

# **Business-to-Business EIPP: Presentment Models and Payment Options**

## **Part Two: Payment Options**



### **Contact:**

**Director, Electronic Billing and Payment  
NACHA – The Electronic Payments Association  
13665 Dulles Technology Drive, Suite 300  
Herndon, VA 20171**

**<http://cebp.nacha.org>  
703-561-3913**

**Disclaimer:** This document is a collaborative effort of the Business-to-Business Task Force membership, under the guidance of NACHA's Council for Electronic Billing and Payment (CEBP). The information in this publication reflects the opinion of the Council, and is intended for educational purposes only. Publication date: July, 2001.

Copyright © 2001 by NACHA  
All Rights Reserved.

## Table of Contents

### Part Two: Payment Options

Purpose Statement.....	1
Introduction.....	2
1. Automated Clearing House (ACH) Network .....	3
1.1. Overview .....	3
1.2. Process Flow – Buyer Initiated Payment.....	5
1.3. Process Flow - Seller Initiated Payments .....	8
1.4. Functional Differentiators.....	10
1.5. Economic Analysis .....	13
1.6. Additional Information .....	15
2. Alternative Electronic Networks - MasterCard RPPS.....	16
2.1. Overview .....	16
2.2. Process Flow – Buyer Initiated Payment.....	18
2.3. Process Flow - Seller Initiated Payments .....	19
2.4. Functional Differentiators.....	20
2.5. Economic Analysis .....	23
2.6. Additional Information .....	23
3. Alternative Electronic Networks - Visa ePay.....	24
3.1. Overview .....	24
3.2. Process Flow – Buyer Initiated Payment.....	26
3.3. Process Flow - Seller Initiated Payments .....	27
3.4. Functional Differentiators.....	27
3.5. Economic Analysis .....	29
3.6. Additional Information .....	29
4. Credit Cards.....	30
4.1. Overview .....	30
4.2. Process Flow – Buyer Initiated Payment.....	33
4.3. Process Flow - Seller Initiated Payments .....	36
4.4. Functional Differentiators.....	36
4.5. Economic Analysis .....	38
4.6. Additional Information .....	38

5. Traditional Mechanisms – Checks .....	39
5.1. Overview .....	39
5.2. Process Flow – Buyer Initiated Payment.....	41
5.3. Process Flow - Seller Initiated Payments .....	43
5.4. Functional Differentiators.....	43
5.5. Economic Analysis .....	45
5.6. Additional Information .....	46
6. Traditional Mechanisms – Wire Transfer.....	47
6.1. Overview .....	47
6.2. Process Flow – Buyer Initiated Payment.....	49
6.3. Process Flow - Seller Initiated Payments .....	51
6.4. Functional Differentiators.....	51
6.5. Economic Analysis .....	52
6.6. Additional Information .....	52
Conclusion .....	53
Glossary .....	54
Appendix: Comparison of B2B Payment Alternatives - Summary Matrices .....	A-1

## Purpose Statement

This is the second of a two-part paper entitled *Business-to-Business EIPP: Presentment Models and Payment Options*. Part one – released in January 2001 – described Electronic Invoice Presentment and Payment (EIPP) presentment models (available at <http://cebp.nacha.org/publicdocs/publicdocs.html>). Part two covers the business-to-business payment options that can be incorporated into EIPP.

The purpose of the 2-part document - *Business-to-Business EIPP: Presentment Models and Payment Options* - is to provide an objective, educational tool about Internet-based EIPP in business-to-business transactions. It is intended to help businesses understand the options currently available in the market. The authors believe that broader understanding will help drive adoption of EIPP.

The information in this document is designed for billers, payers, financial institutions, technology providers, and other industry participants to:

- Educate customers, colleagues, and the general public about EIPP
- Promote a common language and context for EIPP
- Describe and review available EIPP options, including both presentment and payment alternatives.

## Introduction

Electronic Invoice Presentment and Payment (EIPP) is the process by which companies present invoices through the Internet and make payments to one another. This document, the second of a two-part release, reviews existing Business-to-Business (B2B) payment mechanisms. Part One of the paper describes electronic invoice presentment models.

The intent of this document, Part Two, is to develop a framework for analyzing B2B payment options that both Buyers and Sellers may use as a tool to evaluate the comparative benefits of specific payment mechanisms. The focus is on key issues that help to drive the selection of an appropriate payment tool, including remittance capability, speed of settlement, transaction auditability, and accessibility. These factors along with other features—such as economics, speed, or control offered by a specific mechanism—create the rationale for using a particular payment option.

The B2B payment options reviewed in this document are examined within four major categories:

- Automated Clearing House (ACH) Network: Corporate Formats - CCD, CCD+, CTX
- Alternative Electronic Networks – MasterCard RPPS and Visa ePay
- Credit Cards
- Traditional Mechanisms – Check and Wire Transfer

The document provides the following for each payment alternative:

- Overview – defines and describes each payment mechanism, detailing the types of transactions to which it applies.
- Process Flows for Buyer Initiated Payments - explains the steps and parties involved in each step of a buyer initiated payment transaction.
- Process Flows for Seller Initiated Payments – explains the steps and parties involved in each step of a seller initiated payment transaction.
- Functional Differentiators – distinguishes each payment mechanism from other payment alternatives, by examining issues such as collectability, remittance capability, security, privacy, and other functions.
- Economic Analysis – details the types of costs and/or fees associated with each payment mechanism.
- Additional Information – identifies key sources for further information.

The Appendix contains a Summary Matrix comparing and highlighting the critical features of each B2B payment mechanism, and also includes a glossary.

## **1. Automated Clearing House (ACH) Network**

### **1.1 Overview**

The Automated Clearing House (ACH) Network is a nationwide electronic payments system governed by the NACHA – the Electronic Payments Association, a trade association representing more than 12,000 financial institutions. The ACH Network is a batch processing, store, and forward system. ACH transactions, or entries, that are received during the day by financial institutions are stored and processed in a group, or batch, mode. ACH transactions are accumulated and sorted by destination for transmission during a predetermined time period. This process provides significant economies of scale and enables faster processing than is possible for checks, which must be physically handled. Instead of using paper to carry transaction information, ACH payments are sent from one financial institution to another via data transmission.

Business-to-business ACH payments, or Corporate ACH payments, may be made using: Cash Concentration or Disbursement (CCD), Cash Concentration or Disbursement with addenda (CCD+), or Corporate Trade Exchange (CTX). These ACH options move money between business accounts in the same way; what distinguishes one from the other is the ability of the Buyer and Seller to exchange various amounts of remittance information.

- **Cash Concentration or Disbursement (CCD)**

The CCD application is either a Buyer initiated (credit) or Seller initiated (debit) transaction used to move funds between the Buyer's and Seller's financial institution accounts. This format is only a stand-alone funds transfer. It cannot carry remittance detail. The CCD format is used when trading partners do not need to exchange remittance information. An example would be when a Seller initiates a CCD debit against a Buyer's account and simultaneously updates its internal Accounts Receivable (A/R) system. The CCD format is typically used to pay a single invoice.

- **Cash Concentration or Disbursement with addenda (CCD+)**

This is the same format as the CCD but includes an addenda record limited to 80 characters that accompanies the funds transfer. The content of the addenda record must be formatted in an ANSI ASC X12 data segment. The addenda record may also be used to reference a separate transmission of remittance information that flows outside of the ACH Network. The CCD+ is typically used to pay a single invoice that is identified in the addenda record. It may also be used for multiple invoices, providing references for the source of the remittance data.

- **Corporate Trade Exchange (CTX)**

The CTX application is also either a Buyer initiated (credit) or Seller initiated (debit) transaction used to move funds between the Buyer's and Seller's financial institution accounts. The CTX format supports the transfer of extensive addenda records—up to a maximum of 9,999 records of 80 characters each—along with the transfer of the

payment. CTX addenda records must be formatted as either an ANSI ASC X12 (820 or 835) transaction set or as a payment related UN/EDIFACT transaction. The CTX format is typically used to pay multiple invoices that are listed in the addenda records, although it may be used for a single invoice.

In a Corporate ACH payment transaction, the participants include:

1. *The Originating Company (Originator)*

The Originator is the company that initiates the ACH transaction to complete payment between two businesses. The Originator can be either the Buyer or the Seller, depending on which party initiates the ACH transaction.

When ACH payments are used, the Buyer and the Seller establish a contractual agreement (called a Trading Partner Agreement) between the companies prior to the first payment. This agreement provides the authorization for ACH payments. The Originator must also establish a contract with a financial institution, the Originating Depository Financial Institution (ODFI), to initiate ACH payments with or without remittance data.

2. *The Originating Depository Financial Institution (ODFI)*

The Originating Depository Financial Institution is the financial institution that submits the payment transactions to the ACH Operator. The ACH transaction is initiated by the ODFI at the request of the Originator after the appropriate contractual relationship has been established between the Originator and the ODFI. This agreement binds the Originating Company to the *NACHA Operating Rules* and typically defines the parameters of the relationship between the two parties. It also identifies processing requirements for the Corporate ACH payment application(s) to be used and establishes liability and accountability for specific procedures.

3. *The ACH Operator*

The ACH Operator is either the Federal Reserve Bank or one of three private sector ACH Operators (Electronic Payments Network (EPN), Payments Resource One, and Visa). The ACH Operator:

- a. Provides clearing, delivery and settlement services for ACH transactions;
- b. Adheres to the *NACHA Operating Rules*;
- c. Executes agreements with participating financial institutions to bind them to the *NACHA Operating Rules*;
- d. Processes and edits ACH transaction files based on the *NACHA Operating Rules*;
- e. Applies risk control measures; and
- f. Adheres to National ACH Operator Performance Standards.

4. *The Receiving Depository Financial Institution (RDFI)*

The Receiving Depository Financial Institution is the financial institution that receives the ACH debit or credit transaction sent by the Originator through the



ODFI and the ACH Operator. The RDFI typically has a depository relationship and may have a contractual relationship with the company receiving the ACH transaction (Receiver).

The RDFI is responsible for timely posting of the ACH transaction to the Receiver's account on the settlement date. This posting must occur by the close of business. If the ACH transaction is a credit transaction, the payment may also be accompanied by remittance data. The RDFI is responsible for providing this remittance data to the Receiving Company.

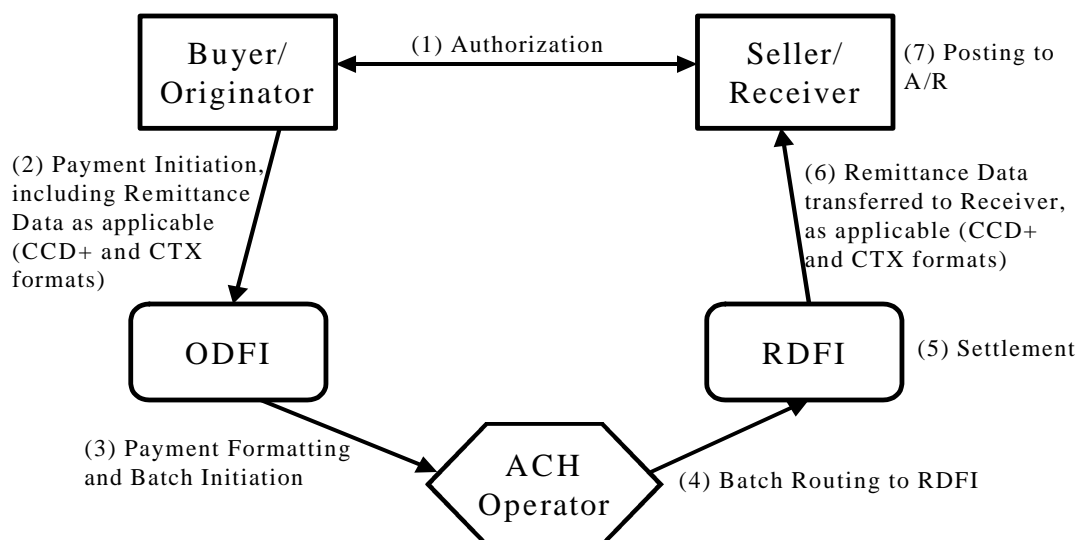
5. *The Receiving Company (Receiver)*

The Receiver is a company to which a Corporate ACH transaction has been sent. The Receiver can be either the Buyer or the Seller, depending on which party initiates the ACH transaction. A Receiver must have an account relationship and may also establish a contractual agreement with a Receiving Depository Financial Institution. The agreement between the RDFI and the Receiving Company typically specifies the arrangements for delivery of remittance information from the RDFI to the Receiver. Remittance information may be delivered to the Receiver electronically, by fax, or by paper listing.

**1.2 Process Flow – Buyer Initiated Payments**

Buyer-initiated ACH transactions are considered credit transactions because the Buyer credits the Seller's account with the ACH payment. This type of transaction is used more often in B2B scenarios than ACH debits. Buyers are reluctant to allow Sellers to initiate ACH debits to the Buyers' corporate accounts. The Buyer is considered to be the Originator in an ACH credit transaction. The process flow for a Buyer initiated payment is as follows:

## Buyer Initiated Corporate ACH Payments



### 1.2.1 Payment Initiation

- (1) The Buyer and the Seller enter into a contractual agreement (a Trading Partner Agreement) that establishes authorization for ACH payment. The Seller must provide the Buyer with the ABA number (i.e.; the bank routing number) of their financial institution and depository account number or electronic lockbox account number. This information is used to route the ACH payment to the Seller. The Seller notifies the Buyer of the desired ACH format.
- (2) The Buyer, who is the Originator of the ACH transaction, initiates an ACH credit through its financial institution, the ODFI. The Buyer uses the payment and remittance format agreed to with the Seller. The ACH transaction can be initiated by the Buyer using a financial institution's information reporting system (which may or may not be Internet based), PC software, a phone call, or by transmitting a formatted file.
- (3) The ODFI formats the payment and remittance data per the Originator's instructions, or uses formatted data provided by the Originator, and sends the ACH transaction to the ACH Operator in a batch transmission one to two days prior to the desired settlement date. The ODFI must have a minimum of one day prior to the settlement date to process the ACH request.
- (4) The ACH Operator sorts and batches ACH transactions for the appropriate RDFIs and transmits the ACH transaction in a batch to the RDFI by the settlement date.

### 1.2.2 Settlement

- (5) The ODFI debits the Buyer/ Originators account. The ACH Operator debits the ODFI and credits the RDFI. The RDFI credits the Seller's, or Receiver's, account on the settlement date. The settlement date is either one or two days after initiation of the payment transaction by the Originator, depending on the ODFI's

cutoff times for ACH origination and the timing of the Buyer's delivery of the payment request to the ODFI.

#### **1.2.3 Remittance**

- (6) Remittance data, which is generated by the Buyer in step 2 above, is transferred by the RDFI to the Seller in the format agreed to by the Seller and the RDFI in their contract. Remittance data, accommodated in either CCD+ or CTX, contains the information necessary for the Seller to accurately update its Accounts Receivable (A/R).
- (7) The payment is posted to the Seller's A/R. If a CCD is used, the payment is posted to A/R based on the amount credited to the Seller's account at the RDFI.

#### **1.2.4 Payment Disputes**

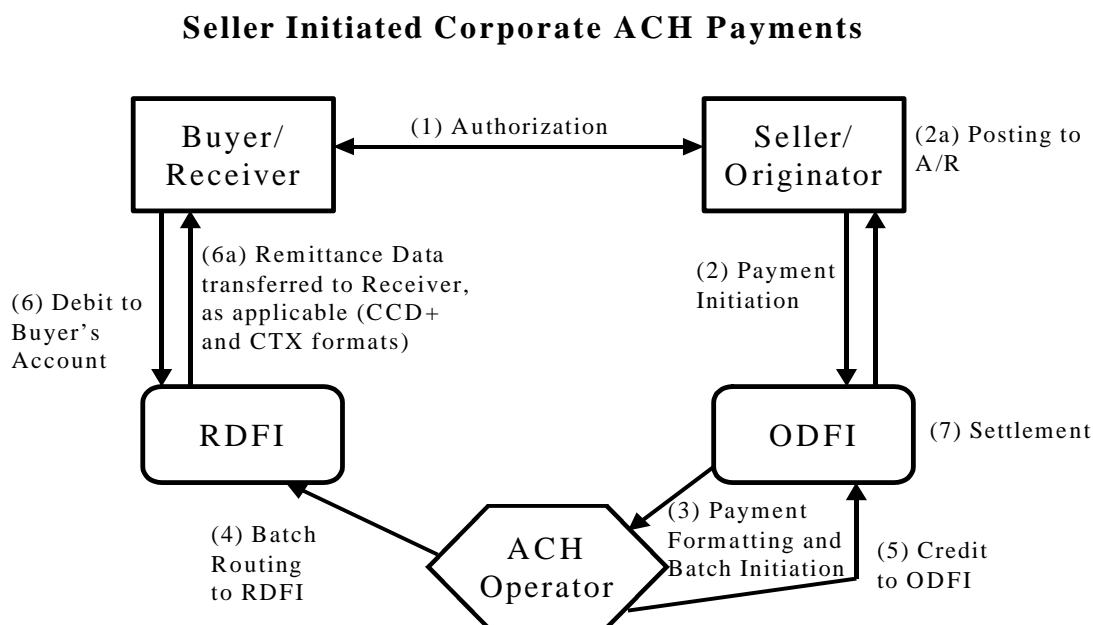
Procedures for dispute resolution are generally covered in the Trading Partner Agreement between the Buyer and the Seller. These transactions are also subject to UCC Article 4A, which may provide for dispute resolution if it is not spelled out in the agreement.

