The Global Language of Business

Analysis and Recommendations – GS1 Company Prefix Sub-Team

GS1 Architecture Group Finding

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1 Executive Summary

The GS1 Company Prefix (GCP) is a fundamental building block of the GS1 Identification System; it is a required component of every GS1 Identification Key. The issuance, allocation, transfer, and general management of the GCP are fundamental to delivering the services upon which GS1 member companies depend.

This purpose of this paper is to create a consistent definition of the GS1 Company Prefix, evaluate the impacts of such a definition, and identify the steps required to realize the definition across all standards. Additional deliverables may include actions and recommendations for other governance groups.

The term "GS1 Company Prefix" is defined in the GS1 General Specifications (1) Section 1.4.4 as follows:

> The GS1 Company Prefix is a part of GS1 data structures. It consists of a GS1 Prefix, which is administered by GS1, and a Company Number, which is assigned by a GS1 Member Organisation.

There is, however, no formal specification (character set, minimum and maximum lengths, construction, restrictions, etc.) for the GS1 Company Prefix.

The GS1 Prefix is only slightly better specified: a number with two or more digits. It does not define a maximum length or any treatment of leading zeroes. The table in Section 1.4.2 of the same document, reproduced below, has GS1 Prefixes of lengths 2 and 3 only and implies significance of leading zeroes:

Synopsis of GS1 Prefixes	
GS1 Prefixes	**Significance**
000 – 019	GS1 Prefix[1] (used to create U.P.C. Company Prefixes)
02	GS1 Variable Measure Trade Item identification for restricted distribution
030 – 039	GS1 Prefix
04	GS1 restricted circulation number within a company
05	GS1 US coupon identification
060 – 099	GS1 Prefix (used to create U.P.C. Company Prefixes)
100 – 199	GS1 Prefix
20 – 29	GS1 restricted circulation number within a geographic region
300 – 976	GS1 Prefix
977	ISSN standard numbering (serial publications)
978 – 979	ISBN standard numbering (books)
980	GS1 identification of Refund Receipts
981 – 984	GS1 coupon identification for common currency areas
985 – 989	Reserved for further GS1 coupon identification
99	GS1 coupon identification

It is equally necessary to define the structure and length of the GS1 Prefix as it is an underlying component of the GS1 Company Prefix.

The current table makes no mention of ISMN. The contract between GS1 and ISBN allows ISBN to sub-allocate a portion of the 979 GS1 Prefix range to ISMN.

[1] Starting from GS1 Company Prefix 00 00100 to avoid collision with GTIN-8 Identification Numbers.

While the length of a GCP is not defined in the GS1 General Specifications (1), it is defined in a number of other documents:

1. The GEPIR (2) data model allows a GCP to be from 4-12 digits in length.
2. The GS1 EPC Tag Data Standard (3) allows a GCP (mapped to an EPC Manager Number) to be from 6-12 digits in length.
3. The GS1 Operational Manual (4) Section B-02 – "Allocation of GS1 Company Prefixes" requires that every MO allocate 9-digit GS1 Company Prefixes but does not specify minimum or maximum lengths.

While the GS1 EPC Tag Data Standard (3) and the GEPIR specification (2) both permit 12-digit GCPs, such GCPs would allow only one each of GTIN-13 (nine of GTIN-14 if the indicator digit is included), GLN, GRAI (non-serialized), GDTI (non-serialized), and GCN (non-serialized). This may cause some confusion among users as the object or class reference for these keys would be null.

Further complicating the definition of a GCP are three things:

1. The GS1 System Architecture (5) defines four classes of identification keys. Class 1 Keys are the traditional GS1 identification keys, but Class 2 Keys are those that start with a GS1 Prefix and incorporate keys administered by external organisations.
    a. What is the equivalent to a GCP for a Class 2 Key?
    b. How are such equivalents to be handled, especially in light of GCP-based services like GEPIR and ONS?
2. There are no defined management rules for GCPs, in particular for whether or not transfers to other MOs are permitted and under what circumstances. For example, for historical reasons, GS1 Ireland manages a number of GCPs originally allocated by GS1 UK; similarly, GS1 Canada manages a number of GCPs originally allocated by GS1 US.
    a. Should similar but more limited transfers of responsibility be permitted, such as when a company in country A moves to or is acquired by another company in country B?
    b. How are such transfers of responsibility to be handled, especially in light of GCP-based services like GEPIR and ONS?

Finally, there is a similar table in Section 1.4.3 of the same document, reproduced below, for GS1-8 Prefixes:

Synopsis of GS1-8 Prefixes	
GS1-8 Prefixes	**Significance**
0	Velocity Codes
100 – 139	GS1 Prefix
140 – 199	Reserve
2	GS1 restricted circulation number within a company
300 – 969	GS1 Prefix
97 – 99	Reserve

This table, while intended to overlap the GS1 Prefix table, contradicts it as follows:

- the GS1 Prefix range 100 – 199 is broken into two GS1-8 Prefix ranges, 100 – 139 (aligned with GS1 Prefixes) and 140 – 199 (reserved); and
- the GS1 Prefix Range 970 – 976 is marked as reserved.

1.1 Audience

This document is intended primarily as a reference for standards development groups; it is not intended for public consumption. Initially, the document is to be given to the teams responsible for the GS1 General Specifications (1) and the GS1 Global Data Dictionary (6) so that their respective materials may be updated in accordance with the recommendations herein.

Because the recommendations in this document may affect MO operations, the GS1 Management Board and other governance groups are also part of the audience and formal approval of this document by one or more such groups may be required for the recommendations to proceed.

1.2 Assumptions

The reader is assumed to be generally familiar with GS1 identification standards. In particular, GS1 Identification Keys such as GTIN, GLN, GIAI, etc. will be used throughout this document without any expansion and with limited if any explanation of their use cases except where such explanation materially substantiates other text in this document.

1.3 Scope of work

The scope of work for this document is to answer the following questions:

1. What is a GS1 Company Prefix? The purpose of this question is to review the definitions of the GCP in various normative and policy documents and to derive a single, consistent definition.
2. When dealing with a GS1-8 Prefix, what is the equivalent to a GS1 Company Prefix? This should provide guidance to standards groups (e.g. Tag Data Standard) for whom the GS1 Company Prefix is relevant.
3. When dealing with Class 2 Keys, what is the equivalent to a GS1 Company Prefix? This should provide guidance to GS1 Global Office and to GS1 Member Organisations that approve the generation of Class 2 Keys within their numbering spaces.
4. What are the structure and the valid lengths of a GS1 Company Prefix?
5. If a GS1 Company Prefix is shorter than the minimum length in the GS1 EPC Tag Data Standard (3), how is it to be treated? Is the proposed treatment (e.g. the expansion of a single 5-digit GCP to 10 6-digit GCPs) to be extended to all standards?
6. Is a 12-digit GCP permissible? Under what circumstances?
7. What is the significance of the GCP within the GS1 Identification Key?
8. How is a GCP to be managed by the MO that allocates it?
9. Is cross-MO transfer of a GCP permissible? Under what circumstances?
10. Is there a better alternative to the term "GS1 Company Prefix"?

These questions are expanded in Section 4 – "Problem Statements".

1.4 Issuance and allocation

Issuance and allocation are processes that apply to GS1 Prefixes, GS1 Company Prefixes, and GS1 Identification Keys. Although issuance and allocation often occur at the same time, they are in fact separate processes.

Issuance is the generation of a new artefact (GS1 Prefix, GS1 Company Prefix, or GS1 Identification Key) in accordance with the GS1 rules and the issuing organisation's policies. Allocation is the association of the issued artefact with an entity or object in accordance with the GS1 rules and the issuing organisation's policies.

Examples:

- A GS1 Prefix is issued by GS1 Global Office and allocated to a GS1 Member Organisation.
- A GS1 Company Prefix is issued by a GS1 Member Organisation and allocated to a GS1 Member.

A GTIN is issued by a GS1 Member and allocated to a trade item (product or service)

2 Background Material

2.1 GS1 General Specifications

The term "GS1 Company Prefix" (GCP) is mentioned in numerous locations in the GS1 General Specifications (1). The references below are to Version 13.1, July 2013.

As the GCP is the foundation of all GS1 Identification Keys, the number of places in which the term appears is significant. The references below pertain only to the definition and management of the GCP, not its use within the construction of a GS1 Identification Key.

- 1.3.3 GS1 Company Prefix
- 1.4.2 GS1 Prefixes
- 1.4.3 GS1-8 Prefixes
- 1.4.4 GS1 Company Prefix
- 1.5 GS1 Company Prefix Allocation
- 1.6.1 Acquisitions and Mergers

2.2 GS1 Global Data Dictionary

The GS1 Global Data Dictionary (6) defines a number of terms related to the GS1 Company Prefix.

