

OPERATIONS AND PROCESSING

COLLATERAL MANAGEMENT



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FIS APEX COLLATERAL

Global regulations have fundamentally transformed collateral management. Collateral now touches every aspect of capital markets activity, pre- and post-trade, across all asset classes and whether your focus is trading, risk management or operations, this transformation creates opportunities as well as challenges.

Standardized derivatives should be cleared through central counterparties (CCP) and higher capital charges and onerous margin requirements will apply for non-cleared derivatives.

Apart from the massive increase in margin requirements, the demand for high quality securities is further fuelled by the drying up of unsecured money markets and that the Basel III liquidity standards require banks to hold a substantial liquid assets buffer to meet the Liquidity Coverage Ratio (LCR).

The post-crisis liquidity squeeze



- Basel III liquidity standards
- Central clearing of OTC derivatives
- Margin standard for uncleared trading
- \$1.41 trillion of collateral posted for cleared and non-cleared trades in Q1 2017

* ISDA MARGIN SURVEY SEPTEMBER 2017

FIS' Apex Collateral solution helps us increase our effectiveness by providing a consolidated, big picture view of our collateral asset pool across OTC derivatives, reinsurance collateral, repo and securities lending. This transparency helps us mitigate counterparty risk while getting maximum value from our collateral assets.

RICH HOCHREUTINER, GLOBAL HEAD OF COLLATERAL TRADING AND MANAGEMENT AT SWISS RE

The Collateral Management Industry Challenge

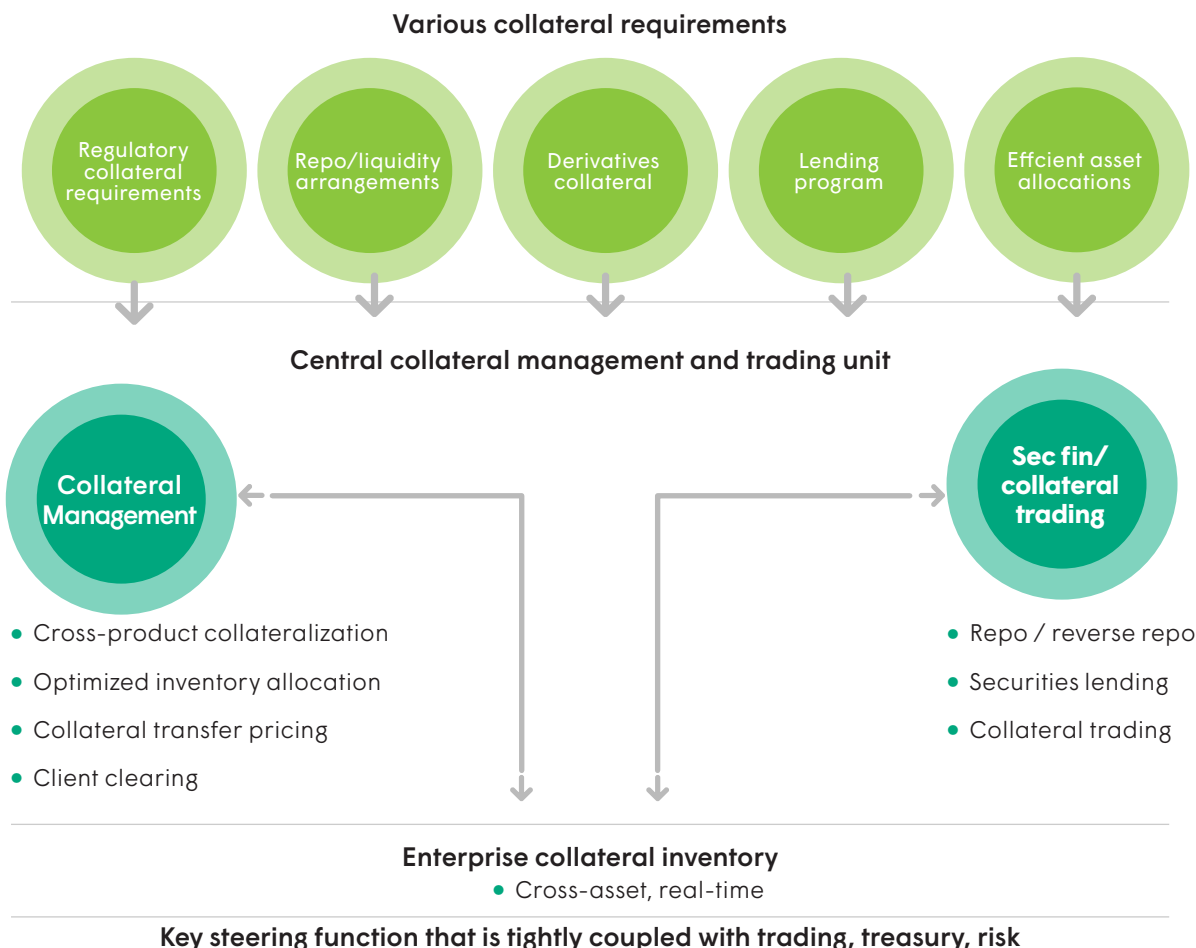
Financial institutions must optimize the use of assets across business lines and transform their collateral management infrastructure to handle the increased volume and complexity of collateralized trading business. High quality collateral has become a scarce commodity and collateral management has transformed from a back-office operational function to a proactive, business critical discipline. Financial institutions on the sell and buy-side are challenged to establish sound collateralization operations and optimization processes in order to make most efficient use of collateral.

