



# GDSN Operations Manual

## GDSN Version 2.7

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## Document Summary

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## Log of Changes

Issue No.	Summary of Change
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Apr-2005	<ul style="list-style-type: none"> <li>Updated SBDH Chapter with Task Group approved content; added MessageID and Content Owner</li> <li>Clarifications</li> </ul>
Mar-2006	<ul style="list-style-type: none"> <li>Removed references to Envelope(s) as SBDH is in place</li> <li>Removed most of the references to 1.3.2</li> <li>Removed references to AS2 and ebMS headers</li> <li>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</li> <li>Removed Figure 7 and list after it from section 5.2</li> </ul>
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Issue No.	Summary of Change
Jul-2006	<ul style="list-style-type: none"> <li>Added reference to the GS1 Glossary</li> <li>Removed empty section "GDSN Web Site" as it is already referenced in section 2.3</li> <li>Added section "GDSN XML Instance Documents" that explains the usage of schemaLocation</li> <li>Updated SBDH sections; included more explicit rules and split example into two: request and response</li> <li>Updated "Responses in GDSN section"</li> <li>Renamed and updated section "Message Identifier in GDSN"; added subsection on Entity Identification</li> <li>Added section on TMSV</li> </ul>
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## Disclaimer

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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.

This 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 BRAD's and BMS's 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 of this Document

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 to help 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: <http://www.gs1.org/services/gsmc/kc/gdsn/>.

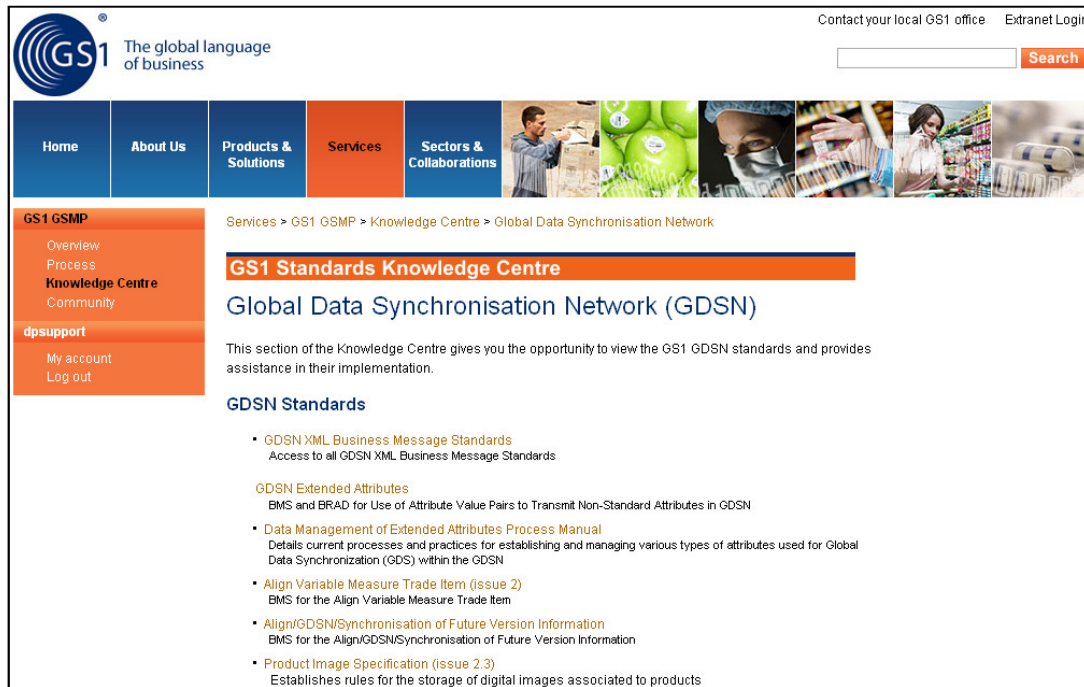
## 1.2. Audience

This document should be of use to implementers of the Global Data Synchronisation Network (GS1 Global Registry, GDSN Data Pools, and GDSN Trading Partners). 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 may 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. GDSN Knowledge Centre

The following link gives access to documents, shown in [Figure 1-1](#), providing additional background and relevant information: <http://www.gs1.org/gsmc/kc/gdsn>.

