The State of Play in U.S. Faster Payments

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FPC Network Committee

The State of Play in U.S. Faster Payments – A Network Perspective

- Introduction
- The State of Play in U.S. Faster Payments – Use Cases
- Understanding Faster Payment Networks
- Update on U.S. Faster Payment Networks

The State of Play in U.S. Faster Payments – A Network Perspective

Consumers and businesses in the United States have a choice of networks that provide faster payments. These networks have different characteristics, which have implications for the variety of use cases faster payments enables. This range of features allows financial institutions and payment service providers to choose the networks that best meet their needs. Providers of payment services often use multiple networks to extend the capabilities of their offerings. The choice among networks provides a rich platform for innovative solutions that no single network can offer.

This report provides an update on the market for instant and immediate payment services in the United States, focusing on the underlying payment networks. For this report, we have defined a payment network as a network that connects financial institutions for the purpose of making funds transfers. A network in which the transmission of the payment message and the availability of final funds to the payee occur in real-time or near real-time on as near to a 24-hour and seven-day (24/7) basis as possible is considered to be either instant or immediate, depending upon the settlement mechanism. We will also include both core clearing and settlement networks and value-added networks or overlays built on top of core payments infrastructure.

The profiles included in this report are provided by networks represented in the U.S. Faster Payments Council. We believe these networks offer a broad profile of faster payment options in the United States.

Real-Time, Instant and Faster Payments.

Where are they same and where are they different?

Applicable to all Real-Time, Instant, Faster time payments. Based on the Bank for International Settlements, Committee on Payments and Market Infrastructures, a "fast payment" is one in which the transmission of the payment message and **the availability of final funds to the payee occur in real time** or near-real time ("immediate") **and on as near to a (24/7) basis as possible*** This definition is broadly applicable to include both card and account-based offerings currently in the U.S.

While we often center the conversation around account based Faster Payments, there are other varieties of Faster Payments to consider.

Account Based	Card Based	Digital Money
• Account-to-account tied to all FI accounts • FI owns authentication and authorization • Irrevocable transactions • Intraday/immediate settlement (immediate settlement is referred to as an "instant" payment) • Rich data via ISO 20022	• Leverages existing card credentials • Domestic ubiquity and global reach • Utilizes existing infrastructure	• Fiat (e.g., USD-based) or Non-fiat (e.g., non-national currency, crypto, etc.). • Wallet-to-Wallet (May be open or closed loop; may leverage an array of technology platforms, e.g., Venmo, Cash App, blockchain) • Digital Bearer Instruments
Example	**Example**	**Example**
TCH RTP, FedNow, Zelle	Visa Direct, Mastercard Send	Fiat: CBDC, Stable Coin Non-fiat: Bitcoin, Ethereum

Faster Payments are Enabling a Variety of Use Cases

P2P/C2B

- Paying neighbors for consolidated grocery store trips & errands
- Transfers to friends & family who have lost jobs*
- Private landlords collecting rent without visiting tenants*
- Cross-border remittances to family locked down in other countries*
- Individuals paying for services to SMBs (e.g. plumber)
- Bill payments**

B2B

- Payments to expedite shipments – to suppliers, trucking firms, drivers
- Mortgage closings without exchanging checks

A2A

- Expedited merchant settlement to improve cash flow*
- Transfers to move CARES Act Economic Impact Payments between accounts*

Disbursements

- Payroll Protection Plan loan disbursements*
- Instant insurance claim payments
- Payouts to sellers on marketplaces

Wages

- Gig workers paid on demand
- "Touchless" tips to employees handling curbside pickup*
- Expedited payroll
- Cashless payments to individuals providing home services*

US Faster Payments Council

U.S. Consumers and Businesses Have a Choice of Faster Payment Networks

These networks have different characteristics, which have implications for the variety of use cases that faster payments enable.

Routing Mechanisms
- Account number and routing number
- Card number
- Social alias (phone number, email address)

User Experience
- Network defines user experience and use cases
- Network sets baseline, providers design user experience and use case specific features

Value Added Services
- Directories
- Payment request
- Remittance data
- Anti-fraud and compliance
- Account validation
- FX or cross-border payments

Cross Border Payments Migrating to Instant Payments

A cross-border faster payment is where a sender and receiver in different countries can transact seamlessly in real time through their respective domestic payment networks. A primary goal of current cross-border efforts is to approach the customer experience of domestic payments.

There is a growing emphasis on cross-border payments as a goal of global public policy. In 2020 The Bank for International Settlement's Committee on Payments and Market Infrastructures (CPMI) issued a report outlining 19 building blocks to improve cross-border payments. The Financial Stability Board (FSB) has launched an effort to create a G20 Roadmap for Enhancing Cross-Border Payments.

Benefits to business & consumers from the new functionality:

- Consistent access to remittance data for businesses reconciliation
- Accelerated funds availability and greater certainty on final amount to recipient
- Opportunity for increased efficiency and more competition
- More options to both send and receive cross border payments

Functional Characteristics of Cross Border RTP:

- Data standards (may vary by payment type and sending and receiving country file formats)
- Transaction Submission (Moving to API, but still may be batch file or ISO)
- Posting and Settlement times (may vary by mechanism with availability in real-time, same day, or next day)
- Data availability (posting time, cost to beneficiary, payment status, etc.)
- Reach (payments posted to bank accounts, mobile wallets, cash out agents, push to card)

For more information regarding Cross Border payments, you can reach out to the following Faster Payments Council partners:

- Federal Reserve
- Junifunds® Network
- Mastercard Send
- Open Payment Network
- RTP® Network
- Visa Direct

Understanding Faster Payment Networks

Faster payment networks offer a broad range of features. Users and payment service providers can choose the networks that provide the functionality they need for the use cases and user experience they need. These distinctive characteristics help users understand the faster payment network options available in the United States. Defining characteristics of faster payment networks include:

- **Credits and debits** – Does the network support credit transfers, debits, or both?
- **Speed** – How fast are payments cleared, and how soon are funds available to the payee?
- **Settlement** – How are payments settled (e.g., deferred net settlement, real-time gross settlement) and how soon after initiation?
- **Payment finality** – Can payments be revoked, reversed or returned, for what reasons, and for how long after initiation?
- **Payment confirmation**— Does the network provide confirmation of payment to payers, to payees, and when? Is it provided?
- **Additional message functionality** – What non-payment messages (e.g., request for payment, account verification) and extended data capabilities does the network provide?
- **Payment routing** – How are payments routed over the network (account number and routing number, card number, social alias, token, etc.)?
- **Directories** – Does the network use a directory of recipients to support network routing or risk management? And if so, how?
- **Links to other networks** – Does the network use other networks to clear or settle transactions, to expand its reach, or for other purposes?
- **User experience** – What elements of the user experience does the network control through rules, technical specifications, user interface requirements, etc.?
- **Fraud and risk controls** – Does the network have built-in compliance and other anti-money laundering checks?
- **Rules** – Does the payment network have defined rules to support each use case, channel, and customer type?

Network Characteristics

Network Characteristics – At a Glance

Network	Accel	ExcheQ	FedNow^{SM}	Junifunds®	Mastercard Send	Open Payment Network OPN®
Fraud and Risk Controls	See detailed network characteristics	See detailed network characteristics	See detailed network characteristics	See detailed network characteristics	See detailed network characteristics	Limits, authorized transfers, etc. See detailed network characteristics for more information.
Credits and Debits	Credits and debits	Credit transfers	Credit transfers	Credit transfers	Credits and debits	Credit transfers, pre-authorized payments
Payment Routing	Card credentials (primary account number)	Routing number and account number	Routing number and account number	Routing number and account number	Card credentials (primary account number)	Routing number and account number, social alias (email etc.)
Speed	Typically, seconds; otherwise within 5-minutes.	Same or next business day	Within seconds	Typically, seconds up to 30 minutes	Typically, seconds up to 30 minutes	Immediate
Settlement	Deferred net or gross settlement / single-point settlement	ACH	Real-time gross settlement	Real-time gross settlement	The acquirer is responsible for settlement	Immediate
Payment Finality	Immediate, irrevocable	Per ACH rules	Immediate, irrevocable	Immediate, irrevocable	Immediate, irrevocable	Immediate, irrevocable

Network Characteristics – At a Glance

Network	RTP® Network	SHAZAM	STAR	Visa Direct	Zelle®
Fraud and Risk Controls	See detailed network characteristics	See detailed network characteristics	See detailed network characteristics	See detailed network characteristics	See detailed network characteristics
Credits and Debits	Credit transfers	Credit transfers	Credits and debits	Credits and debits	Credit transfers
Payment Routing	Routing number and account number, account tokens (Q1 2022)	Card credentials (primary account number) or routing number and account number	Card credentials (primary account number)	Card credentials (primary account number) or routing number and account number	Social aliases (e.g., email or phone number)
Speed	Average 2-3 seconds, up to 15 seconds	Funds availability to receiving entity within seconds, 24 X 7	Typically, availability within seconds	Typically, seconds up to 30 minutes	Typically, within seconds when the recipient is already enrolled
Settlement	Real-time gross settlement	Real-time gross settlement and net deferred settlement options	Deferred net settlement; with FLEX Settlement options	Deferred net settlement	ACH, Visa Direct and Mastercard Send, and RTP
Payment Finality	Immediate, irrevocable	Immediate, irrevocable	Immediate, irrevocable	Immediate, irrevocable	Immediate, irrevocable

Network Characteristics – At a Glance

Network	Accel	ExcheQ	FedNow^{SM}	Junifunds®	Mastercard Send	Open Payment Network OPN®
Payment Confirmation	Within seconds for the sender and receiver	Typically, within seconds for sender and receiver	Within seconds for sender and receiver	Within seconds for sender and receiver	Synchronous response with status	Occurring immediately with initiation and receipt
Additional Messaging Functionality	Eligibility check, transaction amounts, & velocity limits	Routing number lookup and validation	Request for payment and other non-payment messages	Link to external documents	Eligibility check; transaction limits and thresholds	Full API with support for multiple message formats and program interfaces
Directories	N/A	User-defined with in-app stored routing and account data capabilities	N/A	N/A	N/A	Integrated and updated in real time with context-sensitive security and interoperable with other directories (e.g., social media, contacts, routing, and account number, etc.)
Cross Border Payments	N/A	N/A	N/A	Available through Global Payment Gateways	Send money to eligible Mastercard cards in 65 countries	N/A

Network Characteristics – At a Glance

Network	RTP® Network	SHAZAM	Star	Visa Direct	Zelle®
Payment Confirmation	Within seconds for sender and receiver	Available immediately upon initiation or receipt	Within seconds for the sender and receiver	Pre-transaction	Typically, within seconds for the sender and receiver
Additional Messaging Functionality	Request for payment and other non-payment messages	Eligibility checking, transaction limits, daily dollar limits, routing decisioning, email notifications for requests for return of funds and fraud alerts	Eligibility check, transaction amounts, & velocity limits	Dynamic controls including transaction limits and velocity limits	Request, unregistered notifications, alerts, and reminders
Directories	N/A	N/A	N/A	Domestic and Cross Border alias services	Social alias directory
Cross Border Payments	TCH, EBA CLEARING and SWIFT are developing IXB, a platform to link real-time payment systems to support cross-border immediate payments 24/7	N/A	N/A	Send money to 175 combined (card and account) countries	N/A

Network Profiles

Network Profile – Accel® Money Transfer

- Accel delivers! With 40+ years of experience delivering real-time payments, including 10+ years of money transfers with instant access to funds

- Accel brings together millions of consumers & businesses through thousands of financial institutions and money transfer service providers

- Consumers & businesses expect to send funds & be able to receive funds with immediate access

- The Network and processing streams provide an expansive array of real-time risk tools, providing multi-layers of fraud fighting capabilities considering all transactions sent to the network using debit card credentials

