

IBScanUltimate API Manual for Java (and Android)

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Revision History

Date	Author	Remarks
2018/4	YOUNG	Added description of new IBScanDevice method generateDisplayImage() Added description of new IBScanDevice method removeFingerImage() Added description of new IBScanDevice method addFingerImage() Added description of new IBScanDevice method isFingerDuplicated() Added description of new IBScanDevice method isValidFingerGeometry() Added description of new IBScanDevice method SaveBitmapImage()
2017/4	Gon	Added description of new IBScanDevice method getCombineImageEx(). Added descriptions of new PropertyID values for IBScanUltimate v1.9.6: NO_PREVIEW_IMAGE, ROLL_IMAGE_OVERRIDE, WARNING_MESSAGE_INVALID_AREA, ENABLE_WET_FINGER_DETECT, WET_FINGER_DETECT_LEVE. Added descriptions of new FingerQualityState values for IBScanUltimate v1.9.6: INVALID_AREA_BOTTOM. Added descriptions of new warning code for IBScanUltimate v1.9.6: QUALITY_INVALID_AREA, QUALITY_INVALID_AREA_HORIZONTALLY, QUALITY_INVALID_AREA_VERTICALLY, QUALITY_INVALID_AREA_HORIZONTALLY_VERTICALLY, INVALID_BRIGHTNESS_FINGERS, WET_FINGERS
2016/4	Yesica	Added descriptions of new PropertyID values for IBScanUltimate v1.9.3: ROLLED_IMAGE_WIDTH and ROLLED_IMAGE_HEIGHT.
2015/12	Yesica	Added description of new IBScanDevice method getOperableBeeper (). Added description of new IBScanDevice method setBeeper (). Added description of new IBScanDeviceListener method devicePressedKeyButtons ().
2015/8	Yesica	Added description of new IBScanDevice method getCombineImage (). Added description of new IBScanDevice nested enumeration CombineImageWhichHand.
2013/10	BAN	Added descriptions of new PropertyID values for IBScanUltimate v1.7.0: CAPTURE_TIMEOUT and ROLL_MIN_WIDTH. Added descriptions of new FingerQualityState values for IBScanUltimate v1.7.0: INVALID_AREA_TOP, INVALID_AREA_LEFT, INVALID_AREA_RIGHT. Added description of new IBScanDevice method captureImageExtended(). Added description of new IBScanDevice nested class SegmentPosition. Added description of new IBScanDeviceListener method

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`deviceImageResultExtendedAvailable()`.

Added description of new IBScanDevice method `enableEvent()`.

Added description of new IBScanDevice nested enumeration
`EventType`.

1. API Descriptions

1.1. Java API Summary

The Java API of IBScanUltimate is contained within the package `com.integratedbiometrics.ibscanultimate`. Additional common definitions are contained within the package `com.integratedbiometrics.ibscancommon`.

Some methods, marked with asterisks, are available only on Android.

1.1.1. Summary of Main Class and Interface Methods

No	Method
IBScan methods (all platforms)	
1	public void enableLogTrace (boolean on) throws IBScanException
2	public int getDeviceCount () throws IBScanException
3	public IBScan.DeviceDesc getDeviceDescription (int deviceIndex) throws IBScanException
4	public int getInitProgress (int deviceIndex) throws IBScanException
5	public static IBScan getInstance ()
6*	public static IBScan getInstance (Context context)
7	public IBScan.SdkVersion getSdkVersion () throws IBScanException
8*	public boolean hasPermission (int deviceId)
9*	public static boolean isScanDevice (UsbDevice device)
10	public IBScanDevice openDevice (int deviceIndex) throws IBScanException
11	public IBScanDevice openDevice (int deviceIndex, String uniformityMaskPath) throws IBScanException
12	public void openDeviceAsync (int deviceIndex) throws IBScanException
13	public void openDeviceAsync (int deviceIndex, String uniformityMaskPath) throws IBScanException
14*	public void requestPermission (int deviceId)
15*	public void setContext (Context context)
16	public void setScanListener (IBScanListener listener)
IBScanDevice methods	
1	public void beginCaptureImage (IBScanDevice.ImageType imageType, IBScanDevice.ImageResolution imageResolution, int captureOptions) throws IBScanException
2	public int calculateNfiqScore (ImageData image) throws IBScanException
3	public void cancelCaptureImage () throws IBScanException
4	public java.lang.Object[] captureImage () throws IBScanException
5	public java.lang.Object[] captureImageExtended () throws IBScanException
6	public void captureImageManually () throws IBScanException
7	public void close () throws IBScanException

