



GDSN 2.1

Operations Manual

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Log of Changes

Date of Change	Summary of Change
Jan-2005	<ul style="list-style-type: none"> ■ Added section 2.2.3.1 with an example. ■ Rewrote Sections 2.2.2 and 2.2.5 to consistently show that the Delete Command acts on a pointer and not a document. ■ Deleted from Section 4.2.3 wording that indicated that the RFCIN generates a subscription in the GS1 GR. ■ Corrected Section 4.2.4 to state that updates happen only if there is a publication that matches the subscription.
Apr-2005	<ul style="list-style-type: none"> ■ Updated SBDH Chapter with Task Group approved content; added MessageID and Content Owner Clarifications
Mar-2006	<ul style="list-style-type: none"> ■ Removed references to Envelope(s) as SBDH is in place ■ Removed most of the references to 1.3.2 ■ Removed references to AS2 and ebMS headers ■ Removed sections 2.4, 3.1.1.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.4.1, 5.3.1 ■ Removed Figure 7 and list after it from section 5.2
Apr-2006	<ul style="list-style-type: none"> ■ Removed Table 2 ■ Corrected URLs for SBDH 1.3 ■ Added URLs for Standards and XML Schemas (both Beta and Production) ■ Replaced EAN.UCC with GS1 in narrative parts of the document ■ Added Chapter on AVPs

Date of Change	Summary of Change
May-2006	<ul style="list-style-type: none"> ■ Replaced the EAN.UCC logo with the GDSN logo ■ Rearranged the structure of the document and cleaned the content ■ Removed content related to GSMP XML that is available on the GSMP web site ■ Removed Chapter on AVPs as this will be available on the web site ■ Change limit of transactions per message from 10 to 100 and consolidated its content with other restrictions on the GDSN message structure ■ Added statement regarding Party Dump ■ Replaced the EAN.UCC logo with the GDSN logo ■ Added Change Management section ■ Added content to the GDSN Specifics section ■ Added On-boarding section
Jul-2006	<ul style="list-style-type: none"> ■ Added reference to the GS1 Glossary ■ Removed empty section "GDSN Web Site" as it is already referenced in section 2.3 ■ Added section "GDSN XML Instance Documents" that explains the usage of schemaLocation ■ Updated SBDH sections; included more explicit rules and split example into two: request and response ■ Updated "Responses in GDSN section" ■ Renamed and updated section "Message Identifier in GDSN"; added subsection on Entity Identification ■ Added section on TMSV
September 15, 2006	<ul style="list-style-type: none"> ■ Target Market Subdivision Code ■ XML Schema Validation ■ Adjusted formatting (indentation) in section 5.3.1.1 for CorrelationInformation and BusinessService elements ■ Changed Validation Rules document version
October 02, 2006	<ul style="list-style-type: none"> ■ Changed Validation Rules document version ■ Changed content related to InstanceIdentifier
December 15, 2006	<ul style="list-style-type: none"> ■ Adjusted references that need to point to 2.1 artifacts ■ Added Rules related to namespace prefixes ■ Added Rule related to single response vs. multiple responses ■ Adjusted the reference for the EDIINT AS1 and AS2 Transport Communication Guidelines
January 04, 2007	<ul style="list-style-type: none"> ■ Adjusted references: Operations Manual, BMS, XML Technical User Guide and Validation Rules

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1. Introduction

The Global Standards Management Process (GSMP) is the global process established by GS1 for the development and maintenance of Global Standards for the GS1 System. The Global Standards include: the GS1 General Specification, EANCOM for Electronic Data Interchange and the Business Message Standards (BMS) for XML used in GDSN. These standards are based on business needs and technical requirements of members using a global consensus process to develop supply chain standards.

The GS1 GDSN (Global Data Synchronisation Network) Operations Manual is a guide for implementers of the Network. It is a 'living document' that is periodically updated on as needed basis. This implementer's guide should be referenced along with the Business Requirements Analysis Documents (BRAD) and the Business Message Standards (BMS) defined by the GS1 Global Standards Management Process (GSMP). The BRADs and BMSs are the normative documents – they specify the standards; how to implement the standards is described in this Operations Manual. The authors and editors of the Operations Manual are responsible for ensuring that there are no discrepancies between the normative documents and this manual. Because the standards for GDSN are dynamic and implementation learnings continually result in modifications to the standards, standards gaps will arise between the documented standards and the learnings forged by implementations. The applicable implementation learnings are being captured in the Operations Manual, being the reference point collecting these decisions reached by the GDSN group before these make their way as standards in the BMS.

1.1. Purpose

The purpose of this document is to explain how to use the GS1 Standards in the Global Data Synchronisation Network (GDSN). It answers the questions – what do I need to do to build a STANDARDS COMPLIANT IMPLEMENTATION. Other GDSN documents provide an overview of GDSN or the business requirements behind GDSN and this document serves as an Operations Manual and an aide to the GDSN user and implementer community. It is supplemented by the GDSN business requirements documents and provides greater detail on how to implement GDSN. Its content will be expanded and will change as the needs of the users change. This document and updated versions of this document will be located and can be downloaded from the following location:

<http://www.gs1.org/services/gsmg/kc/gdsn/>

1.2. Audience

This document should be of use to implementers of the GS1 Global Registry, GS1 Member Organizations, GDSN Data Pools, and GDSN Trading Partners organizations. This document is intended for businesspersons and developers of GDSN who will implement GDSN from the operations guide and the standards as published in the BMS. In most cases they will not have attended GDSN meetings. The information in this document is organized in such a way as to be meaningful to them. In addition, the document is intended for the participants in the standards development process for GDSN.