#### **1.2.5 Returns**

A credit entry initiated by a Buyer to a Seller's account may be returned for any valid return reason as specified in the *NACHA Operating Rules*.

### 1.3 Process Flow – Seller Initiated Payments

Seller-initiated Corporate ACH transactions are debit transactions. The Seller debits the Buyer's account for the amount of payment due. Currently, this option is not frequently used for B2B ACH payments because many corporations are reluctant to allow another company to debit their account. Many financial institutions provide their corporate customers with debit blocks that restrict who may debit an account, the frequency with which an account may be debited, and the dollar amount that may be debited. When the Seller initiates an ACH debit, the Seller is the Originator of the ACH transaction and the Buyer is the Receiver.



#### 1.3.1 Payment Initiation

- (1) Similar to buyer-initiated ACH transactions, the use of ACH debit as the payment method is preauthorized in a Trading Partner Agreement established between the Buyer and Seller. At a minimum, the Buyer must provide the Seller with the ABA number (i.e.; the bank routing number) of their financial institution and with their depository account number. This information is used by the Seller to debit the Buyer's account. The Seller may issue a prenote in advance of the first live transaction to insure the accuracy of the Buyer's account information. The Trading Partner Agreement will also specify the manner in which dispute resolution will be handled.
- (2) The Seller, who is the Originator of the ACH transaction, initiates an ACH debit through its financial institution, the ODFI, by sending debit instructions to the ODFI. The Seller must use the format agreed to with the Buyer. This is typically a CCD format because the Seller generally does not require any remittance data when it initiates the payment by debiting the Buyer's account. CCD debits can be

- initiated by the Seller using information from its A/R. The data can be transmitted in a formatted file to the Seller's ODFI by using financial institution information reporting capabilities, software, a treasury workstation, or a phone call to the Seller's financial institution. CCD+ and CTX options are infrequently used.
- (2a) The Seller posts the payment to its Accounts Receivable based on initiation of the ACH debit.
  - (3) The ODFI formats the ACH debit per the Originator's instructions or uses formatted data provided by the Originator and sends the ACH transaction to the ACH Operator in a batch transmission one day prior to the desired settlement date.
  - (4) The ACH Operator sorts and batches ACH transactions for the appropriate RDFIs and transmits the ACH transaction in a batch to each RDFI.

#### **1.3.2 Settlement**

- (5) The ACH Operator credits the ODFI in the amount of the payment.
- (6) The RDFI debits the Buyer's, or Receiver's, account on the settlement date.
- (6a) In some cases, the RDFI sends remittance data to the Buyer.
- (7) The ODFI credits the Seller's, or Originator's, account with the ACH payment amount on the settlement date. Settlement occurs one day after the payment transaction was initiated by the ODFI.

#### **1.3.3 Remittance**

In a Seller-initiated ACH transaction, the Seller is initiating an ACH debit solely for payment collection purposes. The Seller has the remittance information required to accurately post the payment. The CCD format is typically used for Seller-initiated ACH debit transactions. If the Seller is collecting for multiple invoices or needs to document disputed line items, they may use a CTX or CCD+ to relay the remittance information to the Buyer as noted in step 6a.

#### **1.3.4 Payment Disputes**

Procedures for dispute resolution are generally covered in the Trading Partner Agreement between the Buyer and the Seller.

#### **1.3.5 Returns**

A debit entry initiated to the Buyer's account may be returned for any valid return reason specified in the *NACHA Operating Rules*.

## 1.4 Functional Differentiators

When a company is selecting a payment alternative, the options can be differentiated by specific functional qualities. In this section, and in the sections of this paper that follow, functional differentiators such as collectability, remittance capability, processing issues, security, privacy, and the availability of participant directories are described. CCD, CCD+, and CTX are differentiated from each other and from other payment mechanisms as follows:

### 1.4.1 Collectability

When originating a CCD, CCD+ or CTX transaction, the Originator assigns a date on which it intends the item to be settled, which is referred to as the Effective Entry Date. The ACH Operator assigns the settlement date based on the Effective Entry Date. If the ACH transaction is originated within the proper time frame and is originated on a legal banking day, the settlement date and the Effective Entry Date are the same. Settlement for ACH transactions occurs 1-2 days from the date the transaction is initiated depending on whether the transaction is a Buyer initiated credit or a Seller initiated debit.

If the ACH payment is a Buyer initiated credit to the Seller, the RDFI makes funds available to the Seller on the settlement date that has been assigned by the ACH Operator. If the ACH transaction is a Seller initiated debit to the Buyer, the RDFI debits the funds from the Buyer's account on the settlement date that has been assigned by the ACH Operator. UCC Article 4A requires an RDFI to make the funds available on the settlement date for ACH credits; however, it also allows that the availability of funds may be made provisional pending finality of the transaction.

Finality of ACH credits takes place at 8:30 AM EST on the day of settlement. Finality is the time at which the ACH Operator can no longer reverse the item because of the ODFI's failure to settle. There is one exception to finality provided for by *NACHA Operating Rules*. That exception allows reversals to be originated to correct duplicate or erroneous files or payments.

In a credit transaction, in which the Buyer originates funds to the Seller, the funds are guaranteed to the Seller. In the case of a debit transaction, the funds are not guaranteed until finality of settlement has occurred.

Returns are allowed for all ACH formats. An RDFI may return an ACH transaction for any valid return reason specified in the *NACHA Operating Rules*. The most common reasons for returns include non-sufficient funds (NSF), format errors, or closed accounts. Returns must always be made in the full amount of the payment.

The ACH Network also supports dishonored returns and contesting of a dishonored return. The dishonor process provides financial institutions with a way to handle return items that violate the *NACHA Operating Rules* (e.g.; wrong format) or to handle an untimely return. An untimely return occurs when an ACH transaction is not returned by the second business day following the original settlement date of the transaction. If the untimely return by the RDFI causes the Originator or ODFI to suffer a financial loss, they

can dishonor the return. If the return contains incorrect information and the Originator or ODFI cannot process the return, it may also be dishonored.

#### **1.4.2 Remittance Capability**

Both CCD+ and CTX can carry both payment and remittance data, but CCD is for payment only. When it is necessary for remittance data to accompany a payment, the type of remittance data, along with the appropriate format, is specified by the Seller and communicated to the Buyer in advance of the transaction.

CCD+ is limited in the amount of remittance data it can carry. CCD+ accommodates one addenda record with a maximum of 80 characters. CTX can accommodate 9,999 addenda records of 80 characters each, but the formats allowed in the addenda are restricted to certain ANSI ASC X12 transaction sets (transaction sets 820 and 835), UN/EDIFACT formats, or to NACHA-endorsed banking formats. In CCD+ or CTX the information contained in the remittance addenda record is typically used for applying payment related information.

While the B2B ACH payment vehicles—CCD, CCD+, and CTX—vary in the provision of remittance data, they are consistent in providing certain payment related information, such as payment amount and payment date.

#### **1.4.3 Processing Issues**

The ACH Network is a batch processing, store and forward system. Access to the ACH Network is controlled by regional cut-off times, and there is no 24/7 access. For each ACH format, files are sent by the ODFI in batch form and not in real time. RDFI collection of files is also limited by processing and posting schedules. All transactions are preauthorized between the Buyer and Seller utilizing agreed upon methods. There is no online authorization.

Although blocks and limits are not provided for as a function of the ACH Network, many Financial Institutions provide debit filters that restrict debit access to a corporate account. These filters may restrict access to the account, the dollar amount that may be debited, and/or the number of debits that can be processed against an account during a specific time period. If the use of a debit filter is desired, a business negotiates the specific details in the contract with its financial institution.

The ACH Network does not have standard procedures for handling payment disputes. However, *NACHA Operating Rules* and guidelines address process and handling issues that mitigate potential disputes. Procedures for dispute resolution are generally covered in the Trading Partner Agreement established between the Buyer and the Seller.

#### **1.4.4 Security**

Through a series of agreements, audits and compliance with *NACHA Operating Rules* and Guidelines, the ACH Network has experienced extremely low fraud rates. NACHA's Policy Statement on Data Security recommends that ACH Operators and all ACH participants employ data security techniques for authentication and key management in accordance with ANSI X9.17. When increased confidentiality is required,

ANSI encryption standards are recommended for use. NACHA works with ACH Operators to implement data security techniques for various media exchanges between Operators.

Security between the Originator and the Originating financial institution is controlled by an agreement between the two parties. The ACH format includes a field for the identification of the Originator, allowing auditing of transaction initiation. Authentication of the payment is defined by the agreement between the Originator and the Originating financial institution. This authentication can be in the form of personal identification numbers (PINs), Digital Certificates, Telephone IDs, or some other agreed method.

The *NACHA Operating Rules* and UCC Article 4A specify that “commercially reasonable” encryption solutions must be implemented. Encryption needs are based on many variables including transmission methods, the capability of back office systems that produce the data, and the sensitivity of the data. The main variable is the transmission method. For instance, Value Added Networks (VANs) may not require additional security, whereas File Transfer Protocol (FTP) through the Internet will require additional security for encrypting messages.

Non-repudiation is accomplished by controlling access to the ACH Network through identification of Originators and Receivers, providing secure delivery of payments, and by insuring that all transactions can be traced. All payments are uniquely identified—and therefore auditable—by Batch Number, File Creation Date, File ID Modifier, and Trace Number. A Batch Number is a seven-digit number assigned in ascending sequence to each batch by the ODFI. The File Creation Date is the date on which the file is prepared by the ODFI expressed in “YYMMDD” format. The File ID Modifier is provided to permit multiple files created on the same date between the same participants to be distinguished from one another. It is a single alpha or numeric character. Finally, a Trace Number is assigned to each ACH transaction by the ODFI. It is a 15-character number that is composed of the Bank Routing Number and an entry detail sequence number.

ACH data is viewed as confidential data and is stored on secured systems at the financial institutions and the ACH Operators (both private-sector ACH Operators and the Federal Reserve Bank) that participate in the ACH Network. Both the Seller’s financial institution and the Buyer’s financial institution must retain records of all ACH entries, including returns and adjustments, for a period of six years. ACH Operators must retain records of all ACH entries, including returns and adjustments, for a period of one year. Employees are bound by data confidentiality ethics as required by the individual institutions.

#### **1.4.5 Privacy**

Data transferred through the ACH Network is protected by the data security measures employed by all the ACH participants as described in section 1.4.4 of the *NACHA Operating Rules*. The ACH Network does not have a single stated privacy policy but, rather, is bound by the privacy policies of the individual participants. There is no official non-disclosure policy governing business-to-business transactions. Such issues are



generally addressed in agreements between the Buyers and Sellers and their financial institutions. The ACH Network does not provide for an opt-in or opt-out privacy policy.

#### **1.4.6 Participant Directories**

The Federal Reserve System maintains Participant Directories of financial institutions that can send and receive ACH transactions. These directories are made available to financial institutions that participate in the ACH Network. There are also commercially available directories and software to aid in editing and validating the over 12,000 financial institution participants in the Network. The ACH Network does not have a nationally accessible Seller participant directory, but some financial institutions or other ACH Network participants maintain proprietary databases that identify Sellers that accept ACH payments.

### **1.5 Economic Analysis**

#### **1.5.1 Investment Costs**

There is no special hardware investment required to enable a company to utilize the ACH network. Existing office hardware is sufficient to run software that can originate ACH input or output. Software expenses may range from as minimal as a value-added function of financial institution-supplied software, to more costly expenses such as translators, security packages, data warehousing, or interfaces to legacy or ERP systems.

Low volume ACH origination can be handled at minimal expense in a variety of ways, including financial institution-supplied proprietary software, browser-based software, phone or fax. This type of software can format CCD, CCD+ and CTX transactions easily through manual data entry or a proprietary file that can be fed to the software. This software also handles communication to the financial institution by establishing a secure direct modem dialup into the financial institution or utilizes Secure Socket Layer (SSL) based data exchange over the web (128 bit recommended). It may also provide controls and authentication for the transmission of ACH data to the financial institution.

In a high volume operation that handles complex payments using a CTX structure, the required software investment could be rather large. Companies that make this type of investment typically also utilize EDI for communicating many document types within the supply chain to many trading partners. ACH formatted CTX payments are normally a small subset of these transactions.

In the CTX application, the base requirement is that the firm's legacy or ERP system pass a remittance data file to a translator for formatting. The format may be a payment instruction in an ANSI ASC X12 EDI 820 or 835 transaction set format, a UN/EDIFACT transactions or NACHA-endorsed banking format. This payment instruction is encapsulated in an ACH transaction and placed into the addenda record of the CTX payment.

If the ACH file is transmitted over an open network (such as the Internet), encryption software is necessary. If a closed network such as a direct dial-up, outsourcing to a financial institution, or a VAN is used to transmit the data, encryption is an essential part

of the package. Usually the costs associated with sending financial transactions using an existing EDI framework are incremental to the overall investment required for EDI. These take the form of initial setup costs (transaction mapping, testing, and implementation) and transmission transaction fees.

When a new trading partner is added to receive CTX payments across an EDI platform, testing is usually performed even though standards are used and communication protocols are interoperable. An initial test across the live network insures that all integration points, interpretations, and transmissions work the way both the Buyer and Seller expect. There is a startup expense associated with this system and integration testing.

Depending on the timing of the creation of the ACH transactions, files may have to be warehoused prior to sending to the ODFI. In such cases, storage costs can be incurred for data warehousing. Once the ACH transactions are released and transmitted to the ODFI, there is usually a control passed between the financial institution and the Originator authenticating the transmission and acknowledging that the transmission was received intact and complete. If this is done as a manual operation, there is related employee time expense. If the authentication is automated, there may be additional transactions such as an EDI 997 functional acknowledgement, to verify that the file was received. An EDI 824, which is an application acknowledgement, verifies totals and accuracy of data. There may be an expense to develop these EDI applications.

#### **1.5.2 Transaction Costs/Fees**

The ODFI generally charges for the origination of ACH transactions. These may include file fees, monthly maintenance fees, transaction fees, and exception handling fees. In the case of CCD+ and CTX, a fee for handling remittance data may be charged by the RDFI. This fee is usually contingent upon the volume of data, any translation or formatting requirements, and the method of remittance data delivery to the Seller/Receiver (e.g.; electronic, fax, or paper listing). As discussed in section 1.3.3 above, these remittance-associated fees may also occasionally be assessed to a Buyer/Receiver. Financial institutions may also charge Sellers a fee for receiving ACH deposits. Such charges may take the form of individual transaction fees or may be included in a monthly maintenance charge.

## **1.6 Additional Information**

Sources for additional information on using Corporate ACH payment formats include:

- 2001 ACH Rules – A Complete Guide to Rules and Regulations Governing the ACH Network available from NACHA
- Revised Uniform Commercial Code – Article 4A and the Automated Clearing House – Publication available from NACHA
- [WWW.NACHA.ORG](http://WWW.NACHA.ORG) – NACHA web Site
- [WWW.csnc.nist.gov](http://WWW.csnc.nist.gov) – National Institute of Standards web site
- [WWW.DISA.ORG](http://WWW.DISA.ORG) – Data Interchange Standards Association (administers ANSI X12 EDI Standards)
- [www.fms.treas.gov](http://www.fms.treas.gov) – Department of the Treasury Financial Management Services – Government to corporate payments guidelines as outlined in the Green Book.
- Your Regional ACH Association
- A Financial institution

## **2. Alternative Electronic Networks - Mastercard RPPS**

### **2.1 Overview**

The MasterCard Remote Payment and Presentment Service (RPPS), governed by MasterCard International, is a fully electronic solution for B2B payment processing that provides electronic routing, posting, and same day settlement of financial transactions for participating members. MasterCard RPPS has been processing electronic payments for bill payment services since 1987. In September 2000, RPPS launched its bill presentment service to provide complete end-to-end billing and payment processing in an open-standards environment.

The RPPS network is designed to act as a single connection point, enabling all participants to reach multiple endpoints. For example, to send payments to more than one Seller, a Buyer needs just one connection to MasterCard RPPS. Correspondingly, through a single connection to MasterCard RPPS, a Seller can receive payments from multiple Buyers.

In the MasterCard RPPS network, the Buyer/Originator typically initiates credit transactions; although a Receiver, or Seller, may initiate a return as a credit transaction. Debit transactions may be initiated by a Buyer/Originator to reverse a payment. All MasterCard RPPS payment transactions are single invoice and include remittance data. This data must be submitted in the RPPS proprietary format, a 94-byte record with extensive addenda capability that can contain up to 657 bytes across multiple addendum records. There are no volume or remittance limitations.

