



Technical Guide

Measurements & Allocations Documents

Version 1.5

Revision History

Version	Release	Date	Paragraph	Comments
Concept	1	2020-12-23		First draft
1.0	2	2021-03-31		- Added BRP to definitions - Textual adjustments
1.1	3	2021-06-21		Corrections • Endpoints VolumeInstallationSeries • Endpoints MeasurementSeriesRevision
1.2	4	2021-08-06		Added Endpoint for Qualification Environment Updated endpoints due to new XSD & WSDL Removed versioning of XSD and WSDL throughout document and addendum
1.3	5	2021-08-31		Added to this version history the listing of the XSDs that changed in the Market to Market WDLs and MMC HUB WSDLs with revision 1.2(6-8-2021): • AllocationVolumeRevisionResponse_1p1.xsd replaces AllocationVolumeRevisionResponse_1p0.xsd • MeasurementSeriesRevisionResponse_1p1.xsd replaces MeasurementSeriesRevisionResponse_1p0.xsd • MeasurementSeriesAcknowledgement_3p1.xsd replaces MeasurementSeriesAcknowledgement_3p0 • VolumeInstallationSeriesAcknowledgement_1p1.xsd replaces VolumeInstallationSeriesAcknowledgement_1p0.xsd • VolumeSeriesAcknowledgement_1p1.xsd replaces VolumeSeriesAcknowledgement_1p0.xsd • VolumeSeriesNotification_2p0.xsd replaces VolumeSeriesNotification_1p0.xsd Correction on Content type: • ACK_ALLOCATION_VOLUME_REVISION_REQUEST_N91 replaces ACK_ALLOCATION_VOLUME_REVISION_N91 Correction on List request: • List with CorrelationID not mandatory

1.4 6 2021-12-21

Throughout document: *TenneT Web Service Guide* naming changed to *MMC HUB Web Services Guide*

Par. 1.3 changes:

- TenneT TSO also mentioned as an initiator of MeasurementSeries

Par. 2.3.1 changes:

- Qualifying environment removed for all messages
- Additional explanation on TQF and NEDU GAT

Par. 2.3.2 changes:

- Qualifying environment removed for Pull from MMC HUB

Par. 2.4 changes:

- CorrelationId mandatory

Par. 2.5 changes:

- Notifications and RevisionRequests 14 day retention period (was initially not defined)

Par. 2.8 table 1 changes:

- Version numbers of XSD added
- MeasurementSeries message exchange between MRP and TSO (Energy) added
- MeasurementSeries message exchange between MRP and TSO (Gas) added
- VolumeSeries message exchange between MRP and TSO(Gas) removed because of non-existence
- MeasurementSeriesRevisionRequest exchange between TSO(Gas) and MRP because of non-existence
- AllocationVolumeRevisionRequest message exchange between BRP and TSO(Gas) removed because of non-existence

Par. 2.8 table 2 removal of content types:

- MEASUREMENT_SERIES_NOTIFICATION_N13
- ACK_MEASUREMENT_SERIES_NOTIFICATION_N13

Addendum 3 added where to find in MyTenneT:

- TenneT Transport and Signing certificates
- Market party signing certificates

1.5 7 2022-01-31

New reference document "*Business Service – Uitwisselen allocatiegegevens elektriciteit v1.0*" added

Par. 1.3 changes:

- Added to interface overview the AllocationSeries, AllocationFactorSeries and AggregatedAllocationSeries Notifications and their corresponding Acknowledgements

Par 2.2. changes:

- New WSDLs for the AllocationSeries, AllocationFactorSeries and AggregatedAllocationSeries Notifications and their corresponding Acknowledgements

Par. 2.3 changes:

- New endpoints added for AllocationSeries, AllocationFactorSeries and AggregatedAllocationSeries Notifications and their corresponding Acknowledgements
- Remarks added for Tranche1 and Tranche 2
- TenneT production EANs mentioned for Tranche 1 and 2.