Figure 1-1 GDSN Knowledge Centre



## 2. GDSN Standards

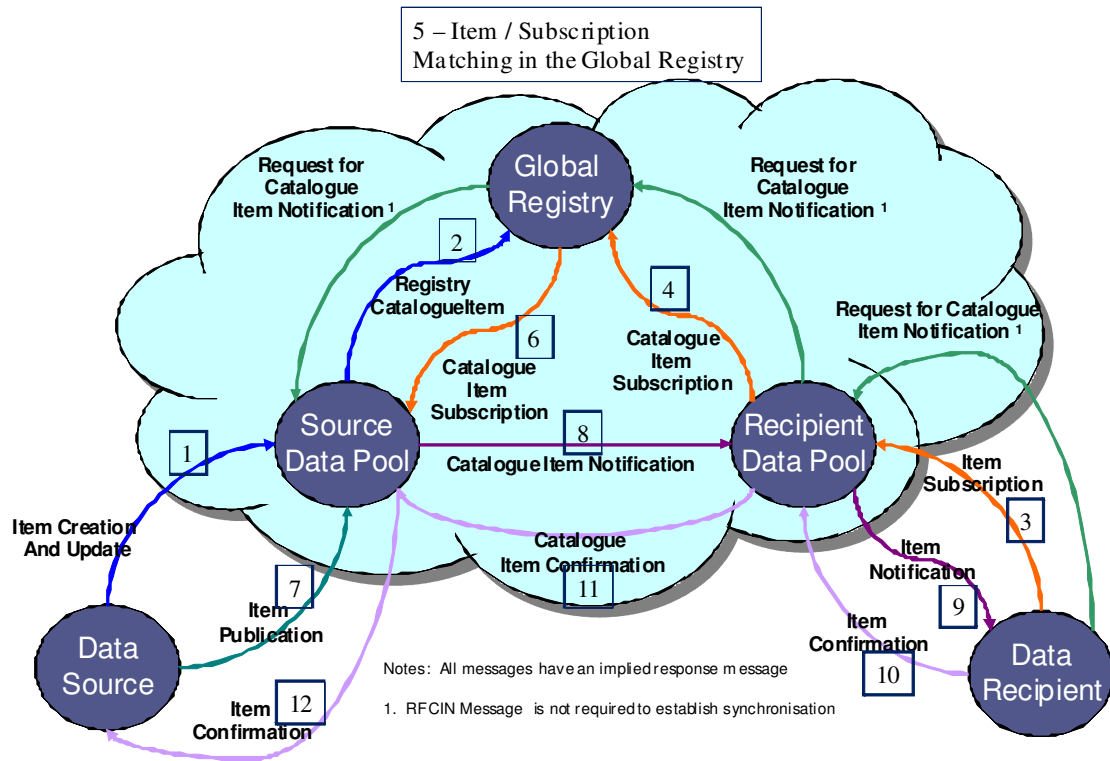
GDSN Trading Partners, Data Pools and the GS1 Global Registry interact with each other through standard interface messages. The defined standard interface messages, their UML class models and use cases are found in the Business Message Standard (BMS) documents. Class diagrams are transformed into W3C 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 trade item (trade item or service) upon which there is a need to retrieve pre-defined information and that may be priced, ordered, or invoiced at any point in any supply chain. GTIN is one of the keys of the GS1 System. Trade Items are identified with a GTIN. 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 Brand 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.)

## 2.1. Global Data Synchronisation (GDSN) Data Flow

Figure 2 depicts the overall flow of all the different messages in the GDSN among the entities. These messages may vary depending upon the sender and receiver of the messages. Some messages are designed as multi-hop messages and can possibly flow through different parts of the network.

Figure 2-1 Full GDSN Choreography



### 2.1.1. GDSN Actors

Below are the functions of the actors in the GDSN - Global Registry, Data Source, Source Data Pool, Recipient Data Pool, and Data Recipient:

<h4><u>GS1 Global Registry</u></h4> <ul style="list-style-type: none"> <li>■ Enables the registration and distribution of Party information, identifying the actors and roles</li> <li>■ Enables the registration all the Item information through a small set of core information <ul style="list-style-type: none"> <li>○ GTIN, GLN of the information Provider, Target Market, and the GPC</li> </ul> </li> <li>■ Provides Validation Services to ensure uniqueness</li> <li>■ Enables the registration all the Item subscriptions with a small set of criteria <ul style="list-style-type: none"> <li>○ GTIN, GLN of the information Provider, Target Market, and the GPC</li> </ul> </li> <li>■ Performs the Item / Subscription matching process at the core of the GDSN choreography</li> </ul>	
<h4 style="text-align: center;"><u>Data Source</u></h4> <ul style="list-style-type: none"> <li>■ Typically a Manufacturer/Distributor</li> <li>■ Maintains trade item information that it wants entered into the GDSN</li> <li>■ Registers trade item information in a Source Data Pool to be registered with the Global Registry and sent a Recipient Data Pool</li> <li>■ Sends trade item information in any format agreed by the Data Source and the Source Data Pool</li> </ul>	<h4 style="text-align: center;"><u>Data Recipient</u></h4> <ul style="list-style-type: none"> <li>■ Typically a Retailer Hospital, Group Purchasing Organization, Distributor or any other User of Data</li> <li>■ Subscribes to trade item information by the any of the following combinations of criteria: <ul style="list-style-type: none"> <li>- Item (GTIN)</li> <li>- Party (GLN)</li> <li>- Target Market</li> <li>- GPC Brick</li> </ul> </li> <li>■ Receives trade item information in any agreed-to format with Recipient Data Pool</li> </ul>
<h4 style="text-align: center;"><u>Source Data Pool</u></h4> <ul style="list-style-type: none"> <li>■ Validates Item Information against the GDSN Validation Rules (Mandatory)</li> <li>■ Receives trade item information from Data Sources to be registered</li> <li>■ Uses standard XML Messages to register the item information in the Global Registry</li> <li>■ Uses GS1 standard XML Messages to exchange trade item information with the Recipient Data Pool (&amp; Data Recipient)</li> </ul>	<h4 style="text-align: center;"><u>Recipient Data Pool</u></h4> <ul style="list-style-type: none"> <li>■ May validate Item Information against the GDSN Validation Rules (Optional)</li> <li>■ Receives subscriptions from its Data Recipients using criteria</li> <li>■ Registers subscriptions in the Global Registry</li> <li>■ Receives item information from the Source Data Pool, including new and updated</li> <li>■ Provides the trade item information from the Source Data Pool to the Data Recipient</li> </ul>

The significance of the cloud is that inside the cloud represents the “in-network” portion of the GDSN. Inside the cloud, all of the exchange of the messages is strictly defined by the GDSN standards. All Data Pools must use the same messages in the same exact way. Out of the network (outside the cloud), the way that the Data Pools communicate with their trading partners (Data Sources and Data Recipients) is up to the Data Pools. This flexibility allows for the Data Pools to create value-add offerings for their customers. For example, item information can be communicated to the Data Pools in additional formats such as excel files, text files, existing Electronic Data Interchange (EDI) messages. Data Pools can translate these formats into the standards-based XML messages for use in the network and can translate when messages are received through the network.

