party



4.9 Quality of service central hub Nexus

Central hub Nexus	
Service	Exchange Wholesale gas Allocation and Reconciliation messages
CMF service ID	BSCMF0056
Description	Central hub service for exchanging Wholesale gas Allocation and Reconciliation messages
Service transaction pattern	To be defined
Precondition	Wholesale message, in XML format, is sent to the central hub Nexus via the AS2- or AS4-protocol by a registered and authenticated market party
Trigger	Market party sends a Wholesale gas Allocation and Reconciliation message
Postcondition	- Received Wholesale gas Allocation and Reconciliation message is denied by Nexus; - or - Received Wholesale gas Allocation and Reconciliation message is sent to the intended receiver, being a registered market party.
Service usage	
Usage (within SLA)	Working days from 08:00 – 18:00 hour (local time CET or CEST)
Average load	1.800.000 messages/month
Peak load	To be defined
Period of peak load	To be defined
Usage (outside SLA)	Working days from 18:00 – 08:00 hour (local time CET or CEST), Saturday, Sunday and public holidays: received Wholesale gas Allocation and Reconciliation message is handled on a best effort basis
Max. response time to sender	Wholesale gas messages will be accepted or denied by Nexus within 2 seconds. The overall maximum response time of Nexus to the sending party is 4 seconds.
Max. handling time Nexus	All accepted Wholesale gas messages will be sent by Nexus to the intended receiver within 15 minutes.
Time-out	In case of time-out: - Wholesale gas message is offered three times more to the receiver by the central hub Nexus after the first time out. Interval between these retries is one hour; - Follow up by EDSN Operations in case these three retries fail; - Retry mechanism will continue for eight more times. Interval between these retries is one hour.
HTTPS endpoints for ACC	
AS2 inbound	https://nexus-dat.edsn.nl/b2b/httpReceiver
AS4 inbound ⁴	https://nexus-dat.edsn.nl/b2b/services/ws/HUB_ListeningChannel_{ID market party}
	{ID market party} = the EAN13 of the market party
AS2 outbound	https://nexus-dat.edsn.nl/b2b/httpReceiver
AS4 outbound ⁴	https://nexus-dat.edsn.nl/b2b/services/ws/HUB_ListeningChannel_{ID market party}
	{ID market party} = the EAN13 of the market party
HTTPS endpoints for PROD	
AS2 inbound	https://nexus.edsn.nl/b2b/httpReceiver
AS4 inbound ⁴	https://nexus.edsn.nl/b2b/services/ws/HUB_ListeningChannel_{ID market party}
	{ID market party} = the EAN13 of the market party
AS2 outbound	https://nexus.edsn.nl/b2b/httpReceiver
AS4 outbound ⁴	https://nexus.edsn.nl/b2b/services/ws/HUB_ListeningChannel_{ID market party}
	{ID market party} = the EAN13 of the market party
AS2 and AS4 Identifiers Nexus	
AS2-From (if Nexus is the sender)	8712423010208
AS2-To (if Nexus is the receiver)	8712423010208
AS4 Party identifier From (if Nexus is the sender)	8712423010208
AS4 Party identifier To (if Nexus is the receiver)	8712423010208

⁴ The endpoints for AS4 apply from the update of Nexus as from October 26, 2019.

Connection details Nexus (for ACC and PROD)					
IP address	Please check the note “Gegevens connectiviteit Nexus hub” [10]				
Public keys certificates	Please check the note “Gegevens connectiviteit Nexus hub” [10]				
Wholesale gas XML Schema Definitions					
Name	LALLNotification	Version	1.3	Date	23-12-2013
Name	LALLAcknowledgement	Version	1.2	Date	11-06-2012
Name	BALLNotification	Version	1.2	Date	11-06-2012
Name	BALLAcknowledgement	Version	1.2	Date	11-06-2012
Name	MINFONotification	Version	1.3	Date	02-07-2012
Name	MINFOAcknowledgement	Version	1.2	Date	11-06-2012
Name	CINFONotification	Version	1.2	Date	11-06-2012
Name	CINFOAcknowledgement	Version	1.2	Date	11-06-2012
Name	TINFONotification	Version	1.2	Date	11-06-2012
Name	TINFOAcknowledgement	Version	1.2	Date	11-06-2012
Name	RNINFONotification	Version	1.3	Date	23-12-2013
Name	RNINFOAcknowledgement	Version	1.2	Date	11-06-2012
Name	RSINFONotification	Version	1.2	Date	11-06-2012
Name	RSINFOAcknowledgement	Version	1.2	Date	11-06-2012
Name	OVEXITNotification	Version	1.3	Date	23-12-2013
Name	OVEXITAcknowledgement	Version	1.2	Date	11-06-2012

4.10 Setup market party identifier for CDSO

The use of EAN13 in the Business Document Header of the Wholesale Gas message and in the AS2/AS4 envelope is for the CDSO identical as for the other market parties. However, in case the CDSO role is divided into a party that owns the CDN and a party that manages/operates the CDN the use of EAN13 for Sender and receiver in the Business Document Header must be:

Sending Wholesale gas messages to Nexus:

Sender in the Business Document Header	EAN13 of the CDN owner
--	------------------------

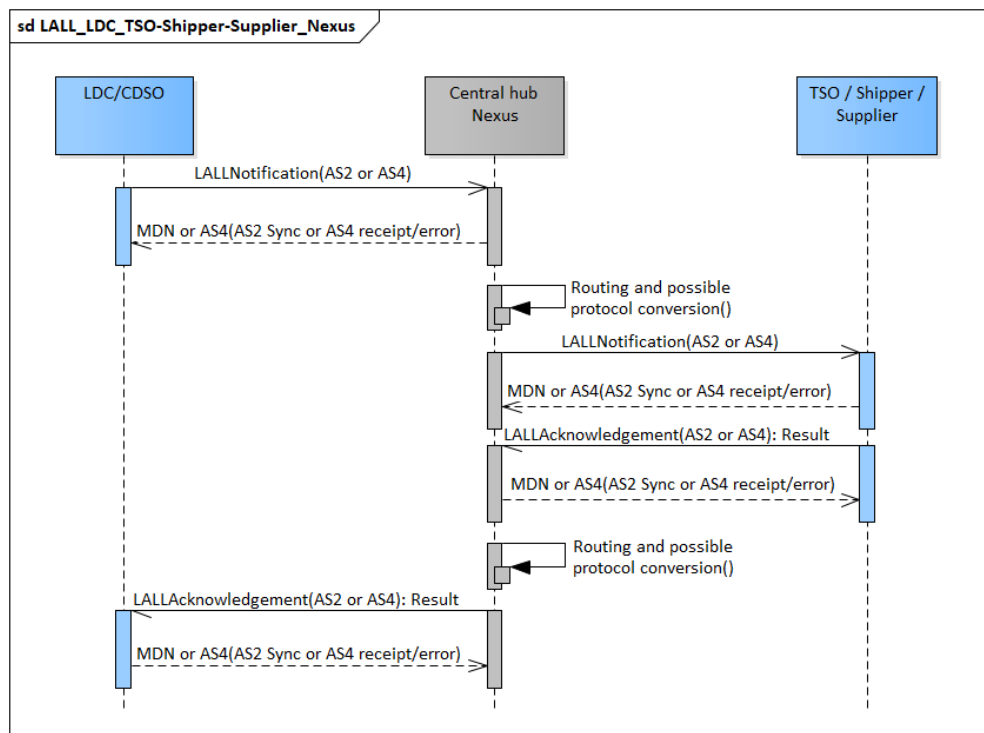
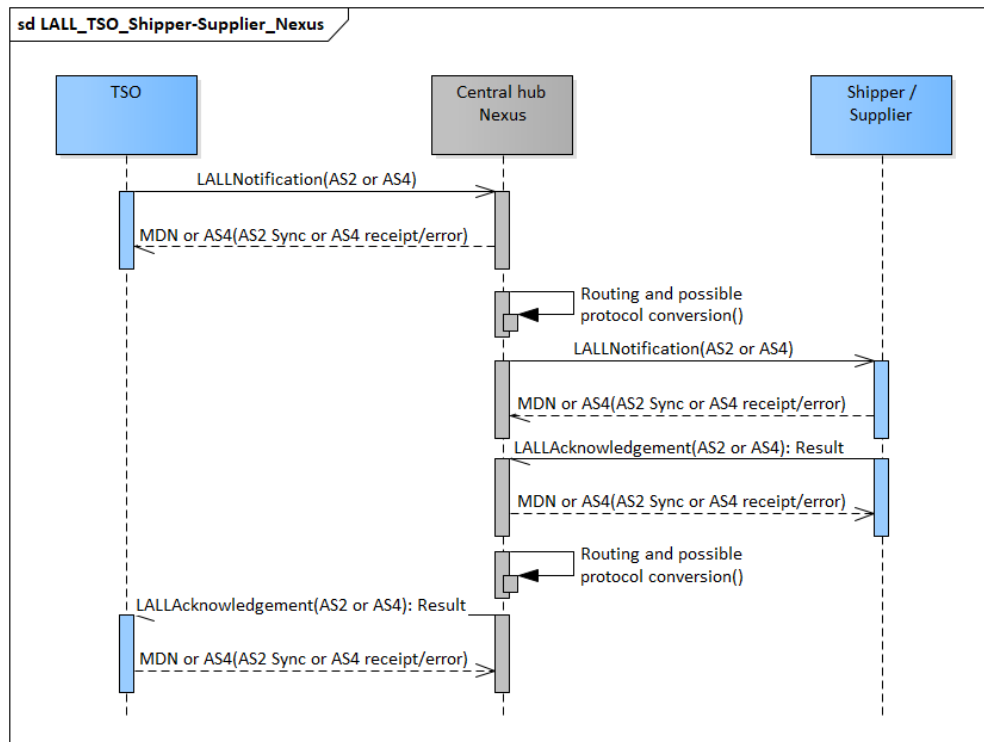
Receiving Wholesale gas messages from Nexus:

Receiver in the Business Document Header	EAN13 of the CDN owner
--	------------------------

5 Allocation – LALL

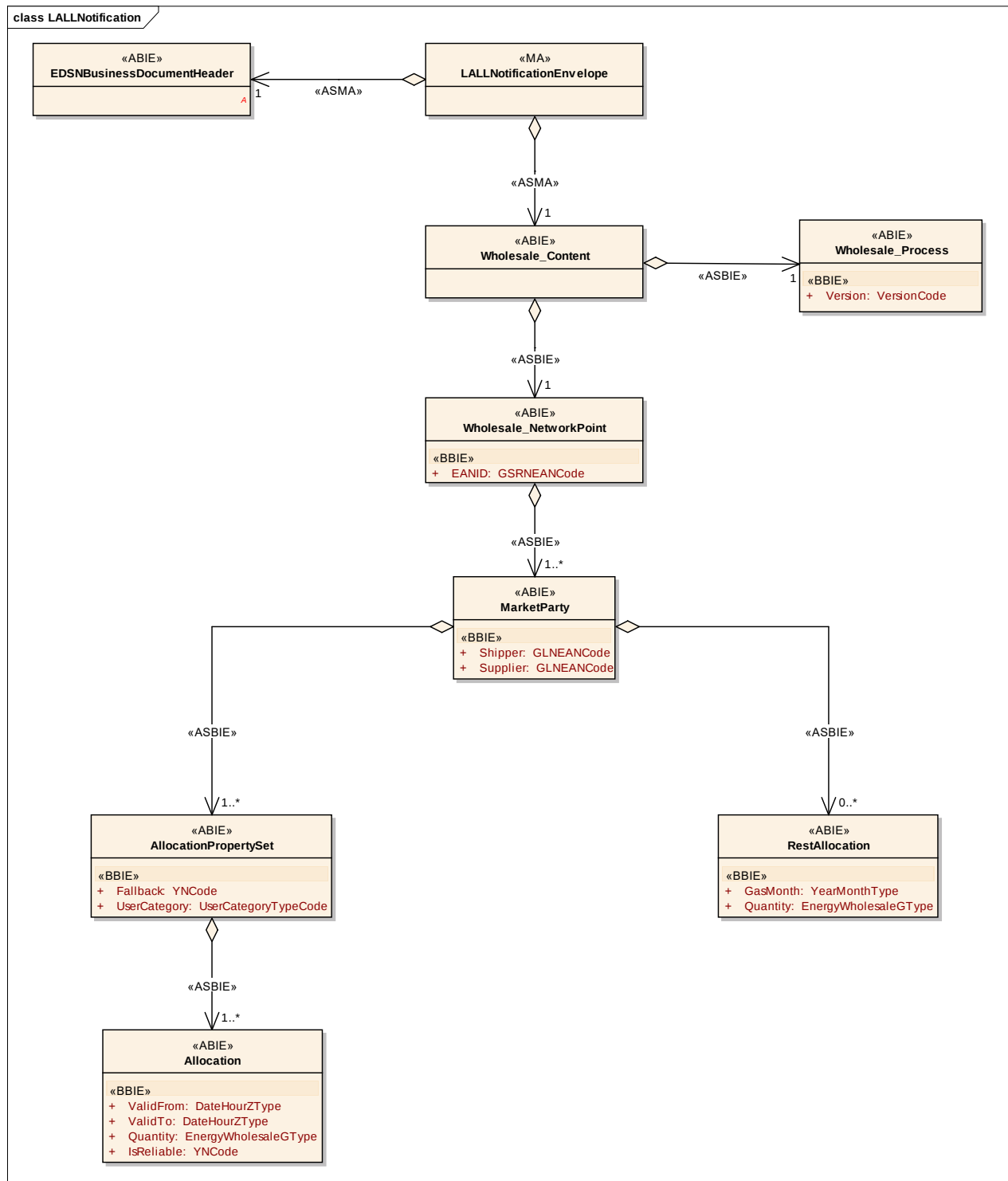
LALLNotification is the message from LDC/CDSO/TSO (GTS) to a shipper or supplier, stating the allocation per shipper/supplier combination per category per network point. Detailed process information is available in referred document [4] “Wholesale gas - Allocation messaging process”.

5.1 Sequence diagram



The MessageID in the LALLNotification instance is used to uniquely identify the LALLNotification instance. This MessageID must be put in the CorrelationID of the LALLAcknowledgement instance in order to correlate the LALLAcknowledgement instance to the corresponding LALLNotification instance.

5.2 UML class diagram



5.3 Description UML class diagram

Allocation

Attribute	Data type	Multiplicity	Description
ValidFrom	DateHourZType	1..1	Valid from in UTC hour notation
ValidTo	DateHourZType	1..1	Valid to in UTC hour notation

Attribute	Data type	Multiplicity	Description
Quantity	EnergyWholesaleGT ype	1..1	Energy in MJ
IsReliable	YNCode	1..1	Allocation reliable, yes (Y) or no (N)

AllocationPropertySet

Attribute	Data type	Multiplicity	Description
Fallback	YNCode	1..1	Allocation are the result of fallback (Y) or not (N)
UserCategory	UserCategoryTypeC ode	1..1	User category

RestAllocation

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)
Quantity	EnergyWholesaleGT ype	1..1	Quantity in MJ

Wholesale_NetworkPoint

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code networkpoint

Wholesale_Process

Attribute	Data type	Multiplicity	Description
Version	VersionCode	1..1	Version

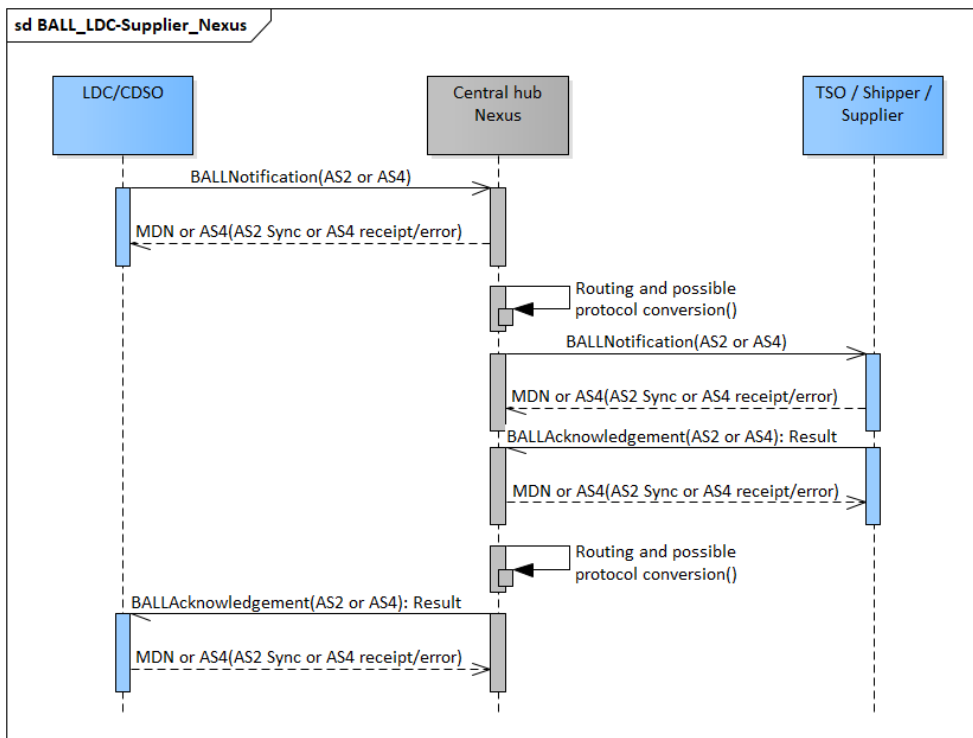
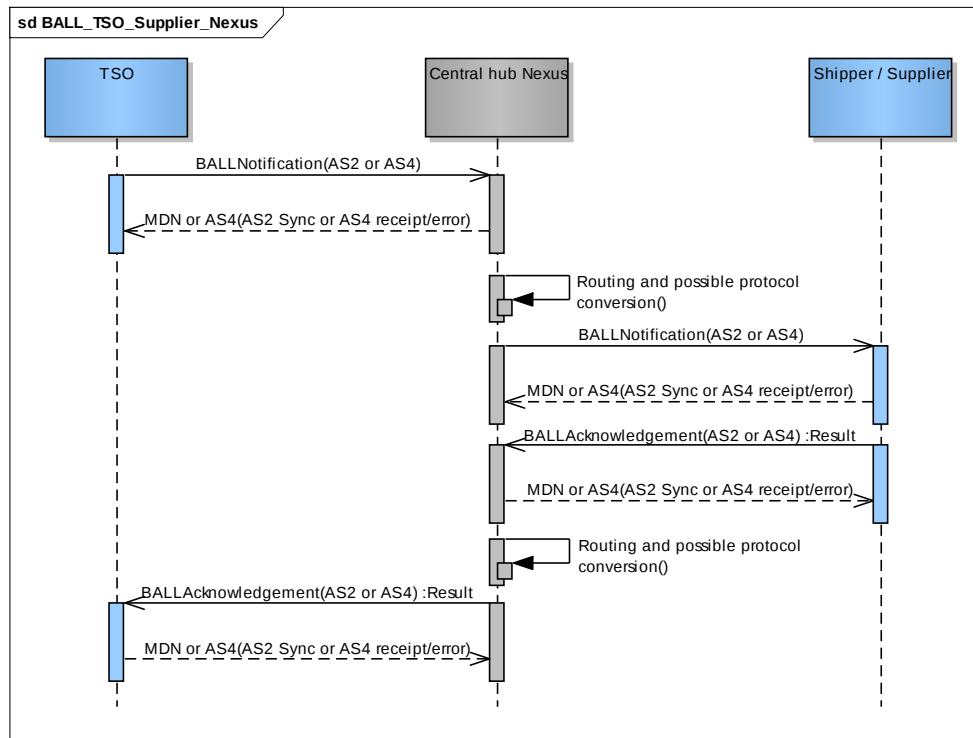
MarketParty

