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Business Payments Coalition



Remittance Delivery Validation Report

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1 Executive summary

While there have been recent advancements in electronic payment technology, the ability to electronically transfer digitized remittance information¹ between businesses—the information that describes what is being paid—has remained a persistent problem. Remittance information is still largely delivered by email or portals. These methods require manual retrieval for cash application, the process of matching incoming payments to outstanding invoices and recording the payment into the accounts receivable system. These methods also preclude straight-through processing (STP), which allows businesses to receive and process business-to-business (B2B) transactions with little or no manual intervention—from invoice creation to reconciliation of the payment to the invoice.

The Business Payments Coalition (BPC), in collaboration with the Federal Reserve, convened industry experts as part of the E-invoice Exchange Market Pilot to address current difficulties with e-invoice delivery between incompatible systems. This led to the establishment of e-invoice delivery and exchange framework standards, and the formation of the Digital Business Networks Alliance (DBNAlliance)² in 2023. DBNAlliance oversees an exchange framework that allows participants to connect to a single network provider to exchange invoice information with any other network participant, regardless of its provider. In other words, connect once, trade with many.

Exchange frameworks are modeled after the global email exchange service ecosystem. Users sign up with an email provider such as Gmail or a local internet provider. Collectively, the email providers serve as a virtual network of access points into email exchanges. Regardless of the end user's email client or operating system, email is successfully exchanged because delivery, interoperability and exchange standards are shared by the providers. Please refer to Appendix A for an overview of an exchange framework.

The BPC, with support from the Federal Reserve, launched the Remittance Delivery Assessment Work Group in late 2021. This work group determined that using an exchange framework, similar to the one used for e-invoicing, to deliver electronic remittance (e-remittance) information provides a feasible solution. The work group further recommended moving into a validation testing phase³.

In the validation phase, the work group further examined the operational feasibility of using an exchange framework to deliver remittance information to continue to build industry support for a full-fledged pilot program.

This report details the work group's findings, which demonstrated that an exchange framework can both facilitate the exchange of e-remittance information and enable STP between incompatible systems. The work group also confirmed options for remittance information sent separately from the payment via an exchange framework that would enable effective linking for automated cash applications.

By incorporating the ISO 20022 Remt.001 message, the validation work demonstrates an exchange framework's ability to support U.S. payment industry adoption of ISO 20022 messaging for remittance information.

¹ Terms found in the glossary are colored green on first reference.

² [The Digital Business Network Alliance \(DBNAlliance\)](#) is the not-for-profit oversight organization created to manage the network after the conclusion of the BPC's E-invoice Exchange Market Pilot.

³ The assessment work group's findings are presented in the BPC [Remittance Delivery Assessment Report](#).

The work group participants now recommend moving swiftly to a remittance pilot phase using the recently-launched [DBNAlliance Exchange Framework](#). The pilot will focus on the following:

- Piloting a fully operational exchange framework.
- Finalizing the ISO 20022 remittance data model.
- Preparing for the establishment of a production remittance exchange framework.

It is further recommended the pilot include approximately 10 access points. These access points would be complemented by a broader industry group, including the original feasibility assessment work group members who decide to opt in. Businesses and service providers that are interested in participating in the remittance exchange network pilot and/or contributing to the policies and rules for exchanging remittance information could also join the pilot.

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2 Introduction

This report is a follow-up to Remittance Delivery Assessment Work Group's conclusions and recommendations included in the [Remittance Delivery Assessment Report](#). That work group confirmed that an exchange framework is a feasible solution for delivering remittance information. An exchange framework also supports STP for electronic B2B payments by enabling posting into accounts receivable systems. The work group further recommended that the industry take the following steps leading to the formation of a remittance exchange network:

Step 1: Validation. Demonstrate operational feasibility of a remittance exchange network to continue building industry momentum, confidence and support for advancing to the market pilot.

Step 2: Market pilot. Build and test a scalable U.S. remittance exchange ecosystem. Establish remittance exchange policies, rules and guidelines. Create business and access point onboarding tools.

Step 3: Remittance exchange network formation: Transition from pilot to an industry-supported full production remittance exchange framework.

This report covers the validation phase key findings and recommended next steps.

Early in the validation phase, the work group members voted to use the [BPC E-invoice Exchange Market Pilot infrastructure](#), which transitioned to the DBNAlliance in early summer 2023, to perform the testing. Doing so reduced the time required to perform the tests and confirmed the ability for a single exchange framework to support sending and receiving multiple document types, in this case both remittance information and e-invoice documents.

This report assumes a high-level knowledge of how the recently established DBNAlliance exchange framework operates. See Appendix A for an overview of an exchange framework.

2.1 Audience

The information in this report will benefit two broad groups, business stakeholders and technology stakeholders.

Business stakeholders

- Individuals responsible for implementing and supporting accounting technology systems.
- Treasury management professionals and individuals responsible for identifying, defining and supporting business requirements for accounting technology systems that support accounts receivable (AR), accounts payable (AP) and electronic exchange of business documents.
- Individuals in financial institutions responsible for products and services that support remittance data for payments.

Technology stakeholders

- Individuals responsible for the design, implementation and support of accounting technology systems and solutions for electronic exchange of business documents.
- Individuals responsible for the design, integration and operational support of business applications that include AR, AP and electronic exchange of business documents.

2.2 Disclaimers, copyright and acknowledgments

Views expressed here are not necessarily those of, and should not be attributed to, the Federal Reserve System or any particular BPC participant or organization.

