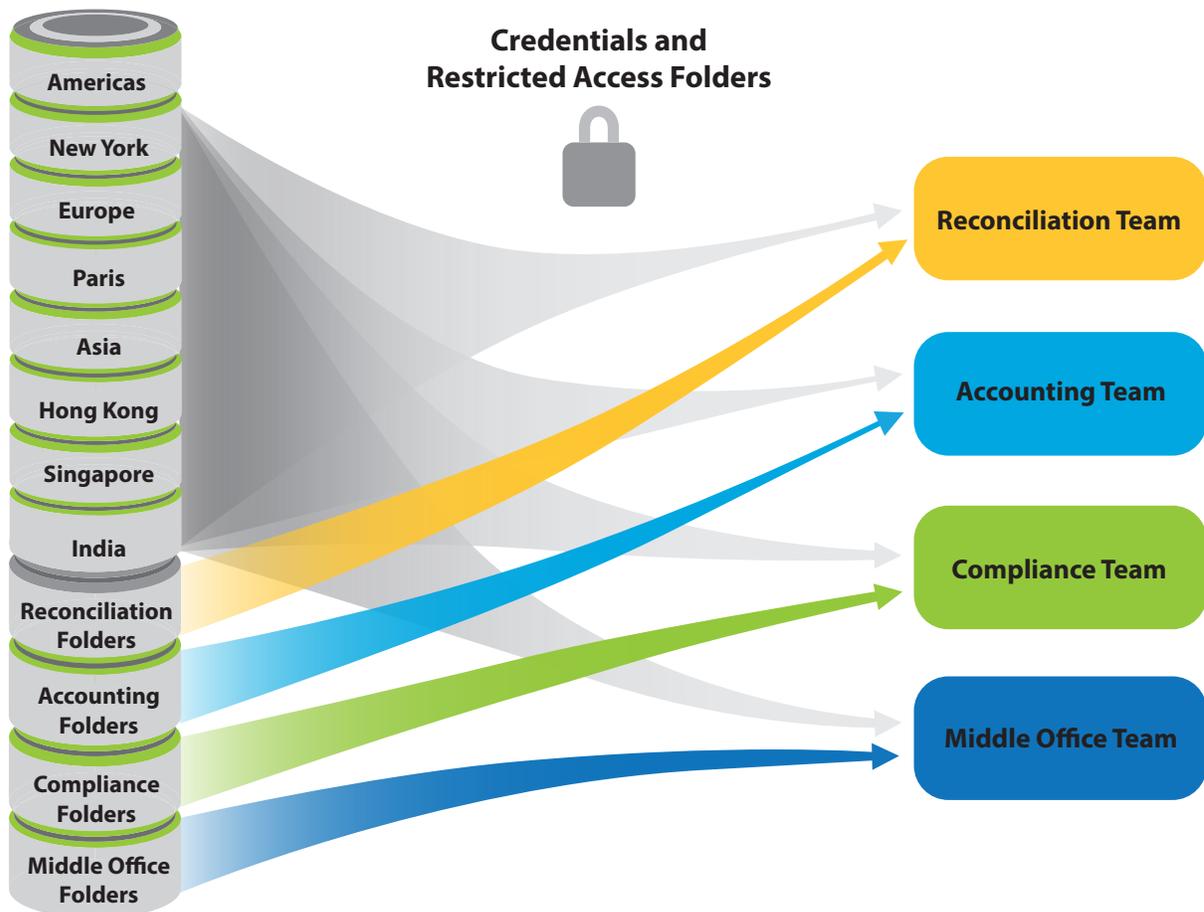


CASE STUDY:

Scalability and Efficiency Via Automation in Global Operations and Middle-office Processing

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CASE STUDY:

Scalability and Efficiency Via Automation in Global Operations and Middle-office Processing

- **Better customer experience**
- **STP**
- **Customization**
- **Enhanced reporting**
- **Higher level of automation**
- **Middle-office services added**

While this is an account of the partnership with a global fund administrator renamed NewCo for confidentiality purposes, the technology described herein is also applicable to hedge funds, fund of funds, RIAs, investment banks, family offices, private banks, and wealth managers—literally all of the buy- or sell-side can benefit. The Viteos platform is customizable for almost any type of settlement requirement or post-trade lifecycle service an organization wishes to offer.

The growth plans of NewCo Fund Services

NewCo has three operating divisions: Investment Banking; Private Banking; and Asset Management, each of which functions autonomously. In 2011, NewCo acquired the fund administration business of a defunct European financial conglomerate, which it rebranded as NewCo Fund Services (NFS), a part of its investment banking business. Under its new name, NFS continues to supply administrative services to hedge funds, fund-of-funds and other private managers.

Anticipating industry and client needs, NFS' forward-looking approach began by addressing specific post-trade processes. They needed to improve their straight-through-processing (STP) capacity during the life of a trade through middle and back processing to compete on a global scale with other major fund administrators. After consultation with Viteos Technology Solutions, a division of Viteos Fund Services, NFS decided an enterprise approach would provide a high level of automation and provide a scalable platform without requiring additional headcount. They decided to use the enhancements offered by the Viteos enterprise technology suite — ASTTRA® and Recon Redux®. The flexibility of Viteos' technology suite allowed all modifications necessary for fulfilling the needs of NFS and their clients, however unique or complex. Without adding additional resources, requirements included a system to integrate the responsibilities managed by their legacy systems and to receive and normalize data feeds within a central repository for worldwide access and reporting.

