GS1 Healthcare US®

HEALTHCARE PROVIDER TOOL KIT

Global Location Number (GLN)

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Executive Summary

The purpose of this document is to provide guidance to healthcare providers about the need for standardized party and location identification in order to support patient safety and supply chain management. To that end, it introduces and explains the GS1 Global Location Number (GLN) and the GLN Registry™, and describes how they facilitate reliable and efficient management of precise location information. In addition, the benefits to both patient safety and supply chain management are discussed, and a model for how to assess GLN ROI for your organization is included as well. Finally, this document provides detailed steps for implementing GLNs in your organization.

Using this document, you will better understand how the current use of multiple proprietary numbers is error-prone and inefficient, and how use of GLNs for party/location identification will best fulfill your need for reliable party/location information in order to support patient safety and effective supply chain management. And, using this document, you will learn how to get that effort underway today!

About GS1®

ABOUT GS1

GS1® is a neutral, not-for-profit, global organization that develops and maintains the most widely-used supply chain standards system in the world. GS1 Standards improve the efficiency, safety, and visibility of supply chains across multiple sectors. With local Member Organizations in over 110 countries, GS1 engages with communities of trading partners, industry organizations, governments, and technology providers to understand and respond to their business needs through the adoption and implementation of global standards. GS1 is driven by over a million user companies, which execute more than six billion transactions daily in 150 countries using GS1 Standards.

ABOUT GS1 US

GS1 US, a member of the global information standards organization GS1®, brings industry communities together to solve supply-chain problems through the adoption and implementation of GS1 Standards. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading-partner collaboration and for maximizing the cost effectiveness, speed, visibility, security and sustainability of their business processes. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code (EPC®)-enabled RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®). www.GS1US.org.

ABOUT GS1 HEALTHCARE

GS1 Healthcare is a global, voluntary healthcare user group developing global standards for the healthcare supply chain and advancing global harmonization. GS1 Healthcare consists of participants from all stakeholders of the healthcare supply chain: manufacturers, wholesalers & distributors, as well as hospitals and pharmacy retailers. GS1 Healthcare also maintains close contacts with regulatory agencies and trade organizations worldwide. GS1 Healthcare drives the development of GS1 Standards and solutions to meet the needs of the global healthcare industry, and promotes the effective utilization and implementation of global standards in the healthcare industry through local support initiatives like GS1 Healthcare US in the United States.

ABOUT GS1 HEALTHCARE US

GS1 Healthcare US® is an industry group that focuses on driving the adoption and implementation of GS1 Standards in the healthcare industry in the United States to improve patient safety and supply chain efficiency. GS1 Healthcare US brings together members from all segments of the healthcare industry to address the supply chain issues that most impact healthcare in the United States. Facilitated by GS1 US, GS1 Healthcare US is one of over 30 local GS1 Healthcare user groups around the world that supports the adoption and implementation of global standards developed by GS1.

Introduction to Standards

Trading partners in the healthcare supply chain need to share many and complex pieces of data in order to transact business and support their work. For example, manufacturers and distributors need to communicate product information and company location, and hospitals need to share location information. In order to be efficient and effective in that effort, a common language and globally accepted standards are essential. Without such standards, supply chain partners face high, unnecessary costs due to inaccurate data and supply chain information inefficiencies.

Unfortunately, the healthcare industry has experienced the harsh reality of this lesson. In the first comprehensive analysis of this topic in 1996, the *Efficient Healthcare Consumer Response* study found that $11 billion is wasted each year in the healthcare supply chain primarily because data standards are either entirely lacking or not as widely used or well-developed as in other industries[1] Worse yet, a groundbreaking report on patient safety issues by the Institute of Medicine in 1999 cited staggering statistics about medical error, and found that hand written reports or notes, manual order entry, non-standard abbreviations and poor legibility lead to substantial errors and injuries.[2] Those findings and conclusions were reinforced five years later when the authors of that groundbreaking report revisited the status of the healthcare system and once again echoed their findings of widespread systemic problems.[3]

In response, a movement has been building in the healthcare supply chain to adopt and implement data standards to support patient safety and improve supply chain management. A growing number of companies, hospitals and healthcare organizations have chosen the GS1 System to help them improve collaboration with their supply chain partners. For over thirty-five years, the GS1 System has provided globally accepted identifiers and a common language for the communication of supply chain information about products, services and locations.

> The GS1 System is the most widely used supply chain standards system in the world, utilized in twenty-three sectors and industries including GS1's core sectors of Healthcare and Fast Moving Consumer Goods (FMCG), as well as Transport, Defense and many others.

Why Are Standards Necessary?

Healthcare providers need to communicate product and location information with their supply chain partners, and with the various sites and departments within their own enterprise. Without a common language and globally accepted standards, healthcare providers, companies and/or industry associations are left to develop their own identifiers and data formats, resulting in numerous proprietary "standards" for healthcare providers and companies to manage. However, as discussed in the *Efficient Healthcare Consumer Response* study, this is the cause of billions of dollars of waste in the healthcare industry. Moreover, the existence of numerous "standards" causes supply chain inefficiencies and inaccurate data that inserts cost and confusion into healthcare business processes, threatening quality of care and patient safety.

This is why global standards are so important. Global standards provide simplicity and consistency by promoting universal applicability and optimal functionality across the globe for all industry sectors. In today's complex markets, supply chain lines are blurring and channels of distribution for various sectors are overlapping.

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[1] *Efficient Healthcare Consumer Response (EHCR), Improving the Efficiency of the Healthcare Supply Chain*, November 1996. Produced by CSC Consulting, Inc. Copyright 1996, American Society for Healthcare Materials Management, Health Industry Business Communications Council, Health Industry Distributors Association, National Wholesale Druggists' Association, and GS1 US (formerly the Uniform Code Council), jointly and severally.

[2] To Err Is Human: Building a Safer Health System. Institute of Medicine (1999). The National Academies Press.

[3] Lucian L. Leape, M.D., Donald M. Berwick, M.D., *Five Years After To Err Is Human: What Have We Learned?*, Journal of the American Medical Association, May 18, 2005, 293 (19): 2384–90.

This is especially true of the healthcare industry where manufacturers of healthcare products often supply both hospitals and consumer goods retailers; pharmacies and hospitals purchase consumer goods as well as healthcare products; and the pharmaceutical supply chain has expanded to include supermarkets and consumer goods retailers in addition to traditional pharmacies. Global standards that can be used by all supply chain partners, independent of industry sector or location, are essential in this environment.

Global standards support healthcare business processes and can bring about many benefits for patient safety and supply chain management, such as:

- Reduction in medication errors through efficient automatic identification: *the right product for the right patient at the right time through the right route and in the right dose*

- Efficient traceability

- Efficient product authentication

- Less time spent on manual documentation, leaving more time to consult directly with patients

- Cost reduction through increased supply chain efficiency

- Improved order and invoice process

- Optimized receiving

- Reduced inventory

- Increased productivity

- Improved product recall

- Improved shelf management

- Improved service levels/fill rate

- Improved benchmarking and management of supply cost

- Elimination of the need for re-labeling and proprietary codes

- Regulatory compliance (where applicable)

About the Standards

The GS1 System is an integrated suite of global standards that provides for accurate identification and communication of information regarding products, assets, services and locations. Using GS1 Identification Numbers, companies and organizations around the world are able to globally and uniquely identify *physical things* like trade items, assets, logistic units and physical locations, as well as *logical things* like corporations or a service relationship between provider and recipient. When this powerful identification system is combined with the Global Data Synchronization Network (GDSN), the connection is made between these physical or logical things and the information the supply chain needs about them.

Global Location Number (GLN)

The Global Location Number (GLN) is the globally unique GS1 Identification Number for locations and supply chain partners. The GLN can be used to identify a *functional entity* (like a hospital pharmacy or accounting department), a *physical entity* (like a warehouse or hospital wing or even a nursing station), or a *legal entity* (like a health system corporation). The attributes defined for each GLN (e.g., name, address, class of trade, etc.) help users to ensure that each GLN is specific to one, very precise location within the world.

Global Trade Item Number® (GTIN®)

The Global Trade Item Number® (GTIN) is the globally unique GS1 Identification Number used to identify "trade items" (i.e., products and services that may be priced, ordered or invoiced at any point in the supply chain). GTINs are assigned by the brand owner of the product, and are used to identify products as they move through the global supply chain to the hospital or ultimate end user. The attributes defined for each GTIN (e.g., size, weight, packaging, etc.) help users to ensure that each GTIN is specific to one, very precise trading unit configuration (e.g., a blister of two aspirin tablets; a bottle of 100 aspirin tablets; etc.).