Readers are free to republish this report in whole or in part without further permission if the work is attributed to the BPC and Federal Reserve and the work in no way suggests that the Federal Reserve System or BPC sponsors, endorses or recommends any organization or its services or products. Other product names and company names referenced within this document may be either trademarks or service marks of their respective owners.

The Federal Reserve and the BPC gratefully acknowledges the contributions of the Remittance Delivery Assessment Work Group and other contributors during the assessment and current validation process.

2.3 Objective and scope

The primary objectives of the validation phase were to (a) confirm that the technical adjustments to the *discovery*, delivery and data functions identified in the feasibility assessment phase can be effectively implemented to support the exchange of remittance information, and (b) foster industry confidence by demonstrating operational results.

The scope of the validation phase was limited to testing those capabilities identified in the BPC's [Remittance Delivery Assessment Report](#) that needed further validation, including sending test remittance data end-to-end through an exchange framework ecosystem. The work group participants defined requirements for *registries*, delivery testing and data in order to to achieve the validation objectives.

The following items were deemed out of scope for the validation phase:

- Establishing a pilot operation beyond the proof-of-concept capability required to build industry confidence.
- Integrating the remittance information delivered through the exchange framework into a business's accounting system.
- Determining the oversight or governance approach for the remittance exchange framework.
- Creating a security configuration and authentication model for final production.
- Reassessing the appropriateness of the ISO 20022 remittance data model used in the exchange framework.
- Developing a market adoption plan.

2.4 Work group approach

Participants in the validation phase consisted of a subset of industry participants in the Remittance Delivery Assessment Work Group, augmented by one additional participant with strong knowledge of an exchange framework. The participants represented a diverse group of organizations and developed knowledge of, and expertise in, the following areas during the validation phase:

- Access point technical implementation and operations.
- **Registry** and transmission standards used in the BPC's e-invoice exchange framework.
- The ISO 20022 Remt.001 remittance data standard.

Participants solicited and received executive-level support for the time required to achieve the validation phase objectives. BPC e-invoice exchange framework technical experts provided the validation phase participants with guidance needed to achieve their objectives.

The validation phase participants agreed to:

1. Determine if any changes are required to the structure and data stored within the **capability registry** of the e-invoice exchange framework to meet the requirements for the exchange of remittance information.
2. Implement ISO 20022 Remt.001 remittance data as the data model for the exchange.
3. Develop and implement schema validation to ensure integrity of data according to the data model.
4. Assess the potential of sharing the e-invoice exchange framework technology and registries that were developed by the BPC E-invoice Exchange Market Pilot — including its standards and operational model.
5. Send remittance messages through the e-invoice exchange framework.
6. Assess and define methods for linking specific payment types to the remittance message passed through the DBNAlliance exchange framework.
7. Validate the mechanism that links a payment to a separate ISO 20022 remittance message.

3 Overall value proposition

The overall value proposition of an exchange framework is that it offers a consistent means of providing digitized remittance information from all types of electronic B2B payments by replacing current manual methods such as emails and portals. Digitized, structured remittance information also reduces the time spent resolving questions about the remittance information, whether that payment is for one or for several invoices or has credit memos netted into the payment amount.

While payment networks impose size limitations on the ISO 20022 remittance data message (remt.001), an exchange framework has no size constraints. In addition, the use of an enveloped message exchange provides further value by allowing attachments and other message details to be included in the same envelope as the remittance message.

By using service providers as access points in an exchange framework, businesses of all sizes can send and receive remittance information with minimal or no changes to their accounting systems. The exchange framework enables these businesses to reach any payee trading partner of any access point service provider participating in the network. Together, these benefits enable more efficient delivery and processing of remittance information. This in turn extends to cost reductions, speed enhancements and accuracy improvements in overall payment processing functions.

Refer to Appendix E for benefits of an exchange framework.

4 Security considerations

There are several technical aspects of the e-invoice exchange framework that support security.

- All messages are encrypted so that data is secure in transit.
- Industry-standard 256-bit encryption is supported throughout the system.
- Security standards include protections that detect messages which have been altered or tampered with.
- Remittance information data is not stored within the exchange framework.
- No sensitive data is stored on the registries.
- An exchange framework implemented like the BPC e-invoice exchange framework mitigates against fraud.
 - All participants are credentialed and authenticated before onboarding.
 - Each communication requires authentication of the access point using certificate authentication technology. This limits the opportunity to introduce fraudulent invoices.
 - The receiving access points have the option to implement further security vetting tools once they receive the document.
- Since an exchange framework reduces manual and paper processes, it eliminates the potential for business e-mail compromise fraud because e-mails are not used.

5 Technical objectives of the validation phase

The primary technical objectives of the validation phase are listed below with their descriptions, outcomes and overall effects on the remittance ecosystem.

5.1 Establishing multiple access points

Access points for remittance information delivery are typically operated by financial institutions, enterprise resource planning (ERP) service providers, lock box providers, or organizations that perform AP and AR value-added services.

Description: Because of the variety of organizations that may participate as access points, diverse access points were sought out to validate the exchange framework in an assortment of use cases.

Outcome: This objective was met with the participation of three access points with diverse profiles.

Effect: Having multiple access points underscores the value of the exchange framework because it demonstrates the ability to exchange data between diverse entity types using a single set of standards. While it expands the reach of businesses, it does not replace existing payment networks or data interchanges that are already working well.

5.2 Integrating and testing remittance requirements in the discovery registries

The discovery registries and registry queries required testing to assure that they could facilitate discovery of the document types supported and the electronic delivery address of the targeted remittance delivery access point. The registries do not include any information that would enable identification of, or direct access to, the receiving business systems, but information to confirm what documents are supported.