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8	public void enableEvent (EventType event, boolean enable) throws IBScanException
9	public int getContrast () throws IBScanException
10	public long getLEDs () throws IBScanException
11	public IBScanDevice.LEOperationMode getLEOperationMode () throws IBScanException
12	public IBScanDevice.LedState getOperableLEDs () throws IBScanException
13	public IBScanDevice.PlatenState getPlatenStateAtCapture () throws IBScanException
14	Public String getProperty (IBScanDevice.PropertyId propertyId) throws IBScanException
15	public Object[] getResultImageInfo (IBCommon.FingerPosition fingerPosition) throws IBScanException
16	public IBScanDevice.RollingData getRollingInfo () throws IBScanException
17	public boolean isCaptureActive () throws IBScanException
18	public boolean isCaptureAvailable (IBScanDevice.ImageType imageType, IBScanDevice.ImageResolution imageResolution) throws IBScanException
19	public boolean isFingerTouching () throws IBScanException
20	public boolean isOpened ()
21	public void setContrast (int contrastValue) throws IBScanException
22	public void setLEDs (long activeLEDs) throws IBScanException
23	public void setLEOperationMode (IBScanDevice.LEOperationMode leOperationMode) throws IBScanException
24	public void setProperty (IBScanDevice.PropertyId propertyId, String propertyValue) throws IBScanException
25	public void setScanDeviceListener (IBScanDeviceListener listener)
26	public Object getCombineImage (IBScanDevice.ImageData inImage1, IBScanDevice.ImageData inImage2,int whichHand)
27	Public int getOperableBeeper (BeeperType bType)
28	Public void setBeeper (BeepPattern bPattern,long soundTone,long duration,long reserved_1,long reserved_2)
29	public Object[] getCombineImageEx (IBScanDevice.ImageData inImage1, IBScanDevice.ImageData inImage2,int whichHand)
30	public int generateDisplayImage (byte[] image, int inWidth, int inHeight, byte[]outImage, int outWidth, int outHeight, byte bkColor, int outFormat, int outQualityLevel, Boolean outVerticalFlip)
31	public int removeFingerImage (long flIndex)
32	public int addFingerImage (IBScanDevice.ImageData image, long flIndex, IBScanDevice.ImageType imageType, boolean flagForce)
33	public long isFingerDuplicated (IBScanDevice.ImageData image, long flIndex, IBScanDevice.ImageType imageType, int securityLevel)
34	public boolean isValidFingerGeometry (IBScanDevice.ImageData image, long flIndex, IBScanDevice.ImageType imageType)

IBScanListener methods	
1*	void scanDeviceAttached (int deviceId)
2*	void scanDeviceDetached (int deviceId)
3	void scanDeviceCountChanged (int deviceCount)
4	void scanDeviceInitProgress (int deviceIndex, int progressValue)
5	void scanDeviceOpenComplete (int deviceIndex, IBScanDevice device, IBScanException exception)
6*	void scanDevicePermissionGranted (int deviceId, boolean granted)
IBScanDeviceListener methods	
1	void deviceCommunicationBroken (IBScanDevice device)
2	void deviceImagePreviewAvailable (IBScanDevice device, IBScanDevice.ImageData image)
3	void deviceFingerCountChanged (IBScanDevice device, IBScanDevice.FingerCountState fingerState)
4	void deviceFingerQualityChanged (IBScanDevice device, IBScanDevice.FingerQualityState[] fingerQualities)
5	void deviceAcquisitionBegun (IBScanDevice device, IBScanDevice.ImageType imageType)
6	void deviceAcquisitionCompleted (IBScanDevice device, IBScanDevice.ImageType imageType)
7	void deviceImageResultAvailable (IBScanDevice device, IBScanDevice.ImageData image, IBScanDevice.ImageType imageType, IBScanDevice.ImageData[] splitImageArray)
8	void deviceImageResultExtendedAvailable (IBScanDevice device, IBScanException imageStatus, IBScanDevice.ImageData image, IBScanDevice.ImageType imageType, int detectedFingerCount, IBScanDevice.ImageData[] segmentImageArray, SegmentPosition[] segmentPositionArray)
9	void devicePlatenStateChanged (IBScanDevice device, IBScanDevice.PlatenState platenState)
10	void deviceWarningReceived (IBScanDevice device, IBScanException warning)
11	void devicePressedKeyButtons (IBScanDevice device, int pressedKeyButtons)

Table 1
* Available only on Android

1.1.2. Summary of Nested Classes

No	Class
IBScan nested classes	
1	public static class IBScan. DeviceDesc
2	public static class IBScan. SdkVersion
IBScanDevice nested classes	