Global Data Synchronization Network® (GDSN®)

Each user not only defines and maintains its own GLNs and GTINs with their associated attributes, but is also responsible for sharing this information with its supply chain partners. To support those efforts, the Global Data Synchronization Network (GDSN) provides an efficient and effective approach to (1) storing GS1 Identifiers with their associated attributes, (2) checking to make sure that the identifiers and attributes are properly defined and formatted, and (3) sharing that information with supply chain partners. The GDSN offers a continuous, automated approach to data management that ensures that supply chain information is identical among trading partners, increasing data accuracy and driving costs out of the supply chain.

United Nations Standard Products and Services Code® (UNSPSC®)

The United Nations Standard Products and Services Code® (UNSPSC®) is a hierarchical set of product categories used by supply chain partners worldwide to classify their products and services. The UNSPSC provides a single, global classification system for all products and services in all industry sectors. Use of the UNSPSC enhances company-wide visibility of spending analysis, and promotes cost-effective procurement. As a result, the UNSPSC is used extensively around the world in electronic catalogs, search engines, procurement application systems and accounting systems.

## How Do the GS1 Standards Relate to Each Other?

GS1 Identification Numbers provide the link between an object and the information pertaining to it. When a user assigns a GS1 Identification Number, they define a set of standardized information (*known as attributes*) about the object to which that identifier relates (e.g., size, weight, location, etc.) The GS1 System specifies the list of attributes that must be defined for each GS1 Identifier, and provides a precise definition as well as acceptable values and data formats for each attribute. Standardized attributes about *products* include core data like selling unit, item dimensions, and UNSPSC product classification. Standardized attributes about *commercial entities* include core data like location information about a warehouse or hospital. Once defined by the user, those attributes are then stored in a GDSN-certified Data Pool and shared with supply chain partners using the GDSN. Through this process, GS1 Identification Numbers not only identify an object, but also provide a link to information about that object.

That linkage is tremendously valuable. In fact, twenty-three industry sectors have used GS1 GTINs, GLNs and the GDSN as the foundation for a wide range of efficiency building solutions that have improved their operations and supported their business processes for decades. Likewise, with GTINs, GLNs and the GDSN, healthcare providers can lay the foundation for a wide range of solutions to enhance patient safety and supply chain management within their facilities and across their organizations, as demonstrated in the illustration below.

As shown, patient safety and supply chain efficiency are the ultimate goals (*shown as the roof of the house).* There are numerous and ever-evolving tools to support providers in improving patient safety and supply chain management (*shown as the pillars supporting the roof*). However, in order to work, those applications must be

built on a strong foundation. This is where the standards come into play. Standardized product identification, standardized location identification and standardized product definitions (*shown as the foundation of the house*) provide the foundation for developing the tools and applications that healthcare providers use to improve patient safety and supply chain management.

Figure 1: Building Patient Safety

GS1 Healthcare® US
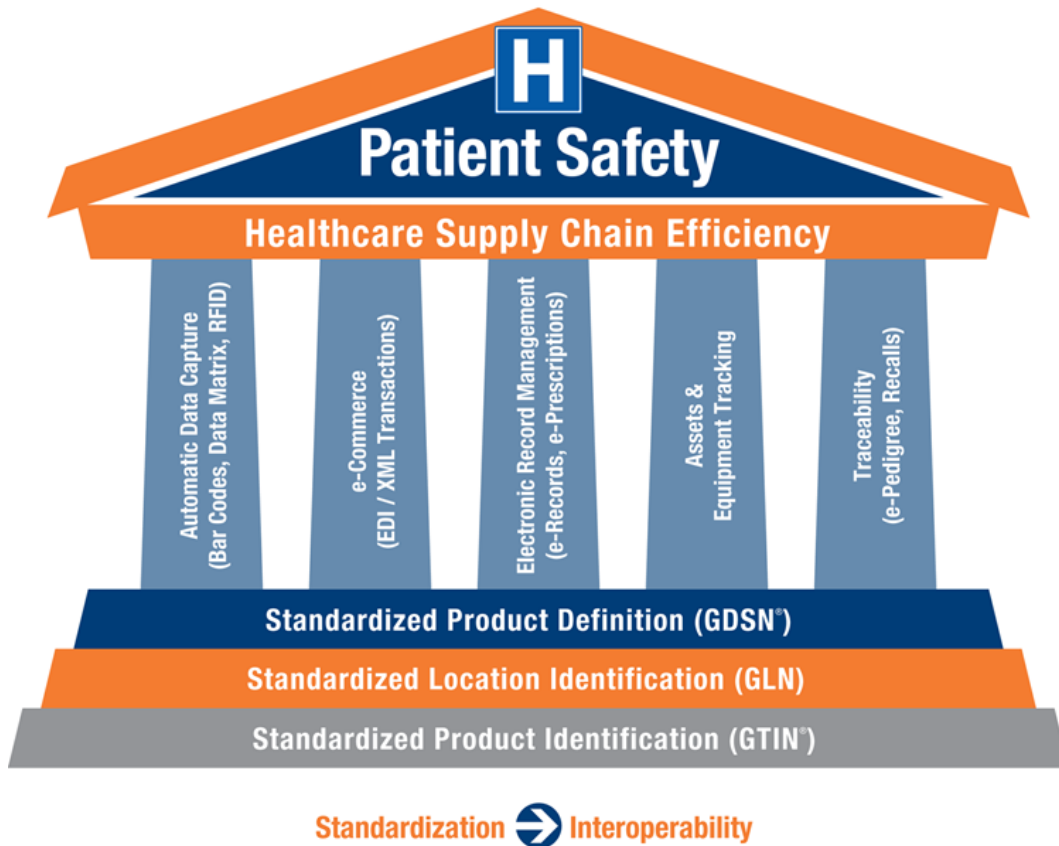
Problem: Supply chain partners use different Organization and Location IDs.
Example: Manufacturer uses GLN. Distributor uses DUNS number. Hospital uses its own proprietary identification system. This causes rebates and claims to be misapplied and/or lost, and frustrates direct deliveries in the facility.
Healthcare Industry Solution: Global Location Number (GLN)

Problem: The same product has different identification numbers assigned to it.
Example: Nearly every hospital has a different Product ID for 3M Item #8630 -- making proper product identification, ordering and recalls difficult.
Healthcare Industry Solution: Global Trade Item Number (GTIN)

Problem: The same identification number is assigned to different products.
Example: "Part Number 10313" refers to several different manufacturers/items. This increases errors in ordering and distribution to patients, and makes sourcing of needed products difficult.
Healthcare Industry Solution: Global Trade Item Number (GTIN)

Problem: There is no standard for unit of measure and no distinct identifier for different product packaging levels.
Example: You may order "50" and receive 500 because they are sold in units of 10, or you may order 20 "cases" and receive 20 "boxes." This results in inventories of wrong products and increased returns processing, driving up costs and creating cash flow issues.
Healthcare Industry Solution: GTIN Allocation Rules for Product Hierarchy and Package Measurement

Problem: No central source of party/location and product information.
Example: The numerous systems across the healthcare facility (e.g., inventory systems, billing/accounts payable, Barcode Point of Care (BPOC) systems, prescription drug systems, etc.) each have their own database. This is a problem because there is no way to ensure that the information used in one system is the same as the information used in another.
Healthcare Industry Solution: Global Data Synchronization Network (GDSN)

Problem: No standards for classifying or grouping products in order to analyze spending activities.
Example: Providers need to manage their purchasing volume with suppliers in order to achieve the best pricing for which the hospital is eligible. However, most provider systems are not structured to provide insight into purchasing activities and patterns based on product categories, products and/or vendors.
Healthcare Industry Solution: *United Nations Standard Products & Services Code (UNSPSC)*

The Case for Global Location Numbers (GLNs)

The Problem: Location Identification

American healthcare is not a static environment. Doctors relocate. Hospitals add new wings and rooms, move their entire organization from one city to another, or are merged and close redundant departments. Although the participants and organizations change over time, healthcare supply chain partners need up-to-date, accurate location information about their partners everyday. Unfortunately, this information is not always readily available.

Healthcare providers are often structured with a parent corporation (e.g., a health system corporation) that has numerous corporate affiliates under their corporate umbrella (e.g., numerous affiliated hospitals). In addition, even those hospital affiliates may sub-contract out certain functions to other corporate entities (e.g., food services; billing; etc.). Supply chain partners may know who the provider organization is, but may not be aware of all of the corporate relationships and specific locations. However, supply chain partners need location information for the specific group with whom they work – not just the corporate parent or even the affiliate hospital. As a result, general corporate location information is not an adequate resource for the precise location information needed for supply chain partners.

