Understanding the Layers of the Electronic Payment Processing Ecosystem

Section 1
Adam Hensleigh, ETA CPP

IntelliPay®

IntelliPay

For almost 20 years, we have provided payment processing and payment gateway services to thousands of government agencies, uniquely qualifying us to help agencies optimize payments.

Our goals for this guide are simple:
- Help you understand the layers, players and costs involved in the credit card system
- Show you service fee structures can be deceiving

So, let's dive right in.

Unwrapping the Layers of Credit Card Processing

Credit card processing is generally safe and very efficient. However, behind the scenes are many layers and players that make the system work.

Over time, as the types of payment options and security requirements have expanded, more layers and players have been added to the process. Digital wallets, address verification, and advanced fraud detection are examples of the added complexity.

What are the layers and who are the players?
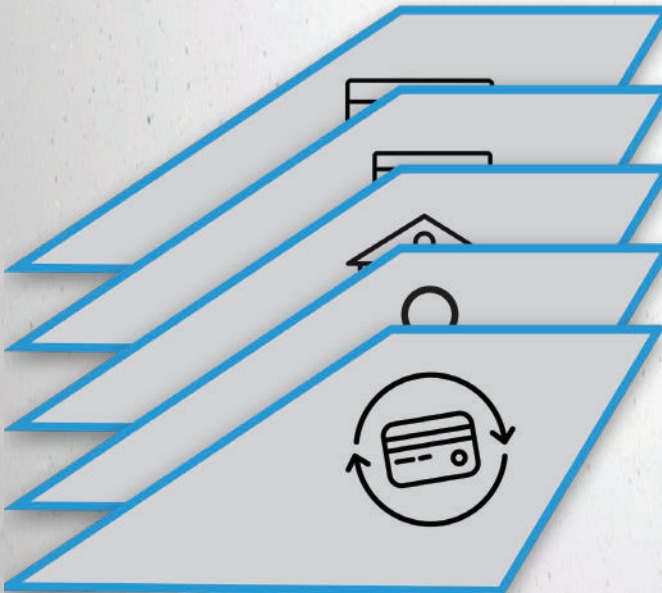

For ease of discussion, we have simplified the layers of credit card processing into the following five layers.

Layer 1- Gateways

Layer 2- Processors

Layer 3- Settlement Banks

Layer 4 - Networks

Layer 5- Card Brand Database

On the next page, we will explore each of theses layers in depth along with the major players involved in each layer.

What are the layers and who are the players?

In the *"How Do They Fit"* diagram below, we have organized the major layers in the order that a payment is processed.