1.3. Related Documents

The following documents provide additional background and relevant information:

1. *GS1 US Glossary* - <http://www.gs1us.org/glossary/>
2. *GDSN Glossary* - <http://www.gs1.org/productsolutions/gdsn/support/index.html>

3. *Business Message Standard for Align/GDSN/Catalogue Item Synchronisation* – <http://www.gs1.org/productssolutions/gdsn/technical/certification/>
4. *Business Message Standard for Align/Trade Item (Data Definition)* – <http://www.gs1.org/productssolutions/gdsn/technical/certification/>
5. *GDSN Validation Rules* – <http://www.gs1.org/productssolutions/gdsn/technical/certification/>

2. GDSN Standard

2.1. GDSN Overview

GDSN Trading Partners, Data Pools and the GS1 Global Registry interact with each other through standard interface messages. The defined standard interface messages, their UML class models and use cases are found in the Business Message Standard (BMS) documents. Class diagrams are transformed into W3C XML Schema Definition Language schemas. The business intent is preserved from BRAD to the BMS through the schema realization, although demands of XML syntax, cross-business process consistency and component reuse may warrant minor deviations between the BMS document and schema.

A Trade Item is any product or service upon which there is a need to retrieve pre-defined information that may be priced, ordered or invoiced at any point in any supply chain. The term “Trade Item” can represent any level of product containment. There is a difference between a Trade Item and a “Catalogue Item”. The Trade Item embodies the representation of the definition of a trade item and may or may not include hierarchy structure. The Trade Item key is a GTIN. The Trade Item is registered by the GTIN Owner and allows for the GTIN Owner to define specific non-changeable attributes. The Catalogue Item embodies the representation of the usage of an item, or in other words the content of an item. A Catalogue Item is uniquely defined within the GS1 Global Registry by the combination of the item’s Global Trade Identification Number (GTIN), Information Provider Global Location Number (GLN), and Target Market. It is registered by the Information Provider who may or may not be equivalent to the GTIN Owner and allows for the flexibility for Information Providers to allow for varying data across GLN’s and/or Target Markets. The Target Market (TM) is a 3-digit numerical code that indicates the country level or higher geographical definition in which the information provider will make the item available to buyers. This indicator does not govern where a buyer may re-sell the item to consumers. The Target Market Country Code is taken from the ISO 3166-1 list. Target Market could also include a subdivision code. The Target Market Subdivision Code is taken from the ISO 3166-2 list. Each Trade Item is treated as a separate and independent item within the GS1 Global Registry. (For more details on the functionality please see the BMS.)

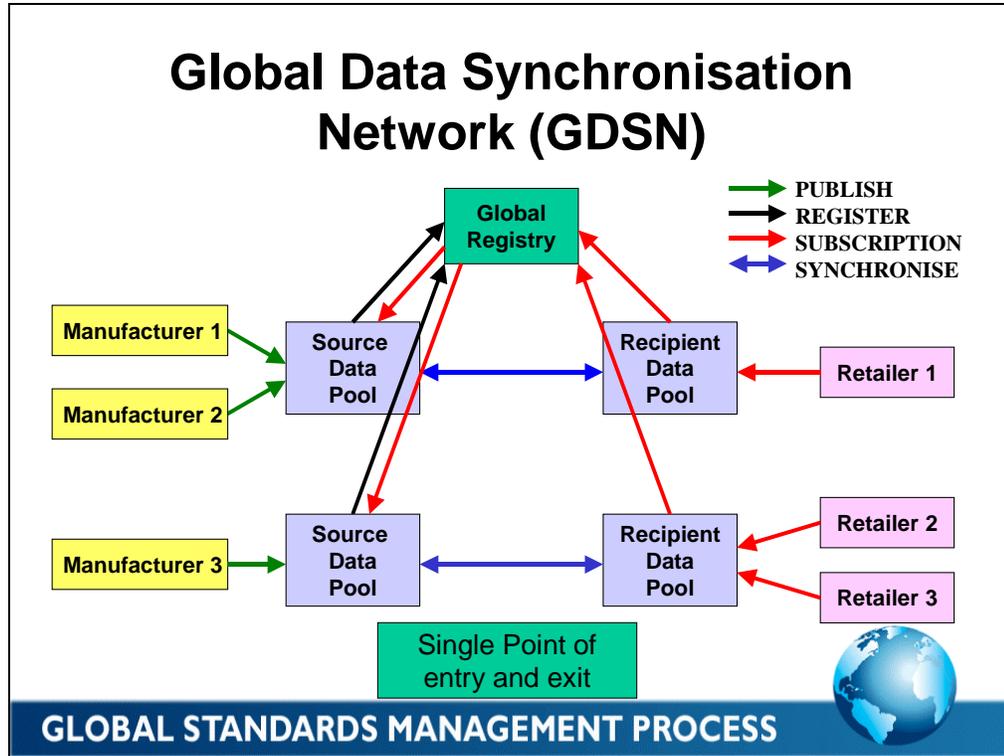
The GDSN as a concept is illustrated in [Figure 2-1](#), and had been developed by GS1 and various industry groups, including the Global Commerce Initiative (GCI), to help industry streamline supply chain transactions and reduce supply chain costs. The GDSN is an Internet-based, interconnected network that enables companies around the world to exchange standardized and synchronised supply chain data with their trading partners. The GDSN assures that data exchanged between trading partners is accurate and compliant with universally supported GS1 XML Standards.

The GDSN consists of three types of entities:

1. Trading Partners (Supplier and Retailers that do business between themselves). In order to be a part of the GDSN, the Trading Partner must become registered with the GS1 Global Registry.
2. Data Pools (services that hold and process trading partner data). In order to be a part of the GDSN, the data pool must become registered with the GS1 Global Registry.

- The GS1 Global Registry (a worldwide directory for Party, Item and Subscription Data that enables the GDSN community to locate data sources and manage ongoing synchronisation relationships between trading partners).

Figure 2-1 Global Data Synchronisation Network (GDSN)



Some key aspects of the GDSN are the following:

- The model supports a rich network of interoperable data pools
- Suppliers and Retailers have a single point of entry to the GDSN through the certified data pool of their choice
- Suppliers and Retailers do not have direct access to the GS1 Global Registry, unless they act as their own data pools
- Catalogue Items are uniquely identified using the unique combination of Global Trade Item Number (GTIN), Global Location Number (GLN) of the Information Provider, and Target Market (TM)
- Parties are identified using GLN

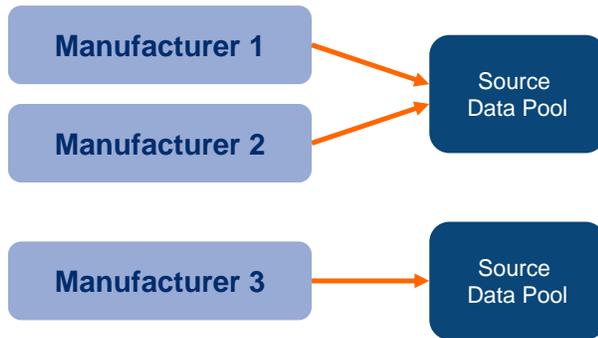
2.2. GDSN Choreography

One of the key advantages of the GDSN is that trading partners have a single point of entry to the GDSN through the certified data pool of their choice therefore avoiding having to pay subscriptions to multiple data pools either within the same geographic location or across multiple geographic locations.