Attribute	Data type	Multiplicity	Description
Shipper	GLNEANCode	1..1	EAN13 code shipper
Supplier	GLNEANCode	1..1	EAN13 code supplier

6 Allocation – BALL

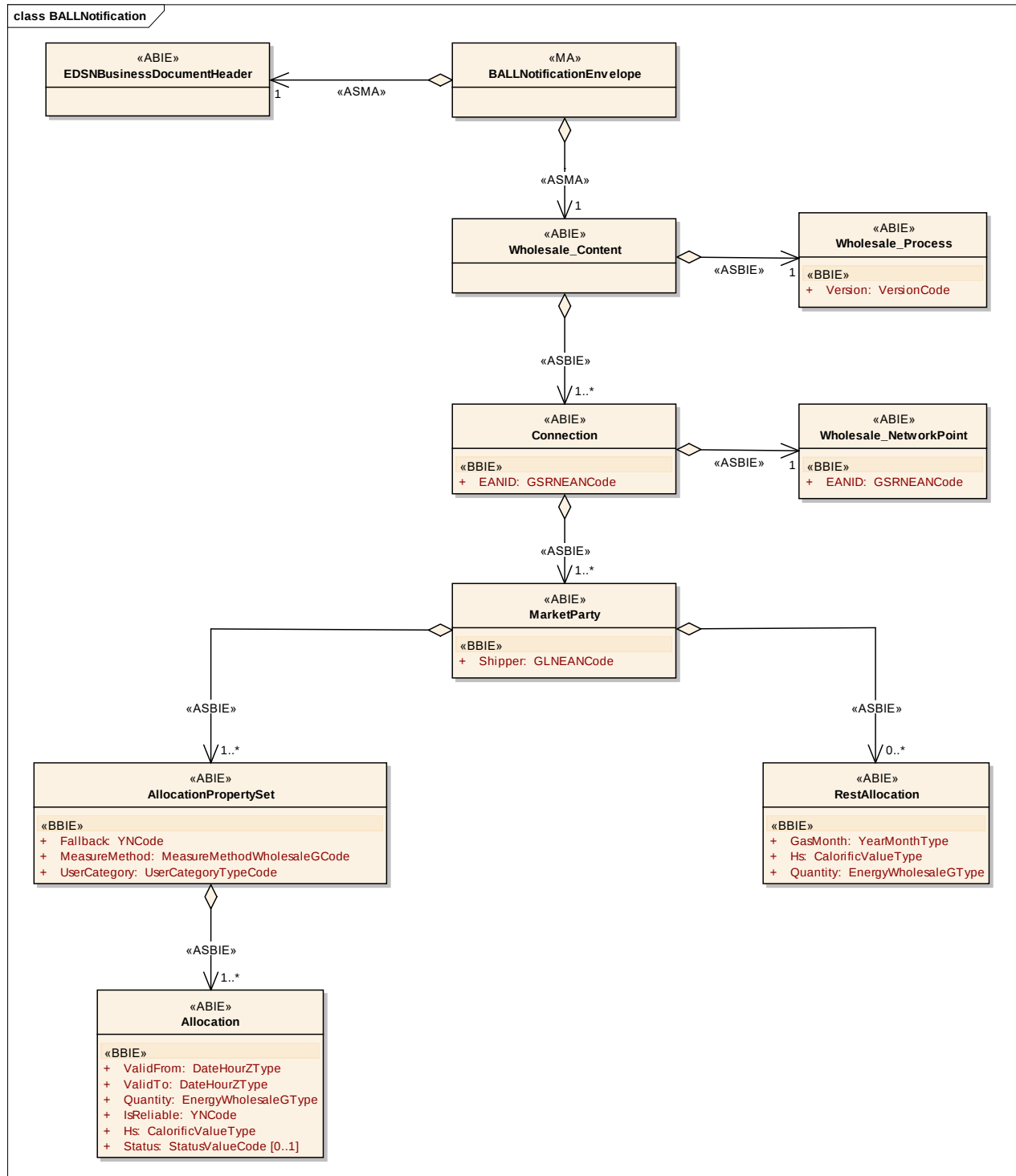
BALLNotification is the message from LDC/CDSO/TSO (GTS) to a supplier, stating the allocation per connection per supplier. Detailed process information is available in referred document [4] “Wholesale gas - Allocation messaging process”.

6.1 Sequence diagram



The MessageID in the BALLNotification instance is used to uniquely identify the BALLNotification instance. This MessageID must be put in the CorrelationID of the BALLAcknowledgement instance in order to correlate the BALLAcknowledgement instance to the corresponding BALLNotification instance.

6.2 UML class diagram



6.3 Description UML class diagram

Allocation

Attribute	Data type	Multiplicity	Description
ValidFrom	DateHourZType	1..1	Valid from in UTC hour notation
ValidTo	DateHourZType	1..1	Valid to in UTC hour notation
Quantity	EnergyWholesaleGType	1..1	Energy in MJ

Attribute	Data type	Multiplicity	Description
IsReliable	YNCode	1..1	Allocation reliable, yes (Y) or no (N)
Hs	CalorificValueType	1..1	Calorific value (decimal)
Status	StatusValueCode	0..1	No value as default (i.e. optional). Status of the allocation value (between brackets the description): 17G (Value automatically repaired); 18G (Value copied from previous period); 19G (Value negotiated between parties); 20G (Value estimated by Network company); 21G (Value estimated by Network company, after consultation of other parties).

AllocationPropertySet

Attribute	Data type	Multiplicity	Description
Fallback	YNCode	1..1	Allocation are the result of fallback (Y) or not (N)
MeasureMethod	MeasureMethodWholesaleGCode	1..1	Measure method: measurement (M) or calculation (C)
UserCategory	UserCategoryTypeCode	1..1	User category

Connection

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code connectionpoint

RestAllocation

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)
Hs	CalorificValueType	1..1	Calorific value (decimal)
Quantity	EnergyWholesaleGType	1..1	Quantity in MJ

Wholesale_NetworkPoint

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code networkpoint

Wholesale_Process

Attribute	Data type	Multiplicity	Description
Version	VersionCode	1..1	Version

MarketParty

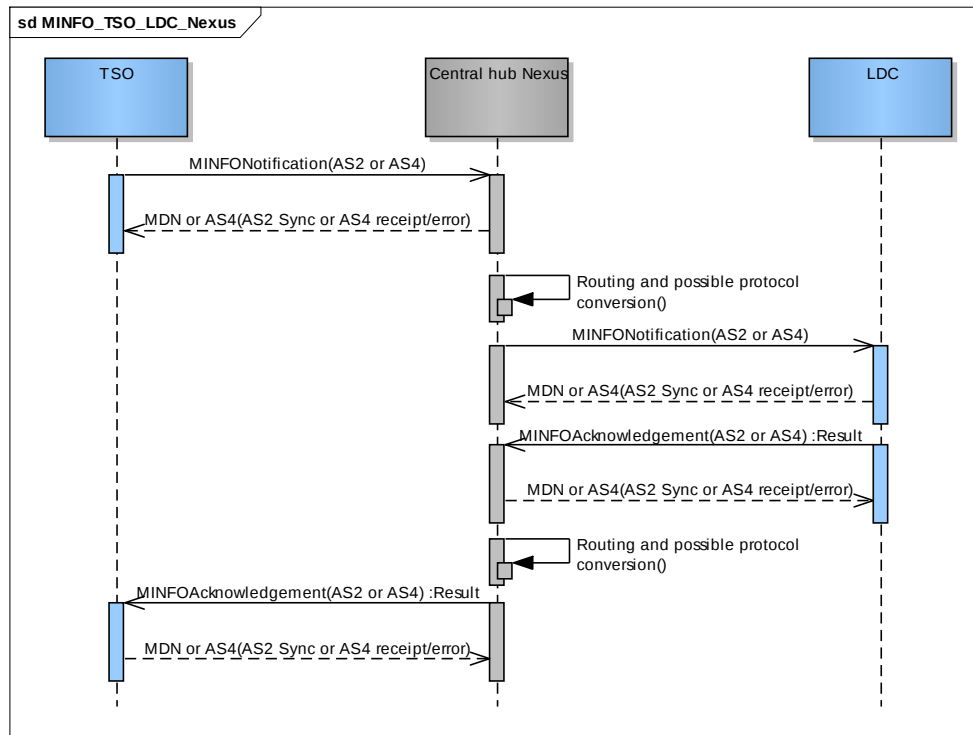
Attribute	Data type	Multiplicity	Description
Shipper	GLNEANCode	1..1	EAN13 code shipper

7 Allocation – MINFO

MINFONotification is the message from GTS to LDC, stating the measurements at a network point.

