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SERIES Y: GLOBAL INFORMATION  
INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS,  
NEXT-GENERATION NETWORKS, INTERNET OF  
THINGS AND SMART CITIES

Internet of things and smart cities and communities –  
Frameworks, architectures and protocols

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### **Requirements and functional architecture of open IoT identity correlation service**

Recommendation ITU-T Y.4462



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# Recommendation ITU-T Y.4462

## Requirements and functional architecture of open IoT identity correlation service

### Summary

Open Internet of things (IoT) identity correlation service (ICS), or open IoT ICS, is a service to map identities among devices, third party services, and transactions. Recommendation ITU-T Y.4462 specifies the reference architecture of open IoT ICS which supports Internet of things (IoT) devices to access multiple third party service providers. This Recommendation clarifies the concept of the open IoT ICS, identifies its basic capabilities and common requirements and also provides the reference architecture and relevant high-level common procedures for open IoT ICS.

### History

| Edition | Recommendation | Approval   | Study Group | Unique ID*                                                                   |
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### Keywords

ICS, ID, identity mapping, IoT, platform.

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\* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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# Recommendation ITU-T Y.4462

## Requirements and functional architecture of open IoT identity correlation service

### 1 Scope

This Recommendation provides information on the:

- Concept and requirements of the open Internet of things (IoT) identity correlation service.
- Functional architecture of the open IoT identity correlation service.
- Basic capabilities, relevant reference points and procedures of the open IoT identity correlation service.

### 2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T G.9961] Recommendation ITU-T G.9961 (2018), *Unified high-speed wireline-based home networking transceivers – Data link layer specification*.
- [ITU-T Q.1743] Recommendation ITU-T Q.1743 (2016), *IMT-Advanced references to Release 11 of LTE-Advanced evolved packet core network*.
- [ITU-T X.1570] Recommendation ITU-T X.1570 (2011), *Discovery mechanisms in the exchange of cybersecurity information*.
- [ITU-T Y.4000] Recommendation ITU-T Y.4000/Y.2060 (2012), *Overview of the Internet of things*.
- [ITU-T Y.4100] Recommendation ITU-T Y.4100/Y.2066 (2014), *Common requirements of the Internet of things*.
- [ITU-T Y.4203] Recommendation ITU-T Y.4203 (2019), *Requirements of things description in the Internet of things*.
- [IETF RFC 4122] IETF RFC 4122 (2005), *A Universally Unique Identifier (UUID) URN Namespace*.
- [IETF RFC 8446] IETF RFC 8446 (2018), *The Transport Layer Security (TLS) Protocol Version 1.3*.

### 3 Definitions

#### 3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

**3.1.1 device** [ITU-T Y.4000]: With regard to the Internet of things, this is a piece of equipment with the mandatory capabilities of communication and the optional capabilities of sensing, actuation, data capture, data storage and data processing.

**3.1.2 identifier** [b-ITU-T Y.2091]: An identifier is a series of digits, characters and symbols or any other form of data used to identify subscriber(s), user(s), network element(s), function(s), network entity(ies) providing services/applications, or other entities (e.g., physical or logical objects). Identifiers can be used for registration or authorization. They can be either public to all networks, shared between a limited number of networks or private to a specific network (private IDs are normally not disclosed to third parties).

**3.1.3 identity management** [b-ITU-T X.1252]: A set of functions and capabilities (e.g., administration, management and maintenance, discovery, communication exchanges, correlation and binding, policy enforcement, authentication and assertions) used for assurance of identity information (e.g., identifiers, credentials, attributes); assurance of the identity of an entity and supporting business and security applications.

**3.1.4 Internet of things (IoT)** [ITU-T Y.4000]: A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.

NOTE 1 – Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of things to offer services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled.

NOTE 2 – In a broad perspective, the IoT can be perceived as a vision with technological and societal implications.

**3.1.5 device ID** [ITU-T G.9961]: A unique identifier allocated to a node operating in the network by the domain master during registration.

## 3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

**3.2.1 IoT identity correlation service:** IoT identity correlation service or IoT ICS, is a service to map relationships among the identities of Internet of things (IoT) related entities (e.g., devices, services and transactions) and also open the capabilities to third party applications.

**3.2.2 unique transaction identifier (UTI):** An identifier that is generated by a third party service provider upon the initial authorization by the user and made available to the open Internet of things (IoT) identity correlation service (ICS). This identifier needs to be globally unique, anonymous and revocable.

**3.2.3 IoT device serial number:** A provenance information related to the Internet of things (IoT) device so that each of the IoT devices can be identified physically, as described in [ITU-T Y.4203].

## 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

|     |                              |
|-----|------------------------------|
| BSS | Business Service System      |
| ICS | Identity Correlation Service |
| ID  | Identity                     |
| IdM | Identity Management          |
| IoT | Internet of Things           |
| PKI | Public Key Infrastructure    |
| SP  | Service Provider             |
| TLS | Transport Layer Security     |
| URI | Uniform Resource Identifier  |