



GLN in Healthcare Implementation Guide

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Contributors

Name	Organization
Bryan Sample	GS1 UK
Corwin Hee	Covidien
Steve Tadevich	McKesson
Tania Snioch	GS1 Australia
Dan Clark	GS1 Canada
Rita Laur	GS1 Canada
Pete Alvarez	GS1 Global Office

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1. Introduction

In order to ensure implementation consistency with other Global Location Number (GLN) implementation information, many existing GS1 sources have been used to create this document. As a trading partner, you should consult your local GS1 Member Organisation to determine if local sources of information and support exist. Visit the GS1 website for contact information for the local GS1 office http://www.gs1.org/about/our_offices.

This implementation guide does not set or modify the GS1 standard for GLNs. Refer to the GS1 General Specification and the GS1 Global Data Dictionary (GDD) for current standards and definitions.

1.1. Purpose of this document

This document serves as a general guide for the implementation of GLNs in healthcare and as a guide this document: assists the reader in understanding:

- What is a GLN
- How are GLNs applied and used
- The GLN data structure
- Steps for implementing GLNs

This document also provides additional information and links to other sources of information.

1.2. Who should use this document?

This document is intended for companies and their personnel who are responsible for assigning and implementing GLNs within the healthcare supply chain. For example:

- Manufacturers, Distributors, Group Purchasing Organisations (GPOs) and Healthcare Providers.
- Supply Chain & Information Technology Managers in the healthcare sector.
- National healthcare regulatory and standards bodies who govern healthcare supply chain and patient safety regulations.
- Information Technology (IT) Solution Providers in the areas of supply chain systems, finance and eProcurement systems, systems integration/ecommerce and clinical systems.
- Solution Providers and other organisations.

2. What Is A Global Location Number?

The GLN is a globally unique GS1 Identification Number that is used to identify any location in the supply chain that needs to be uniquely identified. The GLN may be used to identify both physical locations and legal entities.

For more information refer to the GS1 General Specifications via your local GS1 Member Organisation.

2.1. Physical Locations

These are locations with a single point of access with a physical address. Examples are:

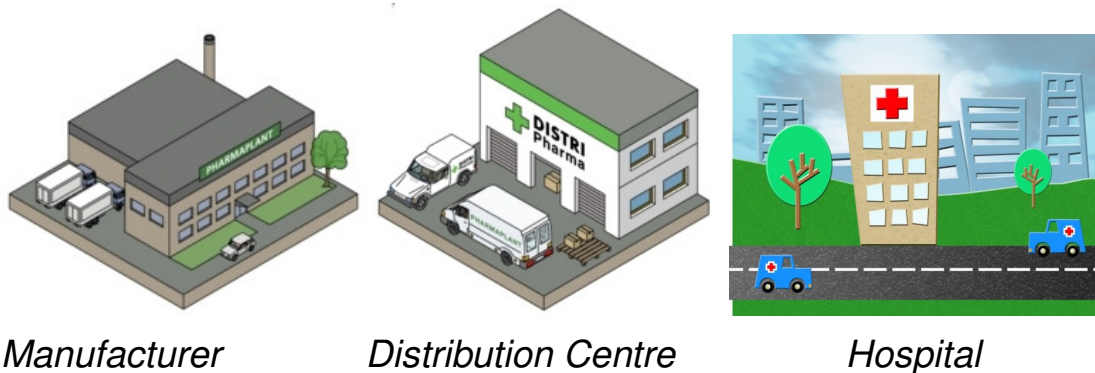
- A manufacturing location, a distribution centre or hospital
- A warehouse
- A specific dock within a warehouse
- A specific delivery location
- A specific shelf in a store room
- An operating theatre
- A storage cabinet
- A nurse's station
- A hospital ward

2.2. Legal Entities

These may be whole companies or subsidiaries. Examples of legal entities include are:

- Manufacturers
- Wholesalers
- GPOs
- Distributors
- Third party logistics
- Healthcare providers
- Hospitals

Figure 2-1 Illustration of Legal Entities in the Healthcare Supply Chain



For smaller organisations it may be sufficient to assign a single GLN at the highest level. The GLN may be used as a replacement for a custom account number or similar identifier such as supplier number, vendor number, trading partner number, etc. However, this will require collaboration with your trading partner well in advance of the transition from an existing custom account number to the GLN.