Moreover, the level of location information required by supply chain partners can vary depending on sourcing model. For example, one hospital may use a *Central Stock* sourcing model where all deliveries are made to one receiving point in the hospital, and then the hospital distributes the supplies to its various departments as needed. Another hospital may use a *Just In Time* sourcing model where supply chain partners deliver directly to various departments and locations within the hospital. And yet other hospitals may use a hybrid sourcing model in which some supplies are delivered to a central receiving point, and others are delivered directly to user locations. These examples illustrate how the various sourcing models affect the level of location information needed. Under a *Central Stock* model, supply chain partners only need the location information for the hospital's central receiving point. However, under a *Just In Time* model, supply chain partners would need location information for each of the receiving points to whom they deliver. And under a hybrid model, supply chain partners would need location information for the hospital's central receiving point, as well as for each of the direct delivery points in the hospital.

Accurate location information is not only essential for supply chain partners, but also for group purchasing organizations (GPOs). If a healthcare organization is associated with a GPO, it is crucial that the GPO roster of hospitals contain all of the necessary location information in order to ensure that accurate, consistent location information is being sent to distributors and manufacturers. Nonetheless, many GPOs encounter the same problems in managing location information in their roster of hospitals. For example, the roster may not reflect the difference between corporate identity and physical location. In addition, it may not have precise location information for each of the various hospitals affiliated with the healthcare parent organization, or for each of the various departments within a hospital. This is especially problematic because if the roster is not accurate, a hospital may not receive the appropriate pricing for their facility/location, and rebates and claims can be lost and/or misapplied.

> Reliable location information is also important for **patient safety**. Accurate location information is essential for proper delivery of *the right product to the right location.* Electronic medical records, automated ordering systems, and other healthcare IT systems all require reliable location identification and information to improve patient safety and support patient care.

In response, many healthcare participants (e.g., hospitals, manufacturers, distributors, etc.) began assigning their own proprietary numbers to locations. Although the creation of proprietary numbers began as an effort to solve some of these problems, they in fact created new problems. So many location numbers were created that maintaining all of the various numbers became a nightmare. In addition, providers now had to create and manage maps between all of the various location identification numbers in their systems. Despite all of the

effort, the end result was an error-prone, inefficient approach to location identification that undermined patient safety and supply chain management.

The Solution: Standardized Location Identifiers

The solution to these problems is standards-based party/location identifiers. The use of standards-based identifiers enables a healthcare organization to maintain and manage precise information for all of its various corporate identities and physical locations. Moreover, the use of a globally accepted, standardized approach to identifiers provides a common language to facilitate the communication of party/location information among supply chain partners. This promotes the efficient exchange of accurate party/location information with supply chain partners to support deliveries, rebates and claims. Moreover, it supports the flow of accurate party/location information *within* the healthcare organization itself, especially important with healthcare's complex corporate structures.

Figure 2: Why Healthcare Providers Need Standardized Party/Location Identifiers
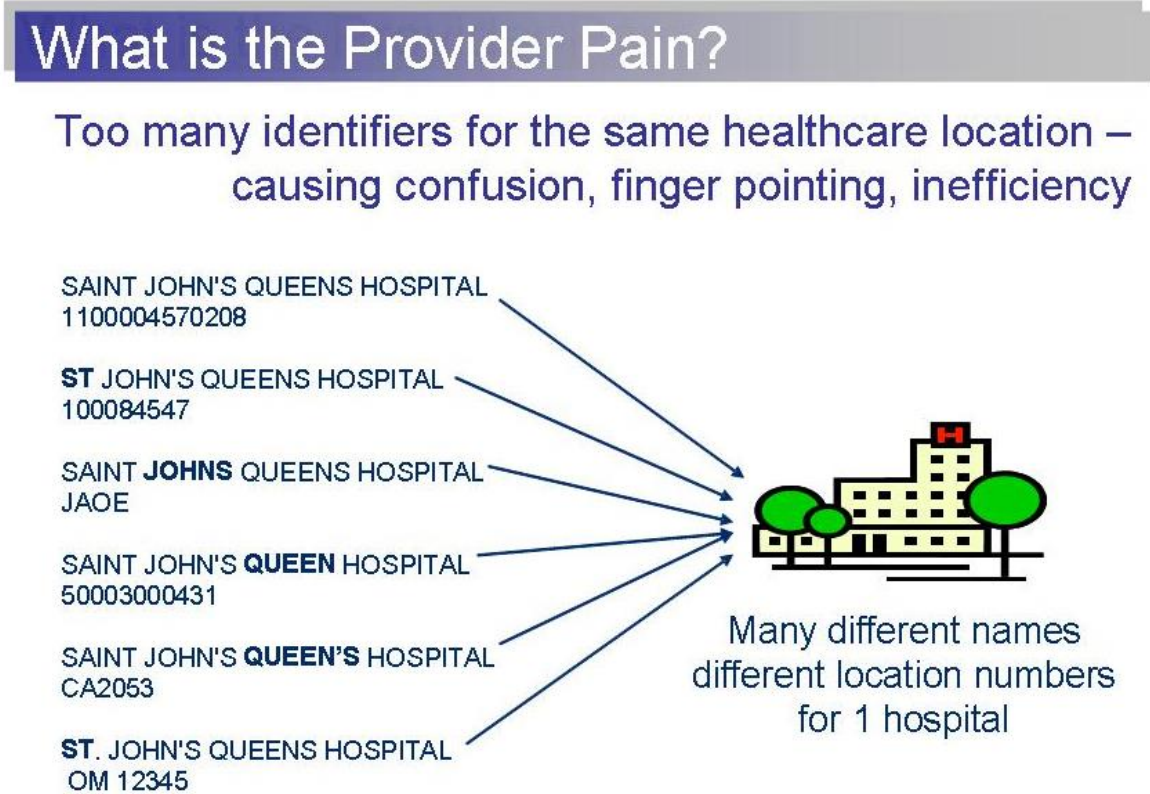
The GS1 System provides globally accepted identifiers, standards and a common language for the communication of supply chain information. The GS1 Identifier for parties and locations is the Global Location Number (GLN). For decades, this GS1 Identifier has facilitated the sharing and communication of party/location information among supply chain partners in twenty-three industry sectors across the globe.

What is a GLN?

A Global Location Number (GLN) is a number – a GS1 standards-based, globally unique identification number used to identify locations and supply chain partners. GLNs can be used to identify a *functional entity* (like a hospital pharmacy or accounting department), a *physical entity* (like a warehouse or hospital wing or even a nursing station), or a *legal entity* (like a health system corporation). For example, a GLN can be used to identify the following:

Table 1: Types of Entities Identified by GLNs

Legal Entities	A *Legal Entity* is defined as a legal organization that is subscribed to the GS1 System. *Legal Entities* can include parent corporations, subsidiaries and/or divisions. Examples: supply chain partners like customers, GPOs, distributors, manufacturers, third party logistics, providers/hospitals, etc.
Functional Entities	*Functional Entities* can include a department within a legal entity, and even unstaffed operation points like vending machines and automated supply replenishment machines. Examples: pharmacies, purchasing departments, accounting departments, etc.
Physical Locations	A *Physical Location* is defined as a single point of access with a physical address. *Physical Locations* can include specific locations within a legal entity and/or a functional entity. Examples: warehouse, warehouse gate, loading dock, hospital, delivery point, hospital unit, nursing station, particular room in a building, and even a cabinet or cabinet shelf.

In terms of data structure, GLNs are 13-digit numbers comprised of three basic segments:

- **GS1 Company Prefix:** The globally unique number assigned to a company or provider by GS1 US (or another GS1 Member Organization). The GS1 *Company Prefix* is part of the data structure for all GS1 Identifiers (e.g., GTIN, GLN, etc.) and provides the foundation for generating all GS1 Identification Numbers.

- **Location Reference:** A number assigned by the company/organization to uniquely identify a location.

- **Check Digit:** A calculated one-digit number used to ensure data integrity. (To understand how this digit is calculated, refer to www.gs1us.org/checkdig)

Figure3: Data Format of a GLN

GS1 Company Prefix →					← Location reference					Check Digit
N_1	N_2	N_3	N_4	N_5	N_6	N_7	N_8	N_9	N_{10}	N_{11}	N_{12}	N_{13}
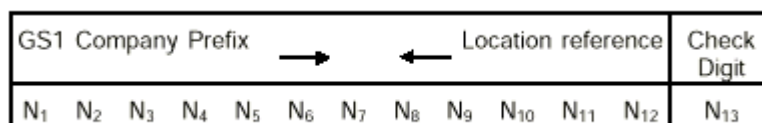
What is the GLN Registry?

The GLN Registry™ is a subscription-based service that provides a comprehensive list of companies in the U.S. with their corresponding GLNs and GLN information. The GLN Registry serves as a single source of information for locations enabling subscribers to access up-to-date, reliable location information for healthcare industry trading partners to improve the accuracy of their supply chain activities. Using the Registry, Subscribers are able to access updated and accurate party and location information about manufacturers, distributors, retailers, hospitals, clinics, and retail and mail-order pharmacies to improve the accuracy of their supply chain activities. As a result, the Registry solves the industry-wide challenge of inaccurate location and party information by providing a central resource of location and party information for healthcare facilities and healthcare-related facilities in the United States.

