TECHNICAL REPORT

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Information technology — Future Network — Problem statement and requirements —

Part 2: Naming and addressing

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

Partie 2: Dénomination et adressage

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Foreword

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The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 6, *Telecommunication 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 is the second part of this Technical Report on Future Network — Problem statement and requirements developed by ISO/IEC JTC1 SC6. As ISO/IEC TR 29181-1 provides an overall perspective of the missions and requirements of the FN project, this part of ISO/IEC TR 29181 focuses on the issue of naming and addressing. The objective of this part of ISO/IEC TR 29181 is to discuss how to develop a clean slate designed new naming and addressing schemes (NAS) to help FN project achieve its lofty ambitions.

Naming and addressing schemes are the cornerstones of telecommunication networks and information systems. NAS designs not only provide fundamental building blocks for network designs, but can also influence network characteristics, performance, and capabilities. Therefore, NAS needs to be among the top priorities of network design projects.

NAS plays an even more important role in FN. As a project aimed at designing a totally new network with a clean slate design approach, FN has to produce a clean slate designed naming and addressing scheme. The need for new naming and addressing systems were based from the gaps between the existing NAS systems and the rising future demands of new applications which produces many technical challenges the existing NAS systems cannot provide satisfactory solutions. This Technical Report summarizes some of the challenges and also offers some new directions for future research on NAS standardization.

However, as the new network has to produce a network structure which would allow information to flow more smoothly, fast, and securely among various networks with various kinds of naming and addressing structures, designing a new NAS which would not only function within the new system, but also interoperate with other naming and addressing systems (such as old systems like DNS or telecom networks and new systems such as RFID and sensor networks) is a very challenging task.

Considering evolutionary approaches which seek to engage gradual improvement with available technologies while protecting the integrity of overall structure of old networks, a new scheme will produce a totally new naming and addressing scheme. A clean slate design needs thorough analysis, full understanding of the demand, careful planning, and collective work. In order to achieve the maximum benefits and find the best solution, a strategic planning document is needed before specific schemes are standardized.

Information technology — Future Network — Problem statement and requirements —

Part 2: Naming and addressing

1 Scope

This part of ISO/IEC TR 29181 describes the general characteristics of Future Network naming and addressing schemes, including problem statements, requirements, design objectives, gap analysis, and development directions.

— Problem Statements: The characteristics and problems of existing NAS in existing network will be discussed.

— Technical Challenges: A list of major technical challenges to assure that the FN-NAS will be able to provide solid technical support from the base level to meet the objectives of FN.

— Requirements: The general characteristics of Future Network are discussed and their impact on NAS design.

— Gap analysis: Examines the gap between existing network NAS and future network performance expectations.

In Annex A, FN-NAS Standardization Plan, design objectives, gap analysis, development guidance, chronological scenarios for future network naming, and addressing guidance are described in detail.

Though this part of ISO/IEC TR 29181 mainly presents a list of up-to-date surveyed problems, requirements, and plausible techniques for Future Network, it does not mean that all of those would be applied to a single Future Network in common, since the naming and addressing scheme can be applied to the various networks, such as global networks, local networks, access networks, mobile networks, etc. If a specific Future Network is designed and implemented, some appropriate parts of ISO/IEC TR 29181 would be considered depending on its network usage and its characteristics.