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BUSINESS CASE

Big Data Analytics & Business Intelligence Observatory

ANRITSU: TRANSFORMING THE BUSINESS MODEL THROUGH ANALYTICS

2018 Research
Business Case

Anritsu: transforming the business model through Analytics

INDUSTRY

Telecommunications

COMPANY

Founded in 1895 in Japan, Anritsu is one of the largest and oldest providers of innovative communications solutions in the Telecom industry. The Service Assurance business unit is devoted to the development of Advanced Analytics solutions for Telecom Operators in areas including but not limited to Network Performance Monitoring and Customer Experience Management

THE NEED

Extend the focus of the Service Assurance business unit to offer more sophisticated big data analytics solutions to the market

SOLUTION

A brand-new analytics market offer with two innovative Advanced Analytics solutions for telco customers. The first is a powerful and agile business intelligence tool that can drill-down complex network data in near real-time. The second is a real-time machine-learning based extension to automate complex customer network analyses (e.g., root cause analysis)

BENEFITS

— Increased clients' employee productivity
— Reduced operating costs and costs for client companies
— Better use of huge and complex data flows for client companies
— Expanded target end-users & stakeholders (marketing, planning, etc.)
— Expanded customer base with new types of customers

COMPANY - TRANSFORMING WITH DATA ANALYTICS

Founded in Japan in 1895, Anritsu is one of the largest international players in the field of radio measurement instruments, such as signal generators, and spectrum and vector network analyzers. Anritsu has approximately 3,600 employees and in 2017 it had a turnover of $1 billion, boasting among its customers the major telco operators worldwide. The company consists of several business units, including the Service Assurance business unit, which was historically dedicated to the development of platforms for network performance monitoring. This is now complemented with advanced analytical solutions, including big data predictive analytics. The division has several offices in Europe, with key research centers in Rome, Prague, Bucharest and Bratislava.

THE NEED:

Anritsu's service assurance architecture uses passive network probes to collect all traffic from all network elements, including user plane and signaling protocol traffic. Network traffic data is usually aggregated in Call Data Records (CDR), i.e., specific data structures containing info related to network events (e.g., phone calls, data sessions, SMS). Traditional service assurance solutions only provided basic near real-time monitoring of the network to alert the service provider (particularly, the Network Operations Department) when a malfunction is detected, but with limited ability to drive insights on causes. Anritsu has extended its focus to more sophisticated analytics leveraging big data technology, thus being able to automate the most complex data correlations and investigations, thanks to the ability to analyze a greater depth and variety of the collected network data.

SOLUTION

Anritsu implemented the solution using Vertica, an analytical big data database for very high-performance analysis of huge data volumes in near real-time. This enabled development of a series of use cases that the previous analytical technology was not able to cover: improved response on analysis of the immense amount of data managed by the Anritsu application, i.e., about 3 terabytes per day for the larger customers, an average total of about 10 petabytes every 3 months. It has also allowed Anritsu to extend their solution to analytical capabilities in new areas such as Customer Experience and performance monitoring of critical over-the-top applications such as social networks and video streaming services.

This technological innovation initiative, led by Anritsu

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products and solutions management, has made it possible to offer two new cutting-edge analytics products for telco. The first is a very agile and fast business intelligence and self-service analytics tool with extensive "slice & dice" capabilities of complex data in near real-time. This is a highly sophisticated dashboarding system, which the customer can interrogate to get answers about the in-depth network functioning and service delivery. Examples include evaluating whether there were radio problems for a particular user or network issues or any disruption in the network affecting the final customer experience. The use of big data results in much more detailed background info on the origin and the reasons behind each event affecting service quality.

Vertica has also enabled more complex analyses and improved the response times compared to before. This has allowed Anritsu to implement a brand-new data visualization front–end, allowing self-service network operation analytic capabilities, with ability to drill down on data even in a challenging context, leveraging the speed of Vertica's columnar, Multi-Parallel-Processing (MPP) design.

Anritsu's second product is a real-time machine-learning solution applied to large data clusters. This product allows the customer to automate complex root-cause analysis and

obtain information on the real impact on the service quality received by end users. In the first development phase, Anritsu focused on the ability to prioritize alert causing disruption to the highest number of network users, or to the most revenue-generating services. By doing so, only problems with significant impact on the experience of many users are brought to the operator's attention, allowing them to give the right priority to complex resolution interventions, based on criticality and revenue impact, within minutes of the failure. The operator receives the first digested alert with detailed context through a simple pop-up in the Anritsu solution within only a few milliseconds of the first CDR from the network probes containing failure data. This speed is possible thanks to the development of a streaming analytics design, where data is analyzed continuously as it's fed from the network probes. The ability to automatically deliver a single contextualized alert with clear insights summarized over millions of malfunctions signaled by all the network elements involved in a failure requires advanced data machine-learning. This way, the Anritsu application simplifies and accelerates the diagnosis of Network Operation Center (NOC) operators, who in the past had to manually investigate the causes of every single alarm received, flipping through the data records (up to thousands of records). Before, they had to perform multiple manual drill-downs on

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often already aggregated data which did not always contain the necessary details and correlations to other business functions, such as revenue of impacted services, normally stored in BSS data. Thanks to big data, this ability enables the operators to reduce the time to repair, while focusing first on most critical services through a remediation plan based on a data-driven strategy in few seconds.

BENEFITS

From an organizational perspective, the technological investment and the launch of these two new products has involved both the need to develop and grow internal resources in the company and hire new professionals in the data science and software engineering area. In recent years, Anritsu has hired more experts in functional analysis and in assessing which new use cases could be solved by a certain algorithm.

This initiative, as a whole, has extended the reach of the Anritsu solution within end customers. Historically, OSS solutions like these were always sold to the network control centers and operations. However, the real-time machine-learning analytics now introduced brings important insights and extremely valuable information for other Telco

business functions: the planning network department can now leverage this for better network development, while network engineering and marketing departments can better plan and sell based on actual service quality and customer satisfaction of the subscribers.

The ROI of developing a new analytics-based product has been massive. The monitoring capabilities offered to telco operators are extremely high performing and are a competitive advantage for Anritsu. From a technological perspective, Vertica's modularity has given Anritsu strong scalability and a reduced operating cost. In numerical terms, the results were astounding: the investment recorded a return of 351%, with a payback time of only 4 months, and a cost-benefit ratio of about 1:43.

FUTURE DEVELOPMENTS

The next steps are multiple: Anritsu is developing a new machine-learning product, which can cover a further extended series of new network use cases. These will leverage machine-learning not only on the streaming data flow, but also on static historical data stored in the data lake, where all past network events reside. An example use case is the creation of a "tariff plan optimization" model, able to suggest

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the optimum number of tariff plans to be offered to single customers based on their actual historical network use. Another application concerns the design of a system to recommend network upgrades, which, working on a large number of variables, highlights to the user the best time to make a network upgrade in a certain geographic area. Finally, Anritsu is developing a predictive algorithm, which allows the telco operator to be informed in advance of possible network congestion, coupled with a relative probability of the event occurring. These applications, although they require very advanced skills and investments, are in high demand by telco operators.

Anritsu will continue to invest heavily in developing its machine-learning and analytics solutions in order to support its customers unleashing the hidden power of data.