- **Top tier network with customers / participants nationwide**

- **Real-time funds access**

- **Strong risk / security tools**

Network Profile – Accel® Money Transfer

Features

- Existing technology, supported by Accel processors for many years
- Accel provides the transaction set and technical guide, rules, and network infrastructure
- Accel Member responsible for integrating "instant availability" within their services
- Money transfer transaction set fully integrated into the FI's back-office, allowing for streamlined operational procedures & support
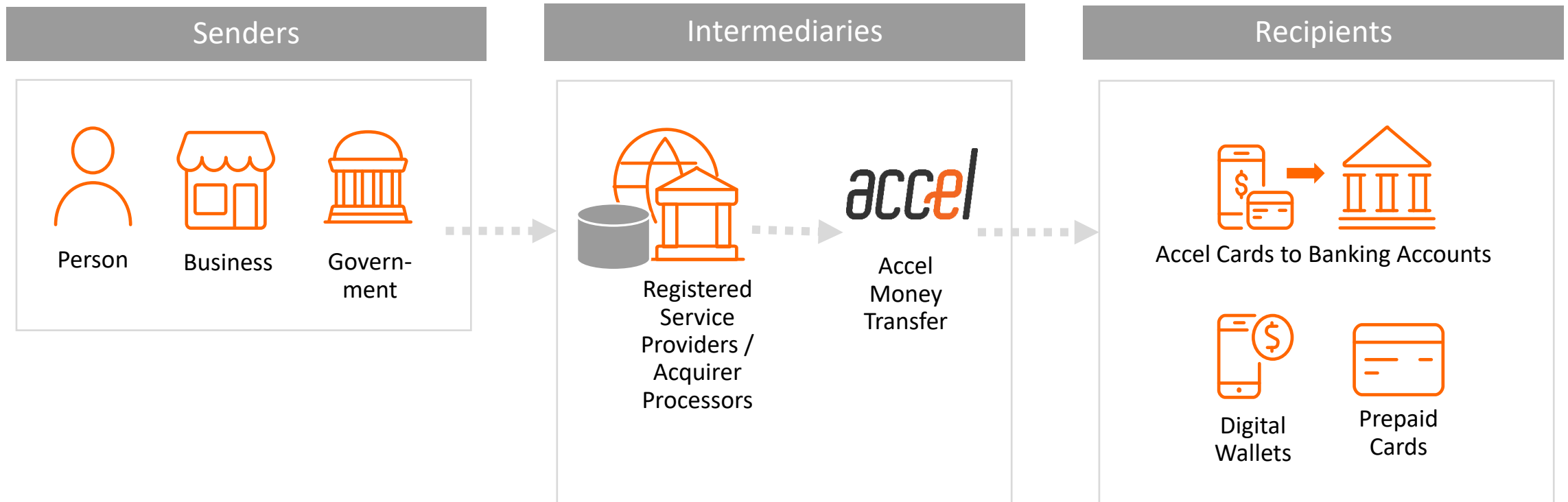
Authentication and Security

- Licensed service providers must authenticate customer, including KYC, CIP, and assignment of authentication tokens – be reasonably certain that the customer is authorized to transact on the account
- Network and processors provide numerous authentication methods & risk tools

Regulatory Compliance

- Accel Network Operating Rules, all applicable federal & state laws, additional industry standards requirements
- Network reserves the right to review and approve method of authentication and consumer experience flows

# Network Profile – Accel® Money Transfer

Senders
- Person
- Business
- Govern-ment

Intermediaries
- Registered Service Providers / Acquirer Processors
- Accel Money Transfer

Recipients
- Accel Cards to Banking Accounts
- Digital Wallets
- Prepaid Cards

Network Profile – Accel® Money Transfer

Feature	Description
Overview	Owned and operated by Fiserv, Accel provides the link between financial institutions and money transfer service providers that enable consumers and businesses to easily pay and receive funds from others. Funds are available directly in bank accounts within minutes when the recipient is already enrolled with the Service Provider.
User Experience	Accel provides the rails and rules for money transfers and disbursements including A2A, P2P, B2C and G2C. Service Providers control the user experience of the Sender and the Network manages the user experience of the Recipient. Using debit cards with deeply-rooted risk tools evolved by the network and participants over many years, provides better smarter decisioning and achieves user expectations.
Access and Distribution Model	U.S. financial institutions may join the Accel Network. Eligible Network Members may sponsor money transfer service providers for participation in the Network. Network rules and guidelines level-set requirements for all participants. Entities considered money transmitters by the Financial Crimes Enforcement Network (FinCEN) must maintain current state licenses as required.
Recent Development and Initiatives	Accel recently made deep investments to provide an additional risk tool that utilizes ML and AI, and enables card members greater security in making real-time authorization decisions.
Statistics	Accel enables secure, real-time money transfers to and from millions of bank accounts using debit card credentials, initiating settlement for billions of dollars.

Network Profile – ExcheQ

ExcheQ is a faster payment service designed for financial institutions of any size with a particular emphasis on smaller financial institutions.

- ExcheQ uses a mobile app over a cloud-based infrastructure, customizable for individual banks.
- It uses existing mobile, encryption, and user technology to keep barriers to entry and costs low.
- The ACH network makes sending and receiving ExcheQ payments easy for any institution, business, or consumer in the U.S.
- The core agnostic design allows for fast deployment by any licensing FI.
- Settlement occurs according to ACH processing windows – same or next business day.
- Recipients of ExcheQ payments are required only to direct the payment – no registration, signup, or download required.
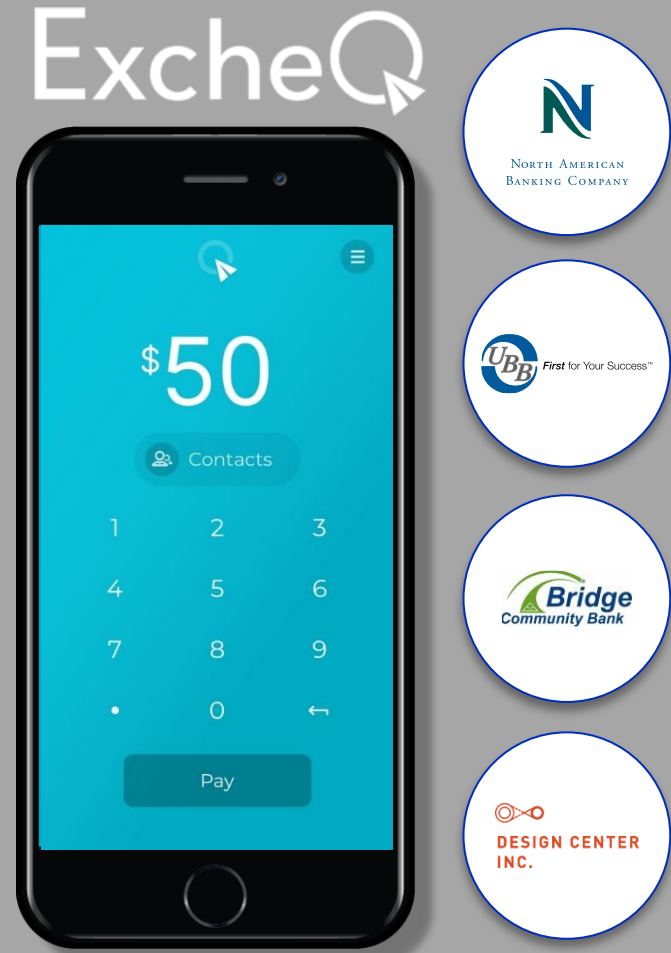
Network Profile – ExcheQ

How it works

1. A user initiates a payment
2. The ExcheQ infrastructure notifies the recipient
3. The recipient securely directs the payment to a routing and account number
4. ExcheQ configures and forwards the payment to the user's financial institution
5. The payment enters the ACH network for standard transmittal and settlement
6. Both user and recipient are notified instantly
7. Origination and settlement are FI to FI, maintaining full regulatory protection, compliance, and insurance at all times
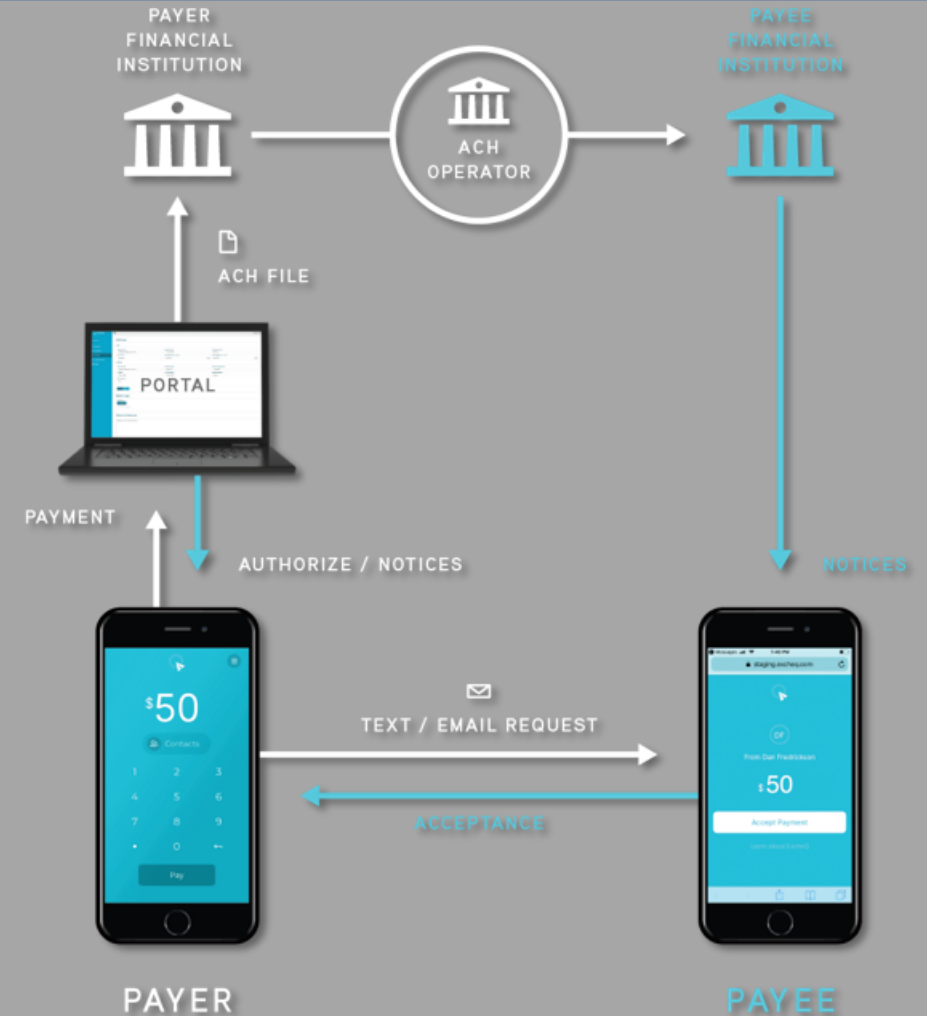
Network Profile – ExcheQ

Feature	Description
Overview	Operated by ExcheQ LLC, ExcheQ is a P2P, C2B, B2C payment application that enables users to easily pay any recipient with a valid U.S. bank account. Funds move via the ACH network and are available same or next business day.
User Experience	ExcheQ user experience is governed by licensing financial institutions' mobile and online banking policies that specify rules for end-user eligibility, payment velocity and limits, funds availability and payment notification.
Links to Other Networks	Transactions initiated via ExcheQ settle over the ACH network.
Access and Distribution Model	U.S. financial institutions are eligible to license ExcheQ directly from ExcheQ LLC or through a designated reseller.
Recent Development and Initiatives	ExcheQ is currently developing interfaces to the RTP and FedNow faster payment networks to provide alternate settlement options for licensed financial institutions and users.
Statistics	Over 3200 ExcheQ payments representing $5.1 million dollars were completed in Q4 2020 and Q1-3 2021 by licensed financial institution users.

Network Profile – FedNow^{SM} Service

The FedNow Service is being developed by the Federal Reserve to enable financial institutions of every size, and in every community across America, to provide safe and efficient instant payment services around the clock, 365 days a year. The target release date of the service is 2023.