A member can participate in RPPS in three ways: as a Buyer (Originator), as a Seller or a third party that acts on behalf of the Seller (Receiver), or as both. In a MasterCard RPPS payment transaction, the participants include:

#### *1. The Buyer*

A Buyer is a company that intends to pay a Seller using the MasterCard RPPS network. The Buyer originates payment transactions to RPPS or may use a financial institution/ service provider to originate payments files to RPPS. A Buyer that is not a financial institution and directly connects to RPPS must be sponsored on the RPPS network by a bank. An agreement or contractual relationship must be in place between the Buyer, the Buyer's Settlement Bank /Sponsor Bank, and RPPS.

#### *2. The Buyer's Settlement Bank/Sponsor Bank*

The Buyer's Settlement Bank/Sponsor Bank is a financial institution used by any Buyer that is not a financial institution itself. If the Buyer is a financial institution, it also acts as its own Settlement Bank. The Buyer's Settlement Bank/Sponsor Bank is the institution from which the MasterCard Settlement Bank obtains funds via a Fedwire to credit Receivers for payment files sent through the RPPS network. All non-banks that send financial transactions through RPPS must be sponsored by a Bank to guarantee settlement. A Settlement Bank /Sponsor Bank

is necessary because RPPS processes in a guaranteed-funds, same day settlement scenario. If, for example, a Buyer were unable to fund payments sent through the RPPS network, the Buyer's Settlement Bank /Sponsor Bank would be responsible for guaranteeing the funds for the Buyer. An agreement or contractual relationship must be in place between the Buyer, the Buyer's Settlement Bank /Sponsor Bank, and RPPS.

3. *The Receiver*

A Receiver is typically a financial institution that receives payments on behalf of a Seller from a Buyer via the RPPS network. In some cases the Seller is also the Receiver if the Seller is a financial institution. The Receiver must have a contractual relationship with MasterCard RPPS in order to accept payment via the MasterCard RPPS system.

4. *The Seller*

The Seller is a company to which a MasterCard RPPS payment transaction is sent. If the Seller is a financial institution, it may function in both the Receiver and Seller roles.

5. *MasterCard RPPS*

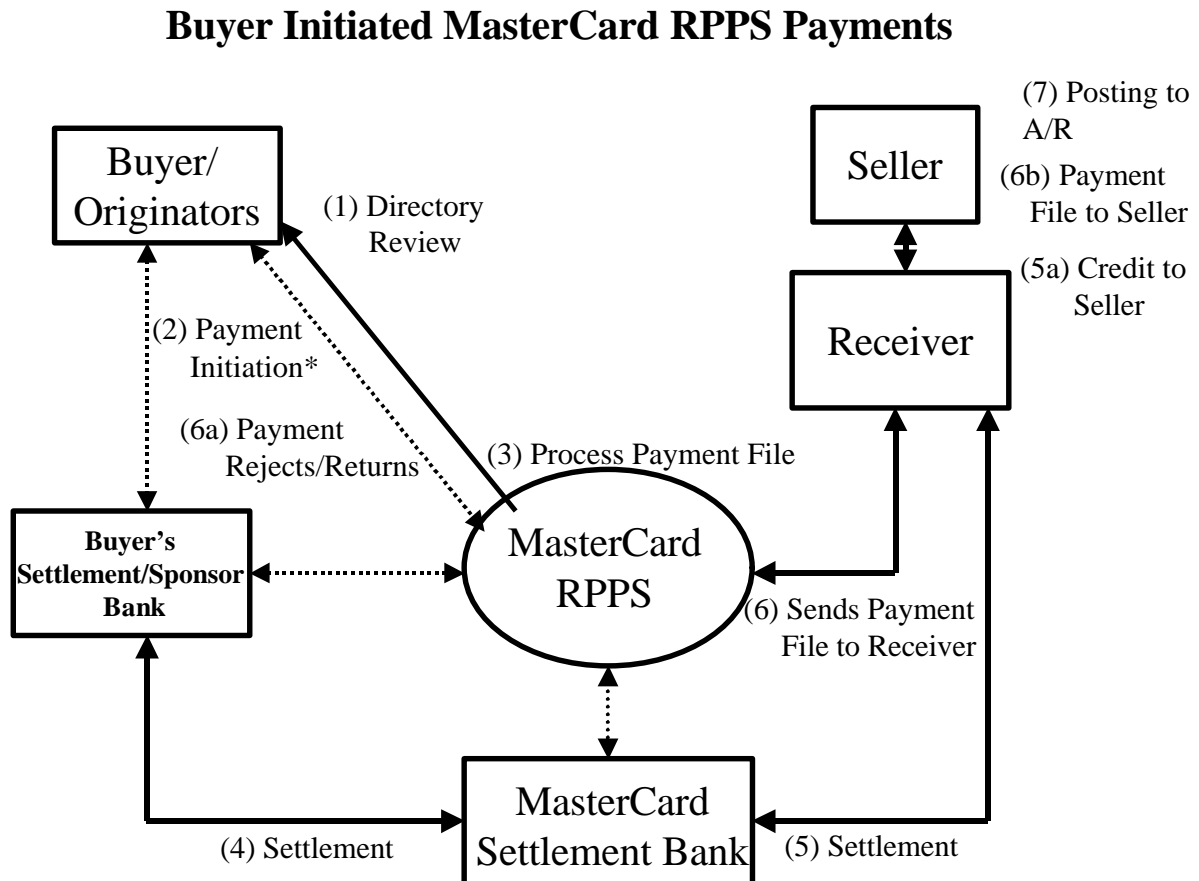
MasterCard RPPS maintains all connections between Buyers and Receivers to transmit data and funds. This allows all parties involved to have one connection to reach multiple Buyers and Sellers. MasterCard RPPS maintains all connections, performs extensive edit checks on all files and payment transactions, batches and sends all files, and initiates all settlement transactions.

6. *The MasterCard RPPS Settlement Bank*

The MasterCard Settlement Bank is the financial institution used by RPPS to initiate Fedwires to all Buyers' Settlement Banks and to credit all Receivers for payment files sent through the RPPS network. The MasterCard Settlement Bank sends Fedwires for the value of payments transferred through the MasterCard RPPS network to the appropriate Receivers. The MasterCard Settlement Bank is an agent of MasterCard RPPS and has an agreement with MasterCard RPPS to provide settlement services on its behalf.

## 2.2 Process Flow – Buyer Initiated Payments

The process flow for a Buyer initiated MasterCard RPPS payment is as follows:



**\*Optional - Payment initiation can come directly from the Buyer or Buyer's settlement/sponsor bank if Buyer is a non-bank.**

### 2.2.1 Payment Initiation

- (1) The Buyer/Originator reviews an online directory accessible at the MasterCard RPPS website to determine if the Seller can receive payments electronically via the RPPS network.
- (2) The Buyer/Originator prepares a payment file containing credits and/or debit transactions and sends the file to MasterCard RPPS. The Buyer/Originator can send this file directly to RPPS or the Buyer/Originator can send the file to their Sponsor bank that would then originate the file to RPPS.
- (3) MasterCard RPPS processes the file. This includes file and batch editing, account number validation and sorting/batching of payments by Receiver/Seller.

### **2.2.2 Settlement**

- (4) The MasterCard RPPS Settlement Bank initiates a Fedwire against the Buyer/Originator settlement account to retrieve funds in the amount of the payment file after all accounts number validations are complete and inaccurate account numbers have been rejected.
- (5) The MasterCard RPPS Settlement Bank initiates Fedwires to credit the appropriate Receivers.
- (5a) If the Receiver is an agent of the Seller, it credits the Seller's account.

### **2.2.3 Remittance**

- (6) MasterCard RPPS sends payment files to the appropriate Receiver, which may be the Seller.
- (6a) MasterCard RPPS sends confirmation files to all Buyers/Originators confirming transactions received, processed, any rejects from RPPS, returns from Receivers/Sellers, and reasons for the reject or return.
- (6b) If the Receiver is an agent of the Seller, the Receiver sends the payment file to Seller. If necessary, the Receiver reformats the file's transaction detail to meet the Seller's Accounts Receivable requirements.
- (7) The Seller posts the credit to its account receivable.

MasterCard RPPS payment processing as described above is performed 3 times a day. Settlement occurs once daily for the total processing that occurred that day.

### **2.2.4 Payment Disputes**

All payments are traceable via the RPPS payment inquiry process. Any participant of the RPPS network can submit a payment inquiry to research a payment via fax, phone, or email. RPPS will trace the payment and respond with the trace information and contacts at the Buyer/Originator or Receiver organization.

### **2.2.5 Returns**

The Receiver and/or Seller can return any payment sent through the RPPS system. Any payment not posted within 24 hours by the Receiver/Seller should be electronically returned via the RPPS network. RPPS routes it back to the correct Buyer/Originator. MasterCard RPPS also allows partial returns. These may be used for various reasons, such as discounts, commissions, rebates, or fees.

## **2.3 Process Flow – Seller Initiated Payments**

Only Buyers can initiate a payment transaction through the MasterCard RPPS network. There are no Seller initiated payments in the MasterCard RPPS network. Sellers can initiate returns using MasterCard RPPS, which reverses the process described above. The Seller initiates a return file through their Receiver, which in turn sends it to RPPS for routing back to the Buyer/Originator.

## **2.4 Functional Differentiators**

### **2.4.1 Collectability**

All funds to match payment files sent through MasterCard RPPS are transferred via Fedwire; hence, they are guaranteed funds. Reversals may only be used if a Seller agrees to accept non-guaranteed funds. This allows Buyers to reverse any payment that was sent in error. The Settlement Bank/Sponsor Bank can also initiate a reversal to retrieve funds previously sent by the Bank on behalf of a Buyer in a non-sufficient funds (NSF) condition. Accepting reversals is not required of Sellers. Sellers that accept reversals are noted on the MasterCard RPPS Online Seller Directory. A Seller may set a limit, or debit cap, on the dollar amount of total reversals they will accept from each Buyer/Originator on any given processing day. This debit cap is established with MasterCard RPPS.

The Seller can electronically return any payment to the Buyer/Originator through the RPPS network. Each returned payment includes a return code that provides the reason the payment is being returned. Payments may be returned if the Seller is unable to post the payment, as may occur if an invalid account number or closed account number is used.

### **2.4.2 Remittance Capability**

All MasterCard RPPS payment transactions include remittance data. This data must be submitted in the RPPS proprietary format, a 94-byte record with extensive addenda capability that can contain up to 657 bytes across multiple addendum records. There are no volume or remittance limitations. Remittance data is sent to a Seller separate from the payment itself; the payment is transferred via Fedwire and the remittance information is sent to the Receiver in a payment file issued by MasterCard RPPS.

MasterCard RPPS offers Net and Gross amount fields within the one payment record to facilitate transactions involving commissions, interchange, or other instances where more than one dollar amount is required per payment. RPPS is also able to send and receive OFX and IFX message information via addenda records.

All files submitted to RPPS are edited for data and format integrity. For example, any file submitted with totals that do not match or that have an error in the field format will be rejected back to the Originating party. Also, RPPS edits all account numbers using account mask information provided by Sellers. For example, all account numbers are checked for length, numeric and/or alpha content, and for any prefixes or check digit routines provided by a Seller.

### **2.4.3 Processing Issues**

The RPPS network is available 24/7. A participant can submit a payment file to MasterCard RPPS at any time, and the file will be processed in the next available processing cycle. MasterCard RPPS performs batch processing three times a day, allowing participants the opportunity to send and receive payments throughout the day.

Upon completion of processing a file, a confirmation file is sent to the entity that originated the file (The Buyer if it originated a payment file; to the Seller if it originated a return file). The confirmation file confirms payment transactions received by RPPS and



processed, and includes any rejects and/or return payments with reasons for rejection or return.

Authorization is performed by the Buyer/Originator prior to sending a payment file to RPPS. Errors and resulting payment disputes are minimized because MasterCard RPPS edits all transaction files prior to sending them to the Receiver. However, a Seller can return any payment to a Buyer via the RPPS network. Any payment sent through the network can be traced and contacts at the appropriate organization will be provided.

Sellers can set up their service with MasterCard RPPS to receive only credit transactions or to receive both debits and credits. Debit transactions are reversals. A Seller may set a limit, or debit cap, on the dollar amount of total reversals, or debits, they will accept on any given processing day. This debit cap is established with MasterCard RPPS. A Sponsor Bank also has the ability to set a credit cap on the Buyer to limit the credits that are sent on any given day.

#### **2.4.4 Security**

All transactions sent through RPPS are traceable. RPPS resolves payment inquiries and/or provides payment research and appropriate contacts at parties involved.

MasterCard RPPS has several connectivity options available to participants. Encryption, data capture, and other alternatives will be affected based on the connection option chosen by the participant. The following options are currently available:

- **MasterCard File Transfer Scheduling System (FTSS) through a MasterCard interface processor (MIP)**

The MasterCard File Transfer Scheduling System (FTSS) allows a participant to connect to the MasterCard RPPS network to schedule file transfers. The FTSS uses a MasterCard Interface Processor (MIP), a customized computer that attaches to the MasterCard member's host computer and provides access to the MasterCard network. Participants develop their internal connectivity to the MIP. The MIP contains all of the software necessary to send information to and receive information from RPPS. Connecting to the MIP is a secured connection to MasterCard member's host computer and network. This connection is developed with MasterCard, and MasterCard must authorize access.

- **Complex-to-Complex (CTC) through either Mainframes or PCs**

- Connect:direct
- Virtual private Network (VPN)

Another method of communication is complex-to-complex (CTC) connection (mainframe to mainframe or PC to mainframe) using an approved software package, such as Connect:direct or a Virtual Private Network (VPN). A participant loads the communication package onto its mainframe or PC and transfers data to the MasterCard Central Site mainframe by dial-up or leased line. Encryption and authentication is dependent on the software that the participant chooses to use. VPN is a private lease line so encryption is not necessary and authentication is given at set up.

Connect:direct is a multi-platform file transfer software package that facilitates the transmission of files to and from MasterCard RPPS in a secure and reliable way. Connect:direct is supported on the following major platforms: mainframe, UNIX, and Microsoft Windows NT. This file-based option requires that the member have a dedicated network connection with MasterCard.

Virtual Private Network is a service that enables organizations to use a telecommunications carrier's network as if it were its own private line connections. The VPN is a private line and secure method of communication so digital certificates and encryption is not necessary.

- **MasterCard File Express**

MasterCard File Express is an application accessed through MasterCard OnLine. A member can use MasterCard File Express in a Microsoft Windows NT, Windows 98, or Windows 95 desktop environment. MasterCard File Express handles both the compression and encryption of data for transmission. MasterCard uses PKWare Data Compression Libraries for compressing data for transmission. MasterCard uses the International Data Encryption Algorithm (IDEA) encryption scheme. IDEA uses a 128-bit key and is authorized by the US Commerce Department. Several users can be set up to use MFE from one site. Each user will be given a secure id card to authenticate the user of the software.

Non-repudiation is available to any participant that sends MasterCard RPPS a file. Any participant that sends a file to RPPS will receive a confirmation file in return. This confirmation file acknowledges total payment transactions received and processed, total payment rejects, and reject reasons.

All transactions processed by MasterCard RPPS are processed on secured servers. Only authorized MasterCard employees have access to RPPS data. All MasterCard buildings have card key access only and only authorized MasterCard employees are given access to RPPS data.

#### **2.4.5 Privacy**

MasterCard has a privacy policy that is published online or can be provided on request. The information passed through the RPPS network is for the sole purpose of posting and returning payments and is passed to the Receiving banks for this purpose only. Payments are made without disclosing any financial account information to individual participants. All account information is maintained at the network level for completing transactions.

#### **2.4.6 Participant Directories**

Originators/Buyers in the MasterCard RPPS network can determine which payments are deliverable through RPPS by referring to the online RPPS Seller Directory. This directory is a password protected, Internet accessible listing of RPPS Sellers. The directory is available 24/7 and has real time updates. Various search functions are available via this web site listing. This directory also includes relevant Seller

information, such as account masks, information about whether a Seller will accept reversals, special notes, etc.

## **2.5     *Economic Analysis***

### **2.5.1    Investment Costs**

MasterCard RPPS offers flexible connectivity options that require little or no investment by the participant. There are no specific hardware or software requirements, as the participant can choose from several connectivity options, such as mainframe, server, PC, or Internet. MasterCard RPPS charges a one-time service implementation fee.

### **2.5.2    Transaction Costs/Fees**

MasterCard RPPS charges an all-inclusive monthly customer service and maintenance fee and a per transaction fee that is discounted according to volume tiers.

## **2.6     *Additional Information***

For more information, contact MasterCard at:

- [www.mastercard.com/rpps](http://www.mastercard.com/rpps)

### **3. Alternative Electronic Networks - Visa ePay**

#### **3.1 Overview**

Visa ePay is a fully electronic solution for B2B payment processing. Through its dedicated network, Visa ePay connects Buyers and their financial institutions with Sellers and their financial institutions. Payments are collected from multiple Buyers, concentrated into a single file, and delivered to the Seller(s) and/or their financial institution(s) in their preferred file format. The system is governed by Visa standards and operating regulations.