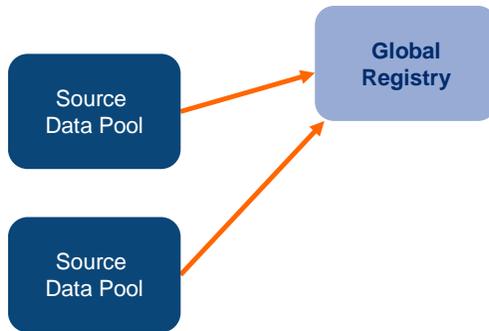
Suppliers and Retailers willing to synchronise item, location (party) and price data with each other should perform five basic steps detailed below:

- Step 1:** Suppliers prepare internal data and systems to match GS1 standards (GTIN, GLN, Global Product Classification - GPC, etc.)

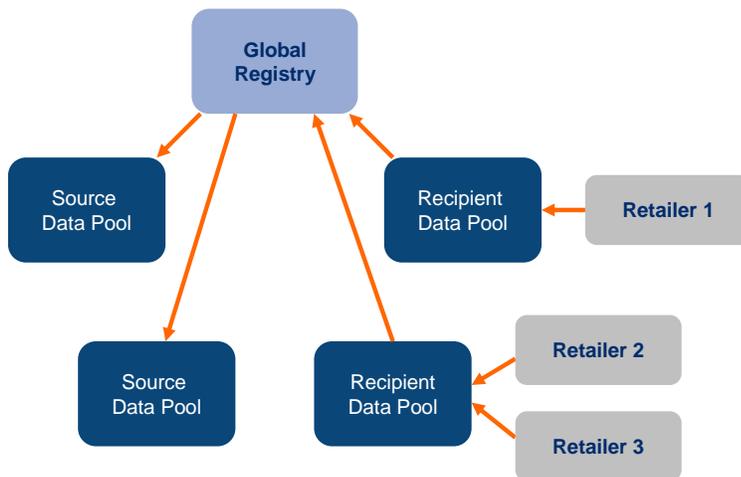
Step 2: Suppliers register and publish their accurate and standardised data utilizing a GS1 certified source data pool of their choice (in-house or third party).



Step 3: The data pool registers a small subset of the supplier's information about each item (or party) to the GS1 Global Registry. The GS1 Global Registry holds this information and the location of each item's (or party's) data pool



Step 4: Retailers determine their subscription criteria and send them to their chosen GS1 certified data pool for the item(s) or party for which they want to subscribe. Subscription can be done by any combination of GTIN, GLN, GPC and/or Target Market at the exception of GTIN and GPC that are mutually exclusive. Their Data Pool routes the subscription to the GS1 Global Registry where it is stored. The GS1 Global Registry identifies the source data pool(s) of the requested item(s) or party(s) and sends the applicable data pool(s) a notification that their Data Source has an opportunity to publish their data according to the detail of the Retailers subscription that the data pool receives.



Step 5: Data pools process the exchange of information between the trading partners via their respective data pools. As product attributes change, suppliers immediately resend their updated information to their chosen data pool, which ensures that all retailers within the GDSN community who are subscribing to this information are notified of the updated information via their recipient data pools. It is this continual update of data that distinguished Data Synchronization.

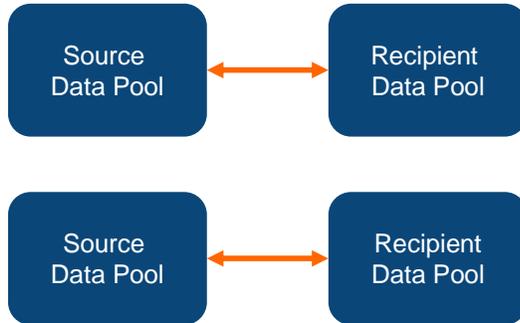
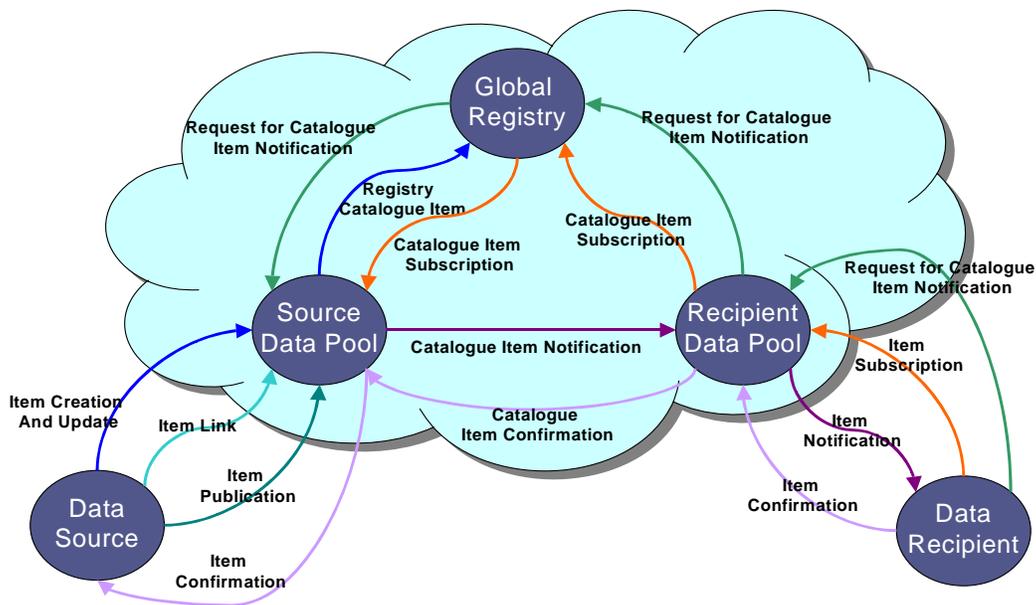


Figure 2-2 depicts the more detailed flow of information among the GDSN entities.

