ESTABLISH DIGITAL DIFFERENTIATION IN RETAIL BANKING

RELEASE VALUE FROM DATA TO COMPETE SUCCESSFULLY WITH NEW ENTRANTS

CONTENTS

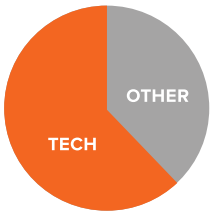
PURESTORAGE®

UNPRECEDENTED CHALLENGES

DIGITAL TRANSFORMATION IN BANKING

Major retail banks, and their counterparts at credit unions and regional banks, have digital transformation initiatives underway, often driven by a younger customer base that has embraced FinTech offerings.

Bain & Co. reports that **"61% of millennials in North America are willing to buy financial products from tech companies"**



A FinTech start-up focuses on one slice of the banking business, but they do it cheaply and provide a lot of value for the customers. With so many start-ups, they are beginning to cover a lot of banking functions. According to a report from KPMG®, FinTech investments globally have reached $111.8B in 2018.

The problem now to resolve is how traditional retail banks and credit unions will engage digitally aware customers with a proposition that competes with new and experienced digital entrants.

BARRIERS TO DIGITAL TRANSFORMATION

Many traditional banks have grown through acquisitions and have very complex IT environments that make change very difficult and time-consuming. Their customer data is trapped in silos that follow the line-of-business processes. Their traditional approach to customer interactions is very product-centric instead of customer-centric. Regulation has slowed down innovation as well.

NEW DIGITAL ENTRANTS

A study by Accenture found out that 19% percent of financial institutions in the U.S. are new entrants, and have captured 3.5 % of total banking and payments revenues. In the U.K. 63% of players are new entrants, while in Europe (including U.K.) 20% of the banking and payments institutions are new entrants, and have captured nearly 7% of total banking revenue. In APAC, China saw 7% of financial institutions being new players, and Australia 38%.

FinTech firms are growing fast by questioning the status-quo of the banking industry and innovating with the customer in mind. They are also very agile operationally, since they don't have the burden of legacy banking IT and legacy business processes. The FinTech providers are early adopters of new technologies and new customer interfaces, such as AI-assisted voice interfaces, chat bots, mobile peer-to-peer payments, digital wallets, real-time account dashboards, and many more. In recent years we saw traditional banks fostering relationships with FinTechs, with the goal of expanding their digital presence, and quickly gaining digital capabilities like account opening or mobile payments.

USE CASES AND SOLUTIONS

TRANSFORM CUSTOMER EXPERIENCE

Customer Experience Challenges

Meeting the challenge of enhancing customer experience for traditional banks, particularly via mobile, depends upon having a more holistic data view of the customer. To achieve this, banks need to adopt a data-centric approach across multiple digital and physical channels, including mobile/online self-service.

"Across the globe, the retail banking industry is fast embracing ***a mobile-centric customer experience****."*

– Deloitte® Center for Financial Services, 2019 Banking And Capital Markets Outlook

All of these channels need immediate access to various data sources and formats in real-time, so the customers can switch channels seamlessly, without having to start-over the interaction. Customer focused applications need access to a common repository for data, so that they can deliver insights and personalized offers at the right time.

Pure Storage® for Customer Experience Transformation

Keeping all customer data on Pure Storage FlashArray™ and FlashBlade™ reduces latency for all workloads, and can scale easily to accommodate the huge growth of data. The Pure Storage all-flash array processing performance enables the delivery of AI-assisted interfaces and real-time insights.

MANAGING GOVERNANCE RISK AND COMPLIANCE (GRC)

GRC Challenges

The complexity and cost of regulatory compliance, and the associated risk management, is growing worldwide. There are many different regulatory compliance requirements, such as Anti Money Laundering (AML), Know Your Customer (KYC), Stress Testing, Comprehensive Capital Analysis and Review (CCAR), General Data Protection Regulation (GDPR), Basel III. They all require sifting through enormous volumes of GRC data, some of which may be decades old.

The challenge is to make all data available to the GRC applications, in a cost-effective way, that also minimizes risk. Many firms have been forced to sample the data, or run fewer reports, but the result is less than optimal compliance, and increased cost from, for example, managing multiple auditor or regulator queries.

The way to scale and adapt to the ever-changing risk and regulatory landscape is to use AI/ML to automate some of the processes and complement existing systems.

