THE **FEDERAL RESERVE**
Financial Services

FedNOW 24|7 ℠
INSTANT PAYMENTS

*The FedNow℠ Service
Readiness Guide*

Welcome to the FedNow Service Readiness Guide

The Federal Reserve Banks are designing the FedNow Service, a safe and efficient instant payments infrastructure that will help modernize the U.S. payments system.

Financial institutions of all sizes across the United States that are eligible for Federal Reserve Financial Services will be able to use the FedNow Service to enable their customers to instantly send and receive money any time of day, any day of the year.

With the FedNow Service, financial institutions, their service providers and others in the payments industry can unlock a range of innovative instant payment use cases that offer benefits all around.

FINANCIAL INSTITUTIONS
Remain competitive, create new products and meet the needs of customers

INDIVIDUALS
Instantly send and receive money with confidence and reduce the risk of overdraft and late fees

BUSINESSES
Gain better control of cash flow management, improve efficiency of corporate payments and streamline reconciliation processes

We invite you to start preparing now for the FedNow Service. And this guide is here to help.

Get to Know the FedNow Service

With the FedNow Service, funds will settle between participating financial institutions (FIs) in real time, which means there's no buildup of interbank obligations or short-term credit risk. And end users should have access to their money immediately. When the FedNow Service launches in 2023, initial features will include:

- *Service level*
  - o Instant payments, 24x7x365 availability
  - o Core clearing and settlement capabilities with credit transfers completing in seconds
  - o A FedNow interface via FedLine® Solutions for participating FIs or their service providers to support reports and queries, and manage configurations
  - o Access to balance information around the clock, activity reports available on demand or end of day

- *Flexibility*
  - o FIs will be able to settle using their own master account or a correspondent's master account
  - o Adjustable participation options including support for the use of service providers and correspondents
  - o Configurable features for each routing transit number (RTN) enabled, such as the ability to receive customer transfers, send and receive customer transfers, receive requests for payments, support FI liquidity management transfers, support settlement services for other FIs
  - o An FI can connect to the FedNow Service through a FedLine Solution directly or through an FI's service provider as its agent
  - o Support for a variety of credit transfer use cases (initial demand is expected to be strongest with account-to-account transfers and consumer bill payment)
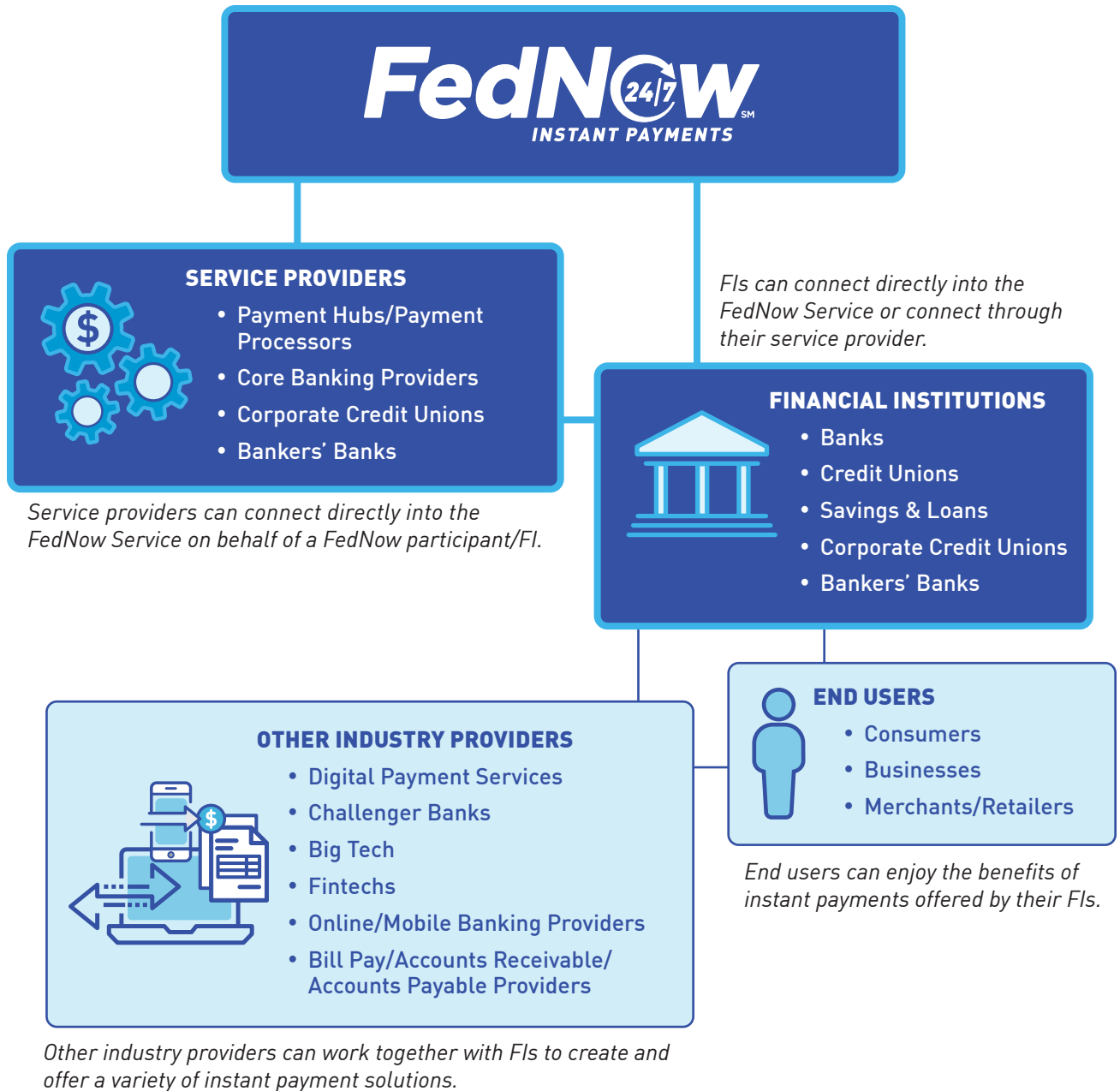
- *Security and risk mitigation*
  - o Encryption of all data flows
  - o Features to support message integrity and data security
  - o Tools to help FIs combat fraud, such as a transaction value limit and the ability to reject transactions for specific accounts
  - o Network-level maximum transaction value limits, which may be adjusted over time (FIs may configure transaction limits that are equal to or below the network limit)

- *Efficiency and transparency*
  - o Rich data supported within ISO® 20022 messages (for example, the option to include remittance information in payment messages and request for payment messages)
  - o FI-to-FI liquidity management transfers in support of instant payments
  - o Use of the widely accepted ISO 20022 standard and other industry best practices to support interoperability
  - o Broadcast messages notifying of changes to participant availability to receive credit transfers, as well as a list of participating RTNs

Who Can Use the FedNow Service?

FIs eligible for Federal Reserve Financial Services, and financial institutions acting as their agents, can directly connect to the FedNow Service. However, other organizations may want to understand how they too can leverage this new service as a platform for innovation in partnership with FIs.

FedNow 24/7
INSTANT PAYMENTS

SERVICE PROVIDERS
- Payment Hubs/Payment Processors
- Core Banking Providers
- Corporate Credit Unions
- Bankers' Banks

Service providers can connect directly into the FedNow Service on behalf of a FedNow participant/FI.

FIs can connect directly into the FedNow Service or connect through their service provider.

FINANCIAL INSTITUTIONS
- Banks
- Credit Unions
- Savings & Loans
- Corporate Credit Unions
- Bankers' Banks

OTHER INDUSTRY PROVIDERS
- Digital Payment Services
- Challenger Banks
- Big Tech
- Fintechs
- Online/Mobile Banking Providers
- Bill Pay/Accounts Receivable/ Accounts Payable Providers

Other industry providers can work together with FIs to create and offer a variety of instant payment solutions.

END USERS
- Consumers
- Businesses
- Merchants/Retailers

End users can enjoy the benefits of instant payments offered by their FIs.

How to Use the FedNow Readiness Guide

The Readiness Guide is a collection of topics offering information FIs and service providers may consider as they prepare for the FedNow Service. The following is a list of the topics available in the guide, including a synopsis:

Getting started

Customer payment flow *(page 7)*
Gain a foundational overview of how a payment message is processed with a step-by-step discussion of an accepted customer credit transfer.

Participation types *(page 10)*
FIs will have flexibility to enable specific features, such as send and/or receive customer credit transfers, liquidity management transfers and settlement services. Such configurations will help each participant best serve their customers and meet their business goals. Learn about the different participation types and how they can be managed within the participant profile as needs evolve.

ISO overview (coming soon!)
The FedNow Service will use the ISO 20022 standard for messages sent by the service, participating FIs and their service providers. Get an overview of the messages the service will support in this topic.

Planning for the FedNow Service
Implementing instant payments may require FIs and their service providers to adjust current systems and processes. In anticipation of this transition, three topics explore potential product capabilities, technology implications and treasury operations that may be relevant to their rollout of the FedNow Service. These three topics provide questions and considerations meant to help FIs get ready for the FedNow Service.

- o **Product and capability planning** *(page 16)*
  An overview of use cases that will be supported by the FedNow Service, discussion of advantages and opportunities that the solution creates, as well as considerations for assessing customers' needs.

- o **Technology planning** *(page 18)*
  Technological considerations to think about when planning for instant payments, such as reviewing systems that may be impacted by 24x7 operations, connectivity and bandwidth, and customer-facing and internal channels that the service may affect.

- o **Treasury planning** *(page 20)*
  Gather insights into settlement, liquidity management, volumes forecasting and other treasury operations considerations aimed at helping participants and their service providers gain a better understanding of options to support back-office processes.

Funds availability (coming soon!)
Review FedNow Service expectations for making funds available to recipients, customer communications and responses to payment orders by the Receiver FI, including an overview of how accept without posting (ACWP) will work.

Operations

Settlement *(page 22)*
Understand the options available to FIs for settlement, including through a correspondent's master account. Gain insights on configurations available, including options and considerations for correspondents.

Reporting and reconcilement *(page 24)*
Find out about reporting and reconcilement capabilities that will be offered in support of the FedNow Service, including balance inquiries and reports available at the end of day or ad hoc. An overview of the FedNow cycle date and options for account reconciliation schedules are included in this topic.