Using the GLN and GLN Registry ensures that the right product arrives at the right place at the right time, facilitates efficient business practices, and drives down supply chain costs.

Why Should I Use the GLN Registry?

- It provides a central resource of accurate, up-to-date, standardized location and party information

- It enables users to define and manage their own account and location information

- It eliminates unnecessary, obsolete, duplicate, and inaccurate address records

- It accurately shows organizational structure using a hierarchy

- It provides 24/7 access to past and present GLN information

The GLN Registry was created by the healthcare industry to facilitate more efficient business practices and to help drive down supply chain costs for both healthcare providers and suppliers. Subscribers to the Registry include companies from across the healthcare supply chain, like hospitals, manufacturers and distributors. By providing accurate, up-to-date information on demand, the GLN Registry supports supply chain partners in getting the party and location information they need, when they need it.

The GLN Registry features and benefits:

- Access accurate company data files quickly and easily

- Create additional GLNs for other locations

- Add or create GLNs individually or through bulk upload

- Search and export GLN information

- Create an organizational profile to display your GLN Readiness to your trading partners

- Utilize Excel on all imports & exports

- Subscribe to locations and receive notifications as locations change within a given hierarchy

- View any changes from the current day for any one GLN or all GLNs in the entire Registry

- Receive a daily system extract with machine-to-machine interface that connects your system to the GLN Registry

- Connect with your trading partners through the GLN Registry messaging feature

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How are GLNs Assigned?

The GLN is a globally unique, standards-based identification number for parties and locations. Each provider is responsible for assigning its own GLNs (a process known as *allocation*). In order to support them in that effort, the GS1 System provides clear, structured data standards and Allocation Rules that providers 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, GS1 US assigns a GS1 *Company Prefix* to the provider.

(2) Second, the provider assigns/generates their own GLNs based on their GS1 *Company Prefix* and the GS1 Standards and Allocation Rules.

When a user assigns a GLN, they define a prescribed set of data about the party/location to which that GLN relates (e.g., street address, floor, etc.). These *GLN attributes* define master data about the party/location (e.g., name, address, class of trade, etc.), which help to ensure that each GLN is specific to one, very precise location within the world. The GLN and its associated attributes are then saved in a database (like a GDNS-certified Data Pool) and shared among supply chain partners.

How are GLNs Used?

As described above, GLNs are assigned by providers to identify their legal entities, functional entities and/or physical locations. Once assigned, GLNs are used to (1) identify parties and/or locations, and (2) to provide a link to the information pertaining to a party/location.

Identification of Parties/Locations

GLNs identify the various locations and functional entities in a healthcare organization and within a healthcare facility. One especially convenient feature of GLNs is that they can be encoded onto data carriers (i.e., bar codes and/or RFID tags). This enables providers to mark the various locations and functional entities throughout their facilities with GLN bar codes for accurate identification (e.g., hospital bed; testing lab; MRI machine; etc.). Marking locations within a facility with bar coded GLNs enhances Barcode Point of Care (BPOC) 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 in BPOC Systems. Because they facilitate reliable location identification, GLNs can be used by providers to enhance patient care and support patient's rights in healthcare facilities.

Link to Party/Location Information

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 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. For this reason, GLN is required in many types of e-commerce transactions, and is most commonly used on purchase orders and delivery documents.

Advantages of Using GLNs in the Healthcare Supply Chain

Standards-based numbering systems are essential for efficient and effective communication of party/location information in supply chains. Without a standardized approach, supply chain partners often assign their own proprietary location identification numbers, resulting in numerous numbers to manage and maintain for the same location. The use of GLNs avoids those problems. With a flexible approach to party/location identification, GLNs facilitate reliable and efficient management of precise location information. As a result, there are many advantages to using GLNs:

- **Flexible:** GLNs may be assigned to any location, providing maximum flexibility to meet the needs/requirements of all businesses anywhere in the world -- from loading docks at a warehouse, to healthcare buildings on a government base, to nursing stations in a hospital, to rooms on a hospital floor. This promotes precision and accuracy in identifying locations, and facilitates communication of reliable party and location information to supply chain partners and within the provider. In addition, it avoids the hassle of mapping and managing multiple proprietary numbers.

- **Simple:** GLNs enable providers to efficiently and effectively manage precise supply chain information for all of their various corporate identities and physical locations using standardized identifiers which they assign and control. In addition, the Registry uses a United State Postal Service standardization program which facilitates the use of the same addresses and address taxonomy for all supply chain partners.

- **Automatic Data Capture:** Providers can encode GLNs in data carriers, such as bar codes and Radio Frequency Identification (RFID) tags, to support automatic data capture. This can be especially useful for BPOC Systems as well as other patient care support systems like automated order entry, prescription drug administration, and others.

- **Multi-sector:** GLNs can be used by any company or organization, in any sector, in any part of the world. That makes inventory systems, ordering systems and accounting systems compatible across different industries. This supports healthcare providers, who purchase both healthcare and non-healthcare related items, in navigating the global economy and overlapping supply chains.

- **Open:** A user can share their GLNs with anyone with whom they do business.

- **GLN Registry:** Use of the GLN enables users to leverage the GLN Registry. The Registry serves as a central resource of location and party information for healthcare facilities and healthcare-related facilities in the United States, providing accurate, up-to-date party and location information on demand.

- **Enhanced Organizational Visibility:** Active use of GLNs in your business creates a structured party/location hierarchy that provides a precise business view of your organization. Such enhanced visibility of your organizational structure helps you to identify redundant business practices and inefficiencies in order to improve your business model.

- **Data Integrity:** Use of the GLN for party/location identification enables users to leverage the Global Data Synchronization Network (GDSN) for party/location information. The GDSN offers a continuous, automated approach to data management that ensures that party/location information is identical among supply chain partners, increasing data accuracy and driving costs out of the supply chain.

Benefits to Healthcare Providers

Beyond business, beyond the supply chain, healthcare is about much more than supply and demand. There is perhaps no other industry where accuracy and speed are more important. In healthcare, caregivers need the right products, in the right location, at the right time to ensure the proper patient treatment. Use of the GLN and the GLN Registry support that effort. GLNs enable healthcare providers to efficiently and effectively manage information about all of their legal entities, functional entities and physical locations using a unique, global standard for party/location identification. This facilitates communication of reliable party/location information among supply chain partners and within the provider as well, translating to significant benefits for patient safety and supply chain management.

Patient Safety Benefits

Caregivers need the right products, in the right location, at the right time to ensure the proper patient treatment. GLNs support that effort by providing reliable location information within healthcare organizations and facilities. Correct location identification and reliable location information has many benefits for patient safety.

- Right location: Use of GLN within healthcare facilities promotes reliable identification of precise locations within the facility. This supports caregivers' efforts to ensure that the right product, procedure, and/or treatment is delivered to the *right location*.

- Streamlined product recalls: GLN facilitates a streamlined product recall process by precisely identifying specific locations where recalled items were received, stored and/or used.

- Enhanced BPOC Systems: Many hospitals have leveraged bar code identification and technology in the processes supporting patient care (i.e., BPOC Systems). Use of bar coded GLNs in such systems facilitates identification of the locations where products are used/administered.

Supply Chain Management Benefits

Use of GLNs facilitates communication of accurate party/location information among supply chain partners. In addition, it enables healthcare providers to efficiently and effectively manage information about all of the various locations and entities in their healthcare facilities. This promotes more efficient business practices and helps to drive down supply chain costs for both healthcare providers and suppliers. As a result, there are many supply chain benefits to using GLNs:

- Better cash flow: Use of GLN streamlines chargeback and rebate processing, reducing the amount of money sitting in unresolved sales accounts.

- Reduced labor costs: Use of GLN frees staff time by eliminating the need to build and maintain cross reference tables in order to keep track of multiple proprietary location identification numbers.

- More efficient payment and reporting processes: With the use of GLNs, invoices will be delivered to providers automatically and with fewer errors, resulting in quicker processing.

- Facilitate contract pricing: Each GLN allows for positive location identification, ensuring that suppliers can easily determine provider eligibility for contract pricing.

- Improved information quality: Using the GLN as the link to party/location information improves information quality by ensuring that party/location information is identical among supply chain partners. This benefits both internal and external business processes.

- Simplified supply chain management: GLNs strengthen business communications among supply chain partners across the industry by accurately identifying specific locations with specific numbers.