The platform now provides improved integration and faster processing, along with better reporting and real-time visibility.

Achievements and highlights

- NFS now has software unaffected by portfolio fund size, whether in the billions or thousands, in any currency
- Modified straight through, real-time software satisfies NFS's desire to continue batch processing
- NFS now has a single, state-of-the-art tool to perform both cash and position reconciliations for its clients and institutional investors
- This more efficient platform enables more with less personnel to manage operations. Viteos has achieved a 30% reduction in headcount using this platform to run its own fund administration business.
- Credit and trade file processing for clients connects efficiently with Geneva® software, regardless of format.
- Data is calculated and available through a secure web portal for each manager replacing overnight reconciliation and emailed attachments
- Clients have customer friendly solutions where data and reports are available securely at a scheduled time
- The major middle-office processing upgrade gives NFS the ability to compete with other top fund administration institutions
- NFS enjoys improved security through a “security stack” that includes three separate security levels to prevent hacking and / or data leaks
- NFS and Viteos technology allows all applications to connect with external transaction data via multiple paths securely, avoiding delays and / or downtime

Central hosting permits distributed operations

For decades, NFS has been a large multi-locational worldwide entity spanning four continents domiciled for local servicing. While this broadly based infrastructure makes superior client service possible, separate legacy technology in a technology driven environment of multiple, global, and complex asset classes was cumbersome. Plans to target transaction heavy prospects trading in complex instruments worldwide would replace parameterized point-in-time local solutions with central hosting that is scalable on an enterprise level.

Process

Certain emerging and existing industry trends would affect client service quality if legacy systems remained—furthering the impetus for an enterprise solution. Extra resources were required in each location to service clients and to fulfill the querying and security needs of other NFS locations, thus potentially hampering NewCo's future ability to provide the superior service for which it is known. For example, the growing complexity for hundreds of funds by way of bi-party and tri-party agreements with counterparties and executing brokers around the globe required complex aggregation of manual processes with the legacy systems. As complexity increased, so did the need for their independent processes to interface seamlessly.

Security

NFS' Security, already at a high level of safekeeping and now with added measures included protocols that were hard-coded requiring manual delegation of access rights based on location and group membership. Consequently, depending on geographic location, not everyone within the same group could access the same repository.

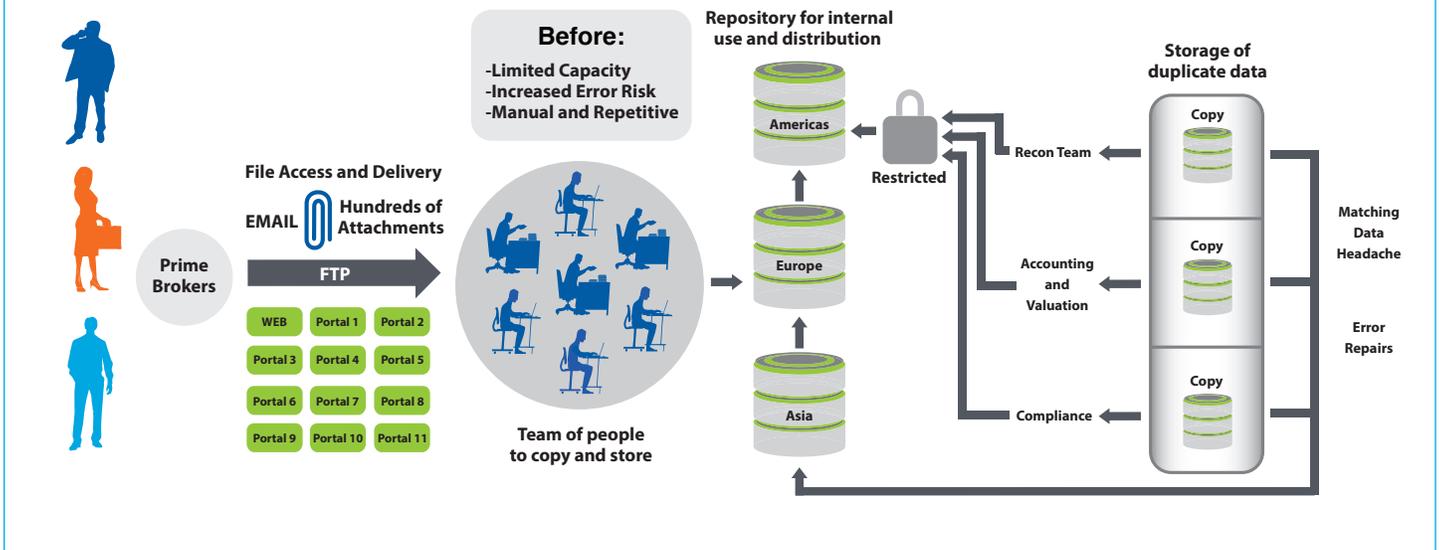
Viteos provided a “security stack” that layers three separate security levels to prevent hacking and / or data leaks. The three layers are as follows:

1. Perimeter security – protects data transfer from outside trade communications
2. Application security – protects the integrity of running applications against threats
3. Policy and procedure security – prevents hackers from invading internal procedures dedicated to safeguard all data

More choice in pricing

Another feature NFS needed, especially as more funds are added is a customized pricing module for global pricing that makes the system efficient. With the limitation of the once daily linear fund-by-fund pricing, NFS clients and prospects would benefit from more choice; once-a-day, single-chart, or incremental pricing.

