WHITE PAPER

Build a stronger financial services firm with analytics and hybrid IT

CenturyLink®
**Analytics: the key to success in today's financial services industry**

Financial services firms of all sizes — from multinational powerhouses to local banks with a handful of branches — all face variations of the same challenges: the need to meet regulatory requirements, to manage risk and to gain insight into markets and customers. While these three challenges appear different, the solution to them is the same. Firms must enhance their analytical capabilities. After all, virtually every business today has data — and lots of it. While analyst reports and news articles differ in their precise predictions about data growth, there’s a clear trend to continued dramatic increases. Data alone has limited value. Firms need analytics to turn this deluge of data into insight that can help them thrive. Analytics can simplify the creation of reports that track every aspect of their activity to ensure compliance with regulations and avoidance of fines or other sanctions. It can provide proactive warnings and real-time information about potential risks to support preemptive action or a swift response that minimizes damage. And it can tease out detailed profiles of target markets or customers, enabling firms to understand and enhance their value to these potential buyers and investors to drive top-line growth and cut customer churn.

Before investing in analytics capabilities, firms must first establish a strong underlying data structure, with excellent data governance to ensure the quality and accessibility of their data assets. In addition, firms need to provision their computing power to manipulate the data and get answers and information in real-time. Once that foundation is in place, firms can focus on creating the analytical abilities to leverage their data for the protection and further development of their business.

Many financial services firms have already begun to build this foundation for analytics by adopting a hybrid IT approach to support data management and deliver the computing power they need but are still exploring how to create the combination of performance and cost-effectiveness that best matches their business’s needs. This paper will describe how a hybrid IT infrastructure can create unique platforms that support an individual firm’s data, computing, and analytical requirements to help monetize their data assets.

**Market drivers: regulations, risk and reward**

On a regulatory level, analytical capabilities are essential; financial services companies are required to report on their compliance with central bank mandates including stress testing like Comprehensive Capital Analysis and Review (CCAR) and DFAST, in addition to developing and managing their Capital Plan Review (CapPR), Basel, Anti-Money Laundering (AML), and Know Your Customer (KYC) initiatives. Financial institutions are making significant investments in establishing the right data platform and building analytical capabilities to meet these regulatory requirements. Many have chosen to invest in a hybrid IT approach, partly for its flexibility and also because it eliminates the need for up-front CapEx in favor of pay-as-you-go OpEx.

Moreover, once an organization has built the analytical infrastructure to support regulatory compliance, it can potentially leverage that same infrastructure to help further its other goals of managing risk and marketing more effectively.

Risk management, including counterparty/sovereign exposure, fraud detection, model risk, model governance, and model validation, is not simply a matter of purchasing the right types and amounts of insurance. Risk management begins with identification and quantification of the risks themselves, which is a data and analytic-centered practice. Strong risk management strategies should support appropriate policies and procedures, rigorous data governance, robust analytics and the computing power and software needed to enable these strategies.

According to Risk Management Monitor, “with the tools now available, businesses can quantify and model the risks they face to enable smarter mitigation strategies and better strategic decisions.” The article goes on to observe that this strategy also offers the prospect of long-term gains. “The business that can effectively leverage data and analytics to manage the risks it faces, will be rewarded by seeing the future more clearly, making better decisions and ultimately being more successful than those companies that cannot.”

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The third market driver for financial institutions is the need to gain market insights to enable firms to exploit profitability and growth opportunities. Analysis provides insights into product differentiation, client/product profitability analysis, cross-selling opportunities, customer segmentation, churn analysis and predictive analytics.

As McKinsey & Company puts it, “a company’s ability to drive above-market growth hinges on the depth of its consumer insights and how well it translates those insights into effective action. Insights into consumers can help companies spark innovation, uncover the most promising (though not always most intuitive) sources of growth, and develop or maintain successful products and brands.”

Finally, no discussion of the market drivers and challenges facing financial institutions today would be complete without mentioning the rapid pace of change. Regulations will change, new data sources will become important, and mobile and digital platforms and tools will continue to evolve. Successful banks must keep pace with this fluid environment, creating robust analytical capabilities that help them to anticipate and respond effectively to change and a hybrid IT infrastructure that helps them to adapt systems and processes to turn change into new opportunities for growth.

