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SMART PIPES:
NETWORK TECHNOLOGIES NEEDED TO COPE WITH TRAFFIC EXPLOSION AND NEW BUSINESS MODELS

Author: Guilherme Lopasso,
Marketing and Strategic Manager,
Ericsson Region Latin America

THE CHALLENGE OF HUGE TRAFFIC GROWTH

All operators throughout the world face the challenge of dealing with a surge in traffic on their networks that put pressure on both investments and costs. On the other hand, revenues are not following the same pace of traffic growth.

In Latin America, the traffic that flows through mobile networks is expected to grow 63% annually over the next three years, as shown in Figure 1. Revenues, however, will grow only 6%.

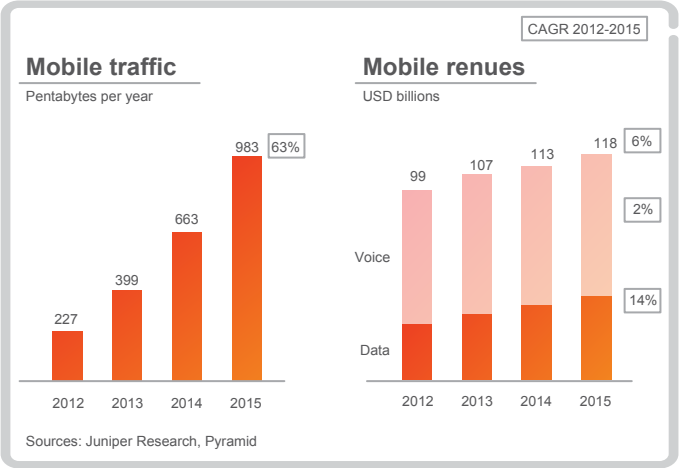

Figure 1: Mobile traffic and revenues projections in Latin America (2012-2015)

Although there is strong demand for broadband, revenues are mainly generated by data plans priced at monthly flat fees, tiered by connection speeds or monthly data allowances (usually measured in Gigabytes per month). Despite their simplicity, such price schemes for broadband are unlikely to drive revenue increases at similar rates of data growth. Other telecommunications services, such as voice, messaging and video (Pay-TV), suffer from the competition of Over-the-Top (OTT) service providers (e.g., Skype, WhatsApp, Netflix), which overload operators' networks but do not generate direct revenues for them.

Operators could seek new business models that meaningfully capture the value of broadband. For example, some customers might prefer data plans that ensure quality of video transmission without delays and frozen screens instead of plans based on data speeds or monthly allowances. Other customers that intensively use a specific application, such as Facebook, could be interested in a plan with a special price, but with access restricted to this application. Therefore, operators should be able to charge not only for connection speed or data amount, but also for application and content.

From the OTT service provider's standpoint, there is value in securing that their end users have the adequate level of quality of service. For example, Google found that a 0.5 second delay in accessing its web search page caused traffic to drop by 20%, which reduced advertising revenues. A study conducted by Akamai revealed that video streaming viewers start to abandon a video if it takes more than two seconds to start up, with each incremental delay of one second resulting in a 5.8% increase in the abandonment rate. Also, Amazon reported that every 100 milliseconds of latency costs 1% in sales. If operators can ensure quality of service to OTT service providers, this could be charged on wholesale plans. This new revenues source would help offset the necessary investments in network capacity.

Operators must modernize their networks with architectures that can scale with the expected double-digit data traffic growth and provide superior performance. Moreover, networks must be aware of applications and the content they are carrying. This would lead to innovative business models targeting both end users and OTT service providers.

TECHNOLOGIES FOR SMART PIPES

Fourth generation IP networks

The fourth generation of IP (4G IP) networking is the main component of Ericsson's overall network vision for the Networked Society. 4G IP networking comprises equipment and solutions that are scalable, provide superior performance and reduced costs by optimizing existing over-layered networks, and are aware of the several dimensions related to the traffic being transported: applications, contents, users, devices and location.

