World Bank Fast Payments Toolkit

Case Study: United States

RTP | 2017

Payment Instruments

Credit Transfer  E-money

Use Cases/ Services

Merchant Payment  Bulk/Batch Payment  Bill Payment

Request to pay  Recurring Payments
## Glossary of terms

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>1</td>
<td>GDP</td>
<td>Gross Domestic Product at current price</td>
</tr>
<tr>
<td>2</td>
<td>Income Category</td>
<td>Classification as per World Bank based on Gross National Income (GNI) per capita</td>
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<tr>
<td>3</td>
<td>CPMI</td>
<td>Committee on Payments and Market Infrastructure</td>
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<tr>
<td>4</td>
<td>FPS</td>
<td>As per CPMI, fast payment System is defined as payments 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 and on as near to a 24-hour and 7-day (24/7) basis as possible</td>
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<tr>
<td>5</td>
<td>Oversight</td>
<td>Regulating or governing body supervising the payments system</td>
</tr>
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<td>6</td>
<td>Operator</td>
<td>Institutions responsible for the operation of the payment system</td>
</tr>
<tr>
<td>7</td>
<td>Alias</td>
<td>Alternative to bank account numbers for increased convenience of the customer. For e.g., mobile number, national identification number</td>
</tr>
<tr>
<td>8</td>
<td>Access Channels</td>
<td>Modes used by customer to initiate transaction on FPS. For e.g., branch, internet, mobile</td>
</tr>
<tr>
<td>9</td>
<td>Individual Payment Type</td>
<td>Person to person (P2P) – Payment between individuals for non-business purposes</td>
</tr>
<tr>
<td>10</td>
<td>Business Payment Type</td>
<td>Person to Business (P2B) – Payment from an individual to a business entity&lt;br/&gt;Business to Person (B2P) – Payment from a business entity to an individual&lt;br/&gt;Business to Business (B2B) – Payment between two business entities</td>
</tr>
<tr>
<td>11</td>
<td>Government Payment Type</td>
<td>Person/Business to Government (P/B2G) – Payment from person/Business to a government institution&lt;br/&gt;Government to Person/Business (G2P/B) – Payment from government institution to a person or business entity</td>
</tr>
<tr>
<td>12</td>
<td>Credit transfers</td>
<td>Credit transfers are payment instruments based on payment orders or possibly sequences of payment orders made for the purpose of placing funds at the disposal of the payee</td>
</tr>
<tr>
<td>13</td>
<td>Direct Debits</td>
<td>Direct debits are payment instruments in which the transaction is pre-authorized, and funds are blocked in account for a debit to be initiated at a future date. In direct debits, payer’s account is debited on execution of mandate by merchant or payee</td>
</tr>
<tr>
<td>14</td>
<td>E-money</td>
<td>E-money is a prepaid value stored electronically, which represents a liability of the e-money issuer (a bank, an e-money institution or any other entity authorized or allowed to issue e-money in the local jurisdiction), and which is denominated in a currency backed by an authority</td>
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## Abbreviations

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<th>S.No.</th>
<th>Term</th>
<th>Expanded form</th>
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<tr>
<td>1</td>
<td>ABA</td>
<td>American Bankers Association</td>
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<tr>
<td>2</td>
<td>CUNA</td>
<td>Credit Union National Association</td>
</tr>
<tr>
<td>3</td>
<td>ICBA</td>
<td>Independent Community Bankers of America</td>
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<td>4</td>
<td>FDIC</td>
<td>Federal Deposit Insurance Corporation</td>
</tr>
<tr>
<td>5</td>
<td>FFIEC</td>
<td>Federal Financial Institutions Examination Council</td>
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<td>6</td>
<td>FRB</td>
<td>Board of Governors of the Federal Reserve System</td>
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<td>7</td>
<td>NACHA</td>
<td>National Automated Clearing House Association</td>
</tr>
<tr>
<td>8</td>
<td>NAFCU</td>
<td>National Association of Federally-Insured Credit Unions</td>
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<td>9</td>
<td>OCC</td>
<td>Office of the Comptroller of the Currency</td>
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<td>10</td>
<td>RTGS</td>
<td>Real-time Gross Settlement</td>
</tr>
<tr>
<td>11</td>
<td>RTP</td>
<td>Real time Payments</td>
</tr>
<tr>
<td>12</td>
<td>SIFMU</td>
<td>Systemically Important Financial Market Utility</td>
</tr>
<tr>
<td>13</td>
<td>TCH</td>
<td>The Clearing House</td>
</tr>
<tr>
<td>14</td>
<td>TLS</td>
<td>Transport Layer Security</td>
</tr>
<tr>
<td>15</td>
<td>TPSP</td>
<td>Third Party Service Provider</td>
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## Select parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tr>
<td>GDP</td>
<td>$21.42 trillion</td>
</tr>
<tr>
<td>Access to mobile phone*</td>
<td>94.86%</td>
</tr>
<tr>
<td>Access to internet*</td>
<td>90.40%</td>
</tr>
<tr>
<td>Branches per 100,000 adult</td>
<td>31.46</td>
</tr>
<tr>
<td>Made or received digital payment in last 1 year*</td>
<td>91.10%</td>
</tr>
<tr>
<td>Bank account*</td>
<td>93.12%</td>
</tr>
<tr>
<td>Received government wages or transfer in account*</td>
<td>64.98%</td>
</tr>
</tbody>
</table>

Others – World Bank 2017
* For age >15 years
How to read this report

• This **deep dive report** relates to the **RTP system** in **USA**
• It has been developed based on **primary interviews** with key stakeholders such as **regulators, operators** and **participants** in the system as well as by leveraging **secondary sources**
• Key secondary sources include TCH website and RTP playbooks
• The table below presents a legend to assist readers as they navigate through different sections of the report

### Legend

- The first slide of every section includes a chapter summary to provide readers with an overview of the section contents
- The green box with the adjacent icon indicates **section/sub-section summary across** the report. Reader may choose to read through this for a **high-level overview on the selected topic**
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<td>6.1. Key Features</td>
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A. Executive Summary
RTP is a real-time electronic fund transfer system operating on 24*7 basis. It was launched in November 2017.

The Clearing House (TCH) is the owner and operator of RTP. TCH Supervisory Board and TCH Managing Board have appointed RTP Business Committee to oversee and govern the system.

RTP's development was primarily a market driven initiative. In 2014, TCH announced Future Payments Initiative, this initiative paved the way for system development. RTP enables consumers, businesses and government agencies to make real-time payments in American Dollars.

TCH collaborated with Vocalink for the system development. The implementation of the RTP network took approximately 30 months.

Key features of RTP system are:

- Real time payments
- Separation of technical connection and settlement mechanism
- Operates 24x7x365
- ISO 20022 messaging standard
- Real time gross settlement
- Fraud detection services

Users can make RTP payments via traditional and alternate delivery channels (Branch, ATM, internet or mobile banking platforms).

