EMV Card Plan & Worksheet

Ready To Begin Your EMV Journey?

When you're ready to begin your EMV card journey, you'll need to make a series of specific decisions regarding your program. If you're new to EMV—and maybe even if you aren't—you'll find a lot of information to master and many details to organize. Use this worksheet to help you:

• Understand the technology and terminology

• Make decisions

• Plan next steps

• Document program details as you go

To get you started, here is a quick introduction to the anatomy of an EMV card. The worksheet on EMV issuance follows, along with "Options Explained," an item by item guide to worksheet questions, with CO-OP recommendations where appropriate.

Issuing EMV cards across your membership is likely to be a lengthy and complex process. This worksheet provides a basic map with which to begin.

EMV Anatomy

The inner workings of an EMV card may be intricate, but for planning purposes it's helpful to keep things simple. Here are the very basics you need to start mapping out your EMV card plans using the worksheet that follows:

At the core of an EMV-enabled card is an **EMV chip**. Think of an EMV chip as a personal computer. It's the "hardware" of the EMV card.

Loaded onto the chip will be an **operating system**. Just as your home computer system needs an operating system like Windows, your EMV chip needs an operating system in order to run applications. There are several versions of operating systems for chips, and we'll go into greater detail about them in the next section.

The **software** loaded onto the chip consists of apps that provide EMV functionality. Next, your chip needs **Application IDs, or AIDs**. The AIDs will provide the EMV reader with the information it needs to properly format communications with the applications on the chip, assist in determining transaction routing and communicate with the application on the chip. You may have more than one AID if network rules allow it.

The national **networks**—Visa®, MasterCard®, American Express®, and Discover®—all have current applications and global AIDs. Most of the debit networks—such as CO-OP, Star, etc.—have licensed common AIDs from Visa and MasterCard that enable routing to any network licensed to use that AID, this includes CO-OP. Credit cards only carry the global AID owned by the national network on the front of the card.

Worksheet: Issuing EMV

Use this interactive worksheet to map out and document your EMV plan. Once the worksheet is completed, you'll have a short list of vendors and details you will need to set up and execute your EMV card rollout.

Need additional help? Check out the "Options Explained" section that follows this worksheet.

Network Participation
Which networks will participate on your EMV card?

_____

_____

Card Manufacturer/Personalization
Who will be handling the card manufacturing and personalization?

_____

Instant-Issue Cards
If you provide instant-issue cards to your members, who is your vendor?

_____

Chips
What size chip will you use?

_____

Operating Systems
Which operating system will you use on the chip?

_____

Cardholder Verification Methods (CVM)
Below are the available options for cardholder verification with CO-OP. Please note that a fourth option, offline PIN, is not widely supported in the U.S. today, particularly for debit, due to the complexity of the infrastructure needed to support it.

CVM Method

Credit: Global AID Only (Common AID not allowed by Visa or Mastercard)	**Debit:** Global AID and Common AID Required
Choice of:	*Visa/MC Global AID*
1. Signature Preferring, Online PIN, no CVM	Choice of:
2. Online PIN Preferring, Signature, no CVM	1. Signature Preferring, Online PIN, no CVM
	2. Online PIN Preferring, Signature, no CVM
	Common AID (no choice in CVM)
	1. Online PIN, no CVM

Core Data Processor

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Options Explained

This section takes you through the Issuing EMV Worksheet item by item—defining terms, outlining options and offering CO-OP recommendations.

Network Participation

List all networks in which you participate. These may include MasterCard®, Visa®, CO-OP, Pulse®, STAR® or others.

Card Manufacturer/ Personalization

Who will manufacture your EMV-enabled plastics cards, and if different, who is your plastics embosser and encoder?

Instant-Issue Cards

Many credit unions offer instant-issue cards at their branches as a convenience to members. In order to continue supporting this service using EMV, you may need upgrades, new machines or updated modules. Check with the manufacturer of your instant issuance devices for more information.

Chips

There are many chip manufacturers producing EMV chips of different types, formats and memory sizes. In order to know which chip to include in your card, you'll need to make a few decisions:

- CO-OP supports Contact EMV chips for your cards and will add contactless support in the near future.

- How much memory do you need? The number of applications to be stored on the chip along with the functionality will determine the memory size of the chip. CO-OP recommends that chip size for contact only EMV cards be at least 8k.

