Key Recommendations

ITU-T E.164: The international public telecommunication numbering plan

This Recommendation provides the number structure and functionality for the three categories of numbers used for international public telecommunications – these are geographic areas, global services and networks. For each of the categories, it details the components of the numbering structure and the digit analysis required to successfully route the calls. Annex A provides additional information on the structure and function of ITU-T E.164 numbers. Annex B provides information on network identification, service parameters, calling/ connected line identity, dialling procedures and addressing for geographic-based ISDN calls. Specific ITU-T E.164-based applications, which differ in usage, are defined in separate Recommendations.

ITU-T E.169: Application of Recommendation ITU-T E.164 numbering plan for universal international numbers for international telecommunications services using country codes for global services

This Recommendation provides general principles for the application of the international public telecommunication numbering plan, ITU-T E.164, in the provisioning of international telecommunication services using Country Codes for Global Services. This Recommendation also provides information on the general organization and description of the individual Recommendations in the ITU-T E.169.x series, Recommendations describing the numbering plans and assignment procedures for various international services [Universal International Freephone Numbers (UIFN) in the provisioning of International Freephone Service (IFS); Universal International Premium Rate Numbers (UIPRN) in the provisioning of the International Premium Rate Service (IPRS); Universal International Shared Cost Numbers (UISCN) in the provisioning of the International Shared Cost Service (ISCS)].

ITU-T E.212: The international identification plan for public network and subscriptions

A plan for unique international identification of mobile terminals and mobile users is required in order to enable these terminals and users to roam among public networks that offer mobility services. International Mobile Subscriber Identity (IMSI) is required so that a visited network can identify a roaming mobile terminal or mobile user, e.g., in order to query a subscriber's home network for subscription and billing information. This Recommendation describes an international identification plan for mobile terminals or mobile users of public networks enabling roaming capabilities. It also establishes procedures for the assignment of International Mobile Subscriber Identities (IMSIs) to the mobile terminals and mobile users of such networks. The Recommendation also describes the format of the IMSI.

ITU-T Q.708: Assignment procedures for international signalling point codes

This Recommendation describes the format of the code used to identify international signalling points in the international Signalling System No. 7 (SS7) network which is identified by the Network Indicator NI=00. This Recommendation also includes principles and procedures for the assignment of Signalling Area/Network Codes and International Signalling Point Code (SANC and ISPC).
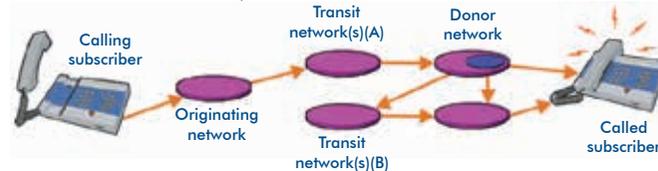
Why this work is important

The "numbering" question has traditionally maintained an extensive list of projects. With the continuing growth in new public services, networks, and capabilities, the list of projects is not expected to diminish – numerous new telecommunication services require unique numbering and addressing capabilities, which have been developed by this question. For example, to achieve roaming capabilities, ITU-T E.212 describes a plan for unique international identification of mobile terminals and mobile users in order to enable these terminals and users to roam among public networks that offer mobility services. In a competitive global telecommunication environment, the importance and controversial nature of numbering, naming and addressing issues often cause their study to be contentious and lengthy. The nature of these studies, consequently, results in not only a large list of issues, but also the need for significant time for the resolution of each. This nature of the studies is also not expected to diminish.

Study topics

Number portability

Number portability is very important in the international public telecommunication numbering plan. It works in the following way: The caller sets up the call by dialling the end user's number, which in this case is a ported number. The end user's number is enough to initiate the routing process. Furthermore, number portability, by definition, implies that the callers should continue to dial the same end user's number and nothing more to set up a call to a ported customer. The figure below shows one possible routing model for calls routed to a ported customer:

In the above figure, the donor network receives an incoming call. It then detects that the called number has been ported-out to another network and makes a database (DB) query to retrieve a routing number. It thereafter reroutes the call onward towards the recipient network using retrieved routing information. For more information, see: ITU-T E.164 Supplement 2 (11/98).

Business cards

ITU-T E.123 applies specifically to the printing of national and international telephone numbers, electronic mail addresses and web addresses on letterheads, business cards, bills, etc. Having a standard notation for printing telephone numbers, e-mail addresses and web addresses helps to reduce difficulties and errors, since this address information must be entered exactly to be effective. The following schema is given as an example of the directories of the ITU-T E.123:

Example:	Telephone:	National	(0609) 123 4567
		International	+22 609 123 4567
	E-mail:		jdeo@isp.com
	Web:		www.doecorp.com

Numbering, Naming and Addressing

Numbering resources enabling global connectivity

ITU-T

Overview

One of the most enduring examples of ITU-T's work is in the numbering and addressing systems that facilitate international telecommunications.