Visa ePay utilizes proprietary ePay formats for payment origination and delivery. Payment and related remittance data may be communicated using a variety of connectivity methods.

- **Origination File Format**

Buyers originate payments using the ePay proprietary format, which is a 300-byte record with a detailed corporate processing segment to accommodate B2B invoice payment detail.

- **Receiving File Formats**

Sellers have the option of choosing from two file formats: a 300-byte record that matches the origination format or a 94-byte record with addenda.

In the Visa ePay payment transaction, the participants include:

1. *The Originator (Buyer)*

A Buyer is a company that intends to pay a Seller using the Visa ePay network. The Buyer originates payment transactions to Visa ePay or may use a financial institution/service provider to originate payments files to Visa ePay. A Buyer that is not a financial institution and directly connects to Visa ePay must be sponsored on the Visa ePay network by a Bank. An agreement or contractual relationship must be in place between the Buyer/Originator, the sponsor Bank, and Visa ePay.

2. *The Buyer's Financial Institution*

Any Buyer that directly connects to the Visa ePay Payment Network and is not a financial institution, or any non-financial 3<sup>rd</sup> party processor acting as an Originator to send or receive transactions on behalf of the Buyer via the Visa ePay Network, needs to be sponsored into the Network by a Bank to guarantee settlement. A sponsoring financial institution, the Buyer's Financial Institution, is required as Visa ePay processes guaranteed funds using a same day settlement process. If the Originator/Buyer is unable to fund its file through Visa ePay, the Buyer's Financial Institution guarantees the funds. As an option, the Buyer's Financial Institution may also perform payment file initiation services on behalf of a non-bank Buyer. An agreement or contractual relationship must be in place

between the Buyer/Originator (if not a Financial Institution), the Buyer's Financial Institution, and Visa ePay.

3. *The Visa ePay Payment Network*

The Visa ePay Payment Network connects Buyers and Sellers or their service providers or financial institutions within the ePay Network. The Visa ePay Payment Network accepts files from Originators and performs editing and validation of files so that they can be sent to Receivers. The Visa ePay Payment Network provides net settlement services with its participants on a daily basis.

4. *The Receiver/The Seller's Financial Institution*

The Receiver is typically the Seller's Financial Institution. The Receiver accepts payment files and performs settlement on behalf of the Seller. The Seller may request that the Receiver provide additional services so that a payment file is passed to the Seller in its Accounts Receivable format. A Receiver or Seller's Financial Institution must have an account relationship with the Seller.

5. *The Seller*

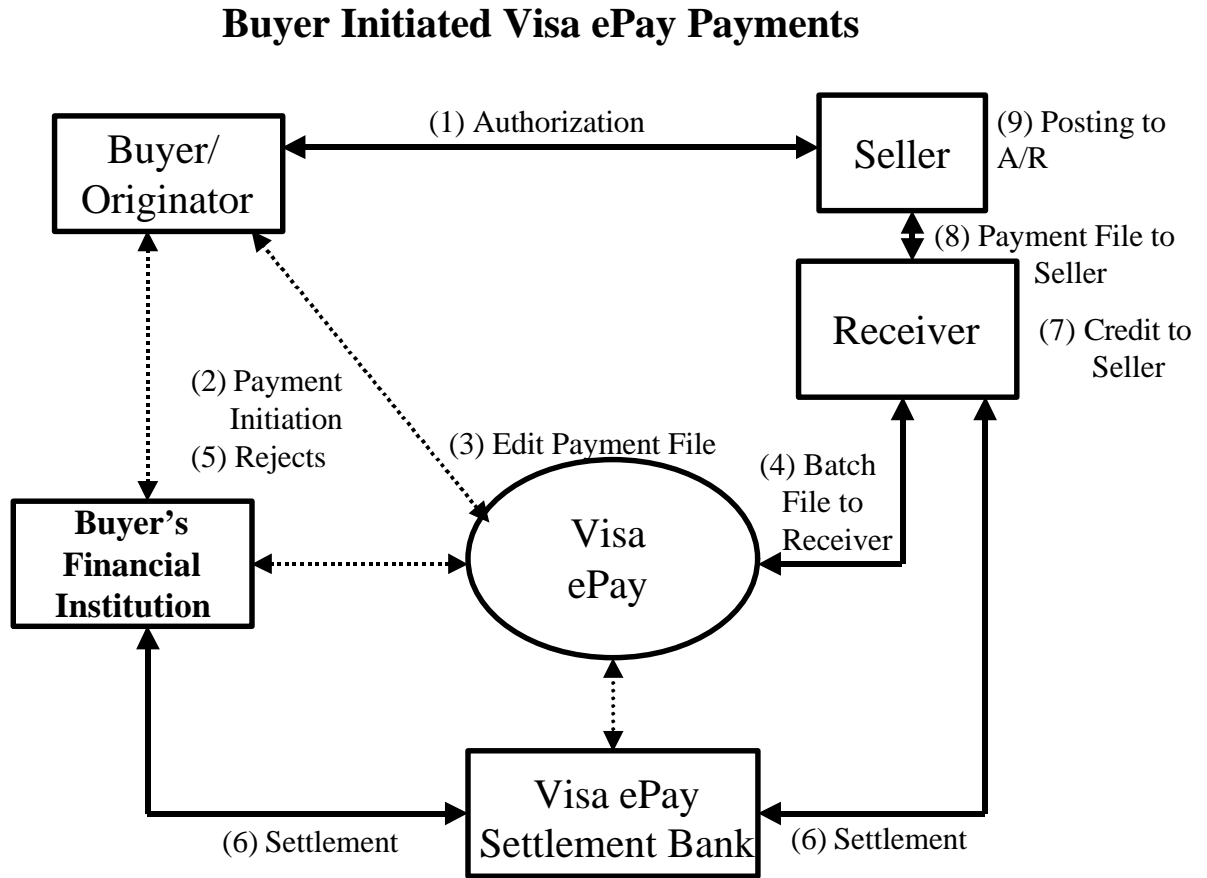
The Seller is the company to which a Visa ePay payment is being sent. The Seller must have an established relationship with a financial institution. This financial institution, the Receiver, accepts payment files and performs settlement on behalf of the Seller. If the Seller is a financial institution, it may function in both the Receiver/Seller's Financial Institution and Seller roles.

6. *The Visa ePay Settlement Bank*

The Visa ePay Settlement Bank is the financial institution used by Visa ePay to initiate Fedwires to all Buyers' Financial Institutions and to credit all Receivers for payment files sent through the Visa ePay network. The Settlement Bank sends Fedwires for the value of payments transferred through the Visa ePay network to the appropriate Receivers. The Settlement Bank is an agent of Visa ePay and has an agreement with Visa ePay to provide settlement services on its behalf.

### 3.2 Process Flow – Buyer Initiated Payments

The process flow for a Buyer initiated Visa ePay payment is as follows:



#### 3.2.1 Payment Initiation

- (1) The Buyer and the Seller establish a contractual agreement. The Buyer, upon receipt of the invoices for payment from their Sellers, determines which Sellers are listed within the Visa ePay Universal Biller File (A directory of participating Seller's which also notes the acceptable account structure for each Seller).
- (2) The Buyer initiates a payment file to participating Visa ePay Sellers directly or through the Buyer's Financial Institution.
- (3) Payment files are received and edited by Visa ePay at a file, batch and detail level to insure that fields are formatted correctly.
- (4) Payments that pass the editing criteria are batched by Seller and transmitted to Receivers.
- (5) Rejects occurring at a file, batch, or detail level are sent back to the Originator(s).

### **3.2.2 Settlement**

- (6) A debit to the Originator/Buyer account is initiated to generate a Fedwire from the Buyer's Financial Institution and to credit the Receiver.

### **3.2.3 Remittance**

- (7) Files are sent to the Receiver on behalf of the Seller to credit the Seller's depository account.
- (8) The Receiver transmits the payment file to the Seller. Receivers may provide additional translation of data on behalf of the Seller.
- (9) The Seller updates its Accounts Receivable (A/R) system.

### **3.2.4 Payment Disputes**

Visa ePay Client Services Managers handle disputes or research for payments that have not been properly posted. Each Visa ePay participant is assigned a client services manager.

### **3.2.5 Returns**

Any items that cannot be posted by the Seller within 24 hours can be electronically returned via Visa ePay if the Originator or the Seller requests that the Receiver create a return file and originate it back to Visa ePay. Visa ePay also allows partial returns. These may be used for various reasons, such as discounts, commissions, rebates, or fees.

## **3.3 Process Flow – Seller Initiated Payments**

Only Buyers can initiate a payment transaction through the Visa ePay network. There are no Seller initiated payments in the Visa ePay network. Sellers can initiate returns using Visa ePay, which reverses the process described above. The Seller initiates a return file through their Receiver, which in turn sends it to Visa ePay for routing back to the Buyer/Originator.

## **3.4 Functional Differentiators**

### **3.4.1 Collectability**

Payment transactions originated via the Visa ePay system are guaranteed and non-reversible. In the Visa ePay system, the Seller can return any payment electronically if they cannot post it within 24 hours of receipt. Payments that cannot be posted commonly result from closed accounts or invalid account numbers. Returned payments carry a specific return code that can be used by the Receiver of the returned item. Payment reversals are not permitted at this time within the Visa ePay network.

### **3.4.2 Remittance Capability**

Buyers originate payment files using the Visa ePay proprietary format. This is a 300-byte record with a detailed corporate processing segment to accommodate B2B invoice payment detail. Sellers have the option of choosing from two file formats: a 300-byte record that matches the origination format or a 94-byte record with addenda. Payments can be denominated in either a net or gross payment amount; however, use of a net

payment amount is usually reserved for transactions that involve deducted fees or commissions due to the Buyer.

Participants within the Visa ePay system utilize a Universal Biller File. This is a directory-based listing of the Sellers participating with the Visa ePay Payment Network. In addition to the name of the Seller, a specific account structure may be noted for each Seller. This alerts the Buyer or Originator that edits will be performed at the detail level of their file for each Seller listing a specified account structure. The account structure may specify the acceptable length and composition (alpha/numeric/alphanumeric) of the account number. If the payment detail does not match this editing criterion, the individual item(s) will be returned to the file Originator for correction. Any changes or updates to the account structure (due to consolidations or mergers) are communicated on a weekly basis to all payment Originators. Editing of account structure information protects both Buyers and Sellers from inaccurate remittance data that could delay the posting of payments.

#### **3.4.3 Processing Issues**

The Visa ePay system can receive incoming payment files 24 hours a day, 7 days per week. Receipt of a file triggers the edit process at the file, batch, and detail levels. Any item that does not meet the editing criteria is rejected and sent back to the Originator. Upon completion of the editing and reject process, file totals are calculated to assure balancing totals. Files are distributed on a batch schedule arranged between Visa ePay and the Receiver. Distribution may occur more than once a day. All transactions are preauthorized between the Buyer and Seller utilizing agreed upon methods. There is no online authorization. The Client Services Manager assigned to the respective participant handles disputes. The Buyer's Financial Institution has the ability to set a credit cap on the Buyer to limit the credits that are sent on any given day.

#### **3.4.3 Security**

Visa ePay offers dedicated connections and standard transmission protocols for the delivery of batch files directly to mainframe systems. For Visa ePay network connectivity, the user has the option of choosing a standard communication package that meets its specific security requirements. Visa ePay also offers Buyers and Sellers the option of incorporating file encryption. Any of the connectivity methods supported by ePay are compatible with this encryption.

All transactions within the Visa ePay network are traceable. Each participating Buyer/Seller is issued a unique ID and password to access the system. These IDs and passwords restrict the user to viewing only their own data. Only authorized customer service representatives and computer operations personnel directly involved with ePay have access to these files and the data contained therein. Physical access to the mainframe systems is strictly limited via card-key access security. In addition, all transactions received by Visa ePay have unique identifiers and are accounted for and documented on a daily basis by comparing originated transaction totals to rejected and delivered transaction totals.



#### **3.4.4 Privacy**

Visa ePay does not publicly disclose participant relationships. Payments are made without disclosing any financial account information to individual participants. All account information is maintained at the network level for completing transactions. Additional details regarding Visa ePay's privacy policy are noted in the Visa Operating Regulations.

#### **3.4.5 Participant Directories**

Visa ePay is a directory-based electronic network whereby all Sellers are registered to accept electronic payments from Visa ePay. Visa ePay electronically publishes a Universal Biller File that lists all Sellers (also referred to as Billers) that can accept Visa ePay payment transactions. In addition to the name of the Seller, a specific account structure can be noted. This typically alerts the Buyer or Originator to the edits that will be performed at the detail level of their file for a specific Seller. It may specify the acceptable length and composition of the account number (alpha/numeric/alphanumeric). If the payment detail does not match this editing criteria, the individual item(s) will be rejected and sent back to the file Originator for correction. Any new additions, changes or updates to the account structure (due to consolidations or mergers) are communicated on a weekly basis to all payment Originators.

### **3.5 *Economic Analysis***

#### **3.5.1 Investment Costs**

Investment costs will vary according to the connectivity and/or encryption requirements selected by the participant. In addition, Visa ePay has a one-time implementation fee that covers all certification and testing requirements for participants.

#### **3.5.2 Transaction Costs/Fees**

Visa ePay charges a payment initiation and payment receipt transaction fee for payments, returns and rejects. These fees are tiered based on volume. There are no additional fees relating to file transmission, remittance delivery, or interchange.

### **3.6 *Additional Information***

For more information, contact Visa ePay at:

- [www.visa.com](http://www.visa.com)

## 4. Credit Cards

### 4.1 Overview

Serving as an alternative to cash or check payment, credit cards have become one of the most widely accepted payment mechanisms. Credit cards allow a Buyer to make purchases using credit provided through a third party, typically a bank or other commercial organization referred to as a Card Issuer.

Many Card Issuers are members of large Credit Card Associations. These Associations, as well as the independent Card Issuers (Issuers that do not participate in an Association but run clearing and settlement networks as for-profit businesses) have oversight over all credit cards issued and all credit card programs. Further, they develop the rules that are applicable to the use of specific credit cards and that are applied in tandem with a variety of state and Federal government regulations. Associations license member financial institutions to “issue” cards and/or “acquire” merchants' sales drafts under the Association's brand name. The Associations then manage the transfer of transaction data and funds between “issuing” and “acquiring” members, creating an infrastructure that is called an “interchange” system. Independent Card Issuers perform these functions directly within their own organization, effectively acting as their own acquirers.

In the B2B arena, so-called commercial cards continue to increase in popularity. The growth of Internet-based procurement and advances in procurement card technology are contributing to expanding business-to-business use of these cards. Businesses paying with commercial cards, and businesses accepting commercial cards, range from single proprietorships to large multi-national organizations, and include Federal, state and local governments. Commercial cards may be used for either single or multi-invoice transactions. There are three primary categories of commercial cards: procurement or purchasing cards, travel and entertainment cards, and business cards.

- **Procurement or Purchasing Cards (P-cards)** – are commercial cards used for procurement purposes. These cards provide point of sale controls as well as back-end reporting data based on information collected at the point of sale. Because Merchant Processors and/or Issuers are not always able to accept or pass through some data elements, P-cards offer three levels of data detail. These variations can be caused by system constraints, point of sale terminal limitations, and/or training as it relates to capturing specific data during the transaction. The three levels of data available in association with a P-card transaction include:
  - (1) Level I Data, providing standard credit card purchase information, such as the total purchase amount, transaction date, merchant category code, and the supplier (Seller) name.
  - (2) Level II Data, which supplies the sales tax amount and the Buyer's accounting code in addition to the information provided in a Level I Data transfer.

(3) Level III Data, which adds full line-item detail to the data offered in Level II. This includes sales quantities, product codes, product descriptions, and shipping data.

- **Travel and Entertainment Cards (T&E Cards)** – are commercial cards commonly used by employees to pay expenses related to travel, including hotel, restaurant, airfare, and other business-related entertainment expenses such as business lunches or dinners. T&E Cards are sometimes referred to as Corporate Cards. These cards provide data reporting capability up to Level III Data.
- **Business Cards** – are multi-function cards that are commonly used by smaller companies for both procurement and travel and entertainment expenses.

In a corporate credit card transaction, the participants include:

1. *The Buyer*

A Buyer is a company that intends to pay a Seller using a commercial card. The Buyer must have a commercial card and a contracted credit relationship with the Card Issuer for the particular card being used to conduct the transaction.

2. *The Seller/Merchant*

The Seller is a merchant or business that can/will accept credit card payment from a Buyer. The Seller must have a contractual relationship with a Merchant Acquirer for a specific credit card type to be able to accept that credit card type as a payment alternative.