The FedNow Service will provide core clearing and settlement capabilities to support a range of transaction types and use cases. Developed with industry input, the service is being designed to advance the Fed's public mission.
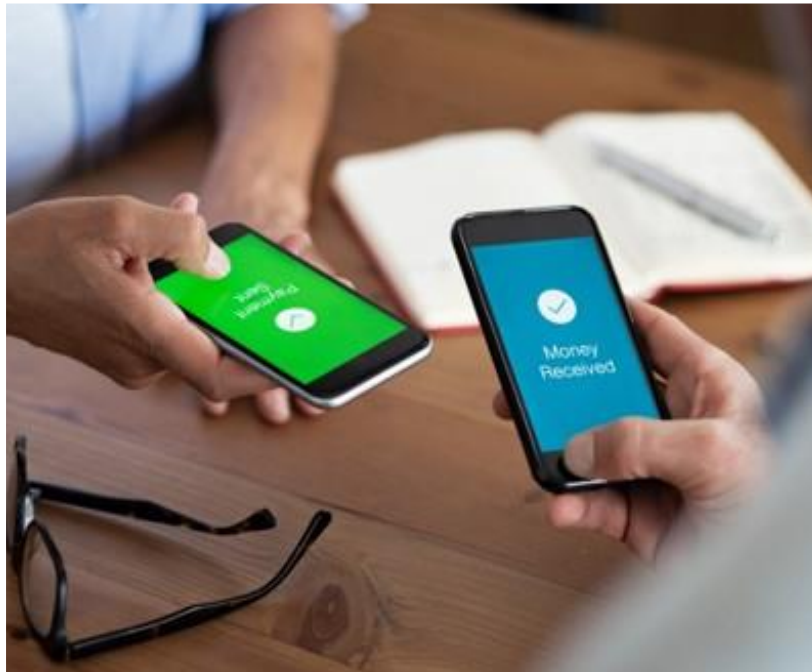
Accessibility

Safety

Efficiency

Network Profile – FedNow^{SM} Service

The Federal Reserve's broad reach, encompassing connections and service relationships with more than 10,000 financial institutions, supports a nationwide infrastructure for instant payments.


- Use of the **ISO 20022 standard** will facilitate industry interoperability.

- **Request-for-payment** capability enables bill payment and other key use cases.

- A broad range of **message types and reports** support payment inquiries, reconcilement, certain exceptions, and returns.

- Tools, including **transaction value limits and reporting features**, help combat fraud, and support payment integrity.

- A **liquidity management** transfer feature allows the transfer.

Network Profile – FedNow^{SM} Service

The figure below illustrates a completed payment over the FedNow Service in its simplest form. This process is designed to take place within seconds.
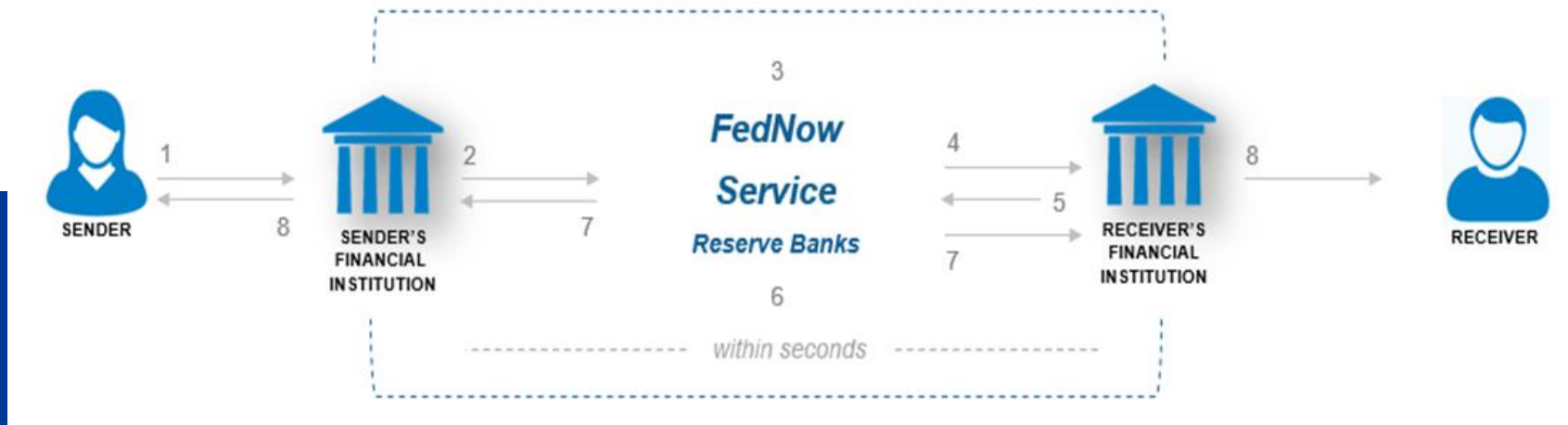
1. Sender initiates payment.
2. Sender's financial institution submits payment message to FedNow Service.
3. FedNow Service validates payment message.
4. FedNow Service sends contents of the payment message to receiver's financial institution.
5. Receiver's institution confirms that it intends to accept the payment message.
6. FedNow Service debits and credits the designated master accounts of the sender's and receiver's institutions.
7. FedNow Service sends a payment message to the receiver's institution with an advice of credit and an acknowledgement of settlement to the sender's institution.
8. Sender's and receiver's accounts are debited and credited, respectively, outside the service.

Network Profile – FedNow^{SM} Service

Feature	Description
Recent Development and Initiatives	• March 31, 2021 marked a major milestone in the development of the FedNow Service with the release of the FedNow ISO 20022 messaging specifications. The specs were developed in collaboration with the FedNow Community and other industry stakeholders. • The FedNow Pilot Program, which kicked off in Q1 2021 with more than 110 organizations from the industry, is helping to shape and refine the features and functionality of the FedNow Service. Currently in an advisory phase, pilot participants will ultimately engage with testing and implementation of the service. • On January 27, 2022, the Federal Reserve announced the pricing approach for the service as well as the planned credit transfer transaction value limit
Access and Distribution Model	The FedNow Service will be broadly available to all depository institutions in the United States, provided they are eligible to hold accounts at the Federal Reserve Banks under applicable federal statutes and Federal Reserve rules, policies, and procedures. Financial institutions will connect to the service using the FedLine® Access Solution. Participants will be able to designate a service provider or agent to submit or receive payment instructions on their behalf and may choose to settle payments in the account of a correspondent. Merchants, consumers, or non-bank payment service providers can access the service through depository institutions as they do with other Federal Reserve payment services.
Additional Information	The FedNow Community is composed of industry leaders with expertise across the payments ecosystem who help inform and evolve the development of the FedNow Service. There are currently more than 700 FedNow Community members. The latest service information, along with instant payments educational materials, is available at FedNow.org along with instant payments education materials including FedNow Explorer website is available.

Network Profile – Junifunds® Network

JUNIPER PAYMENTS

Over 3,000 financial institutions use the Juniper Network.

Outsourcing and automating wires, ACH, faster payments, check, real-time ledger, and international for correspondents, financial institutions, banks, and corporates.

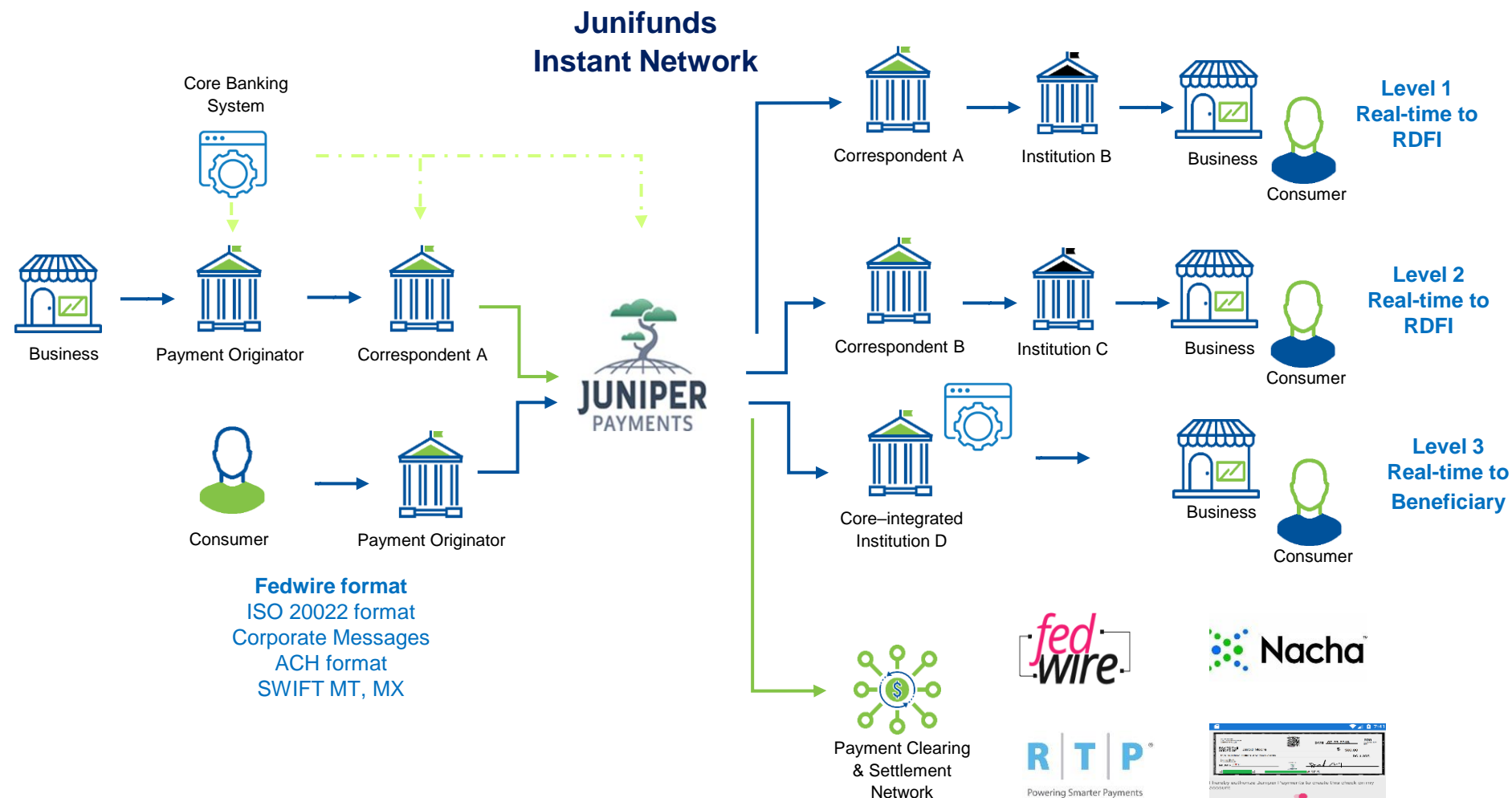U.S. $3 billion transacted daily on Juniper, Federal Reserve, and networks worldwide.

Audited by the Federal Reserve, the OCC, NCUA, and FDIC.

