

Chapter 23

Broker–Controller for NGN Management: A New NGOSS–Based Management Map for New Generation Network

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ABSTRACT

New generation networks (NGN) are based on revolutionary aspects in IT and telecom fields. Huge throughput as well as a simplified infrastructure are based on the data center result of virtualization and cloud computing. Nevertheless, a very important question about the management part is always relevant, regardless of QoS management, of business, or of security. The chapter aims to propose a management architecture, which invokes the notion of broker and also of controller to centralize the management of networks and services.

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INTRODUCTION

Since the integration of the internet or packet-switched services with 3G, users have a tendency to use these services given the diversity, price and simplicity. Nevertheless, several constraints must be taken into consideration such as; mobility, security, Quality of Service(QoS) and management. The arrival of 4G (ETSI TS 123 272 V13.3.0 2016-04) and soon 5G (Akhil Gupta, Rakesh Kumar Jha 2015), offers a better throughput with the integration of virtualization technologies. This revolution completely changes the architecture of supply as well as management and allows operators to focus on software or functional capacity more or less material and groups all the elements in data centres. The issues mentioned in the context of mobility, security, QoS and management still persist; especially the part concerns the QoS and the management and what more important regarding the taxation and customer satisfaction. The objective of the chapter is to bring together two aspects relating to the operators, firstly the technological aspects of the QoS from the point of view of management, and secondly the aspect of the business with flexibility to negotiate the contracts and Billing Charters between the suppliers and the customers, in the form of Service Level Agreements (SLAs) by intelligent methods that attract many customers and services. Our proposal is to present a management architecture that encompasses both a Broker, an entity needed for cloud services as well as for service provider point-of-view operators; and a Controller that controls the communication architecture with the functionality exists in Software-Defined Networking (SDN)(SDN Architecture Overview Version 1.0 2013) and Network Function Virtualisation (NFV)(ETSI NFV ISG, May 26, 2015). In order to ensure a relationship between these two Broker and Controller parts, the New Generation Operations Systems and Software (NGOSS) (TMF NGOSS Release 2.5.2014) repository offers abstract scenarios and decomposition provides operators to provide Operations Systems and Software(OSS) management as in Controller and Business Support Systems(BSS) as in the Broker. The Controller-Broker proposal is independent of the type of delivery architecture or transport is always adaptable to the elements of packet switching networks either 3G, 4G or 5G.

The chapter begins with an introduction of 4G networks as use case with a presentation of NFV, SDN and NGOSS referential; after the proposed Controller-Broker architecture is its processes and finally a test case.

BACKGROUND: NGN ARCHITECTURE AND MANAGEMENT

This part will be devoted to present the NGN network, more precisely the architecture and novelties used such as SDN and NFV, as well as the NGOSS referential that provides a Telecom-oriented management framework.

1. Architecture NGN: 4G as Use Case

In NGN, there is a more defined separation between the transport part (connectivity) of the network and the services that work. This means that whenever a supplier wants to activate or develop a new service, it can do so by defining it directly on the service layer regardless of the sub-adjacent layers regardless of the transport details. Increasingly, applications, including voice, tend to be independent of the access network (deformation of the network and applications) and reside more on user devices (phone, PC, ...).

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