

DigitalPersona, Inc.

U.are.U[®] UPOS for JavaPOS[™]

Version 1.1

Reference Guide for Windows[®]



digitalPersona.

DigitalPersona, Inc.

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Technical Support

Maintenance and technical support are available for this product from DigitalPersona, its partners, and resellers. Once you have paid for maintenance and technical support and agreed to the support terms, you may obtain this support through a variety of mechanisms, including the online form explained in the next paragraph.

The DigitalPersona Web site provides an online technical support form at <http://www.digitalpersona.com/support/enterprise/chooseproduct.php>. Simply describe your issue and include your contact information, and a technical support representative will contact you shortly by email or by phone.

Phone support is available at (877) 378-2740 in the U.S. only.
Outside the U.S., call +1 650-474-4000.

Feedback

Although the information in this guide has been thoroughly reviewed and tested, we welcome your feedback on any errors, omissions, or suggestions for future improvements. Please contact us at

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The DigitalPersona U.are.U UPOS for JavaPOS is an extension to the DigitalPersona One Touch® for Windows SDK and the DigitalPersona One Touch for Linux SDK, providing a Java™ for Retail POS (JavaPOS)-compliant application interface to DigitalPersona products. U.are.U UPOS for JavaPOS runs as a JavaPOS Device Service object, which can be used with any JavaPOS Device Control for the Biometrics device category.

The DigitalPersona U.are.U® UPOS for JavaPOS™ conforms to the specifications for the Biometrics device category in Chapter 4, “Biometrics,” of the UnifiedPOS Retail Peripheral Architecture, Version 1.11, dated January 15, 2007. The complete UPOS documentation is available at <http://www.nrf-arts.org/UnifiedPOS/default.htm>.

A DigitalPersona optical fingerprint reader or module is necessary to use device-dependent methods and may be purchased separately from DigitalPersona or from your distributor. See *Supported DigitalPersona Products* on page 4 for a complete list of supported fingerprint readers and modules.

The purpose of this document is to

- Provide instructions for installing the files you use to develop applications based on the U.are.U UPOS for JavaPOS
- Provide instructions for installing the files that enable your application to use DigitalPersona fingerprint readers and modules within a POS environment
- Introduce the sample application provided on the product CD, which demonstrates how to use U.are.U UPOS for JavaPOS properties, methods, and events
- Describe how the UPOS and JavaPOS properties, methods, and events are implemented by the U.are.U UPOS for JavaPOS

Target Audience

This guide is for developers who have a working knowledge of the Java programming language, familiarity with Java terminology and architecture, and an understanding of the UPOS specification.

Chapter Overview

Chapter 1, Introduction, this chapter, describes the audience for which this guide is written; defines the notational and typographical conventions used throughout this guide; identifies a number of resources that may assist you in using the U.are.U UPOS for JavaPOS; identifies the minimum system requirements needed to run the U.are.U UPOS for JavaPOS; and lists the DigitalPersona products supported by the U.are.U UPOS for JavaPOS.

Chapter 2, Sample Application, describes the functionality of the sample application.

Chapter 3, *Installation*, contains instructions for installing the U.are.U UPOS for JavaPOS developer tools and redistributables, identifies the files and folders that are installed on your hard disk for each installation, and describes the contents of the product CD.

Chapter 4, *Implementation Notes*, contains information about the U.are.U UPOS for JavaPOS implementation of device-specific properties.

Chapter 5, *JavaPOS Device Service Object API Reference*, includes information about how UPOS and JavaPOS methods, properties, and events are implemented in the DigitalPersona U.are.U UPOS for JavaPOS.

Chapter 6, *Device-Related Result Codes*, defines DigitalPersona device-related result codes returned to the *ResultCodeExtended* property of the **ErrorEvent** object.

Chapter 7, *Redistribution*, identifies the files and documentation that you may redistribute according to the End User License Agreement (EULA) accompanying the U.are.U UPOS for JavaPOS-W product CD.

An index is also included for your reference.

Document Conventions

This section defines the typographical and notational conventions used in this guide.

Notational Conventions

The following notational conventions are used throughout this guide:

NOTE: Notes provide supplemental reminders, tips, or suggestions.

IMPORTANT: Important notations contain significant information about system behavior, including problems or side effects that can occur in specific situations.