2.2.1 GS1 Company Prefix

Part of the GS1 System identification number consisting of a GS1 Prefix and a Company Number, both of which are allocated by GS1 Member Organisations. See also U.P.C. Company Prefix. GS1 Member Organisations assign GS1 Company Prefixes to entities that administer the allocation of GS1 System identification numbers. These entities may be, for example, commercial companies, not for profit organisations, governmental agencies, and business units within organisations. Criteria to qualify for the assignment of a GS1 Company Prefix are set by the GS1 Member Organisations.

2.2.2 GS1 System

The specifications, standards, and guidelines administered by GS1.

2.2.3 GS1 Prefix

A number with two or more digits, administered by GS1 that is allocated to GS1 Member Organisations or for Restricted Circulation Numbers.

2.2.4 GS1-8 Prefix

The GS1-8 Prefix is a one-, two-, or three-digit index number, administered by GS1, that is allocated to GS1 Member Organisations for the creation of GTIN-8s or for Restricted Circulation Numbers. GS1-8 Prefixes are only ever used to create GTIN-8s or RCN-8s.

2.2.5 Company Number

A component of the GS1 Company Prefix.

2.2.6 U.P.C. Company Prefix

A special representation of a GS1 Company Prefix constructed from a U.P.C. Prefix and a Company Number. The U.P.C. Company Prefix is only used to create GTIN-12, Coupon-12, RCN-12, and VMN-12, which are encoded in a UPC-A Bar Code.

2.2.7 U.P.C. Prefix

A special representation of the GS1 Prefixes '00 – 09' with the leading zero removed. Used when representing the GTIN-12, Coupon-12, RCN-12, and VMN-12 in a UPC-A Bar Code.

2.3 GS1 Operational Manual

Numerous documents in Section B – "Policies" of the GS1 Operational Manual (4) cover the management of GS1 Company Prefixes:

- Section B-02 – "Allocation of GS1 Company Prefixes" (amended 23 May 2012) defines the GS1 Company Prefix and its recommended structure.
- Section B-03 – "Allocation of GTIN-8 Numbers" (amended September 2009) defines the process for managing the GTIN-8 number bank and the conditions under which a GTIN-8 may be issued to a member company. It also defines the process for transferring unused capacity between GS1 Member Organisations.
- Section B-04 – "Allocation of Global Location Numbers" (first published May 2005, latest amendment unknown) defines the process for allocating blocks of GCPs to professional or trade associations in order to identify its members and specifically states that such GCPs may be used only for the generation of GLNs.
- Section B-05 – "Allocation of additional Prefixes to GS1 Member Organisations" (amended 17 May 2005) defines the process for allocating additional GS1 Prefixes to GS1 Member Organisations that exceed the capacity of their existing GS1 Prefixes.
- Section B-07 – "General Principles for the Direct Assignment of GS1 Company Prefixes to Manufacturers in Non-Member Countries" (approved 26 September 1987) defines the process for allocating GCPs to companies in countries in which there is no GS1 Member Organisation and the transition of those GCPs to new GCPs allocated when a GS1 Member Organisation is formed.
- Section B-12 – "GS1 Policy towards non-GS1 Identification Systems" (approved 18 May 2011) defines the obligations of GS1 Member Organisations when incorporating existing numbering schemes into the GS1 System as either Class 2 Keys (incorporated into the GS1 Identification System) or Class 3 Keys (supported in some standards but not incorporated into the GS1 Identification System).

2.4 GS1 System Landscape

Section 1.1 – "GS1 Identification Keys" defines the management of the GS1 Company Prefix.

2.5 GS1 System Architecture

While the term "GS1 Company Prefix" is used in various locations in the GS1 System Architecture (5), the document does not define its structure or management in any way.

2.6 GS1 System Architecture – Classes of GS1 Identification Keys

The GS1 Identification Keys are the foundation of the GS1 System. However, some GS1 Standards make provision for the use of other systems of identification for which some organisation other than GS1 is the issuing authority. For this reason a classification of keys, drawn from a GS1 perspective, is helpful in understanding the relationship between a key and the rest of the GS1 System.

The following classification of keys is used:

- Class 1: Keys administered by GS1 and fully under its control.
- Class 2: Keys whose framework is controlled by GS1 by means of portion of the GS1 numbering capacity that is allocated for an identification scheme administered by an external organisation.
- Class 3: Keys fully administered and controlled outside GS1 but which are supported in some part or parts of the GS1 System.

- Class 4: Keys that are entirely outside the GS1 System i.e. all identifiers that meet the technical definition of "key" in Section 4.1.3 [of the GS1 System Architecture], but are not in the first three classes.

This classification is described in more detail below.

2.6.1 Class 1 Keys

A Class 1 key has its structure and its allocation and lifecycle rules defined by GS1. Class 1 keys always start with a GS1 Prefix[2]. They usually start with a GS1 Company Prefix licensed by a GS1 Member Organisation (MO) or by the GS1 Global Office to a user company. In some cases, they are licensed one by one by MOs to user companies. They are subject to allocation rules defined in GS1 Standards, and their association with attributes is governed by validation rules also defined in GS1 Standards.

The allocation and lifecycle rules and the standardised structure guarantee full interoperability between users of all layers of the GS1 System. This means that when a company uses Class 1 keys for its intended purpose it can be confident that its GS1 compliant trading partners will be able to accept and process them per GS1 Standards.

Currently the Class 1 keys are GTIN, SSCC, GLN, GRAI, GIAI, GSRN, GDTI, GSIN, GINC, CPID, and GCN.

2.6.2 Class 2 Keys

A Class 2 key starts with a GS1 Prefix, incorporates a key administered by an external organisation, and where its corresponding Class 1 key format has a check digit it must be used and calculated in the same way as for Class 1 keys. Class 2 keys are unique with respect to Class 1 keys of the same type, and their values are a subset of all possible values of the corresponding GS1 key. Their allocation and lifecycle rules, however, are defined by an organisation external to GS1. The degree to which these rules are compatible with those of the corresponding Class 1 keys is specific to each Class 2 key. In some cases they can easily be used alongside Class 1 keys, but sometimes legal restrictions or dominant business practices lead to acceptance of Class 2 keys whose rules vary significantly from their Class 1 equivalents.

It is important to understand that technical compatibility is not the same in practice as interoperability. Technical compatibility is achieved by having uniqueness of values within the namespace and a similar basic structure for the identifier (e.g., GS1 Prefix and check digit). It is still possible for business or legal restrictions to be imposed requiring use of a certain format or range of values, even if such restrictions are not technically justified. It might be argued that Class 2 keys are more susceptible to these geopolitical constraints than keys in Class 1.

Interoperability is the ability to use the key within the context of business processes supported by GS1 standards. However, the degree of interoperability with GS1 System depends on the extent to which a Class 2 key conforms to Class 1 key functionality and rules.

Class 2 keys are always based on a GS1 Prefix issued by GS1 and might be based on a GS1 Company Prefix allocated by a GS1 Member Organisation or the GS1 Global Office. Examples include:

- ISBNs may be used with GS1 prefixes 978 and 979 to form GTIN-13s.
- GS1 prefix 34 is used with Club Inter Pharmaceutique (CIP) codes for pharmaceuticals in France to accommodate national numbers inside the GTIN number range
- The Produce Electronic Identification Board uses the GS1 Company Prefix 033383 combined with a commodity code issued by the Produce Marketing Association to create "PEIB UPCs" inside the GTIN number range.

[2] This is not quite literally true, because the syntax of the GTIN-14 and SSCC keys include an extra digit that precedes the GS1 Prefix. However, from the standpoint of the allocation process, the GS1 Prefix are the first digits to be chosen during the construction of a key, so in this sense the GTIN and SSCC also "start with" a GS1 Prefix. Note that in the EPC syntax, the first digits *are* always the GS1 Prefix.

There must be a contractual agreement between the GS1 Global Office or a GS1 Member Organisation and the agency that administers the embedded key. This agreement specifies at minimum the following:

- GS1 System components that can be used with the key, e.g. data carriers in which the key may be used
- Restrictions that may apply, e.g. ISBN can only be used for books
- Financial considerations
- GS1 keys allocation and lifecycle rules
- Validation rules
- Compatibility with class 1 key function and syntax for example:
  - Will this class 2 key work with physical data carriers and GDSN validation rules
  - Will this class 2 key support ONS
  - Etc…
- Restrictions on reciprocity (e.g. national or currency zones)

2.6.3 Class 3 Keys

A Class 3 key has its structure and its rules for use defined, administered and managed by an agency external to GS1. However this agency enters into an agreement with GS1 that enables its keys to be used in selected GS1 Standards; for example, within an EPC header.