Description: Three document profiles (ISO 20022 core remittance, ISO 20022 remittance with line item detail, and EDI 820 pass-through) were created and used to test the ability to include multiple remittance document types in the capability registry (the [Service Metadata Publisher, or SMP](#)). The capability registry identifies what document types the receiving access point supports, as well as the electronic delivery address for the access point. The EDI 820 document profile was included to validate the support of a widely used alternate data model in addition to ISO 20022 as the core data model. The group tested EDI 820 as a pass-through document, with no analysis or translation of the data by the access points.

Outcome: The three new document types were successfully added, allowing exchange framework participants to discover the receiver's electronic address for delivery of remittance documents. No changes to the participant registry or the registry queries were needed.

Effect: An exchange framework facilitates the ability to securely discover the receiver's access point address for receiving data without having to change the discovery registries or the registry queries operational architecture. In addition it confirms the ability for a single set of registries to support multiple document types, such as e-invoice and e-remittance information.

5.3 Integrating the ISO 20022-based remittance exchange data format

Description: The Remittance Delivery Assessment Work Group selected the ISO 20022 Remt.001 data model for the exchange framework to align with and complement the U.S. market adoption of ISO 20022 messages for payments. During the validation phase, the ISO 20022 data model and **remt.001 message** were integrated into the exchange framework. Rules specific to remt.001 usage within the exchange framework were added. A schema validation tool was created to assure that remittance messages were compliant with the data model and rules.

Outcome: The objective was met and the data model and rules were documented. Access points gained experience in using the ISO 20022 data model and creating remt.001 messages.

Effect: Integrating the ISO 20022 data model with the remt.001 message standardizes remittance information regardless of the payment type. Using a consistent data model and message type for all payment types enables improved data quality and reduces exceptions. It also increases opportunities for automation and reduced manual processing.

5.4 Sending remittance information through the exchange framework

Description: The work group took an iterative approach to testing. Round 1 was a connectivity test with participants paired for testing. Round 2 involved sending sample remittance data to validate various remittance use cases. Round 3 assessed approaches for linking remittance data to its corresponding payment. Test cases ranged from sending core remittance information to sending extended remittance information, such as line item data, to cover as many use cases as possible.

Outcome: Each of the test rounds yielded positive results. The group tested three types of remittance documents: Core Remittance, which meets the needs of most remittance use cases; Line Item Remittance, which includes adjustments and other information about individual document lines; and EDI 820. Messages were also mapped and **translated** both to and from their native formats into ISO 20022 remt.001 messages. It was also verified that the linking identifier in the remt.001 message can link the remittance information to its corresponding payment.

Effect: The tests demonstrated an exchange framework's ability to deliver remittance documents that meet the needs of businesses of all sizes and varieties. Businesses will be able to exchange remittance information with all other businesses in the network, extending their reach and providing the ability to use one remittance information delivery method for all payment types. This degree of interconnectedness can substantially reduce the number of payment portals a business needs to use in order to send or receive remittance information. It also reduces the need to manually process emails that contain remittance information.

5.5 Testing payment linkages to remittance messages

A linking identifier (a linking ID) is a single known pre-determined data element that brings together two transactions or messages for reconciliation. In the remittance context, the linking ID is included in both the payment and the remittance information at the time of payment initiation.

In the exchange framework process, the payer populates the linking ID into the payment and sends it to the sending access point with the remittance information. The sending access point populates the linking ID into the remt.001 message in the RmtId data element and sends it through the exchange framework. The payee receives the linking ID in the remittance message from the receiving access point and in the payment and uses the unique value to match them for cash application.

Description: The objectives of the remittance exchange validation phase data linkage were:

1. To validate that the linking ID in the remt.001 message can be used to link the remittance information to its corresponding payment per section 5.4.
2. To consider feasible options for stakeholders to link ACH CCD+ payments.

ACH payments were chosen because they are the most common electronic payment type for AP payments. CCD+ payments have an 80-character addenda that can carry the linking ID. CTX payments already allow for remittance data, typically in EDI 820 format, so they were excluded from the validation phase work.

Outcome: The group concluded that the ISO 20022 data can be translated into back-end systems and has the data needed to link the remittance information to the payment.

The work group also considered four options for populating the linking ID into an ACH payment, considering practices currently in the market and the desire to minimize changes to AP and AR systems, and payer and payee operational processes. The work group considered options for CCD payments that contain an addendum (CCD+ payments) and those without an addendum. (See Appendix C for further detail.)

The work group concluded the most feasible option is to put the payment effective date and payment amount into the RmtId in the remittance message, using a standard format (e.g., yyyyymmdd + nnnnnn.nn).⁴ The effective date is the date that the receiver should see the funds in the receiver's bank account. The payee matches the payment to the remittance using the RmtId and data from payments received from the payer (payment date plus amount).

Finally, the work group recommended that further validation of the linkage mechanism for various payment types should occur in the market pilot phase.

Effect: Since the advent of electronic payments, there have been challenges sending the remittance information with the payment. As a result, this information is most often sent via an email or provided in a portal, which requires added manual processing for the receiver. By using the recommended linkage methodology and an exchange framework to send digitized remittance information, payments can be matched with their remittance information, thus enabling streamlined cash application. This was shown to be feasible for “bread-and-butter” accounts payable ACH payments—the largest use case for an exchange framework—as well as current instant payments and future ISO 20022-based wire payments.

⁴ Option 4 in Appendix C.