Create the infrastructure for success: hybrid IT

Financial services firms today require IT platforms that support comprehensive and timely analysis by managing data and performing rapid computation. This ideal infrastructure should be scalable, vendor-agnostic, integrated, well-governed, cost-effective and future-proof. Financial services firms are keenly aware that their IT security needs and availability requirements of data will change over time, due to shifts in the regulatory or business environment.

Hybrid IT encompasses network, colocation, managed hosting, and cloud-based services that ensure flexibility, agility and security are at the forefront. Most financial services firms recognize that a hybrid IT environment will satisfy their IT requirements.

Hybrid IT is any infrastructure mix that includes at least one external option beyond on-premises data center deployments. It can include data center colocation, managed services and cloud offerings. Hybrid IT enables companies to aggregate, unify and scale services, creating powerful and highly responsive infrastructure capabilities. Although hybrid IT is sometimes confused with hybrid cloud, the two are not synonymous. Hybrid cloud, a combination of private and public cloud offerings, is a subset of the larger hybrid IT strategy.
Hybrid IT almost always involves outsourcing one or more IT systems. For larger financial services firms, the low-cost scalability of an outsourced system can be compelling. For smaller firms, the main benefit of outsourcing might be the ability to tap into in-depth data science expertise and expert database administration capabilities. Either way, firms can choose which aspects of IT should be managed in-house to optimize use of their own resources. Organizations of any size can also benefit from the fact that outsourcing is a flexible operational expense rather than a large-scale capital cost.

Hybrid IT offers solutions for the challenges most financial services firms face. For example, financial services firms are subject to regulations restricting where data can be stored and also have extreme sensitivity to risk. This means some data will always be stored on premises — ruling out an all-public-cloud infrastructure. A history of growth through acquisition means most firms need to integrate disparate legacy systems. And immediate, real-time communication and transactions with people and systems is essential for financial firms, which often win — or lose — business based solely on their speed of response. All these reasons, in addition to the more generic cost-effectiveness and flexibility benefits of hybrid IT, make it likely that the financial services industry will have some of the most diverse IT infrastructures of any industry.

Data integration
With a strong hybrid data platform integrated into a central analytics environment, users from across the company — CFOs, CMOs, line-of-business managers, and other business users — can get easy access to accurate data. Because data is no longer walled off in isolated siloes, users don’t need to know where the data is stored. The data platform pulls in all the right data to furnish comprehensive and current answers, so users can focus on asking questions instead of sifting through data storage structures.

Data governance
Behind the scenes, a well-governed hybrid data platform ensures that analysis draws on current, complete, and accurate data. It should encompass data from diverse and new sources, including mobile digital consumer information with robust data sets, as well as pooled data on pricing and consumers. It provides features for managing all data assets, including the richer, less structured data sets of social media. A good data platform ensures data quality and accessibility by gathering, storing, cleaning, validating and manipulating data, making use of connectivity and networks, storage capacity and backup and restore capabilities.

Cost-effective tiering
A good data platform optimizes cost-effectiveness by enabling companies to discriminate between the relative sensitivity and value of different data types. Some data should never be made available to the public, while other data types are more valuable when shared. Some data needs to be available within a millisecond while other data is much less time critical. Hybrid IT can support a tiering strategy of placing data in storage systems that deliver the right amount of security and availability at the lowest possible cost. Though many firms are initially wary of outsourcing management of their sensitive data, third-party providers can typically provide data storage that’s even more secure than a firm’s own facilities, but at a lower cost, because the physical security infrastructure cost is shared by multiple clients. They can also simply link to data that’s securely stored on a firm’s premises, if moving the data off-premises is not an option.

Big data
Like businesses in every industry, financial services firms now have to deal with vastly increased and fast-growing amounts of data. Firms must ensure that their infrastructure can scale readily to deal with increased data from traditional sources as well as a potential flood
of data from new sources in the Internet of Things (IoT). Fortunately, with the rise of big data solutions, companies now have more generic data storage (warehousing) capability at a fraction of the cost of traditional systems. As they consider procurement and management of additional technologies such as Hadoop, SAP HANA, data warehousing, and other solutions, they can also evaluate whether they want to develop expertise in new technologies in-house or whether they want to take advantage of the expertise of an outsourcing vendor.

