Cloudera helps communications service providers capitalize on big data to deliver a 360-degree view of customers and improve customer experiences

Facing Increased Competition and Customer Churn
Communication service providers (CSPs) today are undertaking fundamental shifts in their business models to address a wide array of critical challenges and seize emerging opportunities. They are altering what services they offer and how those services are delivered to adjust to declining voice revenue streams and ever-increasing demand for mobile data. They are also looking to capitalize on additional revenue-generating opportunities as they face continuing competition from over-the-top players.

At the same time, increased competition and the high costs of customer churn are spurring CSPs to focus on improving the 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, CSPs are focused on delivering a compelling, personalized, and consistent customer experience across multiple touch points and channels.

<table>
<thead>
<tr>
<th>Key Structured Data Sources/Systems</th>
<th>Key Un/Semi-Structured Data Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network</td>
<td>Clickstream Data</td>
</tr>
<tr>
<td>Billing</td>
<td>Social Media</td>
</tr>
<tr>
<td>CRM</td>
<td>Network Logs</td>
</tr>
<tr>
<td>OSS</td>
<td>Sensor Data</td>
</tr>
<tr>
<td>Ordering</td>
<td>Machine Data</td>
</tr>
<tr>
<td>Inventory</td>
<td>Apps Data</td>
</tr>
<tr>
<td>Other/Legacy Platforms</td>
<td>Documents, Videos, Call Center Records</td>
</tr>
</tbody>
</table>

Figure 1. CSPs are looking to stitch together a complete view of customers from a wide variety of structured, unstructured, and semi-structured sources
However, ongoing market consolidation—especially across fixed and mobile operations—has made addressing these challenges difficult. Consolidation has left many CSPs with multiple data silos; a mismatched set of operational support systems (OSSs) and business support systems (BSSs); and inconsistent network, service, and customer information. They are searching for solutions that can bring together information so they can better understand and serve their customers.

**Striving to Create Personalized Customer Experiences**

As CSPs look to transform their business, they are focused on three primary goals:

**Reduce customer churn.** Based on recent research from Ovum, CSPs can expect to keep only about half of their existing customer base over the next 12 months—about a quarter of all users globally say they will definitely change providers.¹

**Maximize opportunities to increase subscriber revenues.** CSPs are looking for ways to stitch together a true 360-degree view of customers so they can provide a strong customer experience, develop new services, and improve cross-sell/upsell offerings based on specific customer interests and preferences.

**Deliver a personalized and consistent customer experience.** To reduce churn and boost subscriber revenues, CSPs are striving to create personalized, efficient, and seamless experience across all contact channels—including the call center, store, web, mobile app, social media, and more. CSPs are trying to minimize the number of support calls and offer a portfolio of relevant and desirable services that increase brand loyalty.

**Capitalizing on Business, Operations, and Usage Data as Strategic Assets**

Data is a strategic asset that CSPs can—and must—turn into competitive advantage. With the rampant customer adoption of smartphones and use of the mobile Internet, CSPs today have access to unprecedented amounts of valuable data, including data pertaining to customer profiles, devices, networks, customer usage, location, downloaded apps, clickstreams, and more. The challenge is finding ways to capitalize on this data to achieve their goals (Figure 1).

While CSPs have access to a wide variety of disparate data sources, many find it difficult to break down the data silos that have built up over the years. CSPs, like many companies in other fields, have seen systems grow unchecked to a point where they store overlapping, unorganized, and often conflicting information. Data might reside across hundreds of systems and platforms that cut across organizational boundaries including billing and rating platforms; point-of-sale and customer care systems; customer relationship management (CRM) systems; sales and ordering systems; network, inventory, and OSS systems; and legacy and enterprise platforms as well.

CSPs can expect to keep only about 50% of their existing customer base over the next 12 months²

Traditionally, CSPs have used data warehouses to store customer information, such as customer account information; call detail records (the metadata about calls and text messages that traverse the telco network); billing information; and survey information. However, customer activity data is rarely stored in a data warehouse—or even captured—due to the costs of doing so. CSPs must incorporate activity data and generate a more comprehensive, complete view of each customer.

The complexity of managing these disparate data silos is amplified as CSPs start to expand into additional lines of business and offer bundled product offerings. Each business unit maintains its own set of customer, product, and inventory data across its own network of internal and legacy systems and data marts.

**Enabling Transformation**

Big data analytics solutions can help break the data silos and maximize the value of all data available to CSPs, supporting efforts to meet business objectives, promote growth, drive efficiencies, and increase profitability across the entire telecom value chain. By incorporating customer data as part of that analysis, CSPs can generate new insights that help increase customer retention, fine-tune customer segmentation, improve network optimization and planning, and identify new upsell/cross-sell opportunities.³

CSPs are increasingly adopting the open source Apache Hadoop® platform to store, process, manage, and drive analytics from all of their data. Some CSPs use Hadoop purely as an operational data store to drive operational efficiencies by increasing storage capacity, improving performance, and reducing costs. Others are building specific data applications on top of Hadoop to drive actionable insights. Some of the more common applications include real-time network optimization, predictive churn analytics, and real-time fraud analytics.
Informed Business Decision-Making with a 360-Degree View of Customers

Cloudera Enterprise provides a scalable data management platform that enables CSPs to effectively stitch together a full 360-degree view of the customer across all devices, products, systems, and channels. The people and applications that interact with customers have a full knowledge of the history, purchases, preferences, and promotions offered to a customer across all channels and service touch points—from call centers and web pages to kiosks and social media.