Typographical Conventions

The following typographical conventions are used in this guide:

Typeface	Purpose	Example
<i>Italics</i>	Used for properties in events For developers who are viewing this document online, text in italics may also indicate hypertext links to other areas in this guide or to URLs.	<i>Status</i> is a property of the StatusUpdateEvent event. For a complete list of fingerprint readers, see <i>Supported DigitalPersona Products on page 4</i> . The complete UPOS documentation is available at <i>http://www.nrf-arts.org/UnifiedPOS/default.htm</i> .
Bold	Used to indicate methods and properties Used to indicate window and dialog box elements	ClearInputProperties is a UPOS common method. Click Begin Enroll Capture . Both common and specific properties are listed in the Property name column.
ALL_CAPS	Used to indicate property and result code values	The valid value for the <i>EventNumber</i> property is DP_EVENT_DISCONNECT.

Additional Resources

You can refer to the resources in this section to assist you in using the U.are.U UPOS for JavaPOS.

Related Documentation

Subject	Document
Fingerprint recognition, including the history and basics of fingerprint identification and the advantages of DigitalPersona's Fingerprint Recognition Algorithm	The DigitalPersona White Paper: Guide to Fingerprint Recognition (Fingerprint Guide.pdf) located in the Docs folder on the U.are.U UPOS for JavaPOS product CD
Late-breaking news about the product	The Readme.txt files provided in the root directory on the product CD as well as in some subdirectories

Online Resources

Website name	URL
DigitalPersona Developer Connection Forum for DigitalPersona Developers	http://www.digitalpersona.com/webforums/
Latest updates for DigitalPersona software products	http://www.digitalpersona.com/support/downloads/software.php

System Requirements

This section lists the minimum software and hardware requirements needed to run the U.are.U UPOS for JavaPOS.

- x86-based processor or better
- CD-/DVD-ROM drive for installation
- Microsoft® Windows® 2000 Professional SP4; Microsoft® Windows® XP Home, Professional, or Embedded¹; Microsoft® Windows Server® 2003 SP1; or Microsoft® Windows Vista®; only 32-bit versions are supported
- USB port on the computer where the fingerprint reader is to be connected
- Java Development Kit (JDK) or Java runtime environment® (JRE) 1.5 or higher

Supported DigitalPersona Products

The U.are.U UPOS for JavaPOS supports the following DigitalPersona products:

- DigitalPersona U.are.U Fingerprint Reader 4000B and module, revisions 100 and 101

1. A list of list of DLL dependencies for installation of your application on Microsoft Windows XP Embedded, U.are.U UPOS for JavaPOS XPE Dependencies.xls, is located in the Docs folder on the product CD.

This chapter provides a quick introduction to the U.are.U UPOS for JavaPOS using the sample application, which is located in the <destination folder>\JavaPOS with Dev Tools\Samples folder. For more information about the sample application and the sample code, particularly button functionality, refer to the readme.txt file located in the same folder.

IMPORTANT: To run the sample application, Java runtime environment® (JRE) 1.5 or higher must be installed on your computer.

Install the Software

Before you can use the sample application, you must install the U.are.U UPOS for JavaPOS (*page 10*). You must also insert the fingerprint reader into your USB connector.

Using the Sample Application

To start the application

1. Change to the <destination folder>\JavaPOS with Dev Tools\Samples folder.
2. Run **run.bat**.

The **DigitalPersona U.are.U UPOS for JavaPOS** window appears.

The U.are.U UPOS for JavaPOS window is made up of the following four areas:

- Buttons area

This area is located at the left of the window and contains buttons that initiate calls to various methods for interacting with the fingerprint reader and for performing fingerprint enrollment, verification, and identification operations.

- Messages area

This area is located above the Buttons area and displays messages that inform the user of system activity, invite the user to perform actions such as touching the fingerprint reader, or advise the user of system errors. The message that appears when you start the application is "Click to open the device...".

- Log area

This area is located in the middle of the window and displays a log of system activity, including method calls and error codes.

- Properties area

This area is located at the right of the window and displays a list of properties, both common and specific (in the **Property name** column), and their current values (in the **Value** column).

To open the connection with the fingerprint reader

- Click **Open**.

The **open** method of the Device Control object is called.

