



Delivering Customer 360 Insights for Financial Services

An enterprise data hub from Cloudera*, based on Intel® architecture, helps financial institutions turn disparate data sources into insights and increase business opportunities

This solution brief describes how to solve business challenges through investment in innovative technologies.

If you are responsible for...

- Business strategy:**
 You will better understand how an enterprise data hub from Cloudera*, based on Intel® architecture, can help enable you to successfully meet your business outcomes.
- Technology decisions:**
 You will learn how an enterprise data hub from Cloudera*, based on Intel® architecture, works to help deliver IT and business value.

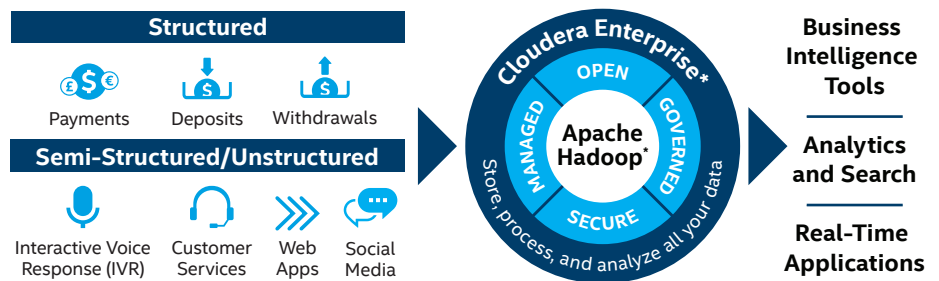
Executive Summary

Today's banking customers use multiple channels, such as web, mobile apps, interactive voice response (IVR), automatic teller machines (ATMs), as well as the branch itself. With the number of products and volume of transactions and locations, customer interactions have become increasingly complex to map. Data silos are pervasive, increasing the need to consolidate, integrate, and analyze information in a cost-effective and timely manner. As a result, many financial institutions access only a fraction of their data, limiting their potential insights.

Financial institutions want to improve customer retention and loyalty, and increase product sales through a compelling customer experience. Advanced analytics solutions from Cloudera*, built on Intel® technology, can help banks gain a true 360-degree view with seamless data integration in a central enterprise data hub. Cloudera and Intel help solve the challenges of incorporating multiple data sources into customer insights that help personalize the customer experience and result in a strong competitive advantage.



Financial Customer 360



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Figure 1. With the Cloudera Enterprise* data repository built on Intel® technology, structured and semi-structured data can be integrated, stored, and analyzed in a centralized, cost-effective big data solution for financial institutions.

Focus on Cloudera*

Great information is the foundation for success. It improves customer engagement and solves tough business challenges. Cloudera*, founded in 2008, delivers a modern platform for machine learning and advanced analytics. An enterprise data hub with Cloudera can unlock the hidden value in business data. With Cloudera, organizations can leverage security, governance, and management functions to create an enterprise-grade foundation for data.

Cloudera provides one of the world's fastest, easiest, and most secure⁵ Apache Hadoop* platforms to help businesses solve their most challenging problems with data. Cloudera has received numerous awards and accolades from industry watchdogs, including the 2014 and 2015 *Database Trends and Applications* Readers' Choice Award for best analytical platform.

Data Volumes and Disparate Sources Tax IT Resources

Customers seeking a more engaging and relevant experience are selecting businesses that can deliver more personalized service, regardless of whether it is in the physical store, online, on the phone, or through mobile apps (see Figure 1).

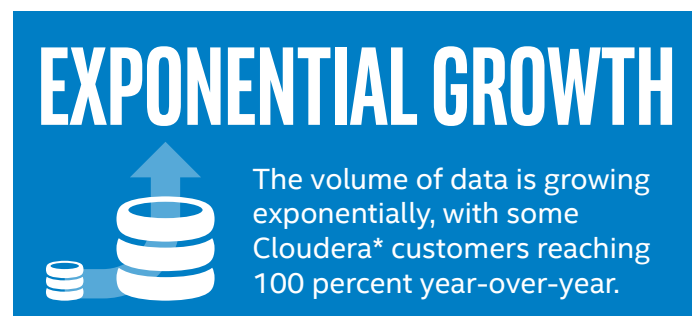
Businesses, on the other hand, want to reduce the cost of customer service and inventory. Financial institutions are challenged with collecting, aggregating, and effectively using new sources of customer information to shape marketing campaigns, provide additional products and services, and improve customer engagement. Additionally, businesses need to better understand customers who are at risk of migrating to a competitor. Acquiring a new customer is 5 to 25 times more expensive than keeping one.¹ IDC FutureScape* estimates by 2020, organizations able to analyze relevant data and deliver actionable results will achieve an extra USD 430 billion in productivity benefits over their less analytically oriented peers.²