It is intended that Class 3 keys are used in selected GS1 standards without disrupting users of Class 1 and Class 2 keys, but:

- GS1 gives no assurance that Class 3 keys will be recognised by users of Class 1 and Class 2 keys
- GS1 has no expectation that systems relying upon Class 3 keys should recognise keys from Class 1 or Class 2
- Has no expectation that systems relying upon one type of Class 3 key should recognise other types of Class 3 key.

Companies can take advantage of GS1 technology, network and communications standards for Class 1, 2 and 3 keys, but should not expect full interoperability between keys in Classes 1 and 2 and keys in Class 3.

Keys in Class 3 at the present time are the Auto-ID Center General Identifier (ID), and keys compliant with US Department of Defence (USDoD) and Airline Transport Association (ATA) standards that are based on CAGE and DoDAAC company identification. Such keys are supported in the GS1 EPC Tag Data Standard and consequently have an EPC URI that can be used in EPCIS.

2.6.4 Class 4 Keys

A Class 4 key is administered and managed externally to GS1 and is not accommodated by any GS1 standard. Examples include DUNS, VIN, HIBC, BIC, DOI and many others.

2.6.5 Summary

The following table summarises the key classification discussed above.

Class	Managed	Contract	GS1 Prefix	Interoperability*
1	By GS1	N/A	Yes	Full
2	Externally	Required	Yes	Variable
3	Externally	Required	No**	Limited
4	Externally	No	No	None

* Interoperability is the ability to use the key within the context of business processes supported by GS1 standards.

** One exception is GID GS1 Prefix 951. While the key itself does not contain a GS1 Prefix, the portion of the key that semantically corresponds to the GS1 Prefix is 951, and this GS1 Prefix is reserved for that use to avoid confusion with Class 1 and 2 keys.

2.7 EPCglobal Architecture Framework

The EPC Global Architecture Framework (7) focuses primarily on the term "EPC Manager Number"; though in most cases this is the same as the GCP that is not always the case. The term "GS1 Company Prefix" (GCP) is therefore seldom in the document. The references below are to Version 1.5, 23 March 2013.

- 5.4 Correspondence to Existing Codes
- 7.3 ONS Interactions

2.8 GS1 EPC Tag Data Standard

As the GCP is the foundation of all GS1 Identification Keys and therefore the foundation of most EPCs, the number of places in which the term appears in the GS1 EPC Tag Data Standard (3) is significant. The references below are to Version 1.8, 2 February 2014, and pertain only to the definition and management of the GCP, not its use within the construction of a GS1 Identification Key or EPC.

- 6.2 Assignment of EPCs to Physical Objects
- 7 Correspondence Between EPCs and GS1 Keys

3 Roles and Responsibilities

3.1 GS1 Global Office

GS1 Global Office is responsible for the allocation of the GS1 Prefix to the various GS1 Member Organisations as a way of partitioning the number space. GS1 Global Office is also responsible for assignment of GCPs to companies under certain circumstances and Class 2 Key GS1 Prefixes to international organisations such as ISBN.

3.2 GS1 Member Organisation

A GS1 Member Organisation is responsible for managing the lifecycle of the GS1 Company Prefix and, in the case of the licensing of a one-off GS1 Identification Key, working with the GS1 Member to manage the lifecycle of the GS1 Identification Key.

Managing the lifecycle of a GS1 Company Prefix requires:

- issuance of the GS1 Company Prefix within the GS1 Prefix space allocated by GS1 Global Office;
- allocation of the GS1 Company Prefix to the GS1 Member;
- transfer of the GS1 Company Prefix to another GS1 Member in the event of a company merger or the acquisition of the first member's product portfolio identified using the GS1 Company Prefix;
- retirement of the GS1 Company Prefix when the GS1 Member surrenders the license;
- management of the GS1 Company Prefix during its non-reuse period (typically four years); and
- release of the GS1 Company Prefix back to the available pool for reallocation to another GS1 Member at the end of its non-reuse period.

Managing the lifecycle of a GS1 Identification Key requires:

- management of a GS1 Company Prefix for the purpose of one-off GS1 Identification Key issuance;
- issuance of the GS1 Identification Key within the space defined by the GS1 Company Prefix
- licensing of the GS1 Identification Key to the GS1 Member;
- informing the GS1 Member of the EPC URI corresponding to the GS1 Identification Key if so required;
- transfer of the GS1 Identification Key to another GS1 Member in the event of a company merger or the acquisition of the first member's product identified using the GS1 Identification Key;
- retirement of the GS1 Identification Key when the GS1 Member surrenders the license;
- management of the GS1 Identification Key during its non-reuse period (typically four years or never reused for regulated healthcare trade items); and
- release of the GS1 Identification Key back to the available pool for reallocation to another GS1 Member at the end of its non-reuse period.

For a country that does not have a GS1 Member Organisation, the above functions may be performed by a GS1 Member Organisation outside the country or by GS1 Global Office.

A GS1 Member Organisation may also be responsible for allocating space within its GS1 Prefix range to local organisations that issue Class 2 Keys.

3.3 GS1 Member

The term used to identify a company to which a GS1 Company Prefix or a one-off GS1 Identification Key is licensed varies from one MO to another, depending on local regulations and the charter under which the MO is incorporated. While the most general term for such a company is "GS1 (country) Member" (e.g. "GS1 UK Member"), that is not always the case. Despite that, the term "GS1

Member" is the most common and is used throughout this document to refer to members, subscribers, or customers as defined by each local GS1 Member Organisation.

A GS1 Member is responsible for managing the lifecycle of the GS1 Identification Keys, those within the GS1 Company Prefix allocated to it or the one-off GS1 Identification Keys allocated to it.

Managing the lifecycle of a GS1 Identification Key within a GS1 Company Prefix requires:

- issuance of the GS1 Identification Key within the space defined by the GS1 Company Prefix;
- allocation of the GS1 Identification Key to an appropriate object in accordance with the allocation rules;
- retirement of the GS1 Identification Key when required by the allocation rules;
- management of the GS1 Identification Key during its non-reuse period (typically four years); and
- release of the GS1 Identification Key back to the available pool for reallocation to another appropriate object at the end of its non-reuse period.

Managing the lifecycle of a one-off GS1 Identification Key requires:

- allocation of the GS1 Identification Key to an appropriate object in accordance with the allocation rules;
- retirement of the GS1 Identification Key when required by the allocation rules;
- management of the GS1 Identification Key during its non-reuse period (typically four years); and
- release of the GS1 Identification Key at the end of its non-reuse period back to the available pool for reallocation to another appropriate object or back to the GS1 Member Organisation if required by the licensing terms.

4 Problem Statements

4.1 Definition of GS1 Company Prefix

There is no formal, consistent definition of a GS1 Company Prefix that would satisfy the Architecture Group were it proposed as a standard under today's Global Standard Management Process.

The GCP is said to be composed of a GS1 Prefix and a Company Number. While the GS1 Prefix is relatively well-defined, the Company Number is defined as a component of the GCP, which creates a circular reference.

The lack of a clear definition causes issues in the development of systems that manage GCPs for Member Organisations. This also affects the development of services such as GEPIR (for GCP lookup) and ONS (for service discovery) that have the GCP at the core of their designs.

4.2 Equivalent of GS1 Company Prefix for GS1-8 Prefix

The GTIN-8 is available for items whose packaging does not include enough available space to permit the use of an EAN-13 or UPC-A symbol. GTIN-8s are issued individually by GS1 Member Organisations on request and are based on their GS1-8 Prefixes. Given the utility of the GCP within the GS1 Identification System, in particular for GEPIR, TDS, and ONS, is it necessary for there to be the equivalent of the GCP for the GS1-8 Prefix used to construct a GTIN-8? If no equivalent is possible, what standards and services are affected and what are the alternatives?

4.3 Equivalent of GS1 Company Prefix for Class 2 Identification Keys

Class 2 Keys are those that start with a GS1 Prefix and incorporate keys administered by external organisations. Given the utility of the GCP within the GS1 Identification System, in particular for GEPIR, TDS, and ONS, is it necessary for there to be the equivalent of the GCP for a Class 2 Key? If no equivalent is possible, what standards and services are affected and what are the alternatives?

4.4 Structure and Valid Lengths of GS1 Company Prefix

While the structure of the GCP is generally accepted to be numeric, this is not explicitly stated in any document although a non-numeric GCP would break a number of standards (e.g. for the construction of a numeric GS1 Identification Key). The GS1 Prefix is stated to be "a number with two or more digits" but the Company Number is not explicitly numeric; the implication cannot be accepted as standard as there are numerous GS1 data elements that use the term "number" and yet support alphanumeric characters (e.g. serial number, batch number, lot number).