Figure 1. Legacy data storage, sharing structure and work flow



Viteos, a partner for growth

At its core, Viteos' technology allows organizations to reengineer operations and processes across post-trade lifecycle activities to gain efficiencies in accuracy, people and time. Viteos has been in the technology and business process outsourcing business since 2003 and has, over the years, recognized the growing advantage provided by enterprise wide STP in alternative investment servicing. As the sector grew from nascency, Viteos recognized in 2004 that institutional grade capabilities in technology and administration would become standard.

A distinct position both as a practitioner and technology provider affords the company an experienced perspective on the shortcomings of solutions available in the marketplace. Taking a different tack than other technology solutions providers, Viteos is a customized blend of fund administrating activities with secure, seamless STP technology for investment managers and providers. Confident it could deliver on all NFS' requirements, the implementation of the platform provides the capacity for greater output with significantly fewer resources. Viteos' business understanding and agile development methodologies alongside NewCo's rigorous procedural controls made it possible to custom develop significant modules in a record time and bring them to production.

Expanded middle-office capability

NFS turned to Viteos, their trusted partner for a centralized shared services model to ensure consistent processing and to eliminate redundant activities. NewCo agreed with the assessment that a centralized shared services model would allow NewCo to offer middle-office services and streamline processes previously impractical under their legacy systems. They chose also to outsource middle-office operations for global reconciliations and other processes to Viteos. The company realized that they needed a balanced combination of technology, skills, and expertise to make their new platform work well.

NFS and other clients needed a team with multi-platform experience along with technical expertise to integrate multiple middle-office fund management and accounting applications as they used multiple systems in their various facilities around the world. In addition, NFS was under the gun to move to the new business model quickly to support their growth. They needed a team with experience in hedge fund management and middle-office operations so they could become operational quickly without a long training cycle. They also needed a partner with the expertise to help ensure that their existing middle-office platform and process worked globally without unnecessary delays.

Viteos was the only firm that brought the complete package of NFS' requirements to the table. Its offering included unique proprietary technology that formed the middle-office operational platform. In addition, from having worked with Viteos in the past, NFS knew that the Viteos team had vast and deep experience in the industry, and that they could ramp up quickly to deploy a team of experts to staff the new centralized shared services center. Therefore, NFS made the decision to entrust their middle-office offering to the capable team at Viteos. Fifteen Viteos associates were then dedicated to NEWCO and its client's middle-office needs. Together, NFS now offers middle-office services. The improved accuracy and streamlined processes helps ensure efficient middle-office operations and improves their competitive position.

Implementation in record time

By approaching the challenges as an expert partner, Viteos personnel collaborated with the NFS fund administration and IT staff to implement

Figure 2. The engine that connects order management to accounting



the solution in a record time of 6 months. All rolled out simultaneously and functioned flawlessly right from the start. The Viteos solution became the new transaction and calculation tool for over \$100 billion in assets, across 300 funds and portfolios, which process more than 1,000 products, 2,000 trades, and 800 scheduled feeds, along with web reporting.

At the beginning of the partnership, the two firms took an appropriate amount of time to clearly identify the modification and customization needed, and gauge the effort it would require. Both NFS and Viteos agreed that all locations would go live on the same date, a solution approach known as a “Big Bang.” While this might have been considered a gutsy, or even risky move, both parties were confident that the solution would work and that the need for common data and the upgraded functionality was worth the minimal risk.

The two firms went through multiple conference room pilots, or dry runs, with various committees to ensure that the system met their needs.

NFS also wanted to be sure that Viteos could continue to deliver from any location, in case of a disaster or catastrophic failure at a site. The specification mandated that there could be no data loss, regardless of the version of Geneva® in use at a given fund. With no parallel runs or extended rollouts, there was a lot riding on the “Go Live” date. At the end of one day, the old feeds were shut down and the new solution went live the next morning. Since the transaction volume and processing is so extensive in these systems, there was no turning back. With over 88,000 trades priced in the first run, everything was riding on the system performing as designed right from the start. Ultimately, all the preparation ensured that NFS experienced a clean cutover, with no downtime and no data loss.

Viteos also brought on board penetration testing experts to ensure that the security model could withstand a concerted break-in effort. The application not only went through rigorous testing but also endured load testing to ensure it could handle the volumes of data that would require processing each day. Once again, careful planning and preparation resulted in excellent results, and the Viteos solution handled the necessary bulk uploads of information from multiple disparate sources.