An important component of 4G IP networking is the Smart Services Router (SSR) that can enforce traffic control policies based on different levels of service quality. To do that, this type of equipment uses technologies such as Deep Packet Inspection (DPI) and Multiprotocol Label Switching (MPLS), which identify different types of traffic and treat them according predefined rules.

Content Delivery Networks

CDNs comprise distributed servers that store frequently accessed content. The servers act as local buffers, avoiding traffic being directed to the original content server and traveling unnecessarily through long paths within the network. CDNs assure high availability and performance of content, and are especially useful for securing video streaming quality.

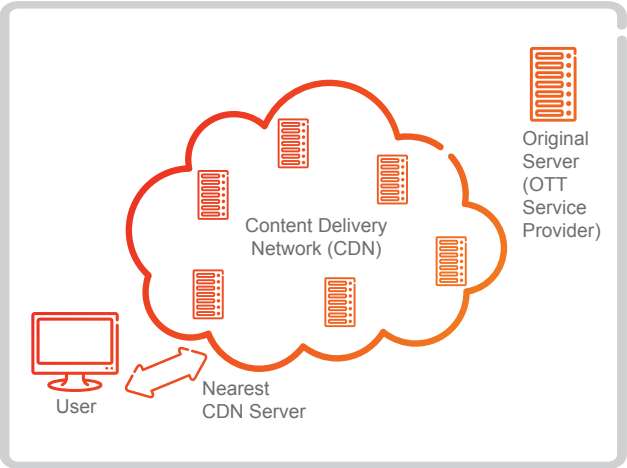

Figure 2: Content Delivery Network

Software Defined Networks

SDN is an emerging network architecture model that defines a software layer, called the control plane, separated from the data plane, comprised of network hardware (switches and routers). In the control plane, data traffic is shaped and prioritized with a highly granular level of control. This architecture allows the network administrator to manage traffic loads in a flexible and more efficient manner through network equipment and data center servers, which form the cloud computing environment.

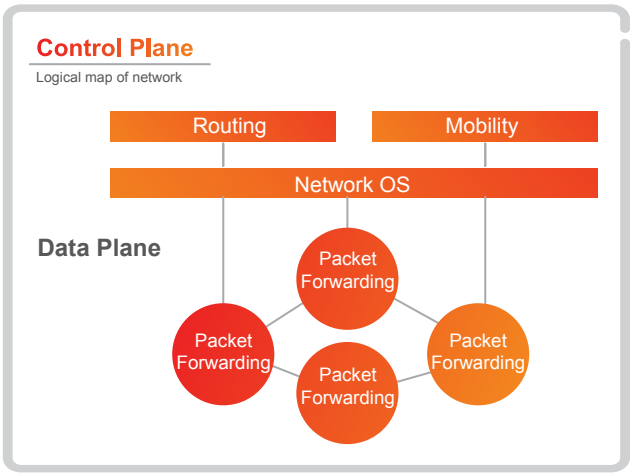

Figure 3: Software Defined Networks

Network administrators can also use SDN to expose network resources and capabilities as Application Programming Interfaces (APIs) to application developers. Then, they could use the APIs to develop applications that can make use of features such as Virtual Private Networks (VPNs), without having specific knowledge of the network topology.

OSS/BSS and Big Data Analytics

Big data analytics are emerging technologies for processing large amounts of information, with the purpose of discovering business insights. For telecom operators, “big data” means vast data banks formed by records of network usage and location, network management and signaling data, and business transactions with subscribers. All this data is obtained through Operations and Business Support Systems (OSS/BSS).

Applying big data analytics to OSS/BSS will provide insights for telecom business innovation, such as real-time promotional offers, high-performance advertising models, subscriber churn analysis and real-time retention measures, and effective management of partnerships with OTT service providers.

The Network Society pushes telecom operators to evolve both their infrastructure and business models. New network technologies that address scale, performance, content awareness and business insights can help operators to transform the telecommunications business.

Telefonaktiebolaget LM Ericsson
S E -126 25 Stockholm, Sweden
Telephone +46 8 719 0000
Fax +46 8 18 40 85
www.ericsson.com

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