### 2.1.2. Use of XSD-based Schema XML Messages

All in-network transactions between a data pools and from the Data Pools to the Global Registry require the use of the GDSN standard XML messages. The GDSN uses a set of standardised XSD-based, XML messages. [Figure 2-2](#) shows the existing set of GDSN-related standards

**Figure 2-2** GDSN Standards

Catalogue Item Synchronisation	
Basic Party Synchronisation	
Item Authorization	
GDSN Common Library	
GDSN Price Synchronisation	
GDSN Trade Item	
GDSN Trade Item Extensions:	
Apparel & Home Fashion	Movie Publications
Attribute Value Pair (AVP)	Music Recordings
Audio Visual Photography	Non-GTIN Logistic Units
BarCode Candidate Attributes	Office Supplies
Electronic Games	Promotional Trade Item
FMCG	Regulatory Compliance
Food & Beverage	Specific Technical Characteristics
Hardlines	US Hazmat
Healthcare	

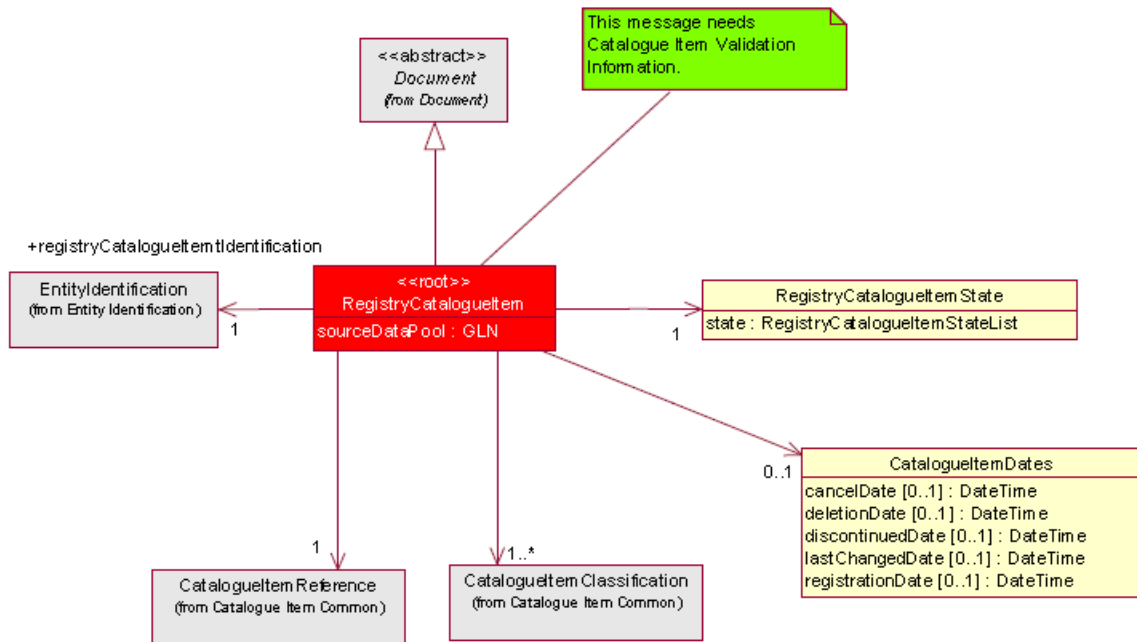
The most significant standard for the GSDN is the “Catalogue Item Synchronisation” standard. It is this standard that is the most implemented standard in the GDSN. The GDSN Trade Item Extensions are special extensions to the Trade Item that adds additional information specific to a particular industry or business need.

Within the Catalogue Item Synchronisation Process, there are a number of standard messages:

- Catalogue Item Confirmation
- Catalogue Item Notification
- Catalogue Item Publication
- Catalogue Item Registration Response
- Catalogue Item Subscription
- Registry Catalogue Item
- Request for Catalogue Item Notification
- EAN•UCC Response
- GDSN Exception

All of the messages are defined in the standard and are created using Universal Modeling Language (UML) models. These models are then used in the creation of the XML messages. An example of a model for the Registry Catalogue Item message is shown in [Figure 2-3](#).

**Figure 2-3 UML Model of the Registry Catalogue Item Message**



### 2.1.3. Communication Transfer Protocol

All messages communicated ‘in network’ between the Data Pools themselves or between the Data Pool and the Global Registry are sent over the internet using the EDI over the Internet, Application Specification 2 (EDIINT AS2) communication protocol. This protocol is used for the exchange of information in a decentralised, distributed environment and was designed and codified by the Internet Engineering Task Force (IETF). In its original version, AS1, it was used primarily to transmit EDI messages using email over the Internet, using Simple Mail Transport Protocol (SMTP). AS2 uses the Hyper Text Transfer Protocol (HTTP) to build a tunnel to the recipient address, establish the connection, and then send the information in a secured environment assuring the sender of the receipt. The use of digital certificates is also implemented in the GDSN, such that the only entities that can communicate with the Global Registry are the GDSN-Certified Data Pools.

## 2.2. Basic Party Synchronisation Choreography

The Basic Party Synchronisation process is a required prerequisite to the Catalogue Item Synchronisation process and is used by all Data Pools to register Parties (GLN’s) in the Global Registry. In the Global Registry, Parties are identified by individual GLN’s registered by a Data Pool. GDSN Trading Partners require Party data information to achieve data synchronization. A Party must be registered in the Global Registry in order to participate in any GDSN functionality, including the registration of items or subscriptions. All Data Pools (either Source or Recipient) must register Party information on behalf of its Trading Partners. The process for this registration is:

- The Data Pool’s Trading Partner communicates its Party information to the Data Pool in a mutually agreeable format.
- The Data Pool uses this information and creates the standard Party Registration message as defined in the Basic Party Registration process. This message must pass all validations in place for the registration of Parties.
- The Global Registry returns either a “Party Response” message (if the Party was successfully registered) or a “GDSN Exception message” (if the Party was not successfully registered). The exception message will also include the errors found as to why the Party could not be

registered. After the successful registration, the GS1 Global Registry will store the Party information, including the Data Pool information identifying responsible Data Pool for that Party.

