JAVA CARD 3.0 TECHNICAL OVERVIEW

Technical features

- Communication based
  on ISO 7816-4 (APDU)
- Asynchronous protocol support
- Support of cap file format
- Support of class (jar) file format
- Enhanced runtime including
- String support
- Multi-threading
- New memory model
- Service oriented framework
  with events
- Enhanced security

Benefits

- Use in existing Smart Card
  environment possible
- Usage of high speed interfaces by
  existing standards (IP protocol based)
- Binary backward compatibility
- Standard format for Java applications
- Needed for app. layer protocols like HTTP
- Allows multiple applications
  simultaneously
- Speeds up handling of Java data
- Better fit to e.g. ETSI STK event model
- Extension of platform possible
- Security also in non-trusted environment
- Finer grain security

Java Card 3.0 overview and 2.x comparison

TECH. FEATURES (1/4): COMMUNICATION DETAILS

Java Card 2.x:
- ISO 7816 physical interface by default
- Opt. Contactless or USB over APDU possible
- Communication protocols T=0, T=1 (and T=CL)
- Card acts on incoming commands only
- One application active per communication channel

Java Card 3.0:
- Backward compatibility to JC2.x
- High speed protocols parallel on different physical interfaces
- Protocol independent
- Communication using TCP/IP for new applications
- Card can also initiate communications
- More than one application connected on one interface

Java Card 3.0 overview and 2.x comparison

TECH. FEATURES (2/4): RUNTIME DETAILS

Java Card 2.x:

- Interoperable CAP file to load application in field
- Applications triggered by processing APDU
- Java data is stored in a persistent manner per default

Java Card 3.0:

- Backward compatibility to JC2.x
- Applications triggered by TCP/IP requests or by events
- Java data is stored as volatile in a non-persistent manner. It can be controlled by an application.
- Multi-threading
- String Support

Java Card 3.0 overview and 2.x comparison

TECH. FEATURES (3/4): SECURITY DETAILS

Java Card 2.x:
- Applications can access Runtime only by API
- Static Firewall (defined at compiling time) to secure application data

Java Card 3.0:
- Backward compatibility to JC2.x
- Access Controller for restrictive API access ?
- Dynamic and flexible firewall (defined at object level)?
- On-card Verification of byte code (class file)

Java Card 3.0 overview and 2.x comparison

TECH. FEATURES (4/4): APIS+FRAMEWORK DETAILS

Java Card 2.x:
- Minimum Java Card API to allow processing of APDU based applications
- Cryptographic API
- Java Card 2.2 RMI framework
- STK framework adapted to Java Card, defined by ETSI

Java Card 3.0:
- Backward compatibility to JC2.x
- Crypto. API, extendable to new algorithms
- CLDC API, which allows efficient programming of TCP/IP based applications
- Generic framework to enable download/update of application frameworks