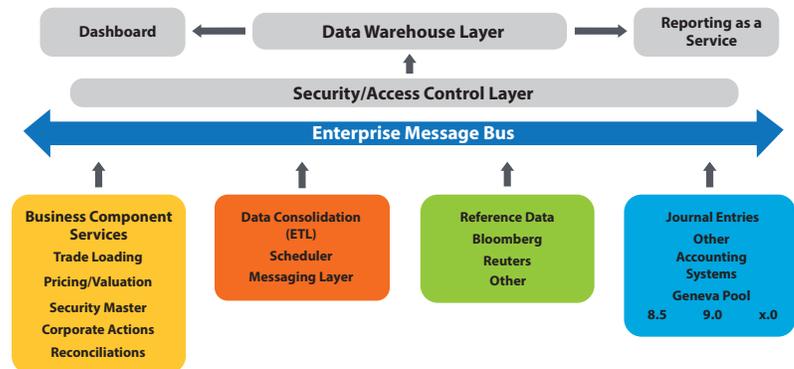
Viteos created primary and backup storage and processing centers in multiple locations along with multiple delivery, support, and help desk centers. Each center had to conform to multiple audit requirements, both internally from NFS itself as well as external auditors.

As stated before, NFS wanted to go live very quickly, which meant Viteos had to respond with interim solutions and data centers that met the functional and auditability requirements while continuing to work on the long-term solution. Viteos responded with the necessary functionality and support to meet NFS’ requirements well before the planned “Go Live” date, including a fully functional security model that enabled faster, more secure access for users across multiple platforms and funds.

Common functionality

Rather than treat each fund's multiple applications as an individual solution, necessitating unique and complex customizations that would slow down the rollout and be expensive to maintain, each NFS group now has access to changes and enhancements at the same time. An enterprise BUS enables the rollout of data, security, and upgrades across multiple applications and sites simultaneously. The result is a unified user experience and faster rollout, regardless of the underlying business application.

Figure 3. An enterprise BUS allows simultaneous changes and enhancements



One of the most important aspects of the BUS architecture is it ensures a common security capability across all divisions by creating a security master that overlies all active applications. Each fund can be accessed without having to maintain an increasingly complex assortment of security protocols within the disparate applications. Groups experienced benefits across the board, in processing and reporting.

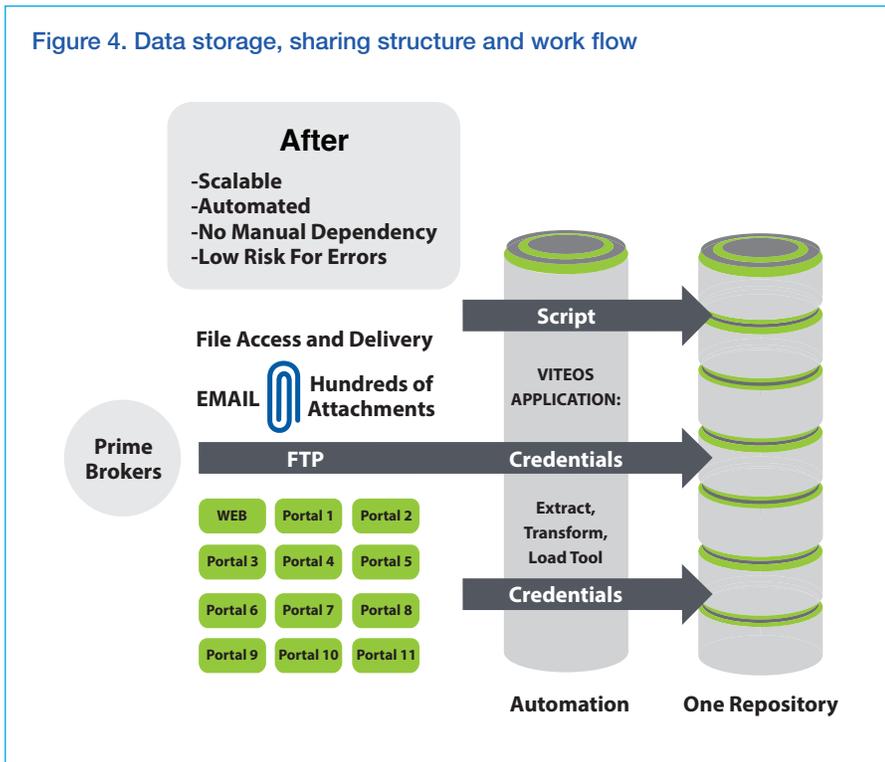
Reconciliation and data feeds

Reconciliation sans manual intervention

Normalization eliminated the handicapping effect on processing multiple data formats. Legacy systems no longer made it difficult for the groups to reconcile trade data from custodians and prime brokers. Data is now automatically stored in one format, in one repository. Furthermore, onboarding each new client became a checklist noting each nuance in the client's requirements and turning them into a series of on and off switches for accessing and downloading files from their various sources worldwide, such as from a prime broker.

Then, by automatically transforming inconsistent data formats into one normalized repository, a pair of processes resolved the volume and complexity challenges: 1) an ETL tool ensured consistency in the data; 2) a scheduler automated the work of fetching data from the providers (and then loading the same after normalization). This solved the challenge of the feeding formats into systems from multiple vendors in multi-locational sites worldwide. The entire trade process was covered with full regulatory compliance, as a fully automated STP procedure.

Figure 4. Data storage, sharing structure and work flow



Modular execution solves the challenge of scalability

In addition, Viteos made changes to the way it connects to reference data models such as Reuters and Bloomberg, to ensure consistency of data and timing across funds and business models.