### 2.2.1. Party Dump

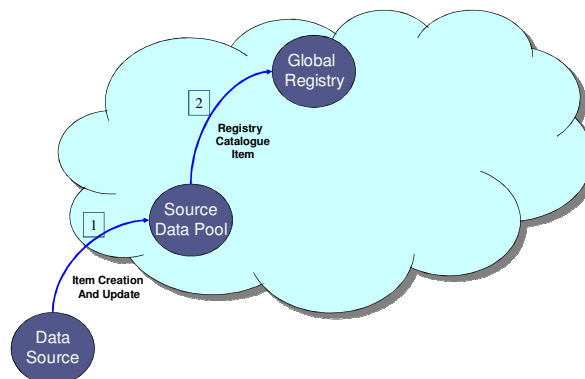
There's a batch process in Global Registry that runs on a daily basis that generates a file containing all the information for all of the Parties in the Global Registry, including such information as GLN, Party Name, Address, Contact Name, Country, Country Code, etc. This XML file of all Parties in the GDSN is sent to all Certified Data Pools in the GDSN for use in synchronising the Party information in the GDSN.

## 2.3. Catalogue Item Synchronisation and Global Registry Functionality

### 2.3.1. Registry Catalogue Item (RCI) Registration

The Registry Catalogue Item is the business message used to register trade item information from a data pool to the Global Registry within the GDSN Network. The process for this is shown in [Figure 2-4](#).

**Figure 2-4** Item Registration Process



1. First a Data Source loads the full set of item information (which may include values for as many attributes about the Trade Item as needed by their customers and the business processes which will eventually use the data).
2. From this information the Source Data Pool forms a Registry Catalogue Item message using the primary information of the:
  - a. GTIN
  - b. GLN of the Information Provider
  - c. Target Market of where the GTIN is intended to be sold
  - d. Global Product Classification (GPC) Brick Code  
- and -
  - e. A Status and a few relevant dates (creation date, last maintained date)
  - f. The Data Pool that is responsible for the Trading Partner and its items

3. This information is registered in the Global Registry if it passes validation and uniqueness checks

The Registry Catalogue Item message is defined very strictly by the standards and all Data Pools must use the same messages and validations. The method by which the Data Source creates the items in the Source Data Pool is dependent upon their choice of data pools and their mutual agreement. For example, it is possible to use a graphical user interface to create and register information. This can also be done using existing EDI message sets that are not related to GDSN.

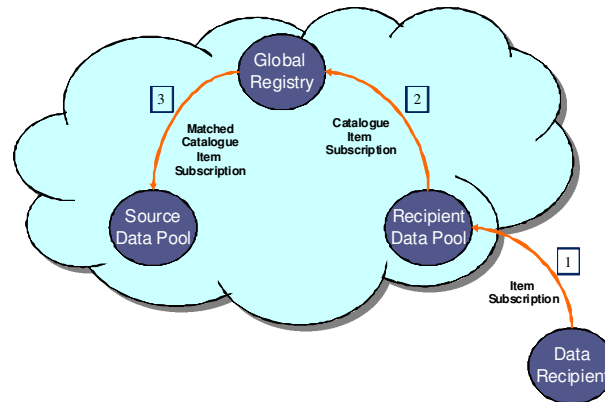
One of the important aspects of the GDSN processes is that at the Source Data Pool, the Items that are to be communicated are usually arranged in product hierarchies. This is a method how items are physically packaged to contain each successive level of the hierarchy. An example would be that a can of soda exists by itself. However, in the supply chain, the can is usually packaged in packs of 6 cans (a six-pack), which are in turn packaged in 1 case of 4 six-packs. These cases may then be packaged together on a pallet of 60 cases. This would be an example of an item hierarchy. It is also possible to have the same can of soda packaged as a 12-pack, with two 12-packs per case, and 40 cases per pallet. So it is possible that the same can of soda can be contained within multiple hierarchies. It is important to note, only the items themselves are registered in the Global Registry. In the above examples, the can of soda, the six-packs of soda, the 12-packs of soda, the cases of soda and the pallets of soda would all be registered individually in the Global Registry, each identified by its own unique GTIN. However, the Global Registry would not know how these levels are pieced together to create the individual hierarchies. That function is performed at the Source Data Pool.

#### 2.3.1.1. Validation Rules

Validation Rules are used in the GDSN to enforce business rules associated with Parties, Items, and Prices. For example there are over 20 different validation rules used by the Global Registry for RCI XML messages. Validation rules are also important in GDSN because mostly all of these validations occur outside of the schemas themselves. Even though it may be technologically easier to embed the validations into the schemas, experience has shown that because validation rules do changes, including updates to code list values, it is important to not have to issue a new set of schemas every time a validation changes. So, by having the validations external to the schemas, the Global Registry and the Data Pools can be modified without having to implement a whole new set of schemas for each change.

#### 2.3.2. Catalogue Item Subscription (CIS) Registration

The Catalogue Item Subscription is the business message used to communicate a request made by a Data Recipient for Trade Item information, with the intention of synchronising this data with the Data Source. The process for this is shown in [Figure 2-5](#).

