

The Evolution of Payments

Federal Home Loan Bank of New York - Members

May 13th, 2021



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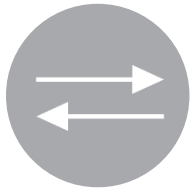
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Immediate Payments: Executive Summary



TREASURY EVOLUTION

The financial services industry has launched a set of new networks and systems to provide a foundation for changing the way companies interact with their customers and business partners in a new 24/7/365 digital age. **BNY Mellon is a leader** in leveraging these systems to provide our clients with the latest digital capabilities.



IMMEDIATE PAYMENTS

Our suite of **Immediate Payments** solutions is **designed to help businesses and institutions** meet specific industry challenges:

- Real-time Credit Transfers and Requests for Payment support your payables and receivables, respectively.
- Remittance advices for additional payment-related information, with instant acknowledgements confirming receipt.
- Automated exception handling to request additional information related to a payment, accelerated with ISO 20022 formatting.
- Integrated capabilities with online, file, and API channels optimize integration into your Treasury Management strategy.



REAL-TIME PAYMENTS

On November 13, 2017, The Clearing House launched its new Real-Time Payments (RTP®) network, the first new U.S. payments system developed in more than 40 years. RTP enables businesses and consumers to send and receive payments and messages in **real-time 24/7/365** directly to and from their accounts at U.S. financial institutions. As a leader in the industry's faster payments transformation, **BNY Mellon was the first bank to originate a real-time transaction** through this new payment system and we support financial institutions and businesses with our full suite of monetary and non-monetary messages.



TOKENIZED PAYMENTS WITH ZELLE®

Our Tokenized Payments solution enables you to **disburse funds** to both consumers (B2C) and small businesses (B2SB) **instantly and electronically without requiring any sensitive information** such as a routing and account number. By leveraging a network of tens of millions of enrolled users, you can deposit funds directly to the receiver's bank account using their name and either their **email address or mobile phone number**. Receivers get instant alerts via email or text message with payment details. Non-registrants receive simple one-time instructions to enroll directly with their bank, or via a mobile app.

ACH: Executive Summary



SAME DAY ACH

BNY Mellon was pioneer in the payments space during the inception of ACH almost 40 years ago, and **BNY Mellon remains at the forefront of innovation** with ACH to this day. BNY Mellon is uniquely positioned as the largest wholesale-only originating institution. The focus we have on our clients is unparalleled as is our representation in the industry's most important organizations. BNY Mellon maintains leadership roles with Nacha and the Clearing House, and we members of Nacha's Payment Innovation Alliance. This allows us to be aware of and drive new innovations for ACH. Recently, there's been significant strides made with Same Day ACH reflecting the ongoing payment-type convergence taking place in the industry:

- In 2016, Nacha began to incrementally release their Same Day ACH agenda culminating to today's capability which supports intra-day settlement of debit and credit entries up to \$100k.
- This month, Nacha is rolling out their 3rd same day ACH window, allowing originators to send Same Day entries for 2 additional hours throughout the business day.
- Looking ahead and noting the popularity of Same Day ACH, Nacha is currently passing for vote to it's direct members a proposal to increase the amount threshold from \$100k to \$1m.



ACCOUNT VALIDATION SERVICES

As innovations are made in the payments space to make it easier, and more efficient to send money, fraudsters are becoming increasingly innovative with how they commit payments fraud. In a 2019 poll by AFP, **81%** of organizations experienced actual or attempted payments fraud – the highest recorded figure. This is why BNY Mellon created Account Validation Services (AVS), to put our clients in the best position to **identify payments fraud early** enough to avoid it.

AVS can be used to validate, in real time, the **status** of a given account (ie. is the account open, closed, in good standing?) It can also be used to authenticate **ownership** of the account by indicating whether a provided name, SSNTIN, DoB, and other ownership elements match what's on file for the account.