The valid lengths of a GS1 Company Prefix are not stated in any normative way. Within GEPIR, the length of the GCP may be 4-12 digits; within the GS1 EPC Tag Data Standard, it is 6-12 digits. The GS1 Operational Manual states only that a GS1 Member Organisation must support 9-digit prefixes but is silent on all other lengths.

4.5 Treatment of GS1 Company Prefix in GS1 EPC Tag Data Standard

Within the GS1 EPC Tag Data Standard, the GCP may be 6-12 digits long. However, some prefixes are shorter than 6 digits; GS1 UK, for example, licensed 5-digit prefixes to CD manufacturers to support their volume. At this time there is no formal instruction on how to treat GCPs shorter than 6 digits. There are no known instances of GCPs longer than 12 digits.

4.6 Support for 12-digit GS1 Company Prefix

Mathematically, a 12-digit GCP poses no problem for the assignment of a GS1 Identification Key. The capacity of a GCP for a given numeric key is $10^{(\text{significant key length} - \text{GCP length})}$; where the significant key length is the length of the key excluding any leader (e.g. indicator digit) and the check digit if applicable. When the significant key length and the GCP length are the same, the result is 10^0,

which is 1. In short, a 12-digit GCP allows for a single GTIN-13, a single GLN, a single GRAI, a single GDTI, a single GCN, and multiples of all other keys.

While this is mathematically correct, should it be permissible? Within GEPIR, it's considered valid to return a 12-digit GCP for one-off identification keys, but that may not be the actual length of the GCP from which the key was issued.

4.7 Significance of GS1 Company Prefix within GS1 Identification Key

While one of the goals of the GS1 Identification System is to treat the entirety of the key as non-significant, the fact that the GCP is strongly (not perfectly) correlated with the licensee has led some to use the GCP as a form of identification for the member. The GCP also has an implied significance (e.g. thanks to its use in GEPIR and TDS).

4.8 Management of GS1 Company Prefix by Issuing GS1 Member Organisation

Except for limited text within Section B – "Policies" of the GS1 Operational Manual (4), the procedures for the management of the lifecycle of GS1 Company Prefixes are not well defined.

4.9 Cross-MO transfer of GS1 Company Prefix

While some MOs sublicense prefixes from their ranges to other MOs (e.g. US to Canada and others, UK to Ireland), this is not common practice. In today's globalized world with companies moving from one locale to another, it's entirely possible for a member company ask the MO in its new country to take over management of the GCP issued by the MO in its old country. Should this be permissible and under what circumstances?

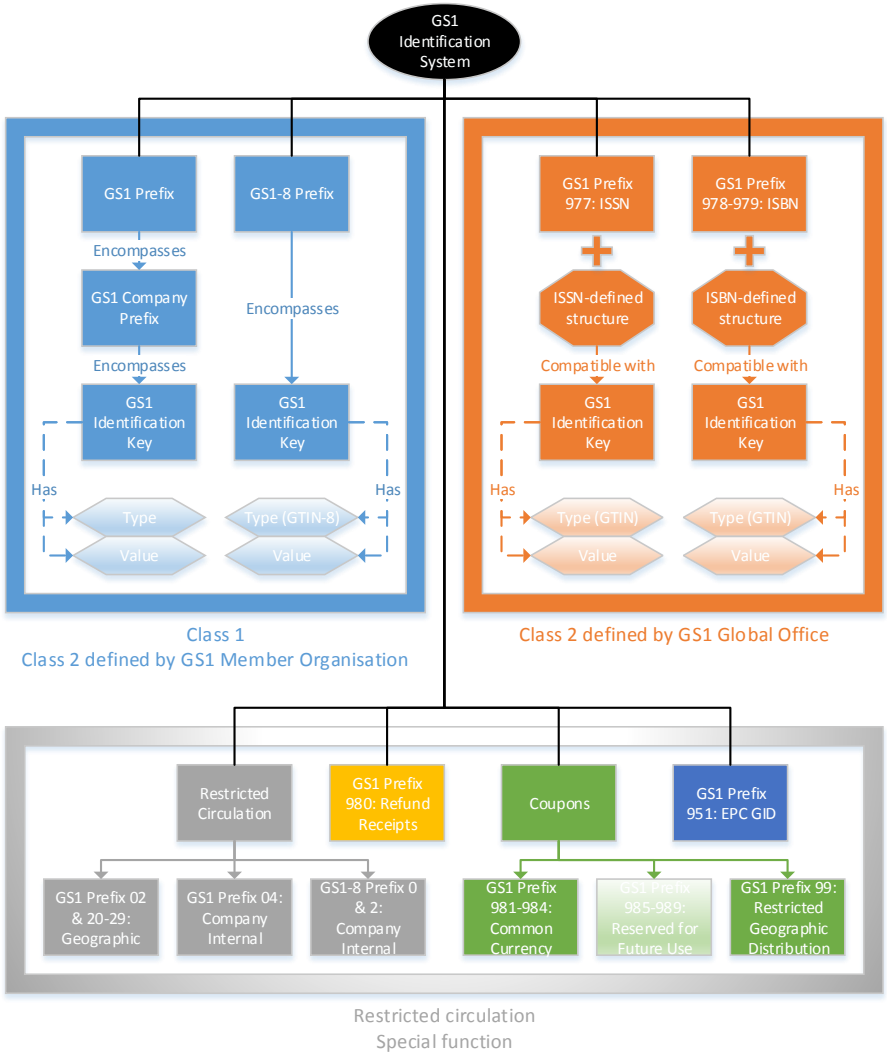
4.10 Alternative to term "GS1 Company Prefix"

The use of the word "Company" in the term "GS1 Company Prefix" implies significance, that the number has some formal association with the company to which is licensed. While this may be true from a general view of the GS1 Identification System, it is not true in all cases and can lead to the misunderstanding that the system carries significance within the keys.

5 The GS1 Identification System (Proposed)

Note: Previous sections of this document referred the GS1 General Specifications (1) Version 13.1, July 2013, the version that was in place at the time that this document was originally developed. From this point forward, the references are to Version 15 (issue 2), January 2015.

The GS1 Identification System is a distributed, federated system for issuing unique GS1 Identification Keys. The space represented by the GS1 Identification System appears below:



Each part of the GS1 Identification System is administered in a different way:

- Class 1 GS1 Identification Keys are administered at three levels: GS1 Global Office, GS1 Member Organisations, and GS1 Members. Each level of the hierarchy is responsible for partitioning the range of permissible GS1 Identification Keys for allocation to the next level or for issuing individual GS1 Identification Keys for allocation to identifiable objects.
- Class 2 GS1 Identification Keys are administered at levels dependent on the GS1 entity (GS1 Global Office or GS1 Member Organisation) that defines them.
  - Class 2 GS1 Identification Keys defined by GS1 Global Office (international identification keys) are administered at two or three levels: GS1 Global Office, an external organisation, and optionally members of the external organisation.

- Class 2 GS1 Identification Keys defined by a GS1 Member Organisation (national identification keys, e.g. US National Drug Code or French Club Inter Pharmaceutique) are administered at three or four levels: GS1 Global Office, GS1 Member Organisation, an external organisation, and optionally members of the external organisation.

- The restricted circulation and special function spaces are administered according to their types.
  - Restricted Circulation Numbers (Geographic) are administered according to procedures defined by the local GS1 Member Organisation, have no applicability outside of the country served, and are not globally unique. They are available to identify trade items, coupons, and other objects in a geographic region. They are often but not exclusively used for Variable Measure Trade Items, items that are sold in random quantities at a fixed price per unit.
  - Restricted Circulation Numbers (Company Internal) are administered according to procedures defined by the company using them, have no applicability outside of the company, and are not globally unique. They are available to identify trade items, coupons and other objects in an internal company environment.
  - Refund Receipts are administered according to procedures defined by the local GS1 Member Organisation and have no applicability outside of the country served.
  - Coupons are administered according to procedures defined by the local GS1 Member Organisation and have no applicability outside of the country served. For Common Currency Coupons, multiple GS1 Member Organisations in partnership are responsible for joint development of administration procedures and the coupons apply in all countries served.
  - The EPCglobal space is administered by GS1 Global Office for special use cases in EPCglobal standards (e.g. for assignment of EPC Manager Numbers not associated with a GS1 Company Prefix).

Unless otherwise indicated, subsequent discussion in this chapter applies only to Class 1 and Class 2 GS1 Identification Keys.

