



JCharge™ White Paper

A company using an IBM iSeries (AS/400) has several methods from which to choose in taking credit card payments. Whether the payments are for retail, mail order, phone order, or Internet transactions, certain relationships must exist and questions must be answered before processing credit cards.

Merchant, Acquirer, Bank, Authorization Network

The company selling goods and/or services wishing to process credit card transactions is considered the **merchant**. The merchant must contact an **acquirer** (also known as an **acquiring processor**) or a bank (usually the bank where the merchant already has an account) and inform them that it wants to accept credit cards. The merchant then completes an application that includes financial information, expected transaction volumes and amounts, types of transactions, and which credit cards will be accepted. Most merchants accept Visa, MasterCard, Discover, American Express, and American Express Corporate Purchasing Cards.

Upon acceptance of the application, the acquirer determines the required services and agrees to purchase the credit card transactions from the merchant at specified discount rates. The merchant must have a deposit account at a bank (referred to as the **merchant bank**), into which the acquirer will deposit the funds from credit card transactions. The acquirer may or may not have a relationship with the merchant bank. The acquirer assigns a **merchant ID** to the merchant. If a merchant wants to process credit card transactions into multiple bank accounts (for different stores or divisions or to segregate Internet orders from retail sales), an additional merchant ID must be created for each account.

The merchant (through the acquirer) must choose an **authorization network** (also known as **service provider**). The acquirer may require the merchant to perform credit card processing through a particular authorization network, or may offer a list of authorization networks to choose from. Only a formally certified authorization network can access each of the issuing bank's computers to process credit card transactions. Over 100 authorization networks, such as VisaNet, Paymentech, MAPP, NaBANCO, NDC, CardNet, and American Express, service the United States.

Credit Card, Cardholder, Issuing Bank

A **credit card** is a piece of thin plastic measuring 3-3/8 inches by 2-1/8 inches. Each card contains the printed name of the issuing bank and the type of credit card, a security hologram, and the embossed cardholder name, 16-digit credit card number, and expiration date. On the back is a magnetic stripe that contains the card information and can be read by a magnetic stripe reader, also known as a card swipe. The **issuing bank** is the bank that made the credit decision to issue the card, sets the credit limit for the card, and maintains the credit card account and all the details related to the transactions associated with the card. The issuing bank authorizes or rejects each transaction presented to it through an authorization network. The **cardholder** is the party who applied for the card and is responsible for paying the credit card bill when it is sent by the issuing bank.

Retail, Mail Order, Internet

In the application to the acquirer, the merchant will state whether it operates in a retail and/or a mail order environment. **Retail** merchants normally see each customer face to face and will have the “card present” to be swiped through a card reader for all transactions. **Mail order** merchants will typically take an order over the phone, the Internet, or by an order form delivered by mail. The mail order merchant is set up as “card not present” and may be required by its bank to utilize “address verification” on all orders to reduce credit card fraud. Address verification has the merchant send 20 characters of address and a zip code to the authorization network where the address is compared to the address on file at the issuing bank. If they do not match or match fully or partially, a code is sent back with the authorization. Address verification cannot be done with an authorization device, such as a VeriFone or ZON.

Authorization, Settlement

To authorize a transaction, a connection is established between the merchant and the authorization network using a dial-up telephone line, dedicated leased line, frame relay, Virtual Private Network (VPN), or Secured Sockets Layer (SSL) Internet connection.

An **authorization** request is sent electronically by the merchant to the authorization network using one of the “Methods of Processing Transactions” shown below. Each request includes the card number, expiration date, and amount, and, based on the type of card or transaction, may include other data such as the CCV code, street address, zip code, sales tax amount, freight amount, and line items. For the merchant to be paid for the transaction, **settlement** must occur. The merchant will process the credit card transactions in either host mode or terminal mode.

In **host mode** (also called **host based processing**), the authorization network retains the authorization information for all credit card authorizations. All authorized transactions may be settled automatically each day at a predetermined time, or the merchant may be required to tell the authorization network that it wishes to settle each transaction or not. Host mode works ideally in the retail environment for “sale” transactions that are settled in an automatic fashion at the end of the business day.

In **terminal mode** (also called **terminal based processing**), the authorization network does not retain the authorization information for each transaction. The merchant must store the authorization information and re-send it with each transaction when it is ready to be settled. Typically, terminal based processing is used when the merchant will not immediately ship the goods or deliver the services. Therefore, the transaction will not be settled the same day it was authorized. Terminal mode is also used when the amount settled is expected to be different from the amount authorized. This occurs normally in the mail order environment when backorders and shipping charges affect the invoice amount. Whether host or terminal mode is used for authorization, the transactions must be settled. After settlement, the acquirer purchases the transactions from the merchant at a discount and electronically transfers funds into the merchant’s bank account in two to three days.