AVS is a compliant tool that originators of ACHWEB debits can use to comply with the **upcoming Nacha WEB Debit rule**. There are a variety of other uses cases across many different organization types. A few examples include:

- Validate applicants of social benefit programs and the recipients of those benefit disbursements.
- Validate insurance policy claimants
- Confirm ownership of a deposit account for a bill payment enrollment

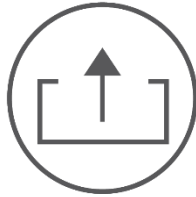


INSTANT FUNDS AND INFORMATION TRANSMISSION

Real-Time Payments

Real-Time Payments: Uniting Treasury Functions

The RTP Network supports multiple treasury areas within a single infrastructure, optimizing efficiency and reconciliation.



ACCOUNTS PAYABLE

Outgoing Funds Origination

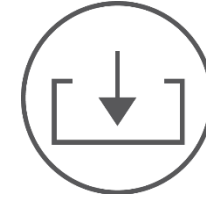
- The **Credit Transfer** message precision payment feature provides full control by scheduling execution at an exact date and time
- Use the **Response to Request for Payment** message to approve, schedule or reject incoming requests to satisfy obligations
- Obtain additional information from your counterparty with the **Request for Information** message before or after sending funds
- For erroneous payments or overpayments, the **Request for Return of Funds** message can be used, which is subject to approval or rejection



INVOICING

Payment-Related Information

- Include up to 140 characters of unstructured remittance information within your **Credit Transfer** or **Request for Payment Message**
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ACCOUNTS RECEIVABLE

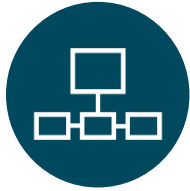
Collections and Reconciliation

- Utilize the **Request for Payment** message to send your customer accounts a visible and actionable instant e-bill 24/7 through their online/mobile banking interface
 - This message does not transfer value and requires the receiver to approve
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B2C & B2SB ELECTRONIC DISBURSEMENTS

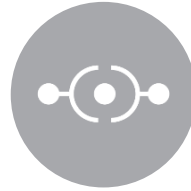
Tokenized Payments[®] with Zelle[®]

Tokenized Payments with Zelle: The Network Explained



EARLY WARNING: OPERATOR

- The **Zelle Network®** is owned by **Early Warning Services, LLC**, a FinTech company, which is in turn owned by seven of the country's largest banks and is an innovator in payment and risk management solutions
- For almost three decades, Early Warning's identity, authentication, and payment solutions have been empowering financial institutions to make confident decisions, enable payments, and mitigate fraud



ZELLE: CONNECTOR

- Zelle is a financial services network focused on transforming payment experiences, acting as **a real-time messaging platform** between U.S. financial institutions and does not itself settle transactions
- The transactions that settle as part of this service are processed through the Automated Clearing House network (ACH credit) or the debit card networks through Mastercard® and Visa®
- Formerly known as clearXchange



BNY MELLON: PROVIDER

- BNY Mellon is a participating bank within the Zelle Network
- Our Tokenized Payments solution with Zelle **automates payments** from:
 - **Business-to-Consumer (B2C)**
 - **Business-to-Small Business (B2SB)**
- Payments are made without requiring you to store and maintain consumer banking information (e.g., transit routing and account numbers), and **includes instant recipient notification**

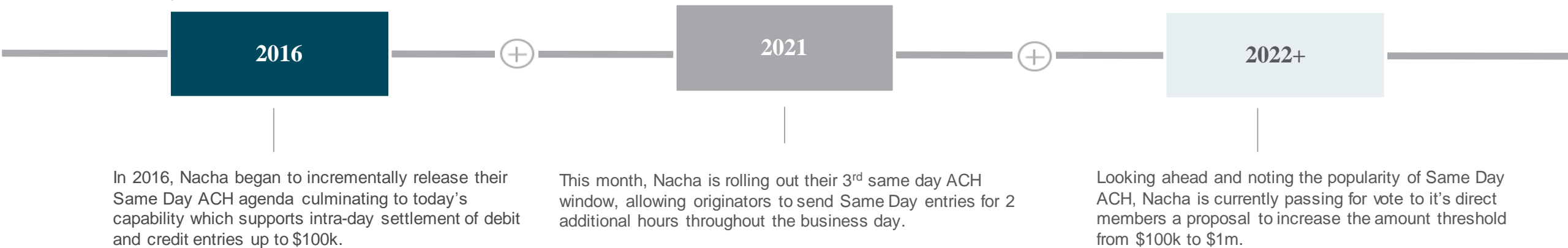
Automated Clearing House (ACH)