5.1 Character set

Every identifier in the GS1 Identification System is a string composed of characters from the ISO/IEC 646 Table 1 – Unique graphic character allocations[3]. The characters available may be further restricted to a subset of that table as follows:

- some identifiers use only the digit characters (‘0’ to ‘9’);
  - GTIN;
  - GLN;
  - SSCC;
  - GRAI (without serial component);
  - GSRN;
  - GDTI (without serial component);
  - GSIN;
  - GCN (with or without serial component);
- CPID uses only the digit characters (‘0’ to ‘9’), upper case alphabetic characters (‘A’ to ‘Z’), and three special characters (‘#’, ‘-’, and ‘/’); and
- the GS1 Prefix and (if applicable) the GS1 Company Prefix within any identifier use only the digit characters (‘0’ to ‘9’).

As every identifier in the GS1 Identification System is a string, even when it is composed only of digit characters, all characters including leading zeroes are significant.

[3] While the ISO/IEC 646:1991 specification is not publicly available, the 6th edition of ECMA-6 corresponds to it and is available at http://www.ecma-international.org/publications/files/ECMA-ST/Ecma-006.pdf.

5.2 Components

5.2.1 GS1 Prefix

A GS1 Prefix is a unique string of two or more digits issued by GS1 Global Office and allocated to a GS1 Member Organisation, allocated to GS1 Global Office itself, reserved for Restricted Circulation Numbers, reserved for special functions (e.g. coupons, receipts, EPC General Identifier), or allocated to external organisations for the management of Class 2 GS1 Identification Keys.

As the GS1 Prefix varies in length, the issuance of a GS1 Prefix excludes all longer strings that start with the same digits from being issued as GS1 Prefixes.

The space for GS1 Prefixes is partitioned as shown in the following table. The table does not imply that every GS1 Prefix in each range has been issued or that every issued GS1 Prefix has been allocated.

Synopsis of GS1 Prefixes	
GS1 Prefixes	**Significance**
00000	Reserved for GS1 Company Prefix equivalent of GS1-8 Prefix
00001 – 01999	GS1 Prefix (used to create U.P.C. Company Prefixes)
02	GS1 restricted circulation within a geographic region
03	GS1 Prefix
04	GS1 restricted circulation within a company
05	GS1 US reserved for future use
06 – 09	GS1 Prefix (used to create U.P.C. Company Prefixes)
10 – 19	GS1 Prefix
20 – 29	GS1 restricted circulation within a geographic region
300 – 950	GS1 Prefix
951	Reserved for EPC General Identifier (GID) scheme
952 – 976	GS1 Prefix
977	Allocated to ISSN International Centre for serial publications
978 – 979	Allocated to International ISBN Agency for books, portion of 979 sub-allocated to International ISMN Agency for sheet music
980	GS1 identification of refund receipts
981 – 984	GS1 coupon identification for common currency areas
985 – 989	GS1 reserved for further coupon identification
99	GS1 coupon identification

5.2.2 GS1-8 Prefix

A GS1-8 Prefix is a unique string of three digits issued by GS1 Global Office and allocated to a GS1 Member Organisation, allocated to GS1 Global Office itself, or reserved for Restricted Circulation Numbers (RCN-8). The GS1-8 Prefix may be used only for the issuance of GTIN-8 or RCN-8 identification keys.

By convention and with one exception, every two-digit GS1 Prefix allocated to a GS1 Member Organisation has a matching set of ten GS1-8 Prefixes and every three-digit GS1 Prefix allocated to a GS1 Member Organisation has a matching single GS1-8 Prefix allocated to the same GS1 Member Organisation. The one exception is any GS1 Prefix starting with '0' (allocated to GS1 US); such GS1 Prefixes have no matching GTIN-8 Prefix as they are reserved for RCN-8.

GS1 Global Office may also allocate GS1-8 Prefixes that do not correspond to any issued GS1 Prefixes to GS1 Member Organisations that need extra capacity.

The space for GS1-8 Prefixes is partitioned as shown in the following table. The table does not imply that every GS1-8 Prefix in each range has been issued or that every issued GS1-8 Prefix has been allocated.

Synopsis of GS1-8 Prefixes	
GS1-8 Prefixes	**Significance**
000 – 099	GS1 Restricted Circulation Number within a company
100 – 199	GS1-8 Prefix
200 – 299	GS1 Restricted Circulation Number within a company
300 – 976	GS1-8 Prefix
977 – 999	GS1 reserved for future use

5.2.3 GS1 Company Prefix

A GS1 Company Prefix is a unique string of four to twelve digits used to issue GS1 Identification Keys. The first digits are a valid GS1 Prefix and the length must be at least one longer than the length of the GS1 Prefix. The GS1 Company Prefix is issued by a GS1 Member Organisation or by GS1 Global Office, is based on a GS1 Prefix allocated to the issuer, and is allocated either to a GS1 Member or to the issuer itself (e.g. for issuing one-off identification keys).

As the GS1 Company Prefix varies in length, the issuance of a GS1 Company Prefix excludes all longer strings that start with the same digits from being issued as GS1 Company Prefixes.

Support for four- and five-digit GS1 Company Prefixes should be limited to those already issued by GS1 Member Organisations. As the GS1 EPC Tag Data Standard (3) supports only GS1 Company Prefixes between six and twelve digits in length (inclusive), a four- or five-digit GS1 Company Prefix shall be treated as a block of consecutive six-digit values for the purposes of RFID tag encoding and EPC URI generation.

5.2.4 GS1 Identification Key

A GS1 Identification Key is a unique identifier for a class of objects (e.g. trade items) or an instance of an object (e.g. shipping container) and is composed of both a type and a value.

The GS1 Identification Key type is declared explicitly by the context in which the key is used:

- in a bar code, the type is declared by the preceding application identifier;
  - in the case of EAN/UPC and ITF-14 symbologies the application identifier 01 is implied;
- in an EPC RFID tag:
  - within the EPC memory bank, the type is declared by the EPC header value;
  - within the user memory bank, the type is declared by extra bits that map to an application identifier;
- in an EPC URI, the type is declared by the scheme component; and
- in electronic systems (eCom messages, XML, databases, etc.), the type may be declared:
  - directly by the underlying schema or specification;
  - indirectly by associated data within the document or record;

The GS1 Identification Key type defines the syntax (character set and structure) of the value. At minimum, the GS1 Identification Key value contains one of the following:

- a GS1 Company Prefix (all Class 1 except GTIN-8, some Class 2);
- a GS1-8 Prefix (GTIN-8); or

- a GS1 Prefix (all other Class 2).

Whether a Class 2 GS1 Identification Key contains a GS1 Company Prefix or a GS1 Prefix alone is determined by the GS1 party to the contractual agreement. A Class 2 GS1 Identification Key that contains a GS1 Prefix alone may also contain an equivalent to the GS1 Company Prefix (see Section 6.3) but that is not the same as containing a true GS1 Company Prefix.

5.2.5 U.P.C. Prefix

A GS1 Prefix starting with a zero ('0') becomes a U.P.C. Prefix by removing the leading zero. A U.P.C. Prefix is used to:

- issue U.P.C. Company Prefixes;
- reserved for Restricted Circulation Numbers; or
- reserved for special functions.

The space for U.P.C. Prefixes is partitioned as shown in the following table.

Synopsis of U.P.C. Prefixes		
GS1 Prefixes	**U.P.C. Prefixes**	**Significance**
00000	N/A	Reserved for GS1 Company Prefix equivalent of GS1-8 Prefix
00001 – 01999	0001 – 1999	U.P.C. Prefix
02	2	GS1 Variable Measure Trade Item identification for restricted distribution
03	3	U.P.C. Prefix, reserved for alignment with FDA Labeler Code
04	4	GS1 Restricted Circulation Number within a company
05	5	Reserved for future use
060 – 099	60 – 99	U.P.C. Prefix

5.2.6 U.P.C. Company Prefix

A GS1 Company Prefix starting with a zero ('0') becomes a U.P.C. Company Prefix by removing the leading zero. A U.P.C. Company Prefix is used to issue GTIN-12 identification keys.

