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- Given recent payment data breaches, clients are increasingly demanding robust security and fraud solutions; and
- Financial institutions continue to outsource and leverage technology providers given their constrained budgets and growing industry complexity.

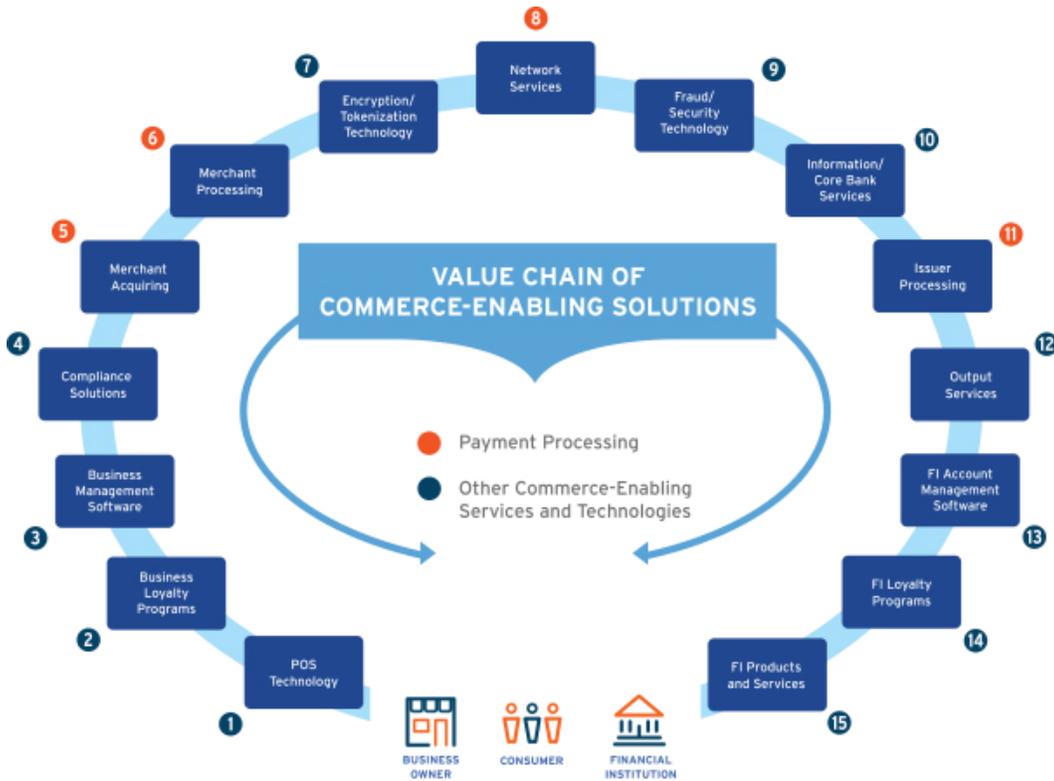
We believe First Data is well positioned to take advantage of all of these trends given the breadth of our solutions and our global operating scale.

**Industry Background**

**Overview of Our Industry**

Our industry is comprised of technology solution providers with different areas of expertise, specialized capabilities, and proprietary technologies. These providers are positioned across the value-chain of solutions that enable businesses and financial institutions to conduct commerce. Together, these providers help facilitate approximately \$43 trillion of annual personal consumption expenditures and approximately \$120 trillion of annual commercial consumption expenditures, according to The World Bank and Visa Inc., respectively.

These providers include payment processors, core bank processors, information services providers, hardware vendors, software developers, web developers, marketing-program managers, security and risk management solutions vendors, card manufacturers, and business process outsourcers, among others. These providers sell their solutions to businesses or financial institutions across 15 general service categories, as illustrated below.



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### *The Value-Chain of Commerce-Enabling Solutions Providers*

The providers in our industry that sell solutions to businesses and financial institutions include:

1. **Point-of-Sale Technology** – Providers of hardware and software systems that enable businesses to perform a range of front and back office functions. Basic POS technologies, such as card terminals, help read credit and debit card information to initiate payment transactions, while more advanced systems, such as integrated POS (IPOS), enable business owners to operate more sophisticated software applications to perform functions that help them manage their enterprise from a PC, tablet, or mobile device that is integrated with transaction processing capabilities.
2. **Business Loyalty Programs** – Program managers that offer businesses the ability to run discrete retention campaigns, membership agreements and reward programs designed to encourage specific customer behaviors such as increased visit frequency, longer customer life, and higher spending.
3. **Business Management Software** – Software developers that create applications to help businesses manage front and back-office operations, allowing users to engage with customers more effectively, manage employees, monitor key operational metrics, and perform accounting and finance functions.
4. **Compliance Solutions** – Providers of services and solutions that help business owners ensure their enterprise practices and processes adhere to and remain compliant with various industry standards, such as payment card industry (PCI) compliance, government standards, such as 1099 reporting, and technical requirements, such as EMV acceptance.
5. **Merchant Acquiring** – Providers of services and solutions that help businesses accept, process, and settle electronic payment transactions across retail POS, online and mobile POS environments. The merchant acquirer sells payment acceptance services to the business client and underwrites the risk associated with each transaction. A few merchant acquirers, with proprietary technology platforms, provide processing in-house, but most outsource these functions to a merchant processor. See “—Overview of Payment Processing” for more detail.
6. **Merchant Processing** – Providers of proprietary technology platforms that facilitate the processing of electronic transactions and other related functions on behalf of merchant acquirers that do not have in-house capabilities. For example, there are 76 merchant acquirers in the United States according to The Nilson Report, but we believe fewer than 20 own end-to-end processing platforms. See “—Overview of Payment Processing” for more detail.
7. **Encryption / Tokenization Technology** – Providers of security solutions that protect payment and other sensitive data at-rest and in-transit from theft and misuse. These solutions encrypt and decrypt commercial transaction data or replace it with an electronic token. These vendors may also provide solutions to protect businesses and financial institutions from external data breaches.
8. **Network Services** – Payment networks such as Visa and MasterCard and EFT networks, such as *STAR*, *NYCE* and *Pulse* that connect, secure and transmit transactions between merchant acquirers and issuers to facilitate payment authorization, clearing and settlement. See “—Overview of Payment Processing” for more detail.
9. **Fraud / Security Technology** – Providers of solutions that help businesses and financial institutions effectively manage risk and protect themselves from external data breaches, maintain control over internal access to data, and defend against fraudulent transactions.
10. **Information / Core Bank Services** – Providers of proprietary software applications and technology platforms that help financial institutions open and manage deposit accounts, process deposits and withdrawals, facilitate the origination, processing and servicing of consumer loans, and provide online access to financial accounts, at bank teller stations, ATMs and through online and mobile banking solutions.

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11. **Issuer Processing** – Providers of proprietary technology platforms that facilitate the management and processing of electronic transactions and other related functions on behalf of card issuers, such as banks and retailers, which do not have in-house capabilities. These providers can sell their solutions as a complete suite of processing and related functions, discrete applications on a customized basis or as a hosted or licensed software solution. See “—Overview of Payment Processing” for more detail.
12. **Output Services** – Providers of outsourcing services that help card issuers procure, produce, design and emboss their credit, debit, prepaid, EMV-enabled, contactless and private-label plastic cards, and deliver cards to account holders. These providers also help design, print and mail statements and letters on behalf of clients and send customer communications through other channels, such as electronic.
13. **FI Account Management Software** – Software developers that create applications to help financial institutions optimize their card portfolios, such as specialized administration portals, data mining and analytical tools, and strategy evaluation software, and manage certain front and back-office operations, such as customer relationship management and dispute resolution functions.
14. **FI Loyalty Programs** – Solutions that enable financial institutions to run discrete rewards programs to help drive customer acquisition, engagement and retention, through loyalty processing platforms, rewards portals, the design and marketing of offers and incentives, campaign management and analytical tools, and communication services.
15. **FI Products and Services** – Providers of services and solutions that help smaller banks cost-effectively offer a full suite of consumer-facing products and services to their account holders, such as revolving credit lines, credit and commercial cards, and access to ATM services.