MEMBER
US Faster Payments Council

OPENBANKINGU.S.A.COM

Nacha™
Affiliate Program

Network Profile – Junifunds® Network

Junifunds Instant Network

Core Banking System

Business → Payment Originator → Correspondent A → JUNIPER PAYMENTS

Consumer → Payment Originator

Fedwire format
ISO 20022 format
Corporate Messages
ACH format
SWIFT MT, MX

Correspondent A → Institution B → Business / Consumer — **Level 1 Real-time to RDFI**

Correspondent B → Institution C → Business / Consumer — **Level 2 Real-time to RDFI**

Core–integrated Institution D → Business / Consumer — **Level 3 Real-time to Beneficiary**

Payment Clearing & Settlement Network

fedwire   Nacha

RTP Powering Smarter Payments

Processing 24x7 and Settled in real-time

Network Profile – Junifunds® Network

Feature	Description
Overview	Operated by Juniper Payments. The Junifunds network is an immediate message transfer, clearing, and settlement network for U.S. financial institutions. The system has 3 levels. • Level 1: transfer where clearing financial institutions have same correspondent. • Level 2: transfer where clearing financial institutions may be using different correspondents for settlement, but both are part of the Junifunds network. • Level 3: transfer where the financial institution is part of Junifunds network and beneficiary will receive the transaction in under 30 seconds.
User Experience	Junifunds network rules define requirements for end-user funds availability, cost of receipt, timeliness of payment notification, and finality of payment. Other aspects of user experience such as user interface are determined by the participating financial institution or payment service provider.
Links to Other Networks	Junifunds is working on interconnection with foreign ACH and central banks to facilitate efficient global payments.
Access and Distribution Model	Any U.S. depository financial institution is eligible to participate in the network. All financial institutions on the network are full participants. Financial institutions can connect directly to the network or can use an approved third-party financial institution sponsor.
Recent Development and Initiatives	The Junifunds network Level 1 and Level 3 are currently available in pilot mode. Level 2 is expected to go live in 2023.

Network Profile – Mastercard Send

People and businesses expect quick, convenient, and secure payments to enable their increasingly fast-paced digital lives.

Speed
- Consumers want to be able to pay and be paid instantly.
- Businesses increasingly recognize value of disbursing funds in near real time.

Convenience
- Consumers expect an intuitive, seamless payments experience.
- Businesses want to offer their consumers the easiest, most convenient way to receive disbursements.

Choice
- Consumers want to choose how they send and receive funds.
- Businesses want the flexibility to disburse funds across multiple channels.

Security
- Consumers and businesses expect their data and their money to be protected at all times.

*Actual posting times for approved transactions will depend on the receiving financial institution.
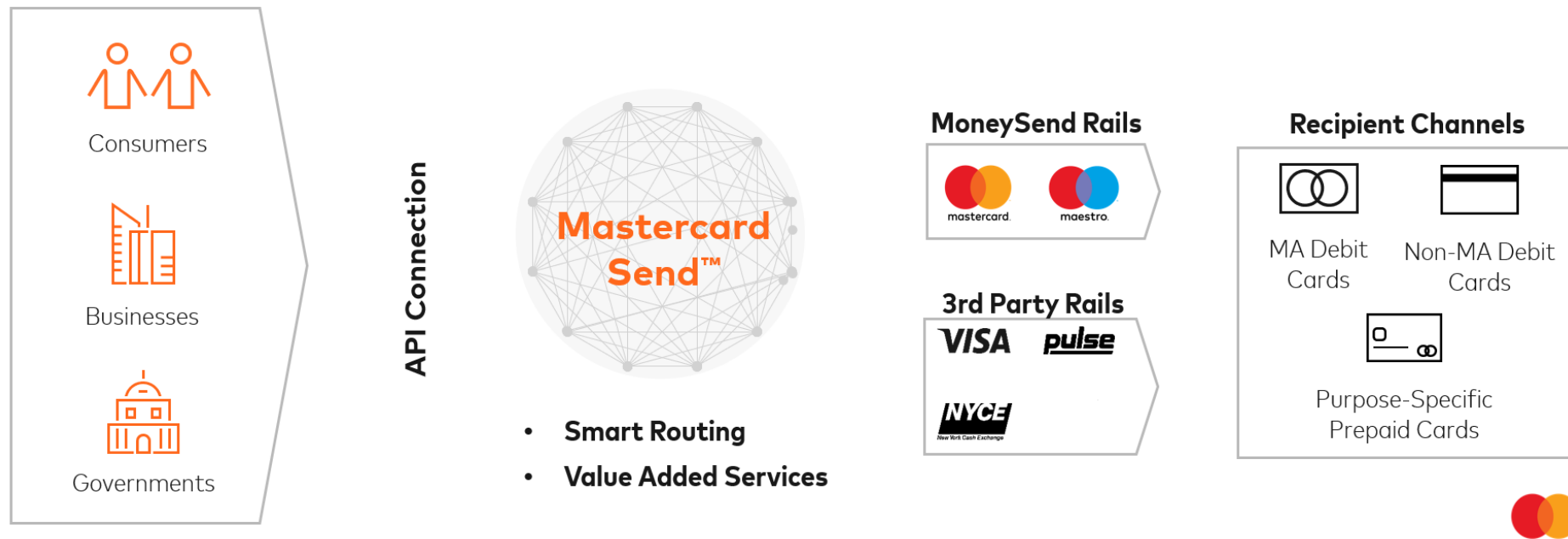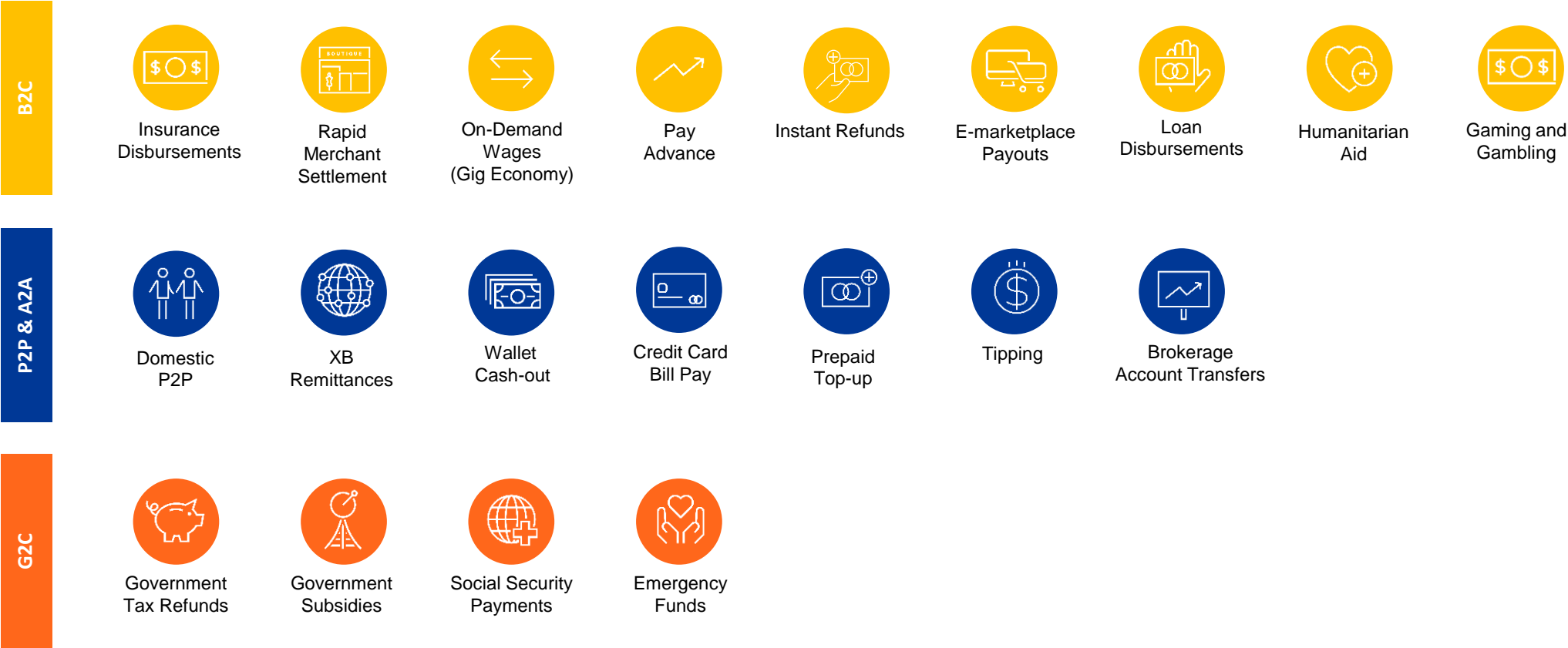
Network Profile – Mastercard Send

Mastercard Send digitizes payment transfers

Mastercard Send™ is a multi-rail platform that enables near real-time payment transfers to and from billions of card, bank, and digital accounts globally.

Consumers

Businesses

Governments

API Connection

Mastercard Send™

- **Smart Routing**
- **Value Added Services**

MoneySend Rails

mastercard · maestro

3rd Party Rails

VISA · pulse

NYCE New York Cash Exchange

Recipient Channels

MA Debit Cards · Non-MA Debit Cards

Purpose-Specific Prepaid Cards

Network Profile – Mastercard Send

And enables a new set of everyday spend categories*

B2C

| Insurance Disbursements | Rapid Merchant Settlement | On-Demand Wages (Gig Economy) | Pay Advance | Instant Refunds | E-marketplace Payouts | Loan Disbursements | Humanitarian Aid | Gaming and Gambling |

P2P & A2A

| Domestic P2P | XB Remittances | Wallet Cash-out | Credit Card Bill Pay | Prepaid Top-up | Tipping | Brokerage Account Transfers |

G2C

| Government Tax Refunds | Government Subsidies | Social Security Payments | Emergency Funds |

Note: B2C denotes Business-to-Consumer, P2P denotes Person-to-Person, A2A denotes Account-to-Account and G2C denotes Government-to-Consumer. *Non-exhaustive list of use cases.

Network Profile – Mastercard Send

Feature	Description
Overview	Mastercard Send Domestic enables transaction originators to send domestic payments for various use cases, including person-to-person payments as well as business and government disbursements to recipients located in the same country, regardless of card brand.
Links to Other Networks	Mastercard Push Payment Gateway Service allows senders (disbursers, load or P2P providers) to send funds to receivers (individual consumers or businesses) on one of four receiver networks: Mastercard, Visa, NYCE, or Pulse, with 24/7 availability. Mastercard Send provides single APIs connection into debit networks to optimize transfers so that funds are delivered in real time in most cases.
User Experience	Mastercard offers Mastercard Send as a B2B2C solution. Transaction originators control the user experience of the disburser; receiving networks control the user experience of the recipient. Mastercard provides best practices and data and services solutions to advise customers to create and maintain best-in-class user experience, customized by end-user segment. Mastercard also administers the network's integrity, mandating for example standards of know your customer (KYC) requirements, sanctions screening, consumer disclosures, transactions limits, etc. Mastercard Send programs and payment transfer activities are governed by the Mastercard rules and Mastercard MoneySend and Funding domestic program guidelines.
Access and Distribution Model	Mastercard Send leverages existing Mastercard relationships with 24,000 financial institutions in over 30 countries and territories.
Recent Development and Initiatives	Transfast: In 2019, Mastercard acquired Transfast, the global cross-border payments network provider serving over 125 countries across Asia, Europe, Africa, Americas, and Australia, and integrated with 300+ banks and other financial institutions. This acquisition enables banks to send and receive money cross-border, reaching over 90% of the world's bank accounts. Finicity: In 2020, Mastercard acquired Finicity, a leading North American provider of real-time access to financial data and insights. This acquisition will enhance Mastercard's existing open banking solutions, streamline the credit decisioning process for consumers and small businesses, and deliver real-time payments experience via account validation tools.
Statistics	Mastercard Send enables secure, near real-time payment transfers to and from billions of card, bank, and digital accounts around the world. Funds available to consumers typically within seconds with 24/7/365 access and high approval rates of 98%+. Multiple real time checks via APIs including card and address verification. Intelligently route funds to 97% of U.S. debit cards agnostic of network including small business debit & KYCed prepaid cards. Single gateway to all major card networks for streamlined service and consolidated reporting

Network Profile – Open Payment Network

OPN Open Payment Network®

Value-added Services & Applications

The OPN technology stack enables financial institutions to innovate rapidly.

1. <u>Open API means</u> financial institutions can rapidly create solutions to offer their customers.

2. <u>Interoperability</u> with RTP and FedNow at launch means one connection reaches receivers regardless of network.