3. *The Card Issuer*

The Card Issuer is a bank or other financial institution that extends credit or initiates a payment via a credit card to a Buyer with whom they have signed a contract, normally a traditional credit card application, to provide these services. The Card Issuer is also responsible for making payment to the Merchant Acquirer on behalf of the Buyer. . In the case of an independent Card Issuer, the Card Issuer and the Merchant Acquirer may be the same party.

4. *The Merchant Acquirer*

The Merchant Acquirer is an organization that enables a Seller to accept a specific type of credit card as a payment alternative and to receive payment for a credit card transaction. Merchant Acquirers solicit, screen, and accept Sellers (merchants) into their specific credit card acceptance program. They also accept and process merchant sales drafts and provide a Seller with point-of-sale terminals, instructions, and support services. In the case of an independent Card Issuer, the Card Issuer and the Merchant Acquirer may be the same party.

5. *The Merchant Processor*

A Merchant Processor is a provider contracted by the Merchant Acquirer to provide network and other services to Sellers (merchants). It is distinct from the actual Merchant Acquirer in that it does not actually extend credit; it simply

processes the payment. Some specialized Merchant Processors handle only a portion of the transaction function (for example, transferring a transaction from the Seller terminal to the Merchant Acquirer), while others provide value-added services, for example, to airlines and gas stations. In the case of an independent Card Issuer, the Card Issuer and the Merchant Processor may be the same party.

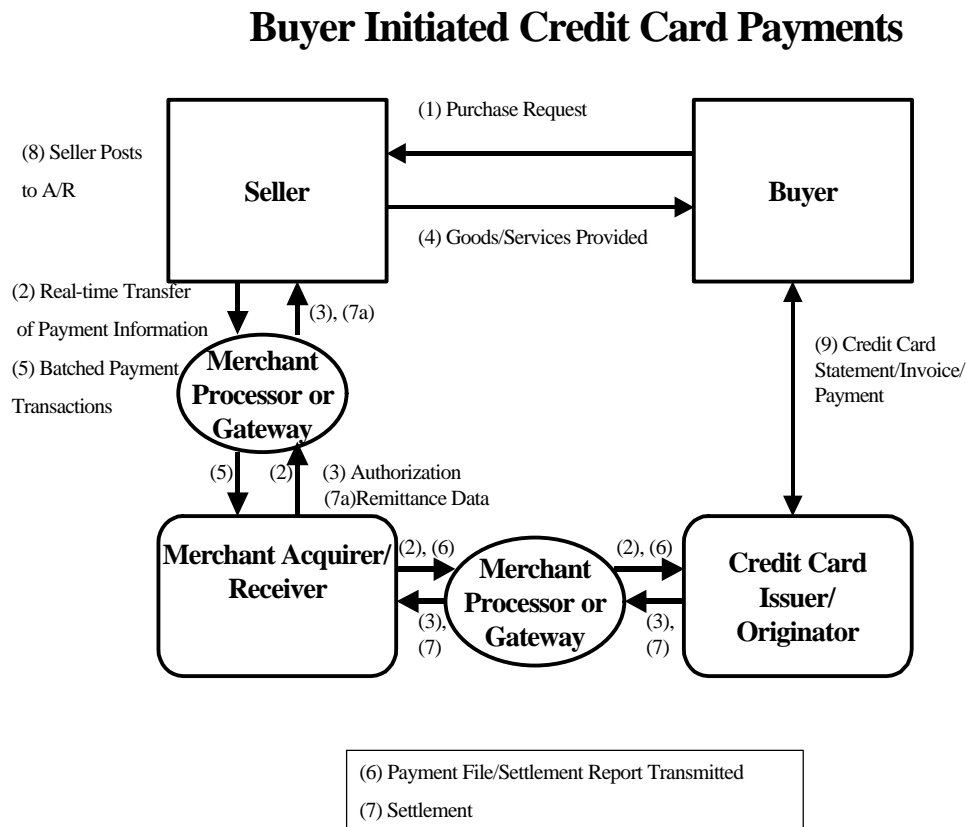
Note: An Independent Sales Organization (ISO) may perform some functions for the Merchant Processor or the Merchant Acquirer. ISOs originally developed as outsourced sales organizations for Merchant Acquirers. They have since taken on many of the functions of Merchant Processors. Many Sellers deal only with their ISO and never interact directly with any Merchant Processor or Merchant Acquirer.

6. *Credit Gateway (Gateway)*

A Credit Gateway is an online Internet gateway used to transfer encrypted credit card data (such as account number, name, and expiration date) from the Buyer to the Merchant Acquirer for authorization. There are numerous Credit Gateway providers in the US.

## 4.2 Process Flow – Buyer Initiated Payments

The process flow for a Buyer initiated credit card transaction is as follows:



### 4.2.1 Payment Initiation

- (1) The Buyer makes a purchase from the Seller and uses a commercial card for payment. In the case of a B2B invoice presentment and payment transaction, the Buyer is remote from the Seller.
- (2) The Seller authorizes the Buyer's payments, typically in real-time, by sending payment information such as the card number, amount, and expiration date to the Merchant Acquirer. The Merchant Acquirer then routes the request to the Card Issuer. A Merchant Processor or Gateway may be used to route this information. In the case of an independent Card Issuer, the Merchant Acquirer and the Card Issuer may be the same party so the transaction may be handled internally once the data is received from the Seller. Typically, as the Buyer is most likely remote from the Seller, authorization is initiated electronically using available software via a traditional point of sale device or terminal, a PC-based program that dials out to the Merchant Acquirer, or a web-based application located at the Seller's site.
- (3) The Card Issuer authorizes the payment against the established credit line for the Buyer's account. Payment authorization is also dependent on authorization

- controls (such as blocks against specific merchant types) that may be in place for the Buyer's account. The Card Issuer responds with either an approval code or a decline message. The authorization process reverses the flow initiated by the Seller in step 2, sending an approval code or decline message back to the Seller. There are a variety of negative authorization codes that may be sent to the Seller.
- (4) When an approval code has been obtained by the Seller in step 3 above, the Seller ships goods or provides services to the Buyer. Credit cards are generally not charged until the goods are shipped, the service is provided, or an agreement for goods or service has been established.

#### **4.2.2 Settlement**

- (5) Settlement typically occurs in a batch mode. The Seller batches all of the approved payment transactions into a single file and sends it to the Merchant Acquirer via a Merchant Processor or Gateway, if applicable. This file is usually transmitted once per day unless the Seller has significant volume that warrants multiple file transmissions or real-time processing.
- (6) The Merchant Acquirer sends a file of all payment transactions, regardless of card type, through the Merchant Processor or Gateway to the Card Issuer. The Merchant Processor initiates the settlement process by tallying the total amount of payment transactions received from each Merchant Acquirer and total amount of payment transactions sent to each Card Issuer. These totals appear on a settlement report that is used to generate the movement of funds between Merchant Acquirer and the Card Issuer. In the case of an independent Card Issuer, the Merchant Acquirer and the Card Issuer may be the same party, so this step may be handled internally.
- (7) Settlement for payment transactions varies by card and transaction type. An ACH file is typically used to transfer funds from the Card Issuer to the Merchant Acquirer for further credit to the Seller's account. In the case of an independent Card Issuer, the Merchant Acquirer and the Card Issuer may be the same party, so the transfer to the Seller may be direct and not include other parties.
- (7a) Remittance data may also be transferred to the Seller at this time.
- (8) The Seller updates its Accounts Receivable.
- (9) Separately, the Card Issuer bills the Buyer for transactions incurred during a specific period of time (known as a billing cycle). The Buyer pays the Card Issuer. The Buyer's payment terms vary by card type and Card Issuer, as well as by volume and transaction activity. An individual cardholder may pay the bill, or the company may pay the bill for all the commercial cards in their portfolio. P-cards are normally a corporate liability paid by the company. T&E and Business Cards are typically a combination of corporate and individual liability, and the party responsible for payment may be either the company or the individual cardholder.

#### **4.2.3 Remittance**

In addition to providing a credit to the Seller's account as indicated in step 7 above, the Merchant Acquirer may be able to provide remittance detail to the Seller. The data provided the Seller varies based on the capabilities of the Merchant Acquirer and/or the Card Issuer. If captured by the software application at the Seller's site during the

authorization process, remittance data is passed to the Card Issuer during settlement as part of the settlement file. However, not all Card Issuers capture the full remittance information contained in Level II or Level III data.

Remittance data related to credit card purchases is usually provided to the Seller in month-end paper statements and in some instances, via web-based reporting. Merchant Acquirers typically do not provide the same data to the Seller that was transmitted originally in the authorization message. Settlement detail is typically provided in batch form. Depending on the Seller's requirements, some files can be converted to an EDI format. EDI is only used when the Seller reconciles directly at the customer (Buyer) level in their Accounts Receivable program.

#### **4.2.4 Payment Disputes**

Buyers can dispute a payment transaction by contacting either the Card Issuer and/or the Seller. The Card Issuer will attempt to resolve the dispute with the Seller on behalf of the Buyer if the cardholder initiates the dispute through the Card Issuer. The Card Issuer may provide the cardholder (Buyer) with a provisional credit to the card account until the dispute is resolved. The timeframe for disputing a transaction is governed by the Card Issuer or its Association. Association dispute rules are not identical for all purchases and can vary based on the method used to complete the transaction (e.g., Internet vs. in-person).

If the dispute is determined to be invalid, the transaction will be re-posted to the Buyer's card account. If the dispute is determined to be valid, a permanent credit will be posted to the Buyer's card account and a disputed payment transaction will be sent to the appropriate card network. The card network will forward the payment transaction to the appropriate Merchant Acquirer. The Merchant Acquirer will debit the Seller's account. The disputed amount will be added to the total settlement amounts that will be settled between the Merchant Acquirer and the Card Issuer during settlement. If, for any reason, the Merchant Acquirer cannot collect from the Seller, the Merchant Acquirer is liable.

The Truth In Lending Act (Regulation Z) limits a consumer cardholder's liability for unauthorized use of a credit card; however, the same rule does not apply to commercial cards. Instead, Liability Waiver Programs cover unauthorized *employee* use of a card to protect a corporation's liability.

#### **4.2.5 Returns**

Payment returns in the form of credits to the Buyer's account are allowed. Returns or refunds, called chargebacks, are initiated by the Seller (merchant) when the products or services do not match the Buyer's requirements. Depending on the Seller's policy, returns can be processed as a credit to the cardholder's account. Credits do not require approval or authorization codes. At the time of settlement, credits post during the interchange process in the same manner that sales do. Merchant Processors may net the amount of the credit against the total sales amount due a Seller or apply an ACH debit to the Seller's depository account the following day.

### **4.3 Process Flow – Seller Initiated Payments**

The Seller initiated payment flow is the same as the Buyer initiated flow discussed above, except that the Seller must obtain authorization from the Buyer to charge the Buyer's credit card.

### **4.4 Functional Differentiators**

#### **4.4.1 Collectability**

Commercial cards may or may not guarantee funds to the Seller depending upon the card brand. Any Buyer has the right to dispute a credit card charge. If a charge is challenged, a retrieval request will be sent from the Card Issuer to the Merchant Acquirer. The Merchant Acquirer will in turn request proof from the Seller of a sale to the Buyer. For in-person transactions, signed receipt copies are normally requested. The Seller assumes most of the transaction risk regardless of how the transaction was completed. Since Internet transactions have not adopted electronic signature capability, the burden of proof is on the Seller to prove the sale was legitimate based on the nature of the cardholder (Buyer) inquiry/charge-back.

In addition, the Seller's Merchant Acquirer has the right to discontinue service to the Seller for a variety of business reasons. The Buyer's Card Issuer also has this right with the Buyer. Some merchant (Seller) business models are high risk in nature as they relate to credit card Association/Card Issuer rules. Examples include telemarketers and Internet-based businesses. These Sellers typically pay higher transaction processing costs and are closely monitored for velocity related transaction patterns or chargebacks.

Denials of online card transactions can occur for a variety of reasons including limits that have been set on the spending pattern of the user (Buyer), such as dollars per month, dollars per day, the type of merchant (Seller), etc. In comparison with consumer credit cards, commercial cards have more features designed to contain spending and prevent improper use of corporate funds.

Commercial cards also allow for reversals, enabling a Seller to send a credit to the Buyer.

#### **4.4.2 Remittance Capability**

Remittance data is included in commercial card transactions, and credit card Associations or independent Card Issuers set the content and file format standards. There are typically three different levels of remittance detail. Level I Data includes the standard credit card purchase transaction (e.g. merchant, charged amount, date). Level II includes summary level detail as well as a point of sale code and sales tax amount, and Level III Data provides line item purchase detail. Merchant Processors and/or Card Issuers are not always able to accept or pass through some of these remittance data elements due to factors such as system constraints, point of sale terminal limitations, and/or training as it relates to capturing specific data during the transaction.



#### **4.4.3 Processing Issues**

Commercial card Merchant Processors and Gateways are available on a 24x7 basis. Authorizations are performed in real-time and can be handled online. Authorization limits can be put in place by the credit Card Issuer or at the corporation's request to limit corporate liability for employee purchases. These can include credit limits, order limits, or blocks for specific merchant types. Credits (reversals) are handled outside of the authorization system.

#### **4.4.4 Security**

Data transferred through the credit card networks is protected by the data security methods employed by the Sellers, Merchant Processors, Gateways, Merchant Acquirers, and Card Issuers.

Transactions are traceable, and Buyers can track them through their credit card Association or Card Issuer via the credit card number and Buyer's account. Using the Merchant Acquirer and/or Merchant Processor or Gateway, the Seller can also track transactions. Commercial cards also have other security features that enable authentication, encryption, non-repudiation, and physical storage and access of data.

A commercial card user (Buyer) can be authenticated via address verification (Address Verification System or AVS). This service verifies the billing address information (zip code and street address) and provides, upon authorization, an additional code that is separate from the authorization code. This code is generally used when the card is not physically presented to the Seller, as in the case of purchases made over the telephone. The Seller verifies the address given by the Buyer during the transaction against the address on the AVS cardholder file.

Credit card data is transmitted through Merchant Processors and Gateways in encrypted form. Most Merchant Acquirers use secured T-1 and frame relay lines to transmit and secure data between their systems and the bank networks. Once the transaction is in process, it can be reversed only by manual intervention by the Seller. Within the credit card network, all data is stored on secure servers. Only personnel designated by the organization involved can access data.

#### **4.4.5 Privacy**

Information such as the Buyer's credit history may be disclosed to third parties and official credit reporting agencies. The transaction and enhanced data received as part of card use typically belongs to the company, and not the individual card user. A cardholder agreement or disclosure statement often defines this agreement. In some cases, credit Card Issuers may sell listings of commercial cardholders, but they do not include credit card numbers or other types of information.

#### **4.4.6 Participant Directories**

Seller directories are not available, although credit card Associations or independent Card Issuers may list Sellers that accept procurement cards.

## **4.5 Economic Analysis**

### **4.5.1 Investment Costs**

There are various hardware options available to Sellers who wish to accept commercial cards for payment. The primary hardware requirement is a telephone line for obtaining authorizations and a point of sale device or its equivalent for a PC. Another option is a computer dedicated to real time credit card authorizations and transactions. This equipment may need to be upgraded to enable Level II and III data acquisition for P-cards. A Buyer requires no hardware, although Buyers may wish to use a computer to initiate a payment online through a seller direct or exchange site.

Depending on the Merchant Acquirer, Merchant Processor or Gateway, and the software used, there may be one-time start up costs, setup fees, or testing fees.

### **4.5.2 Transaction Costs/Fees**

With all credit cards, including commercial cards, interchange fees and third-party costs constitute the majority of transaction processing fees that the Seller must pay. Merchant Processors and Gateways also charge fees for their use. These fees are typically collected with the interchange fees. Merchant Acquirers also charge the Seller an interchange fee for handling each transaction, and this is reflected in a "discount" subtracted from the face amount of the transaction credited to the Seller. Independent Card Issuers typically bundle all of these costs, as applicable, into a total referred to as the discount fee. The discount fee is subtracted in a comprehensive total from the face amount of the transaction credited to the Seller.

Card transactions that provide enhanced data may be more costly for Sellers. Fees may vary based on the data that is supplied, the card type, and/or the method used to process the transaction. Card Issuers or their Associations also may assess different fees to process the various types of cards that they brand.

For the Buyer, there may be additional fees for line of credit services associated with a card's funding account. There may also be fees for detailed transaction reporting and periodic management and transaction reports on the Buyers side. A Buyer does not incur any direct pass-through costs from the Seller to use a credit card. Sellers are charged fees for chargebacks made to their accounts. Buyers may also have to pay a fee to initiate a chargeback.

## **4.6 Additional Information**

Major Credit Card Associations and independent Card Issuers:

- American Express <http://www.americanexpress.com/homepage/corporations.shtml>
- Discover <http://www.discoverbiz.com/>
- JCB <http://www.jcbusa.com/>
- MasterCard <http://www.mastercard.com/business/>
- VISA <http://www.visa.com/fb/main.html>

## 5. Traditional Mechanisms - Checks

### 5.1 Overview

Checks are the most widely used and popular form of non-cash payment in the United States. No other means of remote payment is as widely accepted as the check, which offers user familiarity, legal standing, and the automatic presence of a receipt as proof of payment (the cancelled check). These characteristics help to account for the continuing growth of checks for business payments.