Currently, the RTP system supports use cases/services like Bulk/Batch payments, Bill Payments, Merchant Payments, Request to Pay and Recurring Payments.

TCH is currently collaborating with participating institutions to promote the usage of bill payments. US Faster Payments Council has a working group that is looking at the possibility of enabling QR payments using real time payments, including the RTP network.

Source: TCH | Primary Interviews
B. Detailed Report
1. Overview

**Chapter sections:**
- 1.1. Background & Objectives
- 1.2. System Development
- 1.3. Key Timelines

**Chapter Summary:**
- **Future Payments Initiative** was announced in 2014 by The Clearing House that paved the way for development of RTP system
- The guiding principles of RTP system include **Ubiquity, Adaptability, Extensibility** and **Global Compatibility**
- RTP system was a **market driven initiative** as TCH worked closely with industry associations to develop a system that would fulfil payment needs in an increasingly digital economy
- TCH partnered with **Vocalink** for system development. It took approximately **12 months** to assess business requirements and **18 months** to develop RTP system and on-board initial six participants
- RTP system core infrastructure is based on Vocalinks’s **Instant Payment Service** and resembles the basic architecture used in the FPS in Singapore and Thailand
- Access model for RTP system has been customized to meet the requirements of the USA market. It **separates technical connection and settlement mechanism** and allows several approaches to participants for connecting with the system

**Source:** TCH | Primary Interviews
1.1. Background and Objectives | RTP

**RTP system** is the first new core payments infrastructure in the USA in the last 40 years. It was launched by The Clearing House (TCH) in November 2017. RTP is a real time, 24*7 payment and messaging system that allows immediate fund transfers through accounts at financial institutions. The Clearing House, payments consortium of 25 banks and various technology companies, is the owner and operator of the RTP system.

RTP system was built for financial institutions of all sizes and serves as a platform for innovation allowing financial institutions to deliver new products and services to their customers. Financial Institutions can integrate into the RTP network directly, through Third-Party Service Providers, Bankers’ Banks and Corporate Credit Unions.

RTP system was a market driven initiative as TCH worked closely with industry associations to develop a system that would fulfil payment needs in an increasingly digital economy

In 2014, The Clearing House launched its Future Payments Initiative based on the recommendations from its supervisory board, which consists of several industry leaders from financial institutions. The aim of this initiative was to develop a strategic view of RTP based on an extensive study of payment needs in an increasingly digital economy. Through this review, TCH assessed several aspects surrounding RTP:

- TCH worked closely with industry associations including the Federal Reserve, NACHA, ABA, ICBA, NAFCU, CUNA and TCH banks to identify consumer and business cases with the greatest need for RTP that represent the best incremental value for customers
- The Future Payments initiative considered the experience and lessons learnt from other countries who had already established their own real-time payments system
- TCH also reviewed ways in which a potential RTP system for the U.S. could maintain and improve the safety and soundness of existing payment systems

TCH has developed a safe, sustainable, standards-based RTP system that is inclusive of all the financial institutions (FIs) in the USA. RTP system includes extensible messaging and robust security and allows FIs to develop creative and innovative products for their customers. The guiding principles followed by TCH for development of the system include the following:

- **Ubiquity** – Accessible to FIs of all sizes and charter types in order to reach the vast majority of U.S. account holders
- **Extensibility** – Rich, flexible messaging functionality to support innovative value-added products
- **Adaptability** – Able to adapt as expectations and risk environment inevitably change over time
- **Global Compatibility** – Use of international global standards to facilitate future interoperability & to ease the implementation burden for multinational FIs

Source: TCH | Primary Interviews
1.2. System Development | RTP

Based on the findings from Future Payments Initiative, TCH announced a multiyear initiative to build a ubiquitous RTP system for the USA. Faster payments Task Force was formed to identify and assess approaches for implementing safe, ubiquitous, faster payments capabilities in the USA. TCH had submitted the design of the RTP system for an independent evaluation. RTP's proposed design met all the 36 assessment criteria identified by the task force.

Infrastructure Setup – Key decisions

- RTP system resembles the basic architecture used in the FPS in Singapore and Thailand. However, it has undergone extensive modifications to meet the local market requirements in particular settlement mechanism, access model and non-payment messages (request to pay, request to confirmation, etc.)
- Access model separates technical connection and settlement mechanism. This model was adopted keeping in mind the complexity of USA market. It allows all the financial institutions to connect with the using several approaches
- Network connectivity is via MPLS or Secure VPN. In addition to the security provided by the MPLS or Secure VPN connection, MQ Transport Layer Security (TLS) is utilized and each message is digitally signed to ensure authenticity in accordance with ISO 20022
- Real time gross settlement (RTGS) mechanism was chosen for final settlement for ensuring the settlement finality

Development Process

- The Clearing House partnered with Vocalink for the development of RTP system
- An RFP was issued for vendor selection for which TCH received response from 3 service providers. After the selection process laid out by TCH, Vocalink was on-boarded for system development in December 2015
- As development of the RTP system was a market driven initiative, the system development cost has been paid by the financial institutions owning The Clearing House

Implementation Timelines

- Technical costs involved in the system development were not high though cost of deployment for participant was significant ranging up to $2 billion
- 12 months defining the requirement of the system in collaboration with market participants
- 12 months for system development and 6 months for testing and on boarding initial six participants

Source: TCH | Primary Interviews
1.3. Key Milestones | RTP

With its launch in 2017, RTP is a relatively new system. There is a scope of several milestones as the system progresses ahead in its lifecycle journey.

- **2014**: TCH launched its Future Payments Initiative
- **2015**: Vocalink was onboarded for the system development
- **2016**: RTP was launched in November 2017
- **2017**: TCH forms an RTP Advisory Committee to gather additional input
- **2018**: FirstBank joins the RTP network
- **2019**: Wells Fargo declares it will offer RTP to corporate customers

Note: Above list is not exhaustive

Source: TCH | News Articles
1.4. Background and Objectives | FedNow

Federal Reserve announced on August 5th, 2019, that it will build and operate a real-time payments system called FedNow. Key drivers for development of the FedNow are prevailing market conditions as well as future market outlook. Federal Reserve also worked on policy considerations in case of its involvement in real time payments. Policy considerations by Federal Reserve are as follows:

- System should recover cost in the long run
- Service has to provide clear public benefit
- Service should be one that other providers alone cannot be expected to provide with reasonable effectiveness, scope, and equity

While there weren’t RTP specific gaps which prompted development of FedNow, the Federal Reserve Board’s assessment determined that in case there would only be a single fast payments solution in the USA, it would face significant challenges, including achieving nationwide reach.

