



General Payments Overview Module 11

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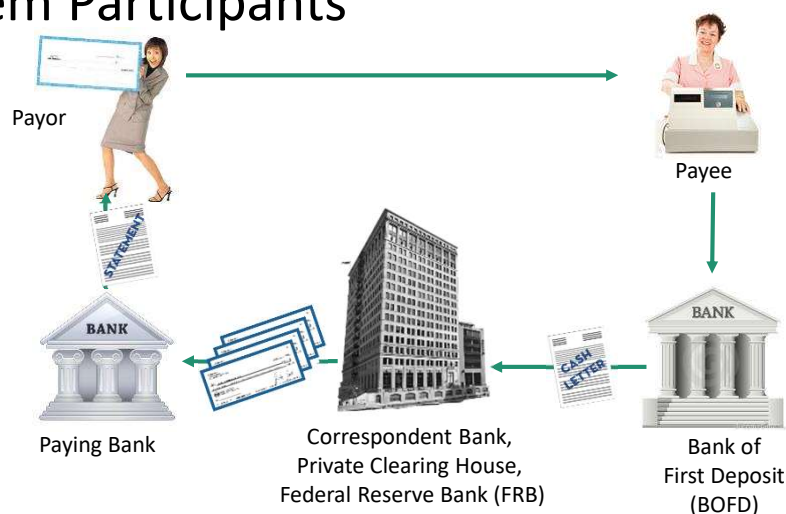
Agenda

- Checks
- Cards
- Wires
- B2B Payments via ACH

Check Processing

- One of the world's oldest forms of payment still extensively used in the United States
- Banking conventions that advanced check processing
 - Routing number policy
 - Adopted by the ABA in 1911
 - Uniquely identifies any depository institution on which a check is drawn
 - Magnetic Ink Character Recognition – MICR
 - National standard for imprinting checks with machine-readable characters in magnetic ink

Check Payment System Participants



Check Payment System Participants

- Payor
 - Party obligated to pay on a check
 - Known as the Check Writer, Maker or Drawee
- Payee
 - Party or parties due payment indicated on a check



Check Payment System Participants

- Bank of First Deposit (BOFD)
 - Institution at which a check is deposited
 - Referred to as the Depository Bank or Payee's Depository Financial Institution
 - Comparable to the ODFI for an ACH debit Entry
- Correspondent Bank
 - Private depository institution, Bankers' Bank, or Federal Reserve Bank providing clearing or settlement services to a Paying Bank or Collecting Bank



Check Payment System Participants

- **Paying Bank**
 - Depository institution associated with the routing number encoded in the MICR line of a check
 - Also called Payor's Depository Financial Institution; Payor Bank or Payor's Bank
 - Comparable to RDFI for an ACH Debit Entry

Check Payment System Participants

- **Truncating Bank**
 - Institution that creates an image of the original check
- **Reconverting Bank**
 - Institution that produces the Substitute Check (or IRD)

Check Clearing and Collection

- Check Clearing
 - Refers to the physical path the check follows
- Check Collection
 - Refers to the process of ensuring the funds represented by the check are debited from and credited to the appropriate accounts

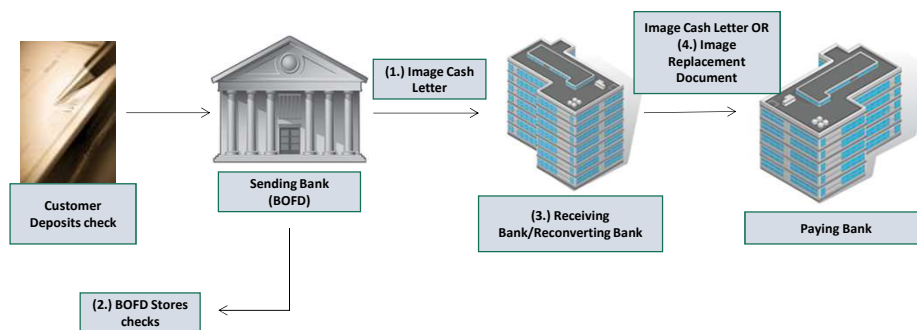
On-Us/Transit Checks

- All checks are classified as local items
- On-Us Checks
 - Payor and Payee have accounts at the same financial institution
- Transit Checks
 - Sent to another depository institution for collection
 - Sometimes through one or more intermediary financial institutions

Additional Check Clearing Paths

- Transit checks can be cleared and collected via
 - Image generated by BOFD or Collecting Bank downstream and Transmitted to Paying Bank
 - Image generated by BOFD or Collecting Bank that is Transmitted to a Clearing House or other clearing facility
 - Clearing House generates a Substitute Check or Image Replacement Document (IRD) to present to Paying Bank
 - ACH debit Entry based on information in the MICR line
 - ARC, BOC, POP, or RCK