Apps
OPN API
Financial Institutions

Fed Account	Joint Account

Reserve Bank

Network Profile – Open Payment Network

OPN Open Payment Network®

Key Attributes

Enhanced Fraud Controls	API with Workflow*	Extended Remittance	Directory Service	Enhanced Reporting	24/7/365 Availability

*With OPN's extensive open API, developers and financial institutions can provide innovative solutions to their customers.

Network Profile – Open Payment Network

Feature	Description
Overview	Open Payment Network (OPN®) is a real-time payment network for financial institutions and their customers. It supports low cost, immediate transfers in good funds, 24/7/365 for both wholesale and retail payments.
User Experience	OPN's end user experience is optimized by value added developers using OPN's API. In many cases, end users are aware that their financial institution is providing the experience and may not be aware OPN is providing the underlying network.
Links to Other Networks	OPN is interoperable with the payment card networks (e.g., SHAZAM, Visa) using the standard ISO 8583 message format, FedACH using the NACHA format, and other networks using the more updated ISO 20022 message format.
Access and Distribution Model	OPN's network services are distributed by participating institutions or their authorized agents and accessible through value added applications by their customers without direct integration with the participating institution's core.

Network Profile – RTP® Network
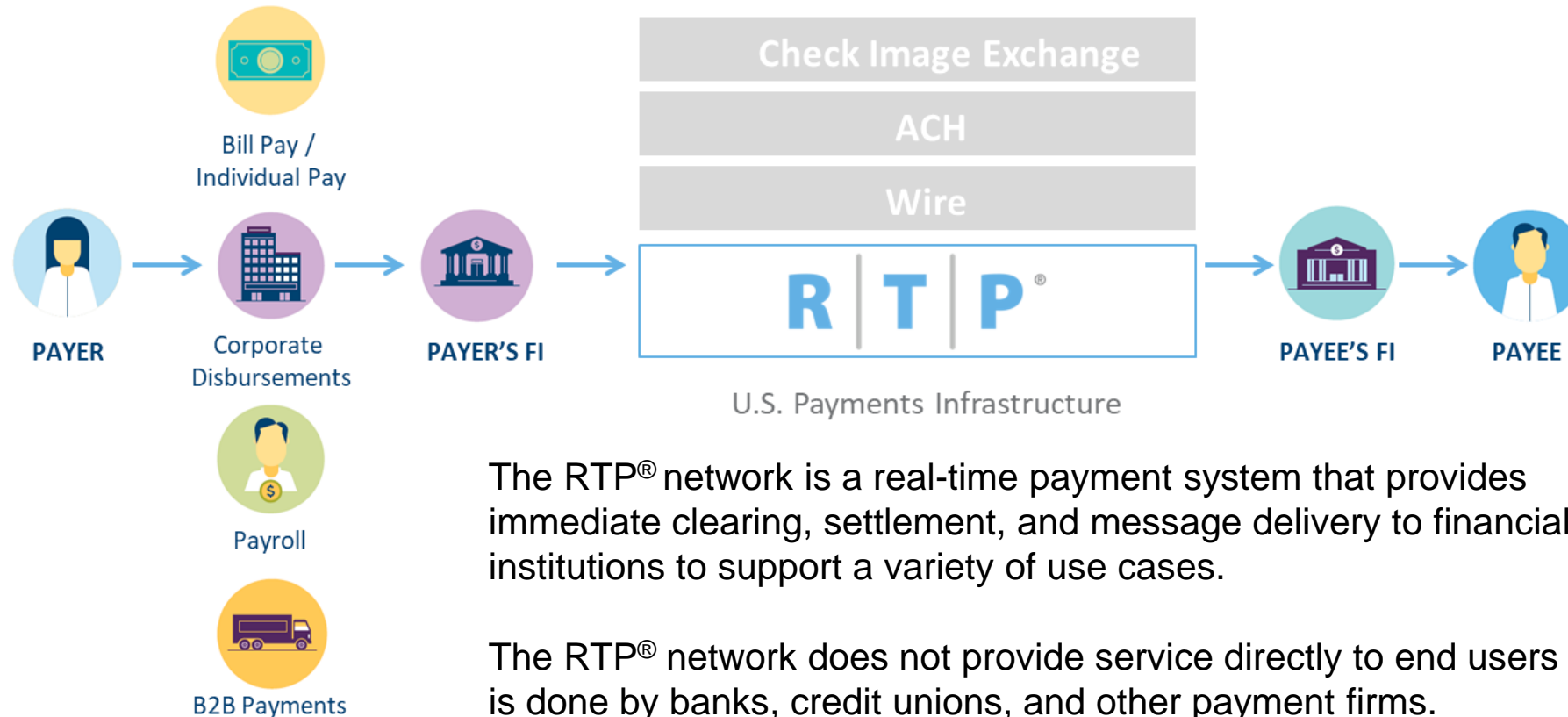
The RTP® network is a real-time payment system that provides immediate clearing, settlement, and message delivery to financial institutions to support a variety of use cases.

The RTP® network does not provide service directly to end users – that is done by banks, credit unions, and other payment firms.

The RTP® network is open to every U.S. depository financial institution.

Network Profile – RTP® Network

RTP® messages: building blocks for payment products

Credit Transfer
- Payer controls timing and sending.
- Increased transparency and immediate indication of success or failure.
- Payment in good and final funds.

Request for Information
- Allows questions to be asked in context in response to the payment made.
- Increased security and automation potential.

Request for Payment
- Non-obligatory "ask" for a payment.
- Bank-grade security for transferring invoice and bill detail.
- Enables straight through processing.
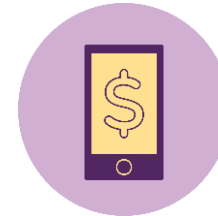
Invoice/Remittance Detail
- This detail can be included in each message or as a standalone addenda.
- Supports links to existing data stores and transfer of full remittance detail.

Receipt Confirmation
- Payee can directly let the payer know they have received and posted the transaction.
- Reduced customer service calls and increase in transparency.

- All messages are based on ISO 20022 standard.
- Confirmed delivery – all messages are immediately accepted or rejected.
- XML format and confirmed delivery make RTP a good fit for API-based deployment.

Network Profile – RTP® Network

How RTP® capabilities are being used today

	A2A		Payroll		Wallets
	Loan Funding		Merchant Funding		Insurance Claims
	Gig Economy		Title Companies		Cash Concentration
	B2B		Logistics		Bill Pay
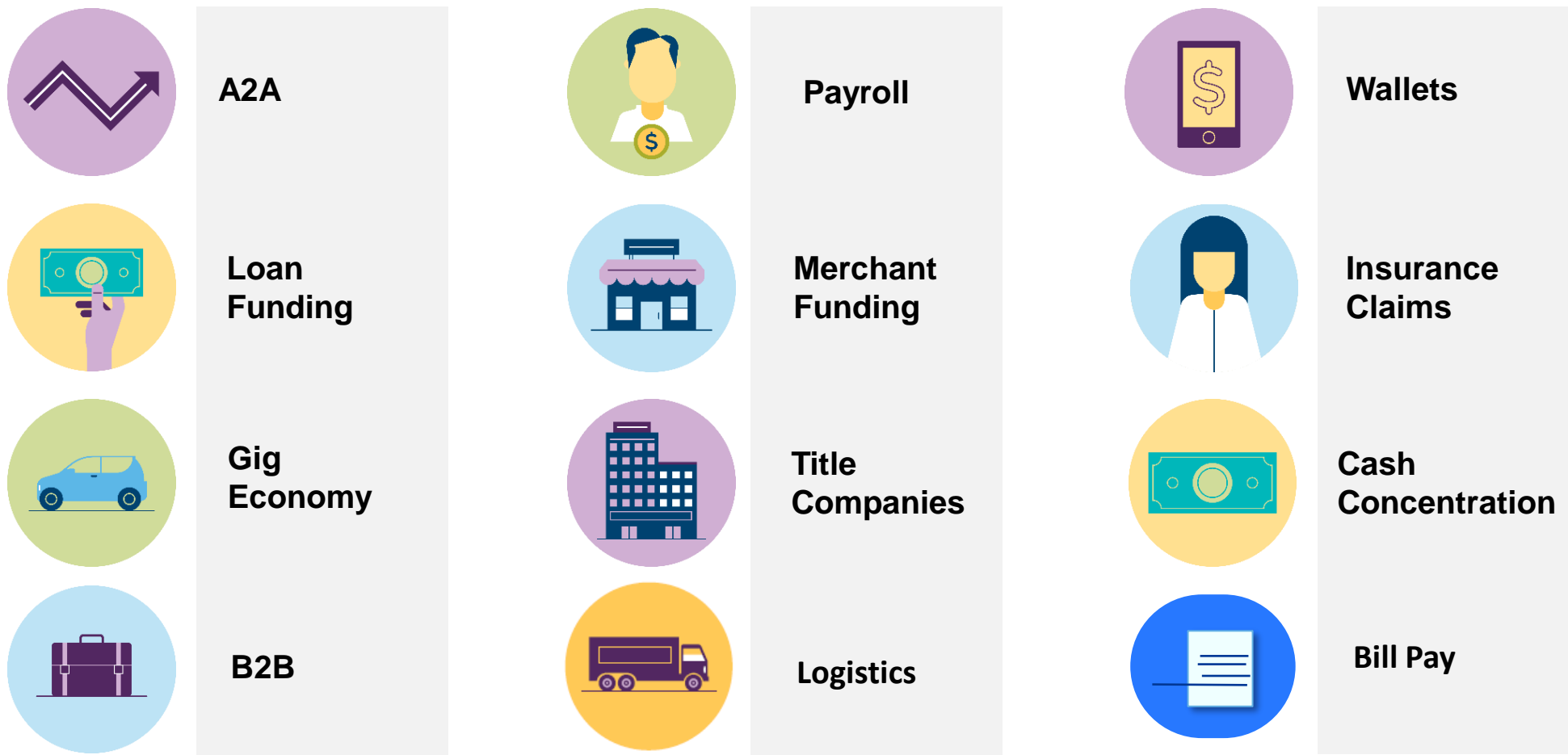
Network Profile – RTP® Network

Feature	Description
Overview	Operated by The Clearing House (TCH). The RTP® network is an immediate message transfer, clearing, and settlement network of U.S. financial institutions.
User Experience	RTP network rules define requirements for end user funds availability, timeliness of payment notification, and finality of payment. Other aspects of user experience such as user interface are determined by the participating financial institution or payment service provider.
Links to Other Networks	The Zelle® network supports RTP payments.
Access & Distribution Model	Any U.S. depository financial institution (see RTP rules for formal definition) is eligible to participate in the RTP network. All financial institutions on the network are full participants. Financial institutions can connect directly to the network or can use an approved third-party processor. Financial institutions can also pre-fund their position in the joint account directly or can rely on another financial institution such as a bankers' bank or corporate credit union to do so. Non-bank payment service providers can use the RTP network via participating financial institutions. Those that are considered money transmitters by the Financial Crimes Enforcement Network (FinCEN) agree to abide by a schedule of safety and consumer protection provisions under RTP rules.
Recent Development & Initiatives	Financial institutions have begun routing Zelle transactions over the RTP network, and are now using requests for payment to present and pay consumer bills. A recent Proof of Concept involving 7 US & European banks demonstrated the feasibility of synchronizing settlement between the RTP® network and RT1, a real-time European € payment system operated by EBA CLEARING, in collaboration with SWIFT. Launching a service to index and securely retrieve documents such as bills, invoices and remittance detail associated with payments.
Statistics	In Q4 2021 the RTP network cleared and settled 38 million payments totaling $15.6 billion, with an average value approximately $410.