Larger, more complex organisations may have more than one GLN to represent different discrete entities and/or subsidiaries, for example:

- A hospital may have a separate GLN for its billing department.
- A hospital may have different GLNs for pharmacy, operating theatre and receiving departments.
- A medical device supplier may have different GLNs for its UK, German and French subsidiaries.

In these cases, it is important that there is no intelligence built into the structure of the GLN to represent a hierarchy as this makes GLNs difficult to maintain, reduces the flexibility of changing organisations and makes IT systems more expensive to maintain. GLN hierarchies should be built into a database for recording purposes. Please contact your local GS1 Member Organisation for additional information.

2.3. Why Are GLNs Used?

The GLN not only identifies a specific party or location, but also provides the link to the information pertaining to it (i.e., a database holding the GLN attributes). This is a key advantage of using a shared, globally unique identifier because all information can be held and maintained centrally in a database reducing the effort required to maintain and communicate information between multiple parties on a national or global basis.

This enables supply chain partners to simply reference a GLN in supply chain communications, as opposed to manually entering all of the necessary party/location information. Using a GLN to reference party/location information promotes efficiency, precision and accuracy in communicating and sharing location information.

A number of GS1 organisations have established or are in the process of establishing such databases to hold details of locations, including mapping the hierarchical relationship between individual locations. Please contact your local GS1 Member Organisation for details.

2.4. Example Uses of GLNs and Other GS1 Keys in Healthcare

As described above, the use of GLNs is flexible and wide ranging. Adoption of GLNs across the healthcare supply chain and within manufacturers, distribution centres and hospitals is imperative to deliver the benefits in terms of patient safety, product traceability and supply chain efficiency seen in other industries.

Described below are other GS1 Keys and examples of applications when used in the extended healthcare supply chain as shown in Figure 2-2. The examples of the GS1 Keys are not intended to be an exhaustive list but rather an illustration of potential opportunities.

- **GTIN (Global Trade Item Number)** used to identify trade items. Trade items are product or service upon which there is a need to retrieve pre-defined information and that may be priced, or ordered, or invoiced at any point in the supply chain. This key can be combined with other information on data carriers to uniquely identify a healthcare product along with a serial number, lot/batch number and expiry date and can be used for pharmaceutical products and medical devices. The GTIN is also used with the GDSN and for electronic commerce.

SSCC (Serial Shipping Container Code) used to identify logistic units. A logistics unit is an item of any composition established for transport and/or storage that needs to be managed through the supply chain. In the supply chain to easily identify logistics shipping units consisting of multiple products, enabling quick and easy identification, tracking of deliveries and receipt of goods. This key is used with a data carrier for automatic identification and data capture and in electronic commerce.