ACH

BNY Mellon became a pioneer in the field of electronic funds transfer in 1974. At the forefront of Automated Clearing House (ACH) processing ever since, we are today one of the top ACH originators in the country, as evidenced by the following:

 <p>RECOGNIZED QUALITY Our ACH Operations group was the inaugural recipient of Nacha ACH Quality Award in the originating depository financial institution category.</p>	 <p>COMMERCIAL FOCUS As a large wholesale-only bank, we can focus our services in support of our large corporate and financial institution clients.</p>	 <p>INDUSTRY POSITION We are 8th largest ACH Debit Originator and 7th largest ACH Credit Originator¹.</p>	 <p>INDUSTRY INVOLVEMENT We have a leadership roles that include seats on Nacha & The Clearing House Boards, membership in Nacha's Payment Innovation Alliance; with participation in several of the Alliance's work groups.</p>
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Same Day ACH evolution:



Account Validation Services

Account Validation Services

Transact confidently in the era of instant information with verification of account status and authenticate counterparties in real time.



BNY Mellon's Account Validation Services (AVS) allows you to not only know whether an account is open or closed prior to sending a transaction, but also indicates whether a provided name, SSN, address, and other ownership elements match what's on file for the account.

VALUE PROPOSITION:



ADVANTAGES:



Appendix

Immediate Payments

Real-Time Payments

Tokenized Payments[®] with Zelle[®]

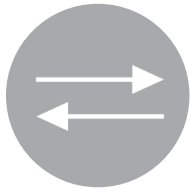
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Immediate Payments: Solution Comparison

Both solutions are optimized to accelerate your treasury functions while improving counterparty relationships.



REAL-TIME PAYMENTS

Request/receive/send funds 24/7/365 with finality and irrevocability, aided by value-added messaging for bi-directional communications

- Best for: Liquidity management and Receivables (e-bills)
- Benefits: No use-case limitation, instant, and information-rich
- Replaces:
 - Lockbox, U.S. ACH, U.S. Wire, (primarily)
 - Checks (secondarily)
- Limitations:
 - \$100K limit per transaction (expected to increase)
 - Network-wide consumer enablement (late 2020, 2021)

TOKENIZED PAYMENTS WITH ZELLE

Disburse funds quickly using the recipients' email address or mobile phone number while providing instant notifications

- Best for: Payables (Disbursements)
- Benefits: Eliminates sensitive banking information storage and fast
- Replaces:
 - Checks (primarily)
 - U.S. ACH and U.S. Wire (secondarily)
- Limitations:
 - Outgoing payments to Business-to-Consumer (B2C) and Business-to-Small Business (B2SB) only (until RTP integration in 2021)

Immediate Payments: Market Changes

Through continuous reinvestment, BNY Mellon is prepared to support your organization as the landscape evolves.



CONVERGENCE

- **Today**, the RTP Network and Zelle Network are **separate** and distinct
 - RTP settlement occurs via the RTP Network
 - RTP routed using Account Number and Routing Number
 - Zelle settlement occurs via ACH or OCT (Mastercard/Visa Debit)
 - Zelle routed using Email Address or Mobile Phone Number
 - Zelle is limited to disbursements only; no C2B/SB2B functionality
- **In 2021**, the RTP Network and Zelle Network will work **together**
 - **Zelle settlement will occur via RTP** (in addition to ACH and OCT)
 - Leveraging RTP, Request for Payment (RFP) messages can be sent to consumers and small businesses using their email address or mobile phone number, **enabling tokenized C2B/SB2B**