FedNow

Objectives

Accessibility: Federal Reserve looked at accessibility to real time payments in case it operates the fast payments settlement service. There are 10k+ financial institutions in the USA, which are quite diverse in terms of geography, size and type of customers served. FedNow would be accessible by all these financial institutions and hence would provide nationwide reach.

Safety: Having an additional fast payments settlement service in addition to RTP would ensure resiliency in case one service faces any crisis situations. Also, as the Federal Reserve is the Central Bank, it would be able to provide liquidity and continuity in case of any crisis or natural disasters.

Efficiency: With FedNow as the core infrastructure, other financial institutions would be able to build modern and innovative service on top of this infrastructure. Having another fast payments settlement service would also provide a healthy competition just like other payment services operating in the USA. This would also ensure reduced pricing and enhanced service quality.

FedNow service is intended to be a platform which would enable FIs to develop innovative use cases / services. This service is primarily meant to facilitate real time interbank settlement. FedNow would also enable certain use cases / services based on input received from the industry participants. For example: Request to Pay service to enable convenient online bill payments, etc. Over time, participants and their partners would develop the uses cases/services desired by the end users. Federal Reserve will work with participants to supplement those services.

Source: Primary Interviews
1.5. System Development | FedNow

### Infrastructure Setup
- The Federal Reserve carried out public benefit analysis and put out a public notice for comments on features and functionality that this service should have. Based on the feedback from this public notice, the Federal Reserve will develop functionality of the FedNow system.
- Going forward, the Federal Reserve has also constituted the FedNow community consisting of stakeholders from private sector to provide insights and inputs for the development of FedNow.

### Development Process
- FedNow would be a completely new system. Settlement mechanism would be based on credit and debit of master accounts held by FIs with the Federal Reserve. FedNow is currently scheduled to be launched in 2023 or 2024.
- The Federal Reserve has requested information and currently in process of examining the proposals sent by the vendors. Meanwhile, Federal Reserve has completed drafting of ISO message flows, specifications for industry feedback, established FedNow community and drafted business requirements for the system.

### Implementation Timelines
- FedNow is expected to go live by **2023 or 2024**.
- Before the launch of the system, pilot testing will be conducted with FIs. The detailed timelines will be put in place by Federal Reserve.

### Interoperability
- The Federal Reserve is open to exploring the message exchange model in the future but that is the one that would require participation by TCH. The initial launch of the FedNow service will be intended to facilitate routing interoperability.
- The Federal Reserve is committed to working towards compatible standards and operating procedures with the existing private-sector service, which will enable interoperability through the model of payment routing, and has initiated discussions on this subject with the existing private-sector service toward that end.

Source: Primary Interviews
2. Business and Operating Model

Chapter sections:
2.1. FPS Structure
2.2. Participants
2.3. Payment Instruments and Payment Types
2.4. Aliases, Access Channels & Agent Networks
2.5 Scheme Pricing and Fee Structure
2.6 Use Cases/Services

Chapter Summary:
• TCH is the owner and operator of RTP system. RTP Business Committee has been appointed for overseeing the system activities
• RTP allows every federally insured depository institution in the USA to become a participant in the system. These institutions can connect with the system directly or through a third-party service provider (TPSP)
• RTP enables consumers, businesses and government agencies in the USA to make payments in American Dollars between accounts, e-wallets of the participating financial institutions
• RTP doesn’t support aliases for completion of payments on its core infrastructure, though third-party PSPs can enable aliases through their application for the end users
• RTP supports form-factor neutrality and allows transactions across both traditional and alternate delivery channels
• Agent networks (assisted mode of transfer) are not supported in RTP network
• RTP system follows same pricing structure for all participants with no volume discounts, no volume commitments and no monthly minimums to ensure that financial institutions of all sizes participate on the same terms
• RTP Participants are free to decide on charges levied to end users
• RTP supports multiple use cases/services like Request to Pay, Merchant Payments, Bill Payments, Bulk/Batch Payments and Standing Orders

Source: TCH | Primary Interviews
2.1. FPS Structure

- The Clearing House (TCH) is the **owner operator and overseer** of RTP system.

- TCH is owned by the **consortium of commercial banks and technology companies** in the USA and is responsible for overseeing the day-to-day operations and maintenance of the system.

Source: TCH | Primary Interviews

- The Board of Governors of the Federal Reserve System (FRB), Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC) jointly regulate TCH and services provided by it.

- These institutions are not responsible for direct supervision of RTP system. RTP Business committee is responsible to govern the RTP system.

Source: TCH | Primary Interviews

- TCH is owned by consortium of commercial banks and technology companies in the USA

- It is responsible for overseeing the day-to-day operations and maintenance of the system
2.2. Participants (1/3)

- RTP allows every federally insured depository institutions in the USA to connect with the system. These institutions can either directly connect with the system or through TPSPs.

- Prospective Participants need to comply with the business and operating rules and undergo technical assessment to connect with the system.

Requirements for Participants

- To become a direct participant in RTP system, financial institutions have to meet the following requirements:
  - Comply with the business and operating rules set by the TCH
  - Undergo technical assessment
  - Financial institutions connecting indirectly through TPSPs also have to undergo certification process for connecting with the system.

Membership Statistics

- As of November 2020, there are 63 participant banks and credit unions in the RTP system.
- Other service providers:
  - 19 Third Party Service Providers (TPSPs)
  - 4 funding agents

Participants can connect as either funding participants or non-funding participants. Non-funding participants have to appoint funding providers or funding manager to fulfill their settlement obligations.
2.2. Participants (2/3)

**Regulatory Considerations**

**Only a depository institution** is eligible to become a Participant in the RTP System. These institutions should have ability to connect with the system either directly or through a TPSP that has been approved by TCH, in accordance with RTP Operating Rules and the RTP Technical Specifications.

Bankers’ Banks and Corporate Credit Unions may provide connections to the RTP network as well as liquidity management services for financial institutions that may not want to connect directly to the RTP system.

There are four participant categories defined as per RTP participation rules:

- **Funding participant**: Funding participant becomes a party to the RTP Prefunded Balance Account Agreement with the Prefunded Balance Account Bank Agreement and requests and receives disbursements from the Prefunded Balance Account to its Federal Reserve account. In case it is a sending participant, it is required to fulfil prefunding obligations. Funding participant is required to:
  - Maintain a reserve or clearing account with a Federal Reserve Bank
  - Be accepted as a funding participant by TCH and the prefunded balance account bank
- **Non-funding participant**: Non funding participant has to designate a Funding Agent to act on its behalf to prefund in accordance with these RTP Participation Rules and the RTP Operating Rules.
- **Receiving participant**: Participant that holds the Receiver’s Account and that receives a Payment Message.
- **Sending participant**: Participant that holds the Sender’s Account and initiates a Payment Message.