Liquidity management *(page 31)*
The FedNow Service liquidity management transfers will support the needs of participants in the FedNow Service and those who participate in a private-sector instant payment service backed by a joint account maintained by a Federal Reserve Bank. This topic reviews how liquidity management transfers will work.

Technology

Connecting to the FedNow Service (coming soon!)
FIs will have various options to connect with the service to send and receive messages via FedLine® Solutions — including connecting directly, connecting through a third-party provider and exchanging messages using IBM® MQ client software.

Understanding the FedNow Service payment timeout clock *(page 34)*
The FedNow Service will use a payment timeout clock that limits the allowable time for settling a payment message. This topic will provide an overview of the clock, considerations for Receiver FIs and how Sender FIs can use it to manage customer expectations.

Participant availability *(page 37)*
Participants of the FedNow Service will need to support 24x7x365 availability, which could require changes to current operations and support structures. This topic addresses how FIs and their service providers can manage planned and unplanned interruptions in availability to the service. Learn how the service will use broadcast messages to communicate changes in availability for each RTN, as well as how participants can request a full list of participating RTNs.

Information security *(page 39)*
Protecting the confidentiality, integrity and availability of data stored and processed will be a critical priority of the FedNow Service. Each participating FI will play an essential role in maintaining high levels of security. Learn about the key security standards that will be in place, including message signing, key pairs, encryption and authentication.

Informational Updates
Periodic updates will be added to this guide, so participants should occasionally check back for additional information or new topics. In addition to these topics, technical specifications, operating guides and specific terms of service will become available.

Customer Payment Flow

One of the primary advantages of the FedNow℠ Service will be its ability to clear and settle transactions in real time — allowing financial institutions (FIs) of all sizes to enable their customers to instantly send and receive money.

Below is a step-by-step overview of the FedNow Service payment process in which the Federal Reserve Banks settle and execute and the Receiver FI accepts a customer payment message.

Follow the Payment Flow

For this sample flow, the Sender FI or Receiver FI may either send and receive messages to and from the service or designate a service provider to act as its agent (e.g., a processor, core solution or other payment hub) to perform those functions on its behalf. A participating FI may settle using its own Federal Reserve Bank master account or it may designate a correspondent for that purpose. See the **Settlement** topic for more information.
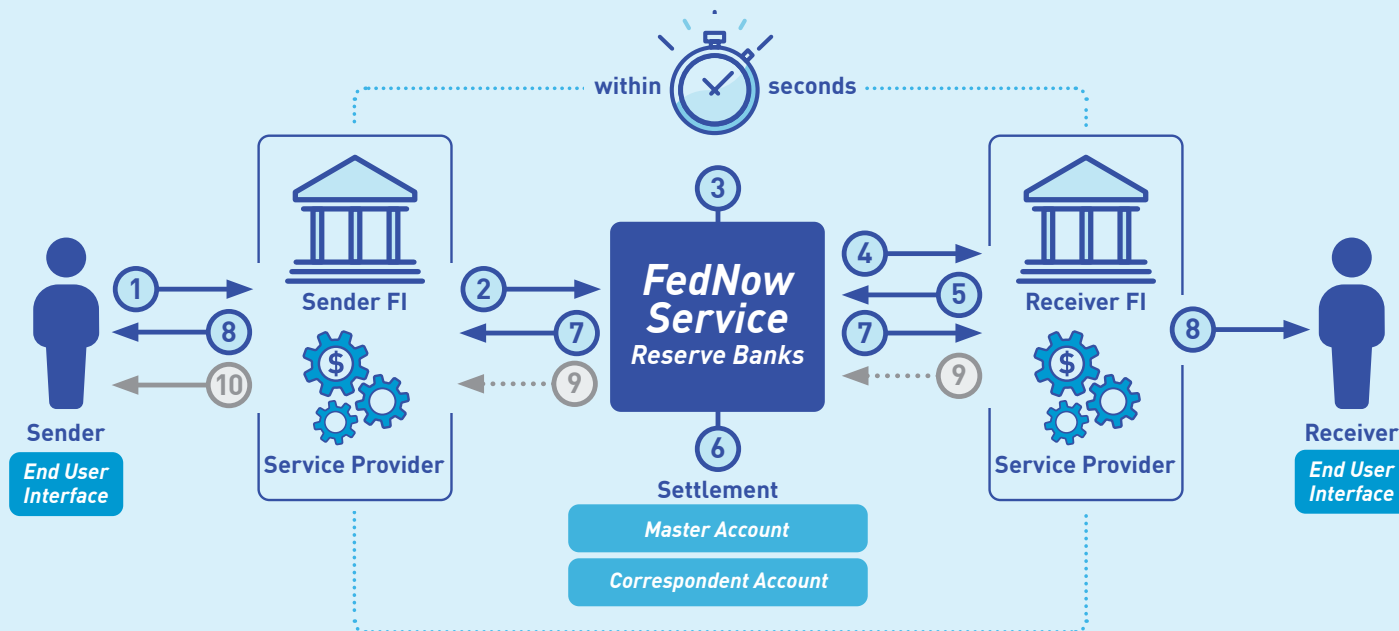
Step 1: Initiation: The sender (an individual or business) initiates a payment with their FI through an end-user interface outside of the FedNow Service. The FedNow Sender FI is responsible for validating the payment according to its internal processes and requirements.

Step 2: The Sender FI submits a payment message (ISO® message pacs.008) to the FedNow Service.

Step 3: The FedNow Service validates the payment message — for example, by verifying that the message meets proper format specifications and complies with applicable controls.

Step 4: The FedNow Service sends the contents of the payment message to the recipient's FI to seek confirmation that the Receiver FI intends to accept the payment message. At this point, the Receiver FI will determine how it will handle the message (accept, reject or accept without posting (ACWP)). Among other things, the Receiver FI should use this step to ascertain whether it maintains an account for the recipient identified in the contents of the payment message. See the **Funds Availability** topic for more details on each of the ways the Receiver FI may respond.

Step 5: Confirmation: In this example flow, the Receiver FI sends a positive response of "accept" to the FedNow Service, confirming it intends to accept the payment message. **Note:** *Steps 4 and 5 are intended to reduce the number of misdirected payments and resulting exception cases that can occur in high-volume systems.*

Step 6: The FedNow Service **settles** the payment, debiting and crediting the designated master accounts of the Sender FI and Receiver FI (or of their correspondents), respectively. Steps 2-6 are expected to complete within a few seconds but will take no more than 20 seconds. See the **Understanding the Payment Timeout Clock** topic for a deeper look at the timing of a payment.

Step 7: The FedNow Service sends an **advice** to the Receiver FI and an **acknowledgement** to the Sender FI, executing the payment order and notifying each that the Federal Reserve Banks settled the payment message. Correspondents enabled within a FedNow profile may choose to receive a notification of debit/credit entries (ISO message camt.054).

Step 8: Funds availability and notification to customer: As a term of participation in the FedNow Service, the Federal Reserve Banks anticipate requiring the Receiver FI to make funds available to the recipient immediately after step 7.

Participants should consider what processes they will need to have in place to respond to the request for confirmation, make funds available to recipients, provide notice to senders and recipients, and respond to a request for payment status (ISO message pacs.028) sent from the Sender FI with a payment status report (ISO message pacs.002). For more information on ISO 20022 messages, please see the **ISO Overview** topic.

In communicating with the recipient, the Receiver FI should notify its customers immediately following receipt of an advice, and may use any reasonable means of communication that is consistent with their customer agreements, including standard channels for which the recipient is enabled.

Note: If the Receiver FI responds with "ACWP," it would not be required to make funds available after receiving the advice through the service. Instead, the Receiver FI will be required to do so if it accepts the payment (see the ACWP spotlight in the **Funds Availability** topic).

The Sender FI should use information in the acknowledgement (pacs.002) from the FedNow Service to notify its sending customer that the payment to the Receiver FI is complete.
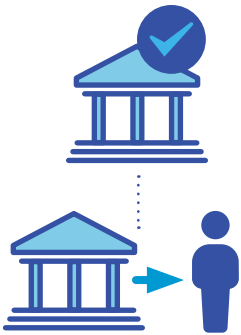
Step 9: Confirmation of posting: In general, the Receiver FI has the **option** of sending a message through the FedNow Service to the Sender FI indicating that the payment has been posted to the recipient's account. See the ACWP spotlight in the **Funds Availability** topic for the circumstances in which the Receiver FI will be required to send a confirmation of posting.

Step 10: If the Receiver FI sends a confirmation of posting message through the service, the Sender FI should notify its customer that the funds have been made available to the recipient.

Setting a Time Limit
The FedNow Service will limit processing of messages to within 20 seconds and will settle within this set amount of time or not at all. While the Federal Reserve Banks expect most payment messages to settle in a few seconds, well below the maximum allowable limit, the payment timeout clock will set expectations for FIs that transactions submitted to the service will be settled or rejected almost immediately.

Please refer to the **Understanding the Payment Timeout Clock** topic for further information, including how time is allotted and how messages are exchanged throughout this process.

Participation Types

The FedNow℠ Service will offer flexible participation options that will allow financial institutions (FIs) to enable specific capabilities aligned with their business objectives and customers' needs.

FedNow participants will set up profiles specifying their connectivity points, participation types and other configurations. Profiles are configured for each routing transit number (RTN) enabled in the service.

While setting up profiles, FedNow participants will select participation types, which indicate the features the FI will offer or support. Generally, FIs will be able to enable any combination of participation types, with a few exceptions.

This document reviews each participation type. Topics covered include:

- Overview of participation types
    - Customer credit transfers and requests for payments
        - Receive credit transfers
        - Send and receive credit transfers
        - Receive requests for payment (RFPs)
    - FI credit transfers and settlement
        - FI liquidity transfers
            - Send and receive FI liquidity transfers
            - Receive FI liquidity management transfers
        - Settlement services for FIs
- Tables of applicable ISO® 20022 messages for each participation type

Overview of Participation Types Within Profiles

The FedNow Service will offer FIs the flexibility to choose almost any combination of participation types within the solution to meet their specific requirements. For example, a participant may be configured to receive customer credit transfers for their own RTN and/or configured as a settlement service provider for their respondents' RTNs.

These configurations will be able to be modified as needed. For example, an FI may select to only receive payments initially but later expand their capabilities to send and receive payments.

The FedNow interface via FedLine® Solutions, will display features configured for participants. The FedNow interface will support self-service management of settings. However, additional steps may be required prior to going live with certain configurations.

