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Powering Intelligent Network Optimization

Bharti Airtel* delivers enhanced customer experience through real-time network analytics powered by Intel® architecture

Executive Summary

In today's highly-connected world, communications service providers (CoSPs) are facing unprecedented challenges as the proliferation and penetration of connected devices continues to surge and consumption models change.

Bharti Airtel is a leading global telecommunications company and one of the top three mobile service providers globally in terms of subscribers. With increased competition and a constantly growing subscriber base, the need to deliver a consistent and valuable customer experience is critical to its success. Bharti Airtel, in its constant endeavour to stay ahead of the competition, leveraged Intel® architecture to optimize its network performance and provide its ever-increasing customer base with a seamless experience.

The Need for High-Quality, Consistent Customer Experience

Customers today expect a consistent, seamless experience no matter what devices, channels, and telecommunications services they are using. To retain the existing customer base and reduce churn, the key is to deliver a compelling and reliable customer experience across services and touchpoints.

With the objective of maintaining its competitive edge, Bharti Airtel turned to Intel as a key collaborator on developing industry-leading solutions to achieve two primary goals:

- **Enhancing customer experience:** Delivering experiences that are more closely aligned with the needs and expectations of the customer and creating a personalized, efficient, and seamless experience.

- **Optimizing network connectivity:** Understanding how connectivity is being used, and delivering real-time optimization, allowing the network to run more efficiently and cost-effectively.

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> To stay ahead in a highly competitive landscape, it is critical for us to deploy a future-ready network infrastructure. Bharti Airtel and Intel worked closely together to deliver seamless customer experiences cost-effectively.
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> **Randeep Sekhon**
> Chief Technology Officer,
> Bharti Airtel

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Delivering Enhanced Customer Experiences with Network Analytics

With the rampant customer adoption of smartphones and use of the mobile internet, businesses are witnessing a data explosion - one that is progressing at an unprecedented rate.

Recognizing the strategic value of data, Bharti Airtel initiated the Network Analytics Project. The aim was to capture data at their network, store it, and run advanced analytics on it to gain deep customer insights on network usage and performance. Ultimately these insights would serve to optimize the network and connectivity based on each individual's need.

Collaborating and Accelerating Network Optimization

Bharti Airtel processes massive volumes of structured and unstructured data, and to effectively maximize all this data, it requires an IT architecture that is highly scalable, agile and performance-optimized. Bharti Airtel and Intel have collaborated closely to enable real-time network optimization towards transforming and enhancing customer experience. Bharti Airtel leveraged Intel's expertise and technology to seamlessly shift from its legacy network infrastructure to a modernized, scalable network infrastructure.

THE INTEL® XEON® PLATFORM: DELIVERING GREAT BENEFITS FOR BHARTI AIRTEL

REAL-TIME NETWORK ANALYTICS

Reducing time-to-insight with fast, powerful processing for network analytics workloads.

HIGH-PERFORMANCE ANALYTICS PLATFORM

Enabling more individualized, granular results for data outcomes that can better service specific user needs.

FUTURE-READY DEPLOYMENT

Offering flexibility, scalability and ROI to support future development and investment.

The Intel® Xeon® platform provides the performance, scalability, and agility required to drive an intelligent and optimized network infrastructure. By modernizing its network infrastructure based on the Intel® Xeon® platform from a legacy system, Bharti Airtel saw huge improvements in performance - up to 4.1x for user/data plane workloads, up to 1.7x for signalling plane workloads, and up to 1.7x for correlation server workloads.[1]

Intel® Architecture for Agile, Scalable, Optimized Networks

The workload-optimized Intel® Xeon® platform enables Bharti Airtel to seamlessly monitor its network and customer experiences in real-time. This, in turn, helps take corrective measures and provide solutions to customers before an issue escalates. The ability to fix any issue in real-time makes the customer experience more enriching and satisfying. Furthermore, the platform provides predictive analytics, where different kinds of data are used to gain insight into potential future outcomes.

Additionally, it is critical for Bharti Airtel to ensure that its network infrastructure is future-ready to address high infrastructure costs, long hardware installation times, and other challenges that can affect its competitive edge. The Intel® Xeon® processor provides the ideal platform for future-ready networks and for powering critical features and services, like self-optimization, self-healing network and auto-correction ability, that can be key to driving the future for Bharti Airtel.

Enabling Intelligent Network Analytics

For this project, Bharti Airtel deployed distributed platforms that leveraged the Apache Hadoop* platform, which is increasingly being adopted by CoSPs to store, process, manage, and drive analytics from all of their data. These frameworks play a key role in driving Bharti Airtel's real-time network optimization and predictive customer analytics to gain actionable insights.

The solution enables the on-demand merger of disparate structured, unstructured and semi-structured data sources without needing to stage the data. Hadoop stores everything in a schema-less structure, enabling Bharti Airtel's infrastructure to flexibly carve up a record or an output from a combination of inputs the user provides, and deliver results on demand.