A participant must be (i) **either a funding participant or a non-funding participant**, and (ii) **a receiving participant**. A participant also may be a sending participant.

**Onboarding Process**

For participation in RTP, interested depository institution must communicate intention to TCH:

- Certification testing to verify the technical requirements for handling both payment and non-payment message.
- TPSPs must also certify all the FIs connecting through it or the **core banking solution** (in case of large TPSP).
- Documentation (participants must enter into a participation agreement with TCH).

**Interoperability**

- Transfers between banks and non-banks participants are allowed.

**Connectivity**

- Due to the high number of Financial Institutions in the USA, ease of connectivity is critical for all FIs. Using TPSP’s technical connection, small FIs that are able to connect with the system through TPSPs. This connectivity option was an added incentive for smaller FIs to join.

Source: TCH | Primary Interviews
2.2. Participants (3/3)

**Regulatory Considerations**

RTP Prefunded Balance Account Agreement is an agreement that TCH, funding participants and funding agents enter into with the Prefunded Balance Account Bank. The joint prefunded balance account is used for the purpose of supporting the operations of the RTP System. According to this agreement:

- All the funds deposited in prefunded balance account are payable exclusively in accordance with the instructions of TCH, which acts as agent on behalf of all funding participants and funding agents
- Prefunded Balance Account is only used in support of RTP activities. Participants and funding providers can maintain excess liquidity for only in case of reasonably anticipated liquidity needs for their or their non-funding participants’ RTP Payments
- Funding agent become a party to the Prefunded Balance Account Agreement. It is either a Funding Manager (provides prefunded requirement, supplemental funding and requests disbursements for its non-funding participant); or a Funding Provider (depository institutions that have their own current prefunded position and provides funding for non-funding participants through it)

**Use of Third-Party Service Providers**

Participants can designate a third-party service provider to act on its behalf as agent to send and receive transmissions of Payment Messages, Payment Message Responses, and Non-payment Messages, using the TPSP’s technical connection.

**Requirements for Third-Party Service Providers are:**

- It must be designated by one or more Participants to act as a Third-Party Service Provider in accordance with procedures established by TCH
- It must satisfy the applicable provisions of the RTP Information Security Standards and Requirements and the RTP Technical Specifications, as certified by the Participant in accordance with procedures established by TCH

Source: TCH | Primary Interviews
2.3. Payment Instruments and Payment Types

- RTP allows **credit transfer** and **e-wallets** as payment instruments. Direct Debits are not supported for RTP payments.

- RTP enables **consumers, businesses and government agencies** in the USA to make payments in American Dollar between accounts of the participating depository institutions.

- Credit transfer limit on the RTP network is currently **$100,000**

### Payment Instruments Supported

- **Credit Transfer** ✔
- **Direct Debit**
- **E-money** ✔

### Interoperability

- RTP supports credit transfer and e-wallets as payment instruments. TCH supports Venmo (which is a wallet) to use RTP for instant money transfer to a consumer’s account.

- Account to account interoperability is supported in RTP through credit transfer. The design principle of RTP network is based on ‘Credit Push’ meaning that the customer authorizes the debit each time.

### Payment Types and Transaction Limit

- **Individual** ✔
- **Business** ✔
- **Government** ✔

- **Credit transfer limit on the RTP network is currently $100,000**

- Sending Participants are allowed to establish a lower transaction limit for their senders. Receiving Participants are not allowed to establish a lower transaction limit for their receivers.

### Transaction Currency

- **American Dollar (USD)**

*Source: TCH | Primary Interviews*
2.4. Aliases, Access Channels and Agent Networks

RTP doesn’t have its own aliasing service though third-party application can enable use of aliases for RTP payments. RTP allows transactions through both traditional and alternate delivery channels. It **does not support payments through agent networks**.

### Aliases

- RTP system inherently **doesn’t support use of aliases or proxies for payments**. Though the network allows third parties to enable alias or proxy payments.

- **PayPal & Venmo** currently use the RTP network for transfers to their clients bank or credit union accounts using aliases. TCH has entered into partnerships with payment service providers Zelle to provide settlement services. Currently, integration of RTP and Zelle is under progress. Zelle allows use of mobile number or email address as aliases.

- There are **no plans to launch RTP’s own social alias/proxy service** because the market is already well served and existing alias/proxy services might transition to RTP payments to clear and settle transactions.

- The RTP network will **support tokenization of account numbers** which could be a way to allow payment originators and payment service providers to replace account numbers with tokens that cannot be used to debit accounts, nullifying the threat of data breach.

### Access channels and Agent Networks

<table>
<thead>
<tr>
<th>Access channels and Agent Networks</th>
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</thead>
<tbody>
<tr>
<td>Branch</td>
</tr>
<tr>
<td>ATM</td>
</tr>
<tr>
<td>Mobile Banking/Apps</td>
</tr>
<tr>
<td>Internet Banking</td>
</tr>
</tbody>
</table>

- **RTP supports form-factor neutrality** and allows transactions across both traditional and alternate delivery channels.

- **RTP network is core payment system** and doesn’t deploy any end user applications. It can support payments through **proximity-based channels**. Though currently there are no end user applications supporting payments through QR and NFC.

- **Agent networks (assisted mode of transfer) are not supported** in RTP system.

*Source: Primary Interviews*
2.5. Scheme Pricing and Fee Structure

RTP system follows same pricing structure for all participants with no volume discounts, no volume commitments and no monthly minimums to ensure that financial institutions of all sizes participate on the same terms.

**Network fees**

The system participants are not required to pay joining fees while onboarding the system. Participants pay only for the transactions they originate.

<table>
<thead>
<tr>
<th>Credit Transfer Sent</th>
<th>Request for Payment Sent</th>
<th>Remittance Advice Sent</th>
<th>Prefunded Balance Account Drawdown Request Executed</th>
</tr>
</thead>
</table>

**Fees owed to other participants**

**Request for Payment Incentive Fee**: Upon each successful RTP Credit Transfer sent in response to a Request for Payment message, the participant that initiated the Request for Payment owes the incentive fee to the participant initiating the RTP credit Transfer.

TCH facilitates the collection and disbursement of Request for Payment Incentive Fees between participants. TCH is not obligated to distribute incentive Fees that TCH is unable to collect from the owing participant.

**Fee charged to users/payee**

Each RTP Participant is free to decide the transaction charges levied to end users.

**Network-at-Cost Pass-through**

Overall cost of connectivity associated with either the MPLS or secure VPN connections to the RTP network is calculated by The Clearing House and charged as pass through on a monthly basis. Connectivity costs applies to any participant with a direct connection. In case of third-party service provider, connectivity fee is shared by financial institutions connecting through it.