Image Cash Letter (ICL) Flow Chart



1. Image Cash Letter: Digital images of paper cash letter; includes both the MICR data record and the transmitted check image
2. Truncation: Stop Processing of physical paper item(s) and forward electronic image(s) and MICR data
3. Reconverting Bank: First FI to create or transfer the Substitute Check
4. Substitute Check: A paper reproduction from an electronic record of (or image of) an original paper check that was previously truncated. Must meet the definition of a Substitute Check from Reg CC, Subpart D and applicable standards (X9.100-140)

Legal Framework for Check Payment Process

- Uniform Commercial Code Article 3
 - Governs checks
- Uniform Commercial Code Article 4
 - Governs check collection
- Regulation CC
 - Governs funds availability
 - Subpart D - Check 21
 - Governs Substitute Checks

Legal Framework for Check Payment Process

- Regulation J
 - Procedures for the inter-bank system of collecting checks
- Federal Reserve Bank Operating Circular 3
 - Governs clearing and settlement for checks cleared through the Federal Reserve System

Legal Framework for Check Payment Process

- ECCHO Rules
 - Governs image rules for check exchanges between ECCHO members
- *NACHA Operating Rules*
 - Governs ACH check conversion (ARC, BOC, POP) and check truncation (RCK)

Card Payments System

- Credit Cards
- Debit Cards
 - ATM & POS Cards
- Prepaid or Stored Value Cards

Card Types

Credit Cards

- Access devices to a lending product and are not considered a true payment instrument
 - Credit transactions are cleared through the Visa®/MasterCard®/American Express®/Discover® networks
 - Transactions are authorized real-time, settlement for merchants is guaranteed and *typically* next day

Debit/ATM/Bank Cards

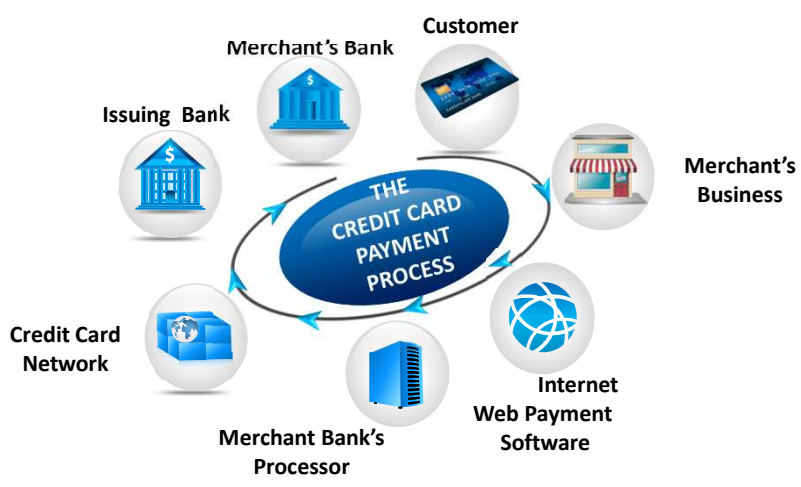
- Access devices most commonly associated with access to a balance in a checking or DDA account
 - Debit transactions can be cleared through the POS/ATM or through the Visa/MC Networks (ATM/Bank Cards are ATM/POS only)
 - Transactions are authorized real-time, settlement for merchants is guaranteed and *typically* next day

Prepaid/Stored Value Cards

- Access devices to a stored balance
 - Similar to debit cards in nature, however the balance is not associated with a DDA or other FI account and does not need to be held by an FI



Card Participants and Flow



Card Payment Participants

- Card Holder
 - Individual who has been issued or authorized to use a credit or debit card
- Merchant
 - Entity that has agreed to accept a credit or debit card for the purchase of goods and services at its retail locations
- Issuer
 - Entity that issues a credit or debit card to the card holder
 - Issuing banks pay acquiring banks for purchases cardholders make. Cardholders must pay issuing bank under the terms of credit card agreement.

Card Payment Participants

- Acquirer
 - Registered member of card associations (Visa/MasterCard). Merchants contract with acquiring banks to create and maintain merchant accounts allowing business to accept credit and debit cards.
 - Most Acquirers associated with one Processor
 - Many merchants don't communicate directly with acquiring bank, as many contract through third party ISO's and MSP's to provide day to day activities.

Card Payment Participants

- Processor
 - Handles notifying Acquirer of transactions
 - Transmits transactions to Interchange Association
 - Most Acquirer's in the United States are associated with one processor
 - Largest processors in the U.S. First Data, National City Processing, Global Payment, Paymentech, TSYS.....to name a few.