The FedNow Service will identify by RTN certain participation types enabled (receive customer transfers, send and receive customer transfers and receive requests for payment) and provide these lists at the end of each day via ISO message admi.998. These can also be pulled from the FedNow interface at any time.

As FIs prepare for implementation of the service, they should consider how they will use the service, including what capabilities they will leverage based on their current business needs and the needs of their customers.

The following provides a closer look at the participation types available within the FedNow Service.

Customer Credit Transfers and Requests for Payment

FIs will be able to select from the below options to enable send and/or receive capabilities for customer credit transfers and RFPs.

Receive customer credit transfers (receive-only)

A FedNow Service receive only participant will be able to receive customer payments, but will not be able to initiate customer payments (ISO message pacs.008) except to return payments (ISO message pacs.004) using the service.

Receive-only participants will have the ability to send RFPs (ISO message pain.013), but will not be eligible to receive RFPs because they will not be able to initiate customer credit transfers (pacs.008) as a response to a payment request.

By default, participants configured with a receive-only profile will be able to send and receive FI credit transfers (ISO message pacs.009) for liquidity management of instant payments. They will be able to disable this capability. Liquidity transfers are discussed in more detail later in this document.
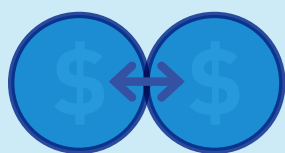
Send and receive customer transfers (send and receive)

A FedNow participant that chooses to enable this participation type will be able to send and receive customer payment messages (pacs.008) and return customer payment messages (pacs.004).

An RTN set up to send and receive customer payment messages will be able to send RFPs and may also choose to receive RFPs (pain.013).

These FedNow participants will be automatically enabled to send and receive FI credit transfers (pacs.009). They will be able to disable this capability. Liquidity transfers are discussed in more detail later in this document.

Receiving requests for payments

This participation type allows FIs to receive requests for payment via the FedNow Service. An FI enabled to send and/or receive customer credit transfers may send an RFP. However, only those enabled to send a payment are eligible to receive an RFP.

Financial Institution Transfers

The FedNow Service will also support transfers between participating FIs — either on behalf of their respondents or for their own internal purposes, such as liquidity management.

Liquidity management transfers (LMT)

FI credit transfers (pacs.009) that support instant payment liquidity needs will be available at certain times to be determined. These transfers can take place between the master accounts of two participants, or between a participant's master account and a joint account that backs another private-sector instant payment service.

FIs will be able to choose to participate in the FedNow Service for the sole purpose of supporting liquidity management transfers. This allows FIs to transfer funds to support certain payment system interbank liquidity needs as a stand-alone service without enabling other capabilities within the FedNow Service.

For more in-depth details regarding these transfers, refer to the **Liquidity Management** topic.

Settlement services for financial institutions

As with some other Federal Reserve Financial Services, the FedNow Service will support correspondent/respondent relationships. Respondents will be able to settle transactions in the master account of their correspondent.

Correspondent FIs with RTNs enabled for the settlement participation type will be able to receive real-time notices of debits or credits. They will also be able to query the FedNow Service for reports.

A correspondent will not be required to have a FedNow participant profile to provide settlement services to their respondents. Such FIs will be able to settle their FedNow Service-enabled respondents' activity against their own master accounts. These correspondents can access their respondents' FedNow activity in intra-day and end-of-day reports of existing Federal Reserve Banks' systems. However, enabling a FedNow profile will enable access to real-time transaction information and FedNow reports.

To learn more, refer to the **Settlement** and **Reporting and Reconcilement** topics.

Customization and Implementation

Flexible configurations of participant profiles will be one of the key aspects of the FedNow Service. Participating FIs will be able to control the capabilities and messaging assigned for each RTN, with the ability to make adjustments to match their evolving needs over time.

Customer Credit Transfers and Requests for Payment

Below is a table indicating which ISO 20022 messages are needed for each participation type.

Note: "Conditional" is in response to "Optional" messages. If a financial institution supports or sends one of the optional messages, they will be required to also support the response message.

Customer Credit Transfer Messages	Credit Transfer Receive Only		Credit Transfer Send/Receive		Send/Receive with Receive RFP	
	Send	Receive	Send	Receive	Send	Receive
pacs.008 – Customer Credit Transfer	Prohibited	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
pacs.002 - Payment Status Report	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
pacs.028 – Payment Status Request	Optional	Mandatory	Optional	Mandatory	Optional	Mandatory
Payment Returns	Credit Transfer Receive Only		Credit Transfer Send/Receive		Send/Receive with Receive RFP	
	Send	Receive	Send	Receive	Send	Receive
camt.056 – Return Request	Prohibited	Mandatory	Optional	Mandatory	Optional	Mandatory
camt.029 – Return Request Response	Mandatory	N/A	Mandatory	Conditional	Mandatory	Conditional
pacs.004 – Payment Return	Mandatory	N/A	Mandatory	Mandatory	Mandatory	Mandatory
Requests for Payment	Credit Transfer Receive Only		Credit Transfer Send/Receive		Send/Receive with Receive RFP	
	Send	Receive	Send	Receive	Send	Receive
pain.013 – Request for Payment (RFP)	Optional	Prohibited	Optional	Prohibited	Optional	Mandatory
pain.014 – Request for Payment Response	N/A	Conditional	N/A	Conditional	Mandatory	Conditional
camt.055 – RFP Cancellation Request	Optional	Prohibited	Optional	Prohibited	Optional	Mandatory
camt.029 – RFP Cancellation Request Response	N/A	Conditional	N/A	Conditional	Mandatory	Conditional
Information Request Messages	Credit Transfer Receive Only		Credit Transfer Send/Receive		Send/Receive with Receive RFP	
	Send	Receive	Send	Receive	Send	Receive
camt.026 – Information Request	Optional	Mandatory	Optional	Mandatory	Optional	Mandatory
camt.029 – Information Request Response	Conditional	Conditional	Mandatory	Conditional	Mandatory	Conditional
camt.028 – Additional Payment Information	Conditional	Conditional	Optional	Conditional	Optional	Conditional

Account Reporting Messages	Credit Transfer Receive Only		Credit Transfer Send/Receive		Send/Receive with Receive RFP	
	Send	Receive	Send	Receive	Send	Receive
camt.060 – Account Reporting Request	Optional	N/A	Optional	N/A	Optional	N/A
camt.052 – Account Balance Report	N/A	Optional	N/A	Optional	N/A	Optional
camt.052 – Account Activity Totals Report	N/A	Optional	N/A	Optional	N/A	Optional
camt.052 – Account Activity Details Report	N/A	Optional	N/A	Optional	N/A	Optional
camt.054 – Account Debit/Credit Notification	N/A	Optional	N/A	Optional	N/A	Optional
System Messages	Credit Transfer Receive Only		Credit Transfer Send/Receive		Send/Receive with Receive RFP	
	Send	Receive	Send	Receive	Send	Receive
admi.002 – Message Reject	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
admi.004 – FedNow Broadcast	N/A	Mandatory	N/A	Mandatory	N/A	Mandatory
admi.004 – Participant Broadcast	Mandatory	N/A	Mandatory	N/A	Mandatory	N/A
admi.011 – FedNow System Response	N/A	Mandatory	N/A	Mandatory	N/A	Mandatory
admi.006 – Retrieval Request	Optional	N/A	Optional	N/A	Optional	N/A
admi.998 – FedNow Participant File	N/A	Mandatory	N/A	Mandatory	N/A	Mandatory

Financial Institution Credit Transfers

Below is a table indicating which ISO 20022 messages are needed for each participation type. These include:

Credit Transfers Messages	Settlement		Liquidity Management Transfers (LMT) Receive Only		LMT Send/Receive	
	Send	**Receive**	**Send**	**Receive**	**Send**	**Receive**
pacs.028 – Payment Status Request	N/A	N/A	Prohibited	N/A	Optional	N/A
pacs.002 – Payment Status Report	Prohibited	Prohibited	N/A	Mandatory	N/A	Mandatory
pacs.009 – Financial Institution Credit Transfer	Prohibited	Prohibited	Prohibited	Mandatory	Mandatory	Mandatory

Account Reporting Messages	Settlement		LMT Receive Only		LMT Send/Receive	
	Send	**Receive**	**Send**	**Receive**	**Send**	**Receive**
camt.060 – Account Reporting Request	Optional	N/A	Optional	N/A	Optional	N/A
camt.052 – Account Balance Report	N/A	Optional	N/A	Optional	N/A	Optional
camt.052 – Account Activity Totals Report	N/A	Optional	N/A	Optional	N/A	Optional
camt.052 – Account Activity Details Report	N/A	Optional	N/A	Optional	N/A	Optional
camt.054 – Account Debit/Credit Notification	N/A	Optional	N/A	N/A	N/A	N/A

System Messages	Settlement		LMT Receive Only		LMT Send/Receive	
	Send	**Receive**	**Send**	**Receive**	**Send**	**Receive**
admi.002 – Message Reject	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory	Mandatory
admi.004 – FedNow Broadcast	N/A	Mandatory	N/A	Mandatory	N/A	Mandatory
admi.004 – Participant Broadcast	Prohibited	N/A	Mandatory	N/A	Mandatory	N/A
admi.011 – FedNow System Response	N/A	N/A	N/A	Mandatory	N/A	Mandatory
admi.006 – Retrieval Request	Prohibited	N/A	Optional	N/A	Optional	N/A
admi.998 – FedNow Participant File	N/A	Mandatory	N/A	Mandatory	N/A	Mandatory

Product and Capability Planning

Instant payments provide many benefits to financial institutions (FIs) and their customers. Yet, as with any new system, implementing the FedNow℠ Service will require planning and preparation across multiple areas of an FI. It could also involve collaboration and coordination with third-party providers. FIs should consult with their legal counsel to determine compliance with applicable consumer protection laws and regulations.