Source: TCH | Primary Interviews
2.6. Use Cases/Services

RTP is a core payment system which has been designed to accommodate **multiple use cases/services**. TCH is focused on facilitating an able infrastructure using which FIs can develop innovating use cases/services for end consumers.

### Request for Payment

- **Payment Instruments**: Credit transfer
- **Access Channels**: Mobile, Internet
- **Pricing Scheme**: No special charge

- RTP system supports ‘Request for Payment’, which require a **payer to authorize a payment** in response to the request.
- In the payment message, the payer is provided with the necessary **pre-populated information** for the RTP payment.
- This functionality provides payees with an effective method to initiate a potential transaction, while also **combatting fraud** and allowing the **payer to maintain control** over the payment flow.

### Merchant Payments

- **Payment Instruments**: Credit transfer, E-money
- **Access Channels**: Mobile
- **Pricing Scheme**: No special charge

- Merchant Payments are supported as a use case in RTP system.
- Similar to Bill Payments, Request for Payment acts as a **complementary service** to drive the adoption of Merchant Payments.

### Bulk/Batch Payments

- **Payment Instruments**: Credit transfer
- **Access Channels**: Internet
- **Pricing Scheme**: No special charge

- Bulk/Batch payments (e.g., payroll, etc.) are supported in RTP system though it is processed in form of individual credit transfer payments.
- Participating financial institutions disaggregate the bulk payments order and submit them in form of series of individual RTP payments.

### Recurring Payments

- **Payment Instruments**: Credit transfer
- **Access Channels**: Mobile, Internet
- **Pricing Scheme**: No special charge

- Recurring Payments or Standing Orders are supported in RTP.
- Users may have the option to set up a recurring transaction with their respective FIs. Though user have to authorize the payment at every instance.

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**Source**: TCH | Primary Interviews
3. User Adoption

RTP Network Coverage by US Deposit Share

As of now, RTP network reaches **over 56% of U.S. transaction accounts**, and is on path to reach nearly all U.S. accounts by end of 2020. Zelle is the preferred network for individual payments as it allows use of aliases. Currently, Zelle uses legacy ACH-next day settlement mode. With the integration of Zelle with RTP for the settlement service, P2P payments initiated through Zelle will also be processed using RTP network.

**Source:** TCH website

**Note:** Adoption statistics are confidential and not published by TCH
4. Technical Details and Payment Process

Chapter sections:
4.1. Technical Details | Messaging Format and QR Codes
4.1. Technical Details | APIs and Customer Authentication
4.2. Payment Process (Customer Registration, Transaction Fulfilment, Liquidity Management and Settlement)

Chapter Summary:
• RTP system is based on ISO 20022 standard as it allows global interoperability, rich remittance data, uniform and reusable messages and paves way for system as a strategic platform for innovation
• As a core payment infrastructure, RTP can support QR payments. Currently, no financial institutions and payment service providers are using RTP system for QR payments
• APIs have not been enabled by TCH for RTP system. Participants are providing APIs to end customers for transaction instructions as well as value added services
• TCH has mandated use of multi factor authentication for all RTP payments. These standards comply with the strong customer authentication standards
• RTP does not require one-time customer registration. Any account at a participating FI can receive RTP credit transfers without registration. The payment process includes payer-payee transaction fulfilment and inter-participant settlement
• RTP uses real time gross settlement mechanism for final settlement between the participants as it allows instant settlement finality

Source: TCH | Primary Interviews
4.1. Technical Details | Messaging Format and QR Code

RTP has adopted **ISO 20022** messaging standard for allowing rich flow of information. Currently RTP is **not being used for QR payments** though a working group of the US Faster Payments Council is looking at possibility of enabling QR payments using real time payments.

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**Messaging Format**

- **ISO 20022**

**QR Code**

- **Not supported, though system has technical capability to support QR payments**

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- **ISO 20022** was chosen as messaging standard as it enables **rich and consistent** follow of information. FIs can embrace this information to build new and innovative products by embedding extensive information not available in current payment messages into RTP payment messages.

- The quantity and quality of data carried in ISO 20022 messages can be extended to include remittance notes and additional supplementary information which reduces the need for custom development in specific geographic markets or industries to deliver to specific client needs.

- Further, the use of the ISO 20022 standard enables multinational FIs and corporates to utilize **one message standard across all payment related activities**.

- While RTP is a domestic payment system, use of ISO 20022 positions the system to support **cross-border commerce and interoperability** with other schemes as real time payments evolve in the global marketplace.

---

**Source:** TCH | Primary Interviews
4.1. Technical Details | APIs and Customer Authentication

TCH doesn’t issue any APIs for the RTP system to the participants, though participants enable APIs for their end customers. TCH has mandated use of **multi factor authentication** for RTP payments.

### APIs

- **APIs are not enabled** by TCH for the RTP system as participants connect using ISO 20022 messages with the system.
- Establishing connection through ISO 20022 messages has been purposeful due to rich nature of information provided by these standards and helps FIs in developing products for end customers. While API based connection would have limited this information flow.
- Many financial institutions offer APIs to their end customers for **transaction instructions** as well as other value-added services such as checking transaction status, fetching transaction details, etc.

### Customer Authentication

- According to the RTP Operating Rules, participants are mandated to establish **multifactor authentication** (something you know and something you have or something you are) to authenticate the identity of customers.
- The TCH RTP system is open and flexible and supports various authentication methods depending on customer segment or channel used to initiate the transaction.
- Participants are also obligated implement a layered security program that includes fraud detection and monitoring as well as other effective controls.
4.2. Payment Process

RTP does not require one-time customer registration. Any account at a participating FI can receive RTP credit transfers without registration. The steps in the payment process include **payer-payee transaction fulfilment and inter-participant settlement**.

1. **Customer Registration**
   - One-time
     - Customer registration
     - Creation of alias (if applicable)

2. **Transaction Fulfilment**
   - Transaction Basis
     - Transaction Flow
     - Connectivity between participants

3. **Inter-Participant (PSP) Settlement**
   - Real time settlement
     - Approach for settlement and liquidity management
4.2. Payment Process | Customer Registration

Participating financial institutions are required to establish customer onboarding process in RTP system. Typical process for customer registration has been described below:

- RTP system is the **core payment infrastructure** to facilitate real-time payments. It is not involved in development of end user applications. **TCH does not prescribe any onboarding process. Only onboarding requirements relate to senders of Requests for Payments.** Customers can make RTP payments through existing channels like internet banking and mobile banking.

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**RTP does not require a customer onboarding process however participant FIs can establish onboarding procedure for a specific service. Onboarding process for one of the participant FIs has been described below:**

1. Step 1: Customer downloads the mobile banking application
2. Step 2: Customer requests for new registration through the application
3. Step 3: Customer registers using the Social Security Number (or Tax ID), an existing ATM, credit or debit card number, and associated PIN
4. Step 4: Bank verifies the details and send a confirmation message to the customer

To make a real-time payment, customers log on to mobile banking application or internet banking with biometrics or through digital or physical security device.

