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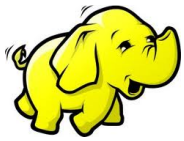
Enabling Cloud Solutions and Emerging Technologies

Use Cases for Hadoop



Analytics are becoming a more critical component in all business environments and are being used to provide near real-time reporting on the state of a business, allowing leaders to make rapid decisions to correct the course of an organization or to capitalize on the needs of the market. The emerging market of tools for analytics allows companies to manipulate the raw data they get from a variety of sources and make intelligent decisions about the state of the business.

Many marketing and financial services organizations are now looking to Hadoop as the core of their analytics programs. Hadoop is used to store a central copy of customer data and product usage information, allowing those developing pricing models and sales models to refine the data in new ways, looking for new relationships. These analytics allow the analysts to look for new relationships, not previously possible with traditional, separate relational database-driven data warehouse environments.

Another example of using analytics to minimize operational expenses is in IT. By leveraging the hyperscale compute and storage capabilities of Hadoop, your IT personnel can optimize system reporting, analyze system performance versus operational expenses, detect potential cases for system failures, and minimize system downtime. The CIO and IT managers can analyze the most optimal operational models, determine operational inflection points, and plan the next budget cycle.

Financial Services Use Cases

The Financial Services industry has been rapidly adopting Hadoop for a range of use cases that impact revenue, costs, risk, reporting, and compliance.

Financial Services use cases for Hadoop Include:

Customer insights - Large financial service providers have adopted Hadoop to improve customer profile analysis to help determine eligibility for equity capital, insurance, mortgage or credit.
Fraud detection and analysis - Hadoop provides a scalable method to more

easily detect many types of fraud or loss prevention, and perform effective risk management. Hadoop is also being used to develop models that predict future fraud events.

Micro targeting - Banks have numerous disparate data systems (e.g., loans, mortgages, investments) that need to be aggregated in order to provide an up-to-date view on customer profitability, consistent CRM, and customized product recommendations and offerings.

Risk Mitigation - Hadoop is used to analyze potential market trends and understand future possibilities to mitigate the risk of financial positions, total portfolio assets, and capital returns.

Web-scale Analysis - Hadoop is used to analyze what is being said on the web at large and on social networks in particular. Sentiment can apply to individual companies or products or reflect general customer satisfaction. This has potential to improve marketing to existing customers through better targeting.

Trade Analysis - Financial service firms use Hadoop to analyze the daily streams of transaction data in conjunction with unstructured news or social media feeds, or to back-test their trading algorithms.

Long-Term Storage & Analytics – Hadoop provides a drastic cost reduction for the long-term storage and analytics of transaction data.

New Opportunities – Many large firms are using Hadoop to identify cross-sell and upsell opportunities by cross referencing sentiment analysis with internal customer profile data.

Meantime to Repair – Operationally, Hadoop provides the opportunity to better understand SLA issues and identify problems in a thousands-of-nodes, big service-oriented architecture.

Healthcare & Life Sciences Use Cases

Some of today's largest healthcare companies are using Hadoop to build healthcare platforms that can store and analyze large data sets, consisting of billions of objects. These organizations also need to be able to search and analyze disparate data sources such as patient populations, treatment protocols, and clinical outcomes to accelerate discovery and insight.

Healthcare & Life Sciences use-cases for Hadoop include:

Health information exchange - Providers need to manage and share patient electronic health care records from mixed data sources (e.g., images, treatments, demographics) among the medical provider community.

Gene Sequencing – This sequencing of all of an organisms DNA holds huge promise, and drives tremendous data.

Serialization - Hadoop is an ideal platform to enable companies address vulnerabilities in the supply chain by enabling a comprehensive system to track and trace the passage of prescription drugs through the entire supply chain.

Healthcare service quality improvements - Improve Healthcare service quality and reduce number of hospitalizations.
Drug Safety - Healthcare professionals need to understand drug safety and toxicity (e.g. interaction between drugs).
Research & Development - Researchers need to make the drug development process more efficient by shortening testing time and reducing time spent on drugs with a low likelihood of success in order to get revenue-generating drugs to the market more quickly.
Personalized Medicine - Targeted genetic sequencing of patients and tumors as well as gut biomes is beginning to provide real advances in treatment selection and detailed prognosis. However, this is causing an explosion in data sizes.
N-of-1 Studies - Massive scale data collection is enabling highly detailed empirical examination and prediction of individual patient treatment responses, allowing investigations to proceed with dramatically smaller trial populations.

Manufacturing Use Cases

Hadoop is being widely adopted by the Manufacturing industry for a broad range of uses that impact the bottom line, including:

Service management - The proliferation of sensors and the corresponding ability to effectively analyze large data feeds across customer locations and product SKUs, has resulted in more effective and efficient service management. For example, automotive manufacturers can equip cars with a variety of sensors to help dealers and service centers understand vehicle usage and service requirements, while also leveraging customer demographics to improve targeted offerings and outreach (e.g. insurance).
Operations - Hadoop can also improve the post-sales maintenance process. The manufacturing industry is adding sensors to equipment to provide increasing levels of data on the operations of this equipment. Collecting and analyzing the data improves the maintenance process and increase overall product quality while reducing costs.