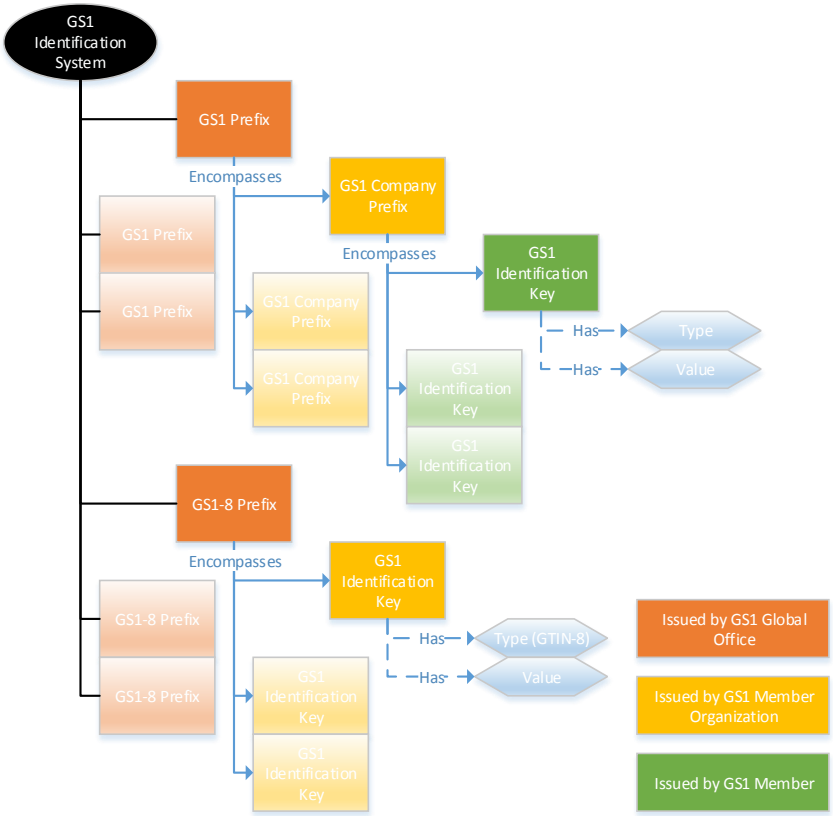
5.3 Alternate Views

The views below are alternatives to the one at the start of this section, expanding on the Class 1 Identification Key section. Similar views may be possible for some Class 2 Identification Keys but that is determined on a case by case basis.

The views are colour-coded according to the entities generally responsible for the components. Exceptions as documented above are possible but are not relevant to the diagrams.

5.3.1 Hierarchical View

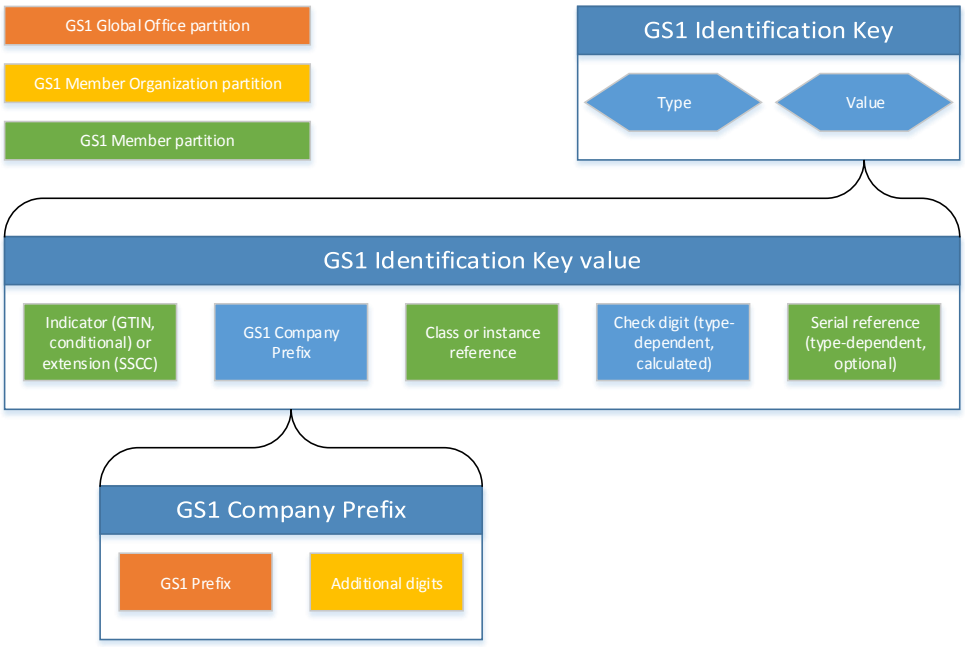
This view shows the GS1 Identification System as a top-down, hierarchical space with each component encompassing one or more components to its right, down to the GS1 Identification Key which has a type and a value.



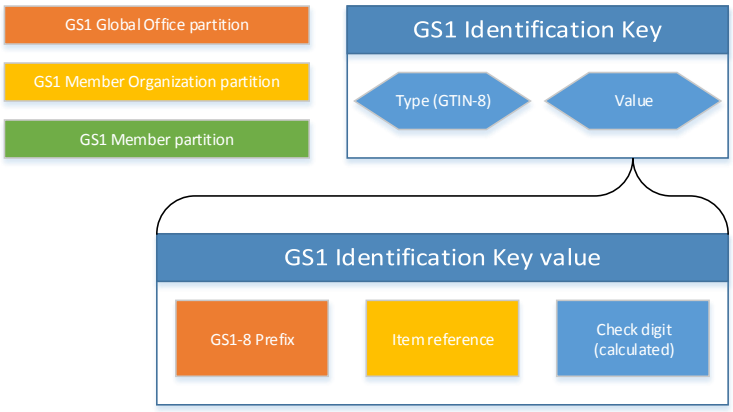
5.3.2 Partitioned View

This view shows the GS1 Identification System as a bottom-up, partitioned space with each component broken out into its sub-components.

The first diagram is for all GS1 Identification Keys except GTIN-8.



The second diagram is for GTIN-8 only.



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6 Proposals

This section aligns with Section 4 –"Problem Statements".

6.1 Definition of GS1 Company Prefix

The definition of the GS1 Company Prefix is as written in Section 5.2.3 – "GS1 Company Prefix". Due to its relationships to other components, all of Section 5.2 – "Components" should be included in any document that formally defines the GS1 Company Prefix or that uses the formal definition for reference purposes.

6.2 Equivalent of GS1 Company Prefix for GS1-8 Prefix

The equivalent of a GS1 Company Prefix for a GS1-8 Prefix shall be the GS1-8 Prefix prepended with a string consisting of five zeroes ("00000").

6.3 Equivalent of GS1 Company Prefix for Class 2 Identification Keys

The equivalent of a GS1 Company Prefix for a Class 2 Identification Key depends on the type of key, on the nature of the agreement between the GS1 party and the external organisation, and on the structure of the external organisation's key.

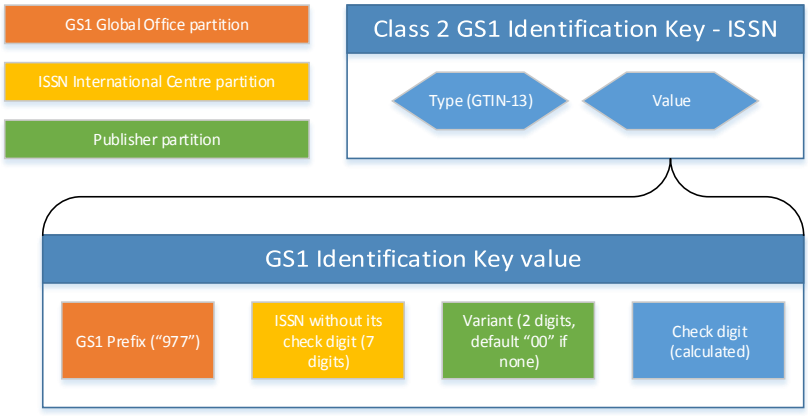
Every GS1 party that supports Class 2 Identification Keys is required to document the equivalent of the GS1 Company Prefix for those keys. Some known examples are documented below.

6.3.1 International Standard Serial Number (ISSN), GS1 Global Office

The GS1 Prefix "977" has been allocated to the ISSN International Centre (*http://www.issn.org/*) for the identification of serial publications. The ISSN is a string of eight characters; the first seven are digits and the last is either a digit or the letter 'X'. The last character is not significant as it is a check sum of the previous seven. An ISSN is allocated to a specific publication.

ISSNs are issued individually. The publisher to whom an ISSN is issued may further issue a variant, a string of two digits, to indicate pricing or publication variances (e.g. day of the week for a newspaper). When encoded in GTIN-13 format, the variant defaults to "00" if not present.

The Class 2 GS1 Identification Key for ISSN is partitioned as follows:



The ISSN without its check digit forms part of the key value. There is no equivalent to the GS1 Company Prefix for a Class 2 GS1 Identification Key for ISSN.