If the call succeeds, the connection with the fingerprint reader is opened and various properties (common and specific) are set to their default values. These properties and values are displayed in the Properties area, and “Device opened...” appears in the Messages area.

NOTE: As each method is called, any properties that change are displayed in the Properties area.

If the method call fails, a failure message appears in the Messages area and error codes are displayed in the Log area.

Once the connection with the fingerprint reader has been opened, it must be claimed.

To claim the fingerprint reader

- Click **Claim**.

The **claim** method of the Device Control is called, the **claimed** property is set to true, and “Exclusive accessed” appears in the Messages area.

Once the connection with the fingerprint reader has been claimed, it must be enabled.

To enable the fingerprint reader

- Click **Device Enable**.

The **deviceEnabled** property is set to true and “Physical Device Operational” appears in the Messages area.

Enrolling a fingerprint consists of capturing four fingerprint images, converting them into fingerprint pre-enrollment templates, and then creating an enrollment template from these templates.

To perform fingerprint enrollment

1. Click **Begin Enroll Capture**.

The **beginEnrollCapture** method of the Device Control is called and “Touch the sensor four times” appears in the Messages area.

2. Touch the fingerprint reader four times. Follow the instructions that appear in the Messages area to guide you.

If the method call succeeds, an enrollment template is created and “Total enrollment completed: N” appears in the Messages area, where N is the number of total enrollments.

If the method call fails, a failure message appears in the box in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

To perform fingerprint verification

1. Click **Begin Verify Capture**.

The **beginVerifyCapture** method of the Device Control is called and “Touch the sensor to capture sample data” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

2. Touch the fingerprint reader.

If the method call succeeds, a verification template is created and “Sample Data Captured” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

3. Click **Verify Match**.

The **verifyMatch** method of the Device Control is called.

If the method call succeeds, a match is performed using the latest enrollment template available and the verification template that was created in step 2, and “Verification success!” or “Verification failed!” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear the Messages area, and error codes are displayed in the Log area.

To perform fingerprint identification

1. Click **Begin Verify Capture**.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

2. Touch the fingerprint reader.

If the method call succeeds, a verification template is created and “Sample Data Captured” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

3. Click **Identify Match**.

The **identifyMatch** method of the Device Control is called.

If the method call succeeds, a match is performed using all of the enrollment templates available and the verification template that was created in step 2. A candidate ranking is generated by listing only the indices of the enrollment templates that match, and “Identification success!” or “Identification Failed!” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

To perform fingerprint verification using a verification template created on-the-fly

1. Click **Verify**.

The **verify** method of the Device Control is called, and “Please touch the sensor for verification” appears in the Messages area.

2. Touch the fingerprint reader.

If the method call succeeds, a verification template is created on-the-fly. Then a match is performed using the latest enrollment template available and the verification template, and “Verification success!” or “Verification failed!” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

To perform fingerprint identification using a verification template created on-the-fly

1. Click **Identify**.

The **identify** method of the Device Control is called and “Please touch the sensor for Identification” appears in the Messages area.

2. Touch the fingerprint reader.

If the method call succeeds, a verification template is created on-the-fly. Then a match is performed using all of the enrollment templates available and the verification template. A candidate ranking is generated by listing only the indices of the enrollment templates that match, and “Identification success!” or “Identification Failed!” appears in the Messages area.

If the method call fails, a failure message appears in the Messages area. If an error occurs, appropriate messages appear in the Messages area, and error codes are displayed in the Log area.

To clear the enrollment template array set and the verification template

- Click **Clear Data**.

The **clearInput** method of the Device Control is called and “Clear data to start enrolling again” appears in the Messages area.

If the method call succeeds, the enrollment template array set and the verification template are cleared. A new verification template and a set of enrollment templates can now be created.

If the method call fails, a failure message appears in the Messages area, and error codes are displayed in the Log area.

To close the connection with the fingerprint reader

- Click **Close**.

The **Close** method of the Device Control is called.

If the method call succeeds, the connection with the fingerprint reader is closed, all of the controls other than the **Open** button are disabled, and the properties are reset, or cleared.

If the method call fails, a failure message appears in the Messages area, and error codes are displayed in the Log area.

To close the application

- Click the **Close** button at the top right of the window.