EXPANSION

- **November 13, 2017:** The Clearing House launched the **RTP®**, the first new core payments infrastructure in the U.S. in more than 40 years, meeting the Federal Reserve Faster Payments Task Force objectives
- **November 15, 2018:** The Federal Reserve sought input on potential actions it could take to promote ubiquitous, safe, and efficient faster payments in the U.S. by facilitating real-time interbank settlement of faster payments, which BNY Mellon and others responded to^{1,2}
- **August 9, 2019:** The Federal Reserve determined that the Federal Reserve Banks should develop a new interbank 24x7x365 real-time gross settlement service (**FedNowSM**) with integrated clearing functionality to support U.S. faster payments, available in 2023/2024³
- **Today:** BNY Mellon has partnered with The Federal Reserve to support the development of FedNow, while continuing to support RTP

• 1 https://www.federalreserve.gov/apps/foia/ViewAllComments.aspx?doc_id=OP-1625&doc_ver=1

• 2 https://www.federalreserve.gov/apps/foia/ViewAllComments.aspx?doc_id=OP-1670&doc_ver=1

• 3 <https://www.federalregister.gov/documents/2019/08/09/2019-17027/federal-reserve-actions-to-support-interbank-settlement-of-faster-payments>

INSTANT FUNDS AND INFORMATION TRANSMISSION

Real-Time Payments

“RTP is the first new core U.S. payments infrastructure since the ACH network was introduced nationally in 1974.”

“RTP allows consumers and businesses to send and receive funds and messages in real time, 24/7/365, directly from their bank accounts”

Real-Time Payments: Features and Benefits

RTP enriches the relationship between parties to a payment transaction, supporting complex digital commerce.

CREDIT PUSH

Credit Transfer messages are **final and irrevocable** payments, debiting the originator of a payment and crediting the receiver of the payment instantly, reducing or eliminating returns and exception handling, providing the payee full control over funds movement

24/7/365

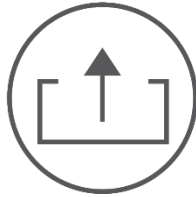
Businesses and consumers can send and receive funds **immediately** 24/7/365 and indicate the **exact date and time** for payment execution to occur, enabling funds to be utilized for investment and liquidity until the minute your financial obligation is due

MESSAGING

Much more than just a payment system, RTP includes value-added messaging to support the payment process such as Remittance Advices, Requests for Information (and responses), and Acknowledgements, enabling **bi-directional contextual commerce**

Real-Time Payments: Uniting Treasury Functions

The RTP Network supports multiple treasury areas within a single infrastructure, optimizing efficiency and reconciliation.



ACCOUNTS PAYABLE

Outgoing Funds Origination

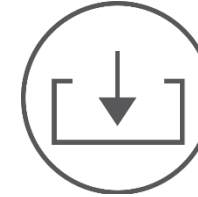
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“BNY Mellon First Bank to Offer Request for Payment Messaging Capabilities”

“Instantly present invoices (e-bills) and receive payments 24/7/365 for one-time or recurring bills”

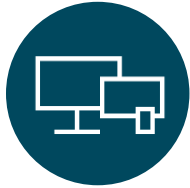
Real-Time Payments: Request for Payment (RFP) Attributes

Accelerate, automate, and digitize Accounts Receivable workflows while upgrading the payee experience.



INSTANT

Instantly present invoices (via e-bills) and receive payments 24/7/365 for one-time or recurring bills through your customers' preferred online or mobile banking channels with our Real-Time Payments (RTP) Bill Pay invoicing and payment collection service



DIGITAL

Leveraging the BNY Mellon RTP Request for Payment message, e-bills will enable your customers to quickly view the request and any payment-related information, and provide them with an option to pay instantly or schedule the payment for future release



FINAL

Once the payment is processed, a final, irrevocable payment will be instantly credited to a BNY Mellon account, providing automated reconciliation of inbound payments tied to your original requests