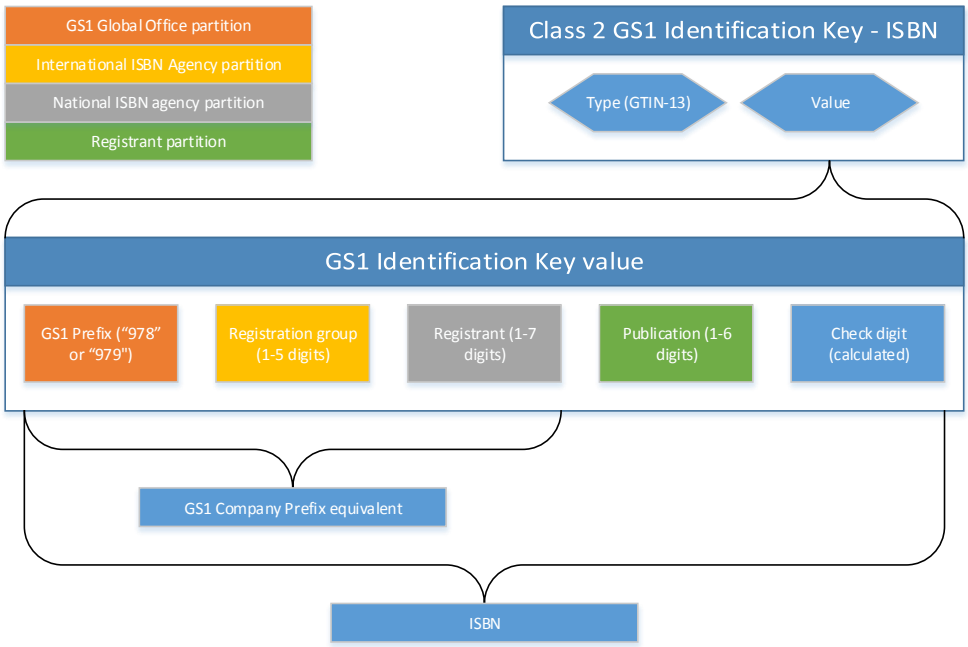
6.3.2 International Standard Book Number (ISBN), GS1 Global Office

The GS1 Prefixes "978" and "979" have been allocated to the International ISBN Agency (*http://www.isbn-international.org/*) for the identification of books and, indirectly, of sheet music.

The ISBN is a string of 13 digits in a format compatible with GTIN-13 and is composed of the following:

- the GS1 Prefix;
  - three digits, either "978" or "979";
- the registration group (language-sharing country group, individual country or territory);
  - one to five digits;
  - if the GS1 Prefix is "979" and this value is "0", the number is sub-allocated (by agreement between GS1 and ISBN) to the International ISMN Agency and remaining components in this list do not apply;
- the registrant;
  - one to seven digits;
- the publication;
  - one to six digits; and
- the check digit.

The Class 2 GS1 Identification Key for ISBN is partitioned as follows:



The ISBN is the entire key value. The equivalent to the GS1 Company Prefix for a Class 2 GS1 Identification Key for ISBN is the sequence of:

- the GS1 Prefix;
- the registration group; and
- the registrant.

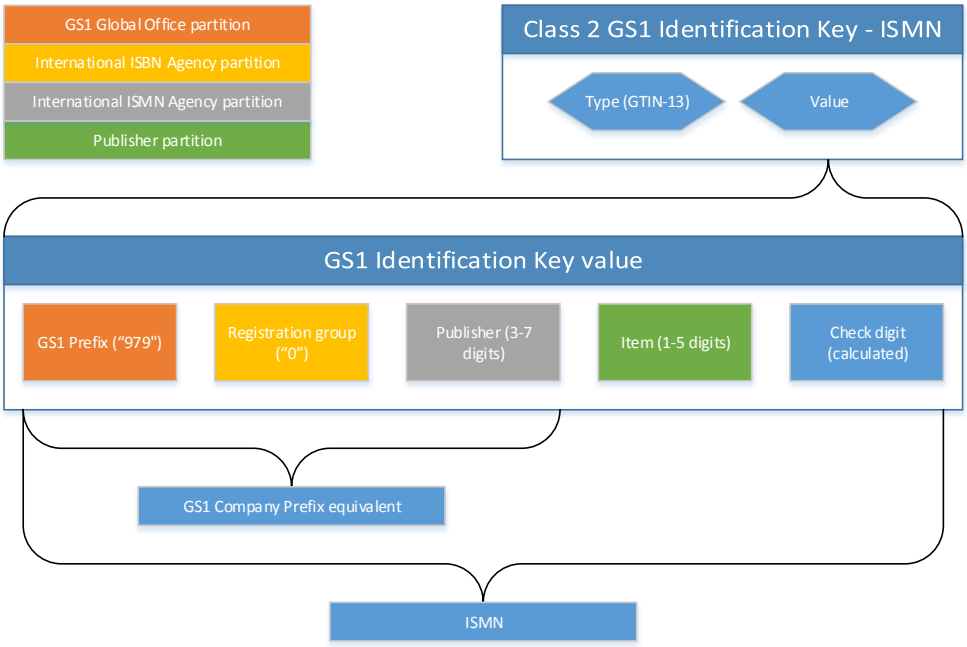
6.3.2.1 International Standard Music Number (ISMN)

The GS1 Prefix "979" registrant group "0" has been sub-allocated by the International ISBN Agency to the International ISMN Agency (*http://www.ismn-international.org/*) for the identification of sheet music. The ISMN is a string of 13 digits in a format compatible with GTIN-13 and is composed of the following:

- the GS1 Prefix;

744 - three digits, "979";
745 - the registrant group;
746 - one digit, "0";
747 - the publisher;
748 - three to seven digits;
749 - the item;
750 - one to five digits; and
751 - the check digit.

752 The Class 2 GS1 Identification Key for ISMN is partitioned as follows:



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754 The ISMN is the entire key value. The equivalent to the GS1 Company Prefix for a Class 2 GS1
755 Identification Key for ISMN is the sequence of:

756 - the GS1 Prefix;
757 - the registrant group; and
758 - the publisher.

759 6.4 Structure and Valid Lengths of GS1 Company Prefix

760 The structure and valid lengths of the GS1 Company Prefix are as written in Section 5.2.3 – "GS1
761 Company Prefix". Due to its relationships to other components, all of Section 5.2 – "Components"
762 should be included in any document that formally defines the GS1 Company Prefix or that uses the
763 formal definition for reference purposes.

764 6.5 Treatment of GS1 Company Prefix in GS1 EPC Tag Data Standard

765 The GS1 Company Prefix or equivalent shall be used as issued in all places required within the GS1
766 EPC Tag Data Standard except as follows:

767 - where the GS1 Company Prefix is five characters long, it shall be treated as ten consecutive values
768 of length six where the first five characters are the issued GS1 Company Prefix and the remain
769 character is digits "0" to "9"; and

- where the GS1 Company Prefix is four characters long, it shall be treated as 100 consecutive values of length six where the first four characters are the issued GS1 Company Prefix and the remain characters are digits "00" to "99".

This direction applies to both the construction of the EPC URI and the encoding of the tags so as to preserve the 1:1 relationship between the two.

As per Section 6.6, discussion of one-off GS1 Identification Keys shall be amended to require that the GS1 Company Prefix be used (though 12-digit GS1 Company Prefix is permitted).

6.6 Support for 12-digit GS1 Company Prefix

Some GS1 Member Organisations have issued and continue to issue 12-digit GS1 Company Prefixes; GS1 Sweden, for example, does so to companies whose primary identification use case is for shipping containers and therefore for SSCCs.

A 13-digit one-off identification key less its check digit shall not be treated as 12-digit GS1 Company Prefixes. Any standard or service dealing with the GS1 Company Prefix shall treat it as separate from the GS1 Identification Key in all circumstances.

As of this writing, the GEPIR 4.0 technical specification is going through the final stages of review. The current GEPIR 3.X specification does not support any distinction between a GS1 Company Prefix licensee and a GS1 Identification Key licensee; the GEPIR 4.0 specification does distinguish between the two and any MO implementing GEPIR 4.0 shall include support for that distinction at the earliest opportunity and cease returning one-off identification keys as 12-digit GS1 Company Prefixes.

6.7 Significance of GS1 Company Prefix within GS1 Identification Key

The GS1 Company Prefix indicates the party responsible for the partitioned space from which the GS1 Identification Key was issued. Similarly, the GS1 Prefix indicates the party responsible for the partitioned space from which the GS1 Company Prefix was issued.

Except for Class 2 Keys, restricted circulation, and special functions, the GS1 Company Prefix or GS1 Prefix has no significance beyond the association between the party and the partitioned space for which it is responsible. The GS1 Company Prefix in particular makes no statement about the nature of the party, including but not limited to:

- brand owner (GTIN);
- logistics provider (SSCC);
- parent company (GLN);
- asset owner (GRAI or GIAI);
- document publisher (GDTI);
- etc.

6.8 Management of GS1 Company Prefix by Issuing GS1 Member Organisation

Protocols for the management of the GS1 Company Prefix by the issuing GS1 Member Organisation are not well-defined. Beyond requiring that every MO support the issuance of a nine-digit GS1 Company Prefix, Section B – "Policies" of the GS1 Operational Manual (4) imposes no restrictions and in fact explicitly states that "the policy on the allocation of GS1 Company Prefixes is left to the discretion of every GS1 Member Organisation".