This chapter contains instructions for installing the U.are.U UPOS for JavaPOS developer tools and redistributables, identifies the files and folders that are installed on your hard disk for each installation, and describes the contents of the product CD.

Installing the U.are.U UPOS for JavaPOS

This installation includes all of the files you need to develop your application based on the U.are.U UPOS for JavaPOS. (The redistributables, which are identified in *Redistribution* on *page 21*, are included in this installation.)

IMPORTANT: You must have administrative rights to install the U.are.U UPOS for JavaPOS.

IMPORTANT: If you have one of the following DigitalPersona products installed on your system, you will not be able to install the U.are.U UPOS for JavaPOS:

- DigitalPersona Online Client (versions earlier than 4.2.0)
- DigitalPersona Online Kiosk Client (versions earlier than 4.2.0)
- DigitalPersona Password Manager
- DigitalPersona Personal
- DigitalPersona Pro Kiosk
- DigitalPersona Pro Workstation

To install the U.are.U UPOS for JavaPOS

1. Insert the U.are.U UPOS for JavaPOS-W product CD into your CD-/DVD-ROM drive.
2. In the JavaPOS with Dev Tools folder, open the Setup.exe file.
3. Follow the installation instructions as they appear.

Table 1 describes the files and folders that are installed by default in the <destination folder> folder on your hard disk. The RTE files and folders, which are listed in Table 2 on page 12, are also installed on your hard disk.

Table 1. U.are.U UPOS for JavaPOS installed files and folders

Folder	File	Description
JavaPOS with Dev Tools	readme.txt register.bat	Instructions for registering DigitalPersona U.are.U Device Service in your JavaPOS environment Registration script
JavaPOS with Dev Tools\Docs	DigitalPersona U.are.U UPOS for JavaPOS Reference Guide-W.pdf	DigitalPersona U.are.U UPOS for JavaPOS Reference Guide: Windows Version
JavaPOS with Dev Tools\ Samples	build_sample.bat dpjavapos_app.jar readme.txt run.bat	This folder contains a sample application that shows how to use the U.are.U UPOS for JavaPOS.
JavaPOS with Dev Tools\ Samples\src\com\ digitalpersona\javapos\ sampleapp\biometrics	JButtonsPanel.java JPropertyPane.java PropertySheet.java SampleApp.java SwingUI.java UI.java	This folder contains the source code for the sample application.
JavaPOS with Dev Tools\ Samples\config\jpos\res	jpos.properties jposUareU4000B.xml	This folder contains the JavaPOS environment for the sample application.

Installing the U.are.U UPOS for JavaPOS Redistributables

When you develop a product based on the U.are.U UPOS for JavaPOS, you must provide device component, fingerprint recognition component, driver, and JavaPOS libraries and files to your end users. Collectively, these libraries and files constitute the U.are.U UPOS for JavaPOS redistributables. (See *Redistribution* on page 21 for licensing terms.) You may incorporate the redistributables directly into your installer, or you may use the merge modules located in the Redist folder on the product CD to create your own MSI installer.

This installation includes the U.are.U UPOS for JavaPOS redistributables, which implement the U.are.U UPOS for JavaPOS methods, properties, and events.

IMPORTANT: You must have administrative rights to install the U.are.U UPOS for JavaPOS redistributables.

IMPORTANT: If you have one of the following DigitalPersona products installed on your system, you will not be able to install the U.are.U UPOS for JavaPOS:

- DigitalPersona Online Client (versions earlier than 4.2.0)
- DigitalPersona Online Kiosk Client (versions earlier than 4.2.0)
- DigitalPersona Password Manager (all versions)
- DigitalPersona Personal (all versions)
- DigitalPersona Pro Kiosk (versions earlier than 4.2.0)
- DigitalPersona Pro Workstation (versions earlier than 4.2.0)

To install the U.are.U UPOS for JavaPOS redistributables

1. Insert the U.are.U UPOS for JavaPOS-W product CD into your CD-/DVD-ROM drive.
2. In the JavaPOS folder, open the Setup.exe file.
3. Follow the installation instructions as they appear.

Table 2 identifies the files that are installed on your hard disk.