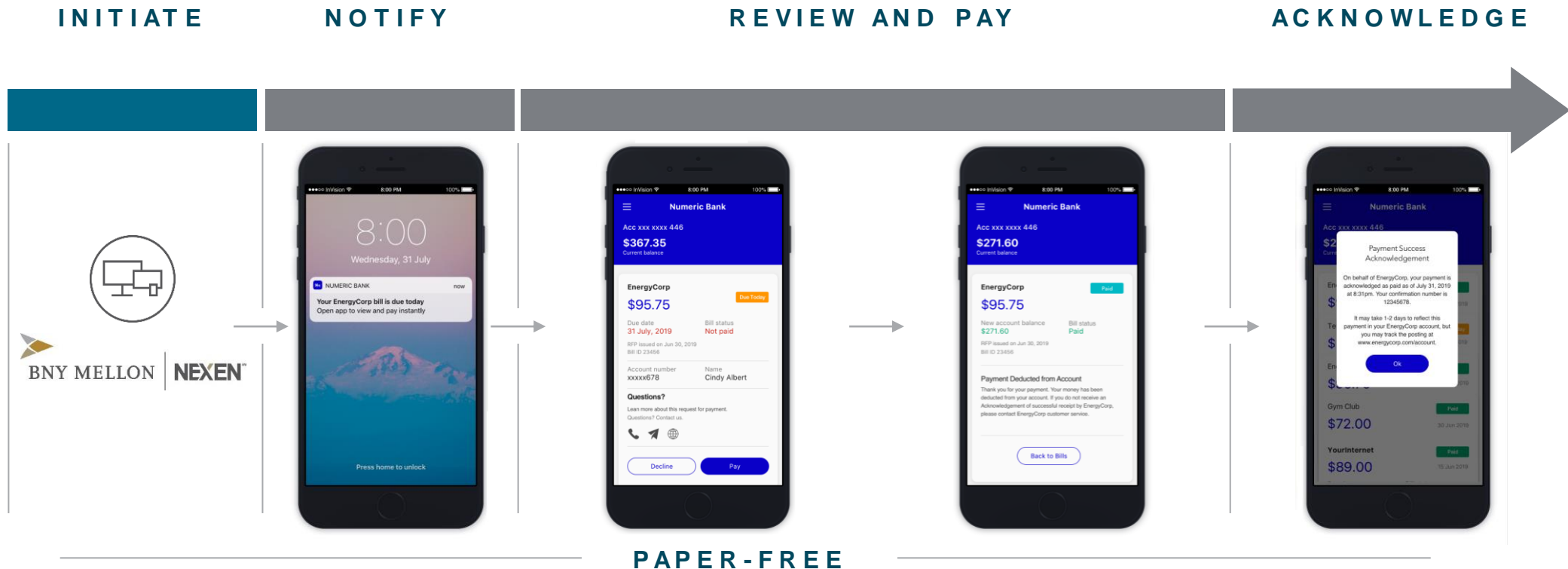


EFFICIENT

This capability provides a crucial component in your strategy to automate an instant, transparent and paper-free receivables environment that speeds collection and improves exception handling while providing your customers with a real-time digital experience to view and pay their bills

Real-Time Payments: Request for Payment (RFP) Receiver Experience

Send instant e-bills 24/7 to your customers that are visible and actionable through their existing online/mobile banking interface. Receive irrevocable and final payments in response, reducing or eliminating returns and exception handling.

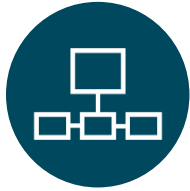


• Source: <https://www.theclearinghouse.org/payment-systems/rfp/-/media/32155B90D9144F66B1ECB9D26579077A.ashx>, <https://invis.io/F3R73RXSZY9>

B2C & B2SB ELECTRONIC DISBURSEMENTS

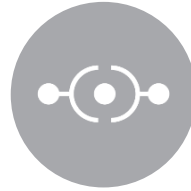
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Tokenized Payments with Zelle: Attributes and Benefits

Disburse funds to consumers and small businesses instantly and electronically without sensitive payee information.

SAFE

Originate B2C and B2SB payments **without needing sensitive banking information** (e.g., Routing Number and Account Number) to almost any consumer or small business who has an account with a U.S. financial institution, deterring fraud associated with checks

DIGITAL

Modernizes the payment process by **utilizing email addresses and mobile phone numbers** to provide instant notification that funds have been disbursed, and includes **up to 140 characters of remittance information** shown to the receiver, with funds posting directly to the recipients' bank account typically credited within minutes*

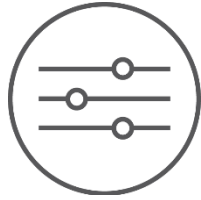
SECURE

The Zelle Network leverages **multiple services to protect and authenticate payments** via **strengthened fraud controls** (e.g., token accuracy, device verification, recipient validation, risk scoring, threat detection, profile management, behavioral analytics, etc.)