Organizations drafting or depositing checks must have a relationship with a financial institution. A check is a debit transaction, and may be used to pay single and/or multiple invoices. Business checks contain a Magnetic Ink Character Recognition (MICR) line, identifying the payee, amount to be paid, payee's account, Federal Reserve district code, Federal Reserve Office responsible for handling the drawee bank, bank identification number, routing number, and sequence or check number. Both check initiation and check receipt services may be outsourced.

Given a choice of payment options, a Buyer may choose to pay by check, even if a Seller is encouraging electronic payments by presenting the invoice electronically. Many Buyers have not automated their accounts payable process, and are therefore not able to send electronic payments. Or, a Buyer may be using a controlled disbursement system, designed to maximize the funds available for investment or for payment to trade creditors. With checks, a Buyer can maximize float and still make the payment on the last day (determined by the Seller as postmark date or date of receipt) before a penalty is incurred or a discount lost. This is also known as leveraging the "mail float."

Rules for inter-bank check settlement are governed by articles 3 and 4 of the Uniform Commercial Code. Furthermore, as specified by title 12, chapter II, of the Code of Federal Regulations, the Federal Reserve drafted "Regulation J" which establishes the procedures, duties, and responsibilities among Federal Reserve Banks for check collection.

In the corporate check process, the participants include:

1. *The Payer*

The Payer is the Buyer, who initiates payment by check using a depository institution, and is responsible for the amount written on the check. Other terms for the Payer include maker, drawer, or writer. The Payer must have a depository relationship with a financial institution, the Drawee Bank, to issue check payments.

2. *The Drawee Bank*

The Drawee Bank is the Buyer's Bank - the bank that holds the Payer's account and is responsible for verifying the appropriate authorization and availability of funds. The Payer must have a depository relationship with a financial institution, the Drawee Bank, to issue check payments.

3. *The Payee*

The Payee is the Seller: an organization or entity named on the check by the Payer as the recipient of the check payment. A corporate Payee typically maintains a depository relationship with a financial institution, the Payee Bank. This bank is used to deposit and “clear” checks. The process by which a check is presented to and accepted by the drawee bank, the institution on which it is drawn. A non-bank may also be used by a Payee to cash (rather than deposit) a check, however, the non-bank would then in turn need to have a depository relationship with a Drawee Bank to clear the check.

4. *The Payee Bank*

The Payee Bank is the Seller’s Bank and is the bank of first deposit. This means that it is the bank into which the Payee first deposits a check received from a Payer. The Payee maintains a depository relationship with its Payee Bank.

After depositing a check, the Payee Bank collects funds from the Drawee Bank through appropriate clearing channels. These include the Federal Reserve, a Clearing House, and/or a correspondent bank.

5. *The Clearing Channel*

One or more of the following channels may be used by the Payee Bank to clear a check:

- **Federal Reserve Bank**

There are 12 regional banks in the Federal Reserve System. The role of the Federal Reserve Bank is to provide financial services, including check collection for a given region. The Federal Reserve Bank consolidates check deposits from Payee Banks and deducts corresponding amounts from the Drawee Bank’s Federal Reserve account or the account of their Correspondent Bank. Corresponding credits are made to the Payee Bank’s Federal Reserve account or the account of their Correspondent Bank.

- **Clearing House**

An association of banks organized to exchange checks or other types of payments. A Clearing House maintains a daily log of transactions it accepts on behalf of members. At the close of business, the Clearing House transfers the net value to members with a positive balance, and debits members with a negative balance, through the member’s respective accounts at the Clearing House.

- **Correspondent Bank**

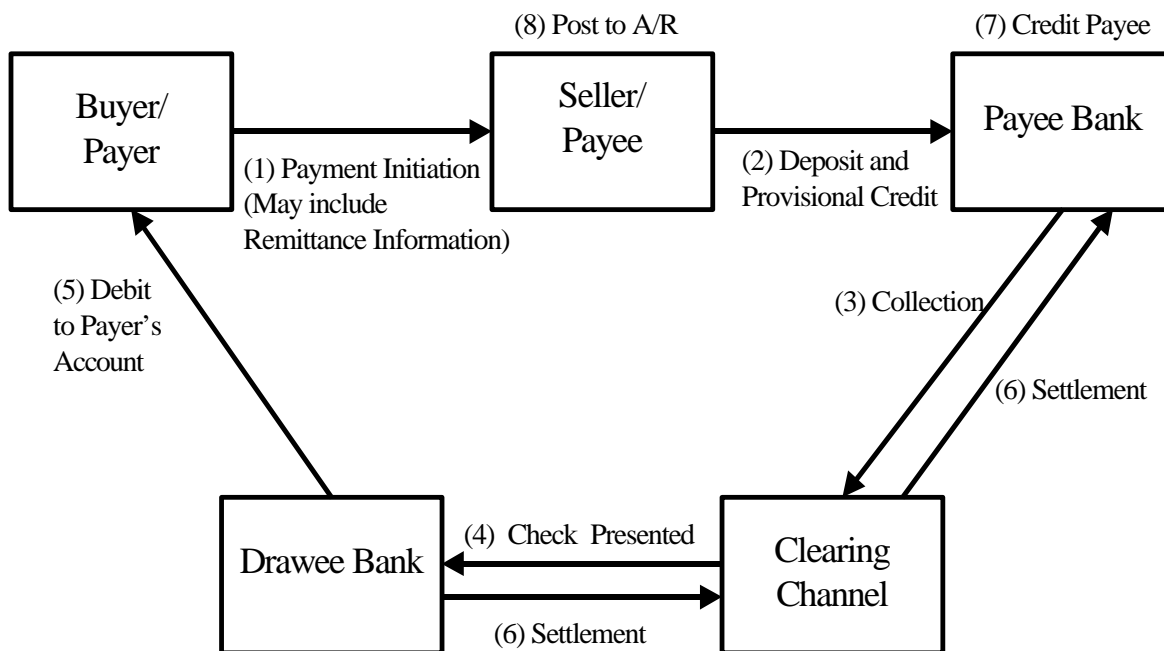
A bank with which a Drawee and/or Payee Bank has a relationship. The Correspondent Bank provides check and other clearing services to Drawee Banks and Payee Banks and may participate in a Clearing House. There is typically a contractual relationship between the Drawee Bank and/or Payee Bank and its Correspondent Bank.

## 5.2 Process Flow – Buyer Initiated Payments

When a Buyer receives an invoice (or invoice information), the accounts payable department typically logs the payment request and prepares a payment. In a supply chain environment, the accounts payable department may perform a three-way match, comparing and matching the purchase order, request for payment, and receipt of goods/bill of lading. If check payment is to be used, the Buyer then prepares a paper check. The check must then be placed in an envelope addressed to the Seller, and the Buyer must pay a delivery service to deliver the payment. This delivery service is usually the US Postal Service (USPS), but may also be an independent service.

There are a number of ways in which banks may clear and settle check payments among themselves. The Payee Bank can collect from the Drawee Bank directly by mailing a check, or it can send a check through a third party (a clearing house, a correspondent bank, or the Federal Reserve System). It may take 1 to 5 days for a check to clear. The length of time for a check to clear is regulated by law and depends upon how many parties the check must pass through as well as the distance the check must be physically transported between Federal Reserve Banks and/or other clearing parties.

### Buyer Initiated Check Payments



### **5.2.1 Payment Initiation**

- (1) The Payer receives an invoice or some other type of notification indicating a payment is due (i.e. a statement), processes the payment request, prepares a check, and sends it to the Payee. Remittance information (e.g. invoice or invoice detail) may accompany the payment. A Payee may use a bank or third party lockbox service to receive, process, and deposit checks on their behalf. In this case, the Payer would send the check to the Payee's lockbox provider, rather than to the Payee.
- (2) The Payee deposits the check with its financial institution, the Payee's Bank, which provisionally credits the Payee's account. If the Payee uses a lockbox service, the lockbox provider receives and deposits the check on behalf of the Payee.

### **5.2.2 Settlement**

- (3) The Payee Bank begins the process of collecting the funds from the Drawee Bank (Buyer's Bank). If both the Buyer and Seller have accounts at the same bank, then the check is settled as an "on-us" item. An "on-us" item means the bank will debit the Payer's account and credit the Payee's account in the amount of the check. The majority of checks, however, are settled on an inter-bank basis rather than "on-us." Checks presented from a different bank must be cleared – or presented to the Drawee Bank for final payment – through one of the available clearing channels.

Depository institutions located within the same Federal Reserve district may send their checks to the local Federal Reserve Bank for collection, which then credits the depositing or Payee Bank's Federal Reserve account, and debits the Drawee Bank's Federal Reserve account. Based on a prearranged availability schedule, a bank will receive credit for most checks the same or next business day and within two business days for most checks. The Drawee Bank pays the Federal Reserve Bank when the check is presented.

If the check needs to cross Federal Reserve districts, then the check must be cleared through the Federal Reserve System. This can involve multiple banks, including one or more Federal Reserve Banks, or a clearing house. Inter-bank checks may also be cleared through a regional or national clearing house that competes with the Federal Reserve in providing this collection service.

A Payee Bank may also use a Correspondent Bank to facilitate the process of clearing checks. The Payee Bank maintains a contractual relationship with the Correspondent Bank, which provides check clearing on behalf of the Payee utilizing the appropriate clearing channel(s).

Within the clearing channels, checks may be cleared electronically, supplementing paper-based processing with electronic processing. In this case, the Payee's Bank uses the MICR line to transmit data to the Drawee Bank, which then debits the Payer's account. The physical check may be sent to the Drawee

Bank later for further handling. Presenting checks electronically speeds the clearing process.

- (4) The clearing channel presents, or delivers, the check to the Drawee Bank. In the case of an on-us item, this step is not required.
- (5) The Drawee Bank verifies the check authorization and funds availability, then debits the Payer's account. A cancelled check and/or bank statement may be provided as proof of payment.
- (6) The Payee Bank settles the payment through a clearing channel. The clearing channel nets the credits and debits for its participants through the respective accounts. If the check is an on-us item, this step is not required.
- (7) The Payee Bank credits the Payee's account.

### **5.2.3 Remittance**

- (8) The Payee, or Seller, posts the payment to its Accounts Receivable. Remittance data may accompany the payment as separate documentation in the envelope sent by the Payer or some minimal remittance detail may be noted on the check memo. If the Payee received the check and remittance data directly, it may provisionally post the receivable until the credit is received or may post the transaction after the credit has been received. If the Payee uses a lockbox service, its provider receives the remittance detail and passes this on to the Payee after the check has been processed and submitted for clearing.

### **5.2.4 Payment Disputes**

With checks, the Payer has the option to order a "stop payment" request to cancel, or postpone, payment in the event of a dispute with the Payee. A stop payment order is placed by the Payer with the Drawee Bank.

### **5.2.5 Returns**

Checks presented to the Drawee Bank for payment may be returned unpaid to the bank of first deposit. In general, return items follow the same channel used in the collection process -- in reverse. The return process is usually much slower than the forward collection process. The Drawee Bank must specify the reason for returning the check, such as insufficient funds (NSF), uncollected funds (funds not available), notice of account closure (NOC), or stop payment.

## **5.3 Process Flow – Seller Initiated Payments**

With the exception of refunds or rebates, checks are generally Buyer initiated payment instruments and not Seller initiated transactions.

## **5.4 Functional Differentiators**

### **5.4.1 Collectability**

In general, checks do not provide guaranteed funds. Funds must be available in the Payer's account when the check is presented to the Drawee Bank for settlement, or the Payer must have a line of credit for overdraft protection. Sellers may contract with a

third party to provide check guarantee services, but the cost may be prohibitive for many companies.

#### **5.4.2 Remittance Capability**

There is limited remittance capability associated with the check itself. However, Sellers can include paper-based remittance coupons and forms that are then returned with the paper check to the Seller or its agent (e.g., a lockbox provider). These can contain extensive free-form data, allowing for better integration into the Seller's Accounts Receivable system and providing consistency of content from the Seller's standpoint.

Sellers may make use of "accelerated presentment" techniques to speed the processing of checks. One technique is lockbox operations, which are designed to reduce mail float and provide faster availability of funds associated with mailed check payments. Lockbox service providers can process the paper-based remittance information and Accounts Receivable data into a variety of electronic formats, based on the Seller's needs. These electronic formats can then be processed into the Seller's Accounts Receivable system. The lockbox service generally transmits the electronic remittance files to the Seller after the check is deposited. In some cases, the Seller may want to receive a physical copy of any remittance documents.

#### **5.4.3 Processing Issues**

Check clearing channels operate in batch mode, and net settlement occurs within specified timeframes. While settlement time within the check processing network is fairly consistent and predictable, the speed of delivery is variable. The Payer/Buyer may receive the benefit of the lag time or float, but many Sellers give discounts for timely payments from their customers.

Regardless of the channels through which a check is cleared, for B2B purposes, the check has to physically be presented to the paying bank (the Drawee's Bank). This is required by the Uniform Commercial Code, which specifies the Drawee Bank's right to physically inspect a check before paying it. In practice, this means that the bank of first deposit must send the check to the Drawee Bank before it will be settled. Thus, the check clearing may be impacted by transport delays. Because of this process, the check clearing system does not provide 24/7 access. There may be multiple parties involved in the clearing process, in addition to the payment network participants.

If a Payer has a dispute with a Payee, the Payer may order a stop payment through the Drawee Bank, which effectively rescinds a payment previously issued. A Payer may also put a restrictive endorsement, such as "Paid in Full", on the face of the check. If the Payee cashes a check with a restrictive endorsement on the face of the check, they may be unable to challenge it later. A Payee involved in a dispute with a Payer could refuse to cash a check, meaning that the Payee is not accepting the finality of an obligation.

With paper checks, online authorization is not applicable. Blocks and limits may be prearranged by the Payer with its Drawee Bank. These can be used, for example, to prohibit check payments to certain payees or above a specified dollar amount.



#### **5.4.4 Security**

Check data is stored on a secured server within banks and within the clearing channel. However, once a check is deposited, it cannot be tracked as it moves throughout the payment network. Because checks are paper-based transactions, encryption is not applicable. The drawee bank is responsible for assuring that a check has the appropriate signature(s) and dates and that it has not been altered. Many banks offer a so-called Positive Pay service, which enables a Payer to review all checks prior to accepting the debit to their account that each check represents. This offers additional security to the Payer against fraud.

Payment non-repudiation is offered in the form of cancelled checks, which serve as a payment receipt indicating deposit by the Payee. Other account records typically provide itemized check detail that can be used for non-repudiation purposes.

#### **5.4.5 Privacy**

There is no single privacy policy within the check processing system, but each participant may have an individual privacy policy. Within the paper based processing system, there are many hands that “touch” a check, including the Payer’s accounts payable department, the delivery service, the Seller’s mailroom and Accounts Receivables department (or lockbox), and the various banks and parties that participate in the clearing of the check. Still, as in all of the other payment networks, information is not disclosed or shared with third parties outside of the clearing process participants.

#### **5.4.6 Participant Directories**

There are no directories of participants available to users of paper-based check processing systems. Check processing services are offered through financial institutions in the United States.

There is an established check routing system. In this system, the check routing symbol is the denominator of a fraction appearing in the upper right corner of checks paid through the Federal Reserve System (the ABA transit number is the upper number). The routing symbol is a number identifying the Federal Reserve district of the drawee bank, the Federal Reserve facility through which the check is collected, and the funds availability assigned by the Federal Reserve.

### **5.5 *Economic Analysis***

#### **5.5.1 Investment Costs**

Check processing technology has improved steadily over time, with increasing accuracy and efficiency. While there are no special hardware or software investment costs necessary to enable check payment and receipt, there are a number of associated service costs, some optional and some required. These may include an accounts payable system to generate and track check payment information, printers, and mailing equipment. Depending upon the desired environment, companies may also develop any number of features to automate and/or expedite the check process or these services may be outsourced to a third party (e.g., check initiation, check receipt, remittance processing, etc.).

### **5.5.2 Transaction Costs/Fees**

Both Payers and Payees must have a relationship with a financial institution for origination and receipt of check payments, and the financial institutions may charge fees for the checking service. The transaction costs and fees may vary depending upon the company's relationship with its financial institution and the number and type of services used. Payers, or Buyers, may incur a per check charge or other costs associated with maintaining an account or these fees may be bundled and priced with a variety of other services.

Payees, or Sellers, may incur costs for receiving, processing, and depositing checks. When using a lockbox service which collects checks, creates electronic remittance information, and deposits the checks, the Seller may incur specific costs. Alternatively, some of these functions may be performed internally, resulting in internal expense. However, the Payee's Bank will still assess some fees of the Seller, such as fees to deposit and clear checks.