But achieving customer 360 requires detailed, well-rounded insights from a wide variety of sources, both internal and external. These sources include traditional structured data (such as customer relationship management (CRM),

transactional information, and call center records) and new and emerging unstructured or semi-structured sources (such as clickstream data). Some of the common hurdles to achieving true customer 360 include:

- **Data silos.** With multiple data sources like bank accounts, loans, debit and credit cards, ATMs, Internet of Things (IoT) devices, and call center logs, structured and unstructured data are often sprawled across multiple silos.
- **Data volume.** The volume of data is growing exponentially, with some Cloudera* customers reaching 100 percent growth year-over-year.
- **New sources.** Online transactions, such as bank deposits, transfers, and bill pay, as well as e-commerce data, are becoming available with the explosion of Internet applications and IoT. It can be time-consuming and costly to integrate this data with existing data stores necessary for customer 360 analytics.
- **High cost.** Storing data in relational database management systems (RDBMSs) can cost between USD 30,000 and 100,000 per terabyte. Data scientists spend 50 to 80 percent of their time collecting and preparing unruly data before it can be explored for useful insights.³

Cloudera Enterprise* can help businesses overcome these challenges and turn their customer data into valuable insights.



Proven Value with Cloudera Enterprise

Royal Bank of Scotland* (RBS*), a global bank with over 30 million customers and 700 retail branches, chose Cloudera for its customer 360 initiatives. In an *American Banker* article titled "Can Big Data Recreate Personal Touch of Bygone Banking? RBS Thinks So," Christian Nelissen discussed the bank's big data strategy and how it is recreating the personal touch to enhance customer engagement.⁴

Cloudera Enterprise can help leading banks gain insights with a true 360-degree view of the customer. Built on Apache Hadoop, Cloudera Enterprise provides a unified platform for aggregating, blending, and analyzing any volume or type of unstructured and structured data in a security-focused environment. Financial institutions, regardless of type and size, can manage the customer experience with marketing initiatives, including up-selling and cross-selling, next-best offers, attrition reduction, loyalty, and proactive customer care programs. Banks can correlate CRM, branch, mobile, geolocation, and transactional data with external sources, such as social media and third-party solutions to understand spending patterns, behaviors, and preferences with greater precision. By utilizing the full breadth and depth of available data, businesses deliver contextual and personal experiences that are more closely aligned with individual needs and expectations.

Solution Value: Cost-Effective Data Integration, Storage, and Analytics

Businesses are better able to meet customer expectations for a personalized experience by achieving consistent, secure customer insights that lead to highly targeted marketing campaigns, greater customer loyalty, and more sales opportunities, but ensuring data consistency is crucial. Big data solutions from Cloudera, built on Intel® technology, provide seamless data integration with security-focused performance and scalability. Cloudera Enterprise based on Apache Hadoop enables businesses to merge disparate structured and semi-structured data sources into one central hub for analysis (see Figure 2).

The benefits include:

- **Consistent, reliable data.** Aggregated, cleaned, and validated customer data from multiple structured, semi-structured, and unstructured data sources provides more accurate analytics. With integrated data, businesses can better understand their customers, manage costs, and offer more meaningful products and services.
- **Easy integration of new data.** New data sources are constantly emerging, and a single solution allows businesses to easily integrate new and emerging sources, including clickstream and IoT data, into existing data stores.
- **Scalable storage at lower cost.** With an EDH using Cloudera Enterprise, scalable data storage is available at a significantly lower cost over traditional data management mechanisms, such as a data warehouse.
- **Diverse analytics options.** An EDH using Cloudera Enterprise helps organizations derive insights using all their data in a variety of ways, including integration with market-leading business intelligence solutions, SQL analytics, text search, and machine learning.
- **Security-focused management.** Built on security-focused Intel technology, Cloudera helps businesses maintain customer privacy and security. From PCI compliance to HIPAA to PII and other compliance regulations, Cloudera's solutions not only help organizations safely comply with the financial industry's unique security requirements, they are designed to make it easy to quickly generate compliance reports when requested by the governing bodies.