- * Transaction typically occur in minutes when the recipient's email address or U.S. mobile number is already enrolled with Zelle.

Tokenized Payments with Zelle: Customization Options

Configure Tokenized Payments with Zelle to align with your organization's disbursement strategy and liquidity needs.



DATE PARAMETERS

- **Hold Days:** Indicate how long the payee will have to enroll with Zelle (if not yet enrolled), during which time the payment will remain in a "Pending" status. You may choose a value between 2-30 days for each payment instruction. If the hold days expire, the payment will either:
 - **Default to Check** (recommended)
 - Expire and be cancelled
- **Processing Date:** BNY Mellon supports future-dated payments for up to 30 calendar days, providing the ability to warehouse transactions for liquidity management purposes



AUTO DEFAULT TO CHECK

- BNY Mellon offers an automated check disbursement for transactions which do not complete via Zelle in the event the receiver fails to enroll within the defined number of **Hold Days** or for exception scenarios (e.g., invalid token)
- BNY Mellon will automatically print, issue and mail a check to the payee using the address and other payment details provided in your original payment instruction, resulting in:
 - Consolidated reporting with both Zelle and Check details
 - Automated exception handling
 - Fewer files needed to support the disbursements process

Tokenized Payments with Zelle: Protecting the Network

All network participants are responsible for preventing fraud, supported through network and application security.

ZELLE

- Monitor fraud at network level 24x7x365
- Manage rules and token maintenance
- Process disputes and find resolution
- Provide consumer marketing and education
- Secure the Zelle App

FINANCIAL INSTITUTION

- Secure mobile, online and treasury processes
- Validate customer data and accounts
- Contribute network data, including fraud trends

DISBURSER

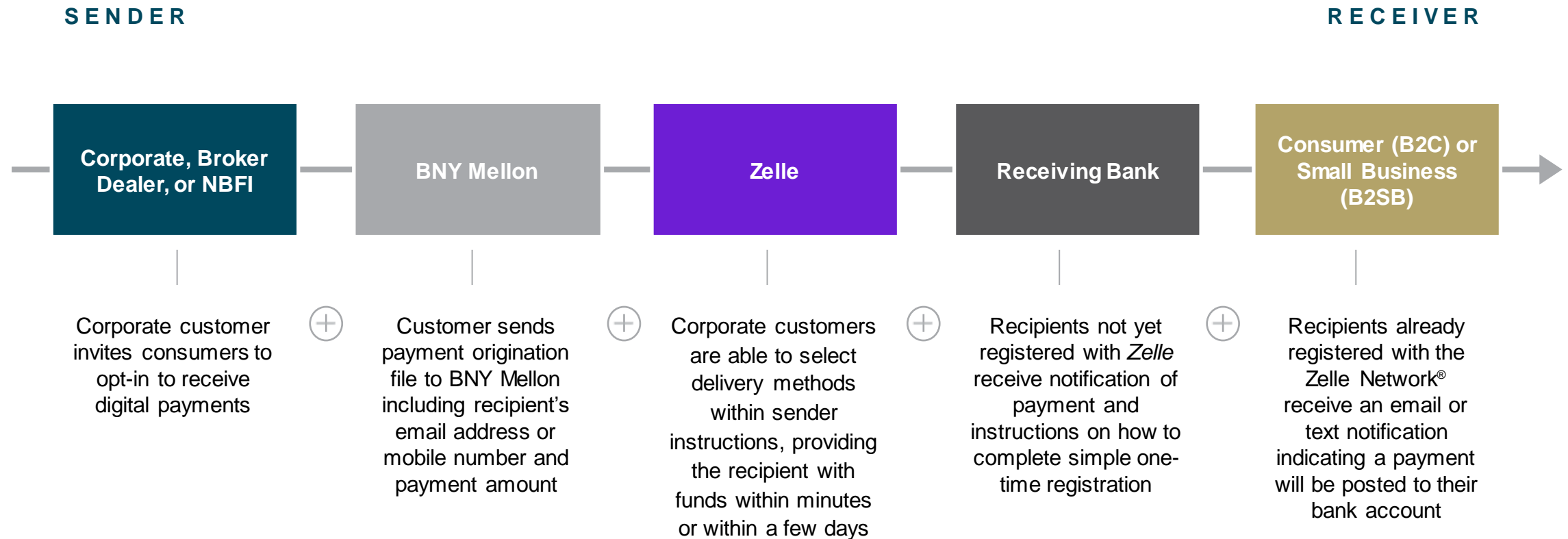
- Obtain accurate token information
- Inform consumer of payment process
- Update token information as needed
- Provide accurate and approved payment information to the FI