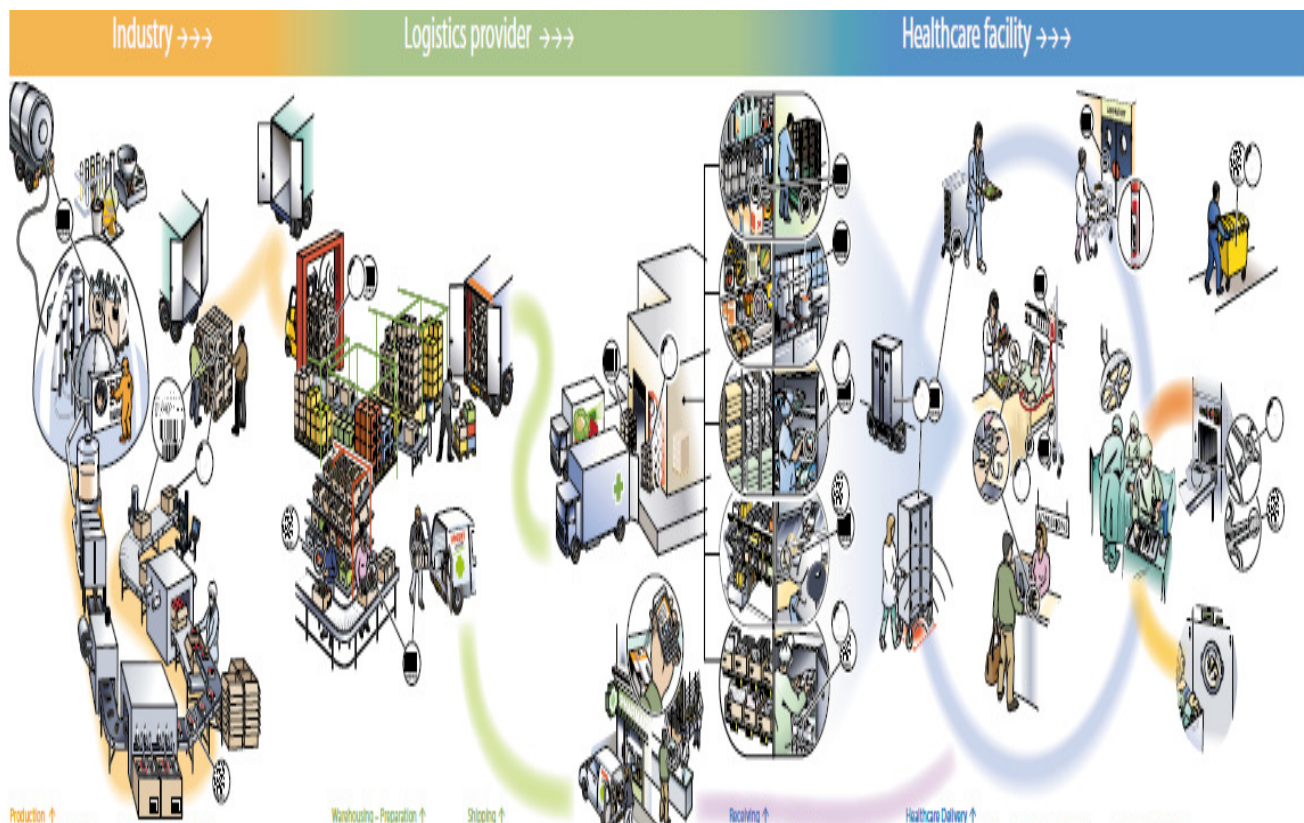
GRAI (Global Returnable Asset Identifier) used to identify returnable assets such as roll cages, tote boxes and parcels used to ship products into and among hospitals. This key

enables automatic identification and data capture to be used for tracking the movement of assets.

- **GIAI (Global Individual Asset Identifier)** used to identify an individual asset such as patient monitoring devices, infusion pumps and x-ray machines. This key enables automatic identification and data capture to be used for inventory control and management.
- **GDTI (Global Document Type Identifier)** used to identify a document type and could be used to identify medical documents such as patient records, prescriptions and discharge notices. This key enables automatic identification and data capture of records.
- **GSRN (Global Service Relation Number)** used to identify the relationship between service provider and service recipient. For example it could be used for the relationship between a hospital and services provided to a patient such as room charges, treatments, medical tests. This key enables automatic identification and data capture to be used for billing purposes.

More information on GS1 keys is available at www.gs1.org and by contacting your local GS1 Member Organisation.

Figure 2-2 Extended Healthcare Supply Chain



2.4.1. Multi-Industry Applications

2.4.1.1. GLNs in supply chain operations

The healthcare supply chain can be highly complex, particularly with products being able to follow multiple routes between the manufacturer and a hospital. Products can be delivered direct to an operating theatre by a manufacturer or go via a combination of importer, third party logistics provider, distributor and central stores. Other healthcare products may have to be delivered to the pharmacy department while computer and medical equipment may have to be configured or tested by the IT department before placed into storage or use.

GLNs can be used in such cases to uniquely identify individual delivery points and the final destination of a product. This information can be provided in electronic commerce messages as well as appearing on the shipping label in a data carrier.

This information can then be used, in conjunction with other GS1 Keys by external and internal supply chain operators to ensure that products are delivered to and stored in the correct location. This is essential as a particular item may be required urgently for an operation or other critical procedure and any delay in locating it may result in a patient safety issue.

This information is also critical for supporting product traceability and recall processes (see 2.4.2.1).

2.4.1.2. GLNs in eCommerce transactions

Use of GLNs is required in many types of electronic commerce transactions, and is most commonly used in conjunction with GTINs for purchasing, shipping and invoicing transactions. They can identify suppliers, purchasers, ship to and bill to locations. GLNs are increasingly important in healthcare transactions to ensure correct pricing is applied to specific customers and that ordering and delivery processes can become increasingly efficient, requiring minimal intervention from clinical staff.