Par 2.5 Changes:

- The List on the MMCHUB has been extended with filter on content type(s), order by oldest message first and limit the list result to a maximum number

Par 2.8 table 1 changes:

- Added: AllocationSeries, AllocationFactorSeries and AggregatedAllocationSeries Notifications and their corresponding Acknowledgements
- WSDLs changed from version 2.0 to 2.1 for:
 - VolumeSeries, VolumeInstallationSeries, MeasurementSeries and corresponding Acknowledgements
 - MeasurementSeriesRevision, AllocationVolumeRevision and their corresponding Response
 - Paragraph 2.8 for further detailing of changes in 2.1 version WSDLs

Par 2.8 table 2 changes:

- Removed content types:
VOLUME_SERIES_NOTIFICATION_N61 and ACK_VOLUME_SERIES_NOTIFICATION_N61
Added: Content types for the AllocationSeries, AllocationFactorSeries and AggregatedAllocationSeries Notifications and their corresponding Acknowledgements content types

Referenced documents:

1. *MMC HUB Web Services Guide*
2. *Business Service - Uitwisselen meetgegevens tijdseries v4.0*
3. *Business Service - Uitwisselen meetgegevens volumes en meterstanden v2.0*
4. *Business Service - Uitwisselen meetgegevens volumes installatie v2.0*
5. *Business Service - Uitwisselen herzieningsverzoeken v2.0*
6. *Business Service – Uitwisselen allocatiegegevens elektriciteit v1.0*

Table of Contents

1. Introduction	7
1.1 Definitions	7
1.2 Purpose	7
1.3 Measurements & Allocations interface overview	8
1.4 Issuing the Measurements & Allocations Data	9
1.4.1 Compose document and submit	9
1.4.2 Receive and handle the SOAP response	9
1.4.3 Receive Acknowledgement or Response Document	10
2. Technical Information	11
2.1 Testing	11
2.2 WSDLs	11
2.2.1 Market-document WSDL's	11
2.2.2 MMC-HUB WSDL	12
2.3 Endpoints	12
2.3.1 Sending messages to the MMC-Hub	12
2.3.2 Push and Pull messages via MMC HUB	15
2.4 SOAP Envelope Header	16
2.4.1 ContentTypes	16
2.5 MMC HUB	17
2.6 IP addresses and port	18
2.7 Certificates	18
2.8 Addendums	19

1. Introduction

1.1 Definitions

MMC-HUB	Market-Market-Communication HUB, the HUB that TenneT offers market participants to exchange messages with TenneT or with other market participants
MRP	Metering Responsible Party
BRP	Balance Responsible Party
DSO	Distribution System Operator
TSO	Transmission System Operator
TQF	Test and Qualification Facility

See the MMC HUB Web Services *Guide*, for further definitions.

1.2 Purpose

This technical guide is one of the technical guides drafted by TenneT TSO B.V. in addition to the *MMC HUB Web Services Guide*, the implementation guides (various *Business Services* reference documents) and the WSDL's in order to provide specific document and channel related details, required for energy market communications.

Its purpose is to provide additional technical details on how to exchange the Measurement and Volume Notifications, the Measurement and Volume Acknowledgements, the Revision Requests and the Revision Responses, the documents that are used to support the Measurements and Allocations process. This between the market participants and TenneT TSO using web services and exchanged via the MMC HUB.

Generic information on the web services channel provided by TenneT can be found in the *MMC HUB Web Services Guide*, specific and detailed information on the Measurement & Allocations process and the content of the documents exchanged can be found in the various reference documents for the *Business Services*. The validations on the data exchanged are also described in the *Business Services* documents. The technical interface specifications are provided in the WSDL documents, of which the names are listed in this document.

1.3 Measurements & Allocations interface overview

The Measurements & Allocations interface allows market participants to submit Measurement and Allocation data to TenneT and market participants via the MMC HUB in XML format through SOAP/HTTPS based web services.

TenneT provides means for:

- the MRP to issue MeasurementSeries, VolumeSeries and VolumeInstallationSeries data and to obtain the Acknowledgements on this data;
- the TSO to issue MeasurementSeries and to obtain the Acknowledgement on this data
- the DSO, BRP and TSO market participants to issue the MeasurementSeriesRevision requests and obtain the Response on this request;
- the BRP to issue the AllocationVolumeRevision requests and to obtain the Response on this request.
- The DSO and TSO to issue the AllocationSeries and to obtain the Acknowledgement on this data
- The DSO to issue the AllocationFactorSeries and to obtain the Acknowledgement on this data
- The DSO and TSO to issue the AggregatedAllocationSeries and to obtain the Acknowledgement on this data

The generic process for Measurements & Allocations is described below, the detailed process is described in the various Business Services.

The MRP or TSO is the initiator of the SOAP communication, the MRP by issuing a MeasurementSeries, VolumeSeries or VolumeInstallationSeries Notification and TSO by issuing a MeasurementSeries. The MMC HUB responds by directly sending a synchronous SOAP-response indicating correct reception (a CorrelationID is then returned) or general SOAP errors, e.g., XSD validation error in case the data is not compliant with the technical specification according to the XSD. The synchronous SOAP-Response with errors is also referred to as the technical NACK.