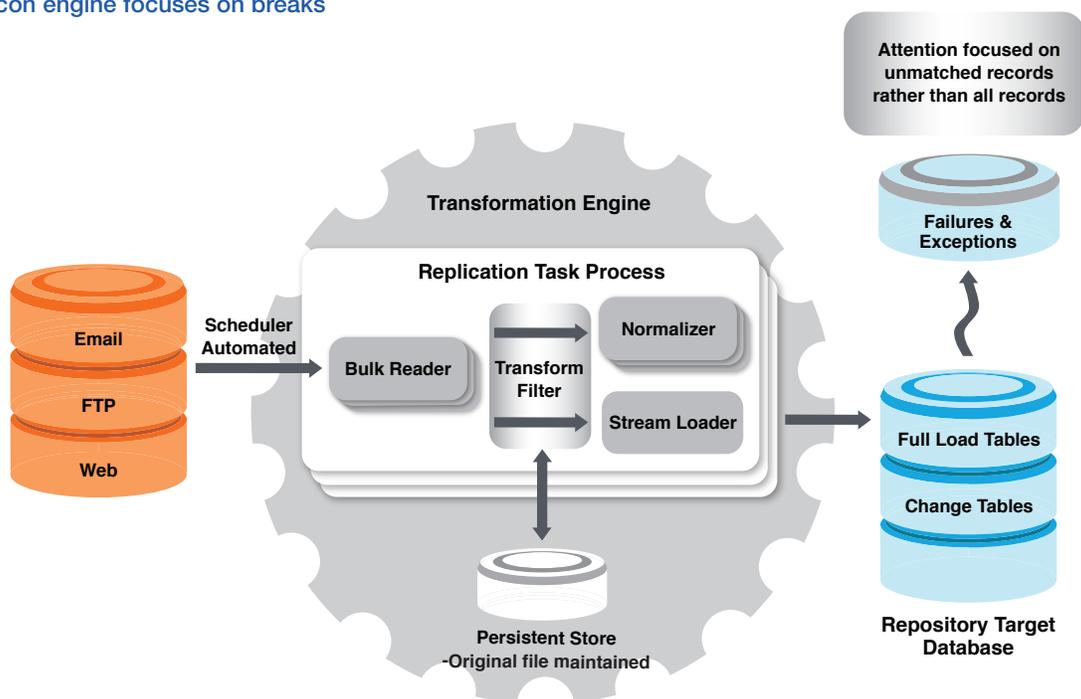
To permit simplified consolidated reporting, multiple systems involved in data interchange were replaced with a single platform. Complemented by a common repository for extracts and reference data, this helps create a seamless and straight through post-trade lifecycle process even as new clients are brought onto the platform. Furthermore, trade aggregation, enrichment of the trade record with feeds from various data providers, ensuring that the data is correct, and then committing the data for an end result is now handled at a much higher velocity as processes can be customized to run alone or as a connected group.

Additionally, the ability for a single instance of ASTTRA to connect to multiple instances of other applications such as Geneva® through a centralized data management platform provides flexibility while sustaining the integrity of data.

Increase in NAV frequency

The execution speed and the ability to combine data from multiple sources has enabled NFS to offer faster, more accurate NAV calculations on a more frequent basis. The Viteos solution is able to accommodate varying fee schedules, and even include redemption transfers, dividend processing, and other complex calculations. The solution matches the results against the trial balance produced by the fund's systems, whether that is Geneva® or another application.

Figure 5. Recon engine focuses on breaks



More attention on breaks and risk

Another important aspect of the new platform is a common methodology for risk assessment and breaks. Using a simple, common user interface, the system distills breaks from the repository into one screen for each client's data and the staff can focus only on the unmatched records. Removing the need to access breaks in various locations increases processing velocity and more time is spent on resolution, which is extremely more efficient. Additionally, the system gives every NFS client the power to evaluate the significance of breaks in relation to overall value quickly. Simple methodology to determine and assess the impacts of each break on the entire portfolio consequently helps to improve reliability when assigning risk levels.