1	public static enum IBScanDevice. EventType
2	public static enum IBScanDevice. FingerCountState
3	public static enum IBScanDevice. FingerQualityState
4	public static class IBScanDevice. ImageData
5	public static enum IBScanDevice. ImageFormat
6	public static enum IBScanDevice. ImageResolution
7	public static enum IBScanDevice. ImageType
8	public static class IBScanDevice. LedState
9	public static enum IBScanDevice. LedType
10	public static enum IBScanDevice. LEOperationMode
11	public static enum IBScanDevice. PlatenState
12	public static enum IBScanDevice. PropertyId
13	public static class IBScanDevice. RollingData
14	public static enum IBScanDevice. RollingState
15	public static class IBScanDevice. SegmentPosition

Table 2

1.1.3. Summary of Common Classes

No	Class
IBCommon nested classes	
1	public static class IBCommon. ImageDataExt
2	public static enum IBCommon. ImageFormat
3	public static enum IBCommon. ImpressionType
4	public static enum IBCommon. FingerPosition
5	public static enum IBCommon. CaptureDeviceTechId

Table 3

1.1.4. Class IBScan

1.1.4.1. Summary

The single instance of this class may be gotten with `getInstance()`. The application will typically register a `IBScanListener` to receive notifications for events such as device count change and device communication failure. Device instances should be obtained by either the blocking `openDevice()` method or non-blocking `openDeviceAsync()` method.

On Android, the Activity accessing IB scanners must set the context for operations with `setContext()`. Several more Android-specific functions are provided to manage USB devices.

1.1.4.2. `enableTraceLog()`

- **Signature**

Method	public void enableTraceLog (boolean on) throws <code>IBScanException</code>
--------	--

- **Description**

Enables or disable trace log in native library. The trace log is enabled by default.

- **Parameter**

Parameter	Description
on	true to enable trace log; false to disable trace log

1.1.4.3. `getDeviceCount()`

- **Signature**

Method	public int getDeviceCount () throws <code>IBScanException</code>
--------	---

- **Description**

Retrieve count of connected IB USB scanner devices. Only the attached devices to which the caller has been granted permission will be counted.

- **Return**

count of IB USB scanner devices

1.1.4.4. `getDeviceDescription()`

- **Signature**

Method	public <code>IBScan.DeviceDesc</code> getDeviceDescription (int deviceIndex) throws <code>IBScanException</code>
--------	---

- **Description**

Retrieve detailed device information about particular scanner by logical index.

- **Parameter**

Parameter	Description
deviceIndex	zero-based index of the device

- **Return**

a description of the device

1.1.4.5. **getInitProgress()**

- **Signature**

Method	public int getInitProgress (int deviceIndex) throws IBScanException
--------	---

- **Description**

Get initialization progress.

- **Parameter**

Parameter	Description
deviceIndex	zero-based index of the device

- **Return**

initialization progress between 0 and 100. A value of 100 indicates that that initialization is complete

1.1.4.6. **getInstance()**

- **Signature**

Method	public static IBScan getInstance ()
--------	--

- **Description**

Get single instance of class. On Android, a context must be associated with the instance through a later call to `setContext()`.

- **Return**

single instance of IBScan

1.1.4.7. **getInstance(Context) (Android only)**

- **Signature**

Method	public static IBScan getInstance (Context context)
--------	---

- **Description**

Get single instance of class.

- **Parameter**

Parameter	Description
context	the context for the receiver and USB accesses

- **Return**

single instance of IBScan

1.1.4.8. **getSdkVersion()**

- **Signature**

Method	public IBScan.SdkVersion getSdkVersion() throws IBScanException
--------	---

- **Description**

Obtains product and software version information.

- **Return**

SDK version

1.1.4.9. **hasPermission() (Android only)**

- **Signature**

Method	public boolean hasPermission (int deviceId)
--------	--

- **Description**

Determines whether the caller has permission to access the device.

- **Parameter**

Parameter	Description
deviceId	ID of the device. This is the ID that Android assigns to the device, obtained through the UsbDevice getDeviceId() method.

- **Return**

true if caller has permission; false otherwise.

1.1.4.10. **isScanDevice() (Android only)**

- **Signature**

Method	public static boolean isScanDevice (UsbDevice device)
--------	--

- **Description**

Determine whether device is a scan device. This just checks whether the vendor and product IDs match recognized devices.

- **Parameter**

Parameter	Description
device	device to investigate

- **Return**

true if device is an IB scan device; false otherwise

1.1.4.11. openDevice(int)

- **Signature**

Method	public IBScanDevice openDevice (int deviceIndex) throws IBScanException
--------	--

- **Description**

Initialize device, given a particular by device index. This function blocks until an error occurs or initialization completes; meanwhile any registered IBScanListener will receive scanDeviceInitProgress() callbacks to track the initialization progress. Either a device object will be returned to the application or an exception will be thrown.