Implementing GLNs in Your Organization

So, what exactly does it take to implement GLNs in a provider? What are the steps and who is involved? This section answers these questions with detailed, step by step instructions for implementing GLNs. 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 supplier involvement, and establishing standard operating procedures.

> For links to all of the *Tools* listed in the implementation steps, please refer to the *References* section of this document.

Advanced Preparation:
Checking Enumeration Status

Before a provider begins the GLN implementation process, it is necessary to determine their enumeration status. *What exactly is "enumeration"?* Enumeration involves the listing of all of the relevant addresses of a healthcare organization within the GLN Registry. At a very basic level, it involves how an organization wants to represent itself. Providers that are a part of GPO may already be enumerated in the GLN Registry. As a result, providers should first check with their GPO to see if they are already enumerated in the GLN Registry. Organizations that are not part of a GPO should check with GS1 US.

ⓘ **Finding out whether your organization is already enumerated is the necessary advanced preparation for all providers implementing GLN. If a provider is already enumerated, their implementation process will work with the current GLN enumeration, determining if it meets your provider's needs and making adjustments where necessary. If a provider is not already enumerated, they can work from a blank slate to define their enumeration from scratch. Either way, all providers still need to follow the steps below to implement GLN in their organization, regardless of whether they are already enumerated or not.**

Step One: Establish Executive Support

The goals in this step are 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. As with any project that will impact the business processes of the organization, the support of senior management is critical.

Actions

- Prepare a presentation on the value of GLN and a GLN implementation plan. Consult this Tool Kit for information to support your presentation.
- Deliver the GLN presentation and implementation plan to senior management.
- Secure approval to initiate the project and form the needed teams (i.e., *the GLN Management Advisory Group, and the GLN Registry Operational Team*).

Tools
- **GLN materials from the GS1 Healthcare US Website**
- **GLN materials from the GS1 Healthcare US Document Library**
- **GLN Registry User Guide**

Step Two: Form a GLN Management Advisory Group

The goal in this step is to establish an Advisory Group. Formation of a multi-disciplinary 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.

Actions

- Recruit and solicit commitments for participation. The Group should include:

  - Financial Controller
  - Legal Counsel
  - Supply Chain
  - Information Systems
  - Accounts Payable
  - Public Relations (internal)
  - Group Purchasing Representative
  - Primary Distributor Representative

Tools

- **GLN presentation materials (prepared in Step 1 above)**
- **GLN Registry User Guide**

Step Three: Establish Your GLN Registry Operational Team

The goal in this step is to establish a GLN Registry Operational Team. The day-to-day utilization and maintenance of the GLN Registry as a support tool will require the involvement of multiple individuals. Your operational team will consist of two individuals: an *Approver* and an *Editor*. The Approver will have overall responsibility to manage GLN Registry implementation efforts and to oversee ongoing maintenance of the integrity of your information in the GLN Registry. The Editor will work with the Approver by maintaining the GLN records, including creating, editing and de-activating locations. In addition, there will be *Viewer* roles available for other internal users who need access to the Registry itself.

Actions

- Identify and select an internal Approver.
- Identify and select an internal Editor.
- Identify and select Viewers.
- Establish the role of each participant. For example:

  - Editors create GLN locations and decide where in the hierarchy the new GLN resides, as well as specifically address the mandatory elements required for the location file as specified in the GLN Registry User Guide (e.g., *is the new location a child of the original parent or a child of a sub element; is the GLN owned, affiliated or leased; is the new GLN a ship to deliver to or bill to or all three; etc.*).

  - Approvers are responsible for reviewing and approving locations, and creating users.

- Update job descriptions to reflect the new responsibilities of the team members.

- Provide education and training.

Tools

- **GLN presentation materials** *(prepared in Step 1 above)*
- **GLN materials from the GS1 Healthcare US Website**
- **GLN materials from the GS1 Healthcare US Document Library**
- **GLN Registry Overview**
- **GS1 US Educational Web Seminars**
- **GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned**
- **GS1 US Minnesota GLN Pilot Report Phase 2: Process Map**

Step Four: Develop & Initiate Project Communication

The goal in this step is to inform your community of your commitment to GLN implementation. Utilize internal communication tools such as newsletters, intranet, websites and vendor letters to introduce the concept of the GLN to your organization, including the supplier community. The Advisory Group member from Public Relations should be enlisted in this effort.

Actions

- Announce organizational commitment to GLN in newsletters & other media.
- Announce commitment to implement GLN standards to your suppler community.

Tools

- **GLN presentation materials** *(prepared in Step 1 above)*
- **GLN materials from the GS1 Healthcare US Website**
- **GLN materials from the GS1 Healthcare US Document Library**
- **GLN Registry User Guide**
- **Vendor letter template (see Appendix)**

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

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

Actions

- Participate in web seminars.
- Train staff.

Tools

- **GLN presentation materials** *(prepared in Step 1 above)*
- **GLN materials from the GS1 Healthcare US Website**
- **GLN materials from the GS1 Healthcare US Document Library**
- **GLN Registry User Guide**
- **GLN Registry Overview**
- **GS1 Healthcare US Web Seminars**
- **GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned**
- **GS1 US Minnesota GLN Pilot Report Phase 2: Process Map**

Step Six: Assess Information System Issues & Make Necessary Changes

The goal in this step 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.

Actions

- Meet with your IS system experts, internal and external, to review your implementation strategy and understand the implications for your information systems.
- Establish a collaborative plan to make the necessary changes and prepare information systems.

Step Seven: Identify/Obtain Your GLN Master Number

The goal in this step is to establish your master number. The GLN Registry already contains many GLNs assigned to Providers.

Actions

- Contact GS1 US or your GPO to determine if your facility has already been enumerated:
- *If a GLN master has already been assigned:*
  - ➤ Obtain an Editor Password.
  - ➤ Review the master GLN information, and fix/change any information that is not correct.
  - ➤ Begin the process to define hierarchy.
- If a GLN master has not already been assigned:
  - ➤ Subscribe to the GLN Registry.
  - ➤ Begin to enumerate your hierarchy *(see Step 8)*.

Tools

- **GLN Registry User Guide**
- **GLN Registry Website**

Step Eight: Establish Implementation Strategy

The goal in this step is to establish a GLN utilization strategy and corresponding hierarchal organizational chart (e.g., warehouse system hierarchy; point of use system hierarchy; etc). The establishment of your organization'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.

Actions

- Analyze your organization's current and future supply chain models and distribution systems.
- Consider organizational expansion to include new locations.
- Identify the depth of locations that your GLN numbering system will need to identify to support operations. Examples:
  - ➤ <u>Bill To</u>: a location where invoices are sent for payment. (For example, accounts payable.)
  - ➤ <u>Ship To</u>: a location where the supplier delivers products. (This is normally a bulk delivery location like a receiving dock, central warehouse, pharmacy, etc.)
  - ➤ <u>Deliver To</u>: a location deeper within a healthcare provider location where the supplier delivers supplies (e.g., direct delivery locations for *Just In Time* systems, nursing floor location, dispensing machine, employee's desk, etc.).

Tools

- **GLN Registry User Guide**
- **GS1 Healthcare US Web Seminars**
- **GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned**
- **GS1 US Minnesota GLN Pilot Report Phase 2: Process Map**

Step Nine: Build Your Initial GLN Database

The goal in this step is to enter an organizational hierarchy into the GLN Registry. Specific information for each location that has been identified for enumeration must be gathered for this effort.

Actions

- Build your organization hierarchy in the GLN Registry based on your business model.
- Review with Advisory Team and Operational Team.

Tools

- **GLN Registry User Guide**
- **GS1 Healthcare US Web Seminars**
- **GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned**
- **GS1 US Minnesota GLN Pilot Report Phase 2: Process Map**

Step Ten: Engage Supplier Involvement

The goals in this step are to prepare the supplier community and identify partner(s) for testing. Collaboration and communication with your supplier community is critical to implementation success. So, now that an implementation plan and initial Registry hierarchy has been established, engage strategic suppliers in a process of communication about your organizational plans.

Actions

- Explain implementation and GLN hierarchy structure.
- Determine supplier capabilities.
- Analyze impact to operations and staff.

Tools

- GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned
- GS1 US Minnesota GLN Pilot Report Phase 2: Process Map

Step Eleven: Conduct Transactional Testing With Suppliers

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

Actions

- Document critical success factors.
- Make adjustments during transactional testing as issues are identified.
- Communicate with community.

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

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

Actions

- Based on test results, make the necessary adjustments to all aspects of the program, from hierarchy through communications.
- Repeat as necessary throughout testing.

Step Thirteen: Create Standard Operating Procedures

The goal in this step 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 the *Editor* and *Approver* roles within the GLN Registry for your organization.

- Procedures for the transition of *Editor* or *Approver* roles due to a personnel change within the organization.

