Orange: two worlds of telecommunications.

asseco

Customer.

Orange Polska is listed on the Warsaw Stock Exchange (WSE) and is part of the Orange Group, a leading provider of telecommunications services in Poland, Europe and worldwide. Orange Polska provides mobile and fixed-line telecommunications services, including voice connections, message and content transmission services, Internet access and television. In addition, it provides ICT (Information and Communications Technology) services, leased lines and data transmission services, as well as sales of telecommunications equipment, electricity trading and the development of telecommunication infrastructure.

In Poland, Orange is leader in the fixed telephony, Internet and data transmission markets. It is the only unique operator offering comprehensive telecommunications solutions available nationwide. Orange aims to provide the highest customer satisfaction and remain the most chosen provider of telecommunications, multimedia and entertainment services which use modern technologies. Orange provides fixed telephony services to approx-

imately 3.5 million subscribers based on two different technologies: TDM – i.e. via traditional digital switching systems and by modern VoIP – telephony based on the SIP protocol. Orange wanted to improve cooperation of these two systems to provide smooth communication between them. To achieve this goal, the existing solution had to be replaced with a newer, more reliable, efficient and cost effective system. The implementation of this project, which also allowed for the reduction of operating costs (OPEX), was associated with a very significant challenge – the implementation of a completely new, critical system into the backbone network operator. The key factor regarding Orange's choice was finding a proven and reliable vendor who had the competence, necessary capabilities, experience and engagement to successfully complete this demanding project. This was the reason Orange Polska decided to implement Asseco Media Gateway Control Function (Asseco MGCF), Asseco proprietary solution.

Implementation.

The main project goal, which began in November 2016, was to ensure the continuity of long-term services of Orange's fixed network core in all of Poland. This was achieved by ensuring cooperation between VoIP and TDM – two areas of the network which are significantly different in terms of basic technology. Asseco MGCF replaced the existing platform completely and became one of the most critical system for maintaining the continuity of Orange's fixed-line services in Poland.

Asseco MGCF was built in JAVA language according to the JSLEE standard and operates within the JBoss application server. The system is responsible for the conversion of signaling between VoIP and TDM networks for SIP and ISUP protocols. It has mechanisms for configuring protocol cooperation and filters, which are important for handling the vast amount of traffic coming from other telecommunications networks.

The MGCF system implemented by Asseco provides Orange Polska with the following functionalities:

- connections handling in SIP-ISUP, ISUP-SIP relations, as a local exchange,
- connections handling in ISUP-ISUP relation, as a transit exchange,
- support for ISUP, SIP, MEGACO (h.248), MGCP, ENUM,
- support for number portability through communication in the ENUM protocol,
- cooperation protocol configurations and filters,
- handling several hundred new connections per second while maintaining many thousands of active connections.

The MGCF system in Orange Polska communicates:

- in the TDM network with international, transit and local telephone exchanges, via SS7 protocols in the SIG-TRAN network (120 telephone exchanges of 4 types),
- in the VoIP/IMS network directly with the main Session Router/Controller elements operating within the New Border Infrastructure platform,
- with 16 Media Gateway (MGW) instances of three different types across Poland.

The introduction of Asseco's product into the Orange backbone network was an enormous challenge for the project team. This was primarily due to the need to carry out a very large range of tests, as for one system. The aim was to confirm the compatibility of telecommunication protocols, starting with tests of cooperation with a wide range of the operator's network equipment on through support scenarios involving handling various end services. This part of the project, which lasted for approximately one year, was carried out in the Orange laboratory and on the production network, and included:

- Approximately 2,000 protocol compliance scenarios performed by several teams of Orange experts. Their scope was highly diverse: from automatic telecommunications protocol testers to service handling scenarios for many different types of end equipment.

- approx. 2,000 scenarios implemented in the production environment included:
  - tests of cooperation with all telephone exchanges carried out by teams all over Poland,
  - interoperability and reliability tests with the SIGTRAN network,
  - traffic tests handling at the border of availability of resources in a specific relation (handling of collisions, transfers, etc.).