- **Parameter**

Parameter	Description
deviceIndex	zero-based index of the device

- **Return**

device object, if initialization succeeds; null otherwise

1.1.4.12. openDevice(int, String)

- **Signature**

Method	public IBScanDevice openDevice (int deviceIndex, String uniformityMaskPath) throws IBScanException
--------	---

- **Description**

See also openDevice(int).

- **Parameter**

Parameter	Description
-----------	-------------

deviceIndex	zero-based index of the device
uniformityMaskPath	uniformity mask path

- **Return**

device object, if initialization succeeds; null otherwise

1.1.4.13. openDeviceAsync(int)

- **Signature**

Method	public void openDeviceAsync (int deviceIndex) throws IBScanException
--------	--

- **Description**

Initialize device asynchronously, given a particular by device index. This function returns immediately. Any registered IBScanListener will receive scanDeviceInitProgress() callbacks to track the initialization progress. When an error occurs or initialization completes, scanDeviceOpenComplete() will be invoked with either a device object or a description of the error that occurred.

- **Parameter**

Parameter	Description
deviceIndex	zero-based index of the device

1.1.4.14. openDeviceAsync(int, String)

- **Signature**

Method	public void openDeviceAsync (int deviceIndex, String uniformityMaskPath) throws IBScanException
--------	---

- **Description**

See also openDeviceAsync(int).

- **Parameter**

Parameter	Description
deviceIndex	zero-based index of the device
uniformityMaskPath	uniformity mask path

1.1.4.15. requestPermission() (Android only)

- **Signature**

Method	public void requestPermission (int deviceId)
--------	---

- **Description**

Request permission to access the device. Success or failure will be returned to the user through the registered IBScanListener's `scanDevicePermissionGranted()` callback. If permission has not already been granted to the device, a dialog may be shown to the user.

- **Parameter**

Parameter	Description
deviceId	ID of the device. This is the ID that Android assigns to the device, obtained through the <code>UsbDevice getId()</code> method.

1.1.4.16. `setContext()` (Android only)

- **Signature**

Method	public void setContext (Context context)
--------	---

- **Description**

Set the context for this IBScan. This function must be called by an activity for scanner devices to be recognized and accessible. When one activity transfers control of the IB scanners to another, this function should be called with a null argument to release the reference to the context and unregister it as a USB receiver.

- **Parameter**

Parameter	Description
context	the context for the receiver and USB accesses. If null, the existing context will still be unregistered as a receiver and the reference to it will be cleared.

1.1.4.17. `setScanListener()`

- **Signature**

Method	public void setScanListener (IBScanListener listener)
--------	--

- **Description**

Set listener for scan events.

- **Parameter**

Parameter	Description
listener	listener for scan events

1.1.4.18. `unloadLibrary()`

- **Signature**

Method	public void unloadLibrary()
--------	------------------------------------

- **Description**

Release the library from the address space manually.

1.1.4.19. **updateUsbPermission()(Android only)**

- **Signature**

Method	public void updateUsbPermission()
--------	--

- **Description**

Update the permission to allow the approach to attached USB bus by libusb library. It is required rooting of Android device.

1.1.5. Class IBScanDevice

1.1.5.1. Summary

Principal class for interfacing with particular IB scanners.

1.1.5.2. beginCaptureImage()

- **Signature**

Method	public void beginCaptureImage (IBScanDevice.ImageType imageType, IBScanDevice.ImageResolution imageResolution, int captureOptions) throws IBScanException
--------	--

- **Description**

Start image acquisition for the device. This function will return immediately, but this device's IBScanDeviceListener will inform the application about scanning progress with the methods deviceFingerCountChanged(), deviceFingerQualityChanged, devicePlatenStateChanged(), and deviceImagePreviewAvailable(). When a quality scan with the correct number of fingers is available or captureImageManually() prematurely aborts the scan, the listener's deviceImageResultAvailable() method will supply a final scan to the application.

- **Parameter**

Parameter	Description
imageType	the image type of the image to acquire
imageResolution	the image resolution of the image to acquire
captureOptions	a bit-mapped value indicating capture options, consisting of zero or more options OR'd together <ul style="list-style-type: none">• OPTION_AUTO_CAPTURE auto capture• OPTION_AUTO_CONTRAST auto contrast• OPTION_IGNORE_FINGER_COUNT ignore finger count

1.1.5.3. calculateNfiqScore()

- **Signature**

Method	public int calculateNfiqScore (ImageData image) throws IBScanException
--------	---

- **Description**

Calculate NFIQ score for image. The calculation is potentially long-running and

may should be performed on a background thread.