6 Insights gained and recommendations for pilot planning

6.1 Access point insights gained

The following are work group observations and recommendations to prepare for access point participation in the e-remittance exchange pilot:

Recruit executive sponsors. It is important to have executive sponsorship in place at the beginning of the project. Determine your institution's executive sponsors and help them understand the benefits and technical requirements of participating in the exchange framework. Explain the benefits to internal sponsors in such a way that they understand the concept of B2B electronic document capabilities and resource allocation requirements.

Review internet security protocols. Access point operators must understand the overall implications of sending external messages over the internet and be comfortable with the security. Executive sponsorship and implementation teams should recognize that an exchange network reduces the number of external communication connections from many to one and thus reduces security vulnerabilities and communication support costs.

Choose the desired role in the four-corner model. Access point operators should be strategic about choosing their role(s) in the four-corner model. Will they be *sending* (C2) documents for their clients, *receiving* (C3) documents for them, or both? The organization's business model will determine which role(s) will best support its business when participating in the exchange framework four-corner model.

Become familiar with ISO 20022. Access points must be familiar with the ISO 20022 data model to translate remittance messages between the exchange framework and their end users' accounting systems. Although the global payments industry is moving toward ISO 20022 adoption, U.S. businesses on the whole lack familiarity with the ISO 20022 message standard and therefore many U.S.-based access point providers will have a learning curve. The learning curve will be less pronounced for international companies that already use the standard. X9's [ISO 20022 Remittance Content Market Guide](#) is a good starting point to become familiar with the ISO 20022 remt.001 message used by access points in the exchange framework. Note that in the exchange framework, C1–sending– and C4 –receiving– businesses can continue to send and receive remittance data using their current formats and are not required to learn and implement ISO 20022 remt.001 messages. Their access point providers will perform the ISO 20022 remt.001 translation on their behalf.

Carefully identify corporate pilot participants. Pilot participants in the C1 and C4 roles should be carefully identified and recruited. Access point providers should explain the benefits of the exchange framework for B2B transactions to potential C1 and C4 participants. Businesses likely will need to be educated on the exchange framework technology and functions. Consider the efficiencies, economies and improvements to cash application.

Gather remittance test data. Using production data for testing and pilot phases is often considered sensitive, and the data is therefore sometimes difficult to obtain. Establishing quality sources of test data that do not use production data can be challenging and time-consuming. For a pilot, access points will need to plan early how to gather remittance data that can be used for testing, including test data that their organizations might already have developed and made anonymous.

6.2 Recommendations for pilot planning

Move to pilot following the three-step approach set forth in the *Remittance Delivery Assessment Report*. Having successfully completed the validation, the participants recommend moving to the next phase, pilot. The objective of the pilot is to build a scalable U.S. remittance exchange framework ecosystem and establish pilot operational policies, rules, guidelines, and corporate and access point onboarding tools.

Move swiftly and maintain momentum going into the pilot phase. To sustain the momentum generated by the validation phase, the work group suggests starting the pilot phase shortly after this report is published in 2023. Learnings from the validation phase will then be fresh in the minds of the participants, who ideally will join the pilot as leaders. This timing also leverages synergies with the BPC's e-invoice exchange framework's transition to the DBNAlliance production environment, including development of processes for onboarding additional electronic document exchange communities such as remittance.

Leverage the newly formed exchange framework infrastructure overseen by the DBNAlliance. This avoids duplicating infrastructure and the need to identify and establish an independent host for the DNS registry, speeds the time to market, and provides synergies for those implementing both e-invoicing and remittance. It also provides additional momentum for both the DBNAlliance and the remittance community.

Include approximately ten access points based on executive commitment and resourcing. This number will help optimize the time to complete the pilot and ensure that access points can complete their work within the pilot timeframe. It will also assist in matching senders (C1s) with receivers (C4s) for end-to-end testing.

See Appendix F for recommended pilot scope and deliverables.

7 Conclusions and next steps

The work confirmed the premise of the Remittance Delivery Assessment Work Group: An exchange framework is indeed a viable solution for delivering remittance information in support of automated cash application.

Work group participants completed the tasks needed to achieve the objectives of the validation phase, including establishing multiple access points, adding remittance document types to registries, successfully delivering remittance messages, integrating the ISO 20022 remittance data model and sending a pass-through EDI 820 document. In addition, the validation phase work group gained valuable insights that will aid future phases of the work.

Using an exchange framework for remittance information will help businesses reduce exceptions and implement consistent cash application processes for multiple payment types. In addition, an exchange framework approach—leveraging access points—minimizes changes to accounting systems. This approach can support businesses of all sizes because the access points transmit and translate remittance information into formats that are specifically tailored for individual C1 and C4 client systems.

In keeping with the assessment group recommendations, the participants in the validation phase unanimously support moving to a pilot that leverages the DBNAlliance's exchange framework. Doing so would create synergies and could dramatically reduce the time, cost and overhead required to establish and maintain a separate exchange framework.

Appendix A: Exchange framework overview

Exchange frameworks are modeled after the global email exchange service ecosystem. In order to send and receive email, users sign up with an email provider such as Gmail or a local internet provider. Collectively, the email providers serve as a virtual network of access points into email exchanges. Regardless of the end user’s email client or operating system, email is successfully exchanged because delivery and interoperability standards are shared by the providers.

As with email systems, exchange frameworks enable businesses to connect once and then exchange information with any business on the virtual network (the network), independent of the platforms, systems or applications used by individual participants. (The network is considered virtual because it connects geographically and physically unrelated computers via the internet.) The virtual network is a federation of Access point Nodes linked together by a federated registry and communication security certificates. The registry and certificates authenticate access for the delivery of electronic documents between authorized access point nodes.

