

# PARTICIPANT BUILD PACK 3

## FRC B2B SYSTEM SPECIFICATIONS

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This document is the FRC B2B System Specifications document for delivery of the IT Systems to support the operation of the Victorian Gas Retail Market.

This document forms part of the Gas Interface Protocol and has been prepared in accordance with Part 15B of the National Gas Rules [and the Approved Process under rule 135EC of the National Gas Rules].

VERSION	DATE	AUTHOR(S)	CHANGES AND COMMENTS
1.0	8/3/2002	Neil Belford	<ul style="list-style-type: none"> <li>First Version</li> </ul>
1.1	4/4/2002	Neil Belford	<ul style="list-style-type: none"> <li>Revised document contains changes including new information regarding message and transaction times; changes to reliable messaging parameters; additional information regarding routing through the hub and the test hub. A reference ebXML MSv1.0 schema forms the appendix.</li> </ul>
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1.6	26/8/2002	Peter Martin	<ul style="list-style-type: none"> <li>Added section 2.7 aseXML Events.</li> <li>Added specific non-CSV transactions to list of low priority transactions in section</li> </ul>

			<p>2.6.3.</p> <ul style="list-style-type: none"> <li>• Changed CPA ID example in section 4.3.4</li> <li>• Update description of gateway names in section 2.2 and removed names suffixed with TEST.</li> </ul>
1.7	25/9/2002	Neil Belford	<ul style="list-style-type: none"> <li>• Changed the word 'number' to the word 'identifier' in the MessageId element – section 4.3.5</li> <li>• Made a correction to the example in the ConversationId element – section 4.3.6</li> <li>• Changes to the required attributes in the Schema element – section 4.5.3.</li> <li>• Made a general change concerning the use of the words 'should' and 'shall' in certain instances.</li> </ul>
1.8	24/4/2003	Neil Belford	<ul style="list-style-type: none"> <li>• Changes to PersistDuration, and RetryInterval parameters and the TimeToLive element in Section 4.2. A change to the CPAId element example in Section 4.3</li> </ul>
1.9	23/02/2004	Darren Field	<ul style="list-style-type: none"> <li>• Change Request 58 &amp; 59. Updated schema information to r12 for Nov 2003 VicGas release. Corrected examples of retryInterval and persistDuration</li> </ul>
			<ul style="list-style-type: none"> <li>• Change Request 58 &amp; 59. Updated requirements for ebXML Manifest and aseXML Event/SupportedVersions to generic description, to enable an aseXML schema change without requiring a change to this document.</li> <li>• Updated referenced document definitions to generic version references, to enable document updates without requiring a change to this document.</li> </ul>
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3.1	17/05/2015	Allan Ng	<ul style="list-style-type: none"><li>• IN023/14 - FRC HUB Upgrade Project</li><li>• Changed Test Hub to Pre-Production Hub</li></ul>

## References to Predecessors

To reflect the governance changes implemented on 1 July 2009, this document has been amended to remove references to the Victorian Energy Networks Corporation (VENCorp) and replace such references with Australian Energy Market Operator (AEMO). Where any content inadvertently refers to VENCorp it should be read as referring to AEMO.

It should be noted that participant ID “VENCORP” remains as the participant ID for AEMO as the gas market operator in Victoria and Queensland.

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## 1. Introduction

### 1.1 Purpose

This document provides specifications that are configuration and control settings that apply to the FRC B2B System (FBS). These settings will become superseded from time to time throughout the life of the FBS. The specifications comprise standard service names, time intervals for message timeouts, standard participant identifiers, XML header mappings, and specific FBS port and network addressing details.

These specifications are the variable implementation details that apply to the FBS architecture, as defined in *FRC B2B System Architecture v3.2*.

### 1.2 Audience

The document has been written for business and IT personnel within industry participants in the Victorian gas industry, as well as AEMO business and IT personnel. It is expected that the audience will have a familiarity with the overall business endeavour of Gas Retail Market in Victoria and with the artefacts listed in the Related Documents section of this document.

### 1.3 Related Documents

REF	ARTEFACT NAME	VERSION	RESPONSIBLE PARTY OR AUTHORS
1	FRC B2B System Architecture	Current version as published in the GIP	AEMO
2	Participant Build Pack 3 Interface Definitions	Current version as published in the GIP	AEMO
3	ebXML Message Service Specification	1.0	UN/CEFACT and OASIS
4	Participant Build Pack 1	Current version as published in the GIP	AEMO
5	Participant Build Pack 2	Current version as published in the GIP	AEMO
6	Guidelines for Development of A Standard for Energy Transactions in XML (aseXML)	Current version as published at <a href="http://www.aemo.com.au/aseXML/index.htm">http://www.aemo.com.au/aseXML/index.htm</a>	ASWG

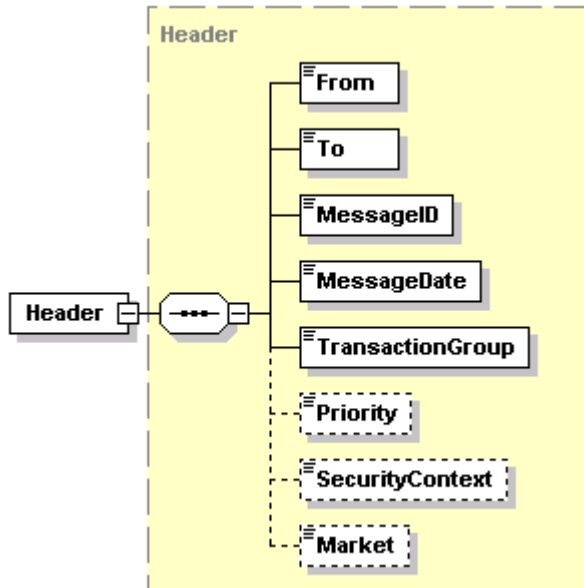


## 2. General Information

### 2.1 aseXML to ebXML Overview

Chapters 3 and 4 in this document define specifically the relationships between the contents of the aseXML header and the ebXML message elements. This section gives a high level overview of these relationships; along with timing considerations in the FBS.

The structure of the aseXML Header is as follows:



#### aseXML Header Format

Five fields from the aseXML header will be used to derive ebXML message element information. The From and To fields in the ebXML header are derived according to the content of the aseXML From and To fields, in conjunction with the optional SecurityContext field. Message elements including Service names and associated message timing elements and parameters are derived from the optional Priority element. The TransactionGroup element is mapped directly to the Action element name.

The following table shows which ebXML elements are based on the contents of the aseXML Header elements.