Processing of the documents in the background is a timely process. Therefore, the functional Acknowledgment is returned a-synchronously from the receiving market participant via the MMC HUB.

The functional acknowledgement response may either be collected (pulled) from the MMC HUB by the issuer through a web service provided by TenneT or pushed via the MMC HUB when the issuer provides a web service that is specified by TenneT.

The DSO, BRP or TSO is the initiator of the MeasurementSeriesRevision to the MRP by issuing a MeasurementSeriesRevision request. This document is sent to the MRP via the MMC HUB. The document may either be collected (pulled) from the MMC HUB by the MRP through a web service (provided by TenneT) or pushed via the MMC HUB to a specific web service provided by the MRP but that is specified by TenneT. The functional Response(s) from the MRP is returned asynchronously to TenneT via a specific web service provided and specified by TenneT.

The BRP is the initiator of the AllocationVolumeRevision data to the DSO or TSO by issuing a AllocationVolumeRevision request. This document is sent to the DSO or TSO via the MMC HUB. The document may either be collected (pulled) from the MMC HUB by the DSO or TSO through a web service (provided by TenneT) or pushed via the MMC HUB to a specific web service provided by the DSO or TSO but that is specified by TenneT. The functional Response(s) from the DSO or TSO is returned asynchronously to TenneT via a specific web service provided and specified by TenneT.

1.4 Issuing the Measurements & Allocations Data

1.4.1 Compose document and submit

To issue a Notification, Acknowledgement, Request or Response the following actions will have to be performed:

- the XML market document needs to be composed according the XSD specification in the corresponding WSDL. The Business Services describe all due information of the document structure and attribute semantics. When the XML document is composed it should be validated against the XSD (provided in the corresponding WSDL) prior to issuing it. Usually this is functionality offered by the middleware;
- after composing the XML the SOAP-request is to be constructed using the corresponding WSDL. All required meta-data in the SOAP-header should be provided, as described in the and this guide. The XML is to be added as pay-load data;
- the pay-load data must be signed (the specifications for signing are mentioned in the *MMC HUB Web Services Guide*) and the signature is to be part of the SOAP-Envelope and then the SOAP web service is to be invoked (usually using designated middleware). The endpoints of the web services are listed further up in this document.

Note: *this document does not elaborate on how the market party technically performs these tasks, as they depend on the specific software and middleware solutions that may differ per party.*

1.4.2 Receive and handle the SOAP response

The MMC HUB responds to the SOAP-request with a SOAP-response (synchronous reply). This response indicates whether the document is received correctly (i.e. the communication was handled correctly and the document syntax did not contain errors). When received correctly the SOAP-response contains the correlationId of the message, which can be used for further communication. A SOAP-fault may indicate that the request was not correctly received or it was malformed (see for further details the reference documents: *Business Services* and the *MMC HUB Web Services Guide*). The result of the SOAP fault is that the message cannot not be processed. Causes e.g.:

- If the service request was malformed: find the cause of issue, and correct it. Once corrected: reissue the request.

- If the service is not available there may be different causes. A retry should be done after a time interval (e.g. 1 minute) which may allow the service to become available again. If even after multiple replies (e.g. 10 times) the web service remains unavailable TenneT may be notified of the issue.

Note: *As the web service is idempotent, there is no risk for errors in the backend when the message would be received multiple times.*

1.4.3 Receive Acknowledgement or Response Document

The Acknowledgement or Response Document (a-synchronous reply) specifies the result of the handling of the issued document. It might be ok, or not if the functional validation failed. In that case the Acknowledgement or Response contains the errors on which the document has been declined. The market party may correct the document and reissue it with a different TechnicalMessageID, and for what to do with the document version number, see the Business Services.

As mentioned above, there are two ways how an Acknowledgement or Response Document may be received: push or pull via the MMC HUB.

2. Technical Information

2.1 Testing

TenneT offers the TQF in order to test the provided web services to exchange data. The TQF endpoints (along with the production endpoints) are mentioned in this chapter.