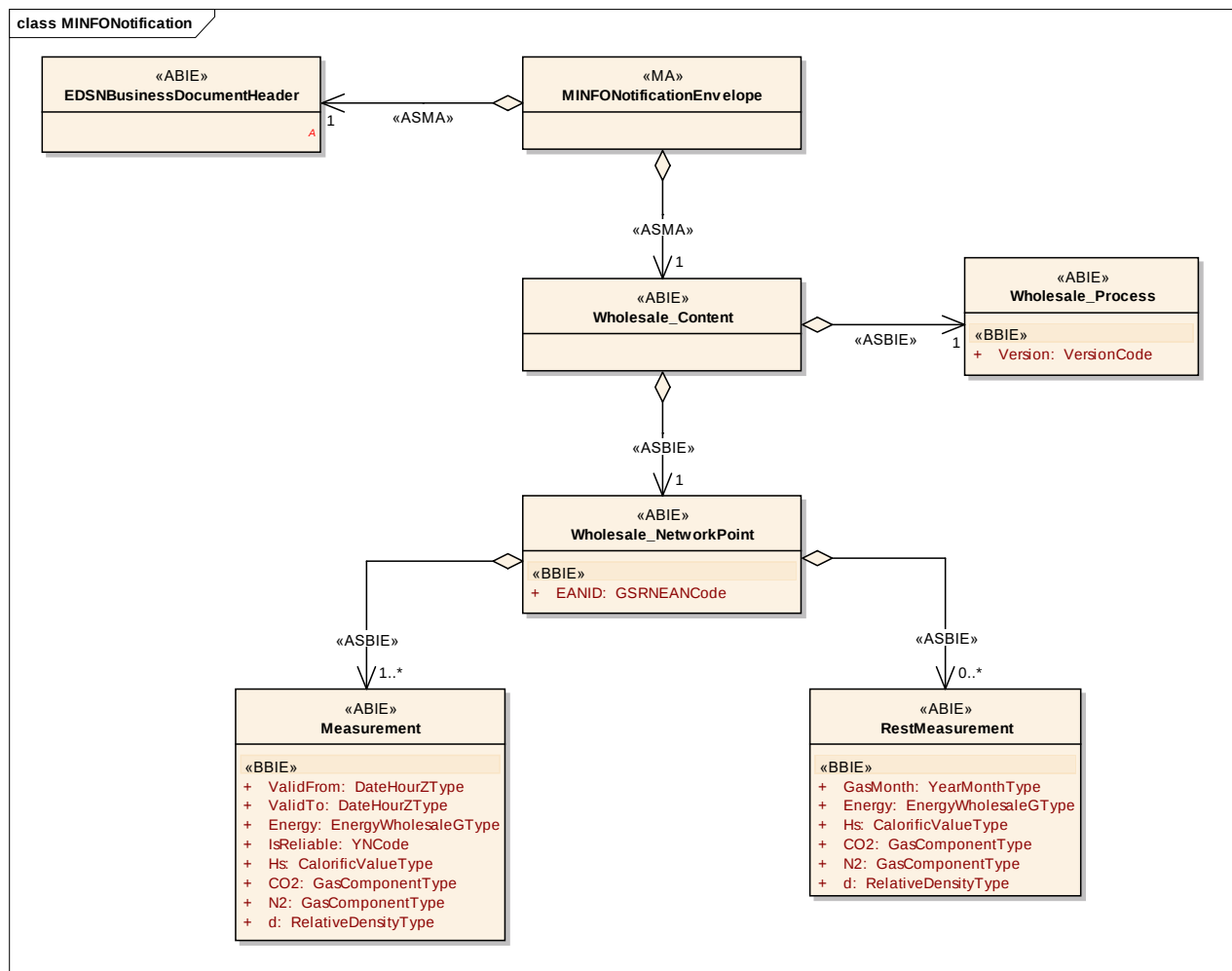
Detailed process information is available in referred document [4] “Wholesale gas - Allocation messaging process”.

7.1 Sequence diagram



The MessageID in the MINFONotification instance is used to uniquely identify the MINFONotification instance. This MessageID must be put in the CorrelationID of the MINFOAcknowledgement instance in order to correlate the MINFOAcknowledgement instance to the corresponding MINFONotification instance.

7.2 UML class diagram



7.3 Description UML class diagram

Measurement

Attribute	Data type	Multiplicity	Description
ValidFrom	DateHourZType	1..1	Valid from in UTC hour notation
ValidTo	DateHourZType	1..1	Valid to in UTC hour notation
Energy	EnergyWholesaleGTtype	1..1	Energy in MJ
IsReliable	YNCode	1..1	Measurement reliable, yes (Y) or no (N)
Hs	CalorificValueType	1..1	Calorific value (decimal)
CO2	GasComponentType	1..1	Gas component CO2 in % (decimal)
N2	GasComponentType	1..1	Gas component N2 in % (decimal)
d	RelativeDensityType	1..1	Relative density (decimal)

RestMeasurement

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm) of rest measurement
Energy	EnergyWholesaleGTtype	1..1	Energy in MJ
Hs	CalorificValueType	1..1	Calorific value (decimal)
CO2	GasComponentType	1..1	Gas component CO2 in % (decimal)
N2	GasComponentType	1..1	Gas component N2 in % (decimal)
d	RelativeDensityType	1..1	Relative density (decimal)

Wholesale_NetworkPoint

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code networkpoint

Wholesale_Process

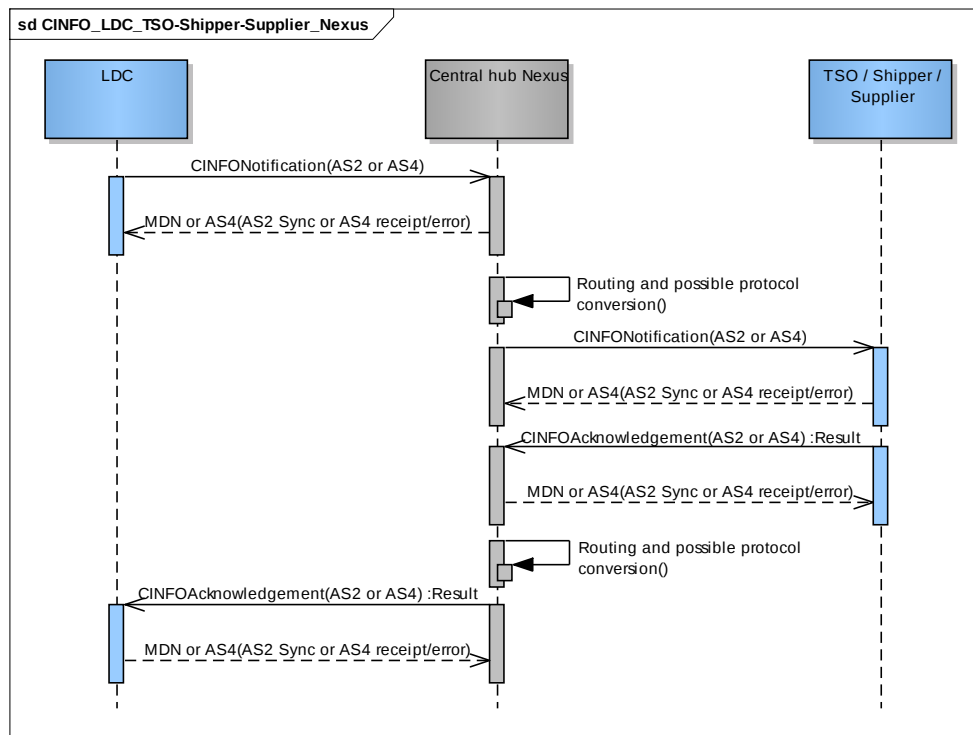
Attribute	Data type	Multiplicity	Description
Version	VersionCode	1..1	Version

8 Allocation – CINFO

CINFONotification is the message from LDC to GTS, shipper and supplier, stating the measurement correction factor per network point.

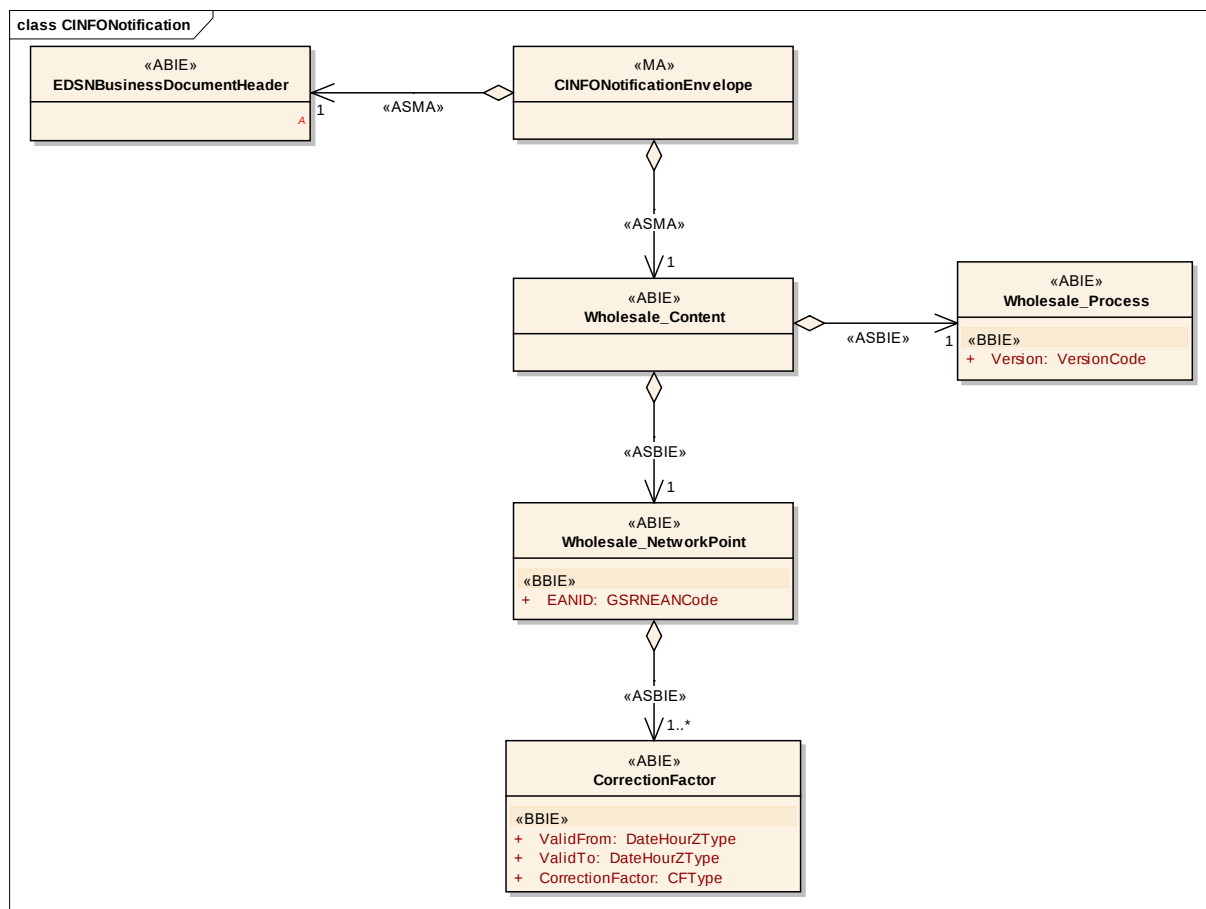
Detailed process information is available in referred document [4] “Wholesale gas - Allocation messaging process”.