- 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 organization. For example: at what level should all *Deliver To* addresses be displayed; at what level should supplier reporting occur for your organization.

Analyzing the GLN ROI for Your Organization

In today's dynamic healthcare environment of declining reimbursement and a reduced labor pool, healthcare organizations expressed a need to establish a return on investment (ROI) for the use of GLN. Indeed, demonstration of positive ROI for GLN supports organizations challenged daily by the allocation of scarce resources.   This section provides guidance and a model to help each organization determine their own return on investment based on their individual needs and circumstances. The model is provided as a starting point for any organization wishing to pursue ROI analysis.

ⓘ **It is good to note that beyond the analysis provided in this section for the ROI of GLN alone, additional benefits and ROI can be found in the implementation of GLN as part of the implementation of the full GS1 System of standards, including Global Trade Item Numbers (GTIN) and the Global Data Synchronization (GDSN). (For more information about GTINs and the GDSN, please refer to the *Healthcare Provider Tool Kits* prepared on those topics by GS1 Healthcare US.) Moreover, most "early adopter" organizations have realized additional value in unanticipated areas like process improvement and infrastructure development. And, many have noted the value of a new "business philosophy" or way of doing business which places the organization in an advantageous position to address some of the upcoming challenges anticipated in healthcare over the next ten years.**

Levels, Readiness and Impacts Model (LRIM)

Center for Innovation in Healthcare Logistics (CIHL) at the University of Arkansas engaged in a Data Standards implementation project with a number of industry partners and provider sites to understand the costs, barriers and opportunities providers can expect in GS1 standards adoption. Together, they designed the *Levels, Readiness and Impacts Model* (LRIM). The LIRM is designed to provide a user-friendly, Excel-based spreadsheet tool to help providers meet their need to quantify the investments and benefits they can expect from GS1 adoption choices. LRIM does not attempt to estimate dollar costs and benefits. Instead, the model aims to provide quantitative foundations on which those economic assessments can be constructed for particular provider settings. (A link to the LIRM is provided in the *References* secrtion of thius document.)

At this time, LRIM addresses only GS1 implications for supply chain operations in commodity medical/surgical products. In the near future the CIHL team plans to enhance LRIM or create sibling versions to address other categories of products including Pharmaceuticals, Implantable Devices, and Surgical Materials.

Hot Spots for ROI

There are various functions and business processes which will be directly impacted and improved through the use of GLN. These functions and business processes serve as "hot spots" for capturing return on investment of GLN implementation. In order to support your ROI analysis, a list of ROI hot spots is provided below. Begin your ROI analysis by determining the amount of staff time and resources currently allocated to each of these functions. In addition, determine the amount of manual error corrections being done in each function as well.

Supply Chain "Ship To" Communications

Record the number of items that do not arrive to the intended location, and the amount of staff it takes to track these items down. Consider each of the following scenarios both before and after GLN implementation:

- Right product, wrong place.
- Errors due to product being shipped to wrong location because of error *in address* within right hospital system.
- Error due to product being shipped to wrong location because of *error in name of facility* within the right hospital system.
- Error due to product being shipped to wrong location because of error in name of facility *outside of right hospital system.*
- Problem with a shipment due to the supply chain partner designating the physical and legal locations, and not the provider.

In addition to those scenarios, also consider the following:

- How long is the list of proprietary "customer location numbers" assigned to your organization by manufacturers and suppliers -- before and after GLN implementation?
- Distributors need to reconcile proprietary "customer location numbers" assigned by all of the manufacturers and suppliers to all of the various hospitals in order to process rebates. However, this can be a daunting and time-consuming task considering the sheer number of manufacturers, suppliers and hospitals – as well as the number of deliveries, which run into the thousands each month. This level of inefficiency for distributors and manufacturers trying to process rebates often leads to lost rebates for providers.
- Hospitals often use new or alternative suppliers in addition to their regular suppliers. For example: your regular supplier doesn't have the item you need or another supplier offers a better price as an inducement. However, infrequent suppliers are not familiar with your hospital layout and/or the proprietary location scheme. As a result, mistakes are often made (e.g., misdirected shipments) which frustrate the purpose of using the alternative supplier in the first place.

Purchasing & Supply Chain Management

Track the number of times before and after GLN implementation:

- Contract prices from suppliers are not awarded.
- Purchase reports received from suppliers and their GPOs are incomplete.
- There is confusion about who is /is not a member when tracking and reporting rebates.
- There is incomplete and inaccurate supplier information.
- Price/contract eligibility and accuracy is available.

Labor Management

In terms of labor management, consider the following for both before and after GLN implementation:

- Hours devoted to tracking customer identification numbers.
- Hours devoted to dealing with location problems and errors.

ROI Model

The following spreadsheet illustrates a provider-anticipated ROI based on the above analytical factors. (Please note all numbers are fictional.)

Table 2: Sample GLN ROI Model

Indicates a provider entered field		
Indicates a calculated field		

Costs (ALL NUMBERS ARE EXAMPLES ONLY)

	Year 1 (top 10% vendors)	Year 2+ (all vendors)
GS1 Fees	$500	$500
System enhancements to support GLN	$10,000	$0
Staff to maintain GLN Registry	0.25	0.25
Avg Fully Loaded Cost/Staff Member	$50,000	$50,000
Staff cost to maintain GLN Registry	$12,500	$12,500
Total Annual Cost	**$23,000**	**$13,000**

Savings (ALL NUMBERS ARE EXAMPLES ONLY)

|	Year 1 (top 10% vendors)	Year 2+ (all vendors)
Dealing with errors *due to mis-aligned provider location data*		
Shipping errors due to mis-aligned location data		
# of mis-shipments per year	480	480
% mis-shipments reduced after GLN adoption	50%	80%
Staff focused on dealing with mis-shipments	2	2
Avg Fully Loaded Cost/Staff Member	$50,000	$50,000
Staff focused after GLN adoption	1	0.4
Staff savings after GLN adoption	$50,000	$80,000
Non-staff savings		
Other annual costs associated with mis-shipments	$5,000	$5,000
Other savings after GLN adoption	$2,500	$4,000
Shipping Errors Annual Savings	**$52,500**	**$84,000**
Pricing/contract errors due to mis-aligned location data		
# of orders with contract pricing errors per year	9500	9500
% of errors reduced after GLN adoption	25%	90%
Staff focused on dealing with contract pricing errors	1.5	1.5
Avg Fully Loaded Cost/Staff Member	$50,000	$50,000
Staff focused after GLN adoption	1.125	0.15
Staff savings after GLN adoption	$18,750	$67,500
Non-staff savings		
Net $ pricing OVERpayment per year	$100,000	$100,000
Pricing OVERpayment savings after GLN adoption	$25,000	$90,000
Net $ rebate UNDERpayment per year	$25,000	$25,000
Rebate UNDERpayment savings after GLN adoption	$6,250	$22,500

Contract Pricing Errors Annual Savings	**$50,000**	**$180,000**

Managing vendor accounts

# of location changes per year	15	15
# of vendors	2000	2000
# vendors expected to adopt GLN	10%	100%
Staff focused on managing vendor notification and accounts	0.5	0.5
Avg Fully Loaded Cost/Staff Member	$50,000	$50,000
Staff focused after GLN adoption	0.45	0
Staff savings after GLN adoption	$2,500	$25,000
Managing Vendor Accounts Annual Savings	**$2,500**	**$25,000**
Total Annual Savings	**$105,000**	**$289,000**

Net Savings (NUMBERS ARE EXAMPLES ONLY)

(Total Savings) – (Total Costs)

	$82,000	**$276,000**

Other Potential Benefits (filled in by provider):

* Improved operational efficiencies
* Improved reporting with consistent identifiers
* More time to focus on other priorities
* Reduce loss due to products requiring special handling going to wrong locations
* Improved understanding of vendors M&A, re-orgs, etc.
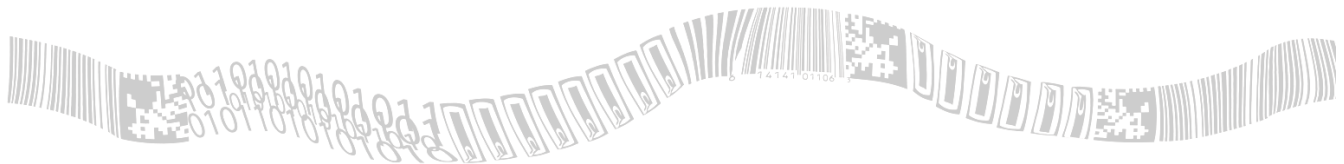
Things to consider:

Which transactions make sense to focus on first?
What changes may be necessary to your internal systems?
What vendors are most critical to get on board first?
Who in your organization should be involved in the process?
Clear roles & responsibilities for all parties
What benefits won't be realized until GLN adoption occurs?
What additional benefits with GLN adoption provide?