How Do They Fit?
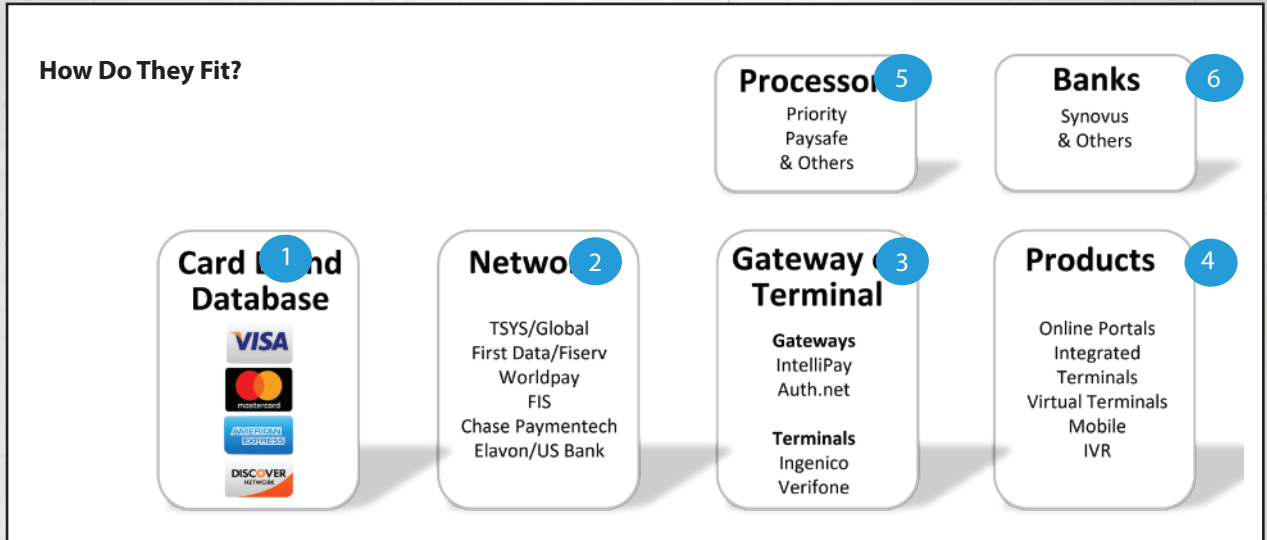
Layer	Description
1	**Card Brand Databases:** Visa, Mastercard, etc., have databases of issued cards and other information. The databases verify the card and issue an authorization (approval) or decline for various reasons.
2	**Networks:** TSYS/Global, First Data/Fiserv, WorldPay, and FIS are four examples of companies that have built secure networks that access the card brand databases to verify a card and to receive authorization. All card transactions must use one of the available networks.
3	**Gateways or Terminals:** The gateways (IntelliPay, Auth.net) or terminals (Ingenico, Verifone, etc., credit card machines) connect to networks so merchants can receive approvals.
4	**Products:** Examples of products include online portals, integrated and virtual terminals, IVRs, etc., built by third parties and used by customers to connect to a gateway, a network, and the card brand databases.
5	**Processors:** Companies like Priority and Paysafe create merchant credit card accounts (merchant accounts); they assign the merchant ID or MID, do the underwriting, maintain risk, provide fraud protection, and service merchant accounts.
6	**Banks:** Banks, also known as settlement banks (Synovus), are the organizations that move the money once the transaction has been authorized.

How Credit and Debt Card Payments are Processed

We will walk through an example of how a payment is processed for a city using the *"How It Works"* diagram below. We'll start with "Customer" in the lower right-hand corner and follow the green arrows through the process before we move on to the blue arrows on the next page.
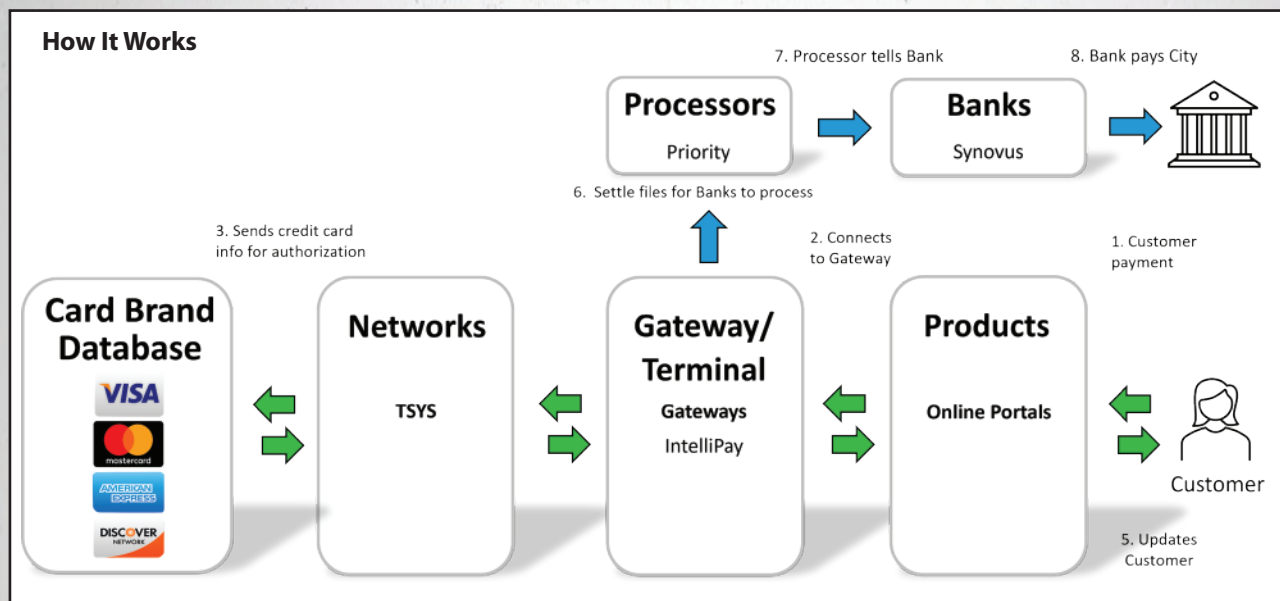