8.1 Sequence diagram



The MessageID in the CINFONotification instance is used to uniquely identify the CINFONotification instance. This MessageID must be put in the CorrelationID of the CINFOAcknowledgement instance in order to correlate the CINFOAcknowledgement instance to the corresponding CINFONotification instance.

8.2 UML class diagram



8.3 Description UML class diagram

CorrectionFactor

Attribute	Data type	Multiplicity	Description
ValidFrom	DateHourZType	1..1	Valid from in UTC hour notation
ValidTo	DateHourZType	1..1	Valid to in UTC hour notation
CorrectionFactor	CType	1..1	Correction factor (decimal)

Wholesale_NetworkPoint

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code networkpoint

Wholesale_Process

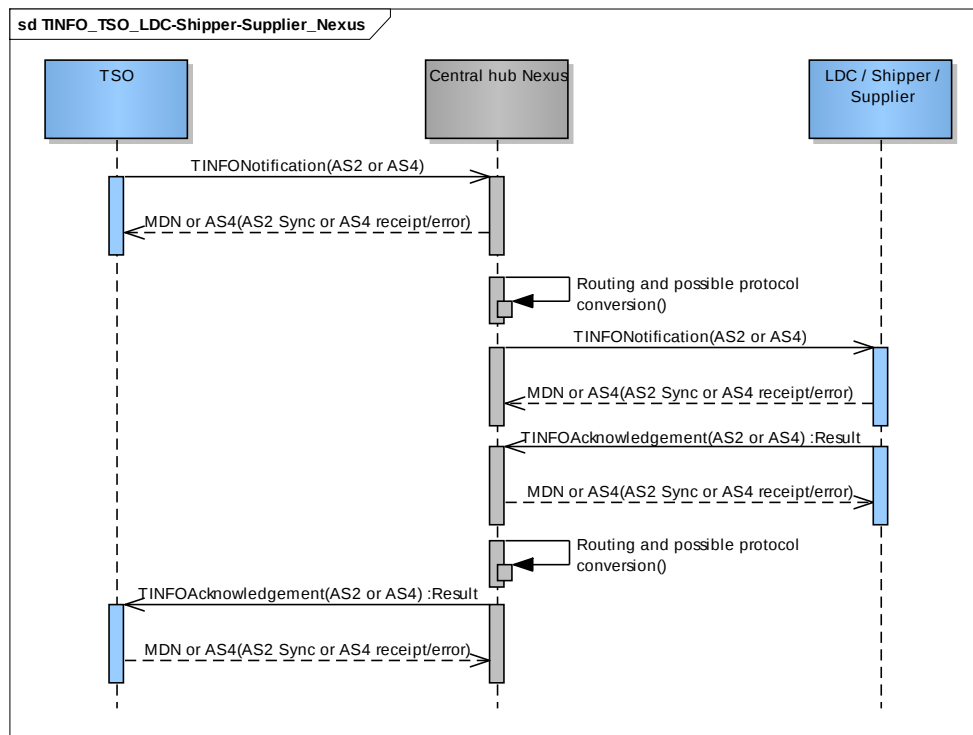
Attribute	Data type	Multiplicity	Description
Version	VersionCode	1..1	Version

9 Allocation – TINFO

TINFONotification is the daily message from GTS to LDC, shipper and supplier, stating the realised temperature per temperature zone.

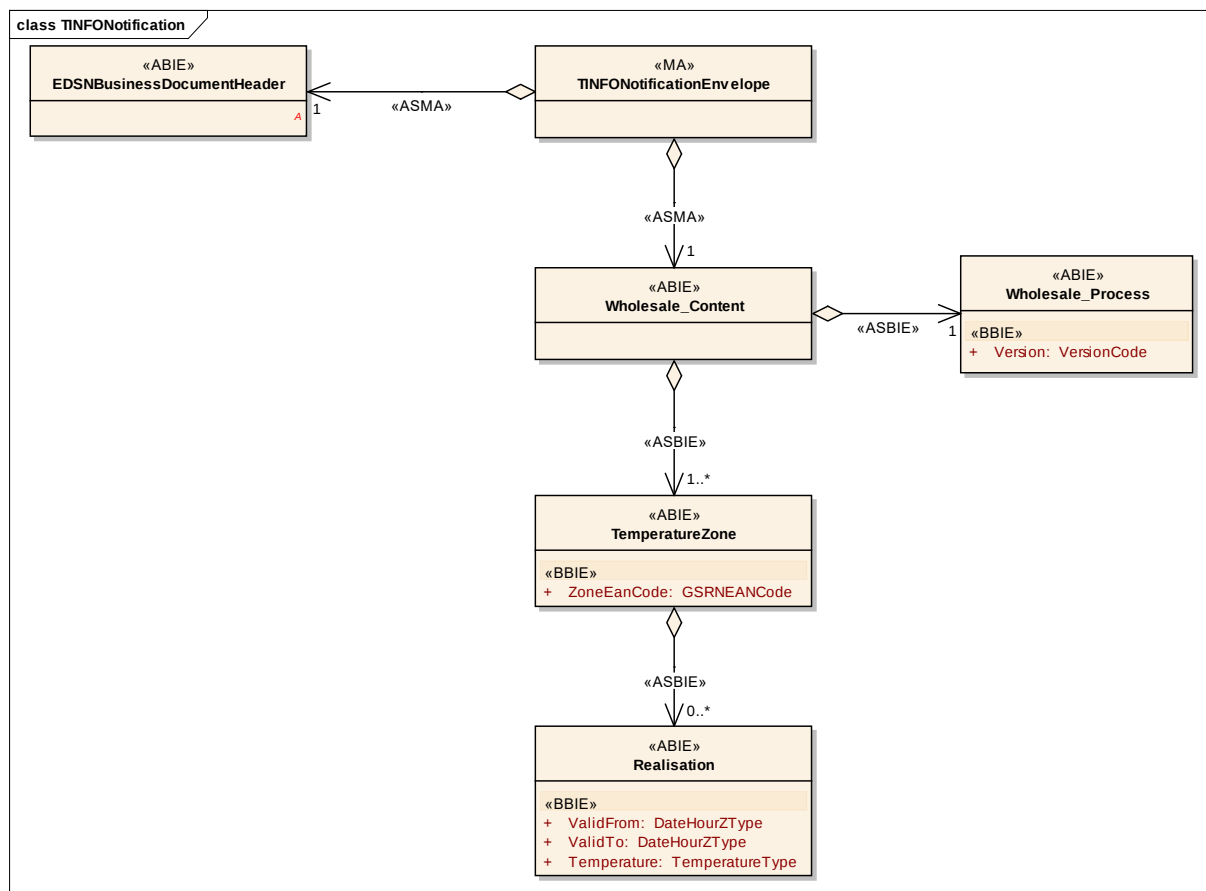
Detailed process information is available in referred document [4] “Wholesale gas - Allocation messaging process”.

9.1 Sequence diagram



The MessageID in the TINFONotification instance is used to uniquely identify the TINFONotification instance. This MessageID must be put in the CorrelationID of the TINFOAcknowledgement instance in order to correlate the TINFOAcknowledgement instance to the corresponding TINFONotification instance.

9.2 UML class diagram



9.3 Description UML class diagram

Realisation

Attribute	Data type	Multiplicity	Description
ValidFrom	DateHourZType	1..1	Valid from in UTC hour notation
ValidTo	DateHourZType	1..1	Valid to in UTC hour notation
Temperature	TemperatureType	1..1	Temperature (decimal)

TemperatureZone

Attribute	Data type	Multiplicity	Description
ZoneEanCode	GSRNEANCode	1..1	EAN18 code temperature zone

Wholesale_Process

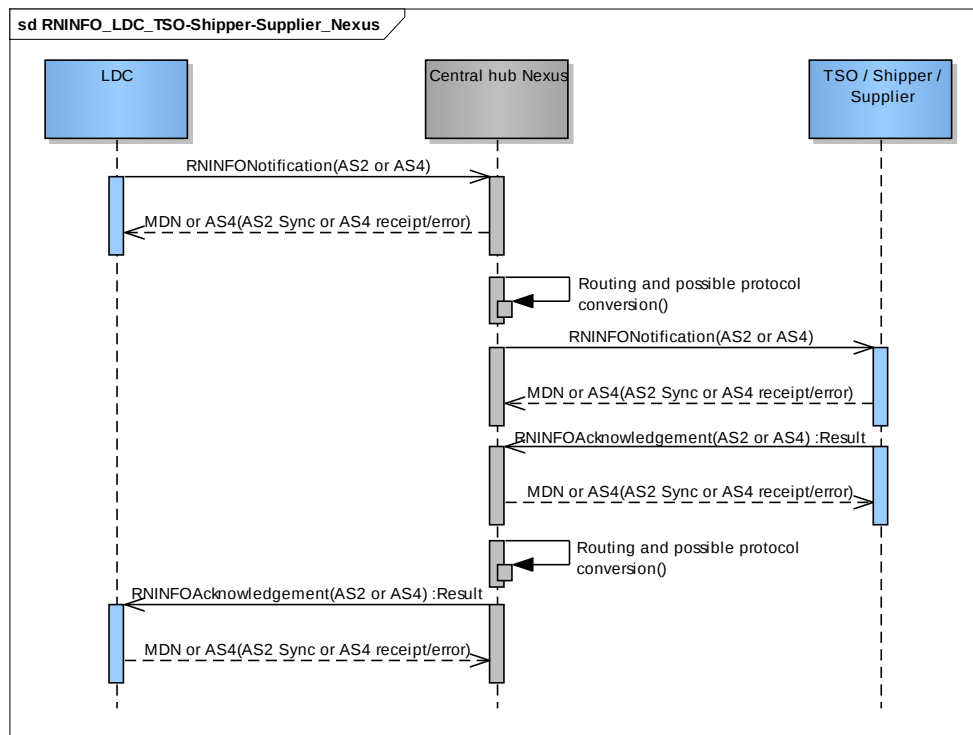
Attribute	Data type	Multiplicity	Description
Version	VersionCode	1..1	Version

10 Reconciliation – RNINFO

RNINFONotification is the message from LDC to TSO, shipper and supplier, stating the ascertained deviations as a result of the reconciliation process at the network points for the previous 17 months.