The Enterprise Data Hub

The enterprise data hub enables a comprehensive customer view by centralizing data in all formats. It brings together the structured data from diverse billing, ordering, customer care, and network data plus semi-structured or unstructured data that includes network logs, clickstream data, and social media and sensor data. All that data can now be ingested and stored within a unified platform for comprehensive analytics (Figure 2).

The enterprise data hub—powered by Apache Hadoop and running on Intel® Xeon® processor–based servers—complements existing CSP data warehouses, helps organizations improve performance, and enables new insights while reducing costs. Centralizing data in all formats, and making that data available to all business users and groups, can help significantly reduce capital expenditures compared with traditional data management mechanisms.

Cloudera Enterprise is already integrated with widely implemented business intelligence and reporting tools that CSPs use to drive insights and thus complements their existing investments. Moreover, the enterprise data hub enables users to access all of this data in a variety of ways—including batch processing, interactive SQL, search, advanced analytics, and machine learning—together with the robust security, governance, data protection, and management CSPs require. As a result, data can be collected, stored, processed, explored, modeled, and served in one unified platform, enabling CSPs to gain a complete view of their customers.

Use Cases

By integrating customer usage information with unstructured data sources, such as social media interactions and sentiment analysis, Cloudera Enterprise enables CSPs to address multiple use cases that can benefit from better understanding and engagement with customers.

Targeted marketing and personalization: CSPs can create personalized product offerings and specific upsell/cross-sell opportunities by analyzing customer attributes, including a subscriber’s usage patterns, device preferences, billing data, customer support requests, purchase history, and buying preferences as well as demographic information, location, socioeconomic influences, and so on. By defining targeted customer micro-segments, CSPs can personalize offers and campaigns that ultimately help improve conversion rates.

Customer journey analytics: CSPs can capitalize on real-time analytics that map the user’s journey and generate actionable insights. They can respond quickly to customers with a “next-best offer” and convert interested prospects into customers by combining data on customer demographics, purchasing behavior, and clickstreams with location and content preferences. CSPs can also map a specific customer’s interactions at various stages of the life cycle to promote tailored offerings and campaigns.

Proactive care: Using big data, CSPs can employ business intelligence and analytics tools that help identify issues and fix them before they affect the customer experience. They can enhance customer satisfaction and reduce calls to customer care centers, thereby lowering support costs.
Predictive churn analytics: CSPs are starting to use Hadoop and big data analytics solutions to bring together data points—including quality of service (QoS), network performance, subscriber billing information, support calls, and social media streams—to build models for predicting and preventing churn. Churn prediction models allow CSPs to identify and launch retention campaigns to address at-risk customers through outbound channels.

These use cases are just a small subset of those enabled by Cloudera Enterprise. CSPs can also conduct customer lifetime value analytics, clickstream analytics, location-based analytics, and more.

Cloudera and Intel Collaboration

The enterprise data hub draws on the collaborative efforts of Cloudera and Intel. Cloudera works with Intel to make contributions to the open source community, improve the performance of Apache Hadoop, and help organizations deploy Hadoop in their environments. Collaborative engineering projects have resulted in six joint releases, each aimed directly at improving enterprise readiness by addressing performance, security, manageability, and application support needs.

The collaboration between Cloudera and Intel is setting the pace of innovation in open source. The companies have produced 24-month rolling roadmaps that envision ways to address the performance, security, manageability, and application support needs of the big data market using new hardware technologies, including:

- Intel® Advanced Encryption Standard–New Instructions (Intel® AES-NI)
- Intel® Advanced Vector Extensions 2.0 (Intel® AVX2)
- Intel® Streaming SIMD Extensions 4.2 (Intel® SSE4.2)
- Intel® Math Kernel Library (Intel® MKL)
- 3D Xpoint™ Technology from Intel and Micron Technology

Through these and other efforts, Cloudera and Intel are helping to ensure organizations can scale with confidence and achieve a scalable return on investment.

Summary

In a fast-changing field, CSPs are striving to reduce customer churn and boost subscriber revenues. By adopting Cloudera Enterprise, which is built on an enterprise data hub and runs on Intel Xeon processor–based servers, CSPs can capitalize on a full range of customer data available to them to create a complete view of each customer. CSPs can generate new customer insights that enable them to produce a better customer experience and help them retain a competitive edge.

For More Information

To learn more about Cloudera products and solutions, visit cloudera.com.

Find the solution that’s right for your organization. Contact your Intel representative, register at Intel IT Center, or visit intel.com/communication.