**Source:** HSBC Bank
### 4.2. Payment Process | Transaction Fulfilment | Illustrative for Request for Payment

Typical transaction fulfilment process which is followed for **Request for Payment with Credit Transfer** has been described below. Intra-bank transfer are not supported in RTP system.

![Diagram of payment process](image)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 sec</td>
<td>Request for Payment</td>
<td>Notification of Request for Payment</td>
</tr>
<tr>
<td>0 sec</td>
<td>Initiation</td>
<td>Request for Payment</td>
</tr>
<tr>
<td>1 sec</td>
<td>Authentication</td>
<td>Payment initiated (channel specific)</td>
</tr>
<tr>
<td>2 sec</td>
<td>Clearing</td>
<td>Credit transfer (pacs.008)</td>
</tr>
<tr>
<td>3 sec</td>
<td>Receipt and Settlement</td>
<td>Credit transfer (pacs.008)</td>
</tr>
<tr>
<td>5 sec</td>
<td>Reconciliation</td>
<td>Accept/Reject (pacs.002)</td>
</tr>
</tbody>
</table>

The payment request message is delivered in real time by the RTP core infrastructure; however, the payer determines when to initiate a credit transfer in response to the request for payment.

Source: RTP Playbooks
Final settlement in RTP is done through **Real-time Gross Settlement (RTGS)** mechanism. This mechanism was used with a prefunding model to enable the immediate finality of payments without settlement risks.

<table>
<thead>
<tr>
<th>Settlement Mechanism</th>
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<tbody>
<tr>
<td><strong>Approach</strong></td>
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<tr>
<td>Real time</td>
</tr>
</tbody>
</table>

- Settlement in RTP system is done through **Real-time Gross Settlement** mechanism through a fully prefunded account, jointly owned by all the financial institutions in the Federal Reserve. The use of a prefunded model to achieve real time settlement eliminates the settlement risk and enables immediate finality of all payments.
- In 2017, Federal Reserve published regulations for creation of **Joint Federal Reserve account** that can be owned by multiple FIs. This joint account allows financial institution to pool their funds and facilitate innovative payment services. RTP system uses similar joint prefunded balance account for fulfilling settlement obligations of the participants.
- The RTP system clears and settles payments on a **good funds model**. The RTP system verifies and reserves settlement capacity by the sending participant before forwarding the payment to the receiving participant, eliminating the risk of settlement failure. In case the sending participant has an insufficient prefunded position to cover a payment, the core infrastructure will reject the payment. Overdrafts or negative prefunded positions are also not permitted in the RTP system.
- **TCH has established a prefunded requirement for each sending participant, which must be funded and maintained by the financial institution to send payments.** Financial institutions that do not fund for themselves must have an **arrangement in place with another financial institutions for fulfilling funding obligations**.
- **RTP system continuously records net position and current prefunded position.** In case of successful transfer, system records entries by decreasing net position and current prefunded position of sending participants or funding provider, and increases net position and current prefunded position of receiving participants or its funding provider.
- Participants provide funding through **Fedwire payments** to the joint account. Prior to the close of Fedwire, financial institutions must ensure that there is sufficient prefunding in place to fund the net amount of transactions until Fedwire reopens on the next business day.
- If a Payment Message is cancelled, **no changes are made to the Net Position or Current Prefunded Position** of the Receiving Participant or the Current Prefunded Position of the Funding Provider.
- Settlement with respect to a Payment Message is complete when the RTP System has recorded both the decrease in the Sending Participant’s Net Position and the increase in the Receiving Participant’s Net Position in the joint federal reserve account.

**Source:** TCH | Primary Interviews

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Chapter summary:

- The legal framework supporting RTP activities is comprised of RTP Operating Rules and RTP Participating Rules along with existing payments laws wherever applicable.

- TCH is regulated and is regularly examined by supervisory staff from the Board of Governors of the Federal Reserve System (FRB), Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC). The Federal Reserve entity that regulates the RTP Network directly is the Federal Reserve Bank of New York, under a regulatory framework established by the Federal Reserve Board.

- TCH has established the RTP Business Committee to govern the RTP network. It is responsible for providing input and guidance on the strategic execution of the RTP network.

- RTP Operating Rules have established multiple layers of risk mitigation for the system. Apart from this, TCH also applies a risk management framework for ensuring security, reliability, and resiliency of the system.

- Settlement risk is eliminated in RTP system by using fully pre-funded real-time settlement.

- No centralized guidelines has been issued by TCH for inter-bank dispute scenarios and customer complaints resolution. US Federal regulations (Regulation E) and State laws (UCC 4a) govern both interbank and customer disputes. Though RTP System provides a mechanism to participants to send and respond to requests for the return of funds.
5.1. Legal, Regulatory and Governance Aspects (1/2)

TCH has established **RTP Participation and Operating Rules** to constitute the legal framework of the system. Existing laws has been also incorporated to complete the legal basis of the system.

<table>
<thead>
<tr>
<th>Institutional and Governance Framework</th>
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<tbody>
<tr>
<td><strong>Legal Framework</strong></td>
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<tr>
<td>RTP Participation and Operating Rules along with existing relevant laws</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulator</th>
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<tbody>
<tr>
<td>FRB, OCC and FDIC</td>
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<table>
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<tr>
<th>Overseer and Operator</th>
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<tbody>
<tr>
<td>The Clearing House</td>
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</table>

- **RTP Participation and Operating Rules** act as the legal framework for the system. These RTP Operating Rules have been drafted to define the **rights and responsibilities** of **participants and TCH** with respect to RTP.
- The participation rules will address topics including, among others, general eligibility requirements; the process for connecting to the RTP system through a third-party service provider; and requirements in the event of a change of name, form of organization, or control of a participant.
- The operating rules will address topics including, among others:
  - General participant eligibility requirements and operating responsibilities
  - Eligible payments
  - The protection of confidential information and customer information security
  - Payment notification and messaging
  - Funds availability
  - Errors and unauthorized transfers
  - Funding and settlement
  - Risk management
  - Enforcement of RTP rules

- **Choice of Law**
  - **EFTA (Electronic Fund Transfer Act) Consumer Payments** (For an RTP Payment any part of which is subject to the EFTA): the rights and obligations of a Participant and end user is governed by:
    - the EFTA and Regulation E, to the extent applicable to the transaction
    - to the extent consistent with EFTA and Regulation E as applicable to an RTP Payment, by RTP Operating Rules, and the laws of the State of New York, excluding Article 4-A of the New York Uniform Commercial Code
  - **Commercial and Non-EFTA Consumer Payments** (For an RTP Payment in which no part of the transaction is subject to the EFTA): Sending Participant, Receiving Participant and other parties involved in an RTP transaction are governed by RTP Operating Rules and by the laws of the State of New York, including Article 4-A of the New York Uniform Commercial Code.