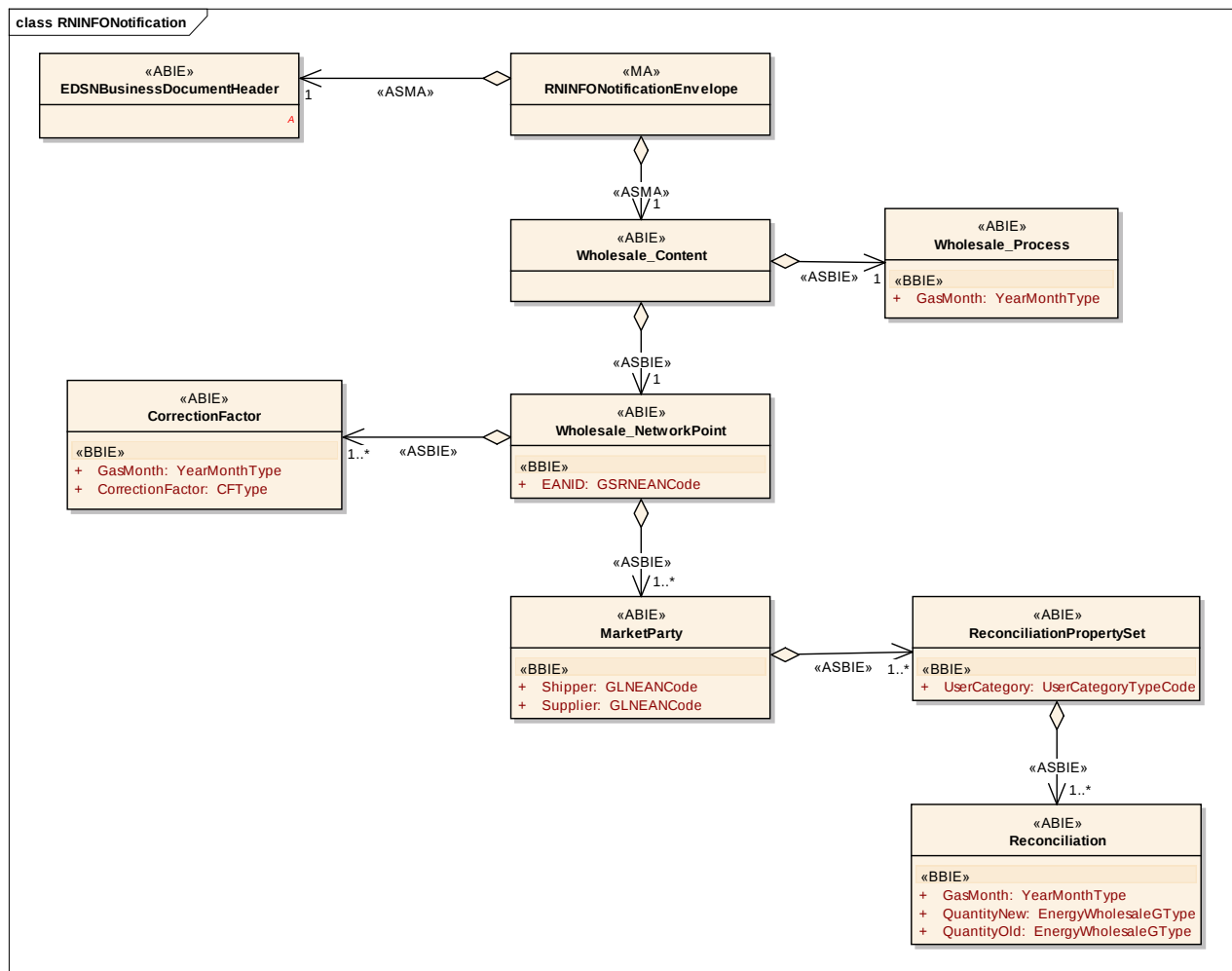
Detailed process information is available in referred document [3] “Wholesale gas - Reconciliation messaging process”.

10.1 Sequence diagram



The MessageID in the RNINFONotification instance is used to uniquely identify the RNINFONotification instance. This MessageID must be put in the CorrelationID of the RNINFOAcknowledgement instance in order to correlate the RNINFOAcknowledgement instance to the corresponding RNINFONotification instance.

10.2 UML class diagram



10.3 Description UML class diagram

CorrectionFactor

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)
CorrectionFactor	CFTYPE	1..1	Correction factor (decimal)

Reconciliation

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)
QuantityNew	EnergyWholesaleGType	1..1	Quantity reconciliation new in MJ
QuantityOld	EnergyWholesaleGType	1..1	Quantity reconciliation old in MJ

ReconciliationPropertySet

Attribute	Data type	Multiplicity	Description
UserCategory	UserCategoryTypeCode	1..1	User category

Wholesale_NetworkPoint

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code networkpoint

Wholesale_Process

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)

MarketParty

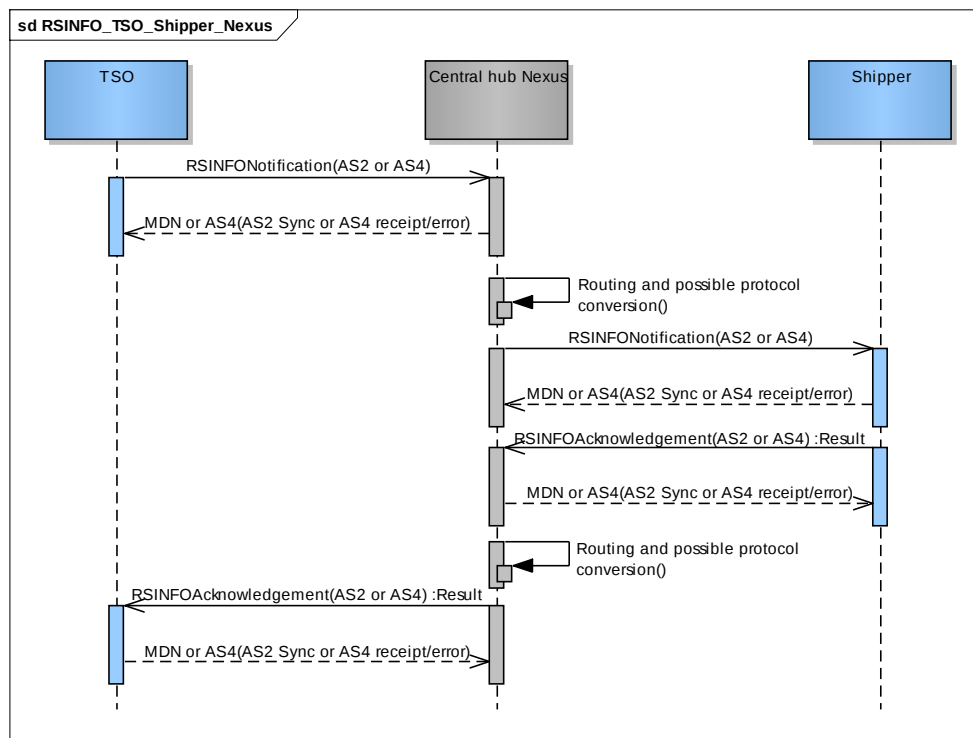
Attribute	Data type	Multiplicity	Description
Shipper	GLNEANCode	1..1	EAN13 code shipper
Supplier	GLNEANCode	1..1	EAN13 code supplier

11 Reconciliation – RSINFO

RSINFONotification is the message from TSO to shipper, stating the ascertained deviations as a result of the reconciliation process at the network points for the previous 17 months, including the financial consequences of this.