**Figure 2-5** Catalogue Item Subscription Registration Process

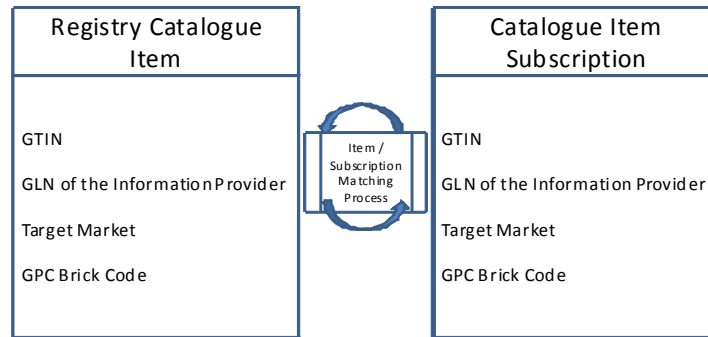
1. First a Data Recipient loads the criteria for the subscription to the item information.
2. From this information the Recipient Data Pool forms a Catalogue Item Subscription message using the criteria of:
  - a. GTIN
  - b. GLN of the Information Provider
  - c. Target Market of where the GTIN is intended to be sold
  - d. Global Product Classification (GPC) Brick Code  
- and -
  - e. A Status and a few relevant dates (creation date, last maintained date)
  - f. The Data Pool that is responsible for the Trading Partner and its subscriptions
3. This information is registered in the Global Registry if it passes validations
4. The Global Registry Matching Process is initiated

The Catalogue Item Subscription message is defined very strictly by the standards and all Data Pools must use the same messages and validations. The method by which the Data Recipient creates subscriptions or the Data Source receives subscriptions is dependent upon their choice of data pools and their mutual agreement. For example, it is possible to use a graphical user interface to create subscriptions and receive information as well.

### 2.3.3. Global Registry Matching Process

The Global Registry then performs a matching process. Whenever a Registry Catalogue Item registration occurs or a Catalogue Item Subscription occurs, the Global Registry performs a matching process to compare items against subscriptions and vice-versa using the common criteria used in both registrations as shown in [Figure 2-6](#).

**Figure 2-6** Global Registry Item / Subscription Matching Process

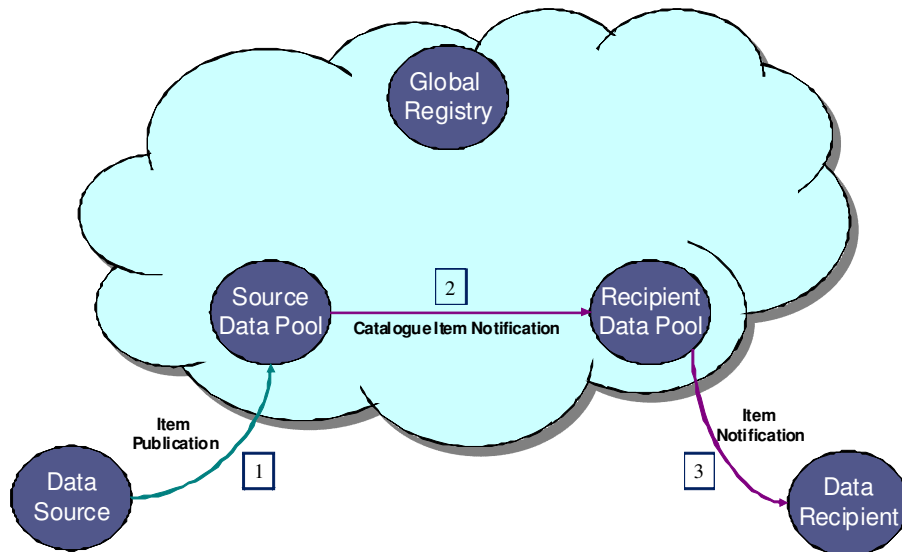


The result of a successful match is that the Global Registry sends this matched Catalogue Item Subscription to each and every Data Pool that has an Item registered that matches that specific subscription criteria.

### 2.3.4. Item Publication and Distribution

Once the Global Registry completes its matching process and sends the matched subscriptions out to the proper Source Data Pools, the Source Data Pools must then match the Item Publications to the received subscriptions. When a Data Source publishes its item information, the Source Data Pool creates a Catalogue Item Notification containing the total package of information about the item, which includes the whole hierarchy of products. Additionally, the Source Data Pool also adds this entry to its synchronisation list. This synchronisation list contains all items that have been published and what the result was for the synchronisation process as to whether or not the Data Recipient was interested in receiving updates to this information automatically with any future changes. This Catalogue Item Notification is sent directly from the Source Data Pool to the Recipient Data Pool. It does not go through the Global Registry, which has facilitated the connection but is not involved in the actual message exchange - as shown in [Figure 2-7](#).

**Figure 2-7** Item Data Distribution Process

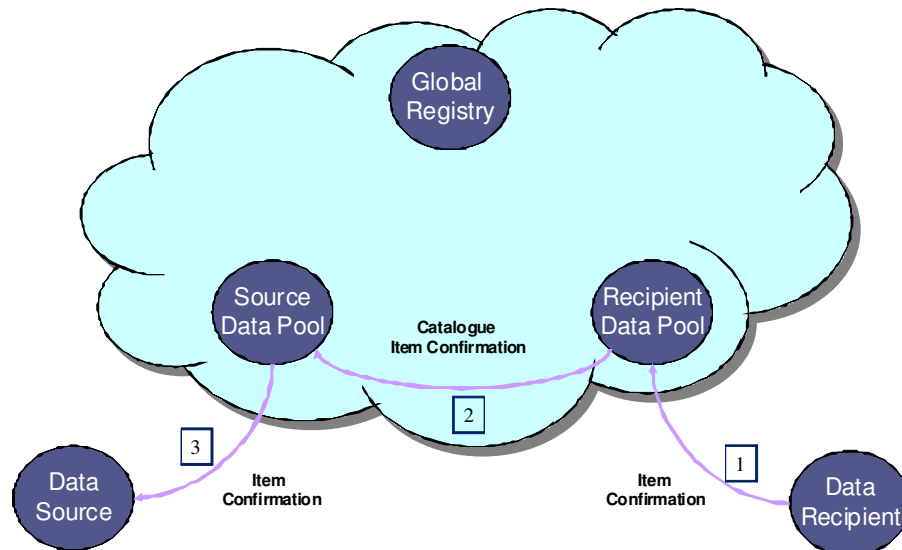


As previously mentioned, the in-network message, the Catalogue Item Notification is defined very strictly by the standards and all Data Pools must use the same messages and validations. The method by which the Data Source Publishes or the Data Recipient receives is dependent upon their choice of data pools and their mutual agreement. For example, it is possible to use a graphical user interface to publish information and receive information as well. This can also be done using existing EDI message sets that are not related to GDSN.