Figure 2-2 GDSN Choreography



Note: All messages have an implied response message

2.3. Joining GDSN

Trading partners wishing to participate in the GDSN should contact the GS1 Member Organisation (MO) in the country in which their company is headquartered. Data pools must be certified to be a part of the GDSN. All interested parties should visit the GS1 GDSN web site for instructions on how to become members:

<http://www.gs1.org/productsolutions/gdsn/>

2.4. On-boarding

Upon making the decision to join the GDSN, a new data pool must contact the GDSN Inc. to start the Registration process. A new data pool will need to establish a main contact for all GDSN communications. The data pool will also need to prepare information such as the URL for the data pool for all the regions (environments), the IP address, Digital Certificate information, and contact information. A ticket should be entered into the tracking system for GDSN for the data pool with all relevant information.

The data pool will then be entered into the GR System(s) by the GDSN Technical Support team after GDSN Inc. approval.

The data pool would then be able to begin testing in the Test / On-boarding Environments. The data pool would then need to participate in the next possible Certification.

The Data Pools and the Global Registry are subject to adhere to the Terms of the GDSN Service Level Agreement [SLA] as well as the GDSN Acceptable Use Policy [AUL]. Both documents are available through GDSN Inc.

2.5. Certification

All GDSN participating data pools have to be certified. Certification criteria and test plans are based upon the approved standard and GS1 GDSN released functionality. The certification agent develops certification tests based upon criteria developed and approved by the GDSN Inc. during the GDSN Release Materials Development Phase.

All the necessary documentation relevant to the past certification event is available on the GDSN certification website at:

<http://www.gs1.org/productsolutions/gdsn/technical/certification/>

 **Note:** Access to the GDSN certification website requires a username and password. For more information contact GDSN at GDSNINC@gs1gdsn.org.

2.6. Change Management

The scope and timeline of any new GDSN release is based upon the GDSN road map. The GDSN road map presents a high level overview of the development priorities of the GDSN User Group.

Based on the priorities outlined in the GDSN road map and the availability of resources, the GDSN User Group can determine the number and types (major or minor) of releases scheduled during the year. The release scope and plan also includes the Version of Global Product Classification which is adopted for the specific GDSN release as well as the adopted versions of externally managed code lists.

 **Note:** GDSN, GSMP and GPC release versions may not be in sync and can diverge over time. Also, some of the XML Schema files might be at the different version than the overall GDSN release.

3. Use of XML in GS1 and GDSN

3.1. GS1 XML Standards

GS1 XML Standards are standards for collaborative commerce defined by a global body of users: the GS1 member companies under the guidance of GS1 and its member organizations. The key features of the standards are that they are customer driven, based on global consensus, and designed jointly by GS1 and GS1 Member Organizations' member companies in an open process that encourages global participation.

The standards provide a flexible and extensible approach for transacting business-to-business electronic commerce. They have multi-sector and global applicability. GS1 XML Standards build on top of the World Wide Web Consortium (W3C) XML specifications. The W3C is a standards organization for developing interoperable technologies (specifications, guidelines, software, and tools) for Internet-based commerce and communication. Key features of the GS1 architecture are a reduced standards development cycle, consistent standards development, reusability, and message interoperability. The GS1 XML organization is modular. GS1 architecture uses this feature to organize schemas into logical layers where each layer performs a specific function.

The detailed *GS1 XML Technical User Guide* is available on the GS1 website at:

<http://www.gs1.org/productssolutions/ecom/xml/implementation/guide/index.html>

3.2. Standards Hosting

Both the Draft and the Final Business Message Standards (BMS) from previous, current and new releases is available on the GS1 website at:

<http://www.gs1.org/productssolutions/gdsn/technical/>

GS1 XML Schemas and the example instance files for GDSN are placed in Implementer's Packets and made available for download.

3.3. GDSN XML Schemas

GDSN schemas are based on the conventions of the GS1 XML Standard. These standards are released on a version basis. As of the publication of this document, GDSN is supported by version 2.1 of GS1 XML Standards. These schemas are hosted by the GS1 Global Registry in two environments, Beta and Production. The URLs of these directories are:

Beta site: <http://www.gdsregistry.org/2.1/>

Production site: <http://www.gs1globalregistry.net/2.1/>

3.4. GDSN XML Instance Documents

It is a responsibility of the Sender of GDSN XML messages to ensure that GDSN XML messages being sent are GDSN XML Schema-valid (conform to corresponding GDSN XML Schemas). More details about XML schemas and validations of XML instance documents could be found in the [XML Technical User Guide](#).

In addition to being valid GDSN XML Schema documents, all GDSN XML instance documents also need to be compliant with the following rules:

- GDSN XML instance documents SHOULD NOT declare namespaces at arbitrary elements inside the document. All namespace declarations SHOULD be placed at the root element (StandardBusinessDocument).

- GDSN XML instance documents SHOULD include at the root element (StandardBusinessDocument) namespace declarations for the following namespace names:
 - <http://www.w3.org/2001/XMLSchema-instance>
 - <http://www.unece.org/cefact/namespaces/StandardBusinessDocumentHeader>
 - urn:ean.ucc:2
 - urn:ean.ucc:gdsn:2
- It is RECOMMENDED that the following GS1 XML Schema namespace prefixes are used for the above namespace names as in:
 - xmlns:sh="<http://www.unece.org/cefact/namespaces/StandardBusinessDocumentHeader>"
 - xmlns:eanucc="urn:ean.ucc:2"
 - xmlns:gdsn="urn:ean.ucc:gdsn:2"
- A recipient of the GDSN message MUST NOT fail a GDSN message due solely to the existence of arbitrarily namespace prefixes.
- GDSN XML instance documents MUST NOT include namespace declarations for extensions that are not present in the message.
- All GDSN XML instance documents MUST include the fully qualified URLs that point to production schema locations as the value for the **schemaLocation** attribute.

