

# Release Notes

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## *Java Card™ 2.1 Virtual Machine Specification*

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## Java Card 2.1 Virtual Machine Specification Release Notes

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# 1. Introduction

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This document is the Release Notes for the *Java Card 2.1 Virtual Machine Specification*, also known as JCVM21\_FINAL.

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## Java Card 2.1 Virtual Machine Specification

The *Java Card 2.1 Virtual Machine Specification* describes the Java Card platform standards within Java Card technology. It is intended to be used as the foundation for designing implementations of the Java Card enabled devices and tools.

## 2. Java Card 2.1 Virtual Machine Specification

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This final release of the Java Card 2.1 Virtual Machine Specification includes various incremental improvements including edits for style and clarity, corrections of inaccurate material, additional explanatory material, and design changes based on review comments. The following sections detail the changes.

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### Design Changes in this release

Added support for types which are arrays of interfaces: added `superinterfaces` item to the `interface_info` structure, and modified definitions for *aastore*, *checkcast* and *instanceof* instructions.

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### Updates since Java Card 2.1VM Draft 2 Rev 2.0 (February 12, 1999)

#### Preface

Added "Acknowledgements" section.

#### Chapter 1 - Introduction

##### Section 1.2

- Updated figures 1-1 and 1-2.
- Added text about where export files come from.

## Chapter 2 - A Subset of the Java Virtual Machine

### Section 2.2.1.2 and Section 2.2.2.2

- Moved `native` keyword to unsupported.

### Section 2.2.3.1

- Added mention of 32-bit intermediate results.

### Section 2.2.4.1

- Added limit of no more than 15 superinterfaces per interface.

### Section 2.3.2.3

- Fixed limits for `tableswitch` instruction.

### Section 2.3.3.3

- Changed `IllegalArgumentException` and `IllegalStateException` to unsupported.

## Chapter 3 - Structure of the Java Card Virtual Machine

### Section 3.4

- Changed term “applet context” to “context”.

## Chapter 4 - Binary Representation

### Section 4.5

- Added this section describing package version assignment and use.

## Chapter 5 - The Export File Format

### Section 5.3

- Changed the `export_class_count` item in the Export File structure to be a `u1` instead of a `u2`.

### Section 5.1.1

- Replaced description of package version with a reference to section 4.5.

## Chapter 6 - The CAP File Format

### Section 6.2

- Added this section to describe a reference cap file component install order.

### Section 6.3

- Replaced description of package version with a reference to section 4.5.

### Section 6.6

- Replaced description of package version with a reference to section 4.5.

### Section 6.8.1

- Added a list of direct superinterfaces to the `interface_info` structure.
- Modified the definition of virtual method table base items to handle empty virtual method table. In this corner case the base is the sum of the base and count items of the superclass.

### Section 6.12

- Changed the `class_count` item in the Export Component to be a u1 instead of a u2.

### Section 6.13

- Changed the `class_count` item in the Descriptor Component to be a u1 instead of a u2.

## Chapter 7 - Instruction Set

### Section 7.3

- Added definition of unrecoverable error.

*aastore*, *checkcast* and *instanceof*

- Fixed descriptions to account for types which are arrays of interfaces.





## 3. Other Java Card 2.1 Documentation

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To further define and explain the Java Card 2.1 Virtual Machine applet firewall model please refer to the *Java Card 2.1 Runtime Environment (JCRE) Specification*, which describes the runtime environment required for interoperable Java Card applet execution.