A tier one bank recently announced an expected 63% increase in the number of collateral calls, an 83% increase in collateral movements and a 1000% increase in the number of collateral substitutions as firms adapt to the new regulations and market conditions and move to proactive collateral asset management and optimization of the collateral portfolios.

The status quo at many financial institutions is still a siloed architecture with segregated collateral pools for the various business lines. This leads to an inability to optimize the allocation of collateral assets centrally and makes collateral operations inefficient and hard to scale.

Key challenges for financial institutions:

- **Compliance** - How do I become compliant with all of these regulations and deal with the volume increases?
- **Connectivity** - How do I connect my infrastructure to collateral utilities for gains in efficiency and control?
- **Cost** - How do I optimise my inventory to minimise balance sheet impact and cost of collateral?



The Solution: Apex Collateral

To address these time critical collateral management challenges, we launched Apex Collateral, a unique and innovative solution that offers enterprise-wide collateral management, optimization and trading on a single platform. Apex Collateral helps financial institutions to make the best use of their inventory and to handle the fast increasing volume and complexity of collateralized trading activities.

Apex Collateral is structured in a modular way as we recognize that not all institutions will want to replace their collateral management infrastructure wholesale. This allows our customers to pick and choose the elements of the platform that best fit their specific requirements.

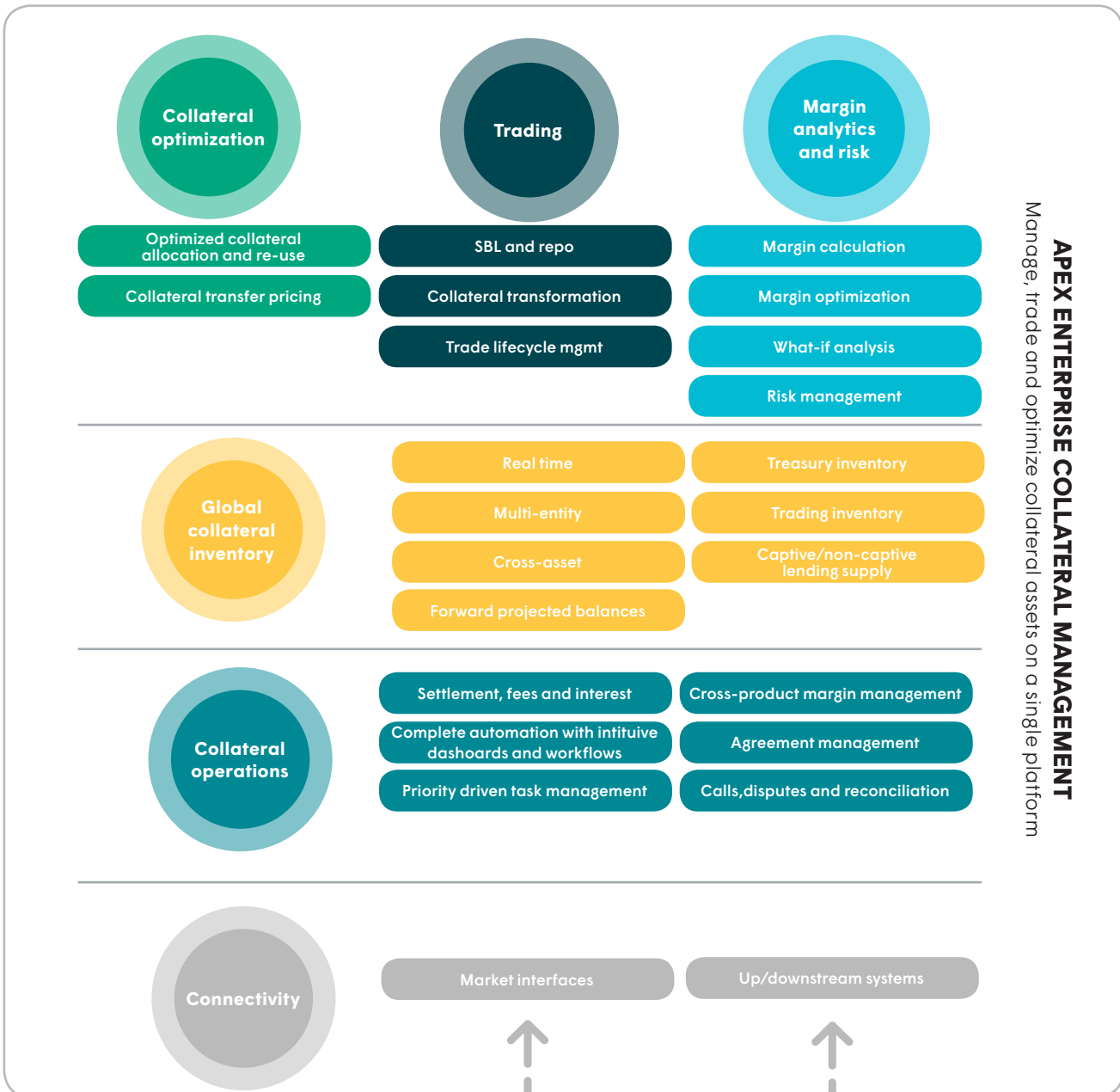
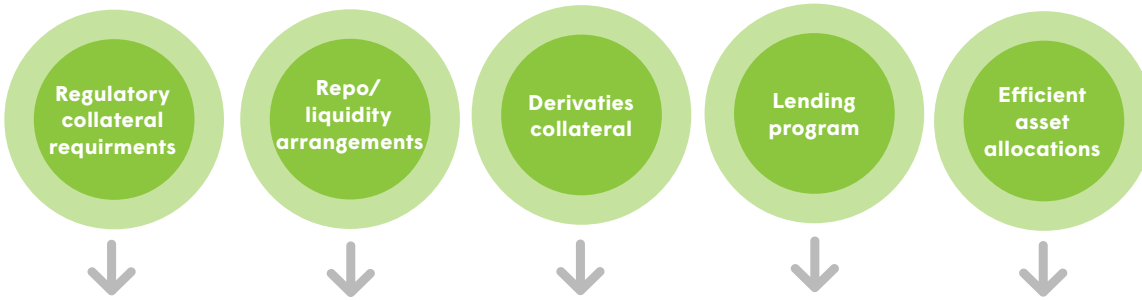
Apex Collateral is built around five key modules:

- Lean operations platform that automates the collateral management processes across product silos
- A global, real-time, cross-asset inventory
- Tools for collateral trading and securities finance
- Collateral optimization to maximise return on inventory
- Connectivity server providing real-time, out of the box connectivity to all the major collateral market utilities, CCPs, exchanges and triparty agents.