Exchange frameworks are based on a four-corner ecosystem (Figure 1), where service providers act as access points which send and receive electronic documents. As a security measure, service providers must apply for and receive authentication certificates from the network governance authority in order to become access points and send documents.

In addition to sending and receiving business documents, the access points also perform the necessary data transformations to and from the ISO 20022 data standard. This minimizes or eliminates the need for changes to business accounting systems. A network independent of payment systems can deliver remittance information for all payment types and without any restrictions to the full use of the ISO 20022 stand-alone remittance message data model (remt.001).

A model of a four-corner exchange framework ecosystem is shown below. The Corner 1 participant (C1) is the buyer of goods, while the Corner 4 participant (C4) is the seller of goods. Corner 2 (C2) and Corner 3 (C3) are access points (AP) that handle the actual interchange of remittance data created by the buyer and processed by the supplier. Registries provide non-sensitive details about the participants and the network locations and capabilities of access points. Note that the roles of corners C1 and C4 are reversed for e-invoices processed through an exchange framework. C1 becomes the supplier sending an invoice and C4 becomes the buyer that records it into its accounts payable system.

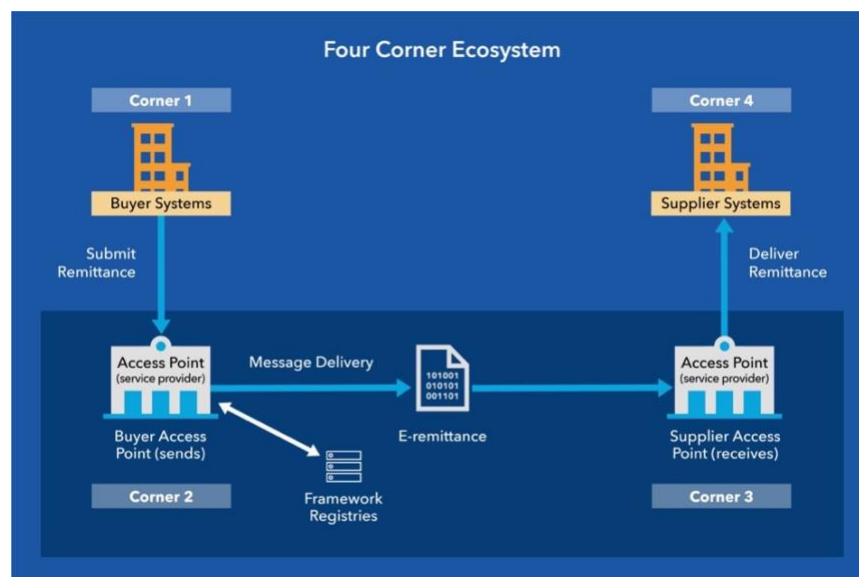


Figure 1. The Four Corner Ecosystem

Appendix B: Technical considerations for the validation phase

Discovery and delivery functions

Approach to confirming discovery and delivery functions

The work group performed the following steps to validate discovery and delivery functions:

1. Determined if any changes were required to the structure and data stored within the capability registry to meet the requirements for the exchange of remittance information.
2. Assessed the potential to share registries with the e-invoicing framework.
3. Created an Access point testing environment for implementation and ongoing operations.

Registries, discovery and delivery configurations

The work group identified the document types (ISO 20022 core remittance, ISO 20022 remittance with line-item detail, and EDI 820 remittance) needed for remittance in the validation phase and validated that the capability registry could support the requirements for these remittance documents. The data model for the remittance document types is described in the Data Model section below.

The work group participants determined that the capability registry specifications standards do not need to be changed from what is currently being used in the exchange framework for exchanging e-invoices.

Potential to share registries used for e-invoicing on the DBNAlliance exchange framework

In the validation phase, the work group decided to leverage the E-invoice Exchange Market Pilot infrastructure rather than replicate it for remittance testing. The primary reasons were to reduce the time and effort required to complete the validation phase, demonstrate an exchange framework's capability to support multiple document types, and confirm the ability to leverage a single exchange framework infrastructure for both documents. This is important because:

- Service providers can use a common infrastructure for invoicing and remittance documents, as well as for future additional document types and data models.
- Using a common infrastructure may preclude future industry fragmentation and siloed solutions.
- Using a common infrastructure heightens the network effect by widening the reach of the exchange framework participants to multiple electronic document exchange communities.

Another reason for leveraging the existing E-invoice Exchange Market Pilot infrastructure is that it reduces overall support requirements and provides consistent configuration and future compatibility for sending and receiving different document types.

Data model

Approach to the data model

ISO 20022 is a standards framework that defines the message structure and content to enable a common global "language" for messaging in payments, cash management reporting, securities, cards, foreign exchange and trade services. The ISO 20022 standard is rapidly becoming the global standard for payments and it is being adopted by payment systems in the U.S.

The ability to carry remittance information is consistent across ISO 20022 payment messages. However, because some payment systems limit data within a payment message and some payment types do not support remittance information at all, the ISO 20022 remt.001 stand-alone remittance message was selected for its ability to support remittance messages sent separately from a payment.

Work on the data model focused on implementing ISO 20022 remittance message data elements as the primary data model, per the recommendation in the BPC [Remittance Delivery Assessment Report](#). ASC X9 published the [ISO 20022 Remittance Content Market Guide](#) (X9 Guide), which provides background and guidance on the remittance data elements for B2B payments to encourage payers and payees to use consistent data regardless of the payment type. During the validation phase, the work group relied on the X9 Guide to expedite the data model work and assure conformity with the recommendations.