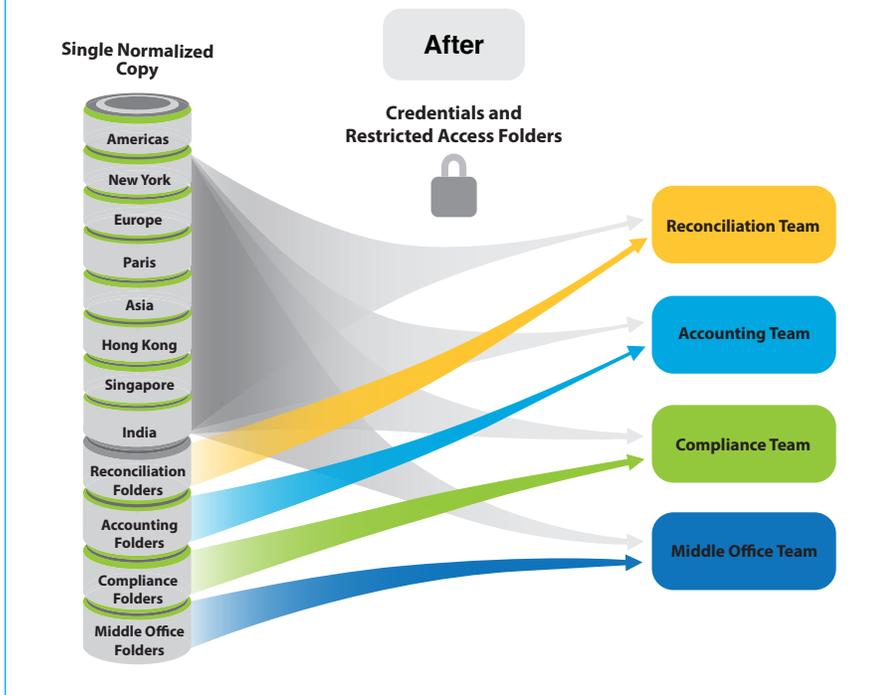
Talent

NFS now has in place an efficient adoption of technology to replace labor and time intensive work. The solution refocused the teams of people required in various locations who performed these manual activities. The result is reduced personnel turnover, and talent can be refocused on activities that lead to enhancing client service as opposed to internal processing.

Architecture

Most available financial applications are client / server solutions, which require running a portion of the software directly on a user's personal computing device. Therefore maintenance and upgrades are required at regular intervals. A completely web-based solution would make these practices a thing of the past and can be accessed securely from anywhere through a browser on almost any device. Enhancements with new features and functionalities are made without inconveniencing users or the internal information technology staff who are left to focus on other activities.

Figure 6. One secure repository for multiple users



Closer to a warehouse environment

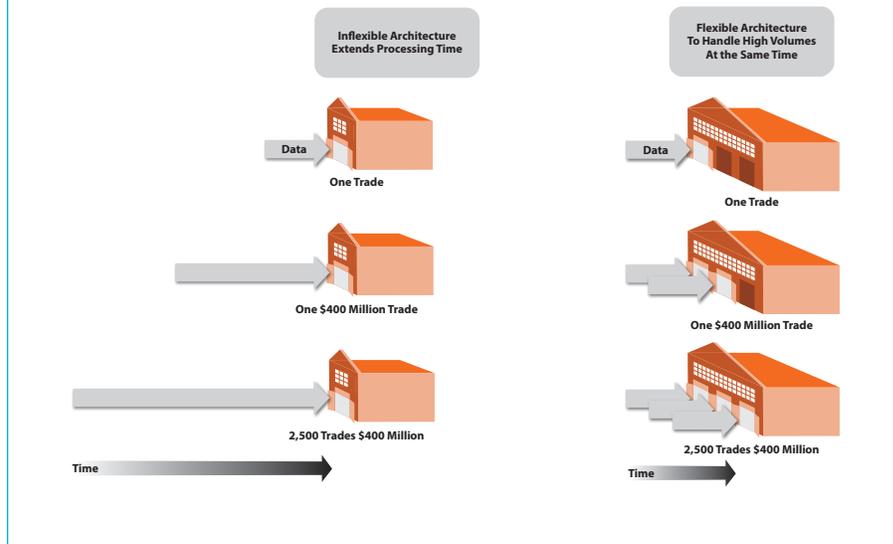
The enterprise platform allows NFS to offer web services combined in any form or fashion a client needs or wants. A single repository effectively lends itself to an enterprise data warehouse, whereby clients are able to extract information from all of the NFS transaction systems and maintain the data in a manner conducive to extrapolation or posting. This functionality helps reduce dependency on their accounting system alone and moves client funds close to having a true warehouse environment.

Unlimited capacity and pricing

Fund size has little to no effect on software capacity—the number and rate of transactions do. The latter taxes capacity and constraint becomes a glaring issue at high-volume trading periods when extra capacity is critical. Scalability at a fundamental level – i.e. the foundation upon which these applications operate and the manner in which their architecture is designed and structured allows them to scale.

NFS can now process trades priced and calculated in real time, as opposed to an older method used by most funds, where trades are valued later. It requires significant resources to manage and it precludes the inclusion of late trades in the portfolio. The Viteos solution also facilitates “bulk licensing” that permits the fund manager to select pricing at day’s end, or to use transaction specific pricing for valuation. This gives the fund manager unprecedented flexibility. By eliminating the delay, the fund’s value is consistently up-to-date, and significant delays in calculating NAV due to pricing at the end of the period have been completely eliminated. An entire day’s trades can now be priced at once.