**Source:** RTP Operating Rules | RTP Playbooks
Federal Reserve is not actively engaged in the oversight of the RTP system. Although Federal Reserve has supervisory authority over its operator TCH because of its operation of CHIPS that has been designated under the USA Law.

- Due to the important nature of the Clearing House’s role in the USA financial system, it is regulated and is regularly examined by supervisory staff from the Board of Governors of the Federal Reserve System (FRB), Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC).

- The Federal Reserve entity that regulates the RTP Network directly is the Federal Reserve Bank of New York, under a regulatory framework established by the Federal Reserve Board.

- Under the Bank Service Company Act, the Clearing House, and all of the payments systems it operates including the RTP network, are subject to regulation and examination to the same extent, as if the services being provided were being performed by a depository institution that is subject to FRB, OCC or FDIC supervision itself.

- Through an arrangement among the federal financial regulatory agencies through the Federal Financial Institutions Examination Council, the FRB acts as the lead examiner of TCH for examinations conducted under the Bank Service Company Act.

- The Clearing House has also been designated by the Financial Stability Oversight Council as a Systemically Important Financial Market Utility (SIFMU) under Title VIII of the Dodd-Frank Act and is subject to a regulatory and supervisory regime.

- While TCH’s regulation and supervision under Title VIII relate specifically to its role as the operator of CHIPS, TCH operates as a single entity in the operation of its payments systems and, therefore, many of the requirements of Title VIII may affect its broader operations such as RTP system.

- Federal Reserve is not actively engaged in the oversight of the RTP system. Federal Reserve and other federal agencies regulate TCH payment systems, including the RTP network, as a Technology Service Provider. Also, there is a separate examination process for the regulation of the CHIPS (high value payment network) as a SIFMU.

- TCH has constituted RTP business committee in order to perform overseeing activities for RTP system.
5.1. Legal, Regulatory and Governance Aspects (3/3)

TCH has established **RTP Business Committee** to govern the RTP network, comprised of representatives from **TCH owner banks** and representatives from **non-member financial institutions**.

- **Institutional and Governance Framework**
  - **Legal Framework**
    - RTP Participation and Operating Rules along with existing relevant laws
  - **Regulator**
    - FRB, OCC and FDIC
  - **Owner and Operator**
    - The Clearing House

- The principal governance arrangements for the RTP system have been set forth in the **limited liability company agreement**. Management of TCH is under the direction of two boards of directors: the **Supervisory Board** and the **Managing Board**.

- According to the LLC Agreement, Supervisory Board has overall responsibility for the business of TCH, while the Managing Board, which reports to the Supervisory Board, is responsible for oversight of TCH’s business and financial performance and for setting TCH’s strategic agenda.

- TCH has established the **RTP Business Committee** to govern the RTP network. It is responsible for providing input and guidance on the strategic execution of the RTP network.

- The Business Committee is also responsible for ensuring **prudent risk management practices**, promoting the design, operation, and management of the system, and establishing or amending the rules for the RTP network.

- The RTP Business Committee is comprised of representatives from **TCH owner banks** and representatives from **non-member financial institutions**. The participation of non-member financial institutions ensures that non-member financial institutions have an active voice in the governance of the RTP network.

- In addition, the RTP system is also managed and supported by executives, officers, and employees of TCH, including product, operations, technology, customer relations, risk-management, audit, and legal staff.

Source: RTP Operating Rules | RTP Playbooks
5.2. Risk Management

TCH applies a risk management framework for operation of the RTP system for ensuring security, reliability and resiliency of the system. RTP Operating Rules have also established multiple layers of risk mitigation:

- All participants are required to meet information security requirements including multi-factor authentication of originators and data center security standards
- The RTP network is configured for multi-site, multi-node, high availability operation. The multi-site operation is active/active for continuous operation
- All data transmissions are encrypted and require digital signatures at sign-on. All messages are encrypted and digitally signed
- Administrative access by participants, processors and operators are subject to privilege-based access controls secured by individual tokens
- RTP operating rules also require that sending participants employ multi-factor authentication and processes to detect and prevent unauthorized payment initiation. The RTP network does not support debit transactions, only credit transfers. All payments must be authorized by the sender to their financial institution
- All message exchanges are based on an assured delivery model. The receiving participant must send a confirming message, or the transaction is cancelled. The network sends final confirming messages to both the sending and receiving participant. The message flows are designed to ensure a “fail safe” outcome in all operational failure scenarios.
- Participants are required to report all incidents of fraud to RTP network administration for tracking and analysis
- Based on incidents reported by participants or analysis of network activity, Network administration can request an investigation of suspicious activity on any of its accounts
- RTP network administration also monitors the operational performance of participants and processors, and will require remediation of any situation that may adversely affect network performance or the operations of other participants

TCH also applies a risk management framework for operation of the RTP system. This framework exists outside of the RTP Operating Rules, and includes significant resources devoted to system reliability and resiliency, security (e.g., physical, operational, network security), incident response, overall risk management, and comprehensive business continuity plans.
## 5.2. Risk Management

Settlement risk is eliminated in RTP system by using fully **pre-funded real-time settlement**. TCH has established several guidelines for participants for maintaining their pre-determined pre-funded positions. TCH has also issued guidelines for mitigating fraud risks.

### Credit and Liquidity Risks

- TCH has a sole discretion to determine the prefunding requirement for:
  - Sending participant that is a funding participant in the system
  - Sending participant that is a non-funding participant but has a current prefunded position (participants with a funding obligation)
  - Each Funding Provider
- During Fedwire operating hours, participant with funding obligations and funding providers are **required to monitor their current prefunded position** and provide supplemental funding to the Prefunded Balance Account if current prefunded position falls below their prefunded requirements.
- Supplemental funding for maintaining current prefunded position based on prefunded requirement should occur:
  - No later than the next opening of Fedwire, if the current Prefunded Position falls below the Prefunded Requirement during hours when Fedwire Funds is closed
  - Before the next close of Fedwire, if the Current Prefunded Position falls below the Prefunded Requirement during hours when Fedwire is open
- During Non-Fedwire hours, supplemental funding is provided in advance of the close of Fedwire to ensure that the funding provider or participant’s current prefunded position is sufficient to cover its anticipated payment origination activity when Fedwire is closed.
- Funding providers and participants with funding obligations can also have arrangements with each other to **transfer liquidity through RTP Payments** in case their current prefunded position becomes low during Non-Fedwire hours. Such liquidity transfers must be reported to TCH **within ten banking days** using procedures specified by TCH.