Table 2. U.are.U UPOS for JavaPOS redistributables installed files and folders

Folder	File	Description
<destination folder>\Bin	DPCOper2.dll DPDevice2.dll DPDevTS.dll DpHostW.exe DPmsg.dll DPMux.dll DPTSCInt.dll	Libraries and executable file for the One Touch for Windows RTE
<destination folder>\Bin\Java	dpotjni.jar	JNI wrapper
	otdpfpjni.dll otfxjni.dll otmcjni.dll	Native libraries
<destination folder>\Bin\ JavaPOS	dpjavapos.jar	DigitalPersona biometrics service for JavaPOS
	jpos111.jar xercesImpl-2.6.2.jar xmlParserAPIs.jar	JavaPOS libraries

Table 2. U.are.U UPOS for JavaPOS redistributables installed files and folders (*continued*)

Folder	File	Description
<system folder>	DpClback.dll DPFPApi.dll DPFpUI.dll dpHFtrEx.dll dpHMatch.dll	Libraries for the One Touch for Windows RTE
<system folder>\drivers	dpd00303.dll dpd00701.dll dpDevCtl.dll dpDevDat.dll dPersona.cat dPersona.inf dpi0030.dll dpi00701.dll DPIInst32.exe dpk00303.sys dpk00701.sys UsbdpFP.sys	Driver libraries

Registering the DigitalPersona U.are.U 4000B Device Service

To enable DigitalPersona U.are.U UPOS for JavaPOS support in your JavaPOS environment, you may need to register the DigitalPersona U.are.U 4000B Device Service.

To ensure that your JavaPOS configuration directory is in the Java class path

1. Modify the `JAVA_POS_CONFIG_PATH` variable in the `register.bat` file. (This file is located in the *<destination folder>*\JavaPOS with Dev Tools folder.)
2. Run **register.bat**.

To unregister the Device Service

- Run **register.bat -u**.

This chapter contains information about the U.are.U UPOS for JavaPOS implementation of device-specific properties.

DirectIOEvent

Syntax

```

upos::events::DirectIOEvent
    EventNumber: int32 { read-only }
    Data: int32 { read-write }
    Obj: object { read-write }

```

This event is fired by a Service Object to deliver vendor-specific events to the application. The U.are.U UPOS for JavaPOS uses DirectIOEvent events to notify the application about device connection and disconnection and intermediate events such as finger touch or removal.

Properties

This event contains the following attributes:

Property	Type	Description
<i>EventNumber</i>	<i>int</i>	Constants whose specific values are assigned by the Service Object
<i>Data</i>	<i>int</i>	Not used
<i>Obj</i>	<i>object</i>	Name of the fingerprint reader

EventNumber Return Values

These constants are defined in the com.dp.javapos.services.biometrics.DPFPConstants class.

EventNumber	Description
DP_EVENT_IMAGE_READY	A fingerprint image is ready for processing.
DP_EVENT_DISCONNECT	The fingerprint reader was disconnected.
DP_EVENT_RECONNECT	The fingerprint reader was reconnected.
DP_EVENT_FINGER_TOUCHED	The fingerprint reader was touched.
DP_EVENT_FINGER_GONE	The finger was removed from the fingerprint reader.

The following table provides information about how UPOS and JavaPOS properties, methods, and events are implemented in the DigitalPersona U.are.U UPOS for JavaPOS.

Name	Implemented	Comment
<i>UPOS Common Properties</i>		
AutoDisable	Partial	This property is initialized to false in the open method. Changing its value will have no effect.
CapCompareFirmwareVersion	Yes	This property is initialized to false in the open method since firmware comparison is not supported.
CapPowerReporting	Yes	This property is initialized to JPOS_PR_NONE in the open method since power reporting is not supported.
CapStatisticsReporting	Yes	This property is initialized to false in the open method since statistics reporting is not supported.
CapUpdateFirmware	Yes	This property is initialized to false in the open method since firmware updating is not supported.
CapUpdateStatistics	Yes	This property is initialized to false in the open method since statistics updating is not supported.
CheckHealthText	Yes	This property is initialized to an empty string in the open method. It is never modified since device health checking is not supported.
Claimed	Yes	
DataCount	Yes	
DataEventEnabled	Partial	This property is initialized to false in the open method, but its value is ignored after a successful claim operation.
DeviceEnabled	Partial	This property is initialized to false in the open method, but its value is ignored after a successful claim operation.
DeviceServiceDescription	Yes	This property is set to "U.are.U Biometrics Device Service for JavaPOS, (c) 2007-2008 DigitalPersona, Inc."
DeviceServiceVersion	Yes	This property is set to 1011000.
FreezeEvents	Yes	
PhysicalDeviceDescription	Yes	This property contains the product name, serial number, and vendor name for the DigitalPersona device.