Once a Data Recipient receives the item information, a business decision must be made as to whether or not they want to continue to synchronise data with this Data Source. This decision is based on a number of factors related to the business relationship between the Data Recipient and the Data Source. Once this decision is made, it must be communicated through the GDSN back to the Data Source.

### 2.3.5. Catalogue Item Confirmation

When the Data Recipient makes the decision, the communication back to the Data Source is created and the Recipient Data Pool creates a message called a Catalogue Item Confirmation, as shown in [Figure 2-8](#).

**Figure 2-8** Catalogue Item Confirmation Process

This message contains the business decision on whether or not the Data Recipient will continue to synchronise the item information. The possible states that can be communicated in the message are:

- **Synchronised:** Data is integrated, synchronised and added to the synchronisation list
- **Accepted:** Data has been received by the Recipient, but no business decision has been made on the data.
- **Rejected:** Data will no longer be synchronised nor will updates be provided
- **Review:** Data Source to “review” data due to discrepant data received preventing synchronisation

If no confirmation is received, data updates will continue to be provided until the data recipient responds with a “rejected” state.

In addition to these Catalogue Item Confirmation States, if the data is put into a state of “reviewed” or “rejected”, the Data Recipient may respond back with a very specific set of responses that would indicate what exactly is wrong with the data and what process should be used to fix the problem and resend the correct information. The Catalogue Item Confirmation Status Codes List provides a code value and a description of what is wrong. The Corrective Action Code List provides the list of correction action codes in a Catalogue Item Confirmation response.

When the Source Data Pool receives this Catalogue Item Confirmation, it can then update the synchronisation list and can pass on the information to the Source Data Pool. This closes the loop and completes the data synchronisation process for the initial synchronisation of data. With the information contained in the synchronisation list, the Source Data Pool knows which Data Pools (and Data Recipients) will be sent any updates the item data that has already been synchronised. In this way, the item data always remains as up to date as possible.

### 2.3.6. Request for Catalogue Item Notification (RFCIN)

A Request for Catalogue Item Notification (RFCIN) functions very much like a normal Catalogue Item Subscription. However, this is a one-time request for the data to be (re)sent. The request for notification is not stored in the Global Registry after the matching process occurs. The RFCIN is only executed once and then discarded by the source data pool.

For Catalogue Items that were previously synchronised (e.g. in the synchronisation list) or rejected, the request for notification resets the confirmation status, that is that it removes the catalogue item from synchronisation list. The primary use for an RFCIN is to recover from a catastrophic failure of an internal system, where the item information must be rebuilt in that system.

## 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 at <http://www.gs1.org/productssolutions/gdsn/>.

In addition, a list of certified data pools is located at:

[http://www.gs1.org/docs/gdsn/gdsn\\_certified\\_data\\_pools.pdf](http://www.gs1.org/docs/gdsn/gdsn_certified_data_pools.pdf)

### 3.1. Data Pool 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 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.

### 3.2. GDSN 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.

Upon successful completion of the certification event, 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 / Beta Environment.

### 3.3. 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.

## 4. Use of XML in GS1 and GDSN

### 4.1. 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 architecture 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/ecom/xml/implementation/guide>

### 4.2. Standards Hosting

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

[http://www.gs1.org/gsmv/kc/ecom/xml/gdsn\\_grid](http://www.gs1.org/gsmv/kc/ecom/xml/gdsn_grid)

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

### 4.3. 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 2.7.3 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/2.7/>
- Production site: <http://www.gs1globalregistry.net/2.7/>

### 4.4. 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/2.7/schemas/sbdh/StandardBusinessDocumentHeader.xsd
urn:ean.ucc:2 http://www.gs1globalregistry.net/2.1/schemas/CatalogueItemNotificationProxy.xsd">
```

## 5. Message Transport

### 5.1. Communication Protocol

The EDI over the Internet Applicability Statement 2 (EDIINT 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/docs/gsm/EDIINT AS1 AS2 Transport Comm Guide i1.pdf>

## 6. GDSN Specifics

### 6.1. Validation Rules

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

[http://www.gs1.org/sites/default/files/docs/gsmpr/xml/2\\_7\\_0/BMS\\_GDSN\\_Validation\\_Rules\\_r2p7p0\\_i1.3.0\\_17\\_Feb\\_2010.xls](http://www.gs1.org/sites/default/files/docs/gsmpr/xml/2_7_0/BMS_GDSN_Validation_Rules_r2p7p0_i1.3.0_17_Feb_2010.xls)

All standard Error Message ID's and Error Messages MUST be used as defined in that document.

### 6.2. Target Market Specific Validations (TMSV)

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 6.1) 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 Registry Catalogue Item (RCI) determines which Target Market-specific validations that are performed against that RCI.
- Target Market-specific validations MUST be at the Target Market Country Code level (MUST NOT be at the Target Market Subdivision level).
- The Catalogue Item Notification (CIN) sent by the Source Data Pool MUST comply with all Target Market-specific validations.

### 6.3. UN/CEFACT Standard Business Document Header use in GDSN

The United Nations Centre for Trade Facilitation and Electronic Business (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 no matter what the transport 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.gs1.org/gsmpr/kc/ecom/xml/xml\\_sbdh](http://www.gs1.org/gsmpr/kc/ecom/xml/xml_sbdh)

#### 6.3.1. How to Use SBDH in GDSN

SBDH schemas used in GDSN are hosted and explained in Section 4.3, [GDSN XML Schemas](#) and section 4.4, [GDSN XML Instance Documents](#).

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

### 6.3.1.1. SBDH Usage Rules

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

- The Standard Business Document Header 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 '2.7' 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 are 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 6.7, [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 EDIINT 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 InstanceIdentifier 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 InstanceIdentifier 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 RequestingDocumentInstanceIdentifier element MUST match the value of the InstanceIdentifier 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.

### 6.3.1.2. 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 */
  /* PRIMARY MANDATORY MUST NOT USE CONTACT INFORMATION */
  .
    <sh:Identifier Authority="EAN.UCC">690314800007</sh:Identifier>
  </sh:Sender>
  /* 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>2.7</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>
  /* 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">220314800007</sh:Identifier>
    </sh:Sender>
    <sh:Receiver>                                   /* SAME AS SBDH SENDER IN THE REQUEST */
    <sh:Identifier Authority="EAN.UCC">690314800007</sh:Identifier>
    </sh:Receiver>
    <sh:DocumentIdentification>
      <sh:Standard>EAN.UCC</sh:Standard>
      <sh:TypeVersion>2.7</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>