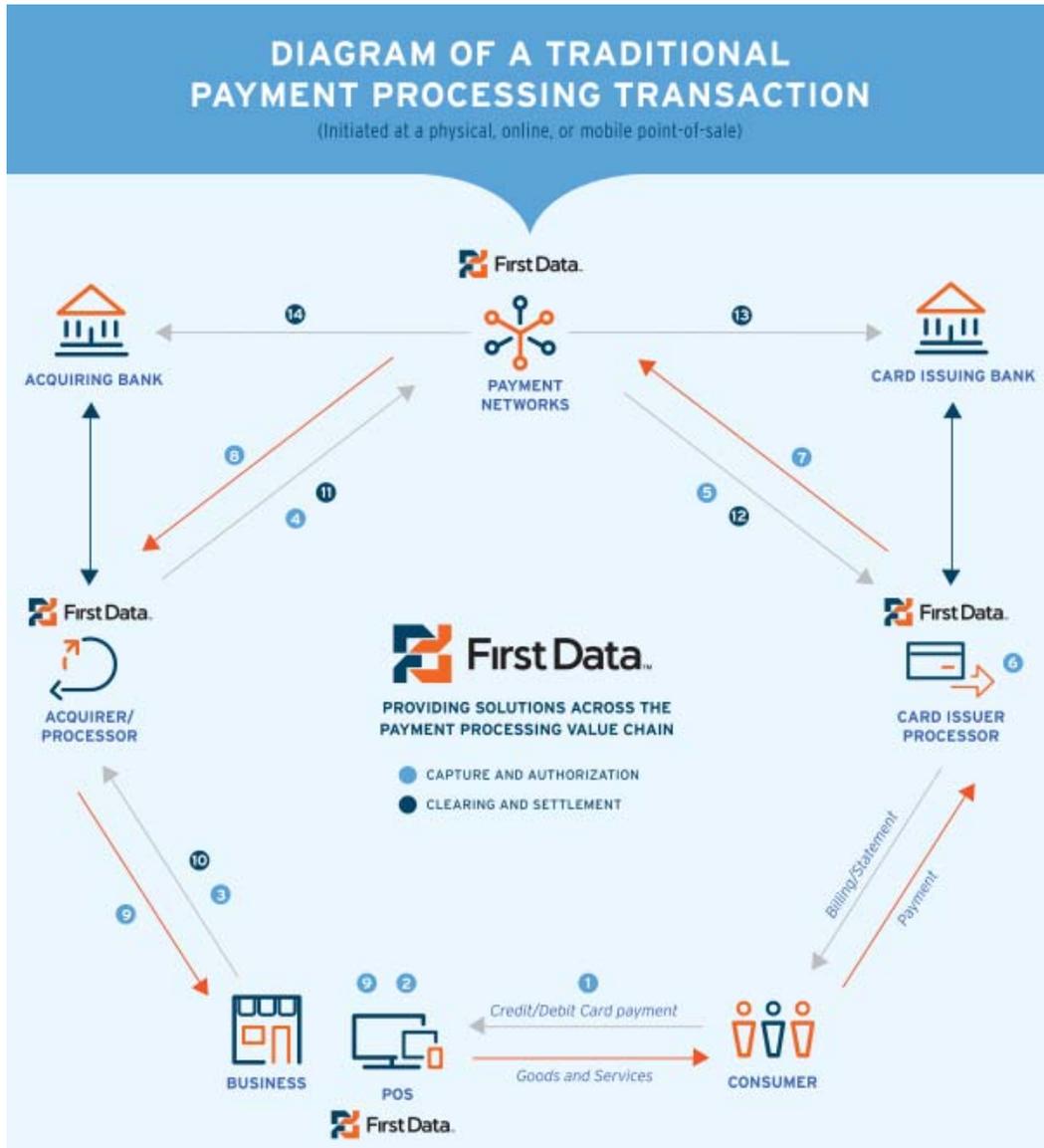
### *Overview of Payment Processing*

A subset of the technology solution providers in our industry are *Payment Processors*, which help facilitate specific services within the value chain of commerce-enabling solutions. These providers include merchant acquirers, merchant processors, network services providers and issuer processors. Traditional payment processing services include the authorization and settlement of electronic payments, such as credit and debit card transactions, which continue to exhibit strong growth trends around the world. For example, according to The Nilson Report, general purpose credit and debit card transactions are projected to grow significantly from 2013 to 2023, as shown in the table below.

<u>Key Metrics for General Purpose Credit and Debit Cards</u>	<u>2013</u>	<u>2023 Projected</u>	<u>Compound Annual Growth Rate from 2013 to 2023</u>
Global Purchase Volume	\$16.3 trillion	\$49.1 trillion	12%
Global Purchase Transactions	187 billion	469 billion	10%
U.S. Purchase Volume	\$4.5 trillion	\$10.0 trillion	8%
U.S. Purchase Transactions	82 billion	163 billion	7%

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The processing of a traditional card transaction includes two sub-processes: (1) capture and authorization and (2) clearing and settlement. Below is an illustrative diagram of the flow of a typical card transaction and an explanation of each step in the process.



*Capture and Authorization*

In the capture and authorization process, the business obtains approval for payment from the card issuing bank. This process includes the following steps:

1. Once the consumer is ready to make a purchase, he or she presents their card for payment;

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2. The card is swiped in the POS device at the business location, which captures the account information contained on the card's magnetic stripe or EMV-compliant chip;
  - In a mobile commerce transaction facilitated by a mobile wallet, such as Apple Pay, the appropriate card details are stored virtually on an application on the phone and transmitted to the POS device through a chip equipped with near-field communication (NFC) technology;
  - In an eCommerce transaction, the POS device is replaced by a virtual terminal application and the consumer types the card number into the check-out page of the online storefront. In some circumstances, an online wallet, such as PayPal, may be used to transmit the appropriate payment credentials;
3. The customer's card details are transmitted from the POS to the merchant acquirer, or the merchant acquirer's processor, via an internet connection or a phone line;
  - In an eCommerce transaction, the information is encrypted and then transmitted to the merchant acquirer, or merchant acquirer's processor, via an online gateway;
4. The merchant acquirer, or the merchant acquirer's processor, identifies the appropriate payment network affiliated with the card, such as Visa, MasterCard, or *STAR*, and forwards the card details to the appropriate network;
5. The payment network receives the request for payment authorization, identifies the appropriate card issuing bank, and routes the transaction to the bank or its issuer processor;
6. The card issuing bank, or its issuer processor, receives the request and then executes a series of inquiries into its account systems to assess the potential risk of fraud for the transaction, establish that the account is in good standing, and verify that the cardholder has sufficient credit or adequate funds to cover the amount of the transaction;
7. The card issuing bank, or its issuer processor, approves or declines the transaction and sends back the response to the payment network. In this example the transaction is approved;
8. The payment network receives the approval and forwards the authorization to the merchant acquirer, or merchant acquirer's processor; and
9. The merchant acquirer, or merchant acquirer's processor, sends the authorization back to the POS device at the business location, which provides an approval confirmation and prints a receipt;
  - In a mobile commerce transaction, the approval confirmation and receipt may also be transmitted to the consumer's mobile wallet application or to the consumer via email;
  - In an eCommerce transaction, the authorization is sent to the online storefront, which communicates the approval to the consumer on the screen, and may provide the receipt for printing online or via email.

### *Clearing and Settlement*

In the clearing and settlement process, a request for payment is initiated, funds are transferred and the transaction is posted to the business owner's and the consumer's account statements. The clearing and settlement process includes the following steps:

10. Typically at the end of the day, the business submits a batch of all of its approved authorizations to the merchant acquirer, or the merchant acquirer's processor, through a function on its POS device;
  - In the case of an eCommerce business, the online storefront's gateway sends the batch to the merchant acquirer, or to the merchant acquirer's processor;

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11. The merchant acquirer, or the merchant acquirer's processor, receives the batch, notes the final amounts due for settlement and routes the batch of approved authorizations to each applicable payment network;
12. Each payment network sends the batch of approved authorizations to the applicable card issuing bank, or its issuer processor, which posts the transaction to the consumer's statement;
13. Typically within 48 hours, the payment network calculates net settlement positions for the merchant acquirer and the card issuing bank, sends advisements to the merchant acquirer and card issuing bank and submits a fund transfer order to a settlement bank; and
14. The settlement bank facilitates the exchange of funds between the merchant acquirer and the card issuing bank; and the merchant acquirer transfers the funds to the business owner's account.

## **Key Trends**

Our industry is impacted by several significant trends that are driving growth and changing the way commerce is being conducted and facilitated around the world.

These trends include:

- **Shift to Electronic Commerce** – Consumers, businesses, financial institutions, and government entities around the world are continuing to shift their commercial activities and transactions to electronic forms. According to The Nilson Report, in the United States from 2013 to 2018, cash and check purchase volumes are projected to decline by 34% and 46%, respectively, while credit and debit card purchase volumes are projected to increase by 65% and 49%, respectively.
- **Migration to Online Channels** – Over the past 20 years, the combination of the growth of the Internet, the decreasing costs of technology used to access the Internet, and the increasing adoption of electronic payments has driven the migration of commerce to online channels such as eCommerce and mobile commerce. We believe this migration will continue as market demographics shift to newer generations of consumers who use the Internet and mobile smartphones more heavily. According to eMarketer, global eCommerce spending as a percentage of global retail spending is projected to increase from 6% in 2013 to 9% in 2018.
- **Globalization of Commerce** – Commerce is evolving from a primarily local or regional activity to a multi-national or global activity due to several factors, including: (1) population growth rates and changes in socio-economic demographics in developing markets are creating large addressable markets for commerce; (2) large businesses and financial institutions are expanding across geographic borders as they seek to grow their own operations or serve customers who are expanding internationally; and (3) businesses of all sizes are conducting more commerce on the Internet, where online customers are not constrained by geographic distance. According to The Nilson Report, from 2013 to 2023, the percentage of global purchase transactions conducted in the United States and Canada will decline from 48% to 38%, while the percentage of transactions conducted in Asia and Latin America will increase from 27% to 38%, and the percentage of transactions conducted in the Europe, Middle East and Africa region will remain relatively flat, moving from 25% to 24%.
- **Adoption of New Technologies** – The technology landscape around the world has changed significantly over the past decade and has become more accessible to consumers and smaller enterprises. The costs of traditional technology products and services, such as computer hardware, enterprise software, and telecommunications have declined materially, while Internet access speeds and the development of new social media have increased significantly. As a result, a significant amount of innovation has produced new, lower-cost technologies that are rapidly gaining adoption, such as mobile tablets, smartphones, cloud-based marketplaces, mobile apps, person-to-person networks, mobile wallets, and virtual currencies. The adoption of these technologies is also driving more spending on