ASEXML HEADER ELEMENTS	NO MAPPING	EBXML ELEMENT DIRECT MAPPING	EBXML ELEMENT DERIVED MAPPING
From		From	
To		To	
MessageId	x		

ASEXML HEADER ELEMENTS	NO MAPPING	EBXML ELEMENT DIRECT MAPPING	EBXML ELEMENT DERIVED MAPPING
MessageDate	x		
TransactionGroup		Action	
Priority			Service
Priority			CPAId
Priority			TimeToLive
SecurityContext	x		
Market	x		

## 2.2 Derivation of Gateway Identifiers

The FRC Hub maps logical names for the sender and receiver (`From` and `To` fields) to physical URL's. Throughout the life of the FBS, participants will have the need to run test data through the FBS to test both the internal and network components of their systems. It is important that test transactions are never confused with production systems. To facilitate this distinction, the FBS administration will supply all participants with two sets of digital certificates. One set will be for production systems, the other for test systems. The use of certificates to distinguish between environments means that participants can use the same gateway identifier for both the production and Pre-Production environments, removing the need for code changes within each participant's migration process. While Participant Ids on the two hubs will be the same, each hub will hold a distinct profile for each participant, with participants supplying the URL's to which each profile maps. Participants are free to have their identifiers on each hub mapped to the same URL if they so wish.

Gateway identifiers in the FBS will be mechanically derived from the Participant Identifiers, a set of unique ten-character Id's already agreed by industry participants. These Participant-Ids are used as the content of the aseXML `From` and `To` elements.

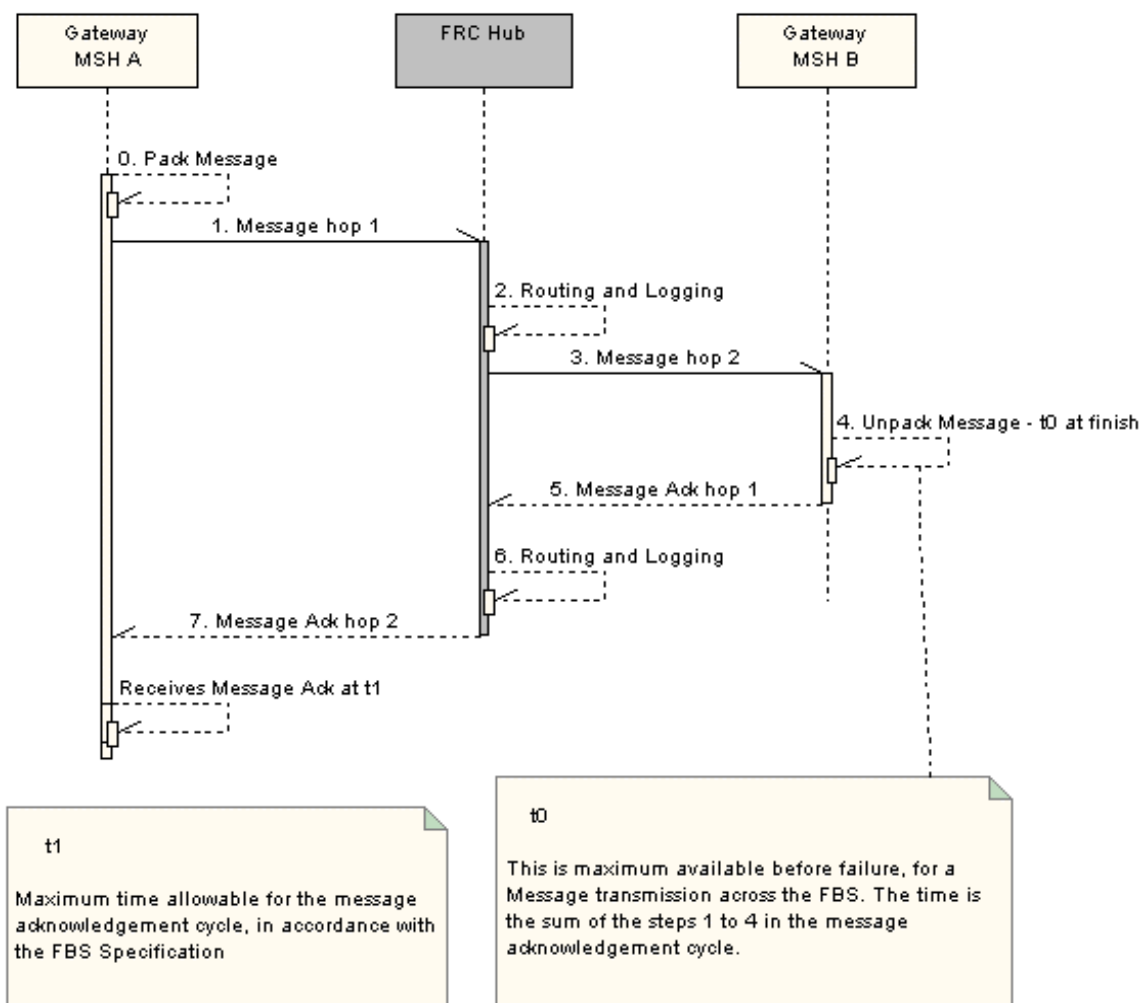
- The content of the ebXML `From` field will be the same participant Id as is contained in the aseXML `From` field.
- The content of the ebXML `To` field will be the same participant Id as is contained in the aseXML `To` field.

Gateway Id's in the FBS are listed here and will be used as the `PartyId` element – see section 4.3.1.

## 2.3 Timing implications

### 2.3.1 Definitions:

1. Allowable time drift on Message Service Handlers is  $\pm 15$  seconds, hence maximum time error will be 30 seconds.
2. Timing steps in the Message cycle are according to the following diagram:



3.  $t_0$  is the maximum time to pass before transaction processing can begin.