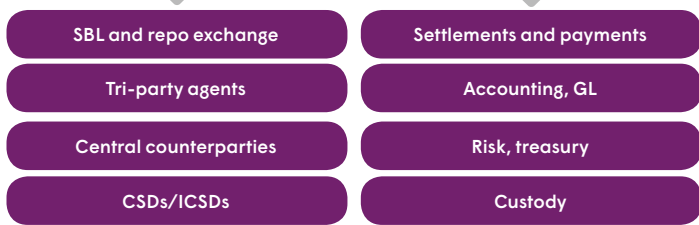
Adopting sophisticated tools to efficiently manage the collateral process on an enterprise-wide basis is an absolutely key requirement in today's highly competitive environment. Being able to manage collateral in a more efficient and timely manner and within the trading process provides a significant competitive advantage.

ANDY NYBO, PRINCIPAL AND HEAD OF DERIVATIVES
RESEARCH, TABB GROUP

Cross-asset collateral requirements



APEX ENTERPRISE COLLATERAL MANAGEMENT
 Manage, trade and optimize collateral assets on a single platform



Global collateral inventory

To make the most efficient use of collateral assets and to manage risk effectively, you need a consolidated view of your inventory. In the new collateral landscape traditional, business-level silos are a hindrance to an institution's performance and collateral optimization works best when you consider the broadest inventory.

Key features:

- A single, global, cross-product and cross-asset view to optimize the use of collateral across business lines
- Current positions with drill downs to slice and dice by legal entity, beneficial owner, etc
- Forward projected balances over any time period
- Real-time updates based on trading activity inside or outside the system
- Real-time settlement updates to show contractual versus actual balances

Securities finance and collateral trading

The shortage of high quality collateral will push market participants to source collateral in the repo and securities lending market. This may create significant potential to increase trading revenues from collateral trading. Apex Enterprise Collateral features front-to-back trading and trade management for Repo, Securities Borrowing and Lending, and Synthetics. This includes trade capture and full trade lifecycle management.

Key features:

- Securities Borrowing and Lending: principal and agency, non-cash and cash, pool management
- Repo: bilateral and tri-party, Specials and GC, open and term, fixed and floating rate
- Synthetics: outright, OTC call/put options, Swaps TRS, etc
- Full front-to-back support and trade lifecycle management: Trade amendments partial return/increase, rate change, recalls, allocation change, interest clean-ups, billing, substitutions, roll over, evergreen, etc
- Automated short covering
- Corporate actions processing
- Global processing and multi-entity support
- Trading (settlement, risk) and portfolio limits

Collateral optimization

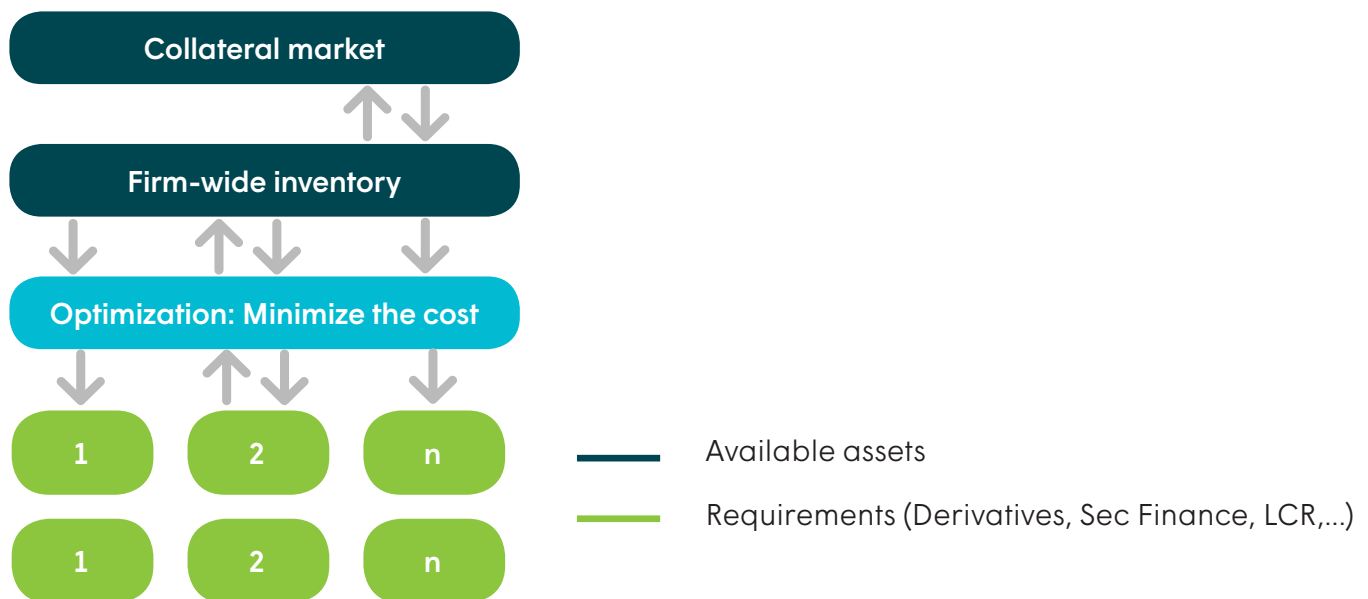
The key to truly efficient collateral management lies in how to determine the optimal way to allocate your inventory to trading, liquidity, capital and collateral requirements.