Card Payment Participants

- Card Associations
 - Non Financial Institution
 - Do Not Issue Cards
 - Do Not Issue Merchant Accounts
 - Clearing house for respective card brand
 - Governing body of Financial Institutions, ISO's & MSP's, working together to support credit card processing.
 - Interchange fees, qualification guidelines, improvements to network and brands, arbiter between Visa and MC.

Card Payment Participants

- POS/ATM/Credit Card Network
 - Network which provides switching facilities for the routing of credit and debit card transactions between Acquirers and Issuers
 - Facilitates both the transmission of requests and transaction approval and denial messages between parties
 - Develop, establish, and promote a network brand
 - Settlement between Issuer and Acquirer accounts
 - Settle fees between Issuer and Acquirer
 - Develop and administer transaction processing and operating rules
 - Enforce compliance among participants

Card Payment Participants

- Virtual Gateway
 - Third Party Gateway accepts electronic payments over the internet and sends them directly to Processor.
 - Two types of companies:
 - Develop their own software
 - Use 3rd Party software
 - Key Entered, Recurring, Mobile, Website, Gift Loyalty, 3rd. Level Processing, Marketing, Optimization, Tokenization,

Key Attributes of a Card

The diagram illustrates the key attributes of a card, divided into two sections: the front of the card and the signature panel.

Front of the Card (Capital One MasterCard):

- EMV Chip:** Located in the top left corner.
- Valid Dates:** The expiration date, shown as 03/03-12/12/12.
- PAN:** The Primary Account Number, shown as 5412 7594 5678 9010.
- Cardholder Name:** The name of the cardholder, shown as LEE S CARDHOLDER.
- Card Brand:** The logo for the card brand, shown as MasterCard.

Signature Panel:

- Magnetic Stripe:** Located at the top of the panel.
- Signature Panel:** The area where the cardholder's signature is written, shown as John Doe.
- CID or CSC:** The Card Identification Number or Card Security Code, shown as 123.
- PIN Network Acceptance Marks:** Logos for INTERLINK and PLUS.
- Your Bank:** The logo for the issuing bank, shown as a star.

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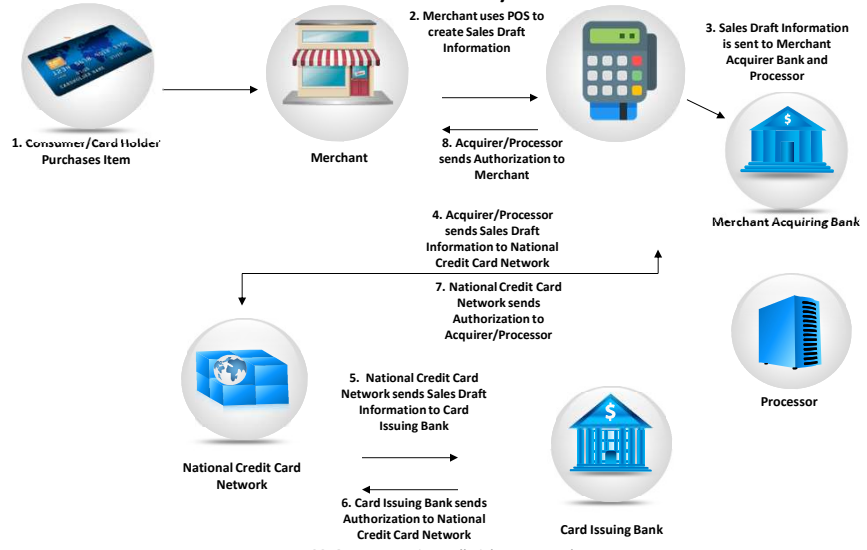
Offline vs. Online Debit at a Glance

Signature/Offline Debit vs. PIN/Online Debit

- **Signature/Offline Debit**
 - Batch settlement through capture
 - Transaction fees (interchange +) are higher
 - Subject to Visa/MasterCard rules
 - Debit cards must be branded Visa/MC
 - Eligible for charge-backs
 - MasterCard and Visa offer consumer protection through their zero liability program when processed through their network
- **PIN/Online Debit**
 - Immediate funds transfer
 - Flat transaction fees are more cost effective
 - Subject to ATM/EFT Network rules
 - Process both ATM only and most Visa/MC branded debit cards
 - Not subject to charge-backs
 - Customer liability for unauthorized use of online debit cards is addressed by the Federal EFT Act and Regulation E

