

CASE STUDY

Service Providers
Data Center



Velcom virtualizes its core network on path to 5G

A leading communications service provider in Belarus lowers its total cost of ownership with virtualization. The new, 5G-ready platform supports its services more cost effectively, and is already accelerating the launch of new services

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Christian Laqué
Senior Director of Technology for
Velcom

Velcom, a leading communications service provider (CoSP) in Belarus, has virtualized nearly all of its core network, through a nine-month transformation project. The new network, using standard servers based on the Intel® Xeon® processor, is easier to manage and maintain, and provides a flexible platform for upgrading existing services or launching new services. Thanks to a significant reduction in total cost of ownership of more than 50 percent¹ according to its FY2016 earnings report, Velcom has already achieved a return on its investment.

Challenges

Legacy equipment came from a patchwork of vendors, and Velcom's engineers had to be trained to maintain the wide range of different systems, increasing cost and complexity.

Extending and upgrading the network was slow. Dedicated communications hardware took up to six months to order, integrate and configure.

The network was not agile. Launching new services could take a year.

Solution

Within nine months, Velcom and ZTE virtualized nearly all of the packet core side for 2G, 3G and 4G services.

The solution uses ZTE's Tulip Elastic Cloud System (TECS) running on HPE servers, powered by the Intel® Xeon® processor E5 family.

The Data Plane Development Kit (DPDK) enables standard servers to deliver the high packet performance required for telecoms applications.

Results

Hardware virtualization helped reduce the data center footprint and cut energy costs.

Velcom can now scale the network in line with demand, reallocating resources flexibly.

The network is ready for 5G. Time to market for adding narrowband IoT to the core network was cut from up to two years to a few weeks.

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5G demands flexibility

5G will bring a wave of new services, not only in communications but also in the Internet of Things, as machine-to-machine communications take advantage of the increased bandwidth. But CoSPs might find their existing network is unable to deliver the flexibility and agility required to launch new services and truly take advantage of the opportunity.

That was the situation that Velcom found itself in. Velcom is a leading mobile operator in Belarus, and a wholly owned subsidiary of Telecom Austria Group (TAG). Its network was based on dedicated communications hardware, which was expensive to own and manage. Some of the hardware was at the end of its life, and a lot of the network functions could no longer be upgraded. The network components came from a number of different providers, so the engineers had to be trained to work with all the different platforms. There was a long lead time for increasing capacity or introducing new services, with new equipment requiring up to six months from order to integration, and new service launches being a year-long program. As the network had transformed from a voice-centric to a data-centric network, capacity was also a challenge.

The introduction of 4G (LTE) in Velcom increased the urgency. “We needed a network that was ready for 4G, and down the road, for 5G,” says Christian Laqué, senior director of technology for Velcom. “Introducing the new functionalities required for LTE in the legacy network would have increased complexity, because of the interoperability between the different systems. Our technology was based on proprietary interfaces, and the increase in complexity would also cause an increase in management and integration costs.”

Virtualizing the core network

Velcom worked with ZTE to virtualize everything on the packet core side for 2G, 3G and 4G. Work continues through 2020 with virtualizing the media gateway. The transformation was achieved in nine months, with the four million post-paid subscribers migrated in just five months, and the prepaid subscribers migrated within an additional two months. Velcom attributes this speed to the removal of proprietary technologies, the adoption of standard 3GPP interfaces, and close cooperation with a single supplier that was able to pre-integrate and test the technologies in its labs.

The solution is based on [ZTE's TECS](#). It's built on OpenStack, and combines virtualization and cloud infrastructure management for computing, storage and network resources. Velcom considered a proprietary virtualization solution, but chose TECS because it had already been used commercially for network function virtualization (NFV), and because the OpenStack solution did not require any additional license purchases.

The software runs on HPE ProLiant* BL460c Gen9 Server Blades, powered by two Intel® Xeon® processors E5-2690 v3. The DPDK enables the high packet speed required, with Velcom reporting a throughput of 15 to 18 Gbits per second for 3G subscriber traffic.

“Intel worked with us to create a course that we could use to teach our employees,” says Wolfgang Fleischer, head of NFV and IMS Services, Telekom Austria Group. “We are also directing our employees to [Intel® Network Builders University](#) to watch the expert webinars for a deeper understanding of virtualization.”

Enabling agility with rapid service launches

The new network has enabled Velcom to launch 4G LTE and puts it in a strong position for 5G. “Launching new services is easier and faster than ever before,” says Laqué. “We were able to upgrade for narrowband IoT by just adding some software. We introduced this functionality to our core network in a few weeks. Before virtualization, it might have taken a year or two to launch a new service.”

The cost of the transformation has already been recouped: Laqué says that introducing LTE on top of the virtualized network was cheaper than the cost of introducing it on the legacy network, and more savings come from the lower operating and maintenance costs. Unified hardware from a single vendor is easier and more cost-effective to manage, and Velcom can maintain more in-house and is less reliant on vendors' expertise. Energy prices in Belarus are significantly higher than in Western Europe, and the virtualized solution has helped cut power consumption and the amount of data center space required.

Resources can now be reallocated when they are needed to help meet peak demand and improve the customer experience. New standard servers follow IT refresh cycles and can now be provisioned in two months, or rented, far quicker than the six-month lead time for buying proprietary equipment.

Spotlight on Velcom

Velcom delivers mobile communications and fixed broadband Internet access, based on its own fiber-optic network. It uses the brands “Velcom” and “PRIVET” and has 4.9 million customers (as of Q2 2016). Its services are based on GSM (GPRS, EDGE), UMTS (HSDPA, HSUPA), HSPA+ and Dual-Carrier HSDPA technologies, and are available throughout the entire territory of Belarus. Alongside common services such as voice, data transfer, SMS, MMS, voicemail, and caller ID barring, Velcom offers value-added services such as mobile data (with or without filtering), Internet security services, Wi-Fi, video calling, and business services including machine-to-machine communications.

Velcom was founded in 1999 and is now a wholly owned subsidiary of Telekom Austria Group (TAG). The Telekom Austria Group has more than 24 million customers across seven countries in Central and Eastern Europe. Its revenue to year end in 2016 was EUR 4 billion (USD 4.49 billion).

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¹ <https://cdn1.telekomaustria.com/final/en/media/pdf/pr-results-qu4-2016.pdf>

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