Working across the firm's global set of requirements, our collateral optimization module uses linear programming techniques to find the cheapest overall combination of assets allocated to the collateral requirements. In so doing, it minimizes the overall funding cost of the pledged collateral assets, or in other words, maximizes the revenue from the overall collateral asset pool.

Key features:

- Optimize inventory across all collateral requirements, not just cheapest to deliver
- Uses linear programming to identify the overall optimal allocation
- Propose substitutions and upgrade trades to optimize the collateral portfolio
- Automated collateral trade generation based on optimization results
- What-if scenarios to model the impacts of changing dynamics in the collateral asset pool and requirements
- Internal collateral transfer pricing that create the right incentive for optimal collateral use

The collateral optimization challenge: Minimize the total cost of all collateral allocations



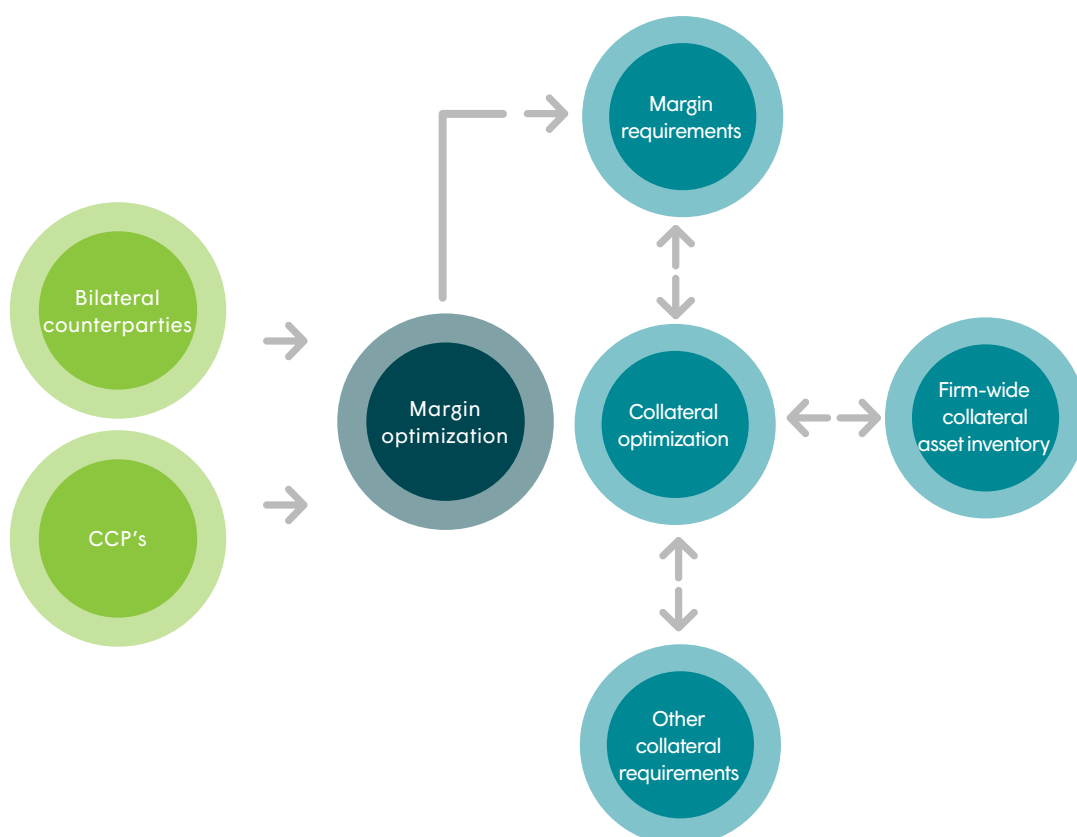
Lean collateral operations

The operations module of Apex Collateral is designed to streamline and automate the collateral processes to cope with the increased collateralization volume and complexity the operations team must handle. This frees the collateral management teams to focus on the exceptions and add value through mitigating risk and optimizing the use of collateral assets.

Key features:

- Cross-product collateralization for repo, securities borrowing and lending, derivatives, and re-insurance agreements
- Support for central clearing (CCP)
- Complete automation with intuitive dashboards and workflows
- Dispute resolution management and advanced reconciliation
- Agreement management
- Processing of settlements, fees and interest
- Electronic messaging

Margin and collateral optimization



Connectivity

Apex Collateral offers out of the box interfaces with the established market infrastructure providers and tri-party agents, CCPs and brokers. Our connectivity module also enables easy integration with up- and downstream third party systems, such as custody platforms, accounting systems, settlement and payment hubs, risk management, and treasury solutions. The connectivity component features pre-configured out-of-the-box adapters (70+) to a large number of market participants and third party systems, including:

- Market data providers
- Tri-Party collateral agents
- Central counterparties
- Reconciliation platforms (OTC, SBL)
- SBL and repo exchanges
- Market data analytics services