The team focused on:

- Confirming the required remittance data elements to include in the exchange framework based on the X9 Remittance Content work.
- Creating a complete remittance message for use in the exchange framework that is in compliance with the ISO 20022 standard.
- Developing and implementing a prototype schema validation tool to ensure integrity of data according to the data model.

Data model details

The remittance advice message for the exchange framework is a profile of the Stand-Alone Remittance Advice (remt.001) message in the [ISO 20022 specification](#). There are three ISO 20022 documents with remt.001 specifications:

1. Message Definition Report - Part 1 (MDR1): This document provides broad information about the use of the messages for Stand-Alone Remittance and includes, for example, business scenarios and message flows.
2. Message Definition Report - Part 2 (MDR2): This document provides details of the message definitions for Stand-Alone Remittance Advice. It includes definitions of all data elements and the remt.001 message structure.
3. Message Definition Report - Part3 (MDR3): This document describes the business model components and elements used by the Stand-Alone Remittance Advice message set.



The ISO 20022 Remt.001 Stand-Alone Remittance Message is designed for remittance data sent separately from a payment.

The data structure and elements in the ISO 20022 remittance data model are shared by all messages that contain remittance data. When sent within a payment, the remittance data is in a self-contained data structure within the payment data. As an implementation of the Stand-Alone Remittance Message, the data model used in the exchange framework must be consistent with all B2B remittance data elements available in the ISO 20022 data structure.

Data model validation details

The validation phase used the existing ISO 20022 remittance data elements with all B2B data elements available for use.⁵ While the validation phase data model is consistent with the ISO 20022 data model, there are specific implementation requirements for the data model in order to optimize the value provided by the exchange framework.

- Some data elements that are optional in the ISO 20022 model are required in the exchange framework. Examples include usage of structured remittance data and populating key data elements such as invoice number, date and amount.
- There are recommended or required values for certain data elements, such as those in the header.
- There are certain rules specific to sending data over the exchange framework. These are primarily related to required vs. optional data elements.
- External code lists incorporated were limited to data elements commonly used in remittance information.

In the validation phase the work group documented (1) the data model and implementation guide for the remt.001 message and (2) rules to optimize straight through processing when sending over the exchange framework.

Future recommendations

The data model is a living document that aligns with the ISO 20022 remit data model. It should be updated in the pilot phase with further insights gained from the pilot. If any change requirements are identified and implemented that are not aligned with the ISO 20022 data model, a change request should be submitted to the ISO 20022 PaySEG directly by going to the webpage at www.iso20022.org/maintenance-iso-20022-message-definitions.

Appendix C: Linking the remittance information to the payment

The objective of the validation phase data linkage work was to consider feasible options for stakeholders to link ACH CCD+ payments and to demonstrate linking for ACH payments. ACH payments were chosen because they are the most common electronic payment type for AP payments. CCD+ payments have an 80-character addenda that can carry the linking ID. CTX payments already allow for remittance data, typically in EDI 820 format, so they were excluded from the validation phase work.

The desired outcomes for the linking assessment were to:

- Confirm that the payment and remittance information can be linked in an automated manner by the payee with minimal changes by payers and payees.
- Verify that an identifier unique to the payer can be included with both the payment and the remittance information to facilitate matching.
- Demonstrate to stakeholders that the linkage is feasible for ACH payments, the largest use case for the e-remittance exchange framework.

⁵ B2B data excludes data for tax and garnishment payments.

Options considered

Work group participants considered advantages and limitations of four options for linking ACH payments. These options, summarized below, could be explored in more detail in future work with the goal of making recommendations that promote consistent adoption by the industry.

Considering current practices, the work group concluded that Option 4 is the most feasible option for linking exchange framework remittance messages. Option 1 could be a desirable option in the longer term if adoption of the exchange framework becomes widespread because it is consistent with the way that linking for ISO 20022 payments will be achieved.

Option 1 (when the ACH payment has addenda or addenda can be added):

Populate the unique electronic payment number (up to 35 characters) from the AP system into the addenda and the RmtId in the remittance message. Payee matches the payment to the remittance using the addenda and RmtId. The addenda should include a RmtId tag with the payment number.

In those cases where the Payment Related Information addenda field is currently being used for other purposes that cannot be compromised, more research needs to be done related to the possibility of the payer using the ACH CTX protocol which can have multiple addenda records. Current information could be retained and an additional addenda line added with the linking ID.

Option 2 (when the ACH payment has addenda):

Pull the first 35 characters of addenda as populated in the payment to populate RmtId in the remittance message. Payee matches the payment to the remittance using the addenda and RmtId.

Option 3 (when the ACH payment has no addenda):

Put the unique payment ID from the payment (up to 15 characters) into the ACH Identification Number (field 7) and populate into RmtId in the remittance message. Payee pulls the Identification Number from bank reporting and matches the payment to the remittance using RmtId.

Option 4 (when the payment has no addenda):

Put the payment effective date and payment amount into the RmtId in the remittance message, using a standard format (e.g., yyyyymmdd + nnnnnn.nn). The effective date is the date that the receiver should see the funds in their bank account. Payee matches the payment to the remittance using RmtId and data from payments received from the payer (payment date plus amount).