For high priority messages there are no retries

$t_0 = \text{sum}(\text{steps 1 to 4 in Definition 2.})$

For other medium and low priority messages  $t_0 = t_1$

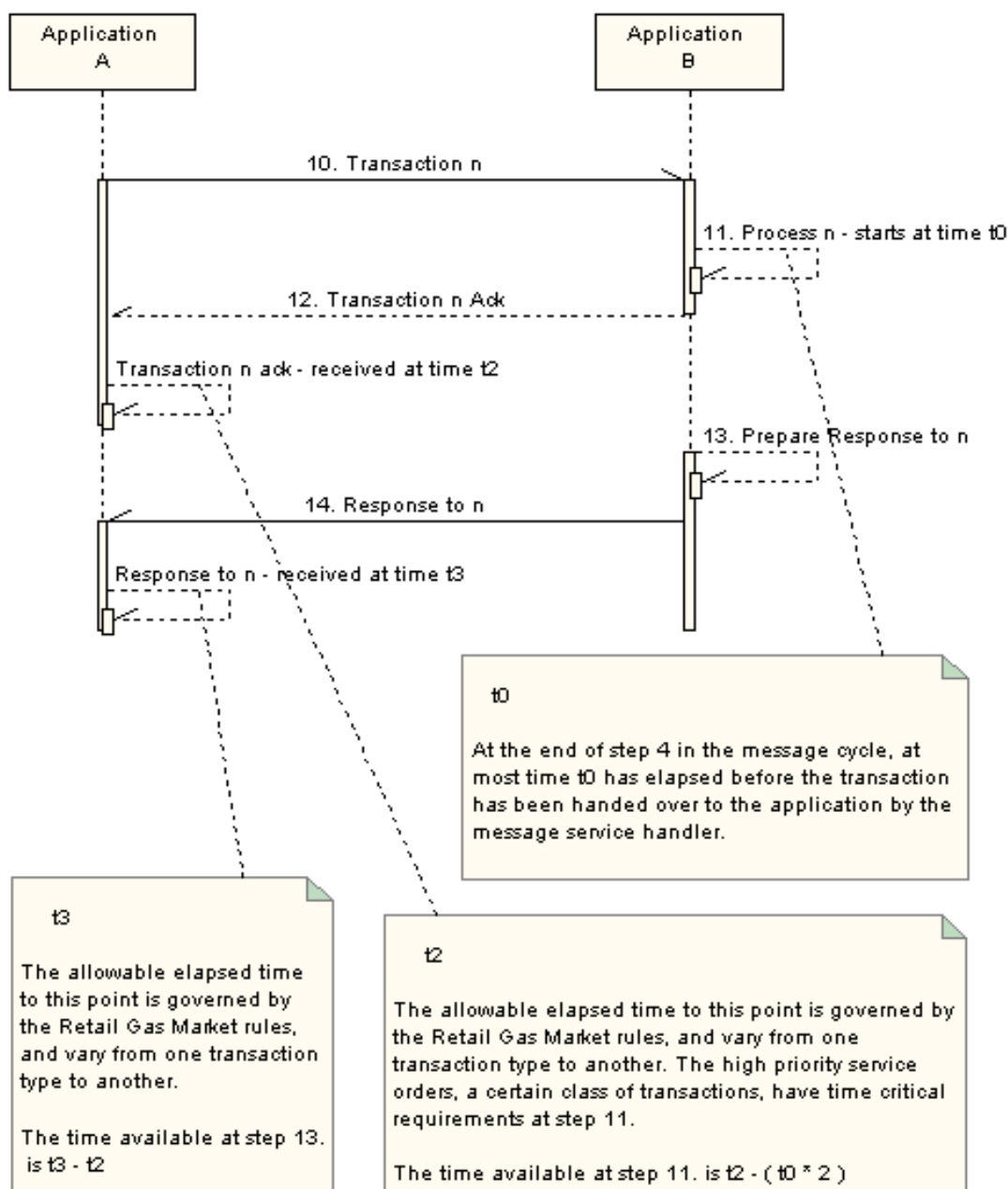
4. **t1** is the maximum time to pass before message acknowledgment receipt

**high priority t1 = 90 seconds message cycle + 30 seconds drift error**

**= 2 minutes**

medium priority and low priority t1 = 1 hour

5. Timing Steps in the Transaction and Response Cycle are according to the following diagram:



6. **t2** is the maximum time to pass before transaction acknowledgement receipt

Subsequent to various discussions and calculations regarding functionality in back end systems, the Gas Transaction Protocol Working Group has decided the various transaction-applications will not of deliver the responsiveness required to support high priority transactions through the FBS. Transaction acknowledgement receipt times are in section 2.5

7. **t3** is the maximum time to pass before a transaction response (if appropriate) is received. These times are governed by the Retail Market Procedures and will be policed by audit.

### 2.3.2 Critical Considerations:

The FBS is not used for transmitting high priority service orders. If this situation changes, these are the relevant considerations.

Critical time considerations in implementing Message Service Handlers and transaction processing applications relate to steps 4 and 11 (from the definitions diagrams) high priority messages.

- step 4 is the time available to process a Message Acknowledgment
- step 11 is the time available to process a Transaction Acknowledgement
- If **t2** expires unacknowledged, the sender must fallback to a secondary communication mechanism.
- The total time available in responding to a high priority service order is **20 minutes**.
- Hence the total time available to the secondary mechanism is 20 minutes – t2. Adequate time must be left for the secondary mechanism if it is needed in the event of the primary mechanism failing.

## 2.4 Timestamps in the FBS

In the FBS all time instants will be expressed in conformance with the ISO 8601 specification, using the methodology that includes the time offset.

– See <http://www.w3.org/TR/xmlschema-2/#dateTime>.

An example of an acceptable expression of a time instant is

```
2002-03-01T10:23:32+10:00
```

This time indicates that the current time at the locale producing the timestamp is 10:23:32 and that the locale in question is ten hours ahead of GMT.

## 2.5 Transaction Acknowledgement times

The Gas Transaction Protocol Working Group has determined that the times by which a transaction acknowledgement will be received shall be as follows:

**High priority transaction = 29 minutes**

**Medium priority transaction = 270 minutes**

**Low priority transaction = 5pm on the following business day**

High priority transactions will not use the FBS for transmission.

## 2.6 Size of aseXML Documents

### 2.6.1 High Priority Transactions

None defined.

### 2.6.2 Medium Priority Transactions

- All other non-CSV transactions will be sent as Medium Priority aseXML documents, except for those identified in the Low Priority Transactions section below.
- It is recommended that these should not be larger than 50 KB in size.

### 2.6.3 Low Priority Transactions

- All CSV transactions will be sent as Low Priority aseXML documents.
- The following fully tagged XML transactions will be sent as Low Priority transactions:
  - Special Read Response
  - Meter Data Verification Response
  - Service Order Response
  - Amend Site Access Details
- The total maximum transaction size shall be 2 MB unless otherwise agreed in the relevant Retail Market Procedures.

## 2.7 aseXML Events

All aseXML transaction acknowledgements and some transactions may contain the aseXML Event element. The use of the Event element is described in the *Guidelines for Development of a Standard for Energy Transactions in XML (aseXML)* document and will not be described further here.

The purpose of this section is to describe how each element within the Event element will be used within the FBS.

### 2.7.1 class Attribute

Can be omitted as it has a default value of "Application". If used, must be set to "Application".

### 2.7.2 severity Attribute

As per the list of event codes defined by the industry. One severity will be assigned to each event code (ie same event code can not be sent with different severities).

The aseXML Guidelines indicate that an error that prevents further processing of a fully tagged aseXML transaction shall have a severity of "Fatal", while an error that prevents a single CSV row from being processed shall have a severity of "Error".