2.2 WSDLs

The following zip files with the WSDL and xsd's are available for the information exchange between market participants:

1. Market-documents WSDL's
 - a. MeasurementSeries-wsdl
 - b. VolumeSeries-wsdl
 - c. VolumeInstallationSeries-wsdl
 - d. MeasurementSeriesRevision-wsdl
 - e. AllocationVolumeRevision-wsdl
 - f. AllocationSeries-wsdl
 - g. AllocationFactorSeries-wsdl
 - h. AggregatedAllocationSeries-wsdl
2. MMC-HUB WSDL's
 - a. mmchub-MeasurementSeries-wsdl
 - b. mmchub-VolumeSeries-wsdl
 - c. mmchub-VolumeInstallationSeries-wsdl
 - d. mmchub-MeasurementSeriesRevision-wsdl
 - e. mmchub-AllocationVolumeRevision-wsdl
 - f. mmchub-AllocationSeries-wsdl
 - g. mmchub-AllocationFactorSeries-wsdl
 - h. mmchub-AggregatedAllocationSeries-wsdl

See addendum 1 for a graphical overview of the various WSDL's(the version used), its contents and needed implementation per market participant.

2.2.1 Market-document WSDL's

The Market-document WSDL's allow market participants to:

1. **send** the Notifications or Requests via the MMC HUB,
2. **receive** the Acknowledgements or Response Documents from the MMC HUB via **push**
3. **send** an isAlive operation to the MMC-HUB for a specific web service.

The MMC-HUB WSDL's allow market participant to

1. **pull** the Notifications, Requests, Acknowledgements or Response Documents **from** the MMC-HUB.
2. **send** an isAlive operation to the MMC-HUB.

In the MMCHUB WSDL's a List and Get operation are available:

1. With the List operation:
 - an overview of all messages which are available for the market participant in the MMC-HUB is shown or

a specific message can be listed based on a specified correlationId (if known, found in the aforementioned synchronous SOAP-response).

2. With the Get operation one message can be retrieved from the MMC HUB.

2.3 Endpoints

2.3.1 Sending messages to the MMC-Hub

Market participants on either side of the communication flows (Notification <-> Acknowledgement or RevisionRequest <-> RevisionResponse) send their messages through the MMC-Hub using the below endpoints. See *addendum 1* for a detailed overview of each market participant role and the expected messages.

The TQF environment mentioned below is used for:

1. Test and Qualifying and
2. the NEDU GAT for Tranche1 until 24th of Feb 2022.

Ad1 Test and Qualifying

- messages are always to be sent to 8716867999983; so 8716867999983 is to be used as <receiverId> element value in the SOAP Header(see par. 2.4 SOAP Envelope Header)
- always fill the <TestRequest> element in the EDSN Business Header with the market role value** you as market party want to simulate testing against in the TQF
- use the TQF Signing certificate (to be retrieved via MyTenneT, see addendum 3)
- use the TQF Transport certificate (to be retrieved via MyTenneT, see addendum 3)

** ValueSet

- LNB-E: this is TenneT TSO (Energy)
- LNB-G: this is TenneT TSO (Gas)
- RNB: this is the DSO (Distributed System Operator)
- PV: this is the BRP(Balance Responsible Party)
- MV: this is the MRP (Measurements Responsible Party)

For Tranche1(VolumeSeries, VolumeInstallationSeries, AllocationVolumeRevision, MeasurementSeries, MeasurementSeriesRevision) the above applies> and for Tranche 2(AllocationSeries, AllocationFractionSeries, AggregatedAllocationSeries the above applies. However the <TestRequest> will be phased out and be superseded by a fictitious receiver EAN for each market role to test against. This will be communicated via the project. Until further notice it will apply.

Ad 2 NEDU GAT for Tranche1 until the 24th of Feb 2022

- For messages sent to TenneT always:
 - Use the EAN 8716867999990 as <receiverId> element in the SOAP Header
 - Use the **TenneT TEST** signing certificate public key (to be retrieved via MyTenneT, see addendum 3)
 - Use the **TQF Transport** certificate (to be retrieved via MyTenneT, see addendum 3)
- For messages sent to other parties use:
 - their EAN-13 as <receiverId> element in the SOAP Header
 - their test signing certificate public key (to be retrieved via MyTenneT (see addendum 3, or from market party)
 - the TQF Transport certificate (to be retrieved via MyTenneT, see addendum 3)

Production EANs TenneT:

For Tranche1:

- The TenneT production EAN to send all messages to is: 8716867999990

For Tranche2:

- The TenneT production EAN to send AllocationSeriesNotification, AllocationFractionSeries and AggregatedAllocationSeriesNotification to is: 8716867999983.
- The TenneT production EAN to receive AllocationSeriesAcknowledgement and the AggregatedAllocationSeriesAcknowledgement is: 8716867999990.

The Production environment mentioned below is the environment where production messages are exchanged.