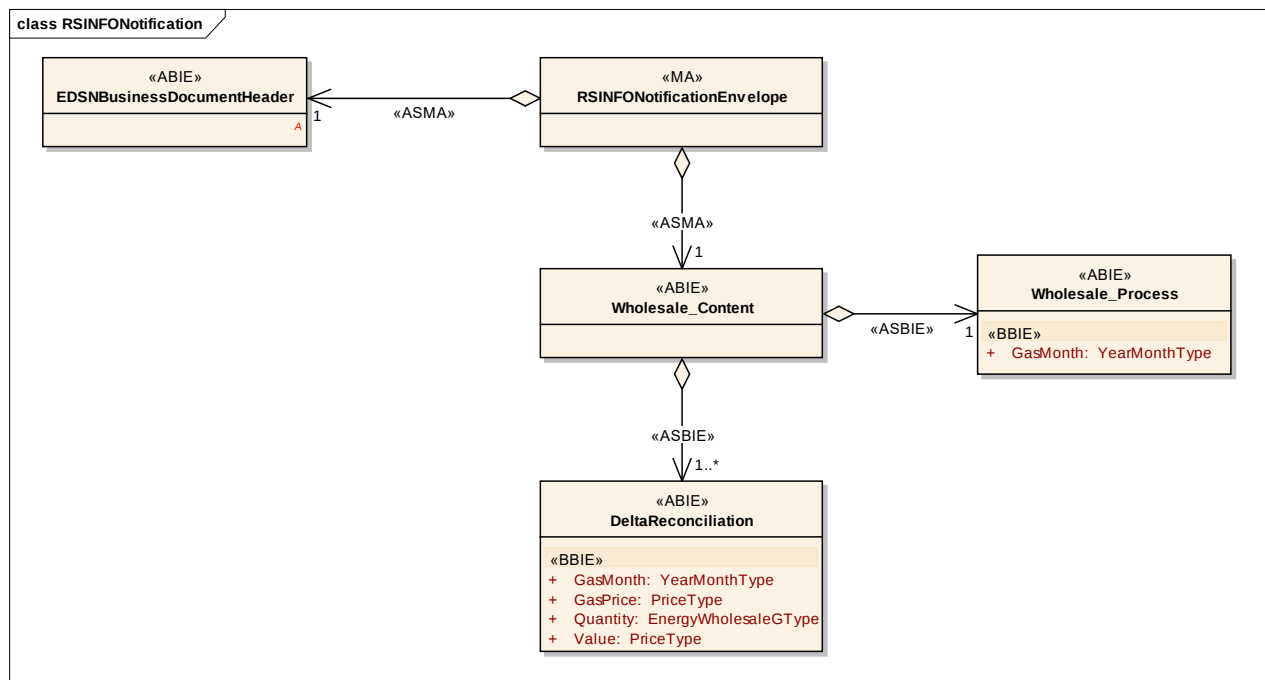
Detailed process information is available in referred document [3] “Wholesale gas - Reconciliation messaging process”.

11.1 Sequence diagram



The MessageID in the RSINFONotification instance is used to uniquely identify the RSINFONotification instance. This MessageID must be put in the CorrelationID of the RSINFOAcknowledgement instance in order to correlate the RSINFOAcknowledgement instance to the corresponding RSINFONotification instance.

11.2 UML class diagram



11.3 Description UML class diagram

DeltaReconciliation

Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)
GasPrice	PriceType	1..1	Gas price (decimal)
Quantity	EnergyWholesaleGT type	1..1	Quantity reconciliation delta in MJ
Value	PriceType	1..1	Value (amount of money) (decimal)

Wholesale_Process

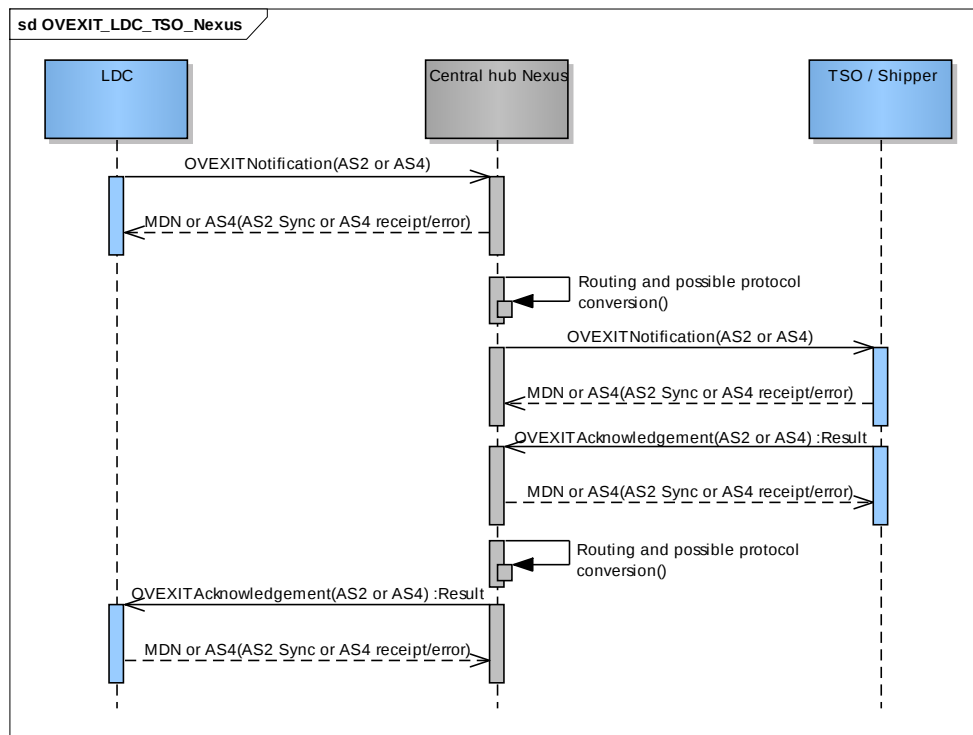
Attribute	Data type	Multiplicity	Description
GasMonth	YearMonthType	1..1	Year and month (yyyymm)

12 OV exit data – OVEXIT

OVEXITNotification is the message from LDC to GTS and shipper, stating the OV-exit aggregated capacity data for a month.

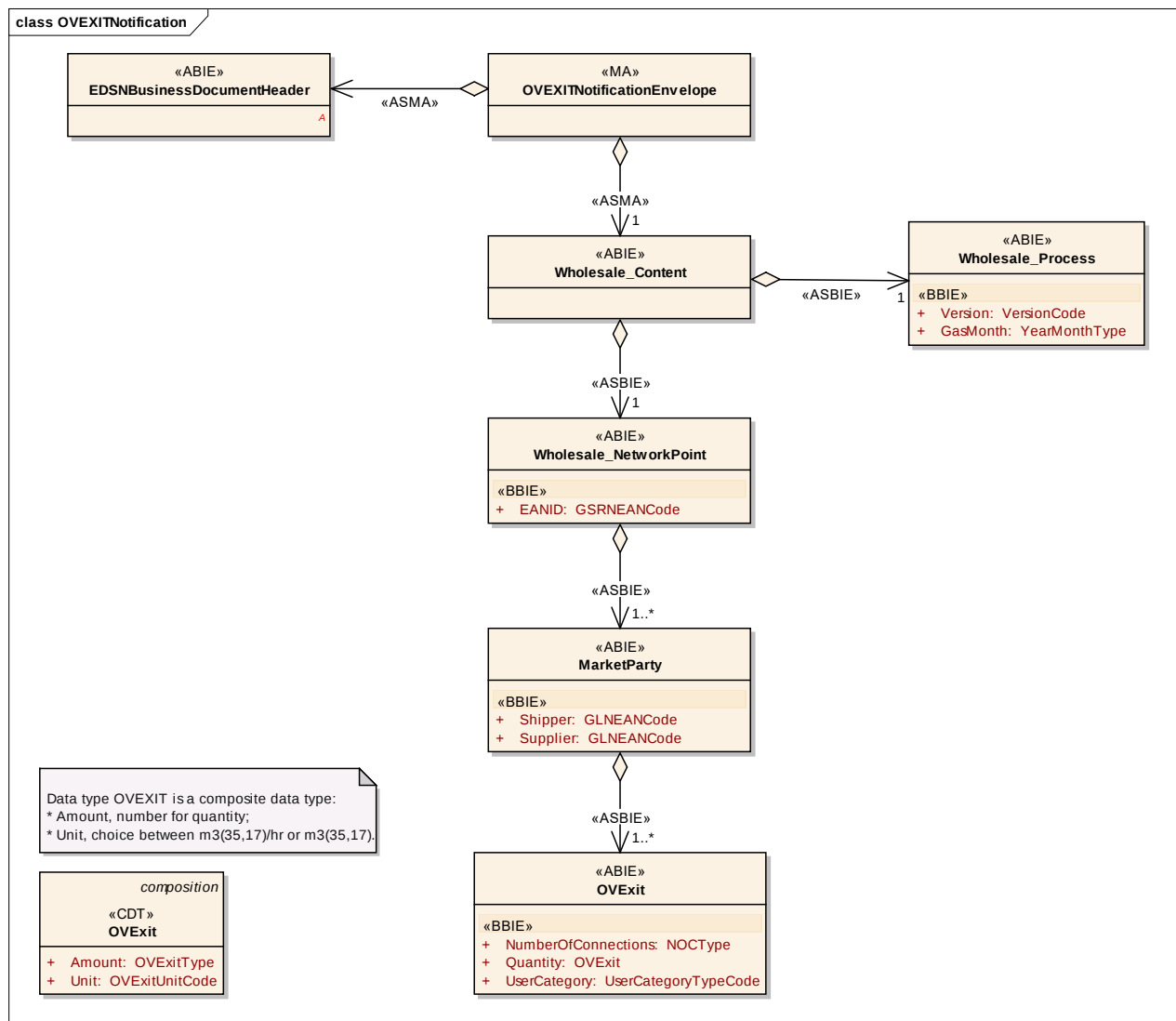
Detailed process information is available in referred document [4] “Wholesale gas - Allocation messaging process”.

12.1 Sequence diagram



The MessageID in the OVEXITNotification instance is used to uniquely identify the OVEXITNotification instance. This MessageID must be put in the CorrelationID of the OVEXITAcknowledgement instance in order to correlate the OVEXITAcknowledgement instance to the corresponding OVEXITNotification instance.