### Fraud Risks

- TCH has established a tiered approach to fraud prevention and mitigation as not all financial institutions participate in real-time payments at the same level.
- All participating financial institutions are required to:
  - Comply with **Federal Financial Institutions Examination Council (FFIEC) guidelines** as applied through prudential regulator examination
  - Report fraudulent behavior to The Clearing House and/or sending financial institutions
  - React to alerts from centralized activity monitoring utility
- Apart from these, there are additional compliance requirements for FIs that support request for payments and permit third party payments
- In addition to the centralized fraud monitoring, TCH has **ability to limit the RTP activities of participating FIs** that violate system rules and risk management requirements.

Source: RTP Operating Rules | RTP Playbooks
5.2.1. Cyber Resilience and Data Management

As per the RTP Operating Rules and RTP Customer Information Security Standards and Requirements, TCH has established guiding principles for ensuring the cyber resilience and data privacy. It has also obligated participants to follow certain guidelines for safeguarding the sensitive information.

**Cyber Resilience**

- TCH monitors its system and its procedures for security breaches, violations, and suspicious activity, including suspicious external activity (unauthorized probes, scans, or break-in attempts) and suspicious internal activity (unauthorized system administrator access, unauthorized changes to its system or network, system or network misuse, or theft or mishandling of customer information).
- Industry-standard information channels are monitored by TCH for newly identified system vulnerabilities regarding the technologies and services (including application software, databases, servers, firewalls, routers and switches, hubs, etc.) and fix or patch any identified security problem as soon as commercially reasonable, based on TCH’s determination of the severity level of the security problem.
- TCH maintains and implements appropriate plans to assure its continued operation. These plans shall include the following: recovery strategy, documented recovery plans covering all areas of operations necessary to delivering services as required by the RTP Operating Rules, vital records protection, and testing plans.
- The plans shall provide for backup of critical data files, customer information, application software, documentation, forms and supplies. The recovery strategy shall provide for recovery after both short- and long-term disruptions in facilities, environmental support, and data processing equipment.
- TCH shall continue to provide service to a participant if the participant activates its contingency plan or moves to an interim site to conduct its business, including during tests of the Participant’s contingency operations plans.
- TCH’s contingency plans for disruptions in facilities, environmental support, and data processing equipment provides the ability to bring any impacted operations that are necessary to delivering services as required by the RTP Operating Rules up to full capacity at its back-up site within 60 minutes of a declared disaster.

**Data Management**

- RTP Operating Rules include provisions regarding the treatment of confidential information by TCH and participating FIs including encryption requirements for the storage and transmission of RTP message data.
- Participating FIs holding customers’ accounts are subject to existing consumer privacy laws regarding the proper use of consumer data and restrictions on disclosure of such information to third parties. Participating FIs are subject to the Gramm-Leach-Bliley Act, which governs the treatment of nonpublic personal information about consumers by financial institutions and requires financial institutions to safeguard the security and confidentiality of customer information.
- Additionally, the PSP compliance criteria require PSPs that access the RTP system through banks to develop and implement administrative, technical, and physical safeguards to protect the security, confidentiality, and integrity of customer information, as well as to ensure the proper disposal of customer information.

Source: RTP Operating Rules | RTP Playbooks
5.3. Dispute Resolution and Customer Complaints

No centralized guidelines has been issued by TCH for inter-bank dispute scenarios and customer complaints resolution. Though RTP System provides a mechanism to participants to send and respond to requests for the return of funds.

<table>
<thead>
<tr>
<th>Inter-bank Dispute Resolution</th>
<th>Customer complaints</th>
</tr>
</thead>
<tbody>
<tr>
<td>• RTP Operating Rules incorporate existing laws (i.e., EFTA, Regulation E and UCC 4A) that sets forth a well-established framework regarding banks’ liability for unauthorized transactions from their customers’ accounts, as well as specific requirements regarding the resolution of errors from consumer accounts</td>
<td>• There are no centralized guidelines for resolution of customer complaints</td>
</tr>
<tr>
<td>• This structure simplifies the account-holding financial institution’s dispute investigation processes and minimize the need for a detailed set of interbank dispute resolution rule</td>
<td>• Though RTP Operating Rules obligates the sending financial institutions to put in place policies and procedures for handling customer claims for unauthorized transfers and funds sent in error</td>
</tr>
<tr>
<td>• RTP System provides a mechanism to participants to send and respond to requests for the return of funds for any reason, including unauthorized or erroneous RTP Payments</td>
<td>• Disputes and exception scenarios are addressed by additional messages such as request for information and request for return of funds. Currently, number of disputes and exception scenarios are low in RTP</td>
</tr>
<tr>
<td>• TCH shall not be a party to any dispute between Participants regarding liability for erroneous or unauthorized RTP Payments. Such determination is left to the participants, including through any available dispute resolution and/or judicial process</td>
<td>• Receiving FIs must have policies and procedures to respond to requests to reclaim funds sent in error</td>
</tr>
<tr>
<td>• TCH shall only be liable for RTP Payments if such RTP Payments are unauthorized and the RTP Payments were caused by dishonest or fraudulent acts of TCH or its representatives</td>
<td></td>
</tr>
</tbody>
</table>

Source: TCH | RTP Operating Rules
6. Annexure

Chapter sections:
6.1. Key Features
6.1. Key Features

### Key Highlights

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Operating hours</td>
<td>• 24*7 including weekends and bank holidays</td>
</tr>
<tr>
<td>Payment Speed</td>
<td>• Real time</td>
</tr>
<tr>
<td>Transaction limit</td>
<td>• $100,000</td>
</tr>
<tr>
<td>Alias</td>
<td>• No aliases supported by the core infrastructure</td>
</tr>
<tr>
<td>Channel</td>
<td>• Branch, ATM, Internet banking and Mobile banking</td>
</tr>
<tr>
<td>User Charges</td>
<td>• At participants’ discretion to charge customers for RTP payments</td>
</tr>
<tr>
<td>Infrastructure Setup</td>
<td>• New system</td>
</tr>
<tr>
<td>Messaging format</td>
<td>• ISO 20022</td>
</tr>
<tr>
<td>Use of Open APIs</td>
<td>• Open APIs not available</td>
</tr>
<tr>
<td>Authentication</td>
<td>• Multifactor authentication</td>
</tr>
</tbody>
</table>

### Payment Types & Use Cases/Services

- **Individual**
  - Merchant Payments
  - Cross-border payments
  - Recurring payments

- **Business**
  - Bulk / Batch Payment
  - Request to Pay
  - Bill payments

- **Government**

### Settlement

<table>
<thead>
<tr>
<th>Approach</th>
<th>Type</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub</td>
<td>Real time</td>
<td></td>
</tr>
<tr>
<td>RTGS</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Distributed clearing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The ClearingHouse | ACI Report | FIS Report