MeasurementSeries

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesNotification/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesAcknowledgement/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesNotification/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesAcknowledgement/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

VolumeSeries

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/VolumeSeriesNotification/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/VolumeSeriesAcknowledgement/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/VolumeSeriesNotification/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/VolumeSeriesAcknowledgement/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/VolumeInstallationSeriesNotification/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/VolumeInstallationSeriesAcknowledgement/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/VolumeInstallationSeriesNotification/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/VolumeInstallationSeriesAcknowledgement/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

MeasurementSeriesRevision

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesRevisionRequest/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesRevisionResponse/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesRevisionRequest/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/MeasurementSeriesRevisionResponse/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

AllocationVolumeRevision

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AllocationVolumeRevisionRequest/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AllocationVolumeRevisionResponse/v2.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/AllocationVolumeRevisionRequest/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/AllocationVolumeRevisionResponse/v2.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

AllocationSeries

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AllocationSeries/v1.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AllocationSeriesAcknowledgement/v1.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/AllocationSeries/v1.0
- https://sys.svc.tennet.nl/Measurements_Allocations/AllocationSeriesAcknowledgement/v1.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

AllocationFactorSeries

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AllocationFactorSeries/v1.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AllocationFactorSeriesAcknowledgement/v1.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/AllocationFactorSeries/v1.0
- https://sys.svc.tennet.nl/Measurements_Allocations/AllocationFactorSeriesAcknowledgement/v1.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

AggregatedAllocationSeries

TQF environment:

- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AggregatedAllocationSeries/v1.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/AggregatedAllocationSeriesAcknowledgement/v1.0
- https://sys.tqf.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Production environment:

- https://sys.svc.tennet.nl/Measurements_Allocations/AggregatedAllocationSeries/v1.0
- https://sys.svc.tennet.nl/Measurements_Allocations/AggregatedAllocationSeriesAcknowledgement/v1.0
- https://sys.svc.tennet.nl/Measurements_Allocations/isAlive/v2.0

Note that the IsAlive endpoint is always version v2.0 for all endpoints.

The isAlive endpoint is to support connectivity testing and to check if the web service is up and running.

2.3.2 Push and Pull messages via MMC HUB

As mentioned previously the message exchange between the market participants and TenneT TSO is executed via the MMC HUB. A market participant can decide to have messages received directly (automatically pushed) via the MMC HUB or to pull messages from the MMC HUB. Note that pulling of messages is always available. Should a market party want the option of push, this must be specified in the questionnaire.

2.3.2.1 Pull messages via MMC HUB

Market participant are able to pull messages (listed in addendum 1) from the MMC HUB using the LIST-, GET and isAlive operations. The MMC-Hub can be reached via the following endpoints:

- **TQF** environment: <https://sys.tqf.svc.tennet.nl/MMCHub/v1.0>
- **Production** environment: <https://sys.svc.tennet.nl/MMCHub/v1.0>

The IsAlive operation of the MMC HUB is to support connectivity testing (for the acceptance and production environment) and to check if the web service is up and running.

2.3.2.2 Push messages via MMC HUB

If a market participant wants to have messages received directly (pushed) via the MMC HUB, the receiving market participant is to implement endpoints (SOAP/HTTPS-service) for their **TQF** and **Production** environment. A proposal for the naming of the endpoints:.

<base>/<domain>/<messagetype>/<version>

<base> is the market participant specific part of the URL, with separate ones for the **TQF** and **Production** environment.

For example:

<base>/Measurements_Allocations/MeasurementSeriesNotification/v1.0

2.4 SOAP Envelope Header

The messages exchanged between the market participants have a standard SOAP Header. The SOAP Header is used for routing and identification of the type of data in the market document payload.

The Soap envelope header of a message consists of the following fields¹

- **TechnicalMessageID**
- **CorrelationID** has a value to group related (to correlate) messages: the Notification with the Acknowledgement and the RevisionRequest with the RevisionResponse.
 - The value is optional according to the XSD validation. However it is **mandatory** when sending a Notification, Acknowledgement, RevisionRequest, ResponseResponse. The Acknowledgement and the Revision Response are to use the CorrelationId of the original message it is responding to)
 - In the case of retrieving messages from the MMC HUB via the pull (list and get), it is optional.
- **SenderId**
- **ReceiverID**
- **CarrierID**
- **ContentType**: has a value which describes the type of data in the payload (see addendum 2 for the allowed values).
 - The value is optional according to the XSD validation. However for using the MMC-Hub it is **mandatory** when sending an Notification, Acknowledgement, RevisionRequest or RevisionResponse to the MMC HUB.
 - In the case of retrieving messages from the MMC HUB via the pull(list and get), it is optional.