SS2

Debit/Credit POS Transaction Cycle

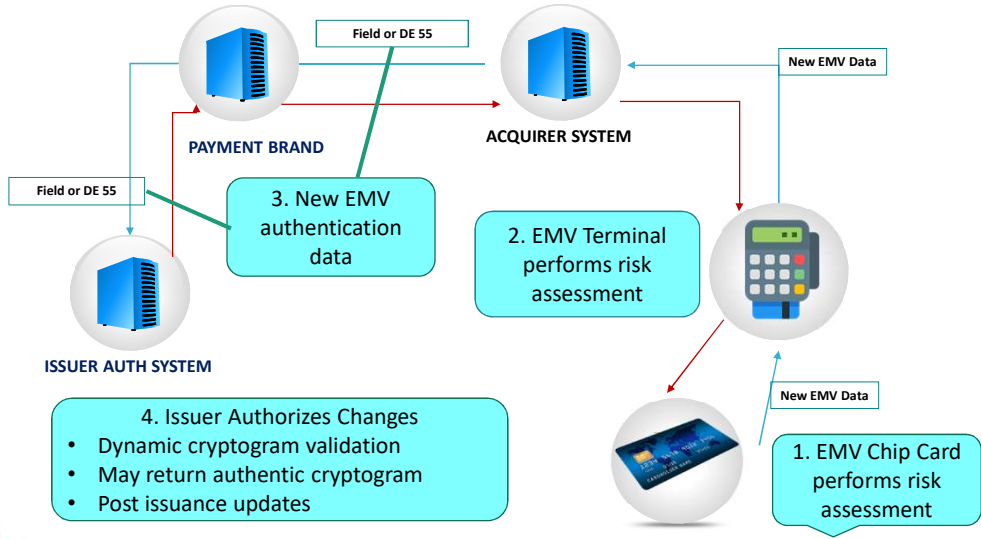


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SS3

EMV Transaction Framework



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Slide 29

- SS2** Jennifer has new graphic and something on EMV per NOTES section
Shelly Simpson, 1/19/2018

Slide 30

- SS3** See previous comment
Shelly Simpson, 1/19/2018

EMV Lost/Stolen CLS Chargebacks

- Offline PIN-preferring card, terminal only supports online PIN
 - AMEX: Issuer does not have lost/stolen chargeback right. Merchant must support PIN for protection.
 - Discover: U.S. merchants supporting chip/PIN must support online and offline PIN for protection.
 - MasterCard: Issuer may have lost/stolen chargeback right. Merchant must support online and offline PIN to help prevent the lost/stolen liability shift.
 - Visa: Visa does not have lost/stolen liability shift in the U.S. Issuer does not have lost/stolen CB right.

EMV Lost/Stolen CLS Chargebacks

- Offline or online PIN preferring card, terminal supports magnetic stripe and online PIN
 - Amex: Not Applicable as magnetic stripe PIN is not supported in the United States.
 - Discover: Lost/stolen liability shift doesn't apply if online PIN is present in transaction approved by issuer. Merchants must support chip transactions to avoid counterfeit liability shift.
 - MasterCard: If online PIN is approved, lost/stolen liability shift doesn't apply to Online PIN preferring cards. Lost/stolen liability may apply to transactions with offline PIN preferring chip cards. Other dispute rights may exist for counterfeit related fraud.
 - Visa: Visa does not have lost/stolen liability shift in the United States.

EMV Lost/Stolen CLS Chargebacks

- Online PIN-preferring card, terminal supports only offline PIN (chip)
 - Amex: Issuer does not have lost/stolen chargeback right. U.S. merchants must support PIN.
 - Discover: Issuer can issue lost/stolen chargeback. Merchant must support PIN offline and online.
 - MasterCard: Issuer may have potential lost/stolen liability chargeback right. Merchant must support PIN offline and online.
 - Visa: Visa does not have lost/stolen liability shift in the United States.

Card Legal Framework: Credit

- Regulation Z-Truth in Lending Act-
 - Required creditors to increase the amount of notice consumers receive before the rate on a credit card account is increased or a significant change is made to the account's terms
 - Allows consumers to reject such increases and changes by informing the creditor before the increase or change goes into effect
 - Rules regarding interest rate increases, over-the-limit transactions, and student cards
 - Addresses reasonableness and proportionality of penalty fees and charges and re-evaluation of rate increases
 - Amended by Credit Card Accountability, Responsibility, and Disclosure Act of 2009
 - Constitutes what is considered to be a prepaid or general-use card

Card Legal Framework: Credit

- EMV fraud liability shift-October 2015
 - Shifts the liability for fraudulent POS card present transactions to a merchant that does not have chip enabled readers
 - ATM liability shift
 - Mastercard-October 2016
 - VISA-October 2017
 - Fuel pump liability shift-pushed to October 2020

Card Network Specific Rules

- Each of the major card brands have their own specific set of rules that merchants and issuers
- These are not laws or regulations but rather private sector rules that are a condition of offering and accepting the specific card brand
- Rules include:
 - Honoring cards
 - Chargeback rights
 - Authorization
 - Advertising