However as most participant back-end systems will not know if the data arrived in CSV or aseXML format, "Error" will be used as the severity for both fully tagged aseXML and CSV transactions if the information cannot be processed.

### 2.7.3 <Code> Element

As per list of event codes developed by industry.

Note that the "Description" attribute of the code remains optional. If this attribute is populated then it must match the description in the event code table developed by the industry and published as part of Participant Build Pack 3.

### 2.7.4 <KeyInfo> Element

#### Preferred

Key data required to uniquely identify the transaction or record in error (eg, if MIRN was all that was needed to identify a particular record then KeyInfo would contain 1234567890). These fields have been identified by transaction and are included in the Event Code documentation in PBP3.

#### Minimum

Not required for aseXML transactions as the initiating transaction ID is included in the header (assumes back-end system knows the transaction was aseXML).

MIRN for majority of CSV records (this will at least narrow it down to a couple of records).

### 2.7.5 <Context> Element

#### Preferred

The portion of the data that is in error, including the field name and the data value. For aseXML transactions the field name as defined in PBP1 is used, whereas for CSV records the field name will be taken from the CSV Format Specification. Multiple values will be separated by a comma. (eg "MIRN=1234567890,Current\_Index\_Value=1234567").

#### Minimum

Values of fields that are in error (may not be able to provide field names initially).

### 2.7.6 <Explanation> Element

#### Preferred

In the case of a CSV record, this should contain the entire CSV record containing the error.

In the case of an aseXML record, this may contain:

A freeform comment (including internal application errors), or

If the event code can be further clarified by providing more information, a description of the error condition.

#### Minimum

May contain any supporting comments or may be left blank.

### 2.7.7 <SupportedVersions> Element

Probably won't be implemented by most systems, but, if populated, shall contain a list of <Version> elements identifying the versions of the sent transaction that are supported by the receiving participant. An example is:

```
<SupportedVersions>  
  <Version>r9</Version>  
  <Version>r12</Version>  
  <Version>r13</Version>  
</SupportedVersions>
```



### 3. aseXML Header Content

This section contains information for formatting the aseXML header content specific to the FBS. This is to be read in conjunction with the *Guidelines for Development of A Standard for Energy Transactions in XML (aseXML)*.

#### 3.1.1 From element

This mandatory element is to be populated with the Participant Id that applies to the enterprise sending the aseXML document. No context attribute is to be used.

#### 3.1.2 To element

This mandatory element is to be populated with the Participant Id that applies to the enterprise for whom the aseXML document is intended. No context attribute is to be used.

#### 3.1.3 MessageId element

This mandatory element is to be populated according to the *Guidelines for Development of A Standard for Energy Transactions in XML (aseXML)*.

#### 3.1.4 MessageDate element

This mandatory element is to be populated directly according to the *Guidelines for Development of A Standard for Energy Transactions in XML (aseXML)*.

#### 3.1.5 TransactionGroup element

This mandatory element is to be populated according to the *Guidelines for Development of A Standard for Energy Transactions in XML (aseXML)*. Each Transaction Group will be represented in the ebXML Action element under the same name as the Transaction Group. Transaction groups for each of the Vic Gas transactions are defined in the interface specifications within Participant Build Packs 2 and 3.

#### 3.1.6 Priority element

This optional element has three allowable values for this field - "High", "Medium", and "Low". When this element is not present "Medium" will be assumed to be the default by the ebXML Message Service Handlers. This element will be used to assign the ebXML message the appropriate service level, as is discussed in detail in the next chapter.

#### 3.1.7 SecurityContext element

The security context element is not used within the FBS system and shall be empty, or not present.

#### 3.1.8 Market element

While this element is optional according to the schema, it must be present, and be populated with the content "VICGAS", as the default identifies AEMO.

## 4. ebXML Message Service Handler Configuration

For any ebXML message, an ebXML message acknowledgement will need to be received within a time interval according to priority, as defined below; or an alert will need to be raised in the sending gateway. It is important to note that prior to sending the ebXML message acknowledgement the aseXML payload must be parsed.

The parameters and elements referred to here are all described in detail in the associated *FRC B2B System Architecture* document. The following element tree shows in bold type the ebXML elements that require special configuration in the FBS, according to these details; those in plain type shall be treated as per the ebXML specification;

MessageHeader

From

**PartyId**

To

**PartyId**

**CPAId**

**ConversationId**

**Service**

**Action**

MessageData

**MessageId**

Timestamp

RefToMessageId

**TimeToLive**

**QualityOfServiceInfo**

SequenceNumber

Description

TraceHeaderList

**TraceHeader**

Manifest

**Reference**

**Schema**

ErrorList

**Error**

Signature

## 4.1 Services & Actions

The ebXML `Service` and `Action` elements will have specific names derived from the content of the aseXML header. It is incumbent on participating gateways to populate these fields according to these specifications. Failure to do so will render the ebXML message invalid, so while the message may be successfully transmitted, there will be no reason to assume that the receiver will be able to appropriately manage the aseXML payload.

Services and actions can be thought of as Classes and Methods in the Message Service Interface. Participants are free to implement these services and actions however they see fit, bearing in mind that these `Service` and `Action` names are the only mechanism by which specified processing of ebXML messages can be achieved.

It is by the use of these `Service` and `Action` names that appropriate interaction with the Message Service Interface is achieved.

### 4.1.1 Service element naming

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `Service` element.

When composing an ebXML message, where the message is to contain an aseXML document as payload

- The `Service` element has a type attribute which shall be set to type="fbs"
- Where the `Priority` element in the aseXML header is not present, the `Service` name will be `MediumPriorityAseXMLDocument`
- Where the `Priority` element in the aseXML header is `High`, the `Service` name will be `HighPriorityAseXMLDocument`
- Where the `Priority` element in the aseXML header is `Medium`, the `Service` name will be `MediumPriorityAseXMLDocument`
- Where the `Priority` element in the aseXML header is `Low`, the `Service` name will be `LowPriorityAseXMLDocument`

### 4.1.2 Action Naming

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `Action` element.

When composing an ebXML message, where the message is to contain an aseXML document as payload the `Action` name will be the same as the name in the `TransactionGroup` element in the aseXML document Header.

## 4.2 Reliable Messaging Parameter Settings

The parameters `mshTimeAccuracy`, `retries`, `retryInterval`, and `persistDuration` can be managed in either of two ways by a participant receiving an ebXML message.

1. They can be set according to the assertions in this specification.
2. The participant can parse the `CPAId` element which is a subordinate element of the ebXML message header element and extract the parameter values from that element, according to the methodology described in section 4.3.4 pertaining to the `CPAId` element.

