



# NXP® JCOP® Java Card™ OS for SmartMX® 3 Secure Microcontrollers

## JCOP 4 EMV®: Advanced Java Card OS for Payment and Transit

JCOP 4 EMV is a field-proven, vendor-independent OS for chip-card applications. It provides multi-application support for dual-interface, contactless and contact formats, and delivers benchmark transaction performance for EMV payment whether on card or other form factors.

### KEY FEATURES

- ▶ Java Card v3.0.5 Classic
- ▶ GlobalPlatform®
  - GP v2.2 Mapping Guidelines configuration v1.0.1
  - GP v2.3 Financial Configuration v1.0 (config 2)
  - GP v2.3 Common Implementation Configuration v2.0
  - Common Criteria EAL 5+ certified (supports 3DES, RSA, AES)
- ▶ ISO 7816-3 T=0, T=1 (223.2 kbps)
- ▶ ISO 14443 (up to 848 kbps)
- ▶ Dual-interface support
- ▶ Available Flash memory (up to 200 KB)
- ▶ Highly flexible feature and Applet selection for Flash preloading for customer-specific products
- ▶ MIFARE Plus®/MIFARE Classic® EV1 or MIFARE® DESFire® EV2 implementations
- ▶ Additional features via OS Addon in JCOP 4 EMV
- ▶ Support (optional)
  - Korean SEED support (optional)
  - Match on Card (optional)
- ▶ Additional features via OS Addon in JCOP 4 SecID
  - Global Platform ID Configuration
  - RSA Key Generation
  - FIPS 140-2

### KEY BENEFITS

- ▶ Platform supports convergence of payment, transport and e-government, increasing flexibility while reducing cost and complexity
- ▶ Easy implementation with full range of certified applets available for loading to FLASH, improving time-to market, offering highest customization
- ▶ Optimized for high performance OS initialization and personalization for excellent machine utilization and throughput
- ▶ JCOP high transaction speed – from border control gates to contactless payment terminals, and automatic fare- collection schemes – enabling a differentiated customer experience.
- ▶ Trusted Java Card OS platform based on current and future NXP secure ICs with highest certified security level, ensuring reliable project deployment

### APPLICATIONS

- ▶ Approved VISA®, MasterCard®, Discover/Diners Club® and American Express® applications available
- ▶ UPI® (Union Pay International), qSPARC 2.0 (India) and NSICCS (Indonesia) applications available
- ▶ JCB available in Q2 2020
- ▶ Additional features in JCOP 4 SecID:
  - National eID
  - Electronic passport
  - Electronic health card
  - Logical and physical access
  - Digital signature card
  - Micro payment
  - Public transport



Common Criteria EAL 6+ certified and EMVCo approved, JCOP is optimized for use with NXP's SmartMX3 family, a line of secure microcontrollers with hardware accelerators. JCOP supports every SmartMX3 crypto algorithm and delivers high transaction performance and personalization time.

Customers can create their own single or multiple Java Card applets with JCOP, or get a head start on design by using NXP's available applets. Additionally, NXP can support customer designed Applets loaded to Flash memory.

The NXP offering for JCOP includes cost-effective solutions based on advanced CMOS040 technologies.

## PRODUCT FEATURES

JCOP 4 EMV P71	
<b>Specifications and features</b>	
Java Card version	3.0.5 Classic
GlobalPlatform	2.3
SCP	SCP01 / 02 / 03
Delegated management	Yes
Secure box	Yes
<b>Available memory and technology</b>	
FLASH (KByte) (available before loading MIFARE, Applets, OS Addons)	up to 200kB
CMOS technology	CMOS040
<b>MIFARE Options</b>	
MIFARE DESFire EV2	optional
MIFARE Plus EV1	optional
<b>Payment</b>	
Transaction time (M/Chip reference Transaction @ M/Chip Advance)	< 200 ms
<b>Cryptography</b>	
DES/TDES [bit]	56/112/168
AES [bit]	256
RSA [bit]	2048 (4096)
ECC GF(p) [bit]	Available on SecID configuration
SHA	SHA-1/2
<b>Certifications and approvals</b>	
EMVCo hardware approval	Yes
EMVCo platform approval	Yes
VISA approvals	Yes
MasterCard PIC (TAS & CAST)	Yes
Discover/Diners Club	Yes
American Express	Yes
JCB	Yes
EMVCo CPA	Yes
Common Criteria (VAN5) for OS	EAL 6+

## APPLETS

Name	Specification & features
VISA	VSDC2.9, VSDC2.8.1G1
MasterCard PayPass M/Chip 4	PayPass M/Chip 4 v1.3.1 (+M/Chip 4 Select v1.1b) with support of MMAR & Transactions acc. PayPass MagStripe Specification v3.1
MasterCard M/Chip Advance	M/Chip Advance v1.2.3 Specification including Data Storage and MMAR
Discover/Diners Club	D-PAS 1.1
American Express	AEIPS 4.4.2 / Expresspay 4.0.2
JCB	J/Smart v3.2
UPI	UICS Application
Local Scheme Applets	qSPARC 2.0 (India), NSICCS (ASPI Indonesia)