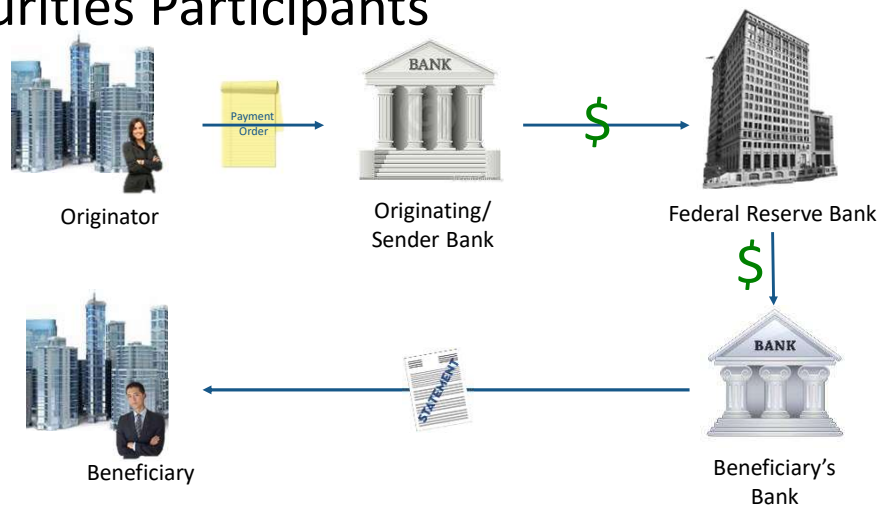
Card Legal Framework: Debit

- Regulation E
- Durbin and interchange (Regulation II)
- Card network specific rules-see previous slide

Fedwire® Funds and Securities

- Fedwire refers to services owned and operated by the Federal Reserve Banks
 - Fedwire Funds Service
 - Fedwire Securities Service

Fedwire Funds and Securities Participants



Fedwire Funds and Securities Participants

- **Originator**
 - Sender of the first payment order in a funds or securities transfer
- **Originating/Sender Bank**
 - Bank to which the payment order of the Originator is issued
 - Initiates the transfer

Fedwire Funds and Securities Participants

- Federal Reserve Bank
 - Entity that processes and settles Fedwire funds transfers and book-entry securities transfers at instruction of participants
- Beneficiary's Bank
 - Identified in a payment order to be credited pursuant to the order
- Beneficiary
 - Person/entity to be paid

Fedwire Funds Services

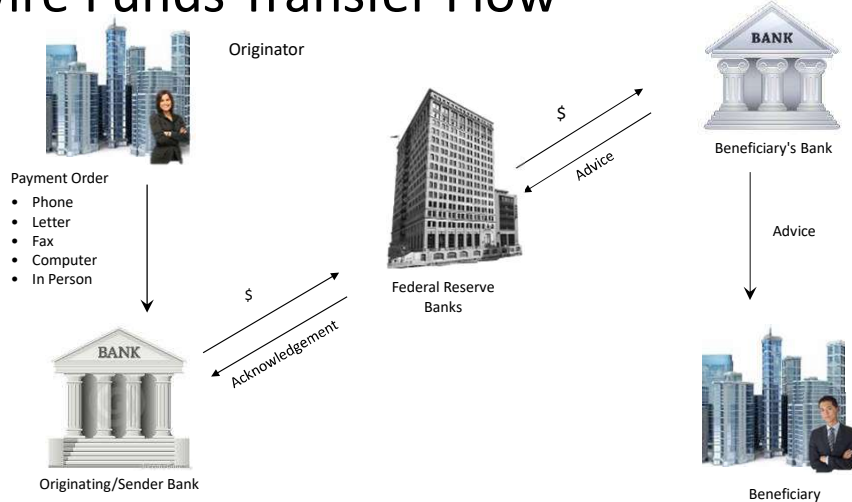
- Fedwire Funds Service
 - Real-time gross-settlement system that allows for the electronic transfer of funds
 - The Fedwire Funds Service is a credit/push system in which only the Originating/Sender Bank (an eligible Fedwire participant) can remove funds from its Federal Reserve Bank account

Fedwire Funds Transfers

- Processed transfer-by-transfer (one at a time)
 - Provides immediate finality and irrevocability of settlement once a transfer is processed by the Federal Reserve Banks
- Settled by adjusting the reserve/clearing balances of depository institutions held at the Federal Reserve Banks
- Inter-bank settlement of transactions (examples)
 - Federal funds purchases
 - Corporate payments
 - Other large value payments



Fedwire Funds Transfer Flow



Fedwire Funds Service Legal Framework

- Regulation E, Subpart B
 - Remittance Transfer Rule
- Regulation J, Subpart B
 - Funds Transfers through Fedwire
- Uniform Commercial Code (UCC) Article 4A
 - Wholesale Wire Transfers
- Federal Reserve Bank Operating Circulars
 - OC1 Opening, maintaining & terminating a master account with a Federal Reserve Bank
 - OC5 Electronic Access
 - OC6 Funds Transfers through Fedwire Funds Service