Here is a snippet from the GDSN **CatalogItemNotification** message that illustrates the usage of the **schemaLocation** attribute:

```
<sh:StandardBusinessDocument
  xsi:schemaLocation="http://www.unece.org/cefact/namespaces/StandardBusinessDocumentHeader
  http://www.gs1globalregistry.net/2.1/schemas/sbdh/StandardBusinessDocumentHeader.xsd
  urn:ean.ucc:2 http://www.gs1globalregistry.net/2.1/schemas/CatalogueItemNotificationProxy.xsd">
```

4. Message Transport

4.1. Communication Protocol

The AS2 protocol is the sole approved communications protocol for GDSN. The reader is referred to the following document for information on the use of this protocol: "EDIINT AS1 and AS2 Transport Communication Guidelines". This document is available on the GS1 website at:

<http://www.gs1.org/services/gsmpl/implementation/>

5. GDSN Specifics

5.1. Validation Rules

Relevant GDSN Validation Rules are enumerated in the document which is available on the GS1 website at:

<http://www.gs1.org/productsolutions/gdsn/technical/certification/>

All standard Error Message IDs and Error Messages MUST be used as defined in that document.

5.2. Target Market Specific Validations

Since there are instances where validations that are specific to a target market need to be enforced, it is important to define how those validation rules coexist with already established GDSN Validation Rules (section [5.1](#)) that have a global scope. Here are the rules that must be followed in that case:

- A TMSV MUST NOT be used to relax the characteristics of a core attribute (e.g. from mandatory to be optional);
- A TMSV MUST NOT be used to relax an existing validation with a global scope;
- A TMSV MUST be supported by the GS1 Member Organization responsible for the target market in question.
- The target market of the registered catalogue item determines which target market specific validations are performed against that item.
- Target Market specific validations MUST be at the country code level (MUST NOT be at the subdivision level).
- The Catalogue Item Notification (CIN) sent by the Source Data Pool MUST comply with all target market specific validations.

5.3. SBDH use in GDSN

The UN/CEFACT Standard Business Document Header [SBDH] provides information about the routing and processing of the XML instance document. The SBDH is designed to be independent of the specific transport protocol used. The information contained in the SBDH can be used by communication applications to determine routing whether the transport protocol used is ebMS, AS2 or any other protocol.

The SBDH can also optionally provide business scope and business service information. In GS1 XML Schemas version 2 and beyond, the SBDH is designed to be an integral part of the XML instance document (in other standards, the SBDH may be an object associated with the XML instance document).

Detailed UN/CEFACT Technical Specification for the SBDH, the guidelines on how to use it and corresponding XML Schemas are available at the following location:

<http://www.disa.org/cefact-groups/atg/downloads/>

5.3.1. How to Use SBDH in GDSN

SBDH schemas that are used in GDSN are hosted and used as explained in section [3.3, GDSN XML Schemas](#) and section [3.4, GDSN XML Instance Documents](#).

While GDSN SBDH usage is compliant with the previously mentioned SBDH specifications, GDSN standard imposes additional semantics on its usage within the GDSN network. The following sections enumerate those constrains.

5.3.1.1. SBDH usage rules

Here are the basic usage rules of the SBDH in the GDSN:

- The StandardBusinessDocument is OPTIONAL under the UN/CEFACT SBDH standard however, as published for use in GDSN it is MANDATORY. The GS1 part of the message is wrapped by the header (and NOT sent in a separate MIME part), and the StandardBusinessDocumentHeader element MUST be used.
- The HeaderVersion MUST be set to '1.0'.
- Sender and Receiver elements MUST be used only once.

- The value of the Identifier element under Sender and Receiver elements MUST be a GLN of the corresponding communication entity that directly participates in the message exchange. The Receiver element in response messages matches the Sender element in the requesting message.
- The Authority attribute of the Identifier element under Sender and Receiver elements MUST be set to '**EAN.UCC**'.
- The ContactInformation element MUST NOT be used.
- The DocumentIdentification element MUST be used.
 - The Standard element MUST be set to '**EAN.UCC**'.
 - The TypeVersion element is always set to whatever is the current schema version. The current schema version (as of the publication of this document) is '**2.1**' and should be populated as such.
 - The InstanceIdentifier element MUST always be populated with the value that is unique within the scope of the sender. This applies to both the originating message as well as the responding message. Please notice this in the sample request and the sample response message snippets below.
- ✔ **Note:** As explained in the [XML Technical User Guide](#), the current version of the GS1 XML standard in addition to the usage of the SBDH also defines a Message Layer whose only purpose is to serve as a container for one or more transactions. The message element that represents the Message Layer might be deprecated in the future, but for now it needs to be populated including its **entityIdentification** element. Regarding the value of the **uniqueCreatorIdentification** element (a child of the **entityIdentification** element of the message element) its semantics is constrained only by its declaration in the **EntityIdentification.xsd**. Its value MAY be the same as the value of the **InstanceIdentifier**. For the value of the **contentOwner** element (a child of the **entityIdentification** element of the message element) please see section [5.7, Content Owner](#).
- The Type element indicates the type of GDSN document being sent. This element is MANDATORY under the UN/CEFACT SBDH standard. In GDSN it MUST be used. For any GDSN Response message this element MUST be set to **GDSNResponse**. For the GDSN messages that are not responses this same information MUST match the name of the child element of the payload element **documentCommandOperand**. In the sample below, this element states **catalogueItemNotification**.
- The **MultipleType** element MUST NOT be used.
- **CreationDateAndTime** is MANDATORY under the UN/CEFACT SBDH standard. In GDSN it MUST be used to communicate the date and time when the 'document originating application' created the document. This role will typically be acted upon by the trading partner and will typically differ from the time stamping of the message by the AS2 software. The Manifest element MUST NOT be used.
- The **BusinessScope** is OPTIONAL under the UN/CEFACT SBDH standard. In GDSN the **BusinessScope**:
 - MUST NOT be used in requesting messages
 - MUST be used in all responding messages
 - The Scope element MUST be used only once.
 - The Type element MUST be set to '**GDSN**'.