Transactions Types

The most common transaction types used in credit card processing are authorization/book, ship, sale, credit, authorization reversal, and settlement.

- An **authorization/book** request, if approved, will place a hold on the cardholder’s “open to buy,” meaning the cardholder’s credit line will have that amount reserved until the authorization has expired or until settlement has been performed. An approval number is returned indicating the authorization was successful. The merchant has a fixed number of days to settle the transaction before the authorization becomes stale and a new authorization must be obtained before settlement can occur. Many banks differ on the number of days an authorization is valid, however 7 days is the norm. A valid authorization code must be transmitted with the transaction during settlement or it will not be settled.
- A **credit** is a transaction that returns money to a cardholder. This transaction is used to give credit to the cardholder after a transaction has been settled and a debit has been made to the card. An example is a refund.
- A **sale** transaction is used to perform an authorization and set an automatic flag for settlement. This transaction is typically used in the retail environment where the merchant wants to process a single transaction in order to receive payment for goods or services already delivered by the merchant.

- A **ship** transaction settles a prior authorized transaction. The merchant can settle for any amount up to the total amount authorized. Depending upon whether the merchant ID was set up as mail order or retail, the merchant may be allowed to settle more than the amount authorized by some fixed percentage or amount. The merchant must check with the acquirer and authorization network to see if it is allowed any flexibility in this regard.
- An **authorization reversal** is used just before settlement is performed on a ship transaction where the amount to settle is less than the amount authorized. This transaction is typically used in a mail order environment where some of the items are on backorder and a partial shipment was made. The merchant wants to charge the customer only for the amount of merchandise actually shipped. If the merchant performs an authorization reversal to eliminate the extra amount on hold from the authorization, and then performs the settlement for the actual amount of the new authorization, the acquirer normally gives the merchant a better discount rate.
- A **settlement** is a batch transaction, in which all authorized transactions flagged for settlement are sent to the authorization network to be settled and the funds deposited into the merchant's bank account. Settlements are run in batch, normally unattended, during an end of day routine. Most merchants will automatically perform an update to General Ledger, once a settlement is performed. The General Ledger update posts the batch amount being deposited into the merchant's bank account.

Methods of Processing Transactions

Regardless of the method used, the merchant is required to send each transaction using a device or computer software that has been certified by the authorization network. The device or a computer modem will dial the authorization network, connect with the authorization network's computer, and pass the transaction to the authorization network. The authorization network passes the transaction to the appropriate issuing bank. The issuing bank will authorize or decline the transaction and pass it back to the authorization network. The authorization network passes it back to the merchant's device or computer.

An authorization request is usually performed within six seconds or less by most authorization networks. For users of the iSeries (AS/400), credit card transactions can be processed via the following methods:

1. The acquirer can supply for a fee a standalone device like a VeriFone or ZON terminal. This is a pinpad device used to enter a debit or credit transaction using a card swipe and/or a keypad. The device has no historical reporting capability and is limited in function. If the transaction is authorized, a 6-digit code is displayed on the device. This implementation requires the credit card information to be re-keyed into an iSeries (AS/400) application. This approach typically results in many keying errors, is very time consuming, and is a completely manual operation.

2. A device or PC running a software package (certified by the authorization network) can be used to perform credit card processing. The iSeries (AS/400) application software passes to the device or PC the necessary credit card information and waits on the appropriate response. This can be done in real-time or in batch mode. The chance for failure of the device or PC in the middle is relatively high when compared to the reliability of the iSeries (AS/400).
3. The existing iSeries (AS/400) application can pass credit card transactions to native iSeries (AS/400) middleware (certified by the authorization network) that processes the transactions directly with the authorization network in a real-time environment, without any PC or third-party proprietary hardware in the middle. This solution allows the merchant to take full advantage of the iSeries (AS/400) application software, database, communication ports, and the stability, reliability, and scalability the iSeries (AS/400) is known for. This also means that all available transactions offered by each unique authorization network can be processed and can qualify for the lowest applicable discount rate.