Figure 7. Comparing inflexibility to flexibility



Customization

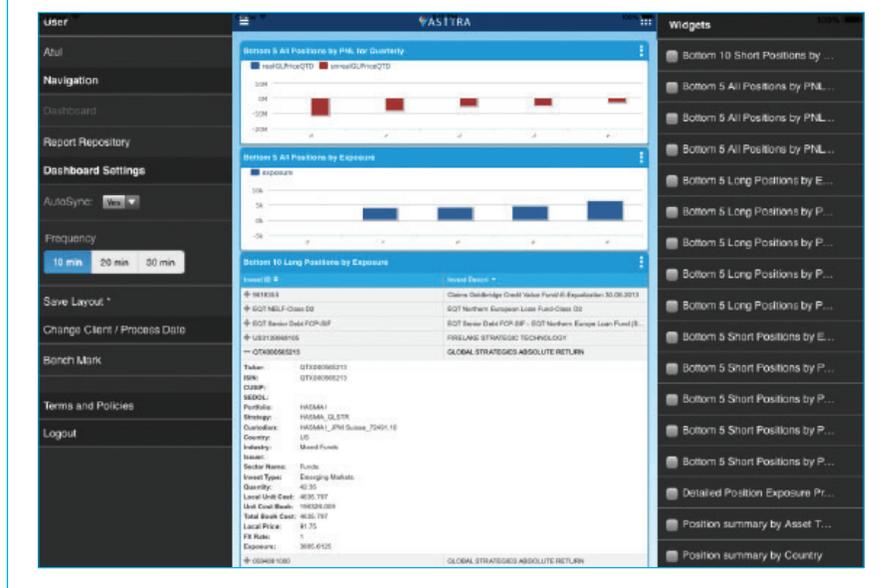
NewCo in front

The graphic user interfaces (GUI) of the Viteos platform were developed into branded NewCo GUIs. NewCo specified mandatory brand rules to be implemented in all application interfaces and reports. The applications were named according to the firm's corporate and product brand rules and they were launched as fully branded interfaces along with 300 reports.

Dashboards

Users expect to visualize data and to see pertinent information in a dashboard that calls attention to necessary actions or information issues. The Viteos solution includes a variety of widgets that users can add to their personal dashboards, giving each user the choice to customize their screen layout.

Figure 8. Customizable dashboard

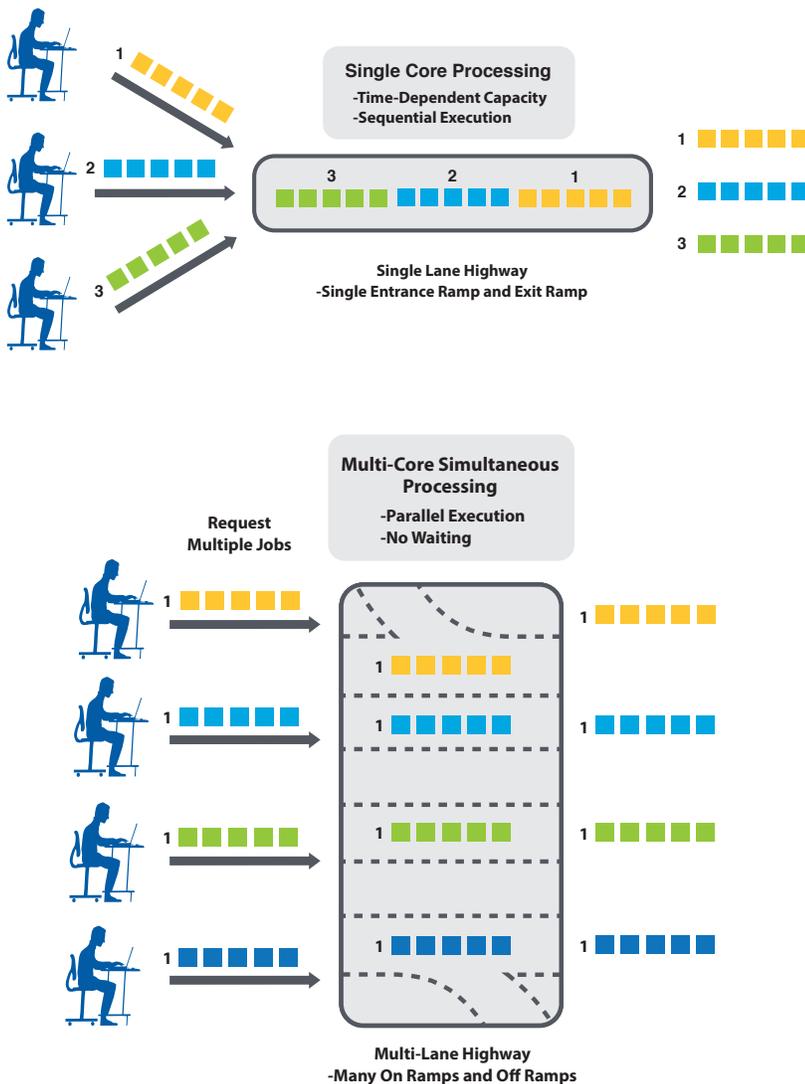


Advent Geneva®

Upgrades: NFS also wanted improved connectivity between Geneva® versions 8.54 and 7.7. The organization needed new technology that offered relatively seamless connectivity to both Geneva® systems to ensure that an upgrade from 7.7 to 8.54 was as error free and seamless as possible.

Multi-core processing: Geneva's® single core approach executes queries in sequence and prioritizes based on the time the request entered the queue. Often overnight batch processing is needed to provide ample time for the "single lane" processing. Viteos knows the bifurcation of Geneva® will override its single core default execution and allow Geneva® to run multiple cores. The bifurcation written on a script base tolerates non-sequential codes, thus report requests are run in parallel. Any number of cores can be created and turns Geneva® into a multi-core environment with any number of reports running in high volumes with much faster processing.