This document provides high-level ideas and opportunities that FIs and service providers may want to consider when determining what products and services to support with the FedNow Service. Topics covered include:

- Understanding the ongoing advantages the FedNow Service can provide
- Identifying opportunities FIs can generate using the service
- Assessing the needs of customers and the critical problems instant payments can help solve

✔ Understanding the Ongoing Advantages

In addition to providing instant payments to support customer transactions and internal liquidity needs, the FedNow Service will offer benefits to participating FIs such as:

- Opportunities to attract and retain customers by offering competitive instant payment services
- Potential to grow revenue (e.g., transaction fees, fees for new service or product offerings)
- Reduced costs through increased efficiency (e.g., automation and operations)
- Real-time settlement in central bank funds
- Reduced interbank settlement risk

✔ Identifying Opportunities

An important step in preparing for instant payments is to identify what benefits the service can generate and what problems it can solve. The FedNow Service will offer opportunities for improvements, both internally for FIs and for their various customers:

- **Internal opportunities**
    - o Reimbursing employee expenses
    - o Providing payroll or incentive pay or corrections
    - o Disbursing 401(k) loans or investments
    - o Funding customer or member loans, such as auto loans, mortgages, HELOCs, prepaid credit or debit cards
    - o Offering liquidity to other FIs

- **Retail customer or member opportunities**
  - Paying loans or other credit accounts, or funding health care savings accounts and more
  - Transferring funds between accounts at separate FIs, sometimes called "account-to-account" or "me-to-me" transfers
    - Funding a brokerage account to take advantage of an investment opportunity
    - Funding a newly opened account
    - Funding or cashing out a wallet (For example, a small business was paid through an online wallet or merchant account and needs to use that money somewhere that does not accept payments from the wallet)
  - Paying bills either as one-time or recurring payments, including presentation of bill details from request for payment (RFP) messages
  - Reloading prepaid cards
  - Paying another person (person-to-person payments)

- **Business customer or member opportunities**
  - Consolidating excess cash from different accounts in various subsidiaries into a centralized account in order to manage it more efficiently (aka cash concentration)
  - Transferring (sweeping) cash between accounts (For example, from a noninterest-bearing cash bank account that exceeds, or falls short of, a predetermined level into an interest-earning investment account at the close of the business day.)
  - Sending bills or invoices using RFP capabilities
  - Paying bills, both recurring (e.g., utilities, leases, suppliers and loans) and one time, such as taxes
  - Disbursing payroll or payroll exceptions (e.g., errors, incentive pay and final paycheck)
  - Paying suppliers for inventory, services and rent
  - Paying one-time transactions, such as insurance claims and rebates

✔ Assessing the Needs of Customers

As FIs consider what services and products to offer, and how these align with FedNow Service options, it's important to think about critical problems instant payments can solve for customers. For example:

- Are there specific reasons why business customers are interested in making payments instantly (e.g., they have trucks on the dock that need to be unloaded)?
- Are business and retail customers seeking confidence that funds are available to them, without concerns of insufficient funds or delays?
- Are customers looking to take advantage of opportunities an instant payment can provide that other payment channels may not support, such as sending funds immediately to a college student?
- Are customers especially interested in the transparency and confidence that an instant bill payment can provide?

Communication and Collaboration
A successful implementation of the FedNow Service will require forethought and planning. While the considerations listed above are not all-encompassing, they are meant to serve as an impetus for internal communication and collaboration within each participating FI.

Technology Planning

Financial institutions (FIs) considering the FedNow℠ Service will need to make decisions about any potential changes to their technology, services and software ahead of implementation. This includes internal systems and those managed by external partners. FIs should consult with their legal counsel to determine compliance with applicable consumer protection laws and regulations.

A participating FI will need to have a comprehensive understanding of how to manage its core and other systems while connected to the FedNow Service — from troubleshooting outages to ongoing monitoring.

The following series of questions and considerations is intended to prompt internal discussion and ultimately build effective partnerships within an FI as it prepares for adoption. This will help FIs develop a roadmap for a smooth launch and continued success. Information covered includes:

- Reviewing internal and vendor solutions
- Customer-facing and internal interfaces
- Internal and external systems
- FedNow Service connectivity and bandwidth considerations

✔ Existing Internal and Vendor Solutions

An FI should review its internal and vendor solutions to help promote a stronger alignment with current and future objectives for instant payments. This includes creating an end-to-end flow, including the function of each system and the timing of relevant activities.

Participants should consider which of their internal and external solutions may be impacted by instant payments and whether they would need to have 24x7x365 availability. Questions FIs will need to answer about these solutions include:

- What additional capabilities, if any, will be needed to handle real-time processing?
- Are systems set up to alert customers of payments received or other status messages and to meet anticipated requirement to make funds available immediately?
- What customer experiences and functionality are desired?
- What areas have security and resiliency implications to support around-the-clock activity?
- What data capabilities will be needed for customers and internal needs? Participants should consider how they will manage data needs.
- *Batch files:* Consider which systems that are dependent on batch files may be used as part of the instant payments ecosystem. Would these batch processing systems still be useful for instant payments?

While processing transactions around the clock, managing maintenance will play a pivotal role in customer satisfaction.

When going offline from the FedNow Service, for example, for maintenance, FIs should consider how they will manage related processes. This includes clearing messages from queues as needed, reconciliation processes and processes for signing back onto the system. FIs will also need to review implications related to disaster recovery, business continuity, and incident response processes and related systems.

For more information, refer to the **Participant Availability** topic.

✔ Customer-Facing and Internal Interfaces

FIs should consider how interaction points for customer-facing and internal staff might be impacted by the FedNow Service. This includes online banking, mobile banking, text banking and Interactive Voice Response (IVR) systems. Teller or customer care interfaces for initiating transactions and accessing information about transactions, dispute investigations or requests for payments may also need updating.

Changes may be needed on statements, reports, data extracts or other information sources. FIs should also consider interfaces needed to support desired capabilities. Will systems that handle online opening and funding of accounts be enabled to send a request for payment or receive instant payments?

Further questions FIs should think about to create a positive customer experience include:

- What data will be needed to support the desired capabilities and experience? For example, will additional authentication protocols be needed that require additional data elements to support instant payments?
- Will current interfaces enable a user to report fraud or a mistake, like a duplicate payment?
- What will the reporting needs be for customers? How can FedNow transactions be incorporated into this reporting?
- What alerts, notifications or other information relative to instant payments will be made available to customers?

✔ Risk Mitigation Systems

Instant payments may call for adjustments to risk mitigation systems. FIs should consult with their legal counsel for further guidance about their obligations under applicable law. In addition, review fraud mitigation solutions, Office of Foreign Asset Control (OFAC) and anti-money laundering (AML) solutions to determine if these capabilities can support instant payments.

✔ Connectivity and Bandwidth Requirements

Participants or their service providers will be able to connect to the FedNow Service using FedLine® Solutions. Each FI should review connectivity and bandwidth requirements to ensure the connection will meet their forecasted needs. The FedNow Service will support different sending and receiving points for participating FIs and their service providers. For more information, refer to the **Connecting to the FedNow Service** topic.

24x7x365 — Preparing in Advance

While the 24x7x365 nature of instant payments through the FedNow Service may present some new technological challenges, resources will be in place to help streamline the onboarding process. Proper preparation is the best way to make a more seamless transition. Participating FIs should start proactive discussions with internal stakeholders, as well as any third-party vendors, to ensure that all systems are prepared for the potentially high volume of transactions and messages.

Treasury Operations Planning

With the implementation of the FedNow℠ Service, participating financial institutions (FIs) may need to make adjustments to their current treasury operations to support instant payments. This includes back-office processes and how the Federal Reserve Banks' reporting can be used within current information flows. Topics covered in this document include:

- Settlement
- Volumes forecasting and back-office processes
- Liquidity management

✔ Settlement

It will be important for participants to decide where their FedNow transactions will settle. Settlement may occur in an FI's own master account with a Federal Reserve Bank, or the FI may choose to designate a correspondent, such as a banker's bank or corporate credit union.

If an FI decides to settle in their own Federal Reserve Bank account, the appropriate processes will need to be in place to manage account balances and ensure compliance with the Payment System Risk (PSR) policy under an expanded window to process transfers 24x7x365. When using a correspondent to handle settlement, an FI will need to consider the specific agreements that may be required for this settlement, such as thresholds or liquidity management considerations.

For more detailed information on what goes into settling payments through the FedNow Service, refer to the **Settlement** topic.

✔ Volumes Forecasting and Back-Office Processes

Considering the potential for shorter processing times associated with instant payments, FIs should review back-office processes that require manual intervention. How might these operations be automated to help streamline relevant workflows?

Participants might also consider how the FedNow Service may impact processes and reports for accounting and reconciliation. Account balance management will also become more complex in a 24x7x365 environment where payments settle continuously in master accounts. FIs should consider how they will monitor balances around the clock or deal with issues during nonstandard business hours.

And when it comes to reconciliation, will current windows work with instant payments?

For more information, refer to the **Reporting and Reconcilement** topic.

Liquidity Management

FIs that send credit transfers or provide settlement services in the FedNow Service will need a strategy to maintain liquidity for instant payments. As with settlement, this may involve either making internal adjustments, sourcing liquidity from the Discount Window, another FI or via a correspondent. FIs will be expected to manage their master account in compliance with Federal Reserve policies, including the PSR policy on intra-day and overnight credit. To learn more about the FedNow Service cycle date, refer to the **Reporting and Reconcilement** topic.

The FedNow Service will support FI-to-FI liquidity transfers in support of instant payments. To learn more about the liquidity management transfers within the FedNow Service process and how this capability can support liquidity needs, refer to the **Liquidity Management** topic.

Working Together to Improve Implementation
FIs will need a strategy for managing how transactions are settled, how their internal or third-party systems will function with the service and how they will maintain suitable liquidity for around-the-clock payments.

Proactive and ongoing communication will be essential for a successful implementation. Making sure that everyone is on the same page — from end users to partnering providers — will help ensure a more seamless transition. More importantly, it will create the strongest possible customer experience.

OPERATIONS

Settlement Through the FedNow Service

One of the benefits of the FedNow℠ Service will be that payment messages will clear and settle between financial institutions (FIs) in real time.

The FedNow Service will settle payments to a participating FI's Federal Reserve Bank master account — or the master account of its correspondent (including bankers' banks and corporate credit unions). Settlement through the service will be final.

This document includes information about settlement through the FedNow Service including:

- Designating routing transit numbers (RTNs) to send and receive messages and to settle transactions
    - o Mapping to a master account RTN for settlement
    - o Using primary/master account RTNs, subaccount RTNs or other secondary RTNs for FedNow activity
- Managing account balances and reconciling activity
    - o FedNow Service-specific reports that will be available
    - o The Federal Reserve Banks' standard reports that will be updated to include FedNow activity
- Correspondent/respondent relationships
    - o Settlement configurations
    - o Reporting options for all parties

Designating RTNs to Send and Receive Messages and to Settle Transactions

During the FedNow Service onboarding process, FIs will be able to designate the specific RTN(s) enabled to send messages and the RTN(s) enabled to receive messages, including the master account RTN, primary RTN (for those who do not maintain a master account) or secondary RTNs (either subaccount RTN or other secondary RTN).