RTP rules and specifications are published on The Clearing House website at https://www.theclearinghouse.org/payment-systems/rtp/document-library
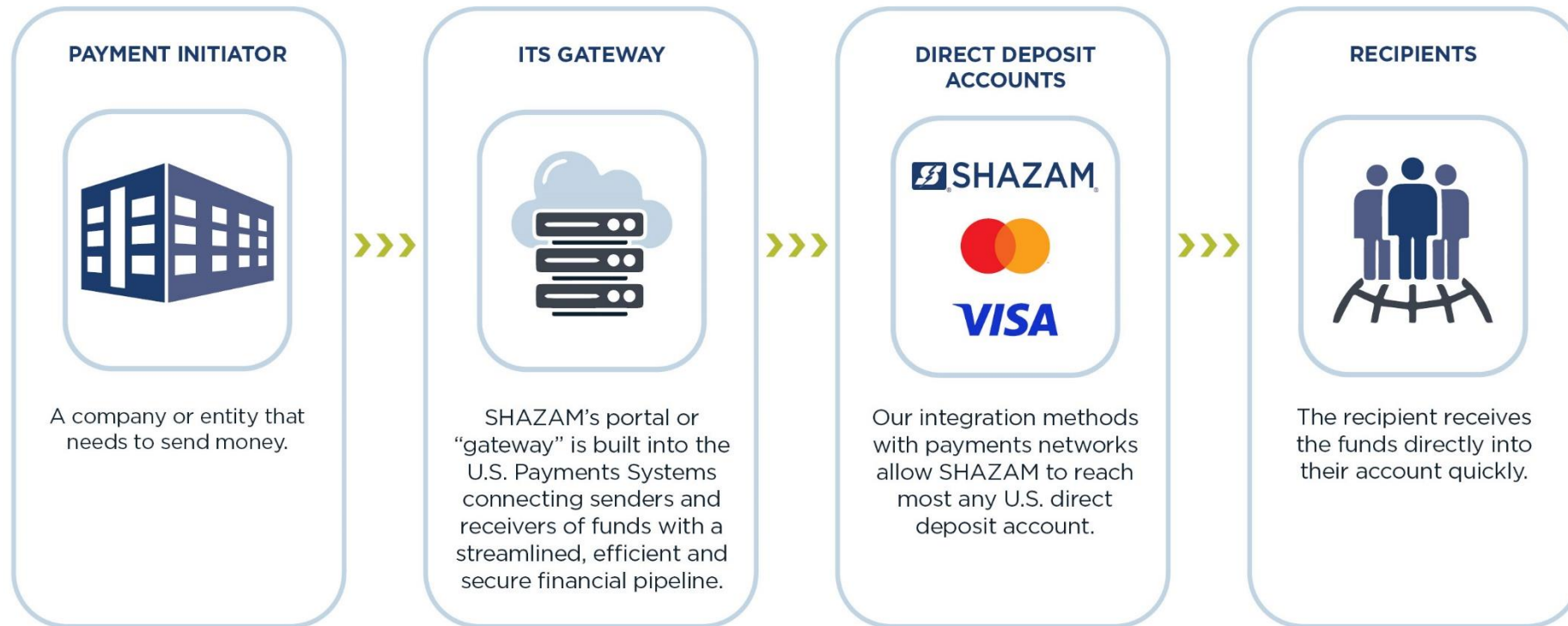
Network Profile – SHAZAM

Instantly Move Money™

SHAZAM is the original innovator of processing debit card transactions, and we've evolved to be a leader in the payments space, helping banks, credit unions, fintechs and other corporate entities move money efficiently and safely across the U.S. payments rail systems. Huge strides have been made in the payments space, and SHAZAM is on the cutting edge of the mechanics to move money in real-time.

Network Profile – SHAZAM

FASTER PAYMENTS GATEWAY

PAYMENT INITIATOR

A company or entity that needs to send money.

ITS GATEWAY

SHAZAM's portal or "gateway" is built into the U.S. Payments Systems connecting senders and receivers of funds with a streamlined, efficient and secure financial pipeline.

DIRECT DEPOSIT ACCOUNTS

Our integration methods with payments networks allow SHAZAM to reach most any U.S. direct deposit account.

RECIPIENTS

The recipient receives the funds directly into their account quickly.

Network Profile – SHAZAM

Feature	Description
Overview	SHAZAM is the original innovator of processing debit card transactions, and we've evolved to be a leader in the payments space, helping banks, credit unions, fintechs, and other corporate entities move money efficiently and safely across the U.S. payment rail systems. Huge strides have been made in the payments space, and SHAZAM is on the cutting edge of the mechanics to move money in real-time.
User Experience	SHAZAM APIs provide financial institutions, fintechs, and businesses with the flexibility to integrate with their choice of other options to deliver faster payments
Links to Other Networks	SHAZAM, Debit Card Networks, TCH RTP® System, FedNow™ System (when it becomes available), and ACH
Access and Distribution Model	SHAZAM/Cardinal Core is certified to receive faster payments, plus our APIs allow financial institutions using other core providers to leverage our faster payments processing capabilities without a large investment of resources. Our APIs also provide financial institutions the choice and flexibility to use our SHAZAM digital (online/mobile) banking user interface or their own provider to enable their accountholders/users to initiate faster payments.
Recent Development and Initiatives	SHAZAM has offered 24 X 7 immediate funds availability through debit card funds transfer credits for many years In early 2021, SHAZAM introduced 24 X 7 immediate funds availability through account-based real-time credit transfers SHAZAM is currently expanding its card-based faster payments gateway to support initiation of account-based faster payments SHAZAM will be integrating to FedNow™ in 2023
Statistics	Our 2021 experience with 24 X 7 immediate funds availability through account-based real-time credit transfers identified the following as the most popular use cases: "cash out"/credit transfer from a fintech virtual wallet to a financial institution account, merchant expedited settlement, real-time payroll deposit, and Me2Me transfers. The average transaction value was $390.

Network Profile – STAR Expedited Transfer Service

In our evolving payments market, you need to meet the needs of consumers and businesses today, and in the future. STAR from Fiserv is ready to help.

On-Demand Experiences

Funds transfers are a primary mechanism used by individuals and the business community for fast and reliable transfer of funds between two parties.

STAR supports funds transfer debits and credits which becomes more important with the growth of person-to-person, business-to-consumer and business-to-business real-time payments.

Security is our Priority

STAR takes the security of transactions seriously. We are focused on constantly expanding fraud mitigation services so that cardholders can feel safe using their debit cards through any payment method.

Processing Integrity & Authorization Rates are Key

STAR real-time processing ensures seamless transactions across all commerce channels, devices and payments methods for consumers and businesses.

Network Profile – STAR Expedited Transfer Service

Keys to Success

1 End User Applications

2 Large Sender/Receiver Networks

3 Real-Time DDA Connectivity

STAR delivers all key aspects:

- Extensive array of user apps available for customer use

- Licensed service providers eligible to send money transfers in STAR with access to hundreds of millions of senders / receivers at thousands of financial institutions

- Real-time access to customer DDAs and immediate funds availability

- Multiple levels of risk monitoring tools in place for all financial institutions, that oversee broad array of digital activity

Network Profile – STAR Expedited Transfer Service

Key Benefits: Faster payments, cost reduction, customer service differentiation

Benefit	Description	Proof Point
More Secure, Faster Payments	• Deliver real time payments to debit and prepaid cards in seconds • Available immediately to hundreds of millions of US consumers • More secure than sending paper checks through the mail • Fully traceable, reconcilable	**<5 seconds** *For a payment to clear* **Over 1Bn** *Accessible accounts*
Reduced Costs	• Less expensive than paper check handling processes • Route disbursements to a cost-effective debit network and bypass checks, wires and ACH • Obtain an immediate ROI through the cost of payment processing via STAR Network	**23% savings** *vs. traditional paper check costs* **96% savings** *vs. wire transactions*
Differentiated Customer Service	• Instant payouts are easily tracked • Incremental revenue stream / earning potential by charging for faster payments • More responsive than mailing a check	**25% reduction** *in payment status inquiries*

Network Profile – STAR Expedited Transfer Service

STAR Money Movement Transaction Flow Example

Funds Transfer Flow - The Pushing and Pulling of Funds

Authorization Flow – Real time approvals of "good funds"
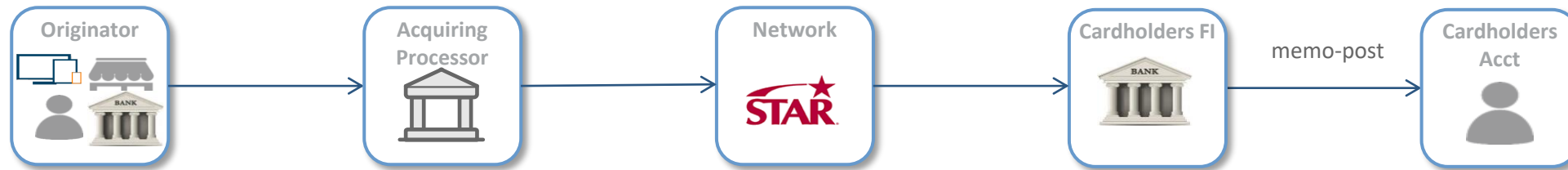
Settlement Flow
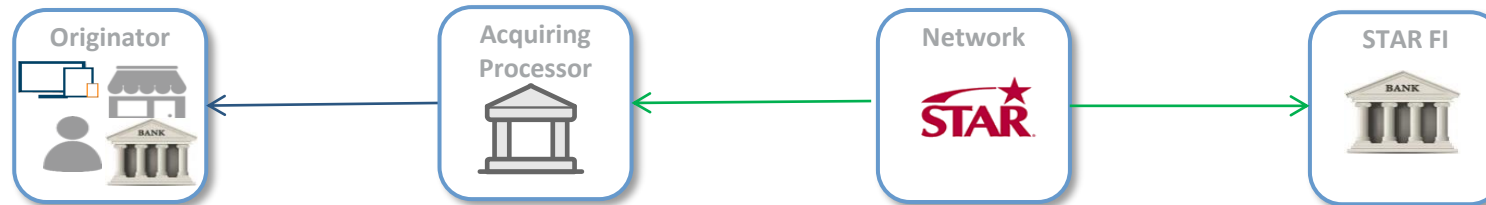
Features

- Real-time approval of "good funds" occurs
- Item memo-posted to/from cardholders account same day
- Funds settlement occurs between funds transfer entities

Network Profile – STAR Expedited Transfer Service

Feature	Description
Overview	Owned and operated by Fiserv, STAR provides a link between financial institutions and STAR Funds Transfer Entities that enable consumers and businesses to easily transfer funds between senders and receivers. Funds are available directly in bank accounts within minutes when the recipient is already enrolled with the Funds Transfer Entity.
User Experience	Funds Transfer Entities and financial institutions provide the user experience for their customers, including integrating "instant transfer" capability and status notifications to users within their services. STAR provides the network infrastructure, rules, security requirements, transaction set and technical guide for all participants.
Access and Distribution Model	Depository financial institutions and bank holding companies are eligible to become STAR Members. STAR Members may be eligible to sponsor processors, facilitators, and Funds Transfer Entities for participation.
Recent Development and Initiatives	STAR recently completed migration of its rules-based engine that monitors transactions to detect unusual activity and fraud. The new system provides capability for comprehensive and robust rules to identify potential fraud occurring across multiple stakeholders and channels. Velocity monitoring checks add another layer of fraud mitigation. These tools work together with the network predictive fraud scoring system that utilizes ML and Smart tools to identify likely high-risk transactions, and shares a risk score to benefit financial institutions which may use the score for real-time decisions whether to approve funds transfer debit (pull) and credit (push) requests.
Statistics	STAR enables secure, real-time money transfers to and from millions of bank accounts using debit card, initiating settlement of billions of dollars.

Network Profile – Visa Direct

Visa Direct helps power trusted "open money movement" ecosystem

Payout Enablers
Single operational connection efficiency

- Acquirers
- Processors
- Gateways
- Banks

Commerce Platforms
Scaled, global distribution channels

- Marketplaces
- Mobile
- Messaging
- Payroll
- ERP

Visa Direct
Global platform for real-time payments

Global Endpoints
Wide-reaching, real-time money movement

- Cards – Debit/Credit/Prepaid
- Bank Accounts

Network of Networks
Trusted, "Open" Network

- Card Networks
- ACH/RTP
- Member Banks
- Regional Networks

Note: Visa offers the Visa Push Payment Gateway Service to enable push-to-card capabilities for non-Visa cards in the U.S. Actual fund availability varies by receiving financial institution, receiving account type, region, and whether transaction is domestic or cross-border

Network Profile – Visa Direct

Visa Direct growth and evolution

Use cases across multiple industries are powered by Visa Direct and help millions of consumers move money in real-time* through billions of transactions annually.