- The **InstancelIdentifier** element that is a child of the Scope element is not used in the current GDSN standard, but as it is declared as a mandatory XML schema element, it needs to be populated. Its value MAY match the value of the **InstancelIdentifier** element that is a child of the **DocumentIdentification** element.
- The Identifier element MUST NOT be used.
- The **CorrelationInformation** element MUST be used only once.
 - The **RequestingDocumentCreationDateTime** element MAY be used, If used, its value MUST match the value of the **CreationDateAndTime** element of the requesting message.
 - The value of the RequestingDocumentInstancelIdentifier element MUST match the value of the **InstancelIdentifier** element that is a child of the **DocumentIdentification** element in the requesting message.
 - The ExpectedResponseDateTime element MAY be used.
- The **BusinessService** element MUST NOT be used.

5.3.1.2. Annotated SBDH usage rules

The following is an annotated requesting message snippet that illustrates the usage rules of the SBDH in the GDSN.

```

<sh:StandardBusinessDocument> /* MANDATORY */

  <sh:StandardBusinessDocumentHeader> /* MANDATORY */

    <sh:HeaderVersion>1.0</sh:HeaderVersion> /* MANDATORY */

    <sh:Sender> /* PRIMARY MANDATORY MUST NOT
                 USE CONTACT INFORMATION */
      <sh:Identifier Authority="EAN.UCC">690314800007</sh:Identifier>
    </sh:Sender>

    <sh:Receiver> /* PRIMARY MANDATORY MUST NOT
                  USE CONTACT INFORMATION */
      <sh:Identifier Authority="EAN.UCC">220314800007</sh:Identifier>
    </sh:Receiver>

    <sh:DocumentIdentification> /* MUST NOT USE MULTIPLE TYPE */
      <sh:Standard>EAN.UCC</sh:Standard>
      <sh:TypeVersion>2.1</sh:TypeVersion>
      <sh:InstanceIdentifier>100002</sh:InstanceIdentifier>
      <sh:Type>catalogueItemNotification</sh:Type>
      <sh:CreationDateAndTime>2004-01-10T10:15:01Z</sh:CreationDateAndTime>
    </sh:DocumentIdentification> /* MUST NOT USE MANIFEST */
                                 /* MUST NOT USE BUSINESS SCOPE */

  </sh:StandardBusinessDocumentHeader>

  <eanucc:message> /* START OF THE EAN.UCC PAYLOAD*/
    <entityIdentification>
      <uniqueCreatorIdentification>200001</ uniqueCreatorIdentification > /* MAY BE THE SAME
                                                                              AS SBDH INSTANCE
                                                                              IDENTIFIER */

      <contentOwner>
        <gln>690314800007</gln> /* SAME AS IN SBDH SENDER */
      </contentOwner>
    </entityIdentification>
    ...
  <eanucc:transaction>
    ...
    <command>
      <eanucc:documentCommand>
        <documentCommandHeader type="ADD">
          ...
        </documentCommandHeader>

        <documentCommandOperand>
          <gdsn:catalogueItemNotification"> /* MATCHES SBDH TYPE */
          ...
        </documentCommandOperand>
        ...
      </eanucc:documentCommand>
    </command>
  </eanucc:transaction>
</eanucc:message>

</sh:StandardBusinessDocument>

```

The following is an annotated responding message snippet that illustrates the usage rules of the SBDH in the GDSN. Please note the correspondence of various values to values that were present in the previous (requesting) message snippet.

```
<sh:StandardBusinessDocument>
  <sh:StandardBusinessDocumentHeader>

    <sh:HeaderVersion>1.0</sh:HeaderVersion>

    <sh:Sender>                                /* SAME AS SBDH RECEIVER IN THE REQUEST */
      <sh:Identifier Authority="EAN.UCC">2203148000007</sh:Identifier>
    </sh:Sender>

    <sh:Receiver>                              /* SAME AS SBDH SENDER IN THE REQUEST */
      <sh:Identifier Authority="EAN.UCC">6903148000007</sh:Identifier>
    </sh:Receiver>

    <sh:DocumentIdentification>
      <sh:Standard>EAN.UCC</sh:Standard>
      <sh:TypeVersion>2.1</sh:TypeVersion>
      <sh:InstanceIdentifier>100003</sh:InstanceIdentifier>
      <sh:Type>GDSNResponse</sh:Type>
      <sh:CreationDateAndTime>2004-01-14T11:14:01Z</sh:CreationDateAndTime>
    </sh:DocumentIdentification>
```

THE FOLLOWING ELEMENT (BUSINESS SCOPE) AND ITS SUBELEMENTS MUST BE USED FOR ALL RESPONDING MESSAGES AND ONLY FOR RESPONDING MESSAGES

```
<sh:BusinessScope>
  <sh:Scope>
    <sh:Type>GDSN</sh:Type>
    <sh:InstanceIdentifier>300001</sh:InstanceIdentifier>
    /* MAY BE THE SAME AS SBDH INSTANCE IDENTIFIER */
    /*MUST NOT USE IDENTIFIER */
    <sh:CorrelationInformation>
      <sh:RequestingDocumentCreationDateTime>2004-01-10T10:15:01Z
      /*SAME AS THE CREATION DATE AND TIME IN THE
      REQUEST*/
    </sh: RequestingDocumentCreationDateTime>

    <sh:RequestingDocumentInstanceIdentifier>100002
    /*SAME AS THE INSTANCE IDENTIFIER IN THE SBDH
    REQUEST*/
    </sh:RequestingDocumentInstanceIdentifier>
    </sh:CorrelationInformation>    /*MUST NOT USE BUSINESS SERVICE*/
  </sh:Scope>
</sh:BusinessScope>
</sh:StandardBusinessDocumentHeader>

<eanucc:message>
...
</eanucc:message>
</sh:StandardBusinessDocument>
```

5.4. Responses in GDSN

There are four types of response messages in GDSN:

- EANUCCResponse
- CatalogueItemRegistrationResponse

- PartyRegistrationResponse
- GDSNException

EANUCCResponse indicates the processing success of transactional unit of work. It is not a transaction or a command or a document, but an indicator of the acceptance of a processed transaction. **CatalogItemRegistrationResponse** and **PartyRegistrationResponse** serve the same purpose of accepting requesting message, but they are exclusively sent by the Global Registry.