Chip Expiration Dates

Chip card plastic stock is fundamentally different than mag-stripe cards. The chips embedded into EMV plastics have an expiration date. Once the expiration date has been reached, the expired chips will still work on existing cards but you would not be able to issue new cards with the expired chip. Typically chip expiration dates are 3 to 4 years into the future. CO-OP recommends that you order only enough cards for a 12-18 month supply to prevent having to scrap cards with expired chips.

Operating Systems

The three most common operating systems are: Native, Multos and Java. Native operating systems are unique (or "native") to the chip manufacturer, and are not necessarily dependent on industry standards. Multos and Java operating systems are both based on industry standards. How do you decide? Pros and cons associated with each operating system should be weighed against availability and costs.

All things being equal, CO-OP recommends that Multos be considered as your first choice. Multos offers multi-sourcing from any vendor, and uses standards monitored by an independent organization.

Java is a good second choice. It too uses standards monitored by an independent organization but has at times required more frequent certification and testing.

CO-OP does not recommend using a native operating system as this locks you into a relationship with a particular card manufacturer. Native systems often require expensive script development, testing and certification as well.

Options Explained
continued...

Applications

Although you do **not** have a choice on which payment application or AID is used on a branded card, it is good to understand what they are. An application is the payment software installed on the chip that runs the EMV authentication process. The application ID, or AID, represents the network(s) available on the chip card. The applications for your card will depend on the networks you participate with. If your card carries the Visa logo, then you will use the Visa VSCD application. If your card is MasterCard, then you will use the MChip Application.

AIDs

AIDs tell the EMV reader (POS device or ATM) which applications and networks are available for authorization. They also tell those devices which cardholder verification methods the issuer prefers. The types of AIDs included on your chip will depend on the networks in which you participate, as well as the applications embedded on the chip.

AIDs can be specific to a network or common among different networks. Networks must participate in U.S. Common AID in order to have debit transactions routed to them. Visa debit cards require the Visa AID and the Visa U.S. Common AID. MasterCard Debit cards require the MasterCard AID and the Maestro AID.

Check with all of the networks you participate with about their participation in Common AID. CO-OP is licensed to use the Visa U.S. Common AID and the Maestro AID; CO-OP debit cards are required to have the Common AIDs personalized on an EMV card.

Online and Offline Authorization

In the U.S. only online authorization is currently available. Offline authorization is not supported. Moreover, Visa prohibits offline authorization on the U.S. Common AID.

Cardholder Verification Methods (CVM)

Cardholder verification methods, or CVM, let the issuer prioritize which verification methods they support, as well as their order of preference. A terminal will also have a CVM preference, but the card determines which methods are available for the transaction. The terminal and card must have at least one matching CVM for the transaction to proceed.

There are four types of CVM:

- **Online PIN**, in which the encrypted PIN is verified online by the issuer (host).

- **Offline PIN**, in which the PIN is verified offline by the chip on the card. Offline PIN is not supported on debit cards in the U.S. today, due to the complexity of the infrastructure needed to support it.

- **Signature verification**, which compares the cardholder signature to the signature on the card.

- **No CVM**, which typically includes terminals used by quick serve, low dollar, swipe and go merchants.

Most U.S. credit and debit cards will support online PIN, signature, and no CVM, with offline PIN transactions remaining "offline" to debit issuers for the moment. Issuers must determine their order of preference for the CVM used on transactions. Contact only EMV cards without offline PIN can choose between two CVMs only—Signature preferring or PIN preferring. See the worksheet for options available. When deciding your order of preference, consider interchange, member preference and merchant availability.

Options Explained
continued...

Core Processing

EMV will require changes to your batch maintenance and ISO file to support new quarterly reporting requirements and to conform to industry standards on the correct passing of EMV data throughout the payments system.

The new CO-OP ISOI 8583 Specification has been published, and this format is in use by other networks in the industry. EMV data will be transmitted in Data Element (DE) 55 and Additional Amounts will move to DE46.

In order to gather the statistics required for quarterly reporting, you will need to include a new flag in the batch maintenance file. Specifications for both APBATCH2 and the new APBATCH4 have been updated and published. Credit unions will need to update their batch maintenance file to include the EMV card categories either by updating the APBATCH2 or changing to the APBATCH4 format. Credit unions not currently including Card-Type in the batch maintenance file will need to contact their core vendor to enhance the file.

Credit unions issuing EMV cards will be required to migrate to the CO-OP ISOI 8583 Specification and update their batch file prior to issuing EMV cards to their membership. Working to update the new files can be done before or concurrently with the EMV implementation project and need not delay EMV certification.

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