Appendix D: Testing

Access point setup

The access points were set up in accordance with the checklist found in the Access Point Quick Start Guide:

1. Sign and submit the BPC Market Pilot Project Participant Non-Disclosure Agreement (NDA)
2. Provide a valid Participant ID that adheres to the BPC Identifier Policy.
3. Register with an SMP and provide the qualified URL obtained from the SMP provider.
4. Register with an SML.
5. Obtain certificate from Certificate Authority Custodian (CAC).
6. Download and install code.
7. Connect to network and begin exchanging invoices.

Testing approach

The first round of testing was a C2 to C3 connectivity exercise with data in the SML, SMP and remt.001 messages. Remittance data in the remt.001 message leveraged examples from the X9 ISO 20022 Remittance Content Market Guide. The main functionalities tested during this round were lookups to the SML and SMP. The resulting connection between C2 and C3 was validated by sending a message between the two points.

The second round involved testing the connection between C1 and C3 with real, anonymized remittance data obtained by the validation phase work group participants.

The third round was intended to have C3 and C4 confirm that the payment can be linked with its remittance information.

See below for results. The validation phase had the following desired outcomes and results:

Desired outcome	Result
Access points in place to support testing	Established multiple access points, sending and receiving roles
Business discovery registries support remittance data	Integrated remittance requirements into Capability registry (SMP)
Remittance data model and format in place	Integrated ISO 20022 remittance data model and data format for exchange
Successful end-to-end testing, C1 to C4	Sent remittance information through an exchange framework from C1 to C3. Due to the incremental effort required to engage C1s and C4s, the group decided that it was best to defer full end-to-end testing from the validation phase to the pilot phase. That is the phase where access points can reasonably engage customers in the testing.
Successful payment linkage	Based on mapping the ISO 20022 remt.001 message into a receivables solution, the group confirmed that the payment can be linked to the remittance document with the data provided. Confirmation with C4s is recommended for the pilot phase, when access points can reasonably engage customers in the testing.

Appendix E: Benefits of an exchange framework

Process automation enables STP

- An automated process for linking the remittance message to the payment is essential to enabling STP of remittance information. Without such a process, manual steps are necessary to match the payment to the remittance information for payment posting. Validation phase work group participants provided options for how the ISO 20022 remittance information, sent separately from a payment through an exchange framework, can be linked to ACH payments using a unique linkage identifier to automate the process. It can also easily link the remittance when the payment is sent separately through the instant payment rails, where the RmtId can be recorded in the payment as well as in the Remt.001 message. Even if the payment was sent via check or paid by card, the payment references in these can be populated into the RemtId of the remt.001 message.
- Delivering remittance information over an exchange framework saves overall payment processing time, increases transaction accuracy and also enables straight-through remittance information and payment processing.

The DBNAlliance exchange framework enhances security

- The exchange framework standards and specifications bring information security to the remittance process. Data is not stored in an exchange framework and email is not used to transfer data. Electronic certificates are utilized to control and validate the access of service providers to an exchange framework. Network messages are encrypted using Advanced Encryption Standard (AES) 256, a symmetric encryption algorithm that uses a 256-bit key to convert plain text or data into a digitally encoded message. In addition, messages are packaged in an envelope that enables optional end-to-end encryption between business users. Together, these factors offer appropriate security, authentication, trust and protection against data fraud.

Sharing an exchange framework infrastructure and onboarding procedure with the e-invoice community saves resources

- The fact that the exchange framework infrastructure can be shared between e-invoicing and e-remittance applications benefits all stakeholders because it allows one onboarding procedure to serve both purposes. Furthermore, the same delivery mechanism is used for multiple message types. This reduces infrastructure setup, maintenance and operating costs for all stakeholders. It is relatively easy to set up and use additional document types (e.g., remittance and other future documents) on the DBNAlliance exchange framework.
- Using an exchange framework to transmit remittance messages provides value because it automates and speeds the cash application process, making accurate, timely and secure straight-through payments processing an attainable reality for businesses of all sizes.

The exchange framework can enhance existing applications

- Financial institutions can integrate remittance delivery into their existing products. They could also offer a stand-alone remittance data service to their treasury management clients and to those small-to mid-size business customers that send and receive ACH payments.
- ERP providers could integrate remittance delivery into their AR and AP software as an additional value-added service.

Appendix F: Next steps: Pilot phase

Pilot objectives

The pilot objectives are to: 1) further demonstrate that an exchange framework works for remittance stakeholders, 2) expand firsthand experience and knowledge with more access points connecting to the network, and 3) integrate remittance messages into the e-invoice exchange framework to further test the compatibility and potential benefits of both documents exchanged through a single exchange framework. Several potential benefits include an easy transition to a live remittance exchange ecosystem for pilot participants and significantly reducing the time, cost and resources required to establish and maintain a remittance exchange framework. The pilot will demonstrate the value proposition for businesses and access points, build industry confidence and inspire post-pilot participation by additional access points and businesses.

Pilot deliverables

The validation phase participants recommend the following Pilot deliverables:

- A data model implementation guide with appropriate documentation to promote proper and consistent usage of the remt.001 message and remittance data model.
- A draft Access point implementation guide to help providers stand up their access points on the network.
- A corporate remittance best practices guide to help businesses understand the path forward and assess how an exchange framework can help them.
- Recommendations for remittance document exchange policies and rules.
- Resources and tools to promote awareness and adoption of the exchange framework.

The pilot should also produce a recommendation for how to populate a linking identifier into an ACH payment, taking as a starting point the options assessed in the validation phase (see Appendix C). Linking mechanisms for other payment types could also be explored if time and capacity exists.