Figure 9. Single-core versus multi-core processing



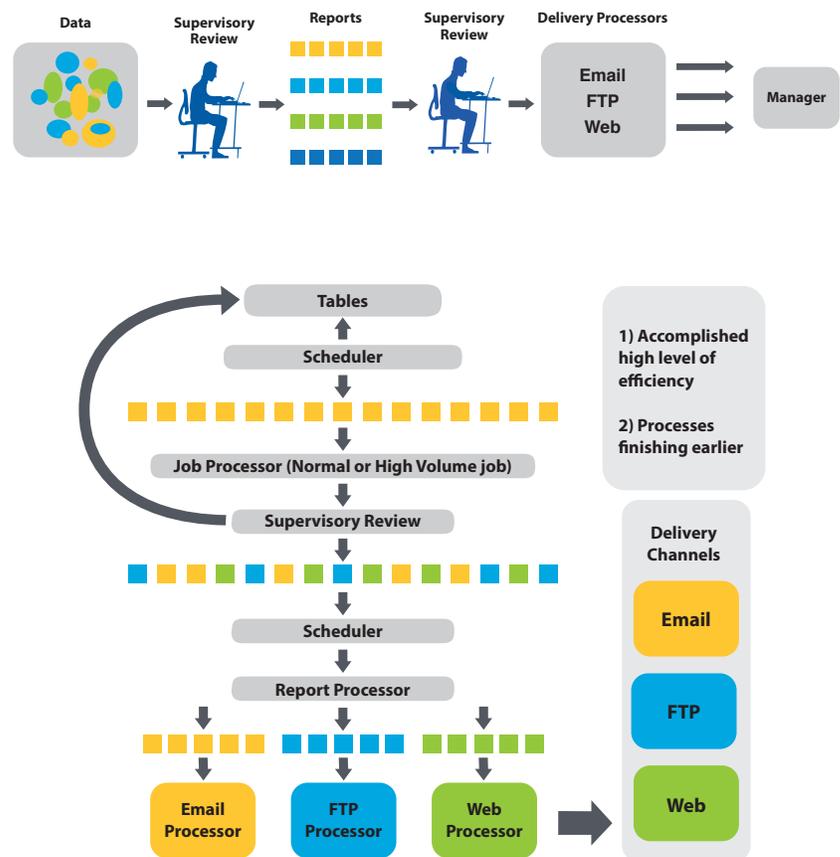
Other applications of this technology

Viteos continues to expand and invest in architecture, performance, technology, and functional upgrades, including adding capabilities to support multiple equalization methods and the ability to handle European mutual funds with their complex regulations. The enterprise solution incorporates AML compliance, and meets local and regional regulatory reporting and valuation requirements including FATCA. The regulatory reporting component is adequately flexible to meet changing needs of Form PF, AIFMD, and incorporate CPO-PQR.

Additional functions contribute to improved controls and auditability. These include fee rollout, bulk transactional flows, automation, and reduced processing time. The Viteos platform is customizable for almost any type of fund administration, shadow accounting, and settlement requirement or service an organization wishes to offer.

NFS wanted to shorten the processing time, which was considered too long given their expectations for growth. Viteos' technology suite offered real time processing via its STP, it modified its system to compliment processes with a much higher throughput speed, reducing the time to compile trades and produce reports.

Figure 10. Reporting review and delivery



Conclusion

Although many of the details are complex, involving the integration of an equally sophisticated software into the policies and procedures applicable to one of the largest financial services entities in the world, the partnership is a winning solution. NFS has enjoyed the enhancements offered by Viteos technology as the platform streamlines its servicing on portfolios of all sizes and complexities. The new solution allows for rapid implementation and easier acquisition. Funds can access the solution in a SaaS model, which can be accounted as an operational expenditure instead of a large capital outlay.

By licensing Viteos' state-of-the-art technology suite, NFS replaced fund administration technology adequate for their current business with a "cutting edge" solution preparing them for the future.

About Us

Our best thinking and best practices help investment managers grow.

You want the scalability and flexibility to add new clients, gather new assets, develop new strategies, and enter new markets. We provide efficient services and knowledgeable people that make it possible, incorporating customized processes and technologies that are fully integrated with your business.

Key facts:

- Founded in 2003
- 400+ professionals worldwide
- 24x7 operations
- Daily straight through processing
- \$26+ billion in administration
- \$200+ billion in assets serviced
- Serving 48 management companies with over 120 funds
- Headquartered in New Jersey
- Branch offices in New York, London, Cayman Islands and Singapore
- Delivery centers in New York Metro, Mumbai and Bangalore
- Serving clients in North America, Europe, Far East and Asia Pacific
- Credit Suisse is a strategic partner and stakeholder
- SSAE16 Level II accredited audit from Ernst and Young

We turn your data seamlessly into information from New York to Hong Kong to Mumbai. We Live and breathe the complexities of the post-trade life cycle, leverage, and risk management. We know how to account for asset classes across the full spectrum of listed and private equities, fixed income, derivatives, and strategies ranging from the conventional to the exotic. Our solutions make advanced automation affordable without the need to build expensive accounting and IT infrastructure.

Straight through processing means we work in real-time, and layers of built-in redundancy and bandwidth promise security and reliability.

Mid-sized funds often reach a stage where they need a more sophisticated accounting solution, but do not want the expensive distraction of building their own proprietary infrastructure, or a tedious implementation. Viteos is strategically aligned with these firms. The seamless implementation and cost efficient services that Viteos provides is a winning solution for all parties.

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