IDC™ estimates **by 2021 that 45% of all banks will have invested in automated GRC applications to improve operational performance, and substantially reduce the operating expense associated with manual processes***

To meet this aim, banks need to develop a comprehensive automation strategy for GRC that will operate across different functional silos. Data from different sources, and in a variety of formats, needs to be integrated and shared so that it can be accessed quickly by analytics and AI workloads. Fraud detection is moving more towards fraud prevention, and AI/ML can help reduce false positives and human error.

**IDC FutureScape: Worldwide Financial Services 2019 Predictions, December, 2018*

Pure Storage for GRC

The Pure Storage FlashArray supports real-time systems associated with tracking customer transactions and saving those records for regulatory purposes, for example AML/KYC. This can include connecting large numbers of market participants across multiple environments in real-time, while ensuring total confidentiality and support for managing regulatory compliance.

As the volume of compliance data grows exponentially, and regulations are being updated to protect the data (e.g. GDPR, Basel III), financial firms have been paying a high price economically, and in performance terms, to encrypt the data which can consume 5x more storage than unencrypted data that has been reduced. Now, they have a solution in the Thales Vormetric™ Transparent Encryption with Pure Storage** FlashArray which, in a recent test, has achieved a 4.8:1 data reduction ratio.

Pure Storage FlashBlade is an ideal hub for aggregating compliance data from different internal and external reference sources, and in a variety of formats, to streamline cybersecurity and compliance. With its abundant bandwidth and processing power, FlashBlade is also a good fit for AI/ML-powered workloads used to automate compliance processes.

INCREASE CYBERSECURITY

Cybersecurity Challenges

Client data governance is essential for digital transactions including privacy, protection, and transaction security, particularly the cybersecurity risk impact of new digitization investments, including growth in cloud implementations. This will aid compliance with, for example, the Payment Card Industry Data Security Standard (PCIDSS), and the Federal Information Security Management Act (FISMA).

> *"**Account takeover fraud** (prevalent in digital payments) has replaced counterfeit card fraud (common in physical payments) as **the top fraud type**."*
>
> **– Deloitte Center for Financial Services, 2019 Banking and Capital Markets Outlook**

The retail banking and credit union strong reputation and brand credibility around security is at risk when they initially engage digitization, as major disruptions tend to have a high and adverse media profile.

Pure Storage For Cybersecurity

Many Pure Storage customers are using FlashBlade as the repository for logs from applications and devices. Log analytics tools such as Splunk®, Elasticsearch™, Security Onion™, will benefit significantly from fast access to all logs in one place. The log data tends to grow exponentially, and FlashBlade offers a cost-efficient way to scale, even compared with cloud. Splunk customers have now the option to use SmartStore, which contains FlashBlade as an object store for logs.

Pure Storage secure data-at-rest complies with Federal Information Processing Standards (FIPS) 140-2 and is certified to Advanced Encryption Standard (AES) 256. The encryption process is in-line with data processing, and has no impact upon performance. Pure Storage complements this ultra-high level of security with automated encryption key management.

In addition, Pure Storage monitors access and function based upon specific account privileges, restricts external connections to the system, and requires complex passwords. This standard of operation resulted in Pure Storage achieving National Information Assurance Partnership (NIAP) Common Criteria Certification. To complete the proposition, Pure Storage has integrated with Vormetric™ to offer data compression on encrypted data, which is a first in the industry. Users no longer need to make the choice between data security or storage efficiency.

***GA in summer 2019.*

ACCELERATE DIGITAL INNOVATION

Innovation Challenges

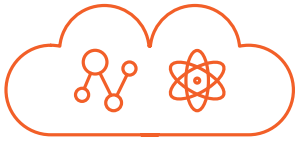
A 2017 survey on innovation in Financial Services by Futurion™ determined that an innovation project takes on average 24 months from idea to general availability. The aim is to accelerate innovation time-to-market, achieve higher differentiation, even against FinTech providers, and an improved customer experience.

> *"As customer expectations evolve,* ***banks need to respond and innovate faster than ever before****; which requires* ***infrastructure that supports all stages of development*** *– from proof of concept to testing and deployment."*
>
> **– Capgemini®, Top Trends in Retail Banking 2019**

Sustaining enhanced innovation in, for example, customer experience will inevitably lead to application modification or innovation of a totally new customer service app., such as the "chat bot" and "voice banking", driven by data analytics and ML, possibly integrated with social-media. Software developers use the agile methodology, which enables teams to work on smaller projects in parallel and iterate quickly through the cycles of development and test. They need an environment where they can spin-up instances of databases, or other applications in minutes, not hours or days. They need to test their code with current data, copied from the production databases, instead of using old or synthetic data.