Name	Implemented	Comment
PhysicalDeviceName	Yes	This property contains the product name of the DigitalPersona device.
PowerNotify	Yes	This property is initialized to JPOS_PN_DISABLED in the open method since power reporting is not supported.
PowerState	Yes	This property is initialized to JPOS_PS_UNKNOWN in the open method since power reporting is not supported.
State	Yes	
Specific Properties		
Algorithm	Yes	
AlgorithmList	Yes	This property is set to "DigitalPersona Fingerprint Recognition Algorithm."
BIR	Yes	
CapPrematchData	Yes	This property is initialized to false in the open method since pre-matching is not supported.
CapRawSensorData	Yes	This property is initialized to false in the open method.
CapRealTimeData	Yes	This property is initialized to false in the open method.
CapSensorColor	Yes	This property is initialized to BIO_CSC_GRAYSCALE in the open method.
CapSensorOrientation	Yes	This property is initialized to BIO_CSO_INVERTED in the open method.
CapSensorType	Yes	This property is initialized to BIO_CST_FINGERPRINT in the open method.
CapTemplateAdaptation	Yes	This property is initialized to false in the open method since template adaptation is not supported.
RawSensorData	Yes	An exception is thrown since CapRawSensorData is set to false.
RealTimeDataEnabled	Yes	This property is initialized to false in the open .
SensorBPP	Yes	This property is initialized to 8 in the open method. No other value is supported.
SensorColor	Yes	This property is initialized to BIO_CSC_GRAYSCALE in the open method. No other value is supported.
SensorHeight	Yes	This property is initialized to 550 in the open method. No other value is supported.

Name	Implemented	Comment
SensorOrientation	Yes	This property is initialized to BIO_SO_INVERTED in the open method. No other value is supported.
SensorType	Yes	This property is initialized to BIO_ST_FINGERPRINT in the open method.
SensorWidth	Yes	This property is initialized to 500 in the open method. No other value is supported.
<i>UPOS Common Methods</i>		
Open	Yes	
Close	Yes	
ClaimDevice	Yes	
ReleaseDevice	Yes	
CheckHealth	Yes	Only internal health check is supported. Attempts to perform an external or interactive check cause an exception to be thrown.
ClearInput	Yes	
ClearInputProperties	Yes	
ClearOutput	No	This method is not supported by the Biometrics device category.
DirectIO	Partial	An exception is thrown since device direct I/O is not supported.
CompareFirmwareVersion	Yes	An exception is thrown since CapCompareFirmwareVersion is set to false.
ResetStatistics	Yes	An exception is thrown since CapUpdateStatistics is set to false.
RetrieveStatistics	Yes	An exception is thrown since CapStatisticsReporting is set to false.
UpdateFirmware	Yes	An exception is thrown since CapUpdateFirmware is set to false.
UpdateStatistics	Yes	An exception is thrown since CapUpdateStatistics is set to false.
<i>Specific Methods</i>		
beginEnrollCapture	Yes	
beginVerifyCapture	Yes	

Name	Implemented	Comment
endCapture	Yes	
identify	Yes	
identifyMatch	Yes	
processPrematchData	Yes	An exception is thrown since CapPrematchData is set to false.
verify	Yes	
verifyMatch	Yes	
<i>UPOS Events</i>		
DataEvent	Yes	
DirectIOEvent	Yes	
ErrorEvent	Yes	resultCode - Standard JavaPOS Result Code resultCodeExtended - DigitalPersona Result Code errorLocus - EL_INPUT errorResponse - ER_CLEAR
OutputCompleteEvent	No	This event is not supported by the Biometrics device category.
StatusUpdateEvent	No	

This chapter defines DigitalPersona device-related result codes returned in the *ResultCodeExtended* property of the **ErrorEvent** object.