Each FedNow-enabled RTN will be mapped to a single settlement point — the master account of either the participating FI or that of a correspondent — based on instructions from the participating FI (and agreement by its correspondent, if any) and using the Federal Reserve Banks' accounting applications. FedNow Service participants will not need to fund a separate account to settle FedNow activity.

Managing Account Balances and Reconciling FedNow Activity

FedNow participants will be expected to manage their account in compliance with Federal Reserve policies, including the Payment System Risk (PSR) Policy on intra-day credit and avoiding negative balances at the close of the FedNow cycle date.

Near real-time reconciliation may be accomplished using the advice/acknowledgement message (ISO message pacs.002) for participants, or the notification of debits/credits (ISO message camt.054) for correspondents who have enabled the feature within their FedNow profile.

For tracking and reporting purposes, each transaction will be recorded using the RTNs included within the transaction message.

FedNow participants will be able to perform balance inquiries at the master account RTN or subaccount RTN levels. Other secondary RTNs will be ineligible for balance inquiries.

Available Reports and Balance Inquiries

The Federal Reserve Banks will provide a variety of tools and reports to help participating FIs manage their account balances and reconcile FedNow activity.

FedNow Service-specific reports will include Account Balance, Activity Totals, Activity Details, Message Status and Message Retrieval.

Additionally, the Federal Reserve Banks' standard accounting reports will be revised to include FedNow activity and will be generated seven days a week.

FedNow Reports	**Account Balance**	**Activity Totals** *summary level*	**Activity Details** *detail level*
Standard Reports	**Daily Statement of Account** *summary level*	**Financial Institution Reconcilement Data (FIRD)** *detail level*	**Statement of Account in Spreadsheet Format (SASF)** *detail level*

For more in-depth information about detailed reports and accounting, please reference the **Reporting and Reconcilement** topic.

Settlement and Correspondents/Respondents

The FedNow Service will use a correspondent model similar to that of FedACH® Services. This means that the FedNow Service will clear transactions directly between Sender FI and Receiver FI and settlement will take place in the designated master account. Below are other key details correspondents and respondents should know about settlement:

- Correspondents do not need to have a FedNow profile for their respondents to settle against the correspondent's master account. Correspondents may use Account Management Information reports — Daily Statement of Account, FIRD and SASF — to review activity related to FedNow transactions.
- Correspondents that establish a FedNow profile that enables them to send or receive messages through the service will be able to obtain transaction-level detail reports or totals reports using the FedNow Service.
- Correspondents set up to send or receive messages should also consider whether they wish to receive real-time notices and reports from the FedNow Service. If a correspondent requests a notice of real-time activity that settles in its account, the FedNow Service will provide a notification of such debits or credits (camt.054).

FIs that wish to establish a correspondent/respondent relationship should refer to Operating Circular 1 and its Appendix 2: Accounting Transaction Settlement and Service Fee authorization form.

Reporting and Reconcilement

Because the FedNow Service℠ will process payments 24x7x365, the Federal Reserve Banks have given careful consideration to defining the timing of end-of-cycle activities for accounting purposes. As participating financial institutions (FIs) determine their internal procedures to accommodate FedNow activity, they will be able to choose from account reconciliation options and a report schedule that best suits their needs.

This document offers an overview of how the FedNow Service will provide reports that allow FIs to conduct reconcilement functions. Key takeaways include:

- The FedNow Service's cycle day (i.e., its funds transfer business day) will generally be 7 p.m. to 7 p.m. ET the next day, every day of the week
- Participating FIs will be able to use real-time advices/acknowledgements and notifications of debits/credits to support real-time reconcilement functions
- FedNow reports will include:
  - Intra-day and end-of-day Activity Totals reports by routing transit numbers (RTNs)
  - Intra-day (for prior cycle dates) and end-of-day Activity Details reports by transaction
  - On-demand Account Balance reports
- The Federal Reserve Banks will revise standard accounting reports to include FedNow activity and will generate these reports seven days a week
  - Daily Statement of Account – summary level
  - Financial Institution Reconcilement Data (FIRD) – detail level
  - Statement of Account in Spreadsheet Format (SASF) – detail level

Defined Cycle Dates

The FedNow Service processes payments around the clock, every day of the year. However, for accounting and reporting purposes, the FedNow cycle date will differ from the calendar date for a period of time (from close until midnight) because it will align with the Fedwire® Funds Service business day, which generally has a closing time of 7:00:59 p.m. ET. If the Fedwire Funds Service business day is extended, the FedNow cycle date will extend along with it. For consistency, the FedNow Service will align to the same timeframe for weekends and holidays.

Cycling Forward

The FedNow Service will continue to process and settle messages in real time as it rolls over to the next cycle date.
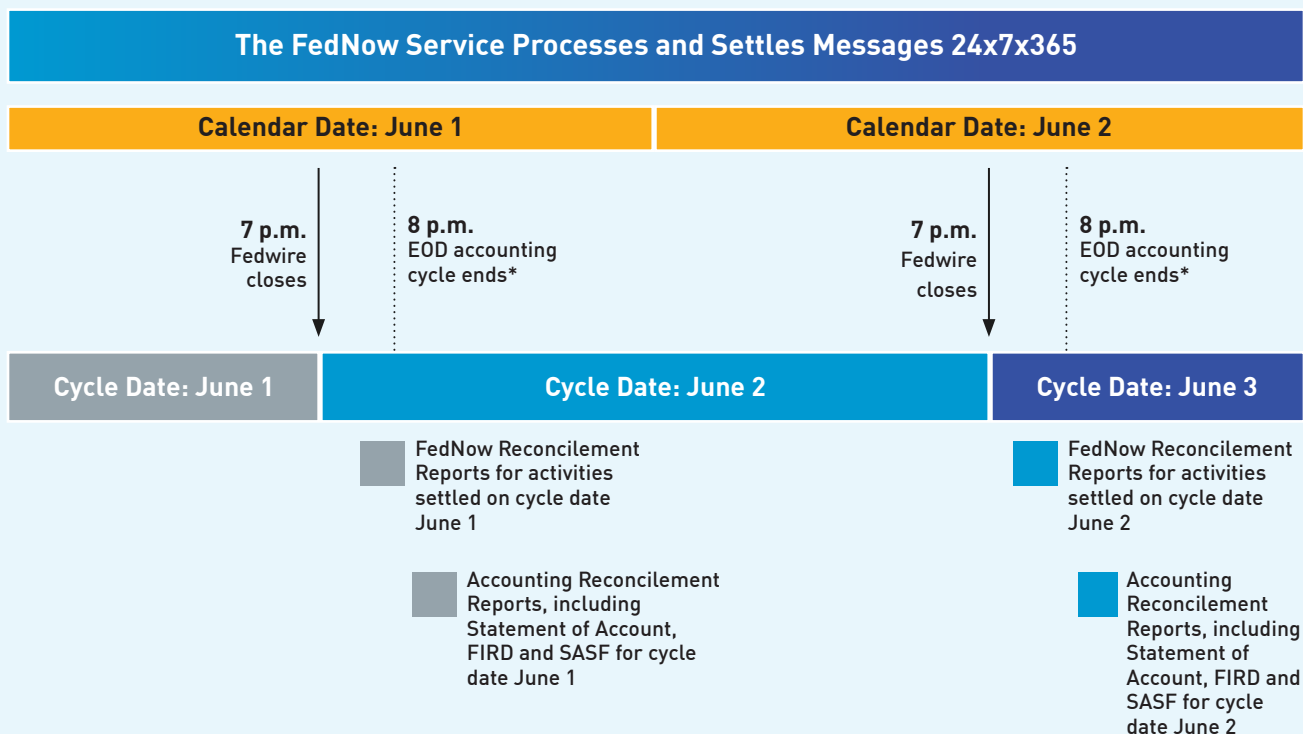
Upon rolling, the FedNow Service will process payments and other messages on the new cycle date even though that date will differ from the calendar date until midnight ET. For example, a payment that is received on June 1 at 7:00:55 p.m. and settles on June 1 at 7:01:00 p.m. ET, would have a cycle date of June 2.

The FedNow Service will assign the applicable cycle date to the transaction and include it in the advice of settlement message (ISO® message pacs.002) and notifications (ISO message camt.054). See the **Customer Payment Flow** topic for more details.

The FedNow Service will also send a daily broadcast message to participants advising them of the change in cycle date (ISO message admi.004). This broadcast message will create awareness for participants and their service providers on those relatively rare instances when the closing time might be extended.

Understanding FedNow cycle dates

All times are based on a typical day, but subject to change if the cycle date is extended.

The FedNow Service Processes and Settles Messages 24x7x365		

Calendar Date: June 1	Calendar Date: June 2

7 p.m. Fedwire closes

8 p.m. EOD accounting cycle ends*

7 p.m. Fedwire closes

8 p.m. EOD accounting cycle ends*

Cycle Date: June 1	Cycle Date: June 2	Cycle Date: June 3

FedNow Reconcilement Reports for activities settled on cycle date June 1

Accounting Reconcilement Reports, including Statement of Account, FIRD and SASF for cycle date June 1

FedNow Reconcilement Reports for activities settled on cycle date June 2

Accounting Reconcilement Reports, including Statement of Account, FIRD and SASF for cycle date June 2

FedNow participants can retrieve Account Balances at any time. At the start of a new cycle date, if the final balance has not been calculated, the provisional balance will be provided.

Note: Participants will have the ability to view Account Balances via AMI or FedNow Service.

Reports and Statements

The Federal Reserve Banks will provide a variety of report options to participating FIs and their service providers to support reconcilement and general ledger posting functions.

The FedNow Service will provide reports of payments and non-value messages (such as request for payment, request for information, request for return of funds) sent or received by participating FIs.

The Federal Reserve Banks' standard accounting reports such as Daily Statement of Account, FIRD and SASF will be revised to include FedNow activity and will be provided seven days a week. Participating FIs will need to determine how frequently they will perform their reconcilement functions.

As part of the FedNow onboarding process, organizations will determine initial settings for reports to ensure these are appropriately enabled. These configurations may be updated as needed.

