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SERIES Q: SWITCHING AND SIGNALLING, AND
ASSOCIATED MEASUREMENTS AND TESTS

Signalling requirements and protocols for the NGN –
VoLTE/ViLTE network signalling

Signalling architecture of distributed infrastructure ENUM networking for IMS

Recommendation ITU-T Q.3643

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Recommendation ITU-T Q.3643

Signalling architecture of distributed infrastructure ENUM networking for IMS

Summary

Recommendation ITU-T Q.3643 defines the framework and signalling architecture for distributed ENUM networking in support of IMS interconnection. Based on the signalling architecture of a distributed ENUM model, this Recommendation specifies the signalling procedures of ENUM profile management and ENUM resolution. Additionally, the signalling requirements and protocols to be applied for interfaces of distributed ENUM networking are addressed.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Distributed, ENUM, IMS, signalling architecture.

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FOREWORD

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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.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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Recommendation ITU-T Q.3643

Signalling architecture of distributed infrastructure ENUM networking for IMS

1 Scope

This Recommendation presents the signalling architecture of distributed ENUM networking in support of IMS interconnection. Based on a distributed framework of the ENUM server, this Recommendation specifies the signalling requirements for the functional entities, signalling procedures and protocols to be applied for interfaces, security considerations, etc.

NOTE 1 – This Recommendation defines the signalling architecture, signalling procedures and signalling requirements for a distributed ENUM model in support of IMS interconnection. The ENUM hierarchical model is addressed in [b-GSMA PRD IR.67] and [b-GSMA PRD NG.105].

NOTE 2 – The focus of this Recommendation is on infrastructure ENUM addressed in [b-IETF RFC 5067].

NOTE 3 – The national ITU-T E.164 numbering resource used in the distributed ENUM model is assigned by a national administration to the operator and should comply with all relevant national and international telecommunication regulatory, legal and licensing requirements.

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 E.164] Recommendation ITU-T E.164 (2010), *The international public telecommunication numbering plan*.
- [IETF RFC 3403] IETF RFC 3403 (2002), *Dynamic Delegation Discovery System (DDDS) Part Three: The Domain Name System (DNS) Database*.
- [IETF RFC 3404] IETF RFC 3404(2002), *Dynamic Delegation Discovery System (DDDS) Part Four: The Uniform Resource Identifiers (URI)*.
- [IETF RFC 6116] IETF RFC 6116 (2011), *The E.164 to Uniform Resource Identifiers (URI) Dynamic Delegation Discovery System (DDDS) Application (ENUM)*.
- [IETF RFC 7230] IETF RFC 7230 (2014), *Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing*.
- [IETF RFC 7231] IETF RFC 7231 (2014), *Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content*.
- [IETF RFC 7232] IETF RFC 7232 (2014), *Hypertext Transfer Protocol (HTTP/1.1): Conditional Requests*.
- [IETF RFC 7235] IETF RFC 7235 (2014), *Hypertext Transfer Protocol (HTTP/1.1): Authentication*.
- [W3C SOAP] W3C (2007), *Simple Object Access Protocol*.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

DES	Distributed ENUM server
DNS	Domain Name System
ENUM	E.164 Number
GRX	GPRS Roaming Exchange
HTTP	Hypertext Transfer Protocol
I-ENUM	Infrastructure ENUM
IMS	IP Multimedia Core Network Subsystem
IPX	Inter-network Packet Exchange
NAPTR	Naming Authority Pointer
O&M	Operation and Maintenance
SIP	Session Initiation Protocol
SOAP	Simple Object Access Protocol
URI	Uniform Resource Identifier

5 Conventions

In this Recommendation:

The phrase "is recommended" indicates a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be satisfied to claim conformance.

In the body of this document and its appendices, the word "should" sometimes appears, in which case it is to be interpreted, respectively, as the phrase "is recommended".

6 Framework for distributed ENUM networking

Figure 6-1 depicts the framework for distributed ENUM networking in support of IMS interconnection.

A distributed ENUM server (DES) serves for inter-operator IMS session establishment and provides the mapping of ITU-T E.164 numbers [ITU-T E.164] to URIs. The DES stores the ENUM data profile of the host operator and the ENUM data profiles obtained from the relevant operators that have interconnection agreements with the host operator. The DES performs ENUM data self-management functions of the ENUM data profile such as ENUM NAPTR record adding, ENUM NAPTR record modification and ENUM NAPTR record cancellation, etc. In addition, the DES is responsible for responding to queries for ENUM translation in support of the IMS interconnection.