Fedwire Funds Service Legal Framework

- Regulation CC
 - Governs Funds Availability
- Bank Secrecy Act – 31 CFR 103
 - Recordkeeping Requirements/Travel Rule
- OFAC - Office of Foreign Assets Control
 - Administration & Enforcement of Economic & Trade Sanctions based on U.S. Foreign Policy

Fedwire Securities Service

- Fedwire Securities Service
 - Real-time, delivery vs. payment (DVP), gross-settlement system
 - Allows for the electronic issuance, transfer, and maintenance of securities issued by
 - U.S. Treasury
 - Federal Government Agencies
 - Government Sponsored Enterprise
 - Certain international organizations, along with the funds payments (if any) associated with the delivery of securities

Fedwire Securities Transfers

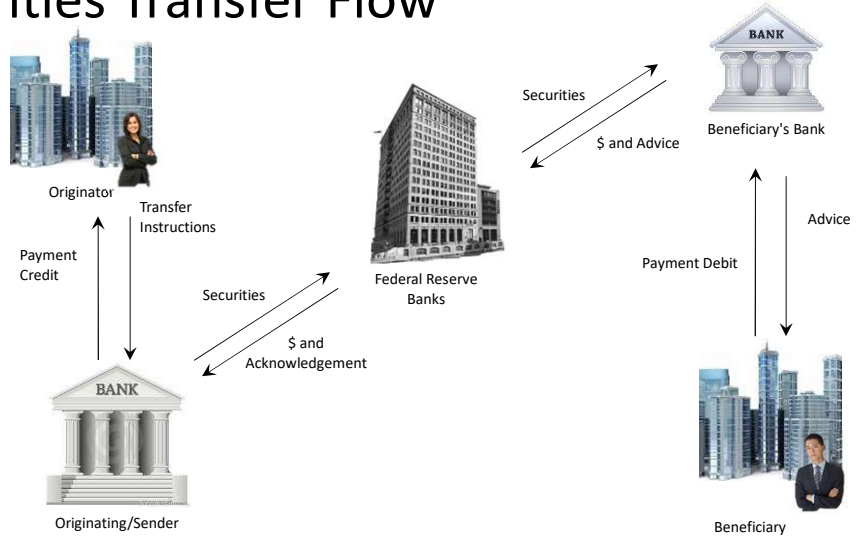
- Fedwire Securities provides a mechanism for the issuance, transfer, maintenance and safekeeping of Fedwire-eligible securities
- Securities are held and transferred in electronic form known as Book-Entry securities

Fedwire Securities Transfers

- Debit/pull system with regard to payments
 - Sender initiates the transfer
 - Automatically debits payment from the Beneficiary Bank's Federal Reserve Bank account



Securities Transfer Flow



American National Standards Institute (ANSI)

- A non-profit group that develops cross-industry national standards
- Special committees within ANSI focus on standards for bank cards and financial communications
- ANSI Accredited Standards Committee (ASC) X12 develops format requirements and data specifications for the different EDI standards used by corporate/business Originators and their financial institutions

American National Standards Institute (ANSI)

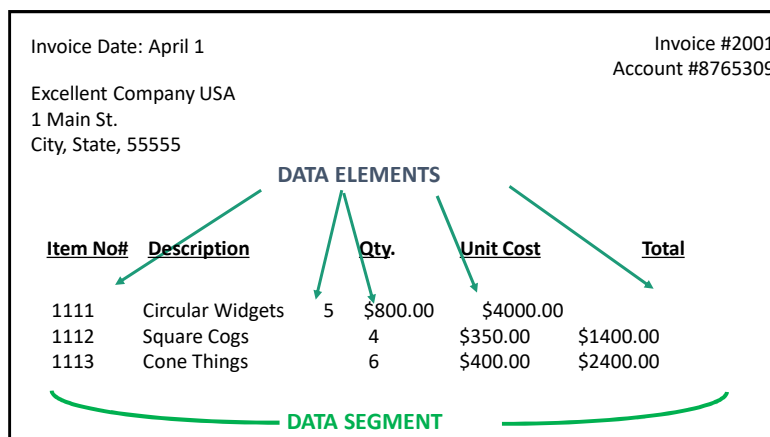
- Most common standard is ASC X12 820 Transaction Set
- Transaction sets used for EDI
 - ASC X12 820 Payment Order/Remittance Advice
 - ASC X12 835 Health Care Claim Payment/Advice
 - ASC X12 813 Electronic Filing of Tax Return Data
 - ASC X12 823 Used for Processing Lockbox Payments
 - ASC X12 521 Income or Asset Offset
 - ASC X12 103 Abandoned Property Filing
 - UN/EDIFACT International EDI Standards

