
**Information technology — Future
Network — Problem statement and
requirements —**

**Part 4:
Mobility**

*Technologies de l'information — Réseaux du futur — Énoncé du
problème et exigences —*

Partie 4: Mobilité



Reference number
ISO/IEC TR 29181-4:2013(E)

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Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviations	2
5 General	3
5.1 Mobile environment in FN	3
5.2 Related works on mobility in FN	4
6 Problem statement of current network in mobile environment	5
6.1 Overloaded semantics of IP address	5
6.2 Single common protocol for heterogeneous networks	5
6.3 Integration of data delivery and control function.....	5
6.4 Centralized mobility control	5
7 Architectural requirements for mobility support in FN	6
7.1 Separation of identifier and locator	6
7.2 Support of heterogeneous access networks	6
7.3 Separation of mobility control function from user data delivery.....	6
7.4 Support of distributed mobility control	6
8 Functional requirements for mobility support in FN	6
8.1 Location management	6
8.2 Route optimization.....	7
8.3 Handover control	7
Annex A (informative) Existing IP-based mobility control protocols	8
Annex B (informative) High-level architecture of mobility control in FN	14
Annex C (informative) Distributed mobility control in Proxy MIPv6 networks	18
Annex D (informative) Additional considerations for FN mobility	20
Bibliography	21

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide to publish a Technical Report. A Technical Report is entirely informative in nature and shall be subject to review every five years in the same manner as an International Standard.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 29181-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

ISO/IEC TR 29181 consists of the following parts, under the general title *Information technology — Future Network — Problem statement and requirements*:

- *Part 1: Overall aspects*
- *Part 2: Naming and addressing*
- *Part 3: Switching and routing*
- *Part 4: Mobility*
- *Part 5: Security*
- *Part 6: Media transport*
- *Part 7: Service composition*

Introduction

This part of ISO/IEC TR 29181 (Future Network: Problem Statement and Requirements) describes the problems of the current network and the requirements for Future Network in the mobility perspective. The general description on the problem statement and requirements for Future Network is given in ISO/IEC TR 29181-1. In addition, ISO/IEC TR 29181-4 establishes the problem statement and requirements for Future Network from the viewpoint of architecture and functionality for mobility support.

In general, the mobility issues can be classified into link-layer, network-layer, and transport/application layer mobility management. It is noted that the link-layer mobility issues have been addressed and well defined in the relevant SDOs, such as 3GPPs, IEEE 802, etc. The transport/application layer mobility issues are also associated with the particular transport/application protocols used by mobile nodes. On the other hand, the network layer mobility control issues are quite dependent on the network architecture. Accordingly, this part of ISO/IEC TR 29181 will focus on the mobility issues of Future Network in the network-layer perspective.

This part of ISO/IEC TR 29181 may be applicable to the overall design of Future Network architecture.

Information technology — Future Network — Problem statement and requirements —

Part 4: Mobility

1 Scope

This part of ISO/IEC TR 29181 describes the problem statements of current network and the requirements for Future Network in the mobility perspective. This part of ISO/IEC TR 29181 mainly specifies

- problems of the current network in mobile environment, and
- requirements for mobility support in Future Network.

In addition, this part of ISO/IEC TR 29181 gives information on

- existing mobility control schemes in the current network,
- examples of high-level mobility control architecture for Future Network,
- distributed mobility control in the Proxy Mobile IPv6 networks, and
- additional considerations for Future Network mobility.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC TR 29181 (all parts), *Information technology — Future Network — Problem statement and requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

Future Network FN

network of the future which is made on clean-slate design approach as well as incremental design approach; it should provide futuristic capabilities and services beyond the limitations of the current network including the Internet

[SOURCE: ISO/IEC TR 29181-1]

3.2

Node Identifier

NID

globally unique identifier for a network node or host

[SOURCE: ISO/IEC TR 29181-2]

Note 1 to entry: Identifier (ID) is a generic term that is associated with various types of objects, whereas NID is used to represent a host in the network. In this part of ISO/IEC TR 29181, the term of ID is used with the meaning of NID.

3.3

Locator

LOC

IP address to connection mapping

[SOURCE: ISO/IEC TR 29181-2]

Note 1 to entry: In this part of ISO/IEC TR 29181, LOC is used to represent the location of a host in the network, which is also used for delivery of data packets in the network.

3.4

Mobility

ability for user to communicate or access the services, irrespective of changes of its location

[SOURCE: ITU-T Recommendation Q.1706/Y.2801]

4 Abbreviations

ACK	Acknowledgement
AR	Access Router
CN	Correspondent Node
FN	Future Network
GILL	Global Identifier and Local Locator
GW	Gateway
HA	Home Agent
HMI	Hierarchical MIP
ID	Identifier
IP	Internet Protocol
ISP	Internet Services Provider
LMC	Local Mobility Controller
LOC	Locator
MIP	Mobile IP
MN	Mobile Node
NID	Node ID
PMIP	Proxy Mobile IP

SCTP	Stream Control Transmission Protocol
TCP	Transmission Control Protocol
TR	Technical Report
UDP	User Datagram Protocol

5 General

5.1 Mobile environment in FN

With an explosive growth of the number of subscribers of 3G/4G cellular systems and also other wireless data systems such as WiFi and WiMAX, the mobile networks now become the key driver toward the Future Network (FN). The number of people who surf the network on their phones has doubled since 2006. In near future, there will likely be more mobile and wireless users than wired ones. In addition, a variety of new types of wireless access networks like ad hoc networks and sensor networks are emerging, and they will be the major access means to FN.

[Figure 1](#) illustrates the network environment, in which the users or things in FN will benefit from a variety of access ways to the network anytime, anywhere, and through any interfaces. In particular, it is expected that ‘mobile’ users/things, rather ‘fixed’ ones, will become more dominant in FN. In this context, a crucial requirement for FN is to provide seamless services for the mobile users/things through the mobile-oriented FN.

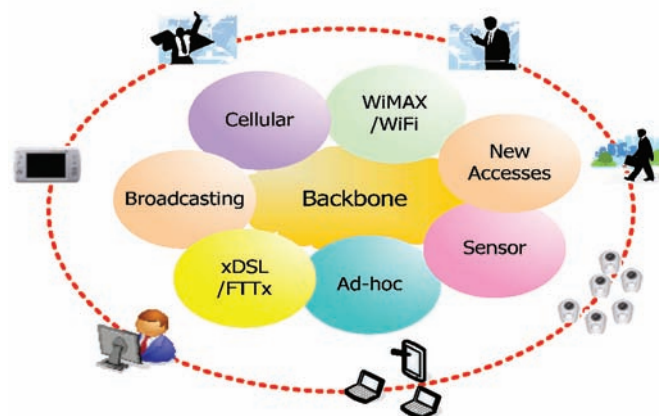


Figure 1 — Network environment in FN

With a recent trend of network convergence, it is expected that the all kinds of networks will be evolved or revolved toward a unified network, i.e. ‘mobile-oriented convergence network’ as shown in [Figure 2](#), including computer or telecommunication networks.