Media and Entertainment Use Cases

In the competitive media and entertainment landscape, the effectiveness of information plays a critical role. Companies rely on Hadoop for the following applications:

Customer Insights - Media and branding companies need to better understand market segments and consumer personal preferences and behavior to better match each brand to its segment, and help companies improve sales. This can allow test marketing to be done in real-time or allow segment optimization to be based on real data, instead of intuitive decisions.

Marketing decision system - Companies need to process all available data to provide online advertisers, marketers, and agencies the ability to better identify and target high-value custom audiences that share similar lifestyles, values, and purchasing habits. Many of these decisions have to be adapted in real-time to allow fast changing trends to be tracked.

Customer lifecycle management - Hadoop is used to optimize customer retention and new product adoption within cable, satellite and other media service producers. Churn management programs have to be based on near real-time data since many churn mechanisms move from first detection to customer loss in a very short period of time.

Effective and personal web content delivery - Organizations are using Hadoop to adjust the content served to each user, to attract and retain users, and thereby improve sales and usage volume.

Pricing analytics and Choice Modeling - Corporations are investigating ways to leverage Hadoop to dynamically determine pricing for everything from game tickets, to web-based games, musics, and videos. As an example, game ticket prices are now based on a broad number of variables such as weather, team rivalries, etc. In addition to price, the entire sales process can be optimized, including the offering of supporting products, add-ons and up-sells.

Customer experience analytics - This is an area experiencing hyper-growth for Hadoop use. Examples include online gaming providers that track all user interactions with the system (from extensive logging), and determine how users are reacting to various features in order to be able to adapt future offerings. Another example is social networking sites that leverage all given data and systems from customer interactions to understand reactions to new features and processes, and what new products will better leverage connections on the website. These features can become available at any time and can be the result of changes anywhere in the system --from customer facing systems to the deepest back-end systems. Learning about the effect that these systems have on user experience requires extensive logging and analysis, often with interfaces to real-time decisioning systems.

Targeting marketing offers - Companies need to determine which marketing offers should be made to each relevant target. Hadoop is used to optimize ad placement, optimize marketing offers and more, especially where simple segment marketing doesn't suffice.

Natural Resources Use Cases

Hadoop is being investigated for a number of natural resource deployments. Examples include:

Processing and analysis of seismic information - Natural Resource companies are using Hadoop to process and analyze seismic information in oil fields. The ability to analyze significant amounts of data to make more intelligent decisions about drilling, etc., can have a demonstrable impact on

costs and topline revenue.

Risk Management and Agricultural Planning - Agriculture companies need to know how different crops are likely to react to different soil types, water levels, and heat patterns in order to make better planting and harvesting decisions. Processing and combining information from aerial surveillance images, in-field sensor networks, meteorological data sets and past performance requires computations on very large-scale data sets using systems such as Hadoop.

Retail Use Cases

The Hadoop platform was designed to solve problems with inherent volumes and variety of data, including a mixture of unstructured and structured data. Hadoop has specific benefits for retail companies that need to that perform deep and computationally extensive analytics. Examples include:

Behavioral analysis - Hadoop has become critical in analyzing the behavior of retail business entities, such as customer churn, propensity to respond, etc.

Targeting marketing offers - There is a need to determine which marketing offers should be made to each relevant target. Hadoop enables retail companies to optimize ad placement and marketing offers.

Customer experience analytics - Retail companies need to provide more accurate and faster analytics around customer interactions by pulling from more data sources and processing the information faster.

Effective and personal web content delivery - Retail organizations are using Hadoop to adjust the content to each user, to attract and retain users, and thereby improve sales/usage volume.

Trade & Transportation Use Cases

The Trade and Transportation area is experiencing hyper-growth for Hadoop use. Examples include:

Inventory management - Retailers need a better understanding of customer basket size and structure, real-time access to inventory levels, and insight into trade and promotion effectiveness to help refine future advertising campaigns and align inventory levels by location.

Fuel conservation - Airlines and trucking companies use Hadoop to track fuel consumption across their fleet to determine key factors for fuel consumption, (e.g., type of place, pilot flying style, weather conditions.) in order to improve efficiencies and save costs.

Targeted Marketing - Hadoop is being deployed to increase sales volume and conversion rates, reduce stock-outs and lead times, and more effectively compete with alternative web-based options.

Capacity forecasting - Firms need to get an updated view of order inventory to enable real-time pricing tools which incorporate projections and actual behavior to maximize high-fixed, low variable cost, inventory.

Utilities Use Cases

Today's utilities companies are using Hadoop to build platforms that can store and analyze large data sets, consisting of billions of objects. The benefits for the adoption of Hadoop include:

Operations - Smart grid analytics provide sensors at locations to collect data and intelligently monitor and potentially regulate power distribution and usage. Utilities leverage capabilities of end-user data-generating devices (e.g., energy sensors) to better understand usage patterns and to price and route electricity accordingly, enabling greater cost savings. Network management during system fluctuations due to external demand changes, such as weather or sub-system failures, requires processing of extensive datasets in very short times.

Risk Management - Large power companies use Hadoop to store and analyze environmental sensor data for critical infrastructure testing of the smart energy grid and individual generators. They are able to improve network performance, scan through historical logs for forensics after a problem occurs, and pinpoint weaknesses to help prevent power outages.

About Cloud Partners™ Cloud Partners offers consulting around Big Data and enterprise Cloud Computing.

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