American National Standards Institute (ANSI)

- A data element is the smallest unit of information in a standard
 - NACHA Standard
 - Delimiter * (asterisk)
 - Separation of elements
- A data segment consists of logically-related data elements in a defined sequence
 - NACHA Standard
 - Terminator \ (backslash) or ~ (tilde)
 - End of segment



ASC X12 Terminology



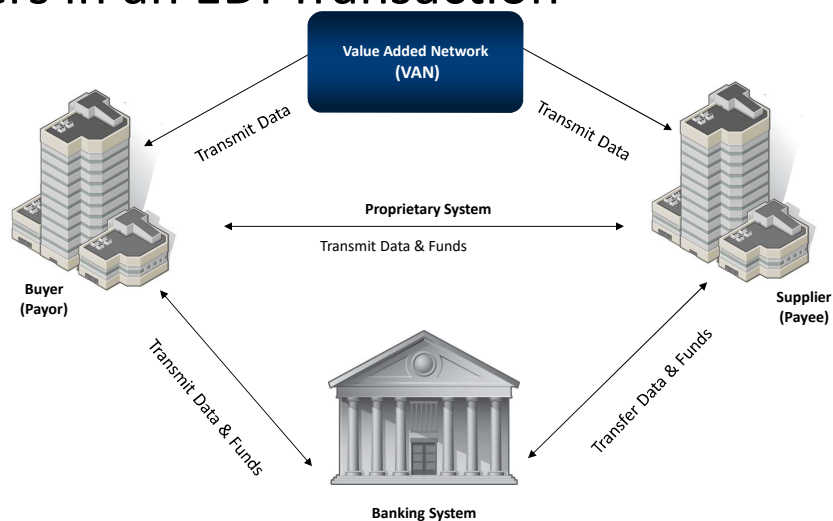
TRANSACTION SET



Electronic Data Interchange (EDI)

- EDI
 - The electronic transmission of information related to payments, invoices, and other business functions
- Electronic means the exchange of data from one computer to another and does not include fax or e-mail transmissions
- EDI capable is a term used to describe the receiving financial institution's ability to process and report remittance information that accompanies payments

Players in an EDI Transaction



Financial EDI

- Electronic exchange of payments, payment information or financially related documents in standard formats between business partners
- ACH Network supports Financial EDI applications for Non-Consumer payments with the CCD and CTX Standard Entry Class Codes

Financial EDI

- CTX Entries accommodate ANSI ASC X12 Transaction Sets that contain a BPR or BPS data segment, used to
 - Indicate the beginning of a Payment Order/Remittance Advice Transaction Set and total payment amount, or
 - Enable related transfer of funds and/or information from Payor to Payee to occur

Financial EDI

- CTX Entries also can accommodate remittance information formatted in UN/EDIFACT syntax
- Financial EDI is used by the Federal Government's Vendor Express Program and businesses of all sizes
- Some financial institutions and corporations choose to Transmit data via a Value-Added Network (VAN), a telecommunications intermediary

Financial EDI Applications

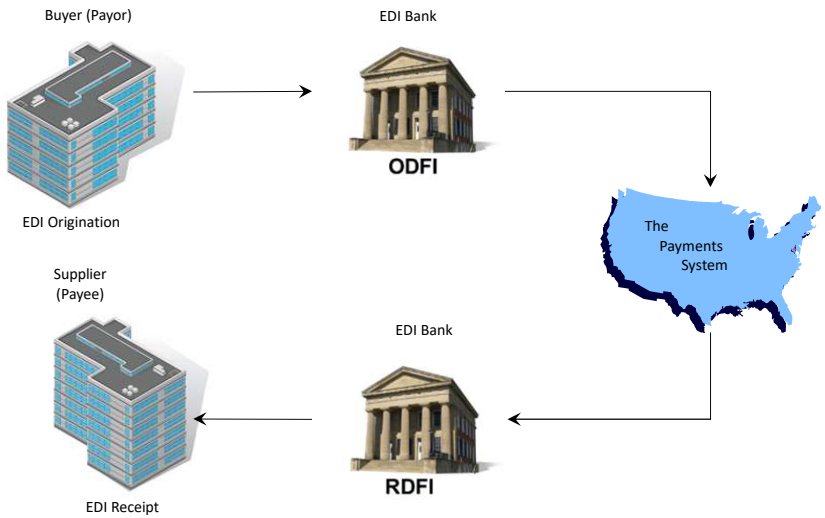
- Vendor Express
- State/Federal Tax Payments
- Child Support
- Health Care
- Dealer Drafting

Financial EDI Benefits

- Cost effective
- Incorporates payment into “computer-processable” business document cycle
- Allows use of “just-in-time” manufacturing
- Reduces operating costs - no re-keying of remittance data
- Facilitates reconciliation process
- Allows better payment timing



Financial EDI Payment Flow



American National Standards Institute (ANSI ASC X9)

- Another Committee within ANSI is the Accredited Standards Committee (ASC) X9, developed to establish and maintain the guidelines and standards for the financial industry
 - Check standards
 - Data security
 - Personal Identification Requirements (PIN) used with MTE, POS or SHR Entries

What is ISO?