ITU-T's numbering and addressing systems underpin international telecommunication; without them it would be impossible to make a call from your home country to another with the simplicity that we enjoy today. An example of the way that ITU-T has shaped the telecommunication networks of today is the numbering Recommendation ITU-T E.164. It provides the structure and functionality for telephone numbers, and without it we would not be able to communicate internationally. From the international country codes detailed in ITU-T E.164, to today's universal numbers that enable companies to trade internationally with little capital outlay, through identification codes for mobile phones and electronic numbering (ENUM), ITU-T develops telecommunication numbering and addressing standards to ensure that we can stay in touch on any device, anywhere.

Resources managed by ITU-T include those defined in ITU-T Recommendations:

ITU-T E.164 (Tel. numbering plan)   ITU-T M.1400 (Interconnection among operators)

ITU-T E.169 (IFS, IPRS, ISCS)*   ITU-T X.121 (Public data networks)

ITU-T E.212 (IMSI)*   ITU-T E.123 (Business cards)

ITU-T Q.708 (SANC)*   ITU-T T.35 (Codes for non-standard facilities)

* See paragraphs on ITU-T E.169, E.212 and Q.708.

Key work items and processes

ENUM, the technology that builds a bridge between the public switched telephone network (PSTN) and the Internet

Under the proposed ENUM protocol, and subject to national authorities and end-user approval, it will be possible for consumers to use a single number to access many types of terminals and services, such as: phone, fax, e-mail, pager, mobile telephones, websites or any other services available through an Internet addressing scheme.

In the long term, this protocol will allow many new services to be provided. *In the short term*, countries wishing to implement trial systems can begin to work on developing it.

Two key applications that ENUM will make possible for the first time is the ability to call a PC from the PSTN and to easily determine what type of terminal is associated with the number. Some analysts predict that this will permit the introduction of new innovative applications where a call to a telephone number can invoke Internet type services. For example, calling an ENUM-enabled telephone number from a third-generation multimedia handset could allow access to a location-based mobile web service, thus avoiding entering Internet-type addresses on numeric keypads.

ITU-T has worked with the Internet Society (ISOC) and the Internet Engineering Task Force (IETF) in developing a set of procedures for the delegation of ITU-T E.164 country codes into the ENUM Tier 0 registry.

Information dissemination

The ITU-T website contains much publicly accessible information on international numbering resources. See: **itu.int/ITU-T/inr**

Some specific examples are:

ITU-T E.164 (International public telecommunication numbering plan)

Code	Country, Geographical area or Global service	Note
380	Ukraine	
33	France	

ENUM

E.164	Country	Delegee	Approval
358	Finland	Finnish Communications Regulatory Authority	26/02/03
36	Hungary	CHIP/ISzT	15/07/02

ITU-T E.169 (Universal freephone, premium rate and shared cost services)

UIFN	Reserved Date	Status	Date Of Activation	Service Provider
(+800) 11110100	24/05/2000	Assigned	04/07/2000	KDDI
(+800) 11110101	08/01/2001	Assigned	22/01/2001	MCI

ITU-T E.212 (IMSI codes)

List of Mobile Country or Geographical Area Codes - numerical order		
Code	Country or Geographical Area	Note
334	Mexico	
338	Jamaica	

ITU-T Q.708 (signalling area network codes)

List of Signalling Area/Network Codes (SANC) - numerical order	
Code	Geographical Area or Signalling Network
6-048	Cameroon (Republic of)
6-072	Ethiopia (Federal Democratic Republic of)

ITU-T X.121 (Public data networks) Zone 4

Code	Country or Geographical Area
450	Korea (Republic of)
428	Mongolia

ITU Operational Bulletin

ITU Operational Bulletin is a fortnightly detailed update containing information that is required to maintain the global interconnection of the world's telecommunication networks. In particular, it contains information on changes to numbering and routing plans, whether at the national or international level. Changes in this numbering information are essential information for operators who will use them to ensure that switching mechanisms are always up to date. So, for example, if one country splits into two, it will need two country codes and operators worldwide need to know this in order that calls continue to be routed correctly.

ITU Operational Bulletin also includes details on changes in regulatory authorities and the assignment of the signalling area/network codes detailed in ITU-T Q.708, data network identification codes detailed in ITU-T X.121, carrier codes detailed in ITU-T M.1400, as well as the mobile country codes detailed in ITU-T E.212, which are used to implement roaming for mobile handsets.

For more information, see: itu.int/ITU-T/bulletin

Administration of resources

Resources are administrated in accordance with ITU-T Recommendations as shown in the previous panel. These include:

INR (International Numbering Resources)

International Country Codes

ENUM Delegations

Notification Forms and Lists for Codes and Numbers

Universal Numbers

Telex and Telegram

Etc.

For more information, see: **itu.int/ITU-T/inr**

Notification of National Numbering Plans

Administrations are requested to notify ITU about changes to their national numbering plans (NNP) and contact details, or to provide a web address detailing the same. This information is consolidated and available to members on the ITU-T website.

For more information, see: **itu.int/ITU-T/inr/nnp**

A **Notification Service** is also available to pass on information on any change in NNP. You can subscribe to this service at: **itu.int/ITU-T/inr/nnp/notification.html**