Example Message Addressing

```
<MessageAddressing xmlns="http://sys.svc.tennet.nl/MMCHub/Header/v1">
  <technicalMessageId>58321bd5-d166-4371-9c2e-cc405b2274a6</technicalMessageId>
  <correlationId>6ab5dede-f376-4434-a383-2d75c561ece6</correlationId>
  <senderId>1234567890321</senderId>
  <receiverId>9876543210321</receiverId>
  <carrierId>1234567890123</carrierId>
  <contentType>ACK_MEASUREMENT_SERIES_NOTIFICATION_N10</contentType>
</MessageAddressing>
```

2.4.1 ContentTypes

The contentType is a value in the Soap envelope header which describes the type of data in the payload. It is used to route the messages received by the MMC-Hub. A full list of the available contentTypes can be found in Addendum 2.

Points of attention concerning the contentTypes of the RevisionResponses

Both the MeasurementSeriesRevisionResponse and the AllocationVolumeRevisionResponse know two contentTypes:

¹ For definitions see the MMC-Hub web service guide.

1. ACK_XXX_XXX_REVISION_REQUEST_N**
 - a. This message only confirms the reception of the RevisionRequest. This is not an affirmation or decline of the RevisionRequest.
2. XXX_XXX_REVISION_RESPONSE_N**
 - a. This message contains the decision upon the RevisionRequest.

2.5 MMC HUB

Availability of Notifications, Acknowledgements, RevisionRequests or RevisionResponses from the HUB:

- The Acknowledgements and RevisionResponses are to be available from the MMC HUB within *TBD* minutes.

Retention period in the MMC HUB of messages:

- The retention period in the MMC HUB before a message is deleted:
 - Acknowledgement: 2 weeks
 - RevisionResponse: 2 weeks
 - Notification: 2 weeks
 - RevisionRequest 2 weeks
- Retention period is configurable by TenneT per message type. It is generic for all parties.
- After deletion from the MMC HUB: The MMC-HUB does not archive messages.

Pull messages from the MMC HUB:

- To be able to retrieve a message with a Get request from the MMC HUB, the market participant must first execute a List request.
This can be done:
 1. With a CorrelationID, if known(e.g. to get the correlating Acknowledgement** on a Document sent to a market participant): the list request will in most cases result in a list with one message (the metadata of one message is returned). If the metadata of more messages is returned, more messages are present under the same CorrelationID. See paragraph 2.4 for when this value is mandatory when exchanging market documents.
 2. Without a CorrelationID: the list request will show the metadata of all documents available for the market recipient. The Measurements & Allocations related documents are those with content type mentioned in addendum 2.
 3. Or either with one of the above with a filter on 1 or more content types.
 4. And the list of results can be ordered by oldest messages first and can be limited to a maximum number.
- The message can then be retrieved with the Get request with a value for the TechnicalMessageID: this value is supplied in the metadata of the message, that was returned with the List request.
- The list request will only show messages that have not been retrieved previously. A message though can be retrieved again(with the same TechnicalMessageID that was used to initially retrieve it) from the MMCHUB as long as the retention period has not passed.

** The synchronous SOAP reply from the MMC HUB on the original document (of which now the Acknowledgement is to be retrieved), returns (in case correct reception (no general SOAP errors)) a CorrelationID: this is equal to the CorrelationID in the SOAP Header of the original document sent to MMC HUB (that is, if filled in the SOAP Header of the original document otherwise it will be equal to the TechnicalMessageID in the SOAP Header of the original document sent to MMC HUB). It is the value of this CorrelationId that is to be used with the List request. This to correlate the functional response to the original document.

2.6 IP addresses and port

IP addresses for whitelisting purposes and which ports to use, are mentioned in the *MMC HUB Web Services Guide*.

2.7 Certificates

The *MMC HUB Web Services Guide* mentions:

- what types of certificates are necessary for message exchange via the MMC-Hub.
- the requirements on these certificates.
- and the requirements on the Certificate Authority that supply the certificates.