2.4.1.3. GLNs in data synchronisation

When suppliers and their trading partners exchange item and/or price information about the products they trade, this process is called Data Synchronisation. The information exchanged for data synchronisation is non-transactional and includes the unique product identifier (GTIN) and additional information such as product descriptions, regulatory information, sizes and weights. This will ensure resulting purchasing transactions are based on accurate and complete information. GS1 provides a standard for data synchronisation via its Global Data Synchronisation Network (GDSN). The GDSN relies on the use of GLNs for unique identification of:

- Data source (provider of data to the GDSN)
- Data recipient (receiver of the data from the GDSN)
- The recipient of the price associated with an item (customer specific)

The use of GLNs in GDSN helps ensure that the right information gets to the right trading partner at the right time. This information is becoming more critical in the healthcare sector as product information becomes more complex and includes aspects such as the potency of a pharmaceutical product or whether a particular brand of examination glove contains Latex.

2.4.1.4. GLNs and Physical Location Marking

GLNs can be encoded in GS1 data carriers. This enables companies to mark the various locations throughout their facilities with GLNs for accurate identification (e.g., warehouse; production line, a fridge, a doctor's room, an operating theatre; etc.). Marking locations within a facility with GLNs enhances your systems by providing reliable and accurate location identification. Moreover, entering a

GLN into an IT system automatically using data carriers (as opposed to typing it in) enables users to record a GLN with as minimal manual intervention as possible, increasing both speed and accuracy.

When physically encoding a GLN in a bar code symbol, an Application Identifiers are used to indicate how the GLN is to be applied. For example, if a GLN is bar coded on a logistics label applied to a shipping unit, the organisation scanning the bar code needs to understand if the GLN is allocated to a ship to location or a ship from location. Application Identifiers provide this clarity.

For more information about Application Identifiers and GLNs see Section 5 of this guide.

2.4.2. Healthcare Applications

2.4.2.1. GLNs in product traceability and recall

It is increasingly important for companies in all sectors to be able to trace their products through the supply chain. This is particularly important in the pharmaceutical and medical devices sectors where product quality and contamination issues may have major implications for patient safety. Companies already have legal and regulatory obligations to trace and be able to recall their products if issues are identified. However, this is often difficult due to the complexity of the supply chain and the range of systems and processes in use.

The GS1 Traceability in Healthcare standard is available for adoption by regulatory authorities worldwide to provide a single global interoperable mechanism for traceability and recall. GLNs, in conjunction with GTINs and serialised product identifiers, are required to enable products to be traced across the supply chain, with each transfer of control or transfer of ownership identified by the GLN of the receiving party.

Manufacturers are also interested in using GLNs to identify each party handling their products in order to ensure the integrity of the product and to combat counterfeiting.

Finally, healthcare providers will be required to use GLNs in conjunction with GTIN and GSRN identifiers to ensure that products can be traced within a healthcare facility.

More information on the GS1 Traceability in Healthcare standard can be found at http://www.gs1.org/docs/gsmpt/traceability/Global_Traceability_Standard_Healthcare.pdf.

2.4.2.2. GLNs in patient safety applications

Within a facility, the GLN can be used to uniquely identify the location where a product is administered or used by a patient. This helps to insure that the correct product for the patient is used and, in the case of an adverse event to trace both the product and the patient.

2.4.2.3. GLNs in sterile equipment management

Effective decontamination and sterilisation of surgical instruments is a critical activity for every healthcare provider, in particular with recent cases of healthcare acquired infections (HAI) and cross-contamination of serious diseases such as variant Creutzfeldt-Jakob Disease (vCJD). This aspect has become even more important in recent years with hospitals outsourcing decontamination operations to specialist service providers who in turn often service a number of hospitals.

Many national healthcare regulators are mandating that each instrument and/or instrument tray must be uniquely identified and each use of the instruments and each decontamination activity recorded. GLNs are used to support this process by uniquely identifying the locations where instruments are used and stored such as Theatre instrument store rooms, operating theatres and sterile service providers, potentially even recording the location of the sterilisation machine used to perform the decontamination activity.