Green Arrows (What happens when a customer makes a payment through an Online Portal)

1. Customer payment - In this example, the customer uses an online portal to enter their credit or debit card information, which is connected to a gateway.

2. Connects to Gateway - The online portal connects to the IntelliPay gateway, which could be any gateway, and passes the credit card information onto the network.

3. Sends credit card information for authorization - The network connects to the card brand database, which is searched to verify the credit card is active and to check if the credit available on the card is more than the purchase amount, among other checks.

4. Sends authorization or declines - The card brand database sends either an authorization that it is okay to accept payment using the credit card or declines this payment to the networks.

5. Updates the customer - The merchant or business that accepts the card or the terminal lets the the customer know if their payment has been authorized (approved) or declined.

Section 2: How Credit and Debit Card Payments are Processed continued

Moving on to the blue arrows using the diagram below, you will see that I have expanded the upper right-hand corner of the How it Works diagram on the previous page to make it easier to see how you receive funds.
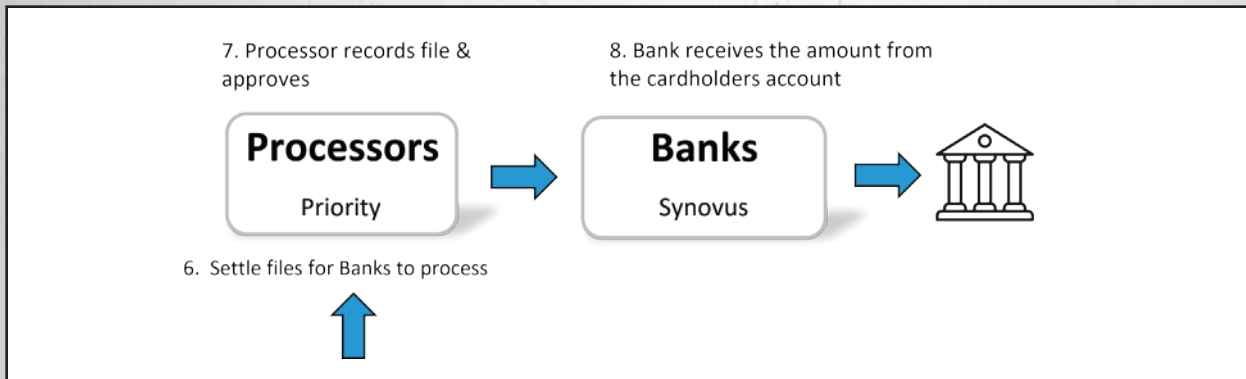
Blue Arrows (How funds get into your account)

6. Settle file for banks to process - The IntelliPay gateway lets the processor (Priority) know the payment has been approved.

7. Processor tells the banks - The processor (Priority) tells the settlement bank (Synovus) the payment has been approved.

8. The bank pays the city - The settlement bank (Synovus) deposits the amount of the customer's payment into the city's account.

Summary
Card processing has many layers, and it is impossible to unwrap just one. Every layer is interconnected to the next, and all are necessary to securely and efficiently process credit and debit card payments.
We discussed the roles of the card brand databases, networks, gateways, and products and the roles each plays in the approval process. We learned that each player adds value and cost to the process, but complexity often complicates resolution when a transaction works out differently than planned.

If you have further questions or would like an evaluation of your current situation, please email me at adam.hensleigh@intellipay.com.