2.8 Addendums

1. WSDL and corresponding messageTypes and messageflow

WSDL	xsd/messageType	Version	From	TO
MeasurementSeries-wsdl-v2.1* mmchub-MeasurementSeries-v2.1**	MeasurementSeriesNotification	2p0	MRP	BRP
			MRP	DSO
			MRP	TSO (Energy)
			MRP	TSO (Gas)
			TSO (Energy)	DSO
	MeasurementSeriesAcknowledgement	3p1	BRP	MRP
			DSO	MRP
			TSO (Energy)	MRP
			TSO (Gas)	MRP
			DSO	TSO (Energy)
VolumeSeries-wsdl-v2.1* mmchub-VolumeSeries-wsdl-v2.1**	VolumeSeriesNotification	2p0	MRP	BRP
			MRP	DSO
			MRP	TSO (Energy)
	VolumeSeriesAcknowledgement	1p1	BRP	MRP
			DSO	MRP
VolumeInstallationSeries-wsdl-v2.1* mmchub-VolumeInstallationSeries-wsdl-v2.1**	VolumeInstallationSeriesNotification	1p0	MRP	DSO
			MRP	TSO (Energy)
	VolumeInstallationSeriesAcknowledgement	1p1	DSO	MRP
			TSO (Energy)	MRP
MeasurementSeriesRevision-wsdl-v2.1* mmchub-MeasurementSeriesRevision-wsdl-v2.1	MeasurementSeriesRevisionRequest	1p0	BRP	MRP
			DSO	MRP
			TSO (Energy)	MRP
	MeasurementSeriesRevisionResponse	1p1	MRP	BRP
			MRP	DSO
AllocationVolumeRevision -wsdl-v2.1* mmchub- AllocationVolumeRevision -wsdl-v2.1**	AllocationVolumeRevisionRequest	1p0	BRP	DSO
			BRP	TSO (Energy)
	AllocationVolumeRevisionResponse	1p1	DSO	BRP
			TSO (Energy)	BRP
AllocationSeries-wsdl-v1.0* mmchub-AllocationSeries-wsdl-v1.0**	AllocationSeriesNotification	1p0	DSO	BRP
			DSO	TSO(Energy)
			TSO(Energy)	BRP
	AllocationSeriesAcknowledgement	1p0	BRP	DSO
			TSO(Energy)	DSO
AllocationFactorSeries-wsdl-v1.0* mmchub-AllocationFactorSeries-wsdl-v1.0**	AllocationFactorSeriesNotification	1p0	BRP	TSO(Energy)
			DSO	TSO (Energy)
	AllocationFactorSeriesAcknowledgement	1p0	BRP	DSO
			TSO (Energy)	DSO
AggregatedAllocationSeries-wsdl-v1.0* mmchub-AggregatedAllocationSeries-wsdl-v1.0**	AggregatedAllocationSeriesNotification	1p0	DSO	BRP
			DSO	TSO(Energy)
			TSO(Energy)	BRP
	AggregatedAllocationSeriesAcknowledgement	1p0	BRP	DSO
			TSO(Energy)	DSO
			BRP	TSO(Energy)

* Changes for wsdl from version 2.0 to 2.1 and present in the new v.1.0 wsdl:

- Added to the WSDL: <xsd:import namespace="http://sys.svc.tennet.nl/MMCHub/common/v1" schemaLocation="CommonTypes-v1.0.xsd"/>. This because in one of the Schema definitions the "common" prefix is referred to but was not imported.
- Security policy <sp:Basic256Sha256/> replaces <sp:Basic256Exn256/> as the <sp:Basic256Exn256/> is an oracle policy.
- JDeveloper issue with inline schema definitions. Therefore the inlines are moved to a separate XSD.

** Changes for wsdl from version 2.0 to 2.1 and present in the new v.1.0 wsdl:

- Security policy <sp:Basic256Sha256/> replaces <sp:Basic256Exn256/> as the <sp:Basic256Exn256/> is an oracle policy.
- List function in the MMCHUB Wsdl has been extended:
 - with a filter option on content type(s) and
 - the list results can be ordered by oldest messages first and can be limited to a maximum number.