Pure Storage for DevOps

The Pure Storage all-flash platform supports multiple concurrent software development projects with predictable performance. FlashBlade Snaphots and Rapid Recovery allows developers to create multiple instances of a database in minutes, rather than hours, which significantly improves their productivity.



For banks that are developing containerized applications, the Pure Storage Service Orchestrator (PSO) is designed to provide developers with the same experience gained from the public cloud. PSO integrates seamlessly with container orchestration frameworks such as Kubernetes™, functioning as the control plane virtualization layer, which enables a containerized environment to move from consuming "storage-as-a-device" to consuming "storage-as-a-service".

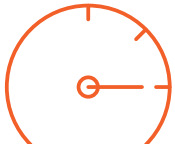
ESTABLISH OPERATIONAL EXCELLENCE

Operational Challenges

Digital transformation is a long-term process, that requires speed and agility both externally and internally. It all starts with a foundation of operational excellence and the ability to handle vast amounts of data efficiently. All retail banks and credit unions have the need to increase efficiency by changing or improving the operating model, which includes reducing process complexity, streamlining operations, and increasing staff productivity. Digital transformation requires more than incremental improvements. It requires re-thinking of both business practices and technology operations, in a process of continuous improvements driven by real-time data.

Most banks have implemented Six Sigma quality programs for a long time. The challenge is the time it takes to collect data manually and the quality of the data. During the digital transformation, the bank will implement digital "instrumentation" into their business systems, thus automating data collection. The data systems need to have the capacity to store, process, and analyze vast amounts of data in real-time. Any interruption is more detrimental than ever to the business.

Legacy storage systems have complex ongoing operational needs which translate into a slower cycle of capacity planning and implementation. In addition, maintenance costs escalate towards the end of a lifecycle and force the bank into "fork-lift" upgrades that are costly and interrupt business-as-usual.



Pure Storage for Operational Excellence

From its inception, Pure Storage had the goal of simplifying storage management, reducing TCO, and increasing availability.

*"Pure Storage has **simplified the complexity**, even where enterprise-class solutions are involved. The three main advantages have been **greater data availability, superior performance, and security.**"*

– Banca Popolare di Sondrio

To solve the storage life-cycle management challenge, Pure offers the Evergreen™ Storage Program, which helps customers future-proof their storage investment in Pure technology. Evergreen™ is more than a business model, it's also built into the technology so customers can upgrade the infrastructure without the need to migrate the data. Evergreen™ has a subscription-based program with 2 levels: Gold and Silver. Gold is the subscription most customers purchase, which includes the program components such as Free Every Three and Upgrade Flex for controller modernization, as well as Capacity Consolidation for media modernization.

*"Pure Storage Evergreen provides new controllers every three years, ensuring the hardware is modern and up to date. **This happens seamlessly, and while online, with zero down time.**"*

– Pure Storage Client Source: KordaMentha, Director of Technology

Pure Storage Evergreen Storage Program

– IDC, 2018

See what IDC has to say about the Evergreen program, in this whitepaper. A new addition to the program is the Evergreen Storage Service (ES2), which is a storage service designed for no balance sheet impact under new accounting guidelines, enabling OPEX treatment regardless of term length[+]. With ES2, customers only pay for used effective capacity (measured daily), not provisioned capacity. The result is up to 2x greater cost efficiency compared to provisioned approaches.

Pure Storage arrays are instrumented to provide a continuous stream of data about storage hardware and software, and even workloads, creating a feed-back loop for continuous operational improvement. Today, its management software, Pure1®, includes an AI engine, Pure1 Meta®, which uses machine learning to make workload predictions. Pure1 continuously monitors rich telemetric data from 1000s of cloud-connected arrays – more than 1 trillion data points a day, and more than 7 PB of total data. It's the analysis of this data by Pure1 Meta™ that enables Pure1® Support to predict vulnerability to known issues and proactively alert customers before problems develop.

CREATE AN AGILE INFRASTRUCTURE

Infrastructure Agility Challenges

Many retail banks and credit unions are unable to match the agile performance of FinTech digital entrants that apply analytics-driven AI in real-time, in a data-centric environment, to support, for example, a new or existing customer journey.