### 4.2.1 `mshTimeAccuracy` parameter

The time accuracy of Message Service Handlers in the FBS must be managed to be accurate within 15 seconds. That implies the total time drift between any two participants should be no more than 30 seconds. If participants can deliver better time accuracy than this, they should do so. The time accuracy is expressed in `mm:ss` format. For example, a gateway with an accuracy of  $\pm 5$  seconds would be expressed in the `CPAId` element as

### 4.2.2 `00:05retries` parameter

NUMBER OF RETRIES
2

This shall be expressed directly as the appropriate integer value in the `CPAId` element.

### 4.2.3 `retryInterval` parameter

RETRY INTERVAL
60 minutes

The retry interval is expressed as a duration in accordance with the XML Schema time duration data type – see <http://www.w3.org/TR/xmlschema-2/#duration> Here for example the retry interval in the `CPAId` element should be `PT60M`

### 4.2.4 `persistDuration` parameter

PERSISTDURATION IN MINUTES
180

The `persistDuration` is expressed as a duration in accordance with the XML Schema time duration data type – see <http://www.w3.org/TR/xmlschema-2/#duration> Here for

example the persist duration in the `CPAId` element should be `PT180M`

#### 4.2.5 TimeToLive element

The `ebXML MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `MessageData` element. The `MessageData` element is a composite element comprised of four subordinate elements, one of which is the `TimeToLive` element.

`TimeToLive` will be set a by adding a certain number of minutes to the current time according the priority, as per the following table:

PRIORITY	TIME MESSAGE IS SENT + DURATION
High	current time + 1 minute 30 seconds
Medium and Low	current time + 180 minutes

The `TimeToLive` element must be an XML schema time instant – see <http://www.w3.org/TR/xmlschema-2/#dateTime>. In the FBS all time instants will be expressed according to the ISO 8601 specification. An example of an acceptable expression of a time instant is

```
2002-03-01T14:23:35+10:00
```

See section 2.4.

### 4.3 ebXML Identifier elements

#### 4.3.1 PartyId element

The content of this element is based on the participant `Id` and the derivations for this are described in section 2.2. The `PartyId` values in the FBS are logical names that will be resolved to physical addresses in the FRC Hub.

For codes, see report as published on AEMO website.

These logical identifiers for participants will be subject to additions and deletions on a dynamic basis.

The `PartyId` element has a type attribute, which in the FBS shall be present, as follows

```
type="urn:frchub.net"
```

#### 4.3.2 From element

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `From` element. The `From` element shall contain the `PartyId` element of the sending participant gateway.

#### 4.3.3 To element

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `To` element. The `To` element shall contain the `PartyId` element of the intended recipient participant gateway.

#### 4.3.4 CPAId element

In the FBS the content of this element must be constructed as follows.

It will be comprised of six components. They are, in order,

- From PartyId
- To PartyId
- mshTimeAccuracy
- retries
- retryInterval
- persistDuration

These values shall be separated by a single whitespace. An example of a CPAId in a message from AEMO's gateway to the FBS test gateway would be as follows:

```
VENCORP FBSTEST 00:15 2 PT60M PT180M
```

#### 4.3.5 MessageId element

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `MessageData` element. The `MessageData` element is a composite element comprised of four subordinate elements, one of which is the `MessageId` element.

The sender of the ebXML message is required to populate this element with a message Id that is unique to the `PartyId` that identifies the sending Message Service Handler gateway. In the FBS the content of this element must be constructed using the `From PartyId`, white space separator followed by an identifier unique to that gateway. For example:

```
VENCORP 654323456
```

#### 4.3.6 ConversationId element

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `ConversationId` element. This element is not used in the FBS to span multiple payload bearing messages. This mandatory element shall be populated by combining the `From PartyId`, the `To PartyId` and the `MessageId`; whitespace separated. In accordance with the *ebXML Message Service Specification v1.0* conversations that do implicitly exist within ebXML such as a message and acknowledgement require the response (acknowledgement) to contain the `ConversationId` in the request (message). Such conversation pairs are:

Message and Acknowledgement

Ping and Pong

Message Status Request and Message Status Response

Error messages should contain the `ConversationId` of the missive they are reporting an error on if they are capable of determining it.

An example of a `ConversationId` in a message from AEMO's visa test gateway to the FBS test gateway would be as follows:

```
VENCORP FBSTEST VENCORP 5432112345
```

#### 4.3.7 SequenceNumber element

The ebXML `MessageHeader` element is a composite element comprised of ten subordinate elements, one of which is the `SequenceNumber` element. Currently the *FRC B2B System Architecture* document asserts that this element is not used in the FBS. This has been the subject of review and currently there are no plans to use this element.

### 4.4 Routing through the FRC Hub

Two hubs are in operation. The PreProduction hub is available for testing and debugging purposes. The production hub is used for production transactions only.

- No messages that are either 'From' or 'To' a test gateway will be routed through the production hub.

Routing messages through these hubs is achieved as follows.

#### 4.4.1 TraceList Element

The `TraceList` element is a composite element made up of one or more `TraceHeader` elements. In the FBS there will be one `TraceHeader` element in outgoing messages, and two `TraceHeader` elements in incoming messages. The `TraceHeader` element contains information that enables an ebXML message to make a single hop. This implies for all

participants that the outgoing `TraceHeader` element contains the information to get an ebXML message from MHS gateway to the FRC Hub.

It also implies for all participants that all received messages will have two `TraceHeader` elements in the `TraceHeaderList`. The first will be the `TraceHeader` element that applies to the sender to hub hop, and the second will be the hub to receiver hop.

#### 4.4.2 `TraceHeader` element

The `TraceHeader` is a composite element comprised of four subordinate elements, `Sender`, `Receiver`, `Timestamp`, and `#wildcard`. The `#wildcard` element is not used. The use of the `TraceHeader` element will be as per the ebXML specification, in conjunction with the following criteria.

The `TraceHeader Receiver` element is a composite element comprising two subordinate elements. These elements are the `PartyId` and the `Location`. For all participants this `Receiver` element will refer to the FRC Test Hub or the production FRC Hub. Addressing is as follows:

##### 4.4.2.1 Routing through the FRC Pre-Production Hub

When a participant initially connects to the Pre-Production hub this may be over HTTP. Once connectivity is established then certificates will be introduced and HTTPS will be deployed.

Prior to the use of certificates, participants will need a username-password pair to connect. These are generated as part of the form based process of a participant registering their physical address with the FBS administration.

- Participants populate the `PartyId` element of the `Receiver` element with the FRC Hub `PartyId` and this is

`RELAY`

- When communicating through the Pre-Production hub, participants populate the `Location` element of the `Receiver` element with the URL of the FRC Pre-Production Hub. For HTTP this is

<http://preprod.frchub.net:5318/invoke/relay/inbound/>

When using certificates this will become

<https://preprod.frchub.net:5319/invoke/relay/inbound/>



#### 4.4.2.2 Routing through the production FRC Hub

Communication with the production hub may only be over HTTPS.