CONSUMER

- Enroll tokens properly
- Update tokens with Zelle as needed
- Maintain proper password protections

Tokenized Payments with Zelle: Disbursements Process Flow

Disburse funds to consumers and small businesses instantly and electronically



Account Validation Services

Treasury Services

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Transact confidently in the era of instant information with verification of account status and authenticate counterparties in real time.



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VALUE PROPOSITION:



ADVANTAGES:



AVS Feature Service

FEATURE:	DESCRIPTION:	COVERAGE:
<p>Account Status Validation (ASV)</p> 	<p>Inquiry type to validate account status (i.e. is the account open or closed). BNY Mellon responds with:</p> <ul style="list-style-type: none"> • Valid • Invalid, or • Unknown 	<ul style="list-style-type: none"> • Effectively 100% • 80-85% of domestic accounts in real-time via EW • 15-20% of domestic accounts within 2 days via ACH Prenote
<p>Account Ownership Validation (AOV)</p> 	<p>Inquiry type to validate ownership by comparing name and other ownership elements with what's on record for the account. BNY Mellon responds with:</p> <ul style="list-style-type: none"> • Valid • Invalid, or • Unknown 	<ul style="list-style-type: none"> • 60% of domestic accounts in real time • 40% of domestic accounts via Microdeposit <optional>
<p>Account Status with Ownership Validation (ASOV)</p> 	<p>One combined account status and ownership inquiry. Client would receive two (2) responses, one indicating the status of the account and one indicating the ownership of the account.</p>	<p>See above.</p> <ul style="list-style-type: none"> • Account Status - 100% • Account Ownership - 60%

BNY Mellon's AVS is a comprehensive solution to identify invalid accounts before making payments and to verify who you are transacting with. The solution is available for use through BNY Mellon's Unified Payments API making the inquiry experience seamless and fast. BNY Mellon has custom built the option to default to an ACH Prenote wherever an account is unknown to EW. This effectively maximizes the reach of the account status validation to 100%.

Common Use Cases

PAYABLES

- Payroll: Pre-validate new employees
- Vendor Management:
 - **Vendor Onboarding** – incorporate a validation as part of your vendor onboarding process.
 - **Vendor Maintenance** – incorporate a validation when a vendor’s account information has changed.
 - **Vendor Governance** – periodic (annual, semi-annual, quarterly) validation or all or a subset of your vendors.
- Refunds: ensure that refunds destined to a different account are going to the right party.
- Claimants: Pre-validate claimants before paying the claim.

RECEIVABLES

- Comply with the Nacha Web Debit rule
- Identify overdrawn policyholder accounts before premium collection payments are made
- Validate funding accounts belong to the right party

WHO CAN BENEFIT FROM AVS:

Merchants & Other Billers



- Retail Merchants
- Cable Providers
- Utilities
- Telecom Companies
- Healthcare
- Non-profits

Financial Services Organizations



- Insurance Companies
- Investment Firms
- Brokerage Firms
- Banks

Government Entities



- State Treasurers, Comptrollers and Executive Branch Agencies (*Human Services, Revenue, Health, Tax, etc.*)
- County and Municipal Agencies
- Educational Entities
- Federal Government Agencies