The use of GLNs in conjunction with GTINs (including serial numbers) and GIAs will:

- Improve traceability and more efficient management of surgical instruments
- Reduce errors and increase quality by more easily identifying missing or damaged instruments
- Avoid the migration of instruments from set to set
- Increase the efficiency of resources in instrument tray assembly operations
- Improve availability and usage of instruments

2.4.2.4. GLNs in medical asset management

Recent studies have highlighted the costs and inefficiencies which result in healthcare through the lack of visibility of the location of medical equipment. Clinical staff spends a lot of time looking for particular items of equipment such as wheelchairs, trolleys, patient monitors and infusion pumps. In addition, the lack of visibility leads to additional equipment being purchased or rented which increases costs and reduced asset utilisation.

An increasing number of healthcare facilities have implemented real time tracking of medical equipment using a combination of GIAI identifiers attached to the equipment in conjunction with RFID tags, wireless networks and GLN codes.

This combination could also be used to track other healthcare resources such as doctors, nurses and patients, subject to the required privacy and confidentiality considerations.


3. How Are GLNs Assigned?

In general, each organisation is responsible for assigning its own GLNs to the physical locations or legal entities for which that organisation has responsibility (a process known as allocation). In order to support them in that effort, the GS1 System provides clear, structured data standards and GLN Allocation Rules that organisations follow when allocating GLNs in order to ensure that their GLNs are globally unique and in a consistent format.

There are two basic steps for allocating GLNs:

1. First, a GS1 Member Organisation assigns a GS1 Company Prefix to their members (companies).
2. Second, the company assigns/generates their own GLNs (per business requirements) based on their GS1 Company Prefix and the GS1 standards and GLN Allocation Rules. Refer to the GS1 website for information on GLN allocation rules: www.gs1.org/glnrules

It is the assigning company's responsibility to keep their trading partners informed of numbers allocated and the corresponding data such as address and contact information that is associated with the location. If you have a GS1 Company Prefix then you can allocate your GLN location reference numbers.

- 
Note: Before assigning GLNs please contact your local GS1 Member Organisation to verify your ability to create GLNs.

In addition it may be possible to obtain an individual GLN number from your local GS1 Member Organisation. In some countries a national GLN Registry is administered by the local GS1 Member Organisation, or a third party, which houses GLN information including addresses and contacts.

Within the GS1 System the GLN and the Global Trade Item Number (GTIN) are two distinct data identifiers. There is no conflict when a GTIN and a GLN have the same digits; the data carrier (electronic data interchange, machine readable symbol, or radio frequency) will distinguish between the two identifiers. For example, when GLNs are used in Automatic Identification and Data Capture



(AIDC) and electronic data interchange (EDI), the context (Application Identifiers and qualifiers) will prevent any misinterpretation.

4. Implementing GLNs in Your Company

This section provides detailed, step by step instructions for implementing GLNs within your company. These steps involve critical areas such as establishing executive support, determining an enumeration strategy, forming cross-functional teams, creating internal and external communication strategies, initiating customer involvement, and establishing standard operating procedures.

4.1. Pre-requisite: checking location status

Many healthcare companies may already use GLNs in correspondence with other market verticals (sectors) such as retail customers, office equipment suppliers, or with another country. As a result, suppliers need to conduct some preliminary research before they begin the GLN implementation process. If you are not sure that your company already uses GLNs check with your GS1 Member Organisation to determine if your company has a GLN assigned and if your company is already enumerated in a local GLN Registry.


-  **Note:** GLNs already assigned in line with the GLN allocation rules, should not be changed simply because the model adopted by the company for the allocation and assignment of GLN has changed. This means, appropriate staff should communicate with all company divisions to source any existing GLNs and record these before undertaking subsequent GLN allocation.
-  **Note:** Not all countries have a GLN Registry, your local GS1 Member Organisation can provide more information.

Also due diligence and internal research can determine if and where GLNs are currently being used in your company, and who or what department is responsible for issuing them. For example:

- Does your company do any business in other sectors such as retail, grocery, hard lines, etc.? If so, many companies in this sector require GLNs from their suppliers. Your GS1 Member Organisation can provide assistance.
- Does your company use a GDSN data pool to access the Global Data Synchronisation Network (GDSN) in another sector? If so, GLNs for your company may have been registered there for data synchronization.
- Does your company do business in any other countries? If so, some countries require a GLN be provided as part of their national product data registry.