2. ContentTypes

MessageType	ContentType
MeasurementSeriesNotification	MEASUREMENT_SERIES_NOTIFICATION_N10
	MEASUREMENT_SERIES_NOTIFICATION_N11
	MEASUREMENT_SERIES_NOTIFICATION_N12
	MEASUREMENT_SERIES_NOTIFICATION_N20
	MEASUREMENT_SERIES_NOTIFICATION_N21
	MEASUREMENT_SERIES_NOTIFICATION_N30
	MEASUREMENT_SERIES_NOTIFICATION_N31
MeasurementSeriesAcknowledgement	ACK_MEASUREMENT_SERIES_NOTIFICATION_N10
	ACK_MEASUREMENT_SERIES_NOTIFICATION_N11
	ACK_MEASUREMENT_SERIES_NOTIFICATION_N12
	ACK_MEASUREMENT_SERIES_NOTIFICATION_N20
	ACK_MEASUREMENT_SERIES_NOTIFICATION_N21
	ACK_MEASUREMENT_SERIES_NOTIFICATION_N30
	ACK_MEASUREMENT_SERIES_NOTIFICATION_N31
VolumeSeriesNotification	VOLUME_SERIES_NOTIFICATION_N40
	VOLUME_SERIES_NOTIFICATION_N41
	VOLUME_SERIES_NOTIFICATION_N50
	VOLUME_SERIES_NOTIFICATION_N60
	VOLUME_SERIES_NOTIFICATION_N70
VolumeSeriesAcknowledgement	ACK_VOLUME_SERIES_NOTIFICATION_N40
	ACK_VOLUME_SERIES_NOTIFICATION_N41
	ACK_VOLUME_SERIES_NOTIFICATION_N50
	ACK_VOLUME_SERIES_NOTIFICATION_N60
	ACK_VOLUME_SERIES_NOTIFICATION_N70
VolumeInstallationSeriesNotification	VOLUME_INSTALLATION_SERIES_NOTIFICATION_N80
VolumeInstallationSeriesAcknowledgement	ACK_VOLUME_INSTALLATION_SERIES_NOTIFICATION_N80
MeasurementSeriesRevisionRequest	MEASUREMENT_SERIES_REVISION_REQUEST_N90
MeasurementSeriesRevisionResponse	ACK_MEASUREMENT_SERIES_REVISION_REQUEST_N90
	MEASUREMENT_SERIES_REVISION_RESPONSE_N90
AllocationVolumeRevisionRequest	ALLOCATION_VOLUME_REVISION_REQUEST_N91
AllocationVolumeRevisionResponse	ACK_ALLOCATION_VOLUME_REVISION_REQUEST_N91
	ALLOCATION_VOLUME_REVISION_RESPONSE_N91
AllocationSeriesNotification	ALLOCATION_SERIES_NOTIFICATION_N101
	ALLOCATION_SERIES_NOTIFICATION_N131
	ALLOCATION_SERIES_NOTIFICATION_N141
AllocationSeriesAcknowledgement	ACK_ALLOCATION_SERIES_NOTIFICATION_N101
	ACK_ALLOCATION_SERIES_NOTIFICATION_N131
	ACK_ALLOCATION_SERIES_NOTIFICATION_N141
AllocationFactorSeriesNotification	ALLOCATION_FACTOR_SERIES_NOTIFICATION_N151
AllocationFactorSeriesAcknowledgement	ACK_ALLOCATION_FACTOR_SERIES_NOTIFICATION_N151
AggregatedAllocationSeriesNotification	AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N102

	AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N111
	AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N121
	AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N132
	AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N142
AggregatedAllocationSeriesAcknowledgement	ACK_AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N102
	ACK_AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N111
	ACK_AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N121
	ACK_AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N132
	ACK_AGGREGATED_ALLOCATION_SERIES_NOTIFICATION_N142

3. Certificates in MyTenneT where to find

The tables below show where to find the TenneT certificates(transport and signing) in MyTenneT and the market party signing certificates that is if a market party has indicated to share their signing certificate with other market parties via MyTenneT.

TenneT certificates	Type of certificate	Where to find in MyTenneT
TQF certificates(for web services supported by TQF)	Transport/TLS aka SSL	Choose App: IT- Connectivity Choose Tab: Documents Filter on Document Type: Certificate Choose: the appropriate certificate
	Signing certificate aka s-mime	
Production certificates	Transport/TLS aka SSL	
	Signing certificate aka s-mime	
Test certificates(for web services not yet supported by TQF)	Transport/TLS aka SSL	
	Signing certificate aka s-mime. See paragraph " 2.3.1 Sending messages to the MMC-Hub" when to use this certificate.	

Market party certificate	Type of certificate	Where to find in MyTenneT
Signing certificates of market party(if the party has indicated to share via MyTenneT)	Signing certificate aka s-mime of individual market party	Choose App: IT- Connectivity Choose Tab: MMC-hub certificate Filter on: - Name or Ean of market party - Environment: Test or Production
	Bulk set of test signing certificates of market participants that partake in the NEDU GAT	Choose App: IT- Connectivity Choose Tab: Documents Filter on Document Type: Certificate Download zip file(s): - NeduGAT_SigningCertificates_GridOperators.7z - NeduGAT_SigningCertificates_MRP_BRP_FSO.7z
Signing certificates of market party(if the party has indicated not to share via MyTenneT)	Contact individual market party for the their test and production signing certificate	Not applicable