



CASE STUDY

Optimizing the MegaFon Moscow network with Behavior-Based SON



MegaFon is a federal mobile telecommunications operator that holds leading positions in the telecommunications market of Russia and the world. The company and its subsidiaries operate in all regions of Russia, as well as in the Republic of Abkhazia, South Ossetia, and Tajikistan.

MegaFon is a recognized market leader in the provision of mobile data services. It was the first operator in Russia to launch commercial operation of a third generation (3G) network and was the first operator in the world to launch commercial operation of an LTE-Advanced (4G) data network.

MegaFon has chosen CellMining's SON solution to optimize its network performance in the Moscow region, and to help it deliver an exemplary subscriber experience. The solution has demonstrated the ability to meet these objectives against a complex background of new technologies and layers combined with a rising demand for data.

Challenges

As MegaFon has introduced new technologies like LTE-Advanced, and has also integrated additional bands and layers such as UMTS900 and LTE800/1800, and has been adding small cells, this expansion brought with it a dramatic increase in the number of radio network optimization operations that were required to maintain the best quality of experience (QoE) for subscribers.

At the same time the market has been growing more competitive, with a new mobile operator having launched in the Moscow region and with subscriber demand becoming more sophisticated.

MegaFon's RF engineering teams were facing conflicting demands on their time due to the imperative to learn and implement new technologies and to pay attention to strategic initiatives, as well as performing routine management of the radio access network (RAN). Consequently, automation of most routine optimization processes had become essential in order for MegaFon to maintain its superiority in network quality.



4-YEAR
RIGOROUS
SELECTION PROCESS



15
VENDOR SYSTEMS
EVALUATED



100,000
CELLS OPTIMIZED
IN MOSCOW



13.5
MILLION
SUBSCRIBERS



49
BSCS AND RNCs, COMBINING
2G, 3G, 4G TECHNOLOGIES



“CellMining’s skills and experience have allowed us to quickly realize changes, and to introduce new algorithms to make the network optimization process more efficient”

*Vicky Govorko,
RNO Expert, PJSC MegaFon*

Legacy Optimization Tools and Environment

Historically MegaFon used a range of optimization tools that had been developed in-house for controlling network consistency and quality. These included planning and performance management tools, as well as network consistency tools. The existing tools allowed a certain level of automation to be achieved, but there were insufficient engineering resources available to allow continued development of new tools to address all the new challenges.

SON Selection Process

MegaFon began looking at SON systems in 2012, and over the subsequent four years tested a number of systems from different vendors in order to define a detailed technical specification. In 2016 a tender was issued for the SON contract to cover the Moscow region, and as a result up to 15 SON systems on the market were rigorously assessed in order to select the most suitable solution. CellMining’s multi-vendor, multi-technology SON capability was a key deciding factor in its selection.

Implementation of CellMining’s Behavior-Based SON

MegaFon’s network in the Moscow region is extremely complex. It comprises around 25,000 base stations, 30 base station controllers (BSC) and 29 radio network controllers (RNC), and provides a cellular service to more than 13.5 million subscribers. The network employs 2G, 3G and 4G technologies with a number of layers, amounting to a total of about 100,000 cells.

CellMining’s engineers succeeded in completing the work of integrating the SON solution with existing systems, and furthermore demonstrated significant KPI improvements, within a very short period of three months.

“The openness of our solution was a huge advantage to us in meeting the needs and challenges of the MegaFon network,” said Shmuel Morad, CTO of CellMining. “The engineering collaboration was successful because we were able to build on the product algorithms to reflect the knowledge and requirements of the MegaFon optimization team.”

The whole process was assisted by the services of CellMining’s local business partner in Russia, Optima Group International. “We facilitated access of CellMining technology to the Russian market to help them enable their innovative approach toward network optimization, which gives MegaFon a wide range of clear benefits centered on the needs of subscribers,” said Nemanja Nikitovic, Business Development Director of Optima. “The ability of the solution to integrate with MegaFon’s existing in-house developed systems was a huge benefit in speeding up the implementation process.”

Functionality and Benefits

“The CellMining SON solution has demonstrated its ability to effectively maintain MegaFon’s complicated multi-technology and multi-layer network,” said MegaFon’s RNO Expert Victoria Govorko.

“Its key feature is its flexibility, which allows us to integrate MegaFon’s network policies with triggers and optimization algorithms.”

The load balancing algorithms in the SON solution provide an immediate reaction to traffic migration. The 2G Automated Neighbor Relation (ANR) module has proved particularly successful due to its principles based on subscriber behavior. Previously the GSM network had relied entirely on manual optimization, but this can now be managed automatically. Many optimization processes across all the technologies, which were previously implemented manually, have now been automated, and this has freed up engineering resources to work on deep network optimization. Consistency of performance in the Moscow network has been improved as a direct result of deploying CellMining’s technology.

Successful Engineering Collaboration

The MegaFon team is particularly appreciative of the ease with which CellMining’s SON tool offers them a simple way in which to implement their ideas. “The CellMining team’s skills and experience have allowed us to quickly realize changes, and to introduce new algorithms to make the network optimization process more efficient,” said Victoria Govorko. “With CellMining we are able to directly apply our expertise in network optimization to the network, in a way that was not previously possible due to conflicting demands on the RF engineers’ time.”

“CellMining’s consistency check module was flexible enough to take into account all our relevant parameters when we needed to include heavily loaded sites - something that had not previously been planned for.”

The CellMining solution even had the capability to pinpoint where problems were occurring due to software faults in the MegaFon OSS. In addition, CellMining’s Energy Saving Module is showing promise in its ability to reduce MegaFon’s operating costs by selectively shutting down radio power when traffic levels are low, without the risk of any degradation in the subscriber experience.

Conclusion

“We are looking forward to a long and mutually beneficial partnership with CellMining, and anticipate that this solution will allow us to realize our future plans for network optimization and to continue developing the best network quality for our subscribers,” said Alexey Semenov, Director of the Stolichny Branch PJSC MegaFon. “I am confident that this technology will help us to provide 24/7 quality management on the scale of the entire network. It means that we will be able to instantaneously react to unexpected network fluctuations, and continuously provide the best voice and data services to our clients.”

Optima Group’s Nemanja Nikitovic concludes: “We are certain that MegaFon subscribers in Moscow Region are already experiencing positive changes that are a direct result of introducing this outstanding technology.”

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About CellMining

CellMining provides mobile network operators and MVNOs with a unique toolset for optimizing user experience and network performance based on real-time metrics of subscriber data. The company's ground-breaking Subscriber Network Analytics technology monitors subscriber experience data, identifies usage patterns, and reconstructs entire call and communication flows for individuals and business customer groups. CellMining has pioneered the integration of SON (Self-Optimizing Networks) with CEM (Customer Experience Management). This provides MNOs and MVNOs with a world-class solution to optimize their networks for subscriber experience excellence, improving against network KPIs, saving on operational and engineering costs, and reducing subscriber churn.

A forward-thinking startup, CellMining has drawn together an experienced team of industry professionals dedicated to solving business and technical challenges for leading carriers around the world.



info@cellmining.com | Tel: +972-4-6363142
www.cellmining.com |  CellMining |  CellMining