- **Parameter**

Parameter	Description
image	the image for which the NFIQ score will be calculate

- **Return**

The NFIQ score, between 1 (best) and 5 (worst), inclusive.

1.1.5.4. **cancelCaptureImage()**

- **Signature**

Method	public void cancelCaptureImage() throws IBScanException
--------	--

- **Description**

Abort image acquisition on the device. After beginCaptureImage() is called, image capture can be prematurely terminated with this function..

1.1.5.5. **captureImage()**

- **Signature**

Method	public Object[] captureImage() throws IBScanException
--------	--

- **Description**

Capture an image from scanner.

- **Return**

an array containing information about captured image. The contents of the returned array, in order, are

- ImageData image - image data of preview image or result image
- ImageType imageType - image type
- ImageData[] splitImageArray - finger array split from the result image
- FingerCountState fingerCountState - finger count state
- FingerQualityState[] qualityArray - finger quality states

1.1.5.6. **captureImageExtended()**

- **Signature**

Method	public Object[] captureImageExtended() throws IBScanException
--------	--

- **Description**

Capture an image from scanner, returning extended information.

- **Return**

an array containing information about captured image. The contents of the returned array, in order, are

- IBScanException image status – status from result image acquisition
- ImageData image - image data of preview image or result image
- ImageType imageType - image type
- Integer detectedFingerCount – detected finger count
- ImageData[] segmentImageArray - finger array split from the result image
- SegmentPosition[] segmentPositionArray – position data for individual fingers split from result image
- FingerCountState fingerCountState - finger count state
- FingerQualityState[] qualityArray - finger quality states

1.1.5.7. **captureImageManually()**

- **Signature**

Method	public void captureImageManually() throws IBScanException
--------	--

- **Description**

Capture current scanner image as result image. After beginCaptureImage() is called, scanning typically continues until a quality scan with the correct number of fingers is available or an error occurs. This function will prematurely terminate the process and return the current scanner image to the application with the IBScanDeviceListener's deviceImageResultAvailable() method.

1.1.5.8. **close()**

- **Signature**

Method	public void close() throws IBScanException
--------	---

- **Description**

Release a device.

1.1.5.9. **enableEvent()**

- **Signature**

Method	public void enableEvent (EventType event, boolean enable) throws IBScanException
--------	---

- **Description**

Enable or disable a low-level event for this device. When a device is opened all events are enabled. Disabling an event will effectively disable the associated method in the configured IBScanDeviceListener.

- **Parameter**

Parameter	Description
event	Event to enable or disable
enable	true to enable event; false to disable event

1.1.5.10. getContrast()

- **Signature**

Method	public int getContrast() throws IBScanException
--------	--

- **Description**

Get the contrast value for the device.

- **Return**

contrast value between MIN_CONTRAST_VALUE and MAX_CONTRAST_VALUE, inclusive

1.1.5.11. getLEDs()

- **Signature**

Method	public long getLEDs() throws IBScanException
--------	---

- **Description**

Get the active status LEDs of the device.

- **Return**

the bit-mapped status of the LEDs; set bits indicate "on" LEDs

1.1.5.12. getLEOperationMode()

- **Signature**

Method	public IBScanDevice.LEOperationMode getLEOperationMode() throws IBScanException
--------	---

- **Description**

Get the Light-Emitting (LE) film operation mode (On, Off, or Auto) for the device.

- **Return**

light-emitting film operation mode

1.1.5.13. getOperableLEDs()

- **Signature**

Method	public IBScanDevice.LedState getOperableLEDs() throws IBScanException
--------	---

- **Description**

Get a description of the operable status LEDs of the device.

- **Return**

a description of the status LEDs

1.1.5.14. **getPlatenStateAtCapture()**

- **Signature**

Method	public IBScanDevice.PlatenState getPlatenStateAtCapture() throws IBScanException
--------	--

- **Description**

Get information about platen state when capture was started.

- **Return**

information about platen state

1.1.5.15. **getProperty()**

- **Signature**

Method	public String getProperty (IBScanDevice.PropertyId propertyId) throws IBScanException
--------	---

- **Description**

Retrieves a property value from the device.

- **Parameter**

Parameter	Description
propertyId	the ID of the property to get

- **Return**

the value of the property, as a string

1.1.5.16. **getResultImageExt()**

- **Signature**

Method	public Object[] getResultImageExt (IBCommon.FingerPosition fingerPosition) throws IBScanException
--------	--

- **Description**

Get extended result image information.