Compute power
Compute power is the most commoditized aspect of an IT infrastructure. Companies can have unique algorithms and applications, but all require the same raw compute power to deliver results. Hybrid IT means firms can drastically scale up or down compute resources to meet their immediate needs, without having to invest in advance or pay for resources when they’re not using them. Firms can also tier the compute performance for each type of task, from ad hoc queries to massive data crunching, and put the right amount of power behind each task to deliver the response rate required for each task.

With hybrid IT, companies can select the mix of compute resources that’s right for them. A hybrid IT environment might include dedicated physical servers for large and secure workloads or multi-tenant virtualized environments — with the right security, of course — for ease of scalability. For spikes in analytical activity, grid computing can be useful. Foundation services provide a fully hosted and managed service that combines global infrastructure and network connectivity with proven software and expertise. Hypervisor-based services deliver a wealth of virtualized computing options. On the other end of the spectrum, companies can also choose bare metal computing, implementing everything themselves.

Implement analytics to monetize data assets
Once a firm has built the IT infrastructure to manage data and process it at required performance levels, it’s ready to create the centralized analytics environment that will help it track what’s going on in its business, identify and assess risks and gain insights into customers and market opportunities.

But building an analytics capability is extremely complicated, even for companies that have built a sound IT infrastructure for their data and have various analytics tools and packages. Most firms don’t have the data gurus to make the most of these foundational components. A recent report from Ernst & Young calls attention to the difficulty of building an analytics capability, pointing out that “overall, just 16% of firms consider themselves “excellent” at extracting value from their data today.” It adds, “In analytics, there are simply not enough data scientists to go around. More than one in four financial services companies (27%) see this issue as a particularly serious obstacle holding their organization back.”

Building queries typically requires a deep understanding of the underlying data models, so business users can’t take a self-serve approach to analytics. Instead, experts need to develop, validate, refresh and enhance analytical models. But finding data scientists and extract, transform, load (ETL) experts who also have extensive experience working with models that are specific to financial services is extremely difficult, because they’re in short supply. Building the capacity in-house requires significant and ongoing investment, including in training to ensure that their knowledge stays up to date.

Just as financial services firms have turned to CenturyLink for affordable, state-of-the-art hybrid IT platforms, they can also turn to CenturyLink for affordable, state-of-the-art analytical capabilities in order to monetize those data assets. Whether you are looking to kick start your big data strategy or expand your existing projects, CenturyLink data scientists, solution architects and IT consultants are here to help.

Case study: CCAR model performance
This top 10 bank needed to run key loss forecasting models for its CCAR submission to the Fed. But several of its models took weeks to execute — or didn’t complete at all. CenturyLink implemented its Decision Analyzer model management and execution platform on HANA, creating a high-performance Markov Chain Monte Carlo simulation-based auto loan model central management for CCAR models, and an advanced visualization and reporting environment. This solved the performance problem and demonstrated a 500x improvement on model execution.
Big data and advanced analytics solutions that monetize data assets
CenturyLink specializes in delivering insights that can unlock the value in data assets and monetize it. Our experts and suite of analytics and business intelligence solutions focus on advanced predictive analytics, content-rich visualization and big data applications. CenturyLink is a trusted partner with leading technology providers, including SAP (SAP HANA, SAP HANA Enterprise Cloud, Managed SAP Solutions), Cisco, SGI and Cloudera Hadoop.

Ensure regulatory compliance
CenturyLink approach to Model Validation and Model Performance Management is structured enough to ensure compliance with regulatory guidance yet flexible enough to be applied more deeply, if firms wish. Our experts conduct independent review, replication, and benchmarking to deliver results that hold up to scrutiny from the OCC and Federal Reserve.

Manage risk
Risk takes many forms and financial services firms must minimize their exposure with sophisticated models. CenturyLink® Data & Analytics Services practice optimizes models of various types and levels of complexity, including models with additional regulatory requirements (Basel, CCAR, DFAST, AML), non-traditional models leveraging judgmental inputs and/or logic, third-party models and models lacking sufficient documentation.