### **5.6 Additional Information**

Sources for additional information on check payment include:

- Federal Reserve Financial Services: <http://www.frbservices.org/Checks/frChecks.cfm>
- Federal Reserve Regulation J: <http://www.ny.frb.org/pihome/regs.html#REGJ>

## **6. Traditional Mechanisms – Fedwire (also known as Wire Transfer)**

### **6.1 Overview**

The Fedwire Funds Transfer System is an electronic payment system developed and maintained by the US Federal Reserve as directed by the Uniform Commercial Code (Article 4A) – Funds Transfer. Fedwire is generally used for larger dollar payments that are time critical. Examples include interbank purchases and sales of federal funds; the purchase, sale, and financing of securities transactions; the disbursement or repayment of loans; and the settlement of real estate transactions. Through Fedwire, the twelve Federal Reserve Banks are connected to depository institutions nationwide. The Federal Reserve Banks act as intermediaries in all Fedwire transactions.

A Fedwire is a real-time method of transferring guaranteed funds and supporting the exchange of information between financial institutions by using the institutions' Federal Reserve accounts. This means that when a Buyer initiates a Fedwire payment, the designated Federal Reserve Bank debits the Buyer's Bank's account and sends a transfer order to the Seller's Federal Reserve Bank, which then credits the Seller's bank account. Funds are immediately available once the transfer is received, and this process may only take minutes. The Federal Reserve guarantees the transferred funds to the receiving bank, so there is no risk associated with using Fedwire. All Fedwire funds transfers are immediate, final, and irrevocable. Fedwires can be initiated to pay a single or multiple-invoice transaction; however, there is very limited ability to transmit remittance data. The network has options to accommodate some limited, free form text, which could be used to include some limited remittance information.

Participants in the Fedwire process include:

#### *1. The Sender*

The Sender is a company that initiates a Fedwire to complete payment between two businesses. For Fedwires, the Sender is always the Buyer, who initiates payment through a depository institution. The Sender must establish a contract with the depository institution they select for wire transfer initiation.

#### *2. The Sender's Bank*

The Sender's Bank is the depository institution that the Buyer uses to initiate a wire transfer. The transaction is usually initiated at the request of the Buyer after the appropriate contractual relationship has been established between the Sender and the Sender's Bank. This agreement typically identifies employees within the Sender organization who are authorized to initiate a Fedwire, defines the parameters of the relationship between the two parties, and establishes liability and accountability for specific procedures.

#### *3. The Federal Reserve Bank*

The Federal Reserve Bank is responsible for debiting the Sender's Bank's reserve account and sending a transfer order to the Receiver's, and the Receiver's reserve account is credited for the amount of the transfer.

4. *The Receiver's Bank*

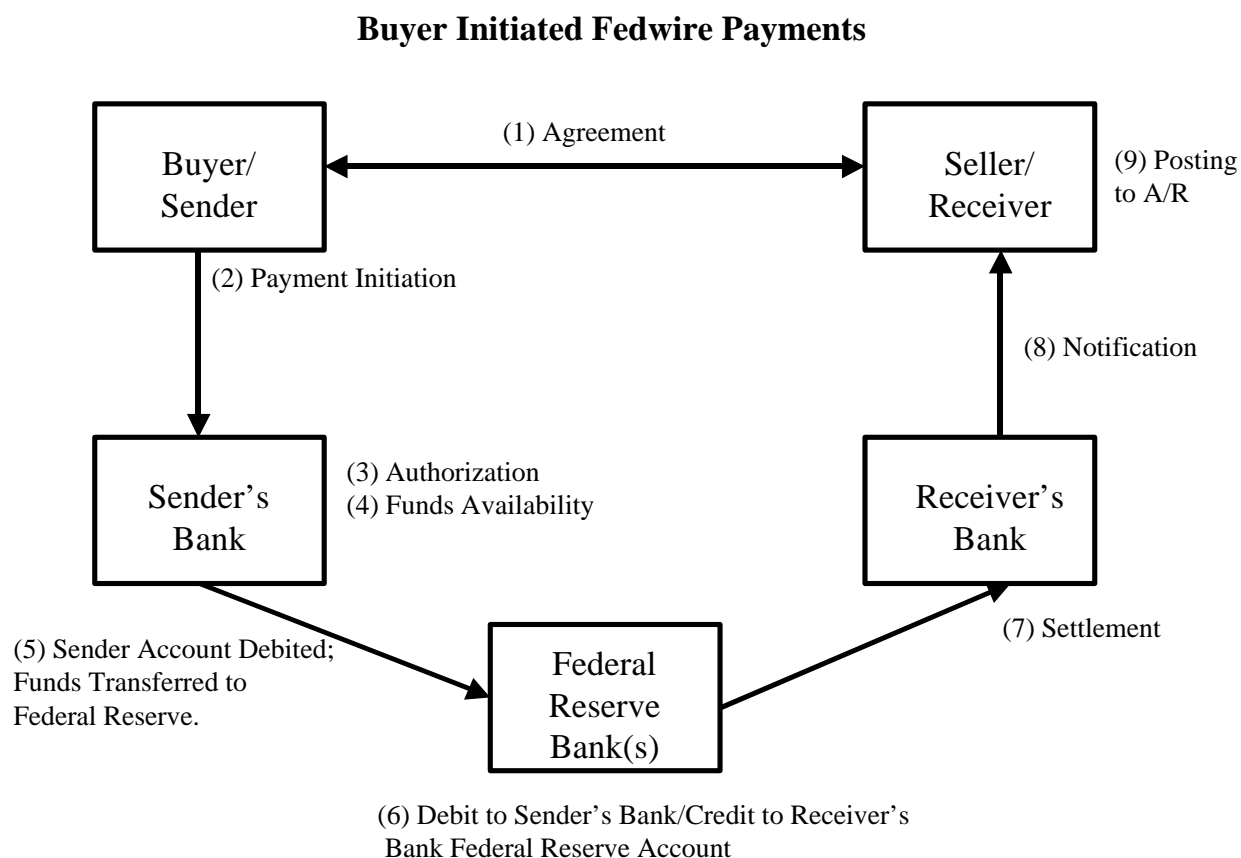
The Receiver's Bank is the depository institution that receives the wire transfer sent by the Sender, or Buyer, through the Federal Reserve System. The Receiver's Bank usually has a depository relationship with the Receiver. The Receiver's Bank is responsible for timely depositing of the Fedwire to the Receiver's account on the settlement date and also for providing the Receiver with any associated remittance data, if any.

5. *The Receiver*

The Receiver is the company receiving payment via Fedwire. The Receiver in a Fedwire transaction is always either the Seller or an agent of the Seller (e.g.; an electronic lockbox provider). A Receiver must have a depository relationship and usually must also establish a contractual agreement with its depository institution, the Receiver's Bank. The agreement between the Receiver's Bank and the Receiver also typically specifies any arrangements for delivery of remittance information. Remittance information is usually delivered to the Receiver using a paper listing, fax, or an electronic transmission.

## 6.2 Process Flow – Buyer Initiated Payments

The process flow for a Buyer initiated Fedwire payment is as follows:



### 6.2.1 Payment Initiation

- (1) The Buyer and the Seller agree that payment will be made to the Seller by the Buyer using wire transfer. At minimum, the Seller must provide the Buyer with the ABA number (i.e.; the bank routing number) of the Seller's financial institution and with the Seller's financial institution account number or electronic lockbox account number. This information is used by the Buyer to assure that the Fedwire payment is properly routed to the Seller.
- (2) The Buyer, or Sender, contacts its financial institution, the Sender's Bank, and requests wire transfer to be sent to the Seller, or Receiver. This request may be made using bank information reporting systems, software, fax or phone.
- (3) The transfer is authorized as being valid by a communication between the Sender's Bank and the Sender. There are numerous options for authorization including personal identification numbers, test key calculations, message authentication algorithms, dual authorization of the transfer, or callbacks to verify instructions.
- (4) The Sender's Bank checks to see if funds are available in the Sender's account or if sufficient credit is available against the Sender's line of credit. Use of a line of

credit for wire transfer purposes must be negotiated and agreed to by the Sender and its Bank. If the Sender does not have adequate funds in its account or if its credit limit has already been met (called a daylight overdraft), then the Sending Bank delays the wire transfer until either the funds or the line of credit become available.

- (5) If funds for the transfer are available, the Sender's Bank debits the Sender's account and immediately transfers funds via Fedwire to the appropriate Federal Reserve Bank.

In the Fedwire funds transfer system, only the Sender's Bank is authorized to remove funds from its Federal Reserve account. The Sending Bank provides payment instructions to the Federal Reserve either online or offline. Online participants send instructions through either a mainframe or PC connection to Fedwire, and no manual processing by the Federal Reserve Banks is necessary. Offline participants give instructions to the Reserve Bank by telephone; once the telephone request is authenticated, the Reserve Bank enters the transfer instruction into the Fedwire system for execution. The manual processing required for offline requests makes them more costly, and, thus, they are suitable only for institutions with small, infrequent transfers.

#### **6.2.2 Settlement**

- (6) The Federal Reserve Bank debits the Sender's Bank reserve account, and credits the Receiver's Bank reserve account.
- (7) The Federal Reserve Bank notifies the Receiver's Bank of the credit to its reserve account and provides the account credit information for the Receiver.
- (8) The Receiver's Bank credits the Receiver's account and notifies the Receiver that funds have been received. Funds are immediately available to the Receiver.
- (9) The payment is posted to the Receiver's, or Seller's, Accounts Receivable.

#### **6.2.3 Remittance**

There is very limited ability to transmit remittance data. The network allows for the inclusion of some free form text, which could be used to include some limited remittance information. Due to this limitation, remittance data usually flows outside the Fedwire system.

#### **6.2.4 Payment Disputes**

The Fedwire system does not have payment dispute processes, as all transactions are immediate and final.

#### **6.2.5 Returns**

In the Fedwire system, all transactions are immediate and final; there are no returns or reversals.

### **6.3     *Process Flow – Seller Initiated Payments***

Only Buyers can initiate a payment transaction through the Fedwire system. There are no Seller initiated payments in the Fedwire system.

### **6.4     *Functional Differentiators***

#### **6.4.1    *Collectability***

Fedwire transfers are real time transfers of funds and are guaranteed to be available upon receipt. Due to the real time transfer and guarantee of good funds, no returns or reversals are allowed. However, if incomplete or incorrect information is provided and the receiving account cannot be identified, then a wire transfer can be returned by the Receiving Bank.

#### **6.4.2    *Remittance Capability***

There is very limited ability to transmit remittance data. The network allows for the inclusion of some free form text, which could be used to include some limited remittance information. Remittance data usually flows outside the Fedwire system because Fedwire cannot accommodate consistent or free text messages. Remittance information must be created by the Sender and sent separately from the payment instructions, outside of the Federal Reserve System. The Fedwire system is a method of transferring funds between bank reserve accounts held at the Federal Reserve Bank, so there is no way to interface an Accounts Receivable system residing at the Seller's site. Accounts must be manually updated using remittance information contained within the Fedwire or may be integrated through a separate message system (e.g.; SWIFT – Society for Worldwide Interbank Financial Telecommunications).

#### **6.4.3    *Processing Issues***

The Fedwire system is available 12:30 AM to 6:30 PM Eastern Standard Time (for bank-bank transfers, 6:00 PM for buyer-seller transfers), although some banks may establish earlier cutoffs to allow time for processing. All transfers are performed in real time. Payments are typically initiated by a telephone call or through a personal computer/treasury workstation. Once initiated, the transfer must be authorized. If an online initiation method is used, the authorization can be performed online as well. Fedwire does not place or utilize dollar volume limitations; however, Fedwire transfers tend to be large dollar payments due to the high per transaction cost. In addition, a Sending company may agree with its Bank to place a limit on the dollar value of transfers that may be initiated; such a restriction is usually employed by the Sender to restrict the potential for fraud. The Fedwire system does not have a payment dispute mechanism, and all payment disputes must be resolved outside of the Federal Reserve System.

#### **6.4.4    *Security***

Because of the high dollar value of a typical transfer and the real time nature of all transfers, security is critical. All Fedwire transactions are auditable; the Federal Reserve assigns each wire transfer a trace number. Commercially reasonable security procedures must be in place at the Sender's Bank and are necessary in order to comply with Uniform Commercial Code Article 4A (UCC4A). These security procedures include the use of

message authentication (a digital signature) to prevent an unauthorized person(s) from changing a wire transfer. Encryption is employed when a Fedwire is initiated via a personal computer or treasury workstation. Test key calculations or message authentication algorithms are used to encrypt the funds transfer instructions. Data is stored on secure systems at the Sender's and Receiver's Banks, as well as at the Federal Reserve Bank(s). Employees are bound by data confidentiality ethics as required by the individual institutions. The Fedwire system provides for non-repudiation of transactions because all transactions are considered final and may not be returned or reversed.

As a measure to prevent fraud, it may take two or more people in the Sender organization to initiate and release (authorize) a wire transfer

#### **6.4.5 Privacy**

The Federal Reserve has no privacy policy, however the Federal Reserve does have stringent guidelines about how information can (or cannot) be used.

#### **6.4.6 Participant Directories**

The "E-Payments Routing Directory" provides a participant list, including basic routing information for Fedwire Funds, Fed ACH transactions, and Book-Entry Securities transfers. It is available online at <http://www.FedEDirectory.frb.org>. The directory is available 24 hours/day, 6.5 days per week. It is unavailable midnight Saturdays through noon Sunday.

### **6.5 Economic Analysis**

#### **6.5.1 Investment Costs**

Start-up costs for Fedwire are fairly low, considering a Buyer (Sender) can use a telephone to initiate payments. However, some large corporations automate the process by using a PC or treasury workstation to initiate a wire transfer. This may create a hardware expense, although many companies will have already made such an investment for other purposes.

#### **6.5.2 Transaction Costs/Fees**

Senders must pay a fee in order to initiate a Fedwire transfer, and there may be other fees (e.g.; transmission fees) associated with establishing an online connection via PC or treasury workstation. Some Receiving Banks will also charge a per transaction fee to a Receiver for wire transfers. Transaction fees for wire transfer vary by financial institution; but the cost is, in general, prohibitively high for frequent use by smaller organizations.

### **6.6 Additional Information**

Sources for additional information on using the Fedwire system include:

- Federal Reserve Financial Services: <http://www.frbservices.org>
- Federal Reserve E-Payments Routing Directory: <http://www.FedEDirectory.frb.org>
- A Bank



## Conclusion

Electronic Invoice Presentment and Payment (EIPP) is an emerging technology that provides benefit to both Buyers and Sellers. It allows for efficiencies and cost savings for the receipt and payment of invoices. EIPP is expected to streamline accounts payable and accounts receivable processes.

This paper is solely an educational tool and does not promote any one model or payment mechanism. It is meant to promote understanding and adoption of electronic payments within EIPP. It is also intended to assist trading partners in determining the options best suited to their business requirements.

This document covers B2B payment mechanisms that are available in the market place today. Other options exist in the B2C environment; however, assumptions should not be made that B2C payment options will be suitable for B2B purposes. As new B2B payment mechanisms develop, or as existing ones evolve, an effort will be made to update this paper accordingly.

The payment options reviewed in this paper can be used in conjunction with or exclusive of electronic invoice presentment. Optimum benefit and value can be gained by using an electronic payment mechanism as part of EIPP. The authors expect the volume of electronic payments to grow and be a dominant factor to the future of successful EIPP transactions.

Comments and feedback are always welcomed and encouraged. Contact NACHA's Director of Electronic Billing and Payment at: <http://cebp.nacha.org>, or 703-561-3913.

## Glossary

**ABA Routing Number** - The nine-digit number (eight digits and a check number) that identifies a specific financial institution. Also referred to as a Bank Routing Number or Routing Transit Number.

**Account mask information** – Editing criteria used to verify the accuracy of a seller's account number in certain electronic payment transactions.

**Accounts Payable (A/P)** - System that tracks the amount owed by Buyer to all Sellers.

**Accounts Receivable (A/R)** - System that tracks the amount due to Seller from all Buyers.

**ACH** - Automated Clearing House - payment system for electronic funds transfer between financial institutions.

**ACH Operator** – An organization that has an agreement with NACHA to provide clearing delivery and settlement services.

**Addenda Record** – An electronic record used for the purpose of transmitting payment related information.

**Aggregators** - Service bureaus that provide billing and/or payment consolidation services.

**ANSI X12** - Standards that regulate electronic data interchange (EDI) as governed by the American National Standards Institute Committee. The electronic remittance files (820 or 835 healthcare) are used with the ACH CTX format.

**ANSI X9.17** – Standards for authentication and key management. These standards are maintained by the National Institute of Standards and can be found at the Computer Security Resource Center ([www.cssrc.nist.gov](http://www.cssrc.nist.gov))

**API - Application Programming Interface** - A set of specifications, standards or conventions that enable programs to exchange information.

**ASP - Application Service Provider** - Third party vendor used by a seller to outsource the presentment of electronic invoices.

**ASP - Hosted Systems** - Third party Application Service Provider providing front end, data center or transaction processing capabilities for either a buyer or seller.