```

## 6.4. 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 upon successful registration of a Registry Catalogue Item (RCI) or a Registry Party (RP).



**Note:** These differ slightly by how the responses reference the Identification of the Requesting Document (as opposed to the Requesting Transaction or Message).

**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 **CatalogItemRegistrationResponse** , **PartyRegistrationResponse**, and **EANUCCResponse**,

**Below 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 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. **CatalogItemRegistrationResponse:** Response identification MUST correspond to the document identification of the requesting message.
  - The uniqueCreatorIdentification element and the contentOwner element that are children of the documentReceived / responseIdentification element in a Positive Catalogue Item Registration 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 document element of the requesting message.
8. **PartyRegistrationResponse:** Response identification MUST correspond to the document identification of the requesting message.
  - The uniqueCreatorIdentification element and the contentOwner element that are children of the documentReceived / responseIdentification element in a Positive Party Registration 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 document element of the requesting message.
9. 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.
10. 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.
11. The **GDSNException** 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.
12. The recipient of the requesting message SHOULD return as many **GDSNExceptions** as discovered during processing the message regardless of these errors being at different levels (message, transaction, command, ...).
13. The recipient of the requesting message SHOULD return **GDSNExceptions** at the lowest level at which errors occurred.

## 6.5. Identifiers in GDSN

### 6.5.1. 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, etc. 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:restriction>
      </xsd:simpleType>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

```

                <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.

## 6.5.2. 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, etc.) 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 5.1 [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**.

## 6.6. 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 and send a GDSNException.

- ✔ **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.

## 6.7. 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.

## 6.8. 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”


## 6.9. 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

## 6.10. 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.
  - If the contents of the Attribute Value Pair Extension (AVP), and/or Extended Attributes, are not supported, it is the Recipient and/or Recipient Data Pool’s responsibility to ignore those contents. It should be understood, that the Data Source is not required to alter the message to satisfy any review comment as the same item may be sent to another recipient who can process these contents.
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.
3. If there is a functional way to use the production version of the schema to send standardised data, the data should not be sent in an additional, duplicated way in an Attribute Value Pair (AVP) extension.

## 6.11. GDSN Extensions – Single Instance / Same Extension

Within the GDSN, when data pools send extensions through the standard method, there is a limit to having only one instance of the same extension in any one message.

### The following rules are enforced for those GDSN messages:

1. Data pools MUST NOT fail (GDSN exception message) a GDSN message due solely to the existence of one instance of a well formed extension.
2. The receiving data pool MAY fail (GDSN exception message) a GDSN message within the network where there are more than instance of the same extension.

## 6.12. Deprecation of Attributes

During the course of standards development, attributes can become obsolete or merged with other attributes to create more flexible implementations to support a broader community of product.

Therefore, within a GDSN release an attribute can be deprecated from service, or more commonly, an attribute may be moved into a more open, standardized implementation.

A common example of an attribute moving into a more open and standardized implementation would be during the migration of an “industry-specific” set of attributes into an “industry neutral” implementation. When this occurs, both the old and new attributes can coexist physically within the schemas. In such a scenario, while the older attribute would be considered obsolete, it could still be physically populated without error.

The paragraphs below outline an agreement between GDSN-certified data pools on how to handle certain attribute support scenarios when involving the deprecation of attributes:

### 6.12.1. Deprecation Due to Obsolescence

This classification defines an attribute that will no longer functionally exist after a release. The network has no other requirements to support this attribute, and it is considered no longer relevant.

Since a physical schema element cannot be removed until a major release, the schema will still show the attribute for a given amount of time. In this scenario, data pools must no longer send this attribute into the network.

### 6.12.2. Deprecation Due to Standardization or Enhancement

This classification defines either an attribute where the initial implementation is either to be standardized now (e.g., an Extended Attribute moving into the Standard), or an attribute that is being moved from an industry-specific extension to a common industry-neutral set of core attributes.

Under this scenario, the original implementation of the attribute, regardless of location in the GDSN document, will be functionally changing and/or moving physically to another more accessible area of the GDSN document.

Since physical schema elements cannot be removed until a major release, the schema will still show the attribute in both its old location as well as its new location. This dual implementation often leads to confusion, unnecessary implementation costs, and data quality issues.

For any deprecation of an attribute, only the newest implementation should be communicated between data pools to reduce costs and confusion inside the network.

## 6.13. 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.

## 6.14. 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.

## 7. Document Retention

There is a requirement for certified GDSN Data Pools to archive the actual messages sent and received (Minimum Archive Period [MAP]) in the following manner:

- 12 months for ALL file traffic into and leaving a GDSN-certified Data Pool.
  - Pass-through messages would not need to be stored by the receiving Data Pool (on the basis that the originating Data Pool is archiving to the 12 month requirement). However, the initiating subscription message from the Data Recipient would be stored by the home data-pool; as would any response messages sent by Data Recipient from the home Data Pool to the originating Data Pool. Definition of 12 months (MAP):