- Exchanges, CSDs/ICSDs

In the post crisis reality, collateral management has become a key steering function within the capital market business. Apex Collateral is a modular platform for financial institutions of all sizes seeking to improve their collateral management infrastructure and to create sustainable competitive advantage in the collateralized trading business by:

- Overcoming silos and unlocking the potential of collateral management by centralizing the management, trading and optimization of collateral in a single profit centre, on a single platform
- Reducing the cost of funding collateral through a holistic optimization process that best allocates collateral to the various requirements
- Avoiding collateral sitting idle and improving revenues through proactive collateral trading
- Complying with the OTC market reform regulations and handling the margining processes for cleared and bilateral trades
- Achieving highest operational efficiency through automated cross-product collateral operations

About Apex Collateral

FIS' Apex Collateral solution helps collateral traders, heads of trading desks, risk professionals, operations staff and senior management manage and optimize their collateral on an enterprise-wide basis. Apex Collateral offers a single platform for trading directly from a real-time, consolidated global inventory as well as supporting operational requirements for underlying securities lending, repo and derivative transactions. It uses numerical algorithms to automatically allocate collateral in the optimal way, helping firms minimize costs and maximize return on assets. For more information, please visit www.fisglobal.com/enterprisecollateral

About FIS

FIS is a global leader in financial services technology, with a focus on retail and institutional banking, payments, asset and wealth management, risk and compliance, consulting and outsourcing solutions. Through the depth and breadth of our solutions portfolio, global capabilities and domain expertise, FIS serves more than 20,000 clients in over 130 countries. Headquartered in Jacksonville, Florida, FIS employs more than 55,000 people worldwide and holds leadership positions in payment processing, financial software and banking solutions. Providing software, services and outsourcing of the technology that empowers the financial world, FIS is a Fortune 500 company and is a member of Standard & Poor's 500® Index. For more information about FIS, visit www.fisglobal.com



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