Lessons Learned & Best Practices

The following materials illustrate lessons learned and best practices for GLN implementation. The documents can be found in the GS1 Healthcare US Online Document Library. (Visit www.gs1us.org/healthcare to download.) In addition, links are provided in the *References* section of this Tool Kit.

- Seton Family of Hospitals / BD Success Story

- Mayo Clinic / Cardinal Health GLN Implementation White Paper

- Success Story: How Intermountain Healthcare Successfully Took Ownership of its GLNs and is Embracing GS1 Standards

- GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned

- GS1 US Minnesota GLN Pilot Report Phase 2: Process Map

- GS1 Healthcare US GLN GPO Roster Pilot Report

Frequently Asked Questions (FAQs)

What is a GLN or a Global Location Number?

The Global Location Number (GLN) is a 13-digit numeric identification number for supply chain parties and/or locations. There is an associated name and address, "tied" to each unique number and it is specific to only one, exact and very precise location within the world. The GLN is a unique number that identifies any legal, functional, or physical location within a business or organizational entity such as:

 ♣ Legal entities: whole companies, subsidiaries or divisions such as Integrated Delivery Network (IDN), hospitals, suppliers, distributors, banks, freight carriers, etc.

 ♣ Functional entities: purchasing departments within legal entities, accounting departments, returns departments, nursing stations, wards, etc.

 ♣ Physical entities: warehouses, loading docks, delivery points, hospital wings, particular rooms in a hospital, cabinets, cabinet shelves, etc.

What are examples of locations that can be assigned GLNs?

GLNs are reference keys for retrieving information from databases about: whole companies, subsidiaries or divisions such as Integrated Delivery Network (IDN), hospitals, suppliers, distributors, banks, freight carriers, purchasing departments, accounting departments, returns departments, nursing stations, hospital wards, rooms in a hospital, warehouses, loading docks, delivery points, cabinets, cabinet shelves, hospital wings, etc.

Why do I need a Global Location Number (GLN)?

Do you buy products from the same pharmaceutical companies that sell to retailers? How about food companies that also sell to restaurants and grocery stores? How about linen and textile companies that also sell to retailers? Do you ever buy anything from local retail stores?

Hundreds, perhaps thousands, of companies that do business with your organization also sell to customers in other industries. If so, they are already using GLNs with these customers. For this reason, it makes sense for U.S. healthcare to adopt a customer identification standard that is the same as the number being used by the suppliers in these other industries. The Coalition for Healthcare eStandards (CHeS) recommends the use of the Global Location Number (GLN).

The GLN is an open global standard that supports 23 major industries conducting business in more than 150 countries worldwide. Since healthcare is a key component of the global economy, it simply does not make sense for U.S. healthcare to be its own island and have its own healthcare specific customer identification standard.

How and when do I use my Global Location Numbers (GLN)?

Customers use their GLNs whenever they communicate business transactions with suppliers and other trading partners outside of their organization. The GLN is an identification number for business communications because it uniquely identifies your organization across the entire supply chain with all suppliers, group purchasing organizations (GPOs), etc. Here are some more specific examples of when it is used:

- Ordering products

- Processing supply related order and invoicing inquiries

- Claiming manufacturer rebates

- Corresponding with suppliers

- For all other standard business transactions with manufacturers, distributors, group purchasing organizations, or any other stakeholder across the supply chain.

Do GPOs, manufacturers, distributors and other suppliers also have GLNs?

Many of the suppliers that you do business with already have GLNs, albeit for use outside of the U.S. healthcare industry. It is time to bring U.S. healthcare into these common and proven business practices of many other industries within the U.S. and around the world.

Can I use a supplier's GLNs within my systems to uniquely identify them?

Using the supplier's GLNs as the standard vendor identification number within your purchasing, accounts payable, and in other systems where exact vendor information must be used is recommended.

What other industries use the GLN?

There are 23 other industries use GLNs, including: Apparel and Fashion Accessories; Building Supplies; Chemicals; Food and Beverage; Foodservice; Furniture; Baby Products; Office Supplies; Domestics/Linens; Healthcare - Over the Counter; Pharmaceuticals; Medical/Surgical; Maintenance; Repair and Operation (MRO); Computer Hardware/Software/Electronics; Lawn & Garden; Photographic Equipment; Publishing; Telecommunications; and Utilities-Power Transmission. Does your organization buy products from any of these other industries?

Why should my organization adopt GLNs now?

Your organization will always have many priorities. If you want to a) improve your pricing accuracy and revenue stream, b) eliminate the maintenance of thousands of single purpose proprietary supplier numbers, and c) improve the accuracy of your GPO sales reports, now is the time to act.

Are there other location coding methods?

There are 196 different location coding methods recognized by ANSI X12, and 212 different location coding methods recognized by UN/EDIFACT. Some industries use proprietary seller generated location codes. Some use location codes assigned by accepted third party organizations. Some healthcare organization have used the DUNS +4 number to identify specific physical locations within their organizations. (The use of DUNS +4 is primarily limited to North America.) This is a 13-digit number that was broken into two different pieces: a 9-digit number assigned by Dun & Bradstreet to identify an organization or a subset of an organization (DUNS) and a 4-digit number assigned by the organization or subset to uniquely identify a location within their own domain.

What are the advantages of GLNs?

The use of Global Location Numbers (GLNs) provides companies and healthcare organizations with a method of identifying locations, within and outside their company/organization, that is:

● Simple: an easily defined data structure with integrity checking that facilitates processing and transmission of data.

● Unique: GLNs are globally unique.

● Multi-sectoral: the non-significant characteristic of the GLN allows any location to be identified for any company and organization regardless of its activity anywhere in the world.

● Global: implemented around the world and supported by GS1 US and the international network of other GS1 Member Organizations, covering more than 100 countries, in the local language.

Why use GLNs instead of another identifier?

Any healthcare organization can design its own internal system and code structure to identify all the locations covering its operating requirements. Although an internal solution might seem to be the easiest and fastest way forward, when information is exchanged between computers of distinct healthcare organizations and companies this may present several problems, such as:

● Duplication: two or more supply chain partners may use the exact same location code to identify an internal location in their company/organization. There is no guarantee of uniqueness.

● Complexity: internal codes will have a variety of structures and formats, making application programming more complex and application changes costly.

● Significance: location codes that contain information related to the location in the code structure itself will become difficult to handle as the coding structure evolves to incorporate new meanings.

Can the GLN change?

If a location identified by a GLN changes, the party responsible for the GLN should change the details associated with the GLN on the related computer file (database) record. A GLN that has stopped being used will remain so for seven years before being reallocated; this is a specific requirement for healthcare provider facilities. The delay must allow time for all references of the old location number to be removed from trading partners' files. When the location number is re-used, the details relating to the location must be retransmitted.

How do we assign GLNs?

GLNs should be allocated sequentially and not contain `classifying' elements. For detailed information on assigning GLNs, see the GLN Allocation rules.

Is the GLN an intelligent number? One than can be parsed into its component attributes?

The GLN is a non-logical number. It can not be parsed into its component part. It should only be used as a pointer to a database file.

Who communicates GLNs?

Normally, it is the responsibility of the company/healthcare organization assigning GLNs to keep business partners informed of all numbers issued and their associated information. Special care is needed if the ownership of the company/organization changes. However, in healthcare, the GLN Registry will be the single location for all GLNs.

What are the benefits of GLNs?

There are many benefits of GLN, including:

● Can be used throughout the world with no need for trading partner(s) to assign proprietary numbers to ensure uniqueness.

● Saves time and money as the number can be moved quickly and confidently through the supply chain.

● May be assigned to any location ensuring ultimate flexibility of the Global Location Number (GLN) to meet the needs/requirements of all businesses anywhere in the world - from can assign a GLN to not only the hospital street address, the loading dock in the back, the surgery center on the 2nd floor, the supply closet nearby, the 3rd shelve of the supply closet, or the red bin on that shelve, and a hierarchical relationship for all.

● Enables users/customers to leverage the full functionality of the GS1 System.

● GLNs can be encoded in GS1-128 bar codes and physically marked onto:

● Trade units to identify the parties involved in the transaction (buyer, supplier).

● Transport units (consignor and consignee).

● Physical locations (place of delivery, place of departure, and point of storage).

I am moving my Accounting Department *(or any other GLN entity)* to a different location. Do I need a new GLN?

If a location identified by a GLN changes, the party responsible for the GLN should change the details associated with the GLN on the related computer file (database) record. A GLN that has stopped being used will remain so for seven years before being reallocated; this is a specific requirement for healthcare provider facilities. The delay must allow time for all references of the old location number to be removed from supply chain partners' files. When the location number is re-used, the details relating to the location must be retransmitted. See the GLN Allocation rules.