For Example: Beginning the 1st of the current month in the prior year. So if today is 17th February 2010, then the Data Pool archive is Feb 1st 2009 to Feb 17th 2010. In other words, the archive period will be at least 12 months (approaching 13 months at times).

By keeping this definition of the archive period, all Data Pools are aligned.

## 8. Disaster Recovery (DR) Capabilities

The GDSN has a Disaster Recovery capability for implementation upon a catastrophic failure of the GDSN Production systems. The decision for a DR situation will be communicated across as many channels as possible as quickly as possible.

There are a series of Internet Protocol addresses (IP's) that the Data Pools must be aware of so that they can be incorporated in to their local firewalls. In the event of a GDSN Disaster Recovery situation, as declared by GDSN Inc, the network would cut over to the DR systems, which are currently in a different geographical location than the Production Servers. The DNS entries would change to these IP's. As long as these IP's are allowed in the firewalls at the Datapools, there should not be any issues getting the service to run from the DR sites (other than a possible Data Pool restart). Below is the link to the public IP's we will be using for the GDSN DR servers.

[http://www.gs1.org/docs/gdsn/GDSN\\_Disaster\\_Recovery\\_Site\\_2010April09.pdf](http://www.gs1.org/docs/gdsn/GDSN_Disaster_Recovery_Site_2010April09.pdf)

- ✔ **Note:** This information is presented for Certified Data Pools only and the information is contained within the Certified Data Pool Support Area, which requires authentication in order to access.

## 9. GPC Implementation and Integration in GDSN

### 9.1. GPC Implementation Process in GDSN

This section describes the process of GPC implementation in GDSN. This process also addresses the steps whereby a Trading Partner, or a Solution Partner on behalf of a Trading Partner, cannot find an appropriate GPC code.

A code **MUST** be supplied as it is mandatory in the network for a Registry Catalogue Item to be registered:

- The network will validate codes against the list in Production in the GDSN.
- Valid codes include any deployed GPC code or “99999999” which is a temporary code for Segments that either have not been developed or for new products that do not fit with the current schema
- The network will not/cannot validate if the code used is valid in context (i.e. this Brick code is valid for this product)
- The type of code assigned depends on the relationship between the trading partners (TP) and solutions providers (SP)
- The TP will make every attempt to find the correct code
- If the correct code cannot be found, they must use “99999999” until an appropriate code is made available
- The next step would be to submit a Work Request (through the Global Standards Management Process (GSMP), monitor the progress, and once an appropriate code is made available, update their system

The GPC schema can only evolve when Work Requests are received. Every Work Request is processed individually and so categories can evolve separately at any time. This is the driving force behind GPC’s publication release strategy which prohibits version numbers. Each publication is date stamped.

Updates to codes, once a product has been registered, are dependent on the Trading Partner and/or Solution Provider implementing changes as they are defined and published in the Delta reports. GDSN has a process for implementing GPC updates within the network. This means that GPC Brick Codes will not be implemented into GDSN as soon as they are released, but as per the publication cycle, usually within 6 months of publication.

## 9.2. GPC Integration Process into the GDSN

This section describes the process of GPC integrating GPC codes into the GDSN.

Upon completion of a GPC publication (twice per year) the GPC Service Provider sends the GDSN two files;

- XML Schema – A complete snapshot of all active nodes in all published standards in the GPC Schema at the point of publication. The purpose of this document is to provide a complete and correct view of what is contained in the GPC Schema at the point of publication.
- XML Delta – An XML document that contains all of the changes between the current and previous publications. The purpose of this document is to enable automatic changes/updates to GPC data contained in the GDSN.

GDSN will integrate/process the XML Delta document.

The XML Delta identifies changes to the GPC Schema by identifying the type of change using change codes and the level of change (Segment, Family, Class etc):

- Additions: The introduction of a new code. For every Addition the GDSN will add the new codes to their database.
- Modifications: When the code has NOT changed but the textual description HAS changed AND the definition has NOT changed. GPC Codes are NEVER modified and once deleted can never be re-used. If the Brick impacted has a significant definition change the normal process is to add new codes and Delete old codes.

- For every Modification the GDSN will update the descriptions of the codes impacted in their database.
- Marked for Deletion: Codes that are marked for deletion remain as part of the GPC schema; however; the codes should not be used to code any items that are newly registered. This is step one of the two-step process to delete GPC Codes. At the next GPC publication these GPC codes that are 'marked for deletion' will become 'physical deletions'. One of the activities that is completed by the GS1 Global Registry as part of this process is to produce a data pool by data pool report of all items and subscriptions that currently use the GPC codes that have been identified as 'marked for deletion'. The intention is to use the period between releases to correct the items or delete the impacted subscriptions. The GPC codes that are marked for deletion become the list of codes that become 'physical deletions' in the next publication.
- Physical Deletions: Codes that have previously been identified as being 'marked for deletion' in the previous GPC publication move to 'physically deleted' from the GPC schemas. As the Publication is deployed into Production in the GDSN, the deletions occur in the GS1 Global Registry. As a result, any validation rules based on the GPC Codes would not be able to reference these deleted codes. As part of the deployment process in the GS1 Global Registry, any remaining items or subscriptions in the GS1 Global Registry are purged so that any references to these items and subscriptions are no longer present.

## 10. References

Source	Description
GS1 GDSN Standards	The latest version of all the GDSN-based GS1 Standards can be found here: <a href="http://www.gs1.org/gsm/kc/ecom/xml/gdsn_grid">http://www.gs1.org/gsm/kc/ecom/xml/gdsn_grid</a>
GDSN Knowledge Center	The information contained in the GDSN Knowledge Center provides additional content for the GDSN and its components.  <a href="http://www.gs1.org/gsm/kc/gdsn">http://www.gs1.org/gsm/kc/gdsn</a>