FedNow-specific reports and information

While settlement only occurs within master accounts, any FedNow-enabled RTN may be identified within payment messages. The FedNow Service will provide reports containing information about service activities for all RTNs included within payment messages and non-value messages. These include transactions at the master/primary RTN, subaccount RTN and other secondary RTN levels. Correspondents can receive reports for their respondents' RTNs. These reports are distinct from reports and statements that other Federal Reserve applications (e.g., AMI balance inquiries) will generate.

Activity Totals and Details reports will be available on demand or will be automatically provided end of day if desired. The current approach allows detailed reports to be requested at any time for a previous cycle date. The Totals report can be requested for prior cycle dates as well as for current cycle date. For current cycle date reports, it will show current up to the last minute of processing. The FedNow reports will be accessible using ISO® messaging (request is camt.060 and returned report is camt.052) or the FedNow interface via FedLine® Solutions.

The Federal Reserve Banks anticipate offering 90 days of historical available content for these reports.

Activity Totals report

The Activity Totals report contains the FedNow Service summary at the RTN level for payments and non-value messages. By default, this is automatically sent at the end of each cycle date via ISO messaging (camt.052). FedNow Service correspondents may receive reports for each of their respondents' RTNs if they desire. The example shown below shows the details within this report:

ACTIVITY TOTALS REPORT	
Credit Transfers (pacs.008/009) and Returns (pacs.004)	
Total Amount of Successful Debit Transactions	Total Amount of Successful Credit Transactions
Total Number of Successful Debit Transactions	Total Number of Successful Credit Transactions
Total Number of Debit Transactions Rejected	Total Number of Credit Transactions Rejected
Non-Value Messages: Request for Payment, Request RFP Cancellation, Request for Information, Request for Returns	
Total # of Non-Value Messages Received	Total # of Non-Value Messages Sent

Activity Details report

The Activity Details report lists individual FedNow Service transactions and non-value messages. For a full list of content, please see the FedNow ISO 20022 Implementation Guide on the MyStandards® site. Selected content for this report is as follows:

ACTIVITY DETAILS REPORT	
Account	Routing number used to determine information in the report
Total Credit Entries	Specifies the total number and sum of successfully processed value messages received by the participant
Total Debit Entries	Specifies the total number and sum of successfully processed value messages sent by the participant
Total Entries Per Bank Transaction Code	Non-value messages sent by participant, non-value messages received by participant, value messages received from participant that were rejected, value messages sent by participant but rejected by FedNow Service
Message Identification	Unique message identification assigned by the sending party (e.g., FI, service provider or FedNow Service)
Message Name Identification	Message identification that defines the business message using ISO 20022 identifiers (e.g., pacs.008, pacs.004, pain.014, etc.)
Message Create Date/Time	The calendar date and time the message was created (ET)
Acceptance Date/Time	The calendar date/time the message was settled within the FedNow Service
Cycle Date	The FedNow cycle date (funds transfer business day) the message was settled in
Sender RTN	The RTN of the account who FedNow Service debited
Receiver RTN	The RTN of the account who FedNow Service credited
Amount	The transaction dollar amount. If it is a non-value message which does not have any amount associated to a transaction, then the amount will be left blank. If there is an amount in the transaction or non-value message, this value will be reflected here.
Bank Transaction Code	Codes which indicate type of message and ultimate status of the message.

Messages supporting near real-time reconciliation

To support near real-time reconcilement functions, the FedNow Service will provide real-time settlement messages to Sender and Receiver FIs (pacs.002). Correspondents who have a FedNow participation type for settlement services may enable real-time receipt of notifications of a debit or credit (camt.054) for respondent activity in their master accounts.

Standard reports updated with FedNow information

The Federal Reserve Banks will generate end-of-day accounting statements and will include FedNow Service detail activity for master and subaccount RTNs in the FIRD file (an end-of-day report). To help automate reconcilement functions, a FIRD file is provided in a machine-readable format and is also available through AMI. With the AMI application, FIs can get a Daily Statement of Account in PDF format or in spreadsheet format using SASF.

Balance inquiries available from the FedNow Service and AMI

Access to 24x7x365 intra-day credit will support the smooth functioning of the FedNow Service. Accordingly, access to intra-day credit will be provided for participants under the same terms and conditions as are available for other Federal Reserve Services. FedNow Participants are expected to manage their master account in compliance with the Federal Reserve policies, including the Payment System Risk Policy on intra-day and overnight credit.

Master account balance inquiries may be requested through the FedNow Service using ISO 20022 messages (request is camt.060 and returned report is camt.052) or can be accessed through the FedNow interface.

The AMI application, available via FedLine Web®/FedLine Advantage® Solutions, may also be used to view real-time account balance information.

Summary of Reports

Below is a summary table of available reports and messages to support reconciliation for real-time payments.

Report Title	Source	Format	Description	Real-time	On-demand pull	End of Day push
Activity Totals	FedNow	ISO, csv, pdf	FedNow Service summary totals of value and non-value messages at the RTN level.		●	●
Activity Details	FedNow	ISO, csv, pdf	Lists individual FedNow Service value and non-value messages.		●	●
Advice/ Acknowledgment (pacs.002) Notification of Debit/Credit Available (camt.054)	FedNow	ISO	Real-time settlement messages sent by the FedNow Service to Sender and Receiver FIs. Real-time debit or credit notifications for respondent activity sent to correspondents.	●		
Account Balance	FedNow, AMI	ISO, csv, pdf	Information for RTN account balance at the Federal Reserve Banks.		●	
Daily Statement of Account	AMI	PDF, spreadsheet format	FedNow Service summary totals by RTN will be included.			●
Data Files: FIRD and SASF	AMI	FIRD - Machine readable SASF – Spreadsheet format	Individual transactions will be provided in the FIRD file for master and subaccounts. The SASF is available for master accounts. Respondent activity is included for correspondents.			●

OPERATIONS

Managing Liquidity in an Instant Payments World

Because the FedNow℠ Service will process and settle payments individually and continuously on a 24x7x365 basis, participating financial institutions (FIs) will need adequate funds or available credit (liquidity) in their accounts at all times.

The FedNow Service will enable FIs to transfer funds to each other to support instant payment liquidity needs. The Federal Reserve Banks anticipate implementing specific controls for liquidity transfers.

This document covers key information about liquidity management transfers including:

- Liquidity expectations
- How liquidity management transfers will work
- Controls for liquidity management transfers
- Configuring liquidity management transfer capabilities
- Other considerations for managing liquidity

Liquidity Expectations

There are a few key points to keep in mind when thinking about liquidity management and the FedNow Service:

- FedNow participants or their correspondents will be expected to maintain balances in their master accounts to settle FedNow transactions, consistent with the Federal Reserve's Policy on Payment System Risk.
- Participants should not expect the FedNow Service, at initial launch, to reject payments based on a participant's insufficient balance or overdraft capacity, even if the Federal Reserve Banks do so for other services. However, standard intra-day and overnight overdraft fees will apply.
- The Federal Reserve Banks do not intend to open the Discount Window outside of standard hours. During its business day, the Federal Reserve Banks will provide intra-day credit to FedNow participants under the same terms and conditions as its other services.

How FedNow Liquidity Management Transfers Will Work

The following is a step-by-step look at how FIs will transfer liquidity to one another using FedNow liquidity management transfers (LMT).
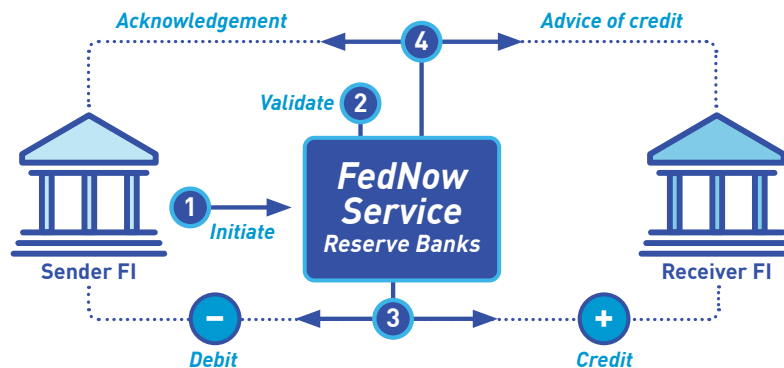
Step 1: The Sender FI initiates a liquidity transfer through a FedLine® Solutions channel and sends a payment message (ISO® message pacs.009) to the FedNow Service.

Step 2: The FedNow Service validates the payment message — for example, by verifying the message meets format specifications.

Step 3: The FedNow Service debits and credits the designated master accounts of the Sender and Receiver FIs. **Note:** The FedNow Service will not seek confirmation from the Receiver FI — as it will with customer credit transfers — before settling the liquidity management transfers and delivering an advice of credit to the Receiver FI. For FIs using a correspondent for settlement, the debit or credit will settle in the correspondent's master account.

Step 4: The FedNow Service sends an advice of credit to the Receiver FI and sends an acknowledgement to notify the Sender FI that the settlement is complete.

Liquidity management transfers will be subject to the same 20-second (or less) payment timeout clock as standard customer transfers received by the FedNow Service. For more information on how the payment timeout process works, refer to the **Understanding the Payment Timeout Clock** topic.

FedNow Service Controls on Liquidity Management Transfers

The Federal Reserve anticipates implementing specific controls for liquidity management transfers (pacs.009), including transaction value limits, daily volume limits (enforced by the terms of service) and limits on available hours of operation.

FedNow participants will be able to route liquidity transfers using master account/primary routing transit numbers (RTNs), subaccount RTNs or other secondary RTNs, as long as they are enabled in the FedNow Service.

FedNow participants will be able to disable sending or receiving liquidity transfers within the customer profile. The FedNow Service will reject liquidity transfers that include either a Sender FI or Receiver FI who is disabled for the service.

Configuring FedNow Liquidity Management Transfer Capabilities

FedNow participants that are set up to send or receive customer payments (ISO messages pacs.008 and pacs.004) will automatically be enabled to send and receive liquidity management transfers (pacs.009). If they wish, participants will be able to opt out of either sending or receiving liquidity management transfers.

FIs will also be able to choose to participate in the FedNow Service for the sole purpose of supporting FedNow liquidity management transfers. For example, FIs will be able to separately enable and transfer funds to support certain payment system interbank liquidity needs as a stand-alone service without enabling other capabilities within the FedNow Service.

Please refer to the **Participation Types** topic to learn more about these participant configuration options.