IMPORTANT: You should always use the names of the return codes, such as FT_OK, rather than the numeric values, because these values may change at any time, without notice. The numbers are provided as a reference for the error codes in the sample application.

Value	Result Code	Description
-1	FT_ERR_NO_INIT	The fingerprint feature extraction module or the fingerprint comparison module is not initialized.
-2	FT_ERR_INVALID_PARAM	One or more parameters are not valid.
-4	FT_ERR_IO	A generic I/O file error occurred.
-7	FT_ERR_NO_MEMORY	There is not enough memory to perform the action.
-8	FT_ERR_INTERNAL	An unknown internal error occurred.
-10	FT_ERR_UNKNOWN_DEVICE	The requested device is not known.
-11	FT_ERR_INVALID_BUFFER	A buffer is not valid.
-33	FT_ERR_UNKNOWN_EXCEPTION	An unknown exception occurred.

You may redistribute the files in the Redist folders of the U.are.U UPOS for JavaPOS-W product CD to your end users pursuant to the terms of the end user license agreement (EULA), attendant to the software and located in the Docs folder on the product CD.

When you develop a product based on the U.are.U UPOS for JavaPOS, you need to provide the redistributables to your end users. These files are designed and licensed for use with your application. You may incorporate the redistributables directly into your installer, or you may use the merge modules located in the Redist folder on the product CD to create your own MSI installer.

Per the terms of the EULA, DigitalPersona grants you a non-transferable, non-exclusive, worldwide license to redistribute, either directly or via the respective merge modules, the following files contained in the Redist folder on the U.are.U UPOS for JavaPOS-W product CD to your end users and to incorporate these files into derivative works for sale and distribution:

Merge Modules

- DpCore.msm

This merge module contains the following files:

- DpClback.dll
- DPFPApi.dll
- DPCOper2.dll
- DPDevice2.dll
- DpHostW.exe
- DPmsg.dll
- DPMux.dll

- DpDrivers.msm

This merge module contains the following files:

- dpd00303.dll
- dpd00701.dll
- dpd00701x64.dll
- dpDevCtl.dll
- dpDevCtlx64.dll
- dpDevDat.dll
- dpDevDatx64.dll

- dPersona.cat
- dPersona.inf
- dPersona_x64.cat
- DPersona_x64.inf
- dpi00303.dll
- dpi00701.dll
- dpi00701x64.dll
- DPInst32.exe
- DPInst64.exe
- dpk00303.sys
- dpk00701.sys
- UsbdpFP.sys

- DpFpRec.msm
This merge module contains the following files:
 - dpHFtrEx.dll
 - dpHMatch.dll

- DPFpUI.msm
This merge module contains the following file:
 - DPFpUI.dll

- DPJPOS.msm
This merge module contains the following files:
 - dpjavapos.jar
 - jpos111.jar
 - xercesImpl-2.6.2.jar
 - xmlParserAPIs.jar

- DPOTJni.msm
This merge module contains the following files:
 - dpotjni.jar
 - otdefpjni.dll
 - otfxjni.dll
 - otmcjni.dll

- DpProCore.msm

This merge module contains the following files:

- DPDevTS.dll
- DPSvInfo2.dll
- DPTSCInt.dll

Fingerprint Reader Documentation

You may redistribute the documentation included in the Redist folder on the U.are.U UPOS for JavaPOS-W product CD to your end users pursuant to the terms of this section and of the EULA, attendant to the software and located in the Docs folder on the product CD.

Hardware Warnings and Regulatory Information

If you distribute DigitalPersona U.are.U fingerprint readers to your end users, you are responsible for advising them of the warnings and regulatory information included in the Warnings and Regulatory Information.pdf file in the Redist folder on the U.are.U UPOS for JavaPOS-W product CD. You may copy and redistribute the language, including the copyright and trademark notices, set forth in the Warnings and Regulatory Information.pdf file.

Fingerprint Reader Use and Maintenance Guide

The DigitalPersona U.are.U Fingerprint Reader Use and Maintenance Guide, DigitalPersona Reader Maintenance.pdf, is located in the Redist folder on the U.are.U UPOS for JavaPOS-W product CD. You may copy and redistribute the DigitalPersona Reader Maintenance.pdf file, including the copyright and trademark notices, to those who purchase a U.are.U module or fingerprint reader from you.

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