



2 The EPCglobal Architecture Framework

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Abstract

This document defines and describes the EPCglobal Architecture Framework. The EPCglobal Architecture Framework is a collection of interrelated standards for hardware, software, and data interfaces, together with core services that are operated by EPCglobal and its delegates, all in service of a common goal of enhancing the supply chain through the use of Electronic Product Codes (EPCs). This document has several aims:

- To enumerate, at a high level, each of the hardware, software, and data standards that are part of the EPCglobal Architecture Framework and show how they are related.
- To define the top level architecture of core services that are operated by EPCglobal and its delegates.
- To explain the underlying principles that have guided the design of individual standards and core service components within the EPCglobal Architecture Framework.
- To provide architectural guidance to end users and technology vendors seeking to implement EPCglobal standards and to use EPCglobal core services.

This document exists only to describe the overall architecture, showing how the different components fit together to form a cohesive whole. It is the responsibility of other documents to provide the technical detail required to implement any part of the EPCglobal Architecture Framework.

Audience for this document

The audience for this document includes:

- Hardware developers working in the areas of developing EPC tags and EPC-enabled systems and appliances, including devices to read and write tag data.
- Software developers working in the areas of developing EPC middleware and business applications that use, create, store and/or exchange EPC-related information.
- Enterprise architects and systems integrators that integrate EPC-related processes and applications into enterprise architectures.
- Participants of EPCglobal Working Groups (including Software Action Group, Hardware Action Group and all Business Action Groups) working on defining requirements and developing EPCglobal standards.
- Industry groups, governing organizations, and companies that are developing or overseeing business processes that rely on EPC technology.
- Members of the general public who are interested in understanding the principles and terminology of the EPCglobal Architecture Framework

Status of this document

This section describes the status of this document at the time of its publication. Other documents may supersede this document. The latest status of this document series is maintained at EPCglobal. See www.epcglobalinc.org for more information.

This document is an EPCglobal approved document and is available to the general public.

Comments on this document should be sent to the EPCglobal Architecture Review Committee mailing list arc_request@epclinklist.epcglobalinc.org.

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Conceptually, this is a single global lookup service. It would not be practical, however, to implement ONS as one gigantic directory, both for reasons of scalability and in consideration of the difficulty of each EPC Manager organization having to maintain records for its object classes in a shared database. Instead, ONS is architected as an application of the Internet Domain Name Service (DNS), which is also a single global lookup service conceptually but is implemented as a hierarchy of lookup services.

ONS works as follows. When an EPCglobal Subscriber wishes to locate an EPCIS service, it first consults the Root ONS service controlled by EPCglobal. The Root ONS service identifies the Local ONS service of the EPC Manager organization for that EPC. The EPCglobal Subscriber then completes the lookup by consulting the Local ONS service, which provides the pointer to the EPCIS service in question.

ONS is implemented as an application of DNS, simply by specifying a convention whereby an EPC is converted to an Internet Domain Name in the `onsepccom.com` domain. This has several implications:

- The "Root ONS service" and "Local ONS service" as used above may each be implemented by multiple independent servers, as DNS allows more than one server to be listed as the provider of DNS service for any particular domain name. This increases the scalability and reliability of the overall system.
- EPCglobal's Root ONS service is actually itself two levels down in a hierarchy of lookups, which has its true root in the worldwide DNS root service.
- ONS benefits from the DNS caching mechanism, which means that in practice a given ONS lookup does not actually need to consult each of the services in the hierarchy, as in most cases the higher-level entries are cached locally.

More information may be found in the DNS specifications [RFC1034, RFC1035], and in the ONS Specification [ONS1.0].

7.4 Number Assignment

The foregoing text has described every role and interface in the diagram at the beginning of this Section 7, except for Manager Number Assignment. This role simply refers to EPCglobal's service of issuing unique EPC Manager Numbers to each EPC Manager organization that requests one, in its capacity as the Issuing Agency for the GS1 family of codes (see Section 4.1). By insuring that every EPC Manager Number that is issued is unique, the uniqueness of EPCs assigned by individual EPCglobal Subscribers within the GS1 family of codes is ensured. (Number assignment for other coding schemes is carried out by Issuing Agencies other than EPCglobal, and so EPCglobal's Manager Number Assignment Core Service does not apply in those cases.)

8 Data Flow Relationships – Intra-Enterprise

This section provides a diagram showing the relationships between EPCglobal Standards, from a data flow perspective. In contrast to Section 7, this section shows only the EPCglobal Standards that are typically used within the four walls of a single subscriber, namely those categorized as "EPC Infrastructure Standards" in Section 2. This section