Once this research is complete, you need to determine if GLN enumeration has already been defined or a standard operating procedure created for the company. What exactly is “enumeration”? At a very basic level, enumeration is the establishment of a hierarchical view of how a company wants to represent itself, and the definition of GLNs for all of the locations and entities represented in that hierarchy. Enumeration involves the listing of all of the relevant addresses of a healthcare company/organisation within internal databases to share with customers in a GLN Registry and/or the GDSN. Even if your company has assigned a few GLNs, it may not have enumerated your corporate hierarchy.

4.2. Implementation steps

-  **Note:** Because each organisation varies, begin by reviewing all of the implementation steps in their entirety, and then decide where to start based on your organisation’s current GLN

implementation status as well as your organisational requirements and priorities. The benefit a company realizes initially varies depending on the requirements of their customers and their internal system readiness. Some suppliers believe that roster alignment is of initial benefit. Some companies initially start with transactions based on their customer requirements.

The following steps are provided as a general guideline.

Step One: Establish Executive Support

The goal is to inform and educate executive management on standards adoption and the need for industry-wide implementation, and to obtain executive approval to proceed with GLN implementation. Many times this step is initiated in response to external pressures like a “Dear Supplier” letter from a major customer or an industry initiative to adopt GS1 standards. As with any project that will impact the business processes of the organisation, the support of senior management is critical. Many managers may already be familiar with the term GLN through dialogues with your customers.

Step Two: Form a GLN Management Advisory Group

The goal is to establish an Advisory Group. Formation of a cross-functional Group including members outside of supply chain functions promotes buy-in, supports communication efforts, and ensures proper input from the areas most impacted by implementation.

Step Three: Determine if a GLN Registry Exists in your Country

The goal is to determine if a GLN Registry exists in the country in which you operate. There must be one person (i.e., the Primary Point of Contact) that has the primary responsibility to build and load the hierarchy in the GLN Registry. Contact your local GS1 Member Organisation to determine if a national GLN registry exists.

Step Four: Develop & Initiate Project Communication

The goal is to inform your community of your commitment to GLN implementation. Utilize internal communication tools such as newsletters and intranet to introduce the concept and benefits of the GLN, and the GLN Registry for Healthcare if it exists, to your company, and external communication tools like websites and corporate letters for your customers and suppliers. The Advisory Group member from Public Relations should be enlisted in this effort. This effort should announce that your company is readying to use GLNs in both its external and internal communications.

Step Five: Initiate Education for the Advisory Group & Operational Team

The goal is to educate company participants. A base level of knowledge about GLNs, the GLN Registry, GS1 Healthcare and GS1 standards is necessary for all active participants.

Step Six: Assess Information System Issues & Make Necessary Changes

The goal is to evaluate the readiness of your information systems, and make the appropriate system changes required to accommodate the use of GLN. The capability of your information system to contain and utilize GLN numbers must be assessed, and the necessary changes made. The necessity of parallel files between the old location numbers and GLNs must be discussed. Determine if a local “GLN sunrise date” has been determined by your national healthcare user community. A GLN Sunrise date means an agreement by the national GS1 Healthcare community to start to use GLN.

Step Seven: Identify/Allocate Your GLNs

The goal is to allocate your GLNs. In this effort, you must consider your company’s GLN strategy and current customer requirements and then align the two. Specifically, you must determine:

- Whether your company will allocate GLNs to the main corporate address only, or to divisions, departments, receiving locations, etc. as well.

- How your organisation will manage the issuing / allocation of GLNs and associated record keeping, i.e., will these two functions be undertaken by a central entity within the organisation, in a distributed manner by different regional branches or in a hybrid model.

This decision should be made as part of your company's overall business plan. If your company has not yet made a firm decision as to GLN strategy, it is recommended that you use the GLN assigned to corporate, and then assign others as the strategy develops and as business needs dictate. The GS1 Member Organisations provide tools to support users in allocating GLNs and defining the associated attributes.

- ✔ **Note:** Companies may be issued GLNs by their local GS1 Member Organisation. These should be recorded as part of the process regardless methodology a company engages for the management of their GLNs.
- ✔ **Note:** It is important to repeat that no intelligence should be built into the structure of the GLN to represent a hierarchy.
- ✔ **Note:** These recommendations do not apply in the case of mergers and acquisitions of companies. Refer to GLN allocation rules for further information.

Centralised and Distributed GLN allocation and record keeping options.