GDSNException is used to indicate back to the sender of the original (requesting) message various errors that might occur while processing the message at the recipient side.

In addition to specifically referring to a single response type, for the rest of this paragraph we will also use the following classification in order to refer to a proper subset of GDSN response messages:

- **GDSN Response** – include all four response types
- **Positive GDSN Response** – includes **EANUCCResponse**, **CatalogItemRegistrationResponse** and **PartyRegistrationResponse**

Here are the rules that are enforced for GDSN response messages:

1. The GDSN Response MUST correspond to one and only one requesting message. This means that it is not possible to respond to more than one requesting message at the same time.
2. The recipient of the GDSN requesting message that includes multiple transactions MAY package and send GDSN Responses related to original transactional requests either as a single GDSN response message or as multiple GDSN response messages.
3. Multiple EANUCCResponse and the GDSNException elements MAY be contained within a single GDSN response message.
4. The Positive GDSN Response MUST have responseStatus attribute set to '**ACCEPTED**'.
5. The Positive GDSN Response identification MUST correspond to the transaction identification of the requesting message.
 - The **uniqueCreatorIdentification** element and the contentOwner element that are children of the documentReceived / responseIdentification element in a Positive GDSN Response MUST be copied from the uniqueCreatorIdentification element and the contentOwner element that are children of the entityIdentification element that is a child of the transaction element of the requesting message.
6. The **GDSNException** identification MUST correspond to the message identification of the requesting message.
 - The uniqueCreatorIdentification element and the contentOwner element that are children of the originatingMessageIdentifier element in a GDSNException MUST be copied from the uniqueCreatorIdentification element and the contentOwner element that are children of the entityIdentification element that is a child of the message element of the requesting message.
7. The Sender and the Receiver of the **EANUCCResponse** and the **GDSNException** MUST match the Sender and the Receiver that were present in the SBDH of the requesting message.
8. The **MessageException** MUST be returned when an error(s) is(are) discovered while processing the SBDH and / or the message element. In all other cases the **TransactionException** MUST be returned.
9. The **GDSNError** MAY be returned at the first occurrence of an error inside a first document whose processing failed as part of a particular transaction. This means that the recipient of the requesting message MAY stop processing the failed transaction as soon as the first error is discovered.

10. The recipient of the requesting message SHOULD return as many **GDSNErrors** as discovered during processing the message regardless of these errors being at different levels (message, transaction, command, ...).
11. The recipient of the requesting message SHOULD return **GDSNErrors** at the lowest level at which errors occurred.

5.5. Identifiers in GDSN

5.5.1. Entity Identification

The GLN and GTIN are used to globally identify parties and trade Items in GDSN. As explained in the [XML Technical User Guide](#), a similar concept is used to identify messages, transactions, commands, ... The structure used for this purpose is called **EntityIdentification**; here is the current XML Schema complex type definition for it:

```
<xsd:complexType name="EntityIdentificationType">
  <xsd:sequence>
    <xsd:element name="uniqueCreatorIdentification">
      <xsd:simpleType>
        <xsd:restriction base="xsd:string">
          <xsd:maxLength value="80"/>
          <xsd:minLength value="1"/>
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:element>
    <xsd:element name="contentOwner" type="eanucc:PartyIdentificationType">
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

As seen from this definition the **EntityIdentification** is composed of the content owner's GLN and the content owner's unique identifier. The content owner itself is represented as a party, and as previously mentioned in GDSN party identification MUST be ensured by leveraging the usage of GLN. The content owner MUST ensure that the generated identifier is unique among entities within the owner's domain. The combination of GLN and the unique identifier makes the **EntityIdentification** globally unique.

5.5.2. Rules for GDSN Identifiers

Here are rules that need to be followed when creating identifiers in GDSN:

- Message identity (that is a combination of the **SBDH.Sender.Identifier** and the **SBDH.DocumentIdentification.InstanceIdentifier**) MUST be globally unique and MUST NOT be reused across different messages.



Note: It is important to further explain the meaning of "reuse" in the above rule. "Reuse" denotes the case when two different messages (with a different purpose, content, ...) happened to have the same identification. This is not allowed. On the other hand, there are various scenarios that might lead the sender to "resend" the original message; some of these are explained in section [4.1, Communication Protocol](#). In this case, the content of the whole message needs to be identical to the original one, which implies that the message identification will be the same

- The following attributes, when taken together, **MUST** be unique in order to prevent duplicate documents and increase traceability within the GDSN:

Sender (Data Pool or Global Registry) GLN / SBDH.DocumentIdentification.InstanceIdentifier / Transaction ID / Command ID / Document ID.

For example:

- If the same Document ID is used within the same Command the transaction **MAY** be failed by the receiving data pool.
- If the same Command ID is used within the same transaction the transaction **MAY** be failed by the receiving data pool.
- If the same Transaction ID is used within the same message the message **MAY** be failed by the receiving data pool.
- A receiving data pool **MAY** fail any messages from a sending data pool if the sending data pool has previously sent the receiving data pool a message using the same **SBDH.DocumentIdentification.InstanceIdentifier**.

5.6. Standard on Transaction, Commands and Documents

When transmitting transactions, commands and documents in GDSN, a consistent convention in the usage of these 3 elements must be followed. There is a distinction between what is technically valid within a well-formed and validated GS1 XML instance document and the desired standard from the business point of view. This section describes the standard for usage of transactions, commands and documents in the GDSN.

- ✔ **Note:** “Message” in the following rules denotes the Message Layer (**eanucc:message element**) that is wrapped under the Standard Business Document.

The following restrictions apply when sending messages within the GDSN:

1. There is a limit of 1 Message within a Standard Business Document
2. There is a limit of 1 Document type within 1 Message
3. There is a limit of 100 Transactions within 1 Message
4. There is a limit of 1 Command type within 1 Transaction
5. There is a limit of 100 Documents within 1 Transaction
6. Implementation of commands and documents could take the form of:
 - Wrapping all documents within one command
 - Including command/document pairs multiple times

If a data pool receives a message that does not follow these restrictions, the receiving data pool **MAY** reject this message.

- ✔ **Note:** As there were some misunderstandings regarding the Party Dump functionality between the Global Registry and data pools, it is worth mentioning that Party Dump is a file and not a GDSN message. As such, it is not restricted to the above limits.

5.7. Content Owner

Within the GDSN data pools need to be consistent in populating the *content owner* of a message at the message, transaction, command and document levels. The following rule is enforced for all GDSN messages:

- The **contentOwner** GLN value at the message level is the GLN of the Data Pool / Global Registry. The **contentOwner** GLN value at the transaction, command and document levels is the GLN of the Data Source / Data Recipient.

5.8. Language Code

The language code that is used within the GDSN release 2.1 is expressed as the **languageISOCode** element under the ISO639CodeType complex type in the **Description.xsd**