- **Parameter**

Parameter	Description
fingerPosition	finger position of finger(s) captured

- **Return**

an array containing information about captured image. The contents of the returned array, in order, are

- IBCCommon.ImageDataExt image - image data of preview image or result image
- IBCCommon.ImageDataExt[] splitImageArray - finger array split from the result image

1.1.5.17. getRollingInfo()

- **Signature**

Method	public IBScanDevice.RollingData getRollingInfo() throws IBScanException
--------	---

- **Description**

Get information about rolling status.

- **Return**

information about rolling status

1.1.5.18. isCaptureActive()

- **Signature**

Method	public boolean isCaptureActive() throws IBScanException
--------	--

- **Description**

Check if capture is active on the device.

- **Return**

true if capture is active; false otherwise

1.1.5.19. isCaptureAvailable()

- **Signature**

Method	public boolean isCaptureAvailable (IBScanDevice.ImageType imageType, IBScanDevice.ImageResolution imageResolution) throws IBScanException
--------	--

- **Description**

Check if requested capture mode is supported by the device.

- **Parameter**

Parameter	Description
imageType	the image type of the mode to check
imageResolution	the image resolution of the mode to check

- **Return**

true if the mode is supported; false otherwise

1.1.5.20. isFingerTouching()

- **Signature**

Method	public boolean isFingerTouching() throws IBScanException
--------	---

- **Description**

Determines if one or more fingers is currently touching the detector.

- **Return**

true if a finger is on the detector; false otherwise

1.1.5.21. isOpened()

- **Signature**

Method	public boolean isOpened()
--------	----------------------------------

- **Description**

Check if a particular device is open/initialized.

- **Return**

true if the device is open; false otherwise

1.1.5.22. setContrast()

- **Signature**

Method	public void setContrast (int contrastValue) throws IBScanException
--------	---

- **Description**

Set the contrast value for the device.

- **Parameter**

Parameter	Description
contrastValue	contrast value between MIN_CONTRAST_VALUE and MAX_CONTRAST_VALUE, inclusive, to set

1.1.5.23. setLEDs()

- **Signature**

Method	public void setLEDs (long activeLEDs) throws IBScanException
--------	---

- **Description**

Set the active status of LEDs of the device.

- **Parameter**

Parameter	Description
activeLEDs	the bit-mapped status of the LEDs; set bits indicate LEDs to turn on, clear bits indicate LEDs to turn off

1.1.5.24. setLEOperationMode()

- **Signature**

Method	public void setLEOperationMode (IBScanDevice.LEOperationMode leOperationMode) throws IBScanException
--------	---

- **Description**

Set the Light-Emitting (LE) film operation mode (On, Off, or Auto) the device.

- **Parameter**

Parameter	Description
leOperationMode	light-emitting film operation mode to set

1.1.5.25. setProperty()

- **Signature**

Method	public void setProperty (IBScanDevice.PropertyId propertyId, String propertyValue) throws IBScanException
--------	---

- **Description**

Set a property value of the device.

- **Parameter**

Parameter	Description
propertyId	the ID of the property to set
propertyValue	the value to set for the property, as a string

1.1.5.26. setPropertyReserved()

- **Signature**

Method	public void setPropertyReserved (String reservedKey, IBScanDevice.PropertyId propertyId, String propertyValue) throws IBScanException
--------	--

- **Description**

Set a reserved property value of the device. It need to get reserved key from Integrated Biometrics to use this method.

- **Parameter**

Parameter	Description
reservedKey	The reserved key to set for the property, as a string
propertyId	the ID of the property to set
propertyValue	the value to set for the property, as a string

1.1.5.27. setScanDeviceListener()

- **Signature**

Method	public void setScanDeviceListener (IBScanDeviceListener listener)
--------	--

- **Description**

Register listener for scan device events.

- **Parameter**

Parameter	Description
listener	listener for events

1.1.5.28. generateZoomOutImageEx()

- **Signature**

Method	public int generateZoomOutImageEx (byte[] image, int inWidth, int inHeight, byte[]outImage, int outWidth, int outHeight, byte bkColor) throws IBScanException
--------	--

- **Description**

Generate scaled version of image.

- **Parameter**

Parameter	Description
image	Original image data
inWidth	Width of input image
inHeight	Height of input image
outImage	Pointer to buffer that will receive output image. This buffer must hold at least 'outWidth' x 'outHeight' bytes
outWidth	Width of output image
outHeight	Height of output image
bkColor	Background color of output image

1.1.5.29. **wsqEncodeToFile()**

- **Signature**

Method	public int wsqEncodeToFile (String filename, byte[] image, int width, int height, int pitch, int bitPerPixel, int pixelPerInch, double bitrate, String commentText) throws IBScanException
--------	---

- **Description**

Save WSQ compresses grayscale fingerprint image to specific file path.