- The International Standards Organization
- The U.S. is a member and contributor through the Accredited Standards Committee (ASC) X9

What is ISO 20022?

- A harmonized set of XML messaging standards across major financial services domains –
- For all payments types, including ACH payments
- Based on a shared data dictionary and business process model
- Freely available to all members of the financial services community

Electronic Billing & Payment

- Electronic presentation of statements, bills, invoices, and related information sent by a company to its customers, and corresponding payment for goods or services
 - Billing and payment process for consumers, or business to consumer (B2C) applications
 - Invoicing and payment process between businesses, or (B2B) applications
 - Internet provides billing companies and their customers with additional methods to deliver and access billing information


Electronic Billing & Payment

- Main consumer payment models
 - Biller Direct
 - Consumer visits multiple biller websites to view a single bill and make a single payment at each site
 - Consolidator
 - Consumer visits a single website to view multiple bills and make multiple payments

Electronic Benefits Transfer (EBT)

- A means of disbursing government benefits electronically
- EBT allows recipients to access their benefits through ATMs and POS terminals
- Rules that form the foundation of nationwide EBT are the Quest Operating Rules®
 - Quest Operating Rules specify the responsibilities and obligations of participants involved in EBT transactions


EMERGING & ALTERNATIVE PAYMENT



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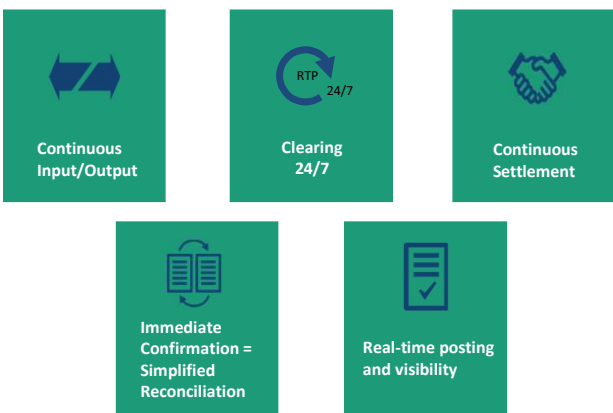
Real-Time Payments



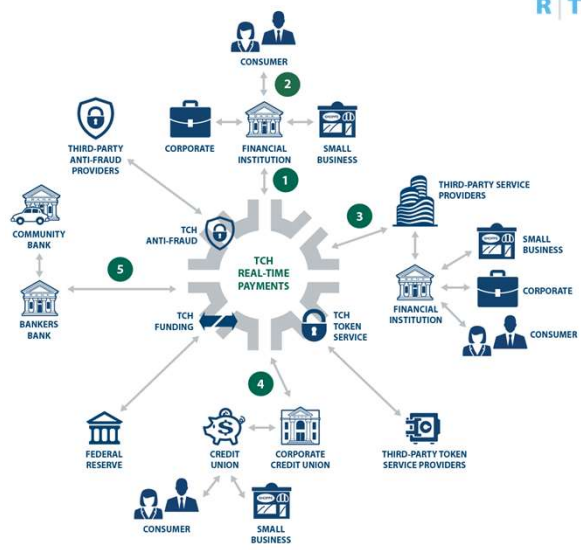
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Real-time Payments (RTP) is faster and smarter



RTP Ecosystem



Emerging Payment Systems

- Open Loop versus Closed Loop Payment Systems
 - Open Loop Network – An open loop network is a multi-party network that connects two financial institutions, the issuing financial institution (issuer/cardholders bank) and the acquiring financial institution (acquirer/merchants bank) and manages the flow of value between the two FI's
 - Visa and Mastercard are an example of an Open Loop Network

Emerging Payment Systems

- Open Loop versus Closed Loop Payment Systems
 - Closed Loop Network – A closed loop network provides payment services directly to merchants and cardholders by the owner of the network without involving third-party financial institutions as intermediaries
 - American Express and Discover Card are two examples of a Closed Loop Network

Emerging & Alternative Payments

- Open Loop
 - Apple Pay
 - Android Pay
 - Venmo
 - Zelle

Emerging & Alternative Payments

- Closed Loop
 - Dwolla
 - American Express
 - Discover

Emerging & Alternative Payments

- Other Options
 - Distributed Ledger Technology
 - Blockchain
 - Hawala
 - Wearable Devices



Questions?



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