```
<xsd:complexType name="ISO639CodeType">
  <xsd:sequence>
    <xsd:element name="languageISOCode">
      <xsd:simpleType>
        <xsd:restriction base="xsd:string">
          <xsd:maxLength value="5"/>
          <xsd:minLength value="1"/>
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

In addition to this the following is required for the valid language codes. The syntax is:

aa{-BB}

where:

- **aa** = ISO 639-1 code list, 2-character representation, lower case and optionally
- **BB** = ISO 3166-1 code list, 2-character representation, upper case

The first two positions of **languageISOCode** MUST be a valid language code from ISO 639-1 code, (ie. "en", "ru", "zh") and these MUST be lower case. If a country language code qualifier is desired append a hyphen ("-") followed by the two character country code from ISO 3166-1 code list and these MUST be upper case.

Examples of correct language codes

- "en"
- "ru"
- "zh"
- "zh-CN"
- "zh-TW"

Examples of incorrect language codes

- "EN"
- "tw"

- “zh-”
- “zh-cn”
- “ZH-TW”
- “ZH-tw”
- “en840”
- “en826”
- “826”

5.9. DateTime Format

Currently there are various places in GDSN XML schemas where data elements are of the “**xsd:dateTime**” data type. The population of data elements that are **xsd:dateTime** data type MUST be compliant to one of the following two approaches that constrain the lexical format for such data elements:

1. Time MAY be expressed in UTC (Coordinated Universal Time), with a UTC designator (“Z”)
-or-
2. Time MAY be expressed in local time with a time zone offset in hours and minutes (“+hh:mm” for times that are ahead of UTC and “-hh:mm” for times that are behind UTC.

Examples of correct dateTime:

- “2006-05-15T05:37:39-05:00” – corresponds to May 15, 2006, 5:37:39 am, US Eastern Standard Time
- “2006-05-15T10:37:39Z” – the same time instance as the previous one expressed in UTC

An example of an incorrect dateTime:

- “2006-05-15T05:37:39” – no time offset indicator

 **Note:** There are some GDSN elements that are expressed as **xsd:date** (without time). This might be a problem when messages are sent between participants that are in different time zones.

5.10. Optional Messages, Attributes and Extensions

Within the GDSN, data pools might have a choice when responding to optional messages and messages that contain optional attributes or extensions. The following rule is enforced for those GDSN messages:

1. Data pools and the Global Registry MUST NOT fail (GDSN exception message) a GDSN message due solely to the existence of an optional attribute or well formed extension.
2. The receiving data pool MAY fail (GDSN exception message) optional messages within the network that are not supported by the receiving data pool. A new GDSN exception error code of “unsupported message” will be created for this circumstance.

5.11. Codelist Validation

The following rule allows optional rejection of codes:

- The recipient has the right (but not the obligation) to reject values for all attributes for which a standard **codelist** applies, if the value in question is not a member of the **codelist** that applies to that attribute.

5.12. Classification Definition

The following rule allows setting of data pool's own classification definitions:

- The value for **classificationDefinition** can be the Brick definition or a data pool's own version of the definition. The value should be accurate but is not required. No validation is made on **classificationDefinition** apart from the schema imposed validation.

6. References

Source	Description
AS2	Title: "EDIINT AS1 and AS2 Transport Communication Guidelines", Issue 1, Feb-2006 GS1 Electronic Commerce Global Implementation Forum (ecGIF) Retrieved Jan 03, 2007 from: http://www.gs1.org/services/gsmf/implementation/
BMSCIS	Title: "Business Message Standards (BMS) for Align/GDSN/Catalogue Item Synchronisation", Document Version 2.0.11 GS1 GSMP Retrieved January 03, 2007 from: http://www.gs1.org/productssolutions/gdsn/technical/certification/
BMSTI	Title: "Business Message Standards (BMS) for Align/Trade Item (Data Definition)", Document Version 9.0.5 GS1 GSMP Retrieved January 03, 2007 from: http://www.gs1.org/productssolutions/gdsn/technical/certification/
CERT	Title: "GS1 GDSN - Certification" GS1 GDSN Retrieved July 25, 2006 from: http://www.gs1.org/productssolutions/gdsn/technical/certification/
GLOSS	Title: "A Glossary of Terms Used in Global Data Synchronisation Network" GS1 GDSN Retrieved May 16, 2006 from: http://www.gs1.org/productssolutions/gdsn/support/index.html
GS1USGL	Title: "GS1 US Glossary", Document Version 7.0 GS1 US Retrieved May 30, 2006 from: http://www.gs1us.org/glossary/
SBDH	Title: "UN/CEFACT Standard Business Document Header Technical Specification", Document Version 1.3 UN/CEFACT Retrieved May 16, 2006 from: http://www.disa.org/cefact-groups/atg/downloads/

Source	Description
VAL	Title: "Validation Rules for Global Data Synchronisation Network", Document Version 1.0.5 GS1 GDSN Validations Team Retrieved January 03, 2007 from: http://www.gs1.org/productssolutions/gdsn/technical/certification/
XMLG	Title: "GS1 XML Technical User Guide to Release 2.0" GS1 GSMP Retrieved Dec 15, 2006 from: http://www.gs1.org/productssolutions/ecom/xml/implementation/guide/