- **Parameter**

Parameter	Description
filename	File path to save image which is compressed from original image by WSQ compression
image	Original image data
width	Width of original image
height	Height of original image
pitch	Image line pitch (in bytes). A positive value indicates top-down line order; a negative value indicates bottom-up line order
bitPerPixel	Bits per pixel of original image
pixelPerInch	Pixel per inch of original image
Bitrate	Determines the amount of lossy compression. Suggested settings: bitRate = 2.25 yields around 5:1 compression bitRate = 0.75 yields around 15:1 compression

commentText	Comment to write compressed data
-------------	----------------------------------

1.1.5.30. SavePngImage()(Java only)

- **Signature**

Method	public int SavePngImage (String filename, byte[] image, int width, int height, int pitch, double resX, double resY) throws IBScanException
--------	---

- **Description**

Save png image to specific file path.

- **Parameter**

Parameter	Description
filename	File path to save png image
image	Original image data
width	Width of original image
height	Height of original image
pitch	Image line pitch (in bytes). A positive value indicates top-down line order; a negative value indicates bottom-up line order
resX	Horizontal image resolution (in pixels/inch)
resY	Vertical image resolution (in pixels/inch)

1.1.5.31. SaveJP2Image ()(Java only)

- **Signature**

Method	public int SaveJP2Image (String filename, byte[] image, int width, int height, int pitch, double resX, double resY, int fQuality) throws IBScanException
--------	---

- **Description**

Save JPEG-2000 image to specific file path.

- **Parameter**

Parameter	Description
filename	File path to save jpeg-2000 image
image	Original image data

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width	Width of original image
height	Height of original image
pitch	Image line pitch (in bytes). A positive value indicates top-down line order; a negative value indicates bottom-up line order
resX	Horizontal image resolution (in pixels/inch)
resY	Vertical image resolution (in pixels/inch)
fQuality	Quality level for JPEG2000, the valid range is between 0 and 100

1.1.5.32. SaveBitmapImage ()(Java only)

- **Signature**

Method	public int SaveBitmapImage (String filename, byte[] image, int width, int height, int pitch, double resX, double resY) throws IBScanException
--------	--

- **Description**

Save Bitmap image to specific file path.

- **Parameter**

Parameter	Description
filename	File path to save Bitmap image
image	Original image data
width	Width of original image
height	Height of original image
pitch	Image line pitch (in bytes). A positive value indicates top-down line order; a negative value indicates bottom-up line order
resX	Horizontal image resolution (in pixels/inch)
resY	Vertical image resolution (in pixels/inch)

1.1.5.33. getEnhancedImageReserved()

- **Signature**

Method	public void getEnhancedImageReserved (String reservedKey, IBScanDevice.ImageData image) throws IBScanException
--------	---

- **Description**

Generate enhanced image from preview, returning extended information.

- **Parameter**

Parameter	Description
reservedKey	The reserved key to set for the property, as a string
imageData	Input image data which is returned from preview callback

- **Return**

an array containing information about enhanced image. The contents of the returned array, in order, are

- IBScanDevice.ImageData enhancedImage – enhanced image data
- Integer detectedFingerCount – detected finger count
- IBScanDevice.ImageData[] segmentImageArray – finger array split from the enhanced image data
- IBScanDevice.SegmentPosition[] segmentPositionArray – position data for individual fingers split from enhanced image data

1.1.5.34. Constant field values

Field	Description
MAX_CONTRAST_VALUE	Maximum contrast value. See getContrast(), setContrast().
MIN_CONTRAST_VALUE	Minimum contrast value. See getContrast(), setContrast().
OPTION_AUTO_CAPTURE	Capture option constant for auto capture. See beginCaptureImage().
OPTION_AUTO_CONTRAST	Capture option constant for auto contrast. See beginCaptureImage().
OPTION_IGNORE_FINGER_COUNT	Capture option constant for ignore finger count. See beginCaptureImage().

1.1.5.35. getCombineImage ()

- **Signature**

Method	public void getCombineImage (IBScanDevice.ImageData inImage1, IBScanDevice.ImageData inImage2,int whichHand) throws IBScanException
--------	---

- **Description**

Combine two images (2 flat fingers) into a single image (left/right hands)

- **Parameter**

Parameter	Description
inImage1	Pointer to IBScanDevice.ImageData (index and middle finger)
inImage2	Pointer to IBScanDevice.ImageData (ring and little finger)
whichHand	Information of left or right hand

- **Return**

Pointer to IBScanDevice.ImageData (1600 x 1500 fixed size image)

1.1.5.36. getOperableBeeper()

- **Signature**

Method	public IBScanDevice. BeeperType getOperableBeeper() throws IBScanException
--------	---

- **Description**

Get characteristics of operable Beeper on a device.