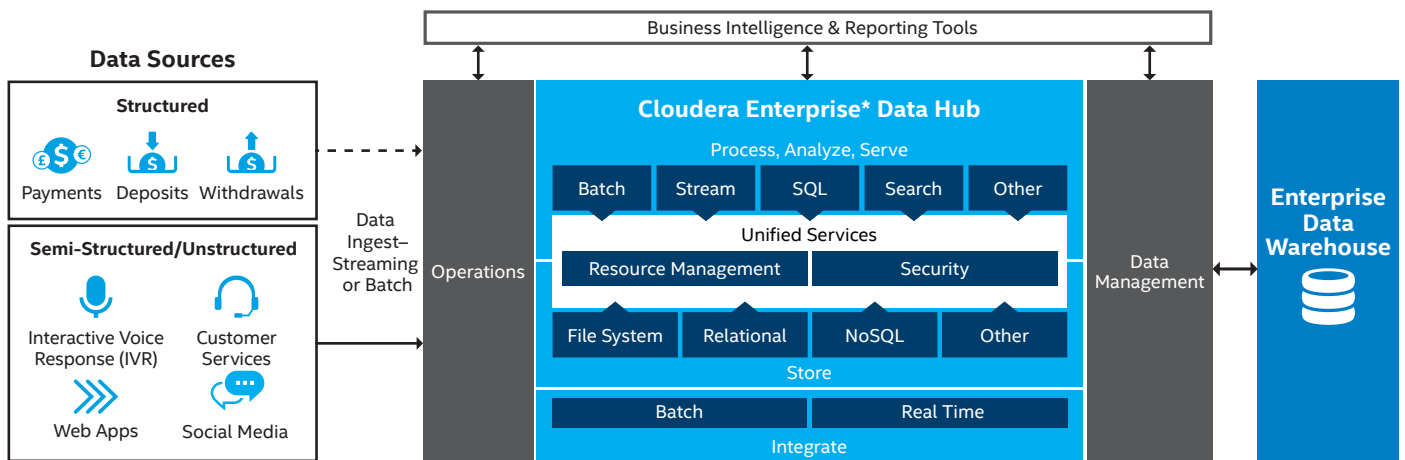


Figure 2. Cloudera Enterprise* Data Hub merges existing data silos with new structured, semi-structured, and unstructured data sources to help banks achieve a true 360-degree customer view.

Achieving a holistic view of customers and their needs requires an investment in integrating and managing data, and an EDH using Cloudera Enterprise is designed to help make that transition easy and more cost-effective.

Key Infrastructure Technologies

Data from a variety of sources can be stored, managed, and analyzed more securely in Cloudera, as shown in Figure 3. Each new generation of processor is optimized to perform Intel® Advanced Encryption Standard New Instructions (Intel® AES NI) faster, implementing intensive sub-steps of the AES algorithm into the hardware.

Intel® architecture can offer the following benefits:

- **High performance computing.** The Intel® Xeon® processor Scalable family helps reduce latency and increase throughput and performance with 50 percent more cores and caches over the previous generation. Alternatively, Intel® AVX-512 and Intel® QuickAssist Technology dramatically reduce the CPU utilization for compression/decompression workloads, making more CPU resources available for other applications such as Hadoop.
- **High performance storage.** Intel® Optane™ technology and Intel® 3D NAND SSD technology help provide an unparalleled combination of high throughput, low latency, high quality of service, and high endurance for in-memory and persistence data storage.
- **Security.** Intel® Data Protection Technology (Intel® DPT) with Intel AES NI helps accelerate data encryption and decryption with minimal impact to overall business processes.

The Benefits of Customer 360 Transcend Industry Boundaries

Businesses can gain actionable customer insights using big data analytics powered by Intel® technology. A few ways in which businesses can use data to achieve customer 360 include:

- **Finance.** Banks can integrate debit or credit card data, shopping history, and geographic information to identify potentially fraudulent purchases and alert customers before damage is done. Additionally, banks can offer refinance options, mortgages, car loans, and other bundled services based on customer-specific information, which can help increase customer loyalty.
- **Insurance.** Insurance companies can use profile and historical data to offer bundled packages that save customers money on home, car, and life insurance policies or multimember family discounts. This allows for better risk assessments for individual customers.