There are significant policy and system integrity implications associated with this question and the GS1 Architecture Group is not the appropriate group to address this issue directly. A team led by GS1 Global Office, with support from the GS1 Architecture Group, should revise the policies for submission to the GS1 Management Board and the GS1 General Assembly.

Issues for consideration in a revised policy include but are not limited to:

- guidance for GS1 Company Prefix length determination based on member requirements;

- guidance for four-, five-, and twelve-digit GS1 Company Prefixes;
- GS1 Company Prefix lifecycle management;
  - issuance;
  - allocation;
  - retirement;
  - reissuance;
- GS1 Company Prefix delegation support;
  - GTIN resellers;
  - government or industry group for allocation to their members;
- Class 2 Identification Key management;
- guidance for one-off GS1 Identification Keys;
  - use of GS1 Company Prefix;
  - communication of GS1 Company Prefix to member;
- one-off GS1 Identification Key lifecycle management;
  - issuance;
  - allocation;
  - retirement;
  - reissuance;
- GEPIR integration; and
- ONS integration.

6.9 Cross-MO transfer of GS1 Company Prefix

Cross-MO transfer is not as simple as just transferring the management of a GS1 Company Prefix from one MO to another; any such change affects GCP-based services. The most obvious ones are GEPIR and ONS: either the source MO must provide a mechanism for the receiving MO to populate the source MO's instances for affected GCPs or the source MO's instances must delegate queries for affected GCPs to the receiving MO's instances. Discovery Services may also be affected.

Even if full support for cross-MO transfer were available, regulatory requirements or Internet governance concerns may dictate that queries to such services be handled entirely in-country.

While GS1 Global Office may recognize some forms of cross-MO transfer, it does not support any of them directly, either in standards development or in its hosted services. Some support may be provided indirectly, e.g. in the GO-hosted instance of GEPIR if both MOs involved use it, but this is not by design and is not guaranteed to be maintained.

6.9.1 GS1 US Alliance Numbers

A GS1 US Alliance Number refers to a GS1 Company Prefix issued by GS1 US and allocated to a GS1 Member via another GS1 Member Organisation. Although the GTIN-13 was expected to be fully adopted in 2005 (see http://www.gtin.info/sunrise), the reality is that many companies have legacy computer applications that can't handle GTIN-13 so they still insist, often in terms of trade, that products be marked with GTIN-12. Any company that wishes to allocate a GTIN-12 must therefore acquire a GS1 US GCP. To simplify the member management process, GS1 US delegates the allocation of the GS1 Company Prefix to the GS1 Member Organisation to which the GS1 Member belongs and has implemented the appropriate query routing in its GEPIR node.

6.9.2 Country expansion

The chartering of a new GS1 Member Organization requires that the source MO (or GS1 Global Office if it was managing that country) make some decision about the GS1 Company Prefixes already allocated to GS1 Members within that country. The two options available are to transfer the management of the GCPs to the new MO in a structure similar to that of the GS1 US Alliance Numbers or to retain the GCPs and therefore the management of the GS1 Members to whom they have been allocated.

Consider the situation of GS1 Ireland. From its formation in 1978 until 1992 the Article Numbering Association (ANA) of Ireland chose not to join EAN International (now GS1). Instead it had an agreement with ANA UK (now GS1 UK) under which blocks of company prefixes were made available to ANA of Ireland for allocation to its members. These blocks together with a number of GTIN-8s (also allocated from ANA UK's number bank) were formally transferred to the ANA of Ireland in 1992 when it joined EAN International and obtained its own prefixes. ANA UK considered this possible because the prefixes it had sub-licensed to ANA Ireland all came from well-defined subsets of its range.

Support for this form of cross-MO transfer is entirely at the discretion of the GS1 Member Organisations involved.

6.9.3 Single transfer

The transfer of a single GS1 Company Prefix may be requested when the GS1 Member to whom it has been allocated wishes to transfer to another GS1 Member Organisation (e.g. due to relocation of corporate headquarters or to acquisition).

Support for this form of cross-MO transfer is entirely at the discretion of the GS1 Member Organisations involved.

6.9.4 Bulk transfer

The transfer of a bulk of GS1 Company Prefixes may be requested by a GS1 Member Organisation that has exhausted its capacity of another GS1 Member Organisation that has extra capacity. This form of cross-MO transfer is not permitted under any circumstances; additional capacity must be requested of GS1 Global Office.

6.10 Alternative to term "GS1 Company Prefix"

The purpose of the GS1 Company Prefix is to subdivide the identification space. With the removal of the term "Company Number", the interpretation of the term "GS1 Company Prefix" is less tied to the concept of company identification so no change is proposed.

7 Affected Documents

This section identifies documents that may be affected by this document. A preliminary review of all listed documents has been done and some immediate suggestions are provided where that review found obvious need for changes.

These are recommendations only; when applying these findings to any specific document the group managing that document, as the subject matter experts, are expected to make modifications as they see fit.

7.1 GS1 General Specifications

The GS1 General Specifications is the normative reference for the GS1 Identification System. The number of places in which the GS1 Prefix, GS1-8 Prefix, and GS1 Company Prefix are defined is significant and a comprehensive review should be done by the document's maintenance team. Some immediate suggestions:

- 1.4.2 GS1 Prefixes
  - Replace the definition and the table with those found in Section 5.2.1.
- 1.4.3 GS1-8 Prefixes
  - Replace the definition and the table with those found in Section 5.2.2.
- 1.4.4 GS1 Company Prefix
  - Replace the definition with that found in Section 5.2.3.
- Review and replace or remove all references to "Company Number".
- Add normative definition of "U.P.C. Prefix" as found in Section 5.2.5.
- Add normative definition of "U.P.C. Company Prefix" as found in Section 5.2.6.
- Add normative definition of "GS1 Identification Key" as found in Section 5.2.4.
- Add normative definition of "One-off GS1 Identification Key" based on the recommendations of this document.

7.2 GS1 Global Data Dictionary

7.2.1 GS1 Prefix

Replace the definition with the first paragraph of Section 5.2.1.

7.2.2 GS1-8 Prefix

Replace the definition with the first paragraph of Section 5.2.2.

7.2.3 GS1 Company Prefix

Replace the definition with the first paragraph of Section 5.2.3.

7.2.4 GS1 Identification Key.

Add the definition with the first paragraph of Section 5.2.4.

7.2.5 U.P.C. Prefix

Replace the definition with the first paragraph of Section 5.2.5.

7.2.6 U.P.C. Company Prefix

Replace the definition with the first paragraph of Section 5.2.6.

7.2.7 Company Number

Remove the definition; review and replace or remove all references to this term.

7.3 GS1 Operational Manual

The GS1 Operational Manual is a policies and procedures guide for operating a GS1 Member Organization. The number of places in which the GS1 Identification System is referenced is significant and a comprehensive review should be done by the document's maintenance team. Some immediate suggestions for some of the sub-documents appear below.

7.3.1 Section B-02 – "Allocation of GS1 Company Prefixes"

Review and replace or remove all references to "Company Number".

7.3.2 Section B-03 – "Allocation of GTIN-8 Numbers"

From Section 2.4:

> If a Member Organisation has spare GTIN-8 capacity and wants to transfer GTIN-8 number blocks to another Member Organisation, it may only do so via the GS1 Global Office and GS1 Board.

This capability should be removed, for two reasons:

- a GS1 Member Organisation that requires additional capacity from GTIN-8 can request additional GS1-8 Prefixes from Global Office; and
- GS1 DataBar, which obviates the space restrictions addressed by GTIN-8, becomes an open symbology in 2014 and all scanning environments are expected to read it.

7.3.3 Section B-05 – "Allocation of additional Prefixes to GS1 Member Organisations"

Replace "3-digit GS1 prefix" with "GS1 Prefix".

7.3.4 Section B-07 – "General Principles for the Direct Assignment of GS1 Company Prefixes to Manufacturers in Non-Member Countries"

Replace "3-digit prefix" with "GS1 Prefix".

Replace "manufacturer" with "company", as manufacturers are no longer the sole licensees of GS1 Company Prefixes.

7.4 GS1 System Landscape

A comprehensive review should be done by the document's maintenance team.

7.5 GS1 System Architecture

A comprehensive review should be done by the document's maintenance team.

7.6 GS1 EPC Tag Data Standard

A comprehensive review should be done by the document's maintenance team.

7.7 EPCglobal Architecture Framework

A comprehensive review should be done by the document's maintenance team.

8 Bibliography

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