There are two ways companies can manage the allocation and record keeping of their GLNs:

- **Distributed GLN Management**
Distributed issuing / allocation means that company divisions are empowered to allocate GLNs from the GS1 Company Prefix(es) allocated to these divisions by the GS1 Member Organisation(s). There should be a requirement that those divisions provide, to the staff responsible for GLN record keeping, information about these GLNs.
- **Centralised GLN Management**
Centralised issuing / allocation means that GS1 Company Prefix(es) are used for company-wide GLN allocation, and allocation is undertaken by the staff responsible for centralised GLN record keeping who then communicate these GLNs to the relevant company divisions.

Both methods of issuing / allocation are equally acceptable and the decision regarding which is most appropriate will depend on company structure and will vary between companies. It is also possible that the allocation of GLNs is managed using the distributed methodology but the records are maintained centrally depending on company capabilities and systems.

- ! **Important:** Companies may start with one methodology and move to the other depending on the strategy and structure of the organisation. In the event that a company decides to create a centralized model within their business they need to understand current GLN allocation processes and ensure integrity of current GLN records is not impacted.

Best Practice Recommendations for GLN Allocation:

- GLNs already assigned in line with the GLN allocation rules, should not be changed simply because the model adopted by the company for the allocation and assignment of GLN has changed. This means, appropriate staff should communicate with all company divisions to source any existing GLNs and record these.
- New GLNs can be assigned centrally or in a distributed manner based on the preference of the company.
- Any GS1 Company Prefix should be able to be used to create GLNs for use anywhere in the world.

- One of the fundamental principles of the GS1 System states that there should only be one GLN for a physical location or party, therefore there will never be two or more GLNs used to identify a physical location or party. If there is ever an instance where there are multiple GLNs for one location or party, the company must select one of the existing GLNs and phase-out the other. This will involve communicating the migration to all affected parties who are using the existing GLN.

Step Eight: Establish Implementation Strategy

The goal is to establish a GLN utilisation strategy and corresponding hierarchal organisational chart (e.g., warehouse system hierarchy; divisional hierarchy; etc). The establishment of your organisation's GLN hierarchy is a critical step in the implementation process. It is necessary to consider not only how business is currently conducted, but also future business processes and supply system possibilities. In order to do that, current and possible distribution and billing systems must be clearly understood. It should be noted that implementation and use of GLN in healthcare is an on-going process.

Step Nine: Build Your GLN Database

The goal is to build an internal database to house GLNs and to enter the company GLNs into the GLN Registry if applicable. Specific information for each location that has been identified for enumeration must be gathered for this effort.

Step Ten: Engage Customer & Supplier Involvement

The goal is to prepare your customers or suppliers community and identify partner(s) for testing. This is the most important step in this process. Collaboration and communication with your customers and suppliers is critical to implementation success. So, now that an implementation plan and initial hierarchy has been established, review recent use cases and engage strategic partners in a process of communication about your company's plans. It is recommended that a trusted partner be selected first to align the initial implementation.

Step Eleven: Conduct Transactional Testing With Customers & Suppliers

The goal is to successfully exchange purchase transactions with your customers and suppliers. At this point, you are ready to conduct transactional tests. The testing process will provide validation of the initial hierarchy, information system capabilities and operational impact.

Step Twelve: Make Adjustments to Initial GLN Hierarchy & Implementation Plan

The goal is to keep the hierarchy consistent with your company's business model and to ensure that it remains accurate in order to obtain maximum benefit and to ensure accurate delivery locations. This is an iterative process based on your transactional testing with customers and suppliers.

Step Thirteen: Create Standard Operating Procedures

The goal is to document standard operating procedures and obtain sign off, both internally and externally. Following testing and the implementation of the necessary adjustments, it is necessary to prepare standard operating procedures for internal and external staff. The Advisory Group and Operational Team should be heavily involved in this process. Several areas to consider when establishing a standard operating procedure include:

- Establishing the owners of GLNs for your company.
- Procedures for the transition of roles due to a personnel change within the company.
- Procedures for adding and deleting locations within the GLN Registry. This may include signoffs needed by executive management for command and control purposes.

- Establishing a consistent enumeration and hierarchy strategy for your company. For example: at what level should all Deliver To addresses be displayed; at what level should supplier reporting occur for your organisation.