Supporting Correspondents/Respondents
A FedNow participant that uses a correspondent to settle FedNow activity, will be allowed to receive liquidity transfers. In this case, liquidity management transfer messages (pacs.009) will be posted to the designated correspondent's master account.

Supporting Participants in Other Instant Payment Services Backed by a Joint Account
FIs who participate in a private-sector instant payment service backed by a joint account maintained by the Federal Reserve Banks will be able to use the FedNow Service for sending and receiving transfers to and from a master account and the joint account.

The joint account agent will need to enable the liquidity management transfers feature of the FedNow Service in order to send, receive and settle liquidity management transfer messages sent through the FedNow Service.

FIs in the private-sector service will need to enable their master accounts to send and receive FedNow liquidity management transfers in the FedNow profile.

Understanding the Payment Timeout Clock

The FedNow℠ Service will use a payment timeout clock to provide predictability to participants and their end-customers that payments will complete (or reject) within a specified time period.

While the Federal Reserve Banks expect most payment messages will settle in just a few seconds, well below the maximum allowable limit configured by the FedNow Service, the payment timeout clock will set expectations for financial institutions (FIs) and service providers that credit transfers submitted to the service will be settled or rejected within a defined timeframe.

This document provides details on the payment timeout clock. Topics covered include:

- An overview of the timeout clock including when it starts and stops
- A step-by-step explanation of how the timeout clock fits into the overall FedNow payment flow
- Payment rejections — what happens when the timeout clock is exceeded
- Submitting a request to check on the status of a payment after the timeout clock expires

## An Overview of How the Payment Timeout Clock Will Operate

The timeout clock creates a defined process for each step in a transaction that clears and settles through the FedNow Service. This will establish clarity on how settlement is completed and outlines expectations for processing speed and capability for both the Sender and Receiver FIs.

The timeout clock will apply to credit transfers — customer payments (ISO® message pacs.008), customer return of funds (ISO message pacs.004) — and FI liquidity management transfers (ISO message pacs.009). The timeout clock is expected to have two main features:

- First, the timeout clock is expected to be 20 seconds in length. It will be configurable within the FedNow Service by the Federal Reserve Banks and will stop counting down just before settlement takes place.
- Second, the timeout clock will expire prematurely if, based on a setting configured by the Receiver FI, there is insufficient time (i.e., "reserved" time) remaining for the Receiver FI to provide a response to a request for confirmation from the service. A Receiver FI can reserve up to five seconds of the clock that will be guaranteed to them as part of the flow. FIs will be able to configure this reserved response time downward from five seconds in increments of one second, with one second being the lowest setting.

A Look at the Payment Timeout Clock Within the Payment Flow

Below is a step-by-step examination of how the timeout clock will fit into the overall flow of a settled customer payment within the FedNow Service.
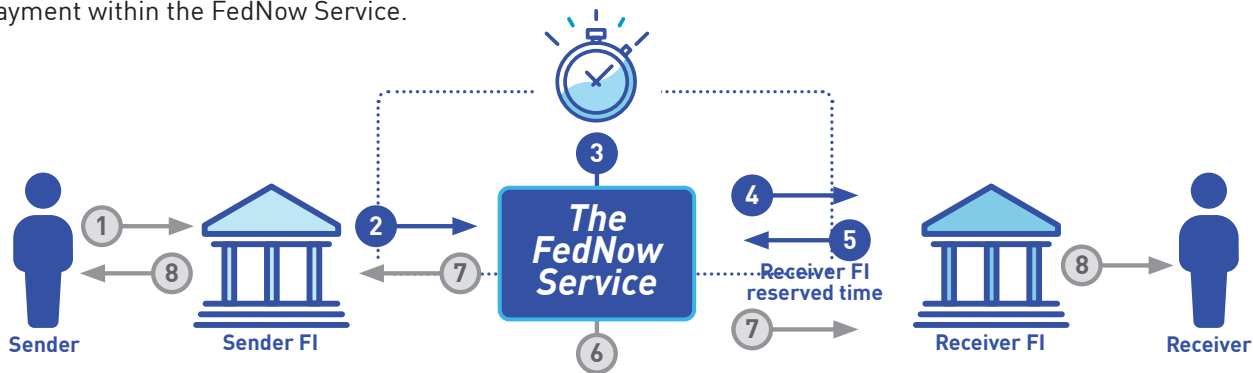
Step 1: The sender (an individual or business) initiates a payment with their FI.

Step 2: Start of clock: The Sender FI or their service provider submits the validated payment message (pacs.008) to the FedNow Service. The payment timeout clock starts based on the "creation date" timestamp included in the business application header of this message *regardless of when the FedNow Service receives the message.*

Step 3: The FedNow Service authenticates the payment message — for example, by verifying that the message meets proper format specifications and complies with applicable controls. If the elapsed time between the creation date timestamp and receipt timestamp by the FedNow Service exceeds the clock limit or does not allow sufficient reserved time for the Receiver FI, the message will be rejected.

For example, given a timeout clock of 20 seconds and a default reserved time of five seconds, if 16 seconds have passed, the message would be rejected.

Step 4: If there is sufficient time, the FedNow Service sends the contents of the message to the Receiver FI to seek confirmation that the Receiver FI intends to accept the payment message. At this point, the Receiver FI determines how it will handle the message — accept, reject or accept without posting (ACWP).

Step 5: Stop of clock: The Receiver FI sends an "accept" response to the FedNow Service, confirming it intends to accept the payment message. If the positive response is received by the FedNow Service before the clock has expired, the clock will stop when the FedNow Service receives this message and just before the service's settlement processes begin.

For customer credit transfers, if the FedNow Service receives a positive response — either accept or ACWP — from the Receiver FI before the timeout clock has expired, the **clock will stop** just before the service's settlement processes begin.

Step 6: The FedNow Service settles the payment, debiting and crediting the designated master accounts of the Sender FI and Receiver FI (or of their correspondents), respectively.

Step 7: The FedNow Service sends an advice to the Receiver FI and an acknowledgement to the Sender FI, executing the payment order and notifying each that the Federal Reserve Banks settled the payment message.

Step 8: Funds availability and notification to customer: As a term of participation in the FedNow Service, the Federal Reserve Banks anticipate requiring the Receiver FI to make funds available to the recipient immediately after step 7.

For a more complete overview of the flow process, refer to the **Customer Payment Flow** topic.

When the Payment Timeout Clock Runs Out Before Settlement Begins

If the process outlined above exceeds the timeout clock's time limit prior to settlement — for example, if 20 seconds lapse without a response from the Receiver FI — the FedNow Service will reject the payment message with the applicable reason indicated. Below are essential points to know about payment rejection scenarios in connection with the timeout clock:

- If a payment is rejected, the FedNow Service will send a message (ISO® message pacs.002) to the Sender FI notifying it that the payment was rejected.
- If the Receiver FI has received the contents of a payment message in a request for confirmation but does not respond before the timeout clock expires, the Receiver FI will also receive a notice that the payment has been rejected.
- If the Sender FI resubmits a payment message that the FedNow Service already received, it will need to include a new unique message identification number. Otherwise, the service will reject the message based on the duplicate identification number.

Where messages are rejected because they exceeded the timeout clock, participants will need to initiate a new payment request if they wish to complete the transfer of funds.

Requesting a Status of Payment

If an FI does not receive an advice (pacs.002), an acknowledgement (pacs.002) or a rejection message (ISO message admi.002/pacs.002), it must submit a request for payment status (ISO message pacs.028).

The Federal Reserve Banks recommend that each FI wait a few seconds longer than the stated timeout clock limit. For example, with a 20-second timeout clock limit, an FI should wait until 25 seconds have passed to submit a status request. This will provide time for the FedNow Service to finish processing and deliver the applicable messages.

FIs that submit request for payment status messages (pacs.028) before resending a payment message through the service will be able to limit their risk of sending duplicate payments.

Participant Availability

Due to the around-the-clock nature of payments processed and settled through the FedNow℠ Service, the Federal Reserve Banks will establish availability requirements for participating financial institutions (FIs) and their service providers.

Participants and their service providers will be expected to be capable of sending or receiving messages as close to the service's 24x7x365 operational availability as possible. As FIs begin their instant payments journey, the Federal Reserve Banks understand that planned and unplanned maintenance windows will occur for FIs, which may result in the need to sign off from the service for a period of time.

This topic goes into more detail about each of these expectations and the processes that the service will have in place around them, including:

- Striving for continuous availability
- Handling availability interruptions
- How the FedNow Service will communicate changes in routing transit number (RTN) availability
- Requesting lists of active RTNs

Striving for Continuous Availability

Using the FedNow Service may require participants to make changes to current operations and support structures to achieve continuous availability. The Federal Reserve Banks encourage FIs to review their internal and third-party systems to verify that they are prepared for the continuous availability required — or are as close as possible.

As FIs and their service providers work to support continuous availability, the Federal Reserve Banks will work together with the industry to manage acceptable downtime of participants, while balancing a network that is available for end-customers to send and receive money. Over time, it is expected that FIs increase their availability to the service, reducing the need to go offline for maintenance and other reasons. As expectations evolve over time, the Federal Reserve Banks will communicate changes to give participants and service providers time to prepare.

FIs will need to ensure they establish appropriate monitoring and alerting capabilities to resolve issues that may arise. Participating FIs will be required to notify the Federal Reserve Banks if for any reason they are unable to send or receive messages to and from the service, or if they are unable to meet the anticipated requirement to make funds available to the recipient immediately.

When Disruptions Happen

During maintenance or other disruptions, participants will be expected to sign off from receiving credit transfer messages from the FedNow Service.

A participating FI will be able to request to sign off, or sign on to, the FedNow Service by using ISO® message admi.004, by using the FedNow interface via FedLine® Solutions or by contacting FedNow Service operations. Participants and service providers will be able to identify each RTN impacted, and with respect to service providers, the message may cover all participants' profiles associated with that service provider. The FedNow Service will respond to the request and confirm the status.

While the receiver's RTN is offline, the FedNow Service will reject payment messages (ISO messages pacs.008 and pacs.004) sent to the RTN. However, while the status of an RTN is set to signed off, the FedNow Service will continue to send all other service messages to the relevant queue for the FI to retrieve. Participants may still initiate messages to the FedNow Service while signed off from receiving credit transfer messages. The Sender FI is responsible for screening all payments according to its internal processes and requirements.