Interfacing Credit Card to Existing iSeries (AS/400) Applications

iSeries (AS/400) application software for Order Entry, Point-of-Sale, Enterprise Resource Planning, e-Commerce, or other applications typically does not include the ability to process credit card transactions. Interfacing native iSeries (AS/400) credit card middleware with packaged or custom written iSeries (AS/400) applications can be done easily. The most common programs or modules that get interfaced to credit card processing are Order Entry, Invoicing, General Ledger, Backorder, Accounts Receivable, and Inquiries. Here are some examples:

- The **Order Entry** program must display additional credit card fields once the total amount of the order has been calculated. The user keys in the credit card number, expiration date, and any other required data, then presses “Enter” to process the transaction. The middleware performs validations on the credit card number and expiration date, dials the authorization network if a connection is not currently open, sends the request for authorization for the total amount of the order, and waits on a response.

Upon receiving a response (approx. 4 to 20 seconds, depending on the authorization network) a window displays the authorization number and acceptance message, or a denial message from the authorization network. The user either presses “Enter” to complete the accepted order or asks the customer for another credit card, or obtains voice authorization in some circumstances. If the order cannot receive a valid credit card authorization, it may be placed on “credit card hold,” and tried again later automatically, or cancelled.

- The **Invoicing** program updates the original authorization record with the actual amount to be settled. The authorization record is flagged for settlement the next time the batch settlement program is run. The settlement program is run on an automated basis as specified by the merchant. Each settlement results in a deposit into the merchant's bank account in two to three days.
- The **General Ledger** program creates G/L entries for all credit card transactions settled based on the merchant's requirements.

This eliminates any manual posting, and is performed only after a successful settlement has been performed by the middleware.

- The **Backorder** program creates an authorization record for each backorder generated. If an authorization cannot be obtained for the entire backorder amount, the order is placed on credit card hold. The backorder release program should automatically try to process authorizations for any backorder currently on credit card hold to eliminate the need for any manual procedure.
- The **Accounts Receivable** program allows payment of an open Accounts Receivable balance by credit card. This allows customers to pay their existing balance through an automatic process of collecting the credit card number, receiving an authorization, and flagging the transaction for settlement.
- **Historical Inquiries** are commonly used when chargebacks are encountered. Selected personnel within a company have access a company have access to search all credit card history by order number, invoice number, credit card number, or cardholder name. This is a valuable resource if a customer disputes a charge several months after settlement. The middleware maintains a complete history for researching and winning disputed claims.

Check Processing

Check processing, such as verification, guarantee, or truncation, works in a similar fashion to credit card processing. The difference is in the information passed to an authorization network such as TeleCheck. Otherwise, the process is almost the same as with a credit card transaction.

VeriFone's JCharge

JCharge processes real-time credit card and check transactions for iSeries (AS/400) applications like point-of-sale, order entry, and web-based e-commerce. JCharge supports merchant transactions through all major authorization networks via a dial-up telephone line, dedicated leased line, frame relay, Virtual Private Network (VPN), or Secured Sockets Layer (SSL) Internet connection.



iSeries (AS/400) application software from companies like J.D. Edwards, daly.commerce, Intentia, or VAI, requires middleware to process credit card and check transactions. Only software and devices that are certified by an authorization network, such as VisaNet, Paymentech, MAPP, NaBANCO, NDC, CardNet, and American Express, are permitted to communicate electronically with that authorization network.

Many iSeries (AS/400) application packages have been designed to interface with VeriFone's software. JCharge eliminates all third-party hardware and software in the middle, providing a fully native iSeries (AS/400) system for authorization and settlement. JCharge is certified directly by all supported authorization networks and VeriFone performs ongoing certification and offers software updates. This means that all available transactions offered by each unique authorization network can be processed and can qualify for the lowest applicable discount rate.

Card present (track data), address verification, check truncation, and purchasing cards are supported. All setup and configuration settings reside within configuration files native on the iSeries (AS/400). The Java software along with all configuration settings can be updated by VeriFone through an IBM supported PPP connection and the existing V.24 port. The automated update routine allows seamless changes to the configuration and updates to all Java programs without requiring an interruption of service or scheduled maintenance by MIS personnel. VeriFone configures and tests each implementation before releasing the configuration file to a customer. Ongoing diagnostic information can be sent electronically by a customer to VeriFone to ensure the configurations are optimized for maximum performance, and for assistance in any problem determination.

JCharge is scalable from a single communication line, single authorization network, and single merchant ID, to multiple lines and authorization networks and an unlimited number of merchant ID's. Additional connections can be licensed as needed to ensure optimal performance and response time, with unlimited expandability. Simultaneous authorization and settlement capability is also available. JCharge is a series of software modules that can be configured depending upon specific requirements. In addition, VeriFone continues to market and support a full line of iSeries (AS/400) credit card middleware that does not require Java.

VeriFone Annual Support & Update Service provides 24 hour, 365-day telephone support.