Chapter XLIII
Practical Experience with New Services and Applications Supported by NGN

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ABSTRACT

This chapter presents results of practical experience with NGN and mainly its application layer. The presented university laboratory based mainly on the open source software follows the evolution strategy of NGN. This evolution includes a way from using SIP-based VoIP architecture to the IP Multimedia Subsystem (IMS) implementation of standardized NGN. The background of the standardization process is briefly presented as well. Our focus on application layer is motivated by its existence and similarity

in various NGN implementations. In this chapter, we also discuss in detail three applications and services: multimedia streaming, security, and AAA service. This chapter shows the ability to build an NGN network for testing purposes. However, we prove that application layer, unified application access, and consequently convergence are main foundations of NGN.

INTRODUCTION

The Next Generation Network (NGN) technology has been developing for several years. We have seen the evolution from pure Voice over IP (VoIP) architecture to NGN architecture based on softswitch technologies or actually the most preferred IMS-based NGN architecture. Actual standardization of ITU-T and ETSI is based on IP Multimedia Subsystem (IMS) as a common framework for fixed mobile converged architecture within first releases of NGN. IMS was originally a result of a standardization process within 3GPP as an evolution of a third generation of mobile networks standardization.

IMS as the possible NGN architecture is a major core network architecture that enables multimedia provisioning and services in both wireline and wireless network environments. We take a short look into the network convergence trends and also compare the functionalities in two major steps in NGN (softswitch-based and IMS-based NGN architecture).

We focus our work mainly on the service control and application layer because in the NGN concept, they are independent and aware of underlying transport technologies (concept of unified service control). Therefore, future converged networks architecture will probably be based on a similar concept, as we have realized in our test-bed platform. We have tracked and implemented these trends in the area of NGN in our laboratory and have systematically built a test-bed platform. Our main effort was to analyze the possibility of NGN implementation using mainly open source applications. We recognize significant benefits of using this kind of technology in terms of ability to perform additional extensions and modifications for required integration purposes.

Network Convergence and NGN Standardization

The trends of the convergence influence several levels, where the process of convergence can take place within the communication networks, services, or media. Let us present at least the most common reasons substantiating the need for converged network architecture represented usually by the NGN platform:

- Several specialized networks for certain types of services, some of them being ineffective to be developed; it is necessary, however, to ensure their tasks.
- Each network platform has, more or less, its own architecture and specifics, though it does not cover all communication needs.
- Duplicity of resources, vertical architecture, and therefore, cost is less effective.
- More complicated securing of Network Management System – NMS and operation as well.
- Reduction in costs of infrastructure and more flexible development of network and services as well.
- The need to respond more flexibly to the advancement within the ICT technologies development.