As part of the project, Asseco and Orange's team of experts integrated the new solution with other Orange systems, migrated domestic resources as well as ensured local and geo-redundancy.

This was one of the most technologically complex implementations carried out by Asseco for Orange Polska. Completed in January 2019, the project required tests and reconfiguration of 120 telephone exchanges of 4 types, which required the cooperation of personnel throughout Poland. At its peak, the project included about 90 specialists from Orange and more than 20 engineers from Asseco.

The main objective of the MGCF project was to ensure the continuity of the fixed-line voice network services of Orange in Poland and at the same time increase the cost effectiveness of their provision. Replacing the existing solution with a new, much more efficient and economic system, allowed us to fully achieve this goal. Building a system from scratch connecting two worlds of different voice service technologies was a difficult and ambitious challenge. The teams of Orange Polska and Asseco can be proud of the results of their joint work on this project – said Krzysztof Kaszewski, Head of the Network Development Department at Orange Polska.

The new MGCF system enables our customers to make fixed-line calls and is much more efficient than the previous one. Its implementation has also significantly reduced operating costs, which translates into the OPEX ratio – said Łukasz Trzos, Director of Convergent Network Development at Orange Polska.

Key benefits.

The new system implementation allowed to reduce platform maintenance costs significantly and provide long-term support. The solution not only met the high requirements of this large telecommunications operator such as reliability and efficiency of connection handling, but the new system also proved to be more flexible, efficient and scalable than before.

The system is fully adaptable to further development, which significantly shortens the time to market for introducing modifications to protocol cooperation and callflows algorithms, which may be necessary e.g. for launching access to new inter-operator connections or transit services.

An additional advantage is the proprietary architecture of the solution, which allows for its further expansion and makes it possible for the telecom to become independent of outside software and hardware manufacturers. Due to the deployment of Asseco MGCF, Orange Polska has a scalable and efficient system in a suitably matched license model, which does not require, among others, operating licenses or product licenses of third parties.

The main stages of the project included:

Approx. 8 months – design, development of basic system version.

Approx. 14 months – tests and system modifications.

Approx. 6 months – migration which took into account:
- physical resources of TDM throughout Poland,
- traffic at the point of contact with VoIP network,
- international, transit and domestic traffic in both relations,
- reliability tests in real traffic.

It was a ground-breaking project for Asseco as we created a solution for Orange which operates in the main part of the backbone network and is responsible for the ability to provide basic telephone services. This means that the solution provided must work with the right efficiency, performance and reliability. It is the only element of this type in the fixed part of the Orange network responsible for communication between the IMS and TDM network areas, both at the domestic and international level – said Maciej Kogut, Head of the Networks and Mobile Services Area at the Telecommunications and Media Division, Asseco Poland.

The implementation of Asseco MCGF in Orange Polska was an unprecedented challenge for the Telecommunications and Media Division project team. Moreover, besides telecommunication protocols implementation, we faced a distinctive and demanding way of verification and deployment for provided solution. Despite the project's challenges, the long-standing cooperation between Asseco and Orange Polska proved to be one of the key factors of success. We hope that the created Asseco MGCF product will meet market interest, especially from operators looking for alternative solutions for expensive and outdated systems – said Radosław Semkło, Managing Director of the Telecommunications and Media Division, Asseco Poland.

Project in numbers:

4,000 tested scenarios repeated several times in 4-5 week cycles, along with application development.

6 months – telephone exchanges migration of resources on a domestic scale.

14 months – system tests and modifications before implementation.

16 Media Gateways – 3 types.

60,000 connection channels

110 professionals involved in the project.

120 telephone exchanges of 4 types integrated and tested.

450 maximum and 130 on average CAPS (call attempt per second) during peak hours, effectively handled by a single instance in real traffic.