[+] *OPEX treatment is subject to customer's auditor review.*

*"The need for **innovation, along with agile and efficient product delivery**, has encouraged an uptake of cloud in the banking industry."*

– Capgemini®, Top 10 Trends In Retail Banking 2019

In order to increase agility, many banks have a "cloud-first" initiative. For new applications this makes a lot of sense, especially if they are cloud-native. For software development, the agility of the public cloud makes sense, but what if the application then needs to be moved to the private cloud because it needs access to sensitive or regulated data? The reality is that a lot of critical back-office applications are still residing in silos, on-premises, in co-location, or in hosted virtual private clouds. The future of cloud is hybrid cloud/multi-cloud, where applications, services, data, and users can reside anywhere and stay connected.

Pure Storage for Infrastructure Agility

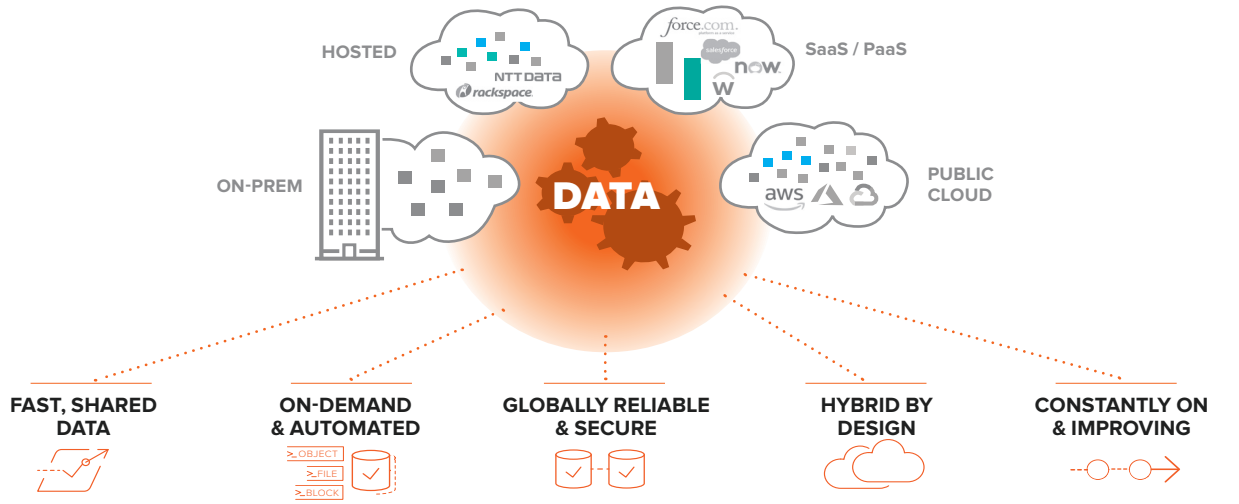
Pure Storage's hybrid cloud solutions enable data sharing, application mobility, seamless management and automation across on-premises, hosted, and public cloud resources. Pure Storage cloud data services, together with Pure's on-premises cloud data infrastructure, bridge the cloud divide to enable hybrid applications that run seamlessly across clouds. You can now build applications once, and then run them on-premises and in the public cloud. But enabling hybrid starts with building your own private cloud. The goal of Pure is to give you the choice to choose any cloud automation platform, any automation, and container or VM. With Pure's software running natively atop AWS storage, you get the same data services, reliability, and APIs on your private and public cloud environments. This enables you to develop applications once and then run them in a different cloud with ease.

Pure Storage Cloud Block Store™ and CloudSnap™ technology, which run atop AWS EBS and S3, simplifies cloud migration, and enables hybrid management applications to run on-premises and across clouds simultaneously, by providing instant bi-directional data and application mobility. The cloud may then also be utilized for back-up and recovery processes, reducing both cost and system restoration time. The time that it takes to back-up or restore data can become a business challenge. This challenge is amplified in the cloud world, where storage and bandwidth costs compound with data transfer rates. Pure Storage ObjectEngine™ taps the power of flash and cloud to deliver unprecedented restore performance on-premises while extending to public cloud for 11x9s of durability and pay-as-you-go economics. Best of all, it just works with your Veritas, Veeam, or Commvault workflow.

DATA CENTRICITY

WHAT IS A DATA-CENTRIC ARCHITECTURE?

Pure Storage defines Data-Centric Architecture as an approach to designing an end-to-end environment across compute, network, storage, and cloud, which is optimized for ubiquitous and fast consumption of data to create value. A data-centric architecture is characterized by five key pillars.