12.2 UML class diagram



12.3 Description UML class diagram

OVEExit

Attribute	Data type	Multiplicity	Description
NumberOfConnections	NOCType	1..1	Number of connections
Quantity	OVEExit	1..1	Quantity as max capacity in m3(35,17)/hr (Unit is M33517HR) or Quantity as standard yearly consumption in m3(35,17) (Unit is M33517)
UserCategory	UserCategoryTypeCode	1..1	User category

Wholesale_NetworkPoint

Attribute	Data type	Multiplicity	Description
EANID	GSRNEANCode	1..1	EAN18 code networkpoint

Wholesale_Process

Attribute	Data type	Multiplicity	Description
Version	VersionCode	1..1	Version
GasMonth	YearMonthType	1..1	Year and month (yyyymm)

MarketParty

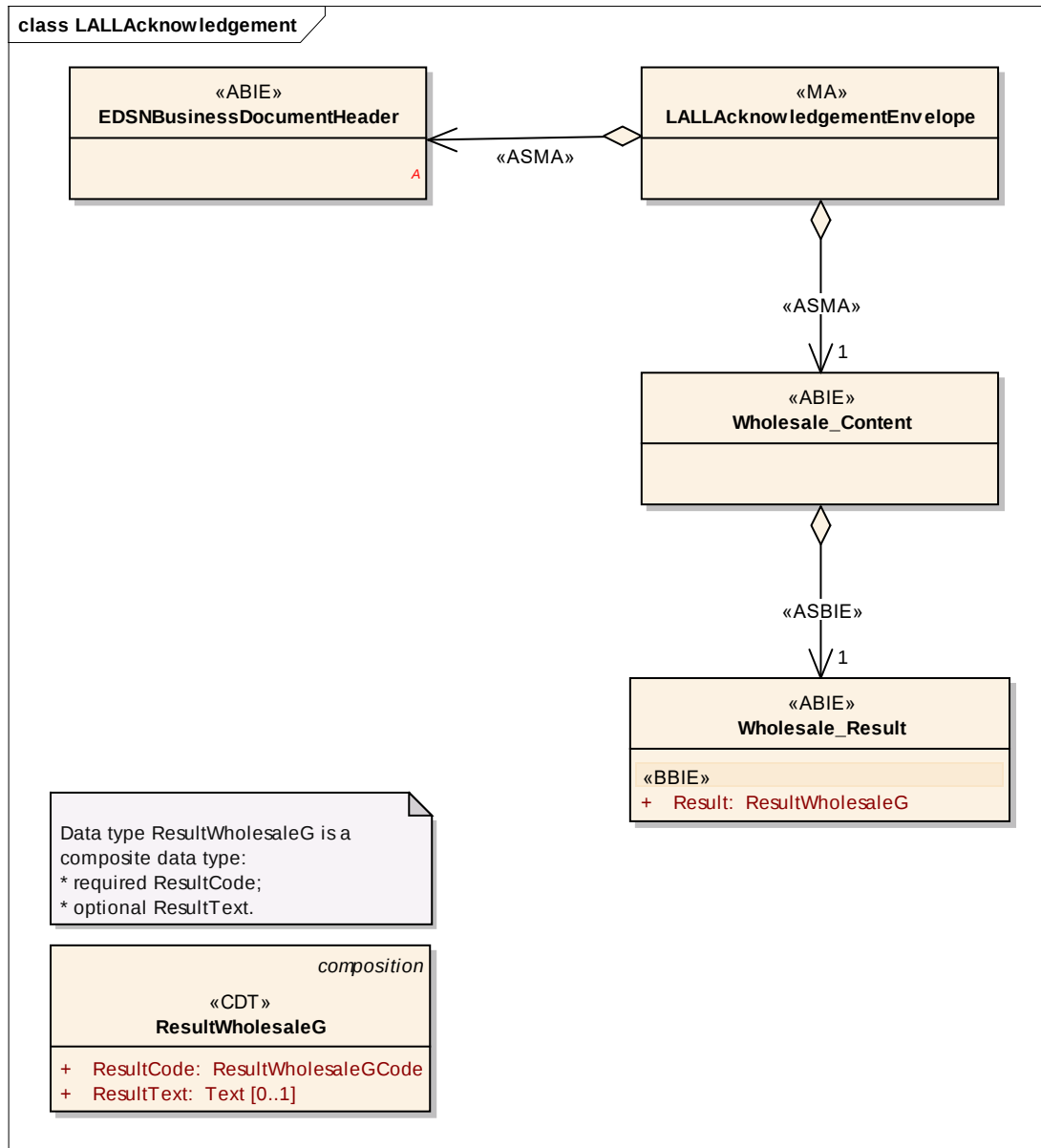
Attribute	Data type	Multiplicity	Description
Shipper	GLNEANCode	1..1	EAN13 code shipper
Supplier	GLNEANCode	1..1	EAN13 code supplier

13 Acknowledgements

13.1 About Acknowledgements

All Acknowledgements do have an identical structure. Only the root tag, the name of the XML message definition, differs.

13.2 UML class diagram



13.3 Description UML class diagram

Wholesale_Result

Attribute	Data type	Multiplicity	Description
Result	ResultWholesaleG	1..1	Result code and result text (optional).

13.4 Result codes

Detailed information about result codes is available in referred document “Wholesale gas - Allocation messaging process” and “Wholesale gas - Reconciliation messaging process”.

Code	Description
000	Correct
40G	Syntactical error
41G	Semantic error
42G	Unequal sum of allocations
43G	Too many metering points
44G	Unregistered party
45G	Unknown party identification
46G	Unknown location identification
47G	Incomplete period
48G	Other error
49G	Unequal sum of rest volumes
50G	Message already accepted
51G	No matching MINFO available
52G	Message received after deadline
55G	Incorrect number of months in message
56G	Reconciliation value old does not match reconciliation value new in previous message (only in RNCONF)
57G	Delta reconciliation (energy) in RSINFO does not match summed values in RNINFO (only in RSCONF)
58G	Gas price for specific month does not match with previous message (only in RSCONF)
59G	Delta reconciliation (monetary value) is incorrect (only in RSCONF)
60G	Reconciliation old does not match reconciliation new (only in RNCONF)
61G	User category is unknown or no longer in use
62G	Capacity unit does not match with the user category
63G	Plausibility check returned an error: number of connections is wrong
64G	Plausibility check returned an error: sum of EAC is wrong ⁵

⁵ EAC = Estimated Annual Consumption, in Dutch SJV (Standaard Jaarverbruik).

Appendix A: ENTSOG AS4 Profile

The ENTSOG AS4 Profile [5] is selected by the NEDU Technical Commission as the AS4 Profile for the exchange of Wholesale gas messages. This profile requires the use of the ENTSOG Energy Identification Coding Scheme (EIC) to identify market parties. However, in the Netherlands the 13 digit European Article Numbering (EAN) code is used to identify market parties. In cases where the EIC code is mentioned in the ENTSOG AS4 Profile [5] to identify market parties, the EAN13 code must be used.

The AS4 parameter AgreementRef relates to both the sending market party and the receiving market party and identifies a particular agreement between both market parties. The ENTSOG AS4 Profile [5] defines the use of the EIC code for the AgreementRef. For the Netherlands the following URI naming conventions must be used for the AgreementRef:

```
<AgreementRef>  
http://nedu.nl/wholesalegas/agreements/EDSN/market party/version agreement  
</AgreementRef>
```

Where **EDSN** is the EAN13 code of EDSN and **market party** is the EAN13 code of the sending or receiving party.

Example:

```
<AgreementRef>  
http://nedu.nl/wholesalegas/agreements/8712423010208/8717185180008/1  
</AgreementRef>
```

Version agreement will only be incremented in the case of an update of the connectivity agreements.

Appendix B: Cipher suites

Cipher suite for AS2:

The set of algorithms to secure the TLS network connection will be defined by the NEDU Technical Commission and will be renewed on a regular basis. To ensure a minimal of connections problems, the Cipher suite for AS2 will be in accordance with the Cipher suite for the current peer-to-peer Wholesale gas message exchange.

Cipher suite for AS4:

A set of algorithms to secure the TLS network connection will be defined by the NEDU Technical Commission and will be renewed on a regular basis. This will be a specific set of algorithms to ensure enhanced security for the AS4 Wholesale gas message exchange via Nexus.

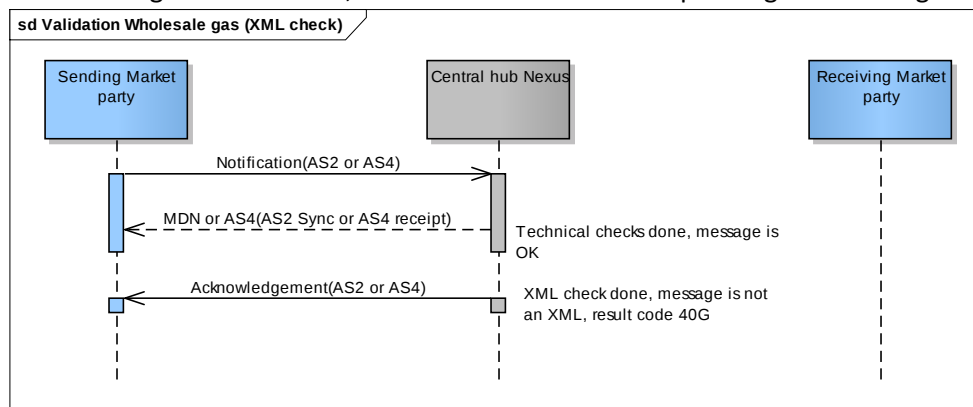
Appendix C: Functional rejection by Nexus

If a check on a received Wholesale gas message results in an error, the returned AS2 MDN or AS4 rejection will contain the corresponding error message (AS2) or error code (AS4) (see paragraph 4.5). However, the following two checks will result in a functional Wholesale gas message with a corresponding result code:

- Is the message an XML file?
- Is the receiver registered in the market party administration?

Is the message an XML file?

If the message is not an XML, Nexus will return an corresponding Acknowledgement with result code 40G.



Is the receiver registered in the market party administration?

If the receiver is not registered in the market parties administration, Nexus will return a corresponding Acknowledgement with result code 44G.