**Authentication** - The process of verifying the identity of a user of a secure system.

**Authorization** – The process of giving approval.

**B2B** - Business to business.

**B2C** - Business to consumer.

**Bank Ledger Day** – The point at which a bank closes out the current day's transactions, and begins the next business day.

**Bank Routing Number** - The number uniquely identifying a bank for payment processing. Also referred to as an ABA Number or Routing Transit Number.

**Batch** - the transmission or processing of a group of payment orders as a set at discrete intervals of time.

**Blocks** – See debit block.

**Browser** - Software program that is used to look at various kinds of Internet resources.

**Buyer** – A business customer, or payer.

**Buyer Direct** - EIPP model connecting one buyer to many sellers. Sellers post their invoice data to the buyer's site.

**CCD - Cash Concentration/Disbursement** - ACH corporate payment format with no addenda record capability.

**CCD+ - Cash Concentration/Disbursement Plus** -ACH corporate payment format that includes limited addenda information.

**CEBP** – NACHA's Council for Electronic Billing and Payment.

**Check** - A paper negotiable instrument payable upon demand to transfer funds from the payer to the payee.

**Clearing** – The process by which a check is presented to and accepted by a drawee bank, the institution on which a check is drawn.

**Clearing House** – An association of depository institution that facilitates the settling of checks or electronic items through the direct exchange of funds between members.

**Consolidator** - An EIPP model connecting many buyers and many sellers through a single site.

**Corporate Card** – A payment mechanism used by authorized employee/cardholders for travel and entertainment expenses incurred during the course of business for a company.

**Correspondent bank** – A depository institution that accepts deposits and performs banking services for other banks.

**Credit** – An entry to request placement of funds into an account.

**Credit Cap** – Limit on the dollar amount of credit transactions for an account or entity.

**Credit Card** - A payment mechanism used to provide credit to the buyer by a 3<sup>rd</sup> party financial institution.

**Credit Card Processor** - A financial institution or third party that process credit card transactions.

**CTX - Corporate Trade Exchange** - ACH corporate payment format that includes ANSI X12 or UN/EDIFACT payment-related records.

**Data Transmission** – Electronic exchange of information between two data processing points.

**Daylight Overdraft** – Status of an account when a financial institution initiates a payment without sufficient or available funds in the account.

**Debit** – An entry to request transfer or removal of funds from an account.

**Debit Block** – Process used to restrict debits to a demand deposit account.

**Debit Cap** – Limit on the dollar amount of debit transactions for an account or entity.

**Debit Filters** – See debit block.

**Dispute Management** - EIPP system function that allows a buyer to notify the seller of invoice disputes, the function also allows the seller to respond to the buyer.

**EIP** - The term Electronic Invoicing and Payment (EIP) is synonymous with EIPP.

**EIPP - Electronic Invoice Presentment and Payment** – In the B2B arena, EIPP is the presentment of an invoice from a seller to a buyer, and corresponding payment from a buyer to a seller.

**EFT - Electronic funds transfer** - Electronic payment such as ACH or wire transfer.

**EBPP - Electronic Bill Presentment and Payment** – The electronic presentation of statements, bills, invoices and related information sent by a company to its customers, and corresponding payment for goods or services.

**EDI - Electronic Data Interchange** - A computer to computer exchange of standard business data according to agreed upon data formats.

**Electronic Payment** - Any non paper-based type of payment.

**Encryption** - Computer generated algorithm that allows secure communication between parties.

**ERP - Enterprise Resource Program** - Integrated, corporate-wide applications such as Accounts Receivable, Accounts Payable, Purchasing, Customer Relationship Management, Treasury, etc.

**Exchanges** - Forum/Clearinghouse for buyers, sellers or commodities to partner to provide economies of scale and reduced development expenses.

**Financial Institution(FI)** – Any organization that can originate and receive payments such as a bank, savings and loan, credit union.

**Fedwire** – Payment system operated by the Federal Reserve or payment transactions that are electronically initiated and settled on the same day.

**Federal Reserve** – Central bank of the United States that set monetary policy and provides services to financial institutions; an ACH operator.

**File Transfer Protocol (FTP)** –A method to move data across the Internet.

**Float** – Amount of money or time represented by checks that are in transit between banks for collection. This includes processing and mail time.

**Guaranteed Funds** – Both buyer and seller know funds are available at the time of payment.

**HTML - HyperText Markup Language** - Screen display language for Internet.

**IFX - Interactive Financial Exchange** - Standard for the exchange of financial data and instructions independent of a particular network technology or computing platform.

**Interoperability** - Standards and file formats promoting interaction between systems.

**Invoice Detail** - Information from a seller that provides itemized information to a buyer. This may include specific invoice event information such as credit card charges, telephone calls, or kilowatts used.

**Invoice Summary** - The summary information from a seller that is essential to a buyer to understand what is owed. Typical information may include; Amount Owed, Date Due, Seller, Seller's Account Number. Also: Summary Record, Summary, Invoice Summary, Invoice Summary Record, Bill Summary Record.

**Invoice Notification** - A process whereby a buyer is notified that an electronic invoice is available for review and payment.

**Invoice Cycle** - The period of time between the recurring events of updating, invoicing, and charging for services rendered.

**ISP - Internet Service Provider** - A vendor that provides access to the Internet.

**Legacy System** – Any existing system (e.g. proprietary, enterprise resource planning, customer service application, etc.) that may require integration with the EIPP solution.

**Master Card RPPS** - Electronic payment network.

**NACHA - National Automated Clearing House Association** - Association of corporations and financial institutions that provides governance for ACH processing. It establishes the standards, rules, and procedures for financial institutions to exchange ACH payments. NACHA also promotes electronic payments, and provides education for members.

**Net settlement** - the settlement of a number of obligations or transfers between or among counterparties on a net basis.

**Netting** - an agreed offsetting of positions or obligations by trading partners or participants.

**Non-repudiation** - A security feature that verifies to the sender that the receiver of the message received the message, and that the integrity of the content was not compromised.

**Non-sufficient funds (NSF)** –Not enough funds available to settle the payment.

**Notification of Change** – ACH message notifying an originator that a change has occurred.

**Originator** – Initiator of payment instructions to a financial institution.

**Participant Directories** – A listing of members of a payment network.

**Payment Authorizations/Instructions** – Instructions for routing/posting the payment (e.g. into which bank account payments should be deposited).

**Payment Disputes** – Disagreement between financial institutions or within the payment network.

**Payment Systems** - Processes by which payment instruments move from one party to another. Checks, wire transfer, credit card, or ACH are the means of moving money from one bank account to the other.

**Posting** - The process of recording debits and credits to account balances.

**Prenote** –Notification to an RDFI that an originator will send one or more entries to a receivers account.

**Personal Identification Number (“PIN”)** – A pass code used to authenticate an account holder.

**Purchasing Card** – A payment mechanism used by employee/cardholders to obtain goods and services needed at the company.

**Real time** - the processing of instructions on an individual basis at the time they are received rather than at some later time.

**Receiver** – Organization that receives funds and/or remittance information.

**Remittance Information** - Account Receivable information required by the biller to effectively post customer bill payments.

**Returns** – Any entry returned to the sender by the receiver that cannot be processed, or has some network specific reason.

**Reversals** – A debit reversing an entry previously initiated.

**Seller** – A biller or vendor. An entity providing product or services.

**Seller Direct** - EIPP model connecting one seller to many buyers. Buyers connect to the seller’s site to view invoices.

**Settlement** - The process by which buyer and sellers or issuers and acquirers exchange financial data and value resulting from sales transactions.

**SSL - Secured Socket Layer** - A security protocol to enable encrypted, authenticated communications across the Internet.

**SWIFT** - The Society for Worldwide Interbank Financial Telecommunication is A bank-owned international financial messaging service.

**Transit Routing Number** – Same as ABA Transit Routing Number

**Travel & Entertainment Card (“T&E”)** – Same as Corporate Card.

**Three-way matching** - Accounting control procedure matching purchase order, shipping or receiving documents, and invoice before payment is authorized.

**Uniform Commercial Code (UCC) Article 3,4, 4A** - The body of law governing commercial transactions in the United States

**UN/EDIFACT** - The United Nation’s body that sets and administers international standards for Electronic Data Interchange usage.

**Value Added Networks (VANs)** - Independent 3<sup>rd</sup> party that process and/or translates electronic remittance files

**Visa ePay** – Electronic payment network.

**XML - Extensible Markup Language** - Interactive database Internet language.



## Appendix: Comparison of B2B Payment Alternatives - Summary Matrices

### 1. B2B Option Overview

	ACH			Alternative Electronic Networks		Credit Cards	Traditional	
	CCD	CCD+	CTX	Mastercard RPPS	Visa ePay	(P-Card, T&E, Business Cards)	Check	Wire
Description	ACH corporate payment	ACH corporate payment	ACH corporate payment	Electronic bill payment & presentment network	Electronic payment network	A payment mechanism used to provide credit to the Buyer by a financial institution.	A negotiable paper instrument payable upon demand and used to transfer funds from the payer to the payee.	Same day transfer of guaranteed funds through the Federal Reserve System.
Participants	<ul style="list-style-type: none"> <li>• Originator</li> <li>• ODFI</li> <li>• ACH Operator</li> <li>• RDFI</li> <li>• Receiver</li> </ul>	<ul style="list-style-type: none"> <li>• Originator</li> <li>• ODFI</li> <li>• ACH Operator</li> <li>• RDFI</li> <li>• Receiver</li> </ul>	<ul style="list-style-type: none"> <li>• Originator</li> <li>• ODFI</li> <li>• ACH Operator</li> <li>• RDFI</li> <li>• Receiver</li> </ul>	<ul style="list-style-type: none"> <li>• Buyer</li> <li>• Buyer's Settlement Bank/Sponsor or Bank</li> <li>• Receiver</li> <li>• Seller</li> <li>• MasterCard RPPS</li> <li>• MasterCard RPPS Settlement Bank</li> </ul>	<ul style="list-style-type: none"> <li>• Buyer</li> <li>• Buyer's Financial Institution</li> <li>• Receiver/Seller's Financial Institution</li> <li>• Seller</li> <li>• Visa ePay Payment Network</li> <li>• Visa ePay Settlement Bank</li> </ul>	<ul style="list-style-type: none"> <li>• Buyer</li> <li>• Seller</li> <li>• Card Issuer</li> <li>• Merchant Acquirer</li> <li>• Merchant Processor</li> <li>• Credit Gateway</li> </ul>	<ul style="list-style-type: none"> <li>• Payer</li> <li>• Drawee Bank</li> <li>• Payee</li> <li>• Payee Bank</li> <li>• Clearing Channel</li> </ul>	<ul style="list-style-type: none"> <li>• Sender</li> <li>• Sender's Bank</li> <li>• Federal Reserve</li> <li>• Receiver's Bank</li> <li>• Receiver</li> </ul>
Type of transaction	Debit/Credit	Debit/Credit	Debit/Credit	Credit	Credit	Credit	Debit	Credit
Payment for single and/or multiple invoice transactions	Single	Both	Both	Single	Single	Both	Both	Both
FI/3 <sup>rd</sup> party relationship required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Governing body(ies)	NACHA	NACHA	NACHA	MasterCard International	Visa	<ul style="list-style-type: none"> <li>• Credit Card</li> <li>• Associations</li> <li>• Independent Card Issuers</li> </ul>	Federal Reserve	Federal Reserve

## 2. Process Flow – Buyer Initiated Payment (*Identifies Party Responsible for Flow*)

	ACH			Alternative Electronic Networks		Credit Cards	Traditional	
	CCD	CCD+	CTX	Mastercard RPPS	Visa ePay	(P-Card, T&E, Business Cards)	Check	Wire
Payment initiation	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
Settlement	ODFI (Buyer's Bank)	ODFI (Buyer's Bank)	ODFI (Buyer's Bank)	MasterCard RPPS Settlement Bank	Visa ePay Settlement Bank	Card Issuer or Merchant Processor	Drawee Bank (Buyer's Bank)	Receiver's Bank (Seller's Bank)
Remittance	NA	RDFI (Seller's Bank)	RDFI (Seller's Bank)	MasterCard RPPS	Visa ePay	Card Issuer	Buyer	Buyer's Bank
Funds transfer	ODFI (Buyer's Bank)	ODFI (Buyer's Bank)	ODFI (Buyer's Bank)	MasterCard RPPS Settlement Bank	Visa ePay Settlement Bank	Card Issuer	Buyer	Buyer's Bank
Settlement time	1-2 days	1-2 days	1-2 days	0-1 day	0-1 day	Varies	1-5 days	0 days

## 3. Process Flow – Seller Initiated Payment (*Identifies Party Responsible for Flow*)

	ACH			Alternative Electronic Networks		Credit Cards	Traditional	
	CCD	CCD+	CTX	Mastercard RPPS	Visa ePay	(P-Card, T&E, Business Cards)	Check	Wire
Payment initiation	Seller	Seller	Seller	Seller to initiate returns	Seller to initiate returns	Seller	NA	NA
Settlement	ODFI (Seller's Bank)	ODFI (Seller's Bank)	ODFI (Seller's Bank)	NA	NA	Card Issuer or Merchant Processor	NA	NA
Remittance	NA	Not Typical – RDFI (Buyer's Bank)	Not Typical – RDFI (Buyer's Bank)	NA	NA	Card Issuer	NA	NA
Funds transfer	RDFI (Seller's Bank)	RDFI (Seller's Bank)	RDFI (Seller's Bank)	NA	NA	Card Issuer	NA	NA
Settlement time	1-2 days	1-2 days	1-2 days	NA	NA	Varies	NA	NA

#### 4. Functional Differentiators

	ACH			Alternative Electronic Networks		Credit Cards	Traditional	
	CCD	CCD+	CTX	Mastercard RPPS	Visa ePay	(P-Card, T&E, Business Cards)	Check	Wire
<b>1. Collectability</b>								
- Guaranteed funds?	No	No	No	Yes – as an option	Yes	Yes – depending upon card brand	No	Yes
- Reversals allowed?	Yes	Yes	Yes	Yes	No	Yes	No	No
- Payment returns allowed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Only for incorrect account information.
<b>2. Remittance Capability</b>								
- Can remittance be sent with payment?	No	Yes	Yes	No	No	No	Yes	Yes
- Who creates remittance data?	NA	Buyer	Buyer	Buyer	Buyer	Merchant Acquirer	Buyer	Buyer
- File format limitation	NA	Yes	Yes	Yes	Yes	Yes	No	Yes
- Flexibility to input content	NA	No	No	Yes	Yes	No	Yes	Yes
- Consistent method of remittance delivery?	NA	Yes	Yes	Yes	Yes	Yes	No	No
<b>3. Processing Issues</b>								
- System available 24/7	No	No	No	Yes	Yes	Yes	Yes	No
- Batch/ real time	Batch	Batch	Batch	Batch	Batch	Real Time Authorization; Batch Settlement	Batch	Real Time
- Online authoriz.	No	No	No	No	No	Yes	NA	Yes
- Blocks and limits allowed	No	No	No	Yes	Yes	Yes	Yes	No
- Payment dispute mechanism?	No	No	No	Yes	Yes	Yes	Yes	No

#### 4. Functional Differentiators (continued)

	ACH			Alternative Electronic Networks		Credit Cards	Traditional	
	CCD	CCD+	CTX	Mastercard RPPS	Visa ePay	(P-Card, T&E, Business Cards)	Check	Wire
<b>4. Security</b>								
- Transaction auditability	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
- Authent.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
- Encryption	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes
- Non repudiation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
- Secured server	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
- Employee access limits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>5. Privacy</b>								
- Privacy policy available	No	No	No	Yes	Yes	Yes	No	No
- Information disclosure to third parties	No	No	No	No	No	Yes	No	No
<b>6. Participant Directories</b>								
- Seller or other directory available?	No	No	No	Yes	Yes	No	No	Yes

## 5. Economic Analysis

	ACH			Alternative Electronic Networks		Credit Cards	Traditional	
	CCD	CCD+	CTX	Mastercard RPPS	Visa ePay	(P-Card, T&E, Business Cards)	Check	Wire
<b>1. Investment Costs (for buyer and/or seller)</b>								
- Hardware	No	No	No	No	No	Optional	No	No
- Software	Optional	Optional	Optional	Optional	Optional	Yes	No	No
- Other one-time start up costs	Yes	Yes	Yes	Yes	Yes	Yes	No	No
<b>2. Transaction Costs/Fees</b>								
- File transmission (if used)	Yes	Yes	Yes	No	No	No	No	Yes
- Payment initiation	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes
- Payment receipt	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes
- Remit. delivery	NA	Yes	Yes	No	No	NA	Potential	No
- Interchange	NA	NA	NA	NA	NA	Yes	NA	NA
- Participant fee (monthly, quarterly, annual, etc)	Yes	Yes	Yes	Yes	No	Yes	Yes	No
- Returns - chargebacks	Yes	Yes	Yes	No	No	Yes	Yes	NA