500+
programs

550M
enablers

5B
transactions

FinTechs
P2P payments

Gig Economy
Ridesharing
driver payouts

Earned Wage Access
Access your earnings
before payday

Remittance
Cross-border
payments

Insurance
Property & casualty
claim payouts

Marketplaces
Payouts to
small sellers

T&E
Passenger
payouts

Sellers
Fast access to settlement
funds

Network Profile – Visa Direct

Feature	Description
Overview	Operated by Visa, Visa Direct is Visa's real-time global money movement platform supporting money flows through a multitude of use cases: person-to-person (P2P), domestic and cross-border payouts and payments, payments to SMBs, corporate, worker, insurance, government payouts, and more.
User Experience	Visa does not control elements of the user experience—as acquirers, service providers, and merchants provide the user experience for their customers. Instead, Visa does offer guidance and best practices around user experience (e.g., card capture, design), research, risk considerations, proof points, developing product identity, messaging examples, consumer preference testing, FAQ recommendations, marketing/communications, and launch plans.
Links to Other Networks	The Visa Push Payment Gateway Service (PPGS) allows acquirers, service providers, and merchants to send their account funding transactions (AFTs) and original credit transactions (OCTs) to Visa for routing to multiple debit networks in the United States, as well as ACH and RTP systems in more than 175 countries. The service provides authorization, clearing, settlement, reporting, and exception processing support for Accel, CU24, Maestro, NYCE, Pulse, STAR, and Mastercard PPGS.
Access and Distribution Model	Visa Direct enables money movement to billions of endpoints worldwide through a single integration and addressing an estimated $65T+ market opportunity. Visa Direct reverses the traditional card payment flow by allowing payment originators, through their acquirer, to push funds directly to card or accounts. It facilitates fast, simple and secure digital payments worldwide, enabling businesses and consumers to send money directly to a bank account or card.
Recent Development and Initiatives	In FY21, Visa launched Visa Direct Payouts, a solution allowing Visa's clients and partners around the world to use a single point of connection to push payments to eligible cards for domestic payouts, and eligible cards and/or accounts for cross-border payments. With the addition of Visa Direct Payouts, Visa Direct now provides multi-rail access to 5 billion cards and accounts combined across more than 200 geographies, supporting 160 currencies, connecting to 16 card-based networks, 65 domestic Automated Clearing House (ACH) schemes, seven Real-Time Payment (RTP) networks and five payment gateways.
Statistics	Visa Direct enables Visa to capture new flows, with over 5 billion transactions in FY2021, across 500 programs and nearly 550 enablers such as acquirers, processors, banks and fintechs. In the US alone, nearly 120 million cards have sent or received funds through Visa Direct in FY2021. Visa Direct connects to 16 card-based networks, 65 domestic ACH schemes, 7 RTP schemes, and 5 payment gateways. Visa Direct facilitates domestic and cross border payments in over 160 currencies

Network Profile – Zelle®

WE MAKE MONEY MOVE FAST, SAFE AND EASY.

SO, LIFE HAPPENS.

Network Profile – Zelle®

What is Zelle®?

TECHNOLOGY

- Alias-based directory
- Immediate messaging
- Fraud risk management

NETWORK

- Governance & rule making
- Person-to-Person (P2P)
- Disbursements (B2C)
- Small Business (C2B, B2B)

BRAND

- Intuitive experience
- Common across FIs
- Fast funds

Network Profile – Zelle®

Feature	Description
Overview	Operated by Early Warning, the Zelle® Network enables consumers and businesses to easily pay others using a social token (email or mobile number). Funds are available directly in bank accounts generally within minutes when the recipient is already enrolled with Zelle®.
User Experience	The Zelle® experience is found within participating financial institutions' mobile and online banking services as well as the standalone Zelle® app for out-of-network participants. User experience is defined by the Zelle® Network for Zelle® financial institution participants.
Links to Other Networks	The Zelle® Network enables settlement over ACH, Mastercard, Visa, and The Clearing House's RTP Network.
Access and Distribution Model	U.S. financial institutions may join the Zelle® Network directly through Early Warning or through reseller partners including FIS, Fiserv, and Jack Henry & Associates.
Recent Development and Initiatives	Zelle® is now available to send and receive money from eligible small businesses, as well as for disbursements from companies and government entities to customers who have bank accounts in the United States.
Statistics	Consumers of nearly 10,000 financial institutions sent money through the Zelle® Network which was an increase of nearly 3,000 from the prior year whether through their financial institution's banking app or enrolling their debit cards in the Zelle® app. During 2021,1.8 billion payments were made by consumers and businesses representing $490 billion.

Detailed Network Characteristics

Network Characteristics – Debits & Credits

Network	Description
Accel	Accel enables secure, real-time money transfer debits (funding) and credit transactions using debit card credentials.
ExcheQ	Credit transfers. Limits determined by licensing financial institutions.
FedNow℠ Service	The default transfer limit will be $100,000. Participants may adjust the limit up or down, with a ceiling of $500,000, based on their business needs and risk preferences.
Junifunds® Network	Level 1 and Level 2 have no limit, Level 3 is $1 Million USD.
Mastercard Send	Mastercard Send offers both funding (pull) and payment (push) transactions in near real time. Funding transactions facilitate pulling funds (debit) from an eligible debit card for the purpose of either (a) funding a subsequent and linked funds transfer from the sender to another person or entity; or (b) transferring funds into another eligible financial account held by the sender. Push transactions facilitate pushing funds (credit) to consumer and small business debit and prepaid cards.
Open Payment Network	Credit transfers.

Network Characteristics – Debits & Credits

Network	Description
RTP® Network	Credit transfer up to $100,000.
SHAZAM	Credit transfers.
STAR	STAR enables secure, real-time expedited transfer debits (funding) and credit transactions using debit card credentials.
Visa Direct	Visa Direct works through Visa's card systems using two types of VisaNet financial transactions: original credit transactions (OCTs) and account funding transactions (AFTs). OCTs are used to push funds ("credit") to an eligible debit, credit, or prepaid card, and AFTs are used to pull funds ("debit"). Whereas purchase transactions are used to fund a merchant for purchase of goods/services, AFTs are used to fund another financial account or to fund a P2P transfer. Information in this document is specific to OCTs except where noted.
Zelle®	Zelle is a good funds network where the sending financial institution debits the sender's account and the receiving financial institution credits the receiver generally within minutes when the recipient's email address or U.S. mobile number is already enrolled. Settlement occurs later either through ACH, debit, or RTP.

Network Characteristics – Speed

Network	Description
Accel	Accel Money Transfer transactions route through the network's real time rails providing an immediate response from the financial institution. Accel rules require that funds for credit transactions be available to the recipient within 5 minutes of the transaction. However, normally the recipient has access to the funds within seconds.
ExcheQ	Notification is immediate. Settlement is via next ACH presentment window. Immediate settlement will be in place when FedNow integration is complete.
FedNow^{SM} Service	Transfers are expected to be completed within seconds. Participants will agree to make funds available to receivers immediately upon receipt.
Junifunds® Network	Immediate between financial institutions. Level 1 and Level 2: Most interbank transfers are completed within 10 seconds. Receivers have access to funds within 30 minutes, a service level defined by network rules. Level 3: Most transfers are completed within 10 seconds. Receivers have access to funds within 30 seconds.
Mastercard Send	Mastercard Send transactions can be routed to a variety of receive networks. Posting time is governed by the receive network and may also vary by issuer. MoneySend Payment Transaction routed through the Mastercard Network to eligible cards are required to post within 30 minutes of Authorization approval. In the United States, typically, funds are made available to the recipient in near real time.
Open Payment Network	Immediate for on-network transfers. A good-funds invitation is created when transfers are initiated to a recipient off-network. Good funds are immediately available to the recipient upon acceptance of the invitation.

Network Characteristics – Speed

Network	Description
RTP® Network	Immediate. Most transfers are completed within 2-3 seconds, with a maximum of 15 seconds before transactions time out. Receivers have access to funds within seconds, a service level defined by network rules.
SHAZAM	Funds availability to receiving entity within seconds, 24 X 7.
STAR	STAR Expedited Transfer transactions route through the network's real time rails providing an immediate response from the financial institution. STAR rules require that funds for credit transactions be available to the recipient within minutes of the transaction. Normally the recipient has access to the funds within seconds.
Visa Direct	The original credit transaction (OCT) uses Visa's real-time information network. Issuers approve OCTs in real time. So, the sender of funds will know within seconds whether the issuer will accept the funds and deliver money to the recipient account. The Visa "fast funds" rule requires issuers to make the funds available to the cardholder in 30 minutes or less of approving the OCT. Typically, funds are available in real time (actual fund availability depends on receiving financial institution and region). Cross-border transactions to account vary by country and receiving financial institution.
Zelle®	Transactions typically occur in seconds when the recipient's email address or U.S. mobile number is already enrolled with Zelle.

Network Characteristics – Settlement

Network	Description
Accel	Accel settles the transaction dollars daily to its participants (issuer and acquirer) according to their pre-defined settlement timeframe. The Money Transfer transaction set is fully integrated into the financial institution's back-office reconciliation processes to make a streamlined, turn-key service.
ExcheQ	ExcheQ transfers are via ACH and governed by licensing institutions' ACH settlement protocols. When FedNow integration is complete ExcheQ payments on that network will settle according to its rules.
FedNow^{SM} Service	Real-time gross settlement through debit and credit entries to balances in participants' reserve bank accounts (or an account of a correspondent).
Junifunds® Network	Level 1, 3 (financial institutions using same correspondent): Real-time gross settlement backed by pre-funded balances in an account at correspondent financial institution of choice. Level 2, 3 (financial institutions using different correspondent in Junifunds): Real-time gross settlement. Settled at the Federal Reserve Bank of New York.
Mastercard Send	Mastercard Send operates on a good funds model. The transaction originator must have sufficient funds available for settlement of the payment transaction prior to its submission to Mastercard Send. The acquirer or sponsor bank is responsible for settlement of payment transactions.
Open Payment Network	Real-time gross settlement with prefunded account balances at participating institutions with deferred net settlement as needed between financial institutions.

Network Characteristics – Settlement

Network	Description
RTP® Network	Real-time gross settlement backed by pre-funded balances in a joint account at the Federal Reserve Bank of New York. Financial institutions can pre-fund their position in the joint account directly or can rely on another financial institution such as a bankers' bank or corporate credit union to do so.
SHAZAM	Real-time gross settlement and net deferred settlement.
STAR	STAR Expedited Transfer transactions route through the network's real time rails providing an immediate response from the financial institution. STAR rules require that funds for credit transactions be available to the recipient within minutes of the transaction. Normally the recipient has access to the funds within seconds.
Visa Direct	Net settlement, once per day. Visa manages settlement with the acquirer (the sending entity's bank) and the issuer (the recipient's bank). Visa collects funds from the acquirer and delivers funds to the issuer.
Zelle®	Zelle enables financial institutions to settle on existing and future settlement services. Today, financial institutions may settle transactions via ACH, Mastercard Send or Visa Direct, and RTP.

Network Characteristics – Payment Finality

Network	Description
Accel	Immediate, irrevocable
ExcheQ	Finality as per settlement network rules.
FedNow^{SM} Service	Immediate, irrevocable.
Junifunds® Network	Immediate, irrevocable.
Mastercard Send	Immediate, irrevocable. Both P2P and disbursement transactions are irrevocable and cannot be reversed. The transaction originator (P2P provider or disburser) must ensure that all payment information is correct before sending a transaction via Mastercard Send. Exception items are supported but resolved based on agreement.
Open Payment Network	Immediate, irrevocable.