Pilot phase guiding principles and guardrails

The validation phase participants recommend pilot phase guiding principles and guardrails for staying within scope of the work to ensure consistency with this validation phase and compatibility with exchange framework standards and technology.

Guiding Principles

1. Framework adaptations should use standards and technology that are open, royalty-free, vendor- and service provider-agnostic and do not require a specific platform or solution.
2. Current standards specified by the DBNAlliance exchange framework for discovery and delivery will be used.
3. Framework adaptations are primarily focused on facilitating remittance exchange independent of the payment method.
4. Ensuring ease of adoption and maintaining momentum are a high priority.
5. Remittance-specific components incorporated in the exchange framework meet current U.S. market capabilities and drive adoption.

6. Remittance-specific adjustments should focus on facilitating corporate end user adoption for all types of businesses, service provider segments and sizes (e.g., including smaller businesses, banks and service providers).
7. Exchange framework adaptations for industry-specific needs (vertical market segments) are out of scope for the pilot phase. The expectation is that an exchange framework will have the flexibility to accommodate unique market vertical data requirements post pilot, but it may require additional data model (profile) definition.

Guardrails

1. Advocating for changes to the DBNAlliance exchange framework's architectural and operational approach, other than those required specifically for remittance needs.
2. Advocating for, or debating, the standards used within the DBNAlliance exchange framework for discovery and delivery that were already addressed in the feasibility assessment and validation phase and would materially change the DBNAlliance exchange framework's operational ecosystem and principles.
3. Advocating for any proprietary data standard (e.g., unique to specific software or products) to be included as a core data exchange standard.
4. Discussing topics that fall within anti-trust restrictions.

Appendix G: Glossary

Access point: A network role that facilitates the sending and receiving of business documents on behalf of a network participant. The access point of the participant initiating the exchange is referred to as C2 in a four-corner network model, while the access point of the receiving participant is referred to as C3. Access points are typically operated by financial institutions, enterprise resource planning (ERP) service providers, lock boxes, or organizations that perform AP and AR services for others as value-added services or for their own account.

BPC e-invoice exchange framework pilot infrastructure: The infrastructure developed and implemented to support the BPC E-invoice Exchange Market Pilot. In early summer 2023, this infrastructure was transitioned to the newly formed DBNAlliance 501(c)(6) oversight organization established at the end of the pilot.

Capability registry: The capability registry provides non-sensitive metadata about a participant's capabilities in the network. Metadata includes information about business document types and formats the participant can receive, business processes supported or implemented by the participant, information the participant expects to receive within a certain business document and information about the technical end point(s) and transport protocol(s) where the participant will receive business documents. This registry is referred to as the Service Metadata Publisher (SMP) service in the e-invoicing framework.

Data: The data exchanged between the access points.

Data model: An abstract model that organizes elements of data and standardizes how data elements relate to one another. In this context, a data model defines data elements within a standard, such as ISO 20022, and explicitly determines the data structure.

DBNAlliance: Independent, tax exempt 501(c)(6) company established at the end of the BPC E-invoice Exchange Market Pilot, that serves as the legal entity overseeing the exchange framework.

Delivery: End-to-end message delivery between the sending and receiving access points.

Discovery: The processes and technology used to discover (e.g., look up) the capabilities of another party, where and how to send an invoice and/or other messages and validate and authenticate credentials. This includes registry services and other decentralized discovery mechanisms.

Exchange framework: An exchange framework is the virtual network communication backbone for delivering structured data (electronic data interchange format for remittance documents) electronically along with its standards, policies and operational rules.

Exchange network: An exchange framework, along with its standards, policies and operational rules.

Framework registries: The collective term for SML and SMP functions.

ISO 20022: A universal financial industry message development scheme. An in-depth primer can be downloaded from <https://www.swift.com/campaign/iso-20022/iso-20022-dummies>.

Linking: The process of linking, or reassociating, a payment to a separate remittance message.

Registry: Non-sensitive information about participants and their participant identifiers in a DNS registry that is registered in the network.

Remittance information: Details about the amount paid – such as invoice number and deductions – so that a payment can be posted to accounts receivable invoices and balances.

Remt.001 message: ISO 20022 stand-alone remittance advice message as defined in Message Definition Report - Part3 (MDR3).

Service provider: An organization that provides its customers with services for the creation, delivery and processing of remittance information and other related e-business transactions, as well as supporting software and services. In an exchange framework, it may provide Access point or capability registry services.

SML (Service Metadata Locator): The SML facilitates the discovery of participants in the network by locating the network address of the participant's Service Metadata Publisher (the capability registry) using the participant's Identifier.

SMP (Service Metadata Publisher): The SMP is a function hosted by an accredited entity that provides details about a participant's selected Access point(s) for receiving electronic business documents and of its capabilities to receive specific document types and to support related business processes. The SMP is sometimes referred to as the capability registry. An exchange framework can have many SMP's that are managed and maintained independently and discovered via SML registry entries.

Syntax: The means by which information elements are expressed in machine-readable technical languages (e.g., XML).

Translate: The process performed by access points that converts a message to and from the framework's standard remittance message.

Virtual network: A virtual network is a network federation of Access point Nodes linked together by a DNS based SML registry, federated SMP registries and security certificates in order to authenticate access to deliver electronic documents between authorized access point nodes.

X9 (Accredited Standards Committee X9): An independent, non-profit corporation that maintains and promotes standards for the financial services industry.

Appendix H: Validation phase participants

Name	Company
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A listing of all Remittance Delivery Assessment Work Group members may be found in the BPC [Remittance Delivery Assessment Report](#).