

Java Card™ OS for NXP's
 SmartMX™ family of secure
 microcontrollers



JCOP: advanced Java Card OS for payment, transit & e-government

NXP's unique, field-proven solution is optimized for performance and security. The portfolio includes the most common approved applets and makes it easy to develop custom applets.

Key features

- ▶ Java Card v2.2.1 / v3.0.1 Classic
- ▶ GlobalPlatform v2.1.1 / GP2.2
- ▶ Common Criteria EAL 5+ certified
- ▶ Supports 3DES, AES, RSA, ECC
- ▶ ISO 7816-3 T=0, T=1 (223.2 kbps)
- ▶ ISO 14443 (up to 848 kbps)
- ▶ Dual-interface support
- ▶ Available EEPROM 12 - 144 KB
- ▶ Custom ROM masking for customer-specific products
- ▶ MIFARE™ Classic and MIFARE DESFire™ implementations available

Key applications

- ▶ National eID
- ▶ Electronic passport
- ▶ Electronic health card
- ▶ Digital signature card
- ▶ eID convergence with Payment
- ▶ Approved VISA® and MasterCard®
- ▶ Local banking
- ▶ Micro payment
- ▶ Public transport
- ▶ Logical and physical access
- ▶ Mobile transactions

Customer benefits

- ▶ Unique platform that supports the convergence of e-government, banking, and transport applications, reducing cost of development
- ▶ Easy implementation with a full range of certified applets provided in ROM, improving time to market
- ▶ Best-in-class transaction speed — from border control gates to contactless payment terminals, as well as for automatic fare collection schemes — enabling a differentiated customer experience
- ▶ Optimized execution performance based on CMOS14 and future NXP hardware platforms, ensuring highest levels of security

JCOP (Java Card Operating System) is the ideal solution for customers seeking a secure, field-proven, vendor-independent OS for their smart card applications. It provides multi-application support for contact, contactless, and dual-interface applications, and delivers benchmark transaction performance for smart cards and security documents.

Common Criteria EAL 5+ certified and EMVCo approved, JCOP is optimized for NXP's SmartMX family of secure microcontrollers to deliver best-in-class 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 approved applets. JCOP meets the highest encryption and security standards. Hardware accelerators for every crypto algorithm deliver

best-in-class execution performance, even in high security multi-application configurations.

tools. It's backed by NXP's world-class application support, which provides access to expert design-in assistance and JCOP customer training.

Custom ROM masking for storing applets in ROM is available to save EEPROM space.

NXP's JCOP support package includes

documentation, samples, and JCOP development

Cost-effective solutions based on advanced CMOS14 technology, and, in future, CMOS90

Product features	JCOP v2.4.1 R3	JCOP v2.4.2 R3
Specifications & features		
Java Card version	2.2.2	3.0.1 Classic
GlobalPlatform	2.1.1	2.2
SCP	SCP01 / 02	SCP01 / 02 / 03
Delegated management	-	Yes
Secure box	-	Yes
Available memory size and technology		
EEPROM (KByte)	12 - 128	80-144
CMOS technology	CMOS14	CMOS14
MIFARE options		
MIFARE™ Classic 1K / 4K / no MIFARE™	Yes / Yes / Yes	
MIFARE Flex™ with MIFARE™ Classic up to 4K	-	Yes
MIFARE DESFire™ EV1 up to 8K	-	Yes
eGovernment and banking performance		
BAC (20 kByte read)	< 1,2 s	<1.2 s
EAC (36 kByte read)	< 5 s	<5 s
MasterCard PayPass M/Chip4 (performance comparison)	< 390 ms	< 390 ms
Cryptography		
DES/TDES [bit]	56/112/168	56/112/168
AES [bit]	256	256
RSA [bit]	2048	2048
ECC GF(p) [bit]	320	320
Point Addition (PACE)	Yes	Yes
SHA	SHA-1/2	SHA-1/2
Certifications and approvals		
EMVCo hardware approval	Yes	Yes
EMVCo platform approval	-	Yes
VISA approvals	Yes	Yes
MasterCard PIC (TAS & CAST)	Yes	Yes
Common Criteria (VAN5)	EAL 5+ (40K – 128K EEPROM)	EAL 5+ (4+ with DESFire option)

Applets licensed by NXP

JCOP products offer the possibility of ROM mask customization with applets for high-volume projects.

Applets	Specification & features	JCOP v2.4.1 R3	JCOP v2.4.2 R3
VISA VSDC 2.7.1	VCPS v2.0.2 / VIS v1.4.1 / Supports DAP	Yes	-
VISA VSDC 2.8.1a	VCPS v2.1.1 / VIS v1.5.1 / Supports DAP	Yes	Yes
MasterCard PayPass M/Chip 4	PayPass M/Chip 4 v1.3.1 / Transactions acc. PayPass MagStripe Specification v3.1. M/Chip 4 v1.1a / Supports Global PIN and CAP	Yes	-
MasterCard M/Chip Advance	M/Chip Advance v1.0 Specification including Data Storage	-	Yes
cv ePasslet Suite v1.1	PKI / Digital Signature (Contactless: CC EAL4+, BSI-CC-PP-0055) BAC/EAC 1.11 (Contactless: CC EAL4+, BSI-CC-PP-0056) EAC 2.03 / SAC (Contactless: CC EAL4+, CC EAL 4+, PP-MRTD-SAC/PACE v2) GelD nPA, without eSign (Contactless: EAC v2 / SAC (CC EAL4+) is part of GelD) National ID (Contactless: CC EAL4+, BSI-CC-PP-0056, BSI-CC-PP-0059) International Driving License European Health Insurance Card Vehicle Registration FingerPrint Match on Card	Yes	-
cv ePasslet Suite v2.1	Additional to ePasslet Suite v1.1: European Citizen Card (Base and French Profile) One Time Password Yes	-	Yes
cv ePasslet Suite v2.0 convergence	Additional to ePasslet Suite v2.0: MasterCard M/Chip 4 v2.0 Applet in EEPROM Banking convergence available for contact interface	-	Yes