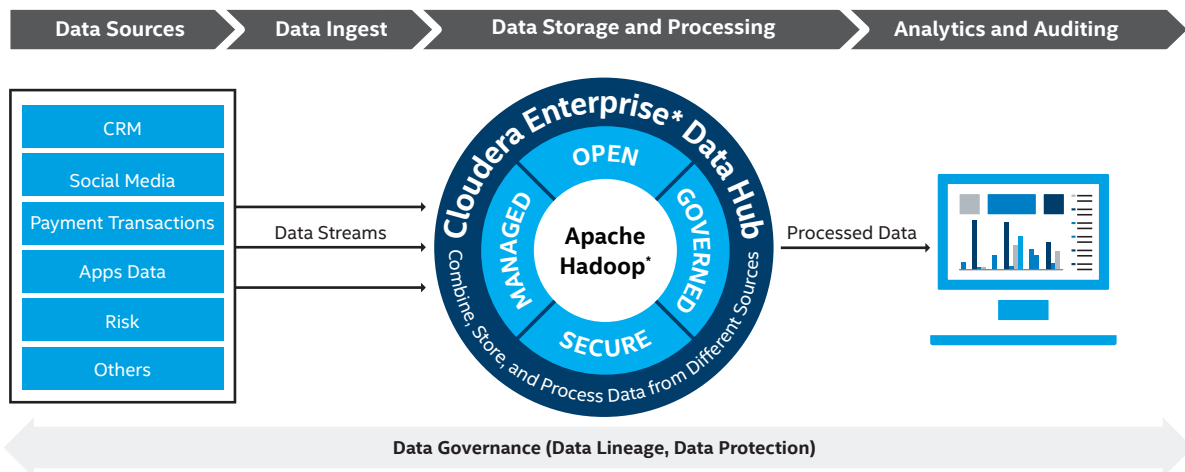


Figure 3. From disparate data sources, content is ingested, stored, and processed for advanced data analytics and auditing, while maintaining regulatory compliance throughout the process.

Conclusion

Customers are increasingly choosing businesses that deliver a personalized experience. Businesses hoping to meet that expectation through customer 360 insights are challenged with multiple data silos, massive volumes, and diverse variety, as well as the high cost of data storage and increasing data streams from IoT, social media, mobile apps, and other solutions. But achieving true customer 360 can make the difference in providing focused and relevant customer interactions that can lead to more revenue. Regardless of sector and sales channel, customers increasingly expect a more personalized experience.

An EDH using Cloudera Enterprise is built with Intel technology and delivers the security-focused performance and scalability necessary for customer 360 at an affordable cost. Cloudera Enterprise platform is certified compliant with PCI data security standards. Achieving customer 360 insights and delivering a relevant customer engagement experience is a critical step in gaining a competitive advantage now and in the future.

Find the solution that is right for your organization.
Contact your Intel representative or visit intel.com/fsi.

Solutions Proven by Your Peers

Intel Solutions Architects are technology experts who work with the world's largest and most successful companies to design business solutions that solve pressing business challenges. These solutions are based on real-world experience gathered from customers who have successfully tested, piloted, and/or deployed these solutions in specific business use cases. Solutions architects and technology experts for this solution brief are listed on the front cover.

Learn More

You may also find the following resources useful:

- [Cloudera Analytics](#)
- [Business Value of an Enterprise Data Hub](#)
- [Accelerating Hadoop* Applications Using Intel® QuickAssist Technology](#)
- [Big Data: Securing Intel IT's Apache Hadoop* Platform](#)

Solution Provided By:



¹ Amy Gallo, The Value of Keeping the Right Customers, October 2014, hbr.org/2014/10/the-value-of-keeping-the-right-customers.

² IDC FutureScape: Worldwide Big Data and Analytics: 2016 Predictions, November 2015, cloudera.com/content/dam/www/marketing/resources/analyst-reports/idc-futurescape.pdf.landing.

³ The Digital Universe: Driving Data Growth in Healthcare, EMC and IDC, 2014, emc.com/analyst-report/digital-universe-healthcare-vertical-report-ar.pdf.

⁴ www.americanbanker.com/news/can-big-data-recreate-personal-touch-of-bygone-banking-rbs-thinks-so.

⁵ Hadoop Distributions: Cloudera vs. Hortonworks vs. MapR, altoros.com/hadoop_benchmark.

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