Channels



API

- Single
- Bulk



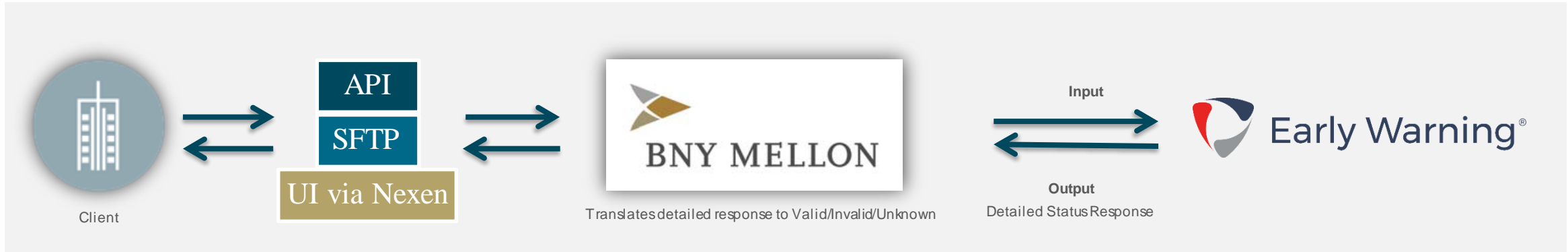
SECURE FILE TRANSFER PROTOCOL (SFTP)



USER INTERFACE (VIA NEXEN)

- Single
- Bulk

Account Validation Services : Channels and Inquiry details



Inquiry type	Input Data		BNY Mellon	Response Returned
	Required	Optional		
Account Status Validation (ASV)	<ul style="list-style-type: none"> Routing number Account number 	<ul style="list-style-type: none"> Amount Check number 	Receives detailed response from EWS which consists of:	<ul style="list-style-type: none"> Valid Invalid Unknown
Account Owner Validation (AOV)	<ul style="list-style-type: none"> Routing number Account number First and last name or Business name 	<ul style="list-style-type: none"> SSNTAX ID Date of birth Address Phone ID type and number 	<ul style="list-style-type: none"> Status match codes Account scores Condition codes Overall match scores 	<ul style="list-style-type: none"> Valid Invalid Unknown
Account Status with Owner Validation	<ul style="list-style-type: none"> Routing number Account number First and last name or Business name 	<ul style="list-style-type: none"> Amount Check number SSNTAX ID Date of birth Address Phone ID type and Number 	Translates detailed responses based on clients' selected eligible criteria profile.	<ul style="list-style-type: none"> <u>ASV</u>: valid, invalid, unknown <u>AOV</u>: valid, invalid, unknown

Market Comparisons

Features and Requirements	BNY Mellon's AVS	Other Early Warning Resellers	Credential login	Pre-note Micro Entries
Real-time response that requires no involvement from end customer	●	●		
Provides the customer's account balance			●	
Direct access to bank data contributed to Early Warning's <i>National Shared DatabaseSM</i> Resource	●	●		
Flexible solution that allows you to select Account Status Validation, AOV only, or AS with OV	●			
Three risk tolerance profiles to chose from among each of the services	●			
Takes into account risk of returns and high risk events	●	●		
API connection with your system	●	●	●	
API for multiple or bulk requests	●			
File-based via direct transmission	●			
User interface for single inquiries or batch import	●	●	●	
No middle layer or third party between financial institution and EWS	●			
Requirement: Customer must have an online banking account to perform validation			●	
Requirement: Provider connects to the customer's financial institution to log into their online banking account screen scraping data			●	

Acceptance Criteria Profiles

Helps you apply your philosophy on treating partial matches.

LOW TOLERANCE

Conservative profile. Requires matches to be comparatively closer for the response to be Valid.

MEDIUM TOLERANCE

Intermediate profile. Considers more inquiries “Valid” than the Low Tolerance profile, but fewer than the High Tolerance profile.

HIGH TOLERANCE

Forgiving profile. Allows more variations to be considered Valid.

Disclosures & Disclaimers

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