- Participants populate the `PartyId` element of the `Receiver` element with the FRC Hub `PartyId` and this is

```
RELAY
```

- Participants populate the `Location` element of the `Receiver` element with the URL of the FRC Hub.

```
https://www.frchub.net:5319/invoke/relay/inbound/
```

### 4.5 Identifying payload data

In the FRC HUB, prior to routing a message to a recipient, the aseXML payload document will be parsed and determined to be schema valid or otherwise. In the event that it is schema invalid, the payload reference features of ebXML will be deployed and used in conjunction with the error handling described in section 4.6 of this document.

#### 4.5.1 Manifest element.

The manifest element is a composite element consisting of one or more `Reference` elements. The manifest element is used as per the *ebXML Message Service Specification v1.0*.

#### 4.5.2 Reference element.

The `Reference` element is comprised of a number of attributes and component elements as detailed in the *ebXML Message Service Specification v1.0*. The only attributes of the `Reference` element that are used in the FBS shall be populated as follows:

```
xlink:type="simple"
```

```
xlink:href="cid:aseXML"
```

It is important to note that the `xlink:href` attribute refers to the Content-Id of the payload. In the FBS all payloads are aseXML, hence a MIME part with a Content-Id of aseXML must be present in the payload.

#### 4.5.3 Schema element

The `Schema` element is the only component element of the `Reference` element that is required in the FBS. This element identifies the schema that can be used to validate the payload contained within the ebXML message. It has two attributes that shall be populated as follows.

`location` – This attribute identifies the physical location of the aseXML schema. It's value will be the same as the `schemaLocation` attribute in the aseXML document contained in the payload. For example:

```
location="http://www.nemmco.com.au/aseXML/schemas/r9/1.3/aseXML_r9.xsd"
```

`version` – This attribute identifies the schema version of the aseXML document contained in the payload. For example:

```
version="r9"
```

#### **4.6 ebXML Error reporting and handling.**

The FRC HUB will employ the ebXML error reporting and handling as per the *ebXML Message Service Specification v1.0* with the following addition.

In the FRC HUB, prior to sending an ebXML message acknowledgement, a schema validation parse is applied to the aseXML payload. If the parse fails a “message reporting the error” is sent. This is a message that contains an ebXML `ErrorList` element.

There are no custom error codes in the FRC HUB and the `codeContext` attribute of the `ErrorList` element will be the *ebXML Message Service Specification v1.0* default value.

##### **4.6.1 ErrorList element.**

In the event of the payload being aseXML schema invalid this element shall contain at least one `Error` element, which will be discussed shortly. As the severity in that error element will be “Error”, the highest severity attribute of the `ErrorList` element shall be “Error”, as per the specification. All other attributes shall be as per the specification.

##### **4.6.2 Error element.**

In the event of the payload being aseXML schema invalid, the attributes of this element shall be set as follows:

```
errorCode="OtherXML"  
severity="Error"  
location=  
"//soap:Envelope/soap:Body/eb:Manifest/eb:Reference/eb:Schema"
```

The content of the `Error` element shall say at least:

```
aseXml schema validation failure on payload
```

If any additional text information about the schema validation failure is available, this should also be included in the content of the error element.

The remainder of the error element shall be as per the *ebXML Message Service Specification v1.0*

#### **4.7 Signature element**

The FBS employs the ebXML Signature handling as per the *ebXML Message Service Specification v1.0* with the following clarification.

The SignedInfo element, contained within the Signature element shall contain the recommended second Reference element that refers to the payload object. This Reference element is important in supporting non-repudiation. As per the *ebXML Message Service Specification v1.0* this element shall have a URI attribute that resolves to the payload object.

## 5. System Security

### 5.1 Custom ports

The FRC Hub will use custom ports as a defence against simple Denial Of Service attacks.

for HTTP/S the port will be 5319

for HTTP the port will be 5318. This port is for testing only and will only be available on the FRC Pre-Production Hub

Participants are free to nominate any non-standard port they wish in the URLs they supply to the FBS administration. These URL's apply to the participant gateways.

### 5.2 Obtaining certificates

Obtaining X509 certificates for use with SSL and digital signatures in the FBS is achieved by submitting a Certificate-Signing-Request (CSR) via the FBS Administration to the FBS Certificate Authority (FBS-CA). Some participants will be using a gateway product that will generate such a CSR. Others may do it using publicly available tools such as Open-SSL.

When a participant has generated a CSR it should be sent to the FBS Administration as an email attachment to the following address

[fbadmin@aemo.com.au](mailto:fbadmin@aemo.com.au) For further information on obtaining certificated, please refer to the Participant User Guide.

### 5.3 FRC Hub Security Services

In order to solve the “many to many” problem with regard to certificate distribution and revocation, participants in the FBS, the hub will provide security services. For each environment – Pre-Production and production - participants will only need one certificate - that of the applicable FRC Hub for SSL and digital signature services.

- Messages will be signed by the From party private key and be routed to the To party via the FRC Hub.
- The hub will verify this signature against the participant's certificate. The hub is the only repository of certificates issued by the associated FBS Certificate Authority (FBS-CA). Individual participants will not need certificates from other participants.
- The hub will then re-sign the message with the FRC Hub private key and forward the message to the To party. The To party then verifies the message signature against the FRC Hub certificate
- There will be no published CRL's. There will be no OCSP technology. Certificate generation and revocation will be handled between the co-located FBS-CA and the FRC Hub. This system will suffer zero propagation delay - for example in the event of notification of a compromised private key.

A motivation for using ebXML was for a technology that provided for a signed payload to provide for non-repudiation of receipt. Using the webMethods hub security services does not change the certainty of non-repudiation of receipt; it simply changes the procedures to be followed in the event of dispute resolution. The FBS Administration will describe these in detail in due course; but in short non-repudiation of receipt will be verifiable as follows:

In the event there is a dispute about an alleged difference in an aseXML payload document both parties will supply their copies of the aseXML payload document in question to the FBS Administration. If these documents do differ:

1. The sender will be asked to sign and send both documents using the same hash-code algorithm. The hash-codes that are generated will be checked against the hash-code and algorithm reference that is archived at the hub.
2. The FRC Hub will re-sign both documents against the hash-code algorithm reference that is archived at the hub and compare these hash-codes with the appropriate hash-code reference that is archived at the FRC hub.

The outcome of this process will reveal exactly what content was sent.

The ebXML Message Service Specification provides for multiple signatures on the payload to facilitate the sort of process described here, whilst providing the benefit of leaving the sending signature intact. Vendor tool support for this functionality is not yet present, so this methodology will not be used in the FBS.