CenturyLink tunes, manages, and updates these screening tools to determine the right tradeoffs between accessibility and security. Models often require a hybrid of expert judgment and data mining. For example, for an AML model, experts familiar with the types of behavior patterns seen in AML — such as multiple transfers just below the amounts that would trigger scrutiny — must comb through data about theoretically derived patterns based on known behaviors and use data-driven tools that look for what’s out of the ordinary.

CenturyLink Data & Analytics Services practice experts help financial services firms to develop and manage their models and integrate the results. With separate models for different lines of business, many firms don’t know all the models they’re using and what they’re doing, let alone whether the models are being executed effectively. CenturyLink offers a model controller solution that can be set up in the cloud to manage deployment of models across multiple platforms and set up workflow around models based on what has been run, when and what results came back.

Stress Testing — Pain Points & Solutions
Lessons learned by CenturyLink Data & Analytics Services practice through actual stress testing engagements

<table>
<thead>
<tr>
<th>Pain Point</th>
<th>Solution</th>
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<tr>
<td>Fragmented Data Environment – need to combine disparate data sources for streamlined testing</td>
<td>Centralized data environment to manage different data sets</td>
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<tr>
<td>Scenario Management – lack of a streamlined management process to run multiple testing scenarios</td>
<td>Streamlined scenario management and orchestration through Decision Analyzer integration with SAP HANA</td>
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<tr>
<td>Computational – need to support wide-ranging demands for tests, speed of runs is critical</td>
<td>High-performance platform to enable tests under multiple scenarios. Data analysis at a loan/pool/portfolio level that can model cash flows used in reserve calculations</td>
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<tr>
<td>Long lead times to risk parameter calculation – predictive model execution is time-consuming. Faster execution permits more scenario runs at finer granularity</td>
<td>Predictive model execution at fine granularity across a distributed computation platform for rapid completion of model runs</td>
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Gain market insights

Financial services firms can leverage analytics to increase sales and customer satisfaction. For example, predictive models help identify opportunities to cross sell or up sell, and analysis of digital advertising — looking at which version of the ad is shown to which customer, how long the customer sees it, and what exactly they do next — can help optimize return on a firm’s advertising investment.

CenturyLink Data & Analytics Services practice expertise can minimize the time and money spent in getting answers, by optimizing compute and storage decisions on the back end and making it easy for business users on the front end to get answers to their questions without knowing where data is stored.

Expert analysts can add another layer of benefit by helping banks gain insights into improving credit outcomes. For example, with most banking products commoditized, there’s a real value to identifying customers who would be overlooked by traditional models that focus on indicators, such as address information, that generalize too much and often undervalue the creditworthiness of individuals.

Take action now

CenturyLink Data & Analytics Services practice offers robust data-to-decision capability in retail banking, capital markets, insurance and other financial services areas. Together we offer everything from 360-degree views of customers to predictive modeling for marketing needs through to risk and fraud analytics.

Get started creating the analytics capability your firm needs in order to monetize its greatest asset: its data. CenturyLink experts have extensive experience in creating analytics solutions for the challenges financial services firms face. CenturyLink has helped some of the world’s leading financial services institutions.

Model Risk Management/Validation

- Anti-Money Laundering
- CCAR Loss Forecasting
- Basel Capital Allocation Models
- Credit Card Acquisition Risk Model
- Mortgage Insurance Model

Banking/Consumer Financial Services

- Strategic Customer Segmentation
- Prospect Acquisition
- Mortgage Clustering
- Banking Customer Churn/Retention
- Cross-Sell and Offer Optimization
- Silent Attrition/Customer Decay

About CenturyLink

CenturyLink (NYSE: CTL) is the second largest U.S. communications provider to global enterprise customers. With customers in more than 60 countries and an intense focus on the customer experience, CenturyLink strives to be the world’s best networking company by solving customers’ increased demand for reliable and secure connections. The company also serves as its customers’ trusted partner, helping them manage increased network and IT complexity and providing managed network and cyber security solutions that help protect their business.

To support our banking clients with state-of-the-art IT and competitive cost advantage, CenturyLink offers an audit-ready FFIEC reporting framework, CenturyLink Data & Analytics Services practice and data modeling practices, a consolidated managed services model and huge economies of scale.

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