The Federal Reserve Banks are exploring how the FedNow Service will monitor participant queues and are considering applicable next steps if a queue that is used to receive payment messages is unresponsive. For a more detailed discussion of ISO 20022 messages, refer to the **ISO Overview** topic.

Communicating Changes in RTN Availability

The FedNow Service will send a broadcast message (admi.004) to all participants communicating changes in availability for each impacted RTN. Such changes may involve RTNs going offline or coming online. This information will also be available via the FedNow interface.

Sender FIs should check outbound messages against the list of offline RTNs prior to submitting a message to the system. The FedNow Service will confirm that a Receiver FI is available to receive credit transfer messages as part of its validation in step 3 of the payment flow (see the **Customer Payment Flow** topic for details). If the Receiver FI's RTN is signed off, the service will reject transactions and notify the Sender FI using the status message (pacs.002).

List of FedNow Service-Enabled RTNs

FedNow Service participants will be able to request a complete list of RTNs with indicators of enabled participation type (receive customer credit transfers, send and receive credit transfers or receive requests for payment) via the FedNow interface or receive at the end of day via ISO message admi.998. To learn more about the flexibility that the service offers for enabling specific roles and capabilities, refer to the **Participation Types** topic.

Ensuring Proper Preparedness

With the FedNow Service processing and settling payments in near real time, continuous availability will be essential for participating FIs. Participants will be expected to operate 24x7, however if unexpected situations arise that require a participant to be offline, the FedNow Service will provide capabilities that allow clear communication between the participant and the service.

Information Security

Protecting the confidentiality, integrity and availability of data that the FedNow℠ Service will store and process will be critical. That's why the Federal Reserve Banks are designing the service with an emphasis on security and resiliency. Data protections put in place will be consistent with industry benchmarks set by organizations such as the National Institute of Standards and Technology (NIST).

Establishing and maintaining strong information security practices for the FedNow Service will be a collaborative effort. In addition to implementing best practices in the design and processes of the service, the Federal Reserve Banks will provide participating financial institutions (FIs) and their service providers information on security standards and requirements. This document provides an overview of these security measures, including:

- Operating Circular compliance
- Establishing physical and logical security system components
- Message signing and public/private key pairs
- Data encryption and authentication expectations
- Information access prerequisites

The Federal Reserve Banks will also provide participants with specific requirements related to information security for the FedNow Service.

Operating Circular Compliance
All FedNow Service participating FIs and their service providers will need to comply with security obligations generally outlined in Operating Circular 8 and Operating Circular 5. These circulars include information about accessing Federal Reserve Financial Services and sending and receiving data.

FIs should consult their legal counsel for other applicable laws and regulations that may apply.

Participant System Security Framework
Because participants will access the FedNow Service using FedLine® Solutions, they will be expected to have an information security program for physical and logical system components. As part of the **FedLine Solutions Security and Resiliency Assurance Program**, participants will be expected to conduct and attest to the completion of an annual assessment of compliance with the Federal Reserve's FedLine security requirements.

Message Signing and Key Pairs
The FedNow Service will use message signatures as one of multiple layers of security controls to help verify the integrity and authenticity of messages sent and received through the service. Message signing occurs point-to-point (between the FedNow Service and participants) and not end-to-end between participants. All messages exchanged through the FedNow Service will require a digital signature, which participating FIs, their service providers or the service can generate.

Participants or their service providers will be required to use public/private key pairs to support digital message signing. During onboarding, participants will receive tools and instructions on message signing, including details on how to create and manage a key pair.

Encryption and Authentication

FedNow data will be encrypted at rest within the Federal Reserve Banks and in transit, requiring participants to manage multiple encryption keys and digital certificates. These requirements may differ based on several factors, including the connectivity method and features being leveraged. Credentials for the service will be provisioned as part of the FedNow onboarding process.

Information Access

The FedNow Service is designing a new user interface via FedLine® Solutions for participants connecting to the service via certain FedLine Solutions. The FedNow interface will leverage the FedLine Solutions authentication process to enable a consistent user experience.

Glossary

Description of terms are in the context of the FedNow℠ Service.

TERM	DESCRIPTION	RELATED TOPIC
Accept without posting	Payment status where the receiving financial institution (Receiver FI) requires additional time to determine whether it will accept the payment because it has reasonable cause to believe that the recipient is not entitled or permitted to receive the payment (e.g., if the recipient payment might be subject to U.S. sanctions). The FedNow Service will process and settle a payment with this status.	Funds Availability
Account Management Information (AMI)	AMI is available via FedLine Web® and FedLine Advantage® Solutions and provides comprehensive Account Balance, Daylight Overdraft Balance and Available Funds Balance information to assist financial institutions (FIs) with account management and reconcilement functions. AMI provides a variety of accounting intra-day and end-of-day inquiry and reporting services.	Reporting and Reconcilement
Acknowledgement	Notification to the sending financial institution (Sender FI) of debit to the Sender FI's designated master account following settlement of a payment message the Sender FI sent through the service.	Payment Flow
Advice of credit	Notification to the Receiver FI indicating that a payment message through the FedNow Service has been processed and settlement of a credit to the Receiver FI's designated master account has occurred.	Payment Flow
Alias	Reference identification, such as an email address or phone number, used to indicate an FI's customer and its related account at an FI.	
Application Programming Interface (API)	A set of protocols that enable software to interact and systems to exchange data electronically via a streamlined interface.	
Clearing	The exchange of information and related activities that take place to correctly route and process payment instructions among FIs.	
Correspondent financial institution (correspondent)	A correspondent is an FI that has authorized a Federal Reserve Bank to settle certain transactions and service fees to its master account for a respondent financial institution.	Settlement, Participation Types
Electronic Transaction Identifiers (ETI)	Special purpose number designated for use as electronic address of organizations that are not FIs but process payment transactions on behalf of FIs.	

TERM	DESCRIPTION	RELATED TOPIC
FedNow cycle date	Date indicating the funds transfer business day for the FedNow Service. This date will indicate the FedNow business day on which a payment message is processed and settled. The scheduled end of the FedNow cycle date will align on all calendar days with the scheduled close of the Fedwire® Funds Service, which is currently 7 p.m. ET. (Extensions of the Fedwire Funds Service would also extend the FedNow Service close.) The start of each cycle date will immediately follow the end of the previous cycle date, with no disruption in processing.	Settlement, Reporting and Reconcilement
FedNow interface via FedLine® Solutions	User interface where participants or their service providers are able to configure settings, download lists, research messages and run reports.	
FedNow participants	FIs who have enabled one or more routing transit numbers (RTNs) to send or receive messages or to settle transactions over the FedNow Service.	
Financial Institution Reconcilement Data (FIRD)	Daily Statement of Account in a machine readable format designed to interface with an institution's internal accounting system to assist with automated reconcilement and posting functions.	Reporting and Reconcilement
Intra-day credit	Credit that is extended during the course of a business day and is repaid by the debtor before close of business on that day.	
Irrevocability	Not reversible. In the context of the FedNow Service, where interbank settlement is final, the Sender FI cannot cancel or recall the payment, nor can the Federal Reserve Banks.	
ISO® 20022	ISO 20022 is an ISO messaging standard for electronic data interchange between FIs.	
Joint account	An account at a Federal Reserve Bank where the rights and liabilities are shared among multiple account holders (joint account holders), each of which is an institution that is eligible to open an account with a Federal Reserve Bank.	Liquidity Management Transfer
Key pairs	A public key and a private key that are a set of security credentials used to verify identities.	Information Security
Master account	The record of financial rights and obligations of an account holder and the administrative Federal Reserve Bank with respect to each other, where opening, intra-day and closing balances are determined. A master account is identified by a primary RTN.	Reporting and Reconcilement
Message signatures	Security protocols that serve to verify the integrity and authenticity of the message sent and received through the service, providing confidence the message received was the same as what was sent. Digital signatures do this by generating a unique hash of the message or document and encrypting it using the sender's private key.	Information Security

TERM	DESCRIPTION	RELATED TOPIC
MQ	Messaging solution used to send and receive data as messages between applications, services and systems.	Connecting to the FedNow Service
Other secondary account RTN	A secondary RTN assigned to an FI to segregate debit and credit transaction activity.	Settlement, Reporting and Reconciliation
Participation type	Set of features, including ISO 20022 message requirements to which an FI has enabled for the FedNow Service. For example, receive credit transfers, send and receive credit transfers, send and/or receive liquidity management transfers and settlement services.	Participation Types
Payment timeout clock	Maximum allowable time for a transaction to complete processing or be rejected.	Understanding the Clock
Primary RTN	An RTN that is associated with an FI's principle office.	Reporting and Reconcilement
Real-time gross settlement (RTGS) system	A payment system that settles payment instructions immediately on a transaction-by-transaction basis.	
Respondent financial institution (respondent)	A respondent is an FI that settles debit and credit transaction activity for some or all of its transactions in the master account of a correspondent.	
Routing transit number (RTN)	A nine-digit number assigned by the American Bankers Association (ABA) Registrar of Routing Numbers to identify an FI.	
Secondary RTN	An RTN, other than the primary RTN, that has been assigned to an FI by the Registrar of Routing Numbers. There are two types of secondary RTNs: subaccount and other secondary RTN.	Settlement, Reporting and Reconciliation
Statement of Account Spreadsheet File (SASF)	Daily Statement of Account which can be downloaded using spreadsheet software to perform internal reconcilement and posting functions.	Reporting and Reconcilement
Subaccount RTN	A secondary RTN which is used to identify information that is reported directly to the FI's master account. These accounts may be used to initiate certain types of transactions.	Settlement, Reporting and Reconciliation

The FedNow^{SM} Service Readiness Guide is a collection of topics offering information to help participants, service providers and others as they prepare for the FedNow Service.

This guide may and is likely to change from time to time, including as the Federal Reserve Banks obtain feedback from various stakeholders. The Readiness Guide is not an agreement with the Reserve Banks and is not necessarily reflective of the final terms, operating procedures, or other documentation for the FedNow Service. The FedNow Service will be governed by applicable law and the terms of an operating circular issued by each of the Reserve Banks. Other Reserve Banks operating circulars applicable to the Reserve Banks provision of financial services, including operating circulars that govern the account relationships and electronic connection with the participants, will also apply. This guide does not create new obligations on the Reserve Banks and the standards outlined in it do not confer or connote legal status or responsibilities of any party to a funds transfer through the service under applicable law. Nothing in this guide otherwise modifies or supersedes requirements imposed on FedNow participants under applicable law.

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