## **5.4 SSL**

The FRC Hub is capable of SSL connectivity in compliance with SSLv3 and TLSv1.0. TLS is based on SSLv3 [and is also referred to as SSLv3.1] and is an Internet standards track protocol:

<http://www.ietf.org/rfc/rfc2246.txt>

The certificates used in the FBS will not employ any extensions. Sometimes these certificates extensions are referred to as server certificates by certain vendors. Certificates without extensions are sometimes referred to as client certificates by certain vendors.

## 6. Appendix A – ebXML MSv1.0 FBS Reference Schema

As there is no online reference schema, the FBS will publish a reference schema for the ebXML Message Service v1.0 for use within the FRC B2B System. If a more widely available schema becomes available, the FBS Administration may drop this reference.

Participants should note that the use of tools such as XMLSpy may report that schemas referenced within this schema are written to an old standard, and prompt to update. Future versions of this schema will resolve this issue.

This is the FBS Administration messageHeader.xsd version 0.1

```
<?xml version="1.0" encoding="UTF-8"?>
<schema
targetNamespace="http://www.ebxml.org/namespaces/messageHeader"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  xmlns:eb="http://www.ebxml.org/namespaces/messageHeader"
  xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns="http://www.w3.org/2000/10/XMLSchema" version="1.0">
  <import namespace="http://www.w3.org/2000/09/xmldsig#"
schemaLocation="http://www.ebxml.org/project_teams/transport/xmldsig-
core-schema.xsd"/>
  <import namespace="http://www.w3.org/1999/xlink"
schemaLocation="http://www.ebxml.org/project_teams/transport/xlink.x
sd"/>
  <import namespace="http://schemas.xmlsoap.org/soap/envelope/"
schemaLocation="http://www.ebxml.org/project_teams/transport/envelop
e.xsd"/>
  <import namespace="http://www.w3.org/XML/1998/namespace"
schemaLocation="http://www.ebxml.org/project_teams/transport/xml_lan
g.xsd"/>
  <!-- MANIFEST -->
  <element name="Manifest">
    <complexType>
      <sequence>
        <element ref="eb:Reference" maxOccurs="unbounded"/>
        <!-- <any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded"/> -->
      </sequence>
      <attribute ref="eb:id"/>
      <attribute ref="eb:version"/>
      <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
    </complexType>
  </element>
  <element name="Reference">
    <complexType>
      <sequence>
        <element ref="eb:Schema" minOccurs="0"
maxOccurs="unbounded"/>

```

```

        <element ref="eb:Description" minOccurs="0"
maxOccurs="unbounded"/>
        <!-- <any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded"/> -->
        </sequence>
        <attribute ref="eb:id"/>
        <attribute ref="xlink:type" use="fixed" value="simple"/>
        <attribute ref="xlink:href" use="required"/>
        <attribute ref="xlink:role"/>
    </complexType>
</element>
<element name="Schema">
    <complexType>
        <attribute name="location" type="uriReference"
use="required"/>
        <attribute name="version" type="eb:non-empty-string"/>
    </complexType>
</element>
<!-- MESSAGEHEADER -->
<element name="MessageHeader">
    <complexType>
        <sequence>
            <element ref="eb:From"/>
            <element ref="eb:To"/>
            <element ref="eb:CPAId"/>
            <element ref="eb:ConversationId"/>
            <element ref="eb:Service"/>
            <element ref="eb:Action"/>
            <element ref="eb:MessageData"/>
            <element ref="eb:QualityOfServiceInfo"
minOccurs="0"/>
            <element ref="eb:Description" minOccurs="0"
maxOccurs="unbounded"/>
            <element ref="eb:SequenceNumber" minOccurs="0"/>
        </sequence>
        <attribute ref="eb:id"/>
        <attribute ref="eb:version"/>
        <attribute ref="soap:mustUnderstand"/>
        <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
    </complexType>
</element>
<element name="CPAId" type="eb:non-empty-string"/>
<element name="ConversationId" type="eb:non-empty-string"/>
<element name="Service">
    <complexType>
        <simpleContent>
            <extension base="eb:non-empty-string">
                <attribute name="type" type="eb:non-empty-
string"/>
            </extension>
        </simpleContent>
    </complexType>

```

```

</element>
<element name="Action" type="eb:non-empty-string"/>
<element name="MessageData">
  <complexType>
    <sequence>
      <element ref="eb:MessageId"/>
      <element ref="eb:Timestamp"/>
      <element ref="eb:RefToMessageId" minOccurs="0"/>
      <element ref="eb:TimeToLive" minOccurs="0"/>
    </sequence>
  </complexType>
</element>
<element name="MessageId" type="eb:non-empty-string"/>
<element name="TimeToLive" type="timeInstant"/>
<element name="QualityOfServiceInfo">
  <complexType>
    <attribute name="deliverySemantics"
type="eb:deliverySemantics.type" use="default" value="BestEffort"/>
    <attribute name="messageOrderSemantics"
type="eb:messageOrderSemantics.type" use="default"
value="NotGuaranteed"/>
    <attribute name="deliveryReceiptRequested"
type="eb:signedUnsigned.type" use="default" value="None"/>
  </complexType>
</element>
<!-- TRACE HEADER LIST -->
<element name="TraceHeaderList">
  <complexType>
    <sequence>
      <element ref="eb:TraceHeader"
maxOccurs="unbounded"/>
    </sequence>
    <attribute ref="eb:id"/>
    <attribute ref="eb:version"/>
    <attribute ref="soap:mustUnderstand" use="required"/>
    <attribute ref="soap:actor" use="required"/>
    <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
  </complexType>
</element>
<element name="TraceHeader">
  <complexType>
    <sequence>
      <element ref="eb:Sender"/>
      <element ref="eb:Receiver"/>
      <element ref="eb:Timestamp"/>
      <any namespace="##other" processContents="lax"
minOccurs="0" maxOccurs="unbounded"/>
    </sequence>
    <attribute ref="eb:id"/>
  </complexType>
</element>
<element name="Sender" type="eb:senderReceiver.type"/>