What is meant by location?

The GLN is a unique data structure that identifies any legal, functional or physical location within a business or organizational entity such as:

- **Legal entities:** whole companies, subsidiaries or divisions such as supplier, customer, bank, forwarder, etc.

- **Functional entities:** a purchasing department within a legal entity, an accounting department, a returns department, a nursing station, a ward, a customer number within a legal entity, etc.

- **Physical entities:** a particular room in a hospital, warehouse, warehouse gate, loading dock, delivery point, cabinet, cabinet shelf, hospital wing, etc.

What is the relationship between a GLN, GTIN (e.g., U.P.C.) and GDSN?

There is a relationship in that they all are governed by GS1, and all use similar techniques to manage the uniqueness of the numbers. GLNs identify locations and GTINs identify trade items (products and services). The GLN and GTIN must be stored separately because they are separate unique identifiers.

I still have question, who can I call?

Contact GS1 US at:

GS1 US Customer Service
7887 Washington Village Drive, Suite 300
Dayton, OH 45459
+1 937.610.4222
info@gs1us.org
Monday - Friday 8:00 AM to 6:00 PM ET

Glossary

Visit the GS1 US Online Glossary for a complete list of terms – www.gs1us.org/glossary

Term	Glossary Definition
Attribute	A piece of information reflecting a characteristic of the object to which an identification number (i.e., GLN, GTIN, etc.) relates.
Bar Code	A precise arrangement of parallel lines (bars) and spaces that vary in width to represent data.
Company Number	A number allocated by the GS1 Numbering Organization. It is combined with the GS1 Prefix (for the GS1 Member Organization) to create the GS1 Company Prefix. The GS1 Company Prefix (i.e., the GS1 Prefix + the Company Number) uniquely identifies a company/provider.
Data Carrier	A physical or electronic mechanism that carries data (e.g., a bar code or RFID tag).
Data Standard	The entirety of all GS1 System data standardized in meaning and structure.
Data Structure	The GS1 System data structures defined in the various lengths required for the different identification purposes, which all share a hierarchical composition. Their composition blends the needs of international control with the needs of the user.
EDI	Acronym for Electronic Data Interchange (defined below).
Electronic Commerce	A method of business communications and management using electronic methods, such as electronic data interchange and automated data collection systems.
Electronic Data Interchange (EDI)	The computer-to-computer exchange of structured information, by agreed message standards, from one computer application to another by electronic means and with a minimum of human intervention.
Enumeration	The process of allocating GLNs to the key business sites of your entity.
GLN	Acronym for the GS1 Global Location Number (defined below).
Global Location Number	The globally unique GS1 System identification number for legal entities, functional entities, and physical locations. The GLN is 13 digits, comprised of a GS1 Company Prefix, Location Reference, and Check Digit. Supply side trading partner locations generally include corporate headquarters, regional offices, warehouses, plants, and distribution centers. Demand side trading partner locations generally include corporate headquarters, divisional offices, stores, and distribution centers.
Global Trade Item Number	The globally unique GS1 System identification number for products and services. A GTIN may be 8, 12, 13, or 14 digits in length, represented as GTIN-8, GTIN-12, GTIN-13, and GTIN-14 respectively.
GS1 Company Prefix	A globally unique number assigned to companies/providers by GS1 Member Organizations to create the identification numbers of the GS1 System. It is comprised of a GS1 Prefix and a Company Number.
GS1 Prefix	A number with two or more digits, administered by GS1 that is allocated to GS1 Member Organizations or for Restricted Circulation Numbers.
GS1 System	The specifications, standards, and guidelines administered by GS1. GS1, through the Global Standards Management Process, manages the GS1 System to maintain the most implemented standards in the world.

Term	Glossary Definition
GS1-128 Bar Code Symbol	A subset of the Code 128 Bar Code Symbol that is utilized exclusively for GS1 defined data structures. UCC/EAN-128 Symbols can be printed as stand-alone linear symbols or as a composite symbol with an accompanying 2D Composite Component printed directly above the GS1-128 linear component.
GTIN	Acronym for the GS1 Global Trade Item Number (defined above).
Hierarchy	A classification structure that is arranged in levels of detail from the broadest to the most detailed. Each level of the classification is defined in terms of the categories at the next lower level of the classification.
Identification Number (ID)	A numerical designation that uniquely identifies an object in the supply chain. Identification numbers are used to retrieve information previously exchanged between trading partners and stored in their computer database files.
Location Number	See GLN above.
Location Reference	A number within a GLN assigned by various parties to identify a different entity.
Supply Chain Partner	A party to transactions in the supply chain, such as a supplier (seller) or a customer (buyer).
Trade Item	Any item (product 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.

References

- **GLN Workgroups**

  To learn more about the various GLN workgroups, contact GS1 US at GS1HealthcareUS@gs1us.org

- **GLN Registry Website** *(click on "Sign Up" to subscribe)*

  http://healthcareportal.gs1us.org/

- **GS1 GLN Allocation Guidelines**

  http://www.gs1.org/1/glnrules/index.php/p=overview

- **GS1 US Data Driver**

  http://www.gs1us.org/resources/tools/data-driver

- **GS1 Check Digit Calculator**

  http://www.gs1us.org/resources/tools/check-digit-calculator

- **GLN Registry Overview**

  http://healthcareportal.gs1us.org/Default.aspx?TabId=36

- **GLN Registry User Guide**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=769&ift=1

- **Online Healthcare Provider Tool Kits**

  http://www.gs1us.org/industries/healthcare/tools-and-resources/healthcare-tool-kits

- **Healthcare Provider GLN Quick Start Guide**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=750&ift=1

- ***Standardization* …*Stat!* Industry Awareness Video**

  http://www.gs1ushealthvideo.com/

- **Industry Sunrise Dates**

  http://www.gs1us.org/industries/healthcare/standards-and-initiatives/industry-sunrise-dates

- ***Levels, Readiness and Impacts Model* (LRIM) (from the Center for Innovation in Healthcare Logistics)**

  http://cihl.uark.edu/5174.php

- **Seton Family of Hospitals / BD Success Story**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=866&ift=1

- **Mayo Clinic / Cardinal Health GLN Implementation White Paper**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=335&ift=1

- **Success Story: How Intermountain Healthcare Successfully Took Ownership of its GLNs and is Embracing GS1 Standards**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=914&ift=1

- **GS1 US Minnesota GLN Pilot Report Phase 1: Lessons Learned**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=311&ift=1

- **GS1 US Minnesota GLN Pilot Report Phase 2: Process Map**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=328&ift=1

- **GS1 Healthcare US GLN GPO Roster Pilot Report**

  http://www.gs1us.org//DesktopModules/DNNCorp/DocumentLibrary/Components/FileDownloader/FileDownloaderPage.aspx?did=325&ift=1

- **GS1 Healthcare US Website**

  https://www.gs1us.org/healthcare

- **GS1 Healthcare US Tools & Resources**

  http://www.gs1us.org/industries/healthcare/tools-and-resources/resources

- **GS1 Healthcare US Webinars**

  http://www.gs1us.org/industries/healthcare/education

Appendix: Sample Vendor Letter

Supplier Name
Supplier Address
Supplier City, State, Zip

Date

<u>RE:</u>   **Requirement for the use of GS1® Global Location Number (GLN) in all business documents**

Dear Supplier:

You are receiving this letter as a valued supplier/distributor to [*insert your organization name*]. In the last several years, there have been ongoing efforts to adopt GS1 commercial supply chain standards in U.S. healthcare. Government regulatory organizations, healthcare associations, group purchasing organizations and manufacturers have all supported the rapid adoption of these commercial standards**.** [*Insert your organization name*] has watched these efforts closely and has determined that now is the time to adopt GS1 standards in all of our business processes.

These GS1 standards are the same as seen in the retail/grocery industries through the use of the Global Trade Item Number® (GTIN®) for accurate product identification, GLN for accurate location identification, the Global Data Synchronization Network® (GDSN®) for product definition and data accuracy, and the United Nations Standard Products and Services Code® (UNSPSC®) for product classification.

Beginning [*insert date*], we will modify the terms and conditions in our contract language to require the use of the Global Location Number in all contracts and business transactions.

<u>GLN – Global Location Number</u>

A GLN is a 13 digit numerical code registered by the GS1 organization and is used to uniquely identify locations in 23 different industries including healthcare. The GLN will be used as a replacement for Customer Account numbers in e-commerce transactions, specifically in the purchase order, reply to purchase order, advance shipment, contact and catalog transactions.

In order to assist you in this transition process we urge each supplier to contact GS1 US at www.gs1us.org for the applicable specifications and standards.

Thank you in advance for your willing participation in this effort.

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