Network Characteristics – Payment Finality

Network	Description
RTP® Network	Immediate, irrevocable.
SHAZAM	Immediate, irrevocable.
STAR	Immediate, irrevocable.
Visa Direct	Immediate, irrevocable. The Visa system does support a process for exception items for original credit transactions (OCTs) – notably originator errors, or situations where recipient does not receive funds – but all adjustments associated with these exception items are agreed upon with the recipient issuer.
Zelle®	Immediate, irrevocable.

Network Characteristics – Payment Confirmation

Network	Description
Accel	The originator receives confirmation of approved or denied immediately via the real-time message. The originator can then use this information to provide a status to the consumer.
ExcheQ	Sending institutions receive payment notice immediately. Initiators and beneficiaries receive immediate confirmation when payment is sent and accepted.
FedNow^{SM} Service	Sending and receiving institutions will receive acknowledgement of receipt of a payment message and an advice of credit, respectively, within seconds, notifying them that settlement is complete.
Junifunds® Network	Sending and receiving financial institutions typically receive confirmation within 10 seconds. Junifunds rules require confirmation to payers and payees within 10 seconds over available electronic channels.
Mastercard Send	Mastercard Send provides a synchronous response with status indicating the receiving institution's authorization decision. Transaction originators have the option to utilize the status and notify the sender and/or the beneficiary.
Open Payment Network	Payment confirmation is sent to sender, receiver, and other parties concurrent with execution of the transfer as specified by the transfer's workflow configuration.

Network Characteristics – Payment Confirmation

Network	Description
RTP® Network	Sending and receiving financial institutions typically receive confirmation within 2-3 seconds, with a maximum of 15 seconds. RTP rules require confirmation to payers and payees within seconds over available electronic channels.
SHAZAM	Available immediately upon receipt.
STAR	The originator receives confirmation of approved or denied immediately via the real-time message. The originator can then use this information to provide a status to the consumer.
Visa Direct	Visa Direct provides a synchronous response with status indicating the receiving institution's authorization decision. Transaction originators have the option to utilize the status and notify the sender and/or the beneficiary.
Zelle®	Sending and receiving financial institutions typically receive confirmation within seconds.

Network Characteristics – Additional Message Functionality

Network	Description
Accel	The originator receives confirmation of approved or denied immediately via the real-time message. The originator can then use this information to provide a status to the consumer.
ExcheQ	All payments can include descriptive text and image addenda.
FedNow℠ Service	Request for payment, request for return (for payments sent in error), request for payment status, request for information, confirmation of posting, request for account balance, and account activity reports. All messages are based on the ISO 20022 standard.
Junifunds® Network	All messages receive a positive confirmation from the receiving financial institution. Credit transfers can include links to external documents (remittance data, invoices, bills, etc.).
Mastercard Send	Mastercard Send checks eligibility of a recipient card to receive funds, including whether the card type is eligible in-market. Provides participants the flexibility to use custom fields and configure statement descriptor. Establishes transaction limits (daily and monthly per card) and checks every transaction against established limits. Send enables acquirers and sponsor banks to establish daily credit limits for any of their customers (transaction originators). Based on established thresholds, proactive notifications are generated to participants. Alleviates PCI compliance for participant with tokenization capability. Send can validate cardholder's Billing Address, Postal Code, CVC/CVV code and card account status
Open Payment Network	OPN supports multiple standard message formats (e.g., ISO 8583, ISO 20022), modern program interface message formats (e.g., JSON, XML, etc.), and design to migrate from older message formats to modern ones.

Network Characteristics – Additional Message Functionality

Network	Description
RTP® Network	Request for payment, acknowledgment of receipt, request for information, request for return of funds (for payments sent in error), and remittance advice. All messages receive a positive confirmation from the receiving financial institution. Credit transfers and requests for payment can include links to external documents (remittance data, involves, bills, etc.).
SHAZAM	Eligibility checking, transaction limits, daily dollar limits, routing decisioning, email notifications for requests for return of funds and fraud alerts
STAR	STAR expedited transfer transactions include several validation checks as part of the authorization. There are validations on card status, dollar limits, and activity velocity limits. All are defined by the financial institution and can be custom down to the consumer level.
Visa Direct	Visa sets dynamic controls in the network overall, with transaction limits of $10,000 and $50,000, for most U.S. domestic consumer-funded (e.g., P2P) and cross-border, and U.S. domestic business-funded transactions (e.g., disbursements), respectively, and with some exceptions. Visa has set one-, seven-, and thirty-day count velocity limits on transaction funding to a single Visa card. In addition, issuers, acquirers, and processors may set limits based on a variety of characteristics to limit their risk. It is important to note that Visa actively monitors and frequently updates its risk policies and controls.
Zelle®	Zelle enables multiple messages including sending a payment and requesting funds. Alerts, notifications, and reminders are also part of the Zelle Network.

Network Characteristics – Payment Routing

Network	Description
Accel	Accel uses card credentials for routing payment authorizations to millions of consumers.
ExcheQ	Account number and routing transit number.
FedNow℠ Service	Based on account number or proxy for account number (e.g., alias) of the receiver and routing number of the receiving bank.
Junifunds® Network	Account number and routing transit number. Alpha-numeric domain-controlled tokens will be supported in future.
Mastercard Send	Mastercard Send transmits funds into consumer and small business debit card, and eligible prepaid card accounts. Through API integration with Mastercard Send, program participants can leverage intelligent network routing capabilities for near real-time payments, eliminating the need to establish connections with multiple networks or build custom routing logic, and to optimize acceptance rates and fastest funds availability.
Open Payment Network	Account number and routing transit number, social alias routing, and domain alias routing are all supported.

Network Characteristics – Payment Routing

Network	Description
RTP® Network	Account number and routing transit number. Alpha-numeric domain-controlled tokens will be supported in Q1 2022.
SHAZAM	Card credentials (primary account number) or routing number and account number
STAR	STAR uses card credentials for routing payment authorizations to millions of consumers.
Visa Direct	Card credentials or account number and routing transit number.
Zelle®	Alias based tokens are used to route payment.

Network Characteristics – Directories

Network	Description
Accel	Accel does not currently have its own directory. Service providers use their directories to route activity through the network rails.
ExcheQ	ExcheQ integrates with user-created and maintained directories at the application level. ExcheQ also maintains and provides a Routing Transit Number directory for both initiators and beneficiaries to use when creating and accepting payments.
FedNow^{SM} Service	Participants that leverage alias directories external to the FedNow Service to provide P2P or other services for their customers will be able to use the service as a platform for clearing and settling alias-based payments.
Junifunds® Network	The Junifunds network does not have an integrated directory.
Mastercard Send	Mastercard partners use their own directory to support payment process. Send provides mapping service to partners. This enables partners to tokenize the account credentials of senders/beneficiaries. The mapping service also enables partners to create and manage a directory of senders and recipients.
Open Payment Network	OPN has a tightly integrated global directory service that is updated in real time with contextual security and alias capability that allows end users to create, read, update, delete, and control their entries in the directory.

Network Characteristics – Directories

Network	Description
RTP® Network	The RTP network does not have an integrated directory. Independent third-party networks can provide alias or directory-based initiation of payments routed over the RTP network via routing number/account or token.
SHAZAM	N/A
STAR	STAR does not currently have its own directory. Service providers use their directories to route activity through the network rails.
Visa Direct	Visa currently does not have an integrated directory in the United States. Partners use Visa Direct in conjunction with their proprietary directory for P2P payments or other use cases.
Zelle®	Early Warning maintains the Zelle directory which associates social tokens with financial institutions.

Network Characteristics – Fraud & Risk Controls

Network	Description
Accel	Accel reviews and approves every service provider who wishes to send activity over the network rails. The network has specific rules that require service providers to authenticate the consumers. Since these transactions route through the network rails, financial institutions are able to apply their debit activity risk tools to scrutinize these transactions which allows fraud detection at the time of the transaction before approval versus other solutions that do not detect fraud until many days after the funds have moved between parties. Finally, Fiserv has reinvested significantly in the network risk tools to provide additional risk evaluation services to the transactions during real-time processing.
ExcheQ	ExcheQ licensing Financial Institutions determine customer eligibility requirements, payment velocity caps, and dollar limits. All ExcheQ payments are subject to existing financial institution fraud detection/prevention controls and protocols for existing like payment types.
FedNow^{SM} Service	At launch, the service will allow participants to set lower limits and conditions for transaction rejection. Enhanced fraud prevention tools will be provided in subsequent releases of the service. In addition, the service is being designed to assist its participants with consumer protections and resolving errors.
Junifunds® Network	Rules require participating financial institutions to implement strong fraud detection/prevention, fraud reporting, and consumer protection policies.
Mastercard Send	To maintain the integrity of each transaction, the Mastercard Send Domestic service performs transaction controls prior to routing payment transactions for processing: eligibility of a recipient card to receive funds; validation of use case by participant and market; proper field configuration in message; defined limits by use case, market and participant. Default limits in the United States are $10,000 per card per day and per month for P2P transactions; and $10,000 per card per day; and $50,000 per card per month for disbursements. Send participants are subject to risk review by Mastercard. Acquirers and transaction originators shall perform all applicable anti-money laundering (AML) measures for each consumer/merchant for whom they submit payment transactions via the Mastercard Send Domestic service. Each program participant must ensure that its service providers and other agents, if any, that facilitate, initiate, or otherwise participate in Mastercard Send transactions for or on behalf of the acquirer or transaction originator have all licenses, permits, registrations, other governmental approvals, and satisfy all other requirements, including applicable money transmitter laws, necessary to engage in such activities. On the Mastercard network, additional controls and capabilities are available for banks to opt-in and configure.

Network Characteristics – Fraud & Risk Controls

Network	Description
Open Payment Network	Participating financial institutions or their authorized agents are each responsible for anti-money laundering (AML), combating the financing of terrorism (CFT), and know your customer (KYC) for their customers. OPN has appropriate balance between privacy and transparency that allows participating institutions (and their agents) to comply with both legal and regulatory requirements to control and mitigate fraud and risks.
RTP® Network	Rules require participating financial institutions and payment service providers to implement strong authentication, fraud detection/prevention, fraud reporting (to the network), and consumer protection policies. Lack of debit transactions limits potential fraud vectors; immediate confirmation provides transparency. All transactions are digitally signed and encrypted. The Clearing House tracks reported fraud and participating financial institutions are required to investigate suspected fraud.
SHAZAM	Eligibility checking, transaction limits, daily dollar limits, routing decisioning, email notifications for requests for return of funds and fraud alerts
STAR	STAR reviews and approves every service provider who wishes to send activity over the network rails. The network has specific rules that require service providers to authenticate the consumers. Since these transactions route through the network rails, financial institutions are able to apply their debit activity risk tools to scrutinize these transactions which allows fraud detection at the time of the transaction before approval versus other solutions that do not detect fraud until many days after the funds have moved between parties. Finally, Fiserv has reinvested significantly in the network risk tools to provide additional risk evaluation services to the transactions during real-time processing.

Network Characteristics – Fraud & Risk Controls

Network	Description
Visa Direct	Originators, acquirers, and issuers need to manage multiple risks every time their customers pay/get paid. Visa Direct has multi-layered controls including: • Only members (issuers and acquirers) trusted and vetted by Visa can participate. • Visa program approval and system-level risk controls and analytics including know your customer (KYC), anti-money laundering (AML), account takeover (ATO) protection, sanctions screening, transaction controls and monitoring, velocity limits, compliance, and risk management. • Robust payment details in a single payment message.
Zelle®	The Zelle Network provides comprehensive risk management and is layered with the Zelle Network participating financial institution's controls. Key categories include due diligence, know your customer (KYC), anti-money laundering (AML), authentication of customers, transaction controls, blocking transactions before funds are sent, protecting consumers from sending money for fraud, and scams. Early Warning provides participants recommended best practices. Additionally, the Zelle Network provides education on safer payments to consumers.

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Thank you to the members of the FPC Network Committee and others who contributed to this industry report:

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