Short-cut to the top

The delivery of voice services over next generation networks has never been a comfortable journey. The business reality takes companies upwards and downwards, twists carriers in the wind of market challenges and throws them in heavy seas of competition. Konstantin Nikashov looks at the current market situation to explain how VoIP softswitches ensure the efficient performance of carriers' networks

VoIP adoption is in full swing worldwide. ABI Research predicts a seven-fold increase in the number of residential voice-over-IP subscribers between 2006 and 2013, while Frost & Sullivan forecasts enterprise VoIP services revenues to surge to $ 3.3 billion in 2010. VoIP is already taken for granted in Europe and the USA, while Asia and Latin America register an incredible interest in the technology. With this promising raise of demand for VoIP services telecom carriers definitely should keep their finger on the pulse of where the industry is heading.

Today's telecom landscape offers carriers numerous margin drivers that seem irresistibly tempting to anyone in the business. VoIP calls are but packets of data travelling across the Internet. The technology can be called virtual since it is not tied to physical locations or devices. Carriers rent out their VoIP capabilities to get higher revenues and traffic volumes. Virtualization facilitates launching service rendering to an unlimited number of subscribers and adding new phone lines wherever and whenever needed. VoIP allows for flexible control over the system (either by the system administrator or subscribers) and redundancy to help service providers manage risks.

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However, revenue-generating opportunities go hand in hand with industry challenges. Cable companies and Internet service providers that compete for the market share with conventional telcos take advantage of the fact that VoIP can be easily bundled up with other services. Triple- and even Quad-Play, which are included in selling propositions, increase load on networks. Therefore, carriers need to ensure that their switching platforms are able to handle huge volumes of traffic with top-level reliability.

Obviously, there are two major tasks that telcos striving to succeed should complete today. The most urgent is a choice of the basic functionality that VoIP solutions deployed on the networks must deliver. At the same time service providers should always look ahead in terms of developing their networks, so the software has to keep up with industry upgrades. Another task is to set up criteria of the solution's successful performance. Along with basic features some vendors offer unique capabilities that generate additional business value and significantly raise carrier's revenues.

The galloping migration to NGN technologies that started at the break of the 21st century instigated the intensive use of VoIP softswitches as core elements of carrier's networks. However, not all softswitches are created equal.

The primary softswitch functionality includes call routing, call control and signalling, and delivery of media services. A lot of carriers appreciate when softswitch routing capabilities are emphasized. The whole concept of the softswitch is advantageous since it allows decoupling software from hardware. It means that new services can be added and removed easily, and the deployed solution can be operated in a flexible manner. Compared to traditional circuit switches, softswitches deliver an elaborate functionality, leave carriers with more freedom and save up to 15-20 per cent on capex and opex.

Analysts argue, nevertheless, that the move towards converged IP communications makes vendors emphasize the session border controller (SBC) functionality of VoIP softswitches.

SBCs are carrier-grade systems designed to facilitate interconnection of disparate IP networks. Carriers deploy softswitches with session border controller capabilities on the border between two adjacent networks to overcome protocol and codec conversion challenges. SBCs also allow NAT and firewall traversal, provide for access control, topology hiding, lawful interception service compliance and ensure that only authorized calls are admitted across network borders. Session border controllers give a competitive edge to service providers that search ways to easily combine calls and services from multi-vendor equipment networks.

Other VoIP softswitches offered on the market today are more sophisticated. And so is the ideology of their deployment. What used to be simply a router has evolved into a complex system of traffic transit management. Best-of-breed softswitches perform intelligent routing based on a variety of route hunting criteria, keep and regularly update all the information about rates and tariffs of peering partners. On top of that, operation and QoS analysis tools of industry-leading softswitches enable carriers to come up with competitive customer-driven service offerings, make profitability forecasts and select the best partners.

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Such softswitches are enhanced with session border control functions and include elements of easy integration into the carrier's network (real-time billing interface). Some software manufacturers add even more capabilities to their complex solutions – ENUM lookup and IPv4 to IPv6 interworking support, tools of interaction with B/OSS applications. The innovations contribute to the softswitch viability in today's ever-changing VoIP environment. All-in-one solutions meet the requirements of carriers that promptly react to network challenges and wish to efficiently run significant volumes of VoIP calls.

Functionality of modern softswitches can be defined depending on the purposes of a particular deployment. Vendors usually focus on the routing or session border controller capabilities or design comprehensive intelligent traffic management systems. Each finds its niche in the current market situation.

Even if carriers are sure about the desired basic softswitch features they often need to evaluate how successful a particular solution will be when deployed on the network. Software products can always be customized to address the carrier's needs, but some capabilities are a must for any VoIP solution offered as a cost-efficient competitive softswitch.

The first and foremost capability of a good softswitch is reliability. Being the focal point of a VoIP network and processing several million minutes of traffic per month, the softswitch has to guarantee business-critical dependability. Top-level fault tolerance can be ensured by the softswitch modular architecture. In case one module fails, its functions are taken over by other modules depending on the current workload. This mechanism enables carriers to choose between various redundancy schemes and set up complete or partial back up scenarios.

An advanced business logic embedded in the softswitch capabilities is another important criterion of successful performance. For instance, IP-based PBX solutions are more attractive to enterprise users than TDM-based systems. An IP platform is generally more service-oriented, and, therefore, delivery of voice-to-email, fax-to-email, email-to-fax and other popular services is easier. Best-of-breed IP Centrex solutions offer 20-40 value added services crucial for businesses.

Today's softswitches are often appraised by their ability to operate in the IMS environment. IP Multimedia Subsystem is an access-independent platform for multimedia service delivery. IMS is based on the IP technology but is designed to take VoIP to the entirely new level of development. However, it does not mean that carriers should look for solutions other than a softswitch. Softswitches perform Call Session Control Function (CSCF) well in the perspective of IMS architecture. One of the most important requirements here is the ability to control quality of service and effectively interact with network devices. This makes the session border controller functionality of softswitches especially relevant.

The last but not the least thing to consider when choosing the most successful VoIP softswitch is price-to-quality ratio. Open source solutions are free but they do not guarantee the reliability, 24x7 professional support service and other technology benefits offered by proven VoIP developers. At the same time it does not sound reasonable to overpay for mere basic features under a widely promoted brand. Today's market of VoIP solutions is highly competitive, and mid-sized developers often help retail and wholesale carriers find the golden mean, supplying reasonably priced full-featured softswithes with capabilities that carriers need most of all.

Modern VoIP softswitches have a great potential to dramatically shorten the carriers' way to the top and lay a solid ground for further innovation. However, the choice of robust VoIP solutions is always defined by carriers' needs and the ability of a softswitch to meet certain criteria of satisfactory performance. Eventually, carriers that demonstrate a thorough and thoughtful approach to equipment deployment issues always benefit from best-in-class VoIP softswitches.

Konstantin Nikashov is CEO of MERA Systems
www.mera-systems.com