- **Return**

information about Beeper type

1.1.5.37. setBeeper()

- **Signature**

Method	public void setBeeper (BeepPattern bPattern, final long soundTone, final long duration, final long reserved_1, final long reserved_2)
--------	--

- **Description**

Set the value of Beeper on a device.

- **Parameter**

Parameter	Description
bPattern	Input beep data which is returned from keybuttons callback
soundTone	The frequency of the sound, in specific value. The parameter must be in the range 0 through 2
duration	The duration of the sound, in 25 miliseconds. The parameter must be in the range 1 through 200 at

	ENUM_IBSU_BEEP_PATTERN_GENERIC, in the range 1 through 7 at ENUM_IBSU_BEEP_PATTERN_REPEAT.
reserved_1	Reserved, If you set beepPattern to ENUM_IBSU_BEEP_PATTERN_REPEAT reserved_1 can use the sleep time after duration of the sound, in 25 milliseconds. The parameter must be in the range 1 through 8
reserved_2	Reserved, If you set beepPattern to ENUM_IBSU_BEEP_PATTERN_REPEAT reserved_1 can use the operation(start/stop of pattern repeat), 1 to start; 0 to stop

1.1.5.38. getCombineImageEx()

- **Signature**

Method	public void getCombineImageEx (IBScanDevice.ImageData inImage1, IBScanDevice.ImageData inImage2,int whichHand) throws IBScanException
--------	---

- **Description**

Combine two images (2 flat fingers) into a single image (left/right hands)

- **Parameter**

Parameter	Description
inImage1	Pointer to IBScanDevice.ImageData (index and middle finger)
inImage2	Pointer to IBScanDevice.ImageData (ring and little finger)
whichHand	Information of left or right hand

- **Return**

an array containing information about result image. The contents of the returned array, in order, are

- IBScanDevice.ImageData resultImage – result image data
- IBScanDevice.ImageData[] segmentImageArray – finger array split from the result image data
- IBScanDevice.SegmentPosition[] segmentPositionArray – position data for individual fingers split from result image data
- Integer SegmentImageArrayCount – detected segment count

1.1.5.39. generateDisplayImage()

- **Signature**

Method	public int generateDisplayImage (byte[] image, int inWidth, int inHeight, byte[] outImage, int outWidth, int outHeight, byte bkColor, int outFormat, int outQualityLevel, Boolean outVerticalFlip) throws IBScanException
--------	--

- **Description**

Generate scaled image in various formats for fast image display on canvas. You can use instead of generateZoomOutImageEx()

- **Parameter**

Parameter	Description
image	Original grayscale image data
inWidth	Width of input image
inHeight	Height of input image
outImage	Pointer to buffer that will receive output image. This buffer must hold at least 'outWidth' x 'outHeight' bytes
outWidth	Width of output image
outHeight	Height of output image
bkColor	Background color of output image
outFormat	Image format of output image
outQualityLevel	Image quality of output image, the parameter must be in the range 0 through 2
outVerticalFlip	Enable/disable vertical flip of output image

1.1.5.40. removeFingerImage()

- **Signature**

Method	public int removeFingerImage (long fIndex) throws IBScanException
--------	--

- **Description**

Remove a finger image

- **Parameter**

Parameter	Description
fIndex	Bit-pattern of finger index of input image. ex) IBUSU_FINGER_LEFT_LITTLE IBUSU_FINGER_LEFT_RING

1.1.5.41. addFingerImage()

- **Signature**

Method	public int addFingerImage (IBScanDevice.ImageData image, long fIndex, IBScanDevice.ImageType imageType, boolean flagForce) throws IBScanException
--------	---

- **Description**

Add a finger image for the fingerprint duplicate check and roll to slap comparison. It can have only ten prints

- **Parameter**

Parameter	Description
image	Input image data
fIndex	Bit-pattern of finger index of input image. ex) IBSU_FINGER_LEFT_LITTLE IBSU_FINGER_LEFT_RING
imageType	Image type of input image
flagForce	Indicates whether input image should be saved even if another image is already stored or not. TRUE to be stored force; FALSE to be not stored force

1.1.5.42. isFingerDuplicated()

- **Signature**

Method	public long isFingerDuplicated (IBScanDevice.ImageData image, long fIndex, IBScanDevice.ImageType imageType, int securityLevel) throws IBScanException
--------	---

- **Description**

Checks for the fingerprint duplicate from the stored prints by