The Power of Value-Based Network Capacity Planning

A Global Telecommunications Company Takes a Data-Driven Approach to Network Investment Planning

Challenges

As part of its impressive growth and expansion, a global telecommunications company needed to roll out a new content delivery network for a high-growth offering: high-speed video player services. Management made an initial investment in network infrastructure, rolling out limited amounts of upgraded bandwidth in strategic geographies.

But to meet growing demand at scale, they had to build out large-scale physical network capacity. The challenge was determining exactly where to invest and how much, as building new networks is a capital-intensive proposition; even a half-point reduction in the company's multi-billion dollar annual spend on infrastructure expansions – made possible through more accurate network planning – would deliver a massive return on investment. Equally important, in order for the service to be successful, the company had to minimize delays between content orders and actual downloads. To achieve this, new content delivery networks had to be strategically placed near sources of high customer demand; by minimizing the distance that digital content had to travel to customers, the company could minimize delays and deliver the high-quality user experience required to be competitive in this market.

To determine exactly where to lay the new infrastructure, the company decided upon a data-driven approach by identifying concurrency in customer data regarding player sessions, peak usage times and dates and then clustered this data to identify usage patterns. These patterns would help them forecast future growth and network demands.

However, this would require analyzing terabytes of session data across a vast carrier network and generating a predictive trend analysis of customer video viewing behavior patterns. Using the company's existing analytical resources, this would be a complex and time-consuming process.

Solution

To expedite analysis of the various data sources, the company deployed Datameer to:

- Aggregate disparate, siloed data sources, some with large data volumes
- Discover and shape the data to suite this business case
- Perform operational analytics
- Visualize results to identify customer usage patterns for use in network capacity planning

Using Datameer, the company was able to aggregate data from IPCDN (Internet Protocol Content Delivery Network) session logs by service group, expand them into 1-minute sessions, and analyze them to identify concurrency and peaks in sessions across their user base. To this data, they added two huge, unrelated data sets: IP lease records and MAC addresses. All of this data was aggregated and regrouped by service group and then analyzed using Datameer to determine customer usage patterns. For example, using Datameer, they were able to model and run growth trend analyses on the following customer session data:

- Bits by service over time
- Bits by location over time
- Bitrate by service over time
- Bitrate by location over time

In addition, they used Datameer to analyze session data and identify the following peak-related metrics:

- Peak time by service
- Peak time by location
- Peak time by service and location
- Sum of the peaks over time
- Peak of the Sums over time

As shown in FIGURE 1, results were then extrapolated to better predict future demand network capacity and build out just the right network capacity at the right times and locations.
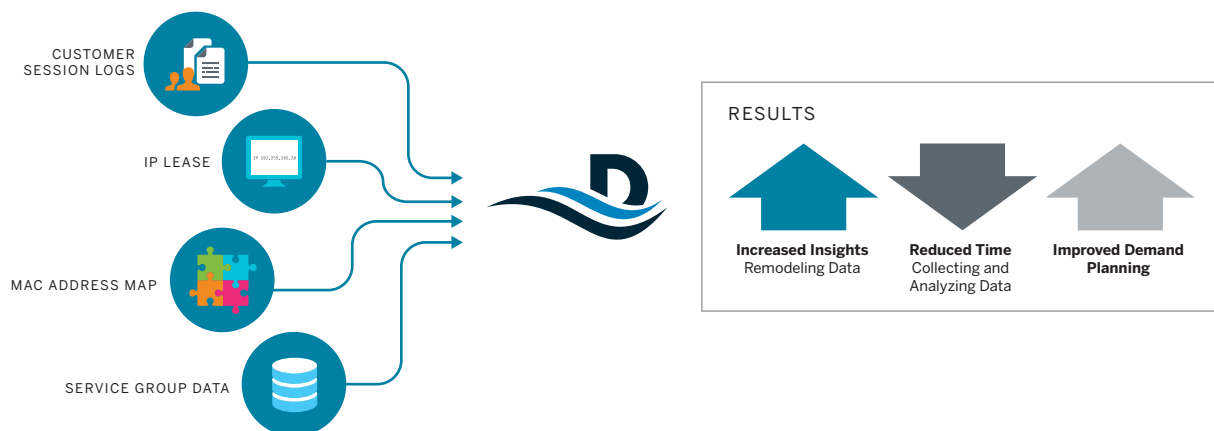

FIGURE 1: Using Datameer, this company can aggregate and analyze huge data sets to forecast future demand and better plan network capital investments.

Benefits

Leveraging Datameer, the IT team was able to aggregate, model and analyze multiple, massive datasets to accurately predict future customer behavior and network usage. They saved money by avoiding unnecessary capital expenditures, which helped them maximize return on assets. And because they had the insights needed to plan network expansions close to areas of high customer demand, they could stay competitive by providing the fast digital download speeds customers demand.

Value-Based Network Capacity Planning

Datameer provided this company with a whole new level of insight into customer behavior trends, which improved their ability to forecast for future demand and plan network investments.

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