5. Additional Useful Information

5.1. GS1 Member Organisations

Your local GS1 Member Organisation is primary contact for information on the benefits that GLN can deliver to your business. In addition they will be able to provide you with further information on all of GS1 standards. Full details can be found on: <http://www.gs1.org/contact/worldwide.php>

5.2. GS1 Global Office

- Further information on all GS1 standards is available on the GS1 Global site: <http://www.gs1.org/>
- The GLN Allocation Rules Where you can find all the details about how GLN can work in your business and when the number should change: <http://www.gs1.org/glnrules/>

5.3. GS1 Healthcare

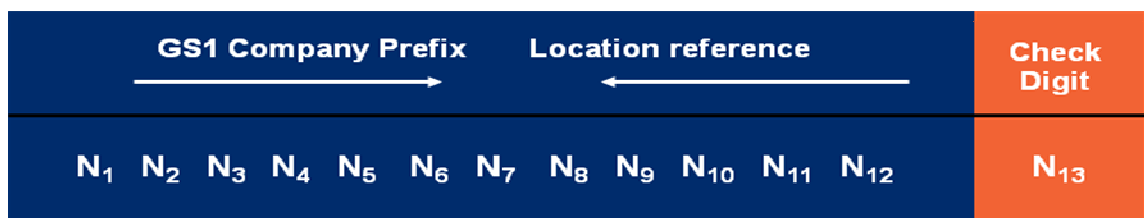
Further information on all GS1 Healthcare is available from the GS1 Global site under Sectors & Collaborations or at <http://www.gs1.org/healthcare>

5.4. GLN structure

It is also important to understand the data structure of the GLN. The GLN data structure is a 13-digit number comprised of three basic segments:

- **GS1 Company Prefix:** The globally unique number assigned to a company by GS1 Member Organisations. The GS1 Company Prefix is part of the data structure for all GS1 Identifiers (e.g., GLN, GTIN, etc.) and provides the foundation for generating all GS1 Identification keys.
- **Location Reference:** A number assigned by the organisation to which the GS1 Company Prefix has been assigned to uniquely identify a location or the organisation itself (e.g. a GLN assigned to the corporate entity).
- **Check Digit:** A modulo-10 number calculated across the preceding digits to ensure data integrity (Contact your local GS1 Member Organisation for more information on calculating the check digit for GLNs).

Figure 5-1 Data Format for a GLN



- ✔ **Note:** When considering the data structure and the assignment of GLNs, it is strongly suggested that you **do not build intelligence into the GLN**. The GS1 system provides this data structure for the identification of locations and the number must be used in its entirety and not broken into constituent parts.

5.5. Application Identifiers and Extensions

The GS1 system has two components that provide additional functionality to the GLNs. One is the assignment of Application Identifiers (AIs) for trading partner applications and the other is an optional AI for internal use as described in 5.4.1 and 5.4.2.

5.5.1. GLN Application Identifiers

The GS1 system contains standards for a range of Application Identifiers which function as triggers when information is bar coded in GS1 bar codes. These application identifiers function to tell the software application what information follows the AI, and the software therefore knows how to handle that information, ie, which database field to store the information in. There are a number of application identifiers relevant to GLNs, being:

- AI (410): Ship to-Deliver to GLN
 - This is the address of the location where goods are to be delivered.
- AI (411): Bill to – Invoice to GLN
 - This is the addressee of an invoice or bill.
- AI (412): Purchase from GLN
 - This is the location of the company from which a product or service was purchased.
 - AI (413): Ship for – Deliver for – Forward to GLN
 - This is used by a consignee to determine the internal or subsequent destination of a physical unit.
- AI (414): GLN of a physical location
 - This is the location of a physical location such as a door, room or control point.

5.5.2. GLN Extension

An AI, AI (254) GLN Extension, is an optional AI for restricted internal purposes. It may be used to identify internal physical locations within a location which is identified with a GLN such as stores, factories and buildings. Although optional, when used, AI (254) must be used in conjunction with AI (414), Identification of a Physical Location.

The GLN Extension will not be communicated with trading partners except by mutual agreement and has been developed in expectation that it will become an important business requirement when used with RFID tags and the EPC Network. Locations that currently have a GLN may also use an optional GLN Extension component to distinguish unique locations (storage slots, door locations, bin storage, shelves, peg holes, rack, cabinet, computer/communication bays, etc. However, a company may choose to assign a unique GLN without an Extension component as a way to identify these locations.