These platforms – powered by Intel® Xeon® processors and Intel® SSDs - are integrated with widely implemented business intelligence and reporting tools that are used to drive customer and network insights. The combination of Intel® Xeon® processors and Intel® SSDs enables a faster, more efficient and less costly data storage and processing infrastructure for Bharti Airtel. These platforms further enable access to all of this data in a variety of ways together with the robust security, governance, data protection, and management that Bharti Airtel requires. As a result, data is collected, stored, processed, explored, modelled, and served in one unified platform, enabling a complete view of customers and network performance.
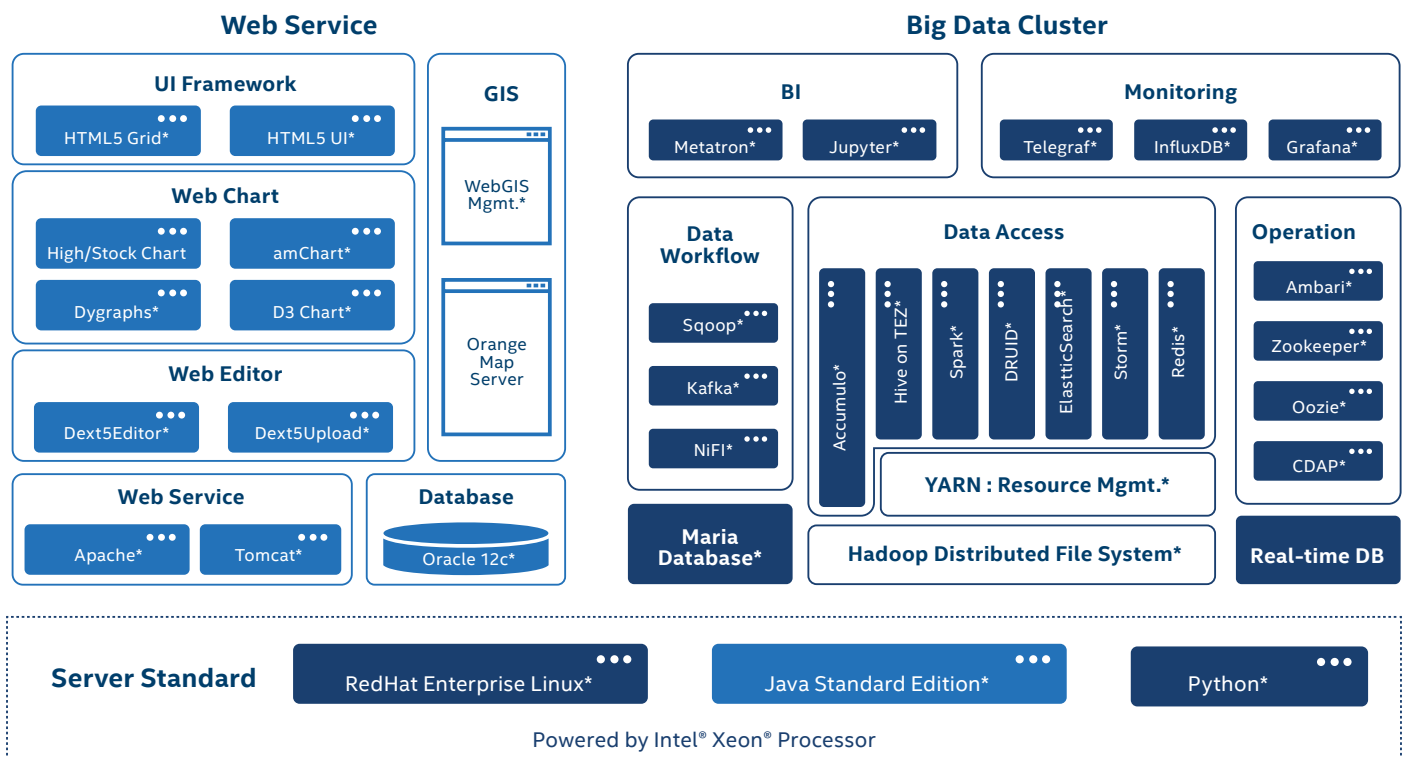

Figure 1: Solution Software Architecture

The Network Analytics Project is driven by two kinds of data sources – the Customer Data Lake and the Network Data Lake. Bharti Airtel already has a robust Data Lake platform – building on unprecedented amounts of customer data. The Network Data Lake platform aims to provide critical data analysis like signal loss and predicting surges in the mobile network to better cope with the load and help build better customer experiences.

Achieving Enhanced Benefits

By utilizing the full breadth and depth of available customer and network data, this solution powered by Intel® architecture enables Bharti Airtel to deliver consistent customer experiences in real-time. It enables customer benefits that include:

- **Optimized network and enhanced experience:** Enabling more cost-effective, efficient networks and user experiences that are more intuitive, enriching and immediate than ever before.

- **Proactive care:** Using data analytics, Bharti Airtel employs business intelligence and analytics tools that help identify issues and fix them before they affect the customer experience, ultimately enhancing customer satisfaction.

Looking Ahead

The Network Analytics Project was successfully deployed with hundreds of Intel-powered servers and network probes deployed. Bharti Airtel is looking to rapidly extrpolate this project across the rest of India in the immediate future by leveraging a stronger collaboration with Intel.

> " Intel powered the project with their processor and server expertise and enabled us to significantly reduce the development time. The cross-functional team overcame a lot of challenges and had a great experience in building and rebuilding the product in an effort to vertically scale it. "
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> **Shashwat Kishore**
> Manager, Digitization,
> Bharti Airtel