BUSINESS CASE STUDIES

In retail banking and credit unions there are typically three main improvement goals: enhance customer experience, reduce operating cost, and transform business processes. These Pure Storage client case studies give an overview of similar gains achieved from all-flash arrays using a data-centric strategy to deliver real business value.

FREMONT BANK

HIGHER OPERATIONAL PERFORMANCE

At Fremont Bank®, a Virtual Desktop Infrastructure (VDI) required high performance storage in order to boot and run reliably, but the existing storage was unable to provide raw Input/Output Operations per Second (IOPS) for potential boot storms. The storage system was fine to support a relatively small number of virtual desktops, but did not have enough spindles to scale-up and support the full rollout. According to the Fremont Bank Director of Infrastructure, they decided to look for an all-flash array to serve as a dedicated system for VDI. They discovered Pure Storage, whose price, performance, scalability, and simplicity, offered a compelling solution.

8.3:1
IN DATA REDUCTION

The Fremont Bank IT team spent the first phase applying 20,000 background IOPS to the FlashArray, in addition to production data and VDI operations. The team was very impressed with the results including that the performance exceeded VDI requirements, with a low latency of 0.27mS, and the extra background workload was unnoticeable. An excellent data reduction rate of 8.3:1 was established which added high scalability, and the Pure Storage array can easily support ongoing expansion of the VDI environment as required.

WILSON Bank & Trust

IMPROVED CUSTOMER EXPERIENCE

At Wilson Bank and Trust®, demands on the IT department intensified after virtualizing applications using Citrix® XenDesktop™ in a VMware environment. Because the bank legacy storage system suffered from latency issues that ranged from 5 to 11 ms, sluggish performance on key applications, and lengthy log-in times, plagued staff throughout the company, and complaints from users came in from all levels.
The source of this latency proved to be elusive until a solution was eventually found using Pure Storage, thanks to the expert guidance of system integrator Hogan Consulting Group®. What the bank learned was that the spinning-disk SAN system was simply not fast enough for Citrix.

*"The simple act of putting our data on Pure Storage made **a major improvement in our network performance**. Response times for applications like loans, deposits and payments were much faster, and log-in times dropped dramatically."*

– Wilson Bank & Trust

The solution was to install Pure Storage FlashArray to replace the SAN, and the improvements have been significant. Help-desk calls are down dramatically, and branch office employees are completing work more rapidly, whilst customer transactions are closing much more quickly than previously.

BANK

GREATER DATA SCIENCE PRODUCTIVITY

A North American bank started an AI journey with a storage vendor, but quickly realized the performance and ease-of-use did not meet their stringent requirements. After comparing the offers of multiple vendors, they decided to invest in the AI-Ready Infrastructure (AIRI) platform powered by Pure Storage.

5X MORE
PROJECTS RUN

The AIRI proposition includes NVIDIA™ Deep Learning Stack and AIRI Scaling Toolkit, as well as the Pure Storage FlashBlade and FlashStack developed with Cisco®. This turn-key solution allowed the bank data science team to run 4x to 5x the number of projects than previously using proprietary or self-build solutions. AIRI performance is at least 20% better than their previous solution, and allows data scientists to benefit from accessing the NVIDIA deep learning software.

FASTER INNOVATION

A global bank headquartered in Europe has continued to add capacity to the Pure Storage all-flash environment, and remove other vendors. The reasons are the Pure Storage track-record of stability, great service support, and the Evergreen™ ownership model. Evergreen means the storage investment is preserved, since upgrades to next generation technology do not require re-purchasing hardware, re-licensing storage software products, or an increase in maintenance and support costs.

In this digital era, banks are under pressure to deliver mobile apps. and digital services that are competitive. Faster time-to-market for new app. development is critical. With Pure Storage, the bank was able to speed up test/dev cycles and enable faster app. delivery. The dev/ops team found gains in reliable sub-ms performance for the bank Oracle® database, high levels of data reduction, and non-disruptive everything, which led to satisfied end-users as well as IT staff.

NEXT STEPS

Pure Storage offers expert guidance to assist retail banking and credit union organizations in understanding, and then deciding, if a data-centric storage strategy is appropriate for their business challenges.

DATA-CENTRIC STORAGE STRATEGY: SUBJECT MATTER EXPERT BRIEFING

An informal retail bank or credit union stakeholder briefing that is facilitated by a Pure Storage subject matter expert. The aim is to clarify the challenges and potential solutions for applying a best practice storage strategy to compete in the digital era, reduce operating costs, protect existing business, and accelerate new client on-boarding. Please contact Pure Storage to arrange the briefing.

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