```



```

<element name="Receiver" type="eb:senderReceiver.type"/>
<element name="SequenceNumber" type="positiveInteger"/>
<!-- DELIVERY RECEIPT -->
<element name="DeliveryReceipt">
  <complexType>
    <sequence>
      <element ref="eb:Timestamp"/>
      <element ref="ds:Reference" minOccurs="0"
maxOccurs="unbounded"/>
    </sequence>
    <attribute ref="eb:id"/>
    <attribute ref="eb:version"/>
    <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
    <!-- <attribute name="signed" type="boolean"/> -->
  </complexType>
</element>
<!-- ACKNOWLEDGEMENT -->
<element name="Acknowledgment">
  <complexType>
    <sequence>
      <element ref="eb:Timestamp"/>
      <element ref="eb:From" minOccurs="0"/>
      <element ref="ds:Reference" minOccurs="0"
maxOccurs="unbounded"/>
    </sequence>
    <attribute ref="eb:id"/>
    <attribute ref="eb:version"/>
    <attribute ref="soap:mustUnderstand" use="required"/>
    <attribute ref="soap:actor" use="required"/>
    <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
  </complexType>
</element>
<!-- ERROR LIST -->
<element name="ErrorList">
  <complexType>
    <sequence>
      <element ref="eb:Error" maxOccurs="unbounded"/>
    </sequence>
    <attribute ref="eb:id"/>
    <attribute ref="eb:version"/>
    <attribute ref="soap:mustUnderstand" use="required"/>
    <attribute name="highestSeverity"
type="eb:severity.type" use="default" value="Warning"/>
    <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
  </complexType>
</element>
<element name="Error">
  <complexType>

```

```

        <attribute ref="eb:id"/>
        <attribute name="codeContext" type="uriReference"
use="required"/>
        <attribute name="errorCode" type="eb:non-empty-string"
use="required"/>
        <attribute name="severity" type="eb:severity.type"
use="default" value="Warning"/>
        <attribute name="location" type="eb:non-empty-string"/>
        <attribute ref="xml:lang"/>
    </complexType>
</element>
<!-- STATUS RESPONSE -->
<element name="StatusResponse">
    <complexType>
        <sequence>
            <element ref="eb:RefToMessageId"/>
            <element ref="eb:Timestamp" minOccurs="0"/>
        </sequence>
        <attribute ref="eb:id"/>
        <attribute ref="eb:version"/>
        <attribute name="messageStatus"
type="eb:messageStatus.type"/>
        <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
    </complexType>
</element>
<!-- STATUS REQUEST -->
<element name="StatusRequest">
    <complexType>
        <sequence>
            <element ref="eb:RefToMessageId"/>
        </sequence>
        <attribute ref="eb:id"/>
        <attribute ref="eb:version"/>
        <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
    </complexType>
</element>
<!-- VIA -->
<element name="Via">
    <complexType>
        <sequence>
            <element ref="eb:CPAId" minOccurs="0"/>
            <element ref="eb:Service" minOccurs="0"/>
            <element ref="eb:Action" minOccurs="0"/>
        </sequence>
        <attribute ref="eb:id"/>
        <attribute ref="eb:version"/>
        <attribute ref="soap:mustUnderstand" use="required"/>
        <attribute ref="soap:actor" use="required"/>
        <attribute name="syncReply" type="boolean"/>

```

```

        <attribute name="reliableMessagingMethod"
type="eb:rmm.type"/>
        <attribute name="ackRequested"
type="eb:signedUnsigned.type" use="default" value="None"/>
        <anyAttribute
namespace="http://www.w3.org/2000/10/XMLSchema-instance"
processContents="lax"/>
    </complexType>
</element>
<!-- COMMON TYPES -->
<complexType name="senderReceiver.type">
    <sequence>
        <element ref="eb:PartyId" maxOccurs="unbounded"/>
        <element name="Location" type="uriReference"/>
    </sequence>
</complexType>
<simpleType name="messageStatus.type">
    <restriction base="NMTOKEN">
        <enumeration value="Unauthorized"/>
        <enumeration value="NotRecognized"/>
        <enumeration value="Received"/>
        <enumeration value="Processed"/>
        <enumeration value="Forwarded"/>
    </restriction>
</simpleType>
<simpleType name="type.type">
    <restriction base="NMTOKEN">
        <enumeration value="DeliveryReceipt"/>
        <enumeration value="IntermediateAck"/>
    </restriction>
</simpleType>
<simpleType name="messageOrderSemantics.type">
    <restriction base="NMTOKEN">
        <enumeration value="Guaranteed"/>
        <enumeration value="NotGuaranteed"/>
    </restriction>
</simpleType>
<simpleType name="deliverySemantics.type">
    <restriction base="NMTOKEN">
        <enumeration value="OnceAndOnlyOnce"/>
        <enumeration value="BestEffort"/>
    </restriction>
</simpleType>
<simpleType name="non-empty-string">
    <restriction base="string">
        <minLength value="1"/>
    </restriction>
</simpleType>
<simpleType name="rmm.type">
    <restriction base="NMTOKEN">
        <enumeration value="ebXML"/>
        <enumeration value="Transport"/>
    </restriction>
</simpleType>

```

```
<simpleType name="signedUnsigned.type">
  <restriction base="NMTOKEN">
    <enumeration value="Signed"/>
    <enumeration value="Unsigned"/>
    <enumeration value="None"/>
  </restriction>
</simpleType>
<simpleType name="severity.type">
  <restriction base="NMTOKEN">
    <enumeration value="Warning"/>
    <enumeration value="Error"/>
  </restriction>
</simpleType>
<!-- COMMON ATTRIBUTES and ELEMENTS -->
<attribute name="id" type="ID" form="unqualified"/>
<attribute name="version" type="eb:non-empty-string" use="fixed"
value="1.0"/>
<element name="PartyId">
  <complexType>
    <simpleContent>
      <extension base="eb:non-empty-string">
        <attribute name="type" type="eb:non-empty-
string"/>
      </extension>
    </simpleContent>
  </complexType>
</element>
<element name="To">
  <complexType>
    <sequence>
      <element ref="eb:PartyId" maxOccurs="unbounded"/>
    </sequence>
  </complexType>
</element>
<element name="From">
  <complexType>
    <sequence>
      <element ref="eb:PartyId" maxOccurs="unbounded"/>
    </sequence>
  </complexType>
</element>
<element name="Description">
  <complexType>
    <simpleContent>
      <extension base="eb:non-empty-string">
        <attribute ref="xml:lang"/>
      </extension>
    </simpleContent>
  </complexType>
</element>
<element name="RefToMessageId" type="eb:non-empty-string"/>
<element name="Timestamp" type="timeInstant"/>
</schema>
```

## 7. Appendix B – sample ebXML message

The following sample is of an unsigned ebXML message with a CATS transaction group aseXML payload.

Message-ID: <422518658.1019188709812.JavaMail.chatton@VENCORP00231>  
Content-ID: <ac1b3ce8f70dc61800003fdd>

```
<?xml version="1.0"?>
<soap:Envelope
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
</soap:Envelope>
```

-----=\_Part\_15\_1170120589.1019188709621

Content-Type: application/xml  
Content-Transfer-Encoding: binary  
Content-ID: <aseXML>

```
<?xml version="1.0"?>
<ase:aseXML
```

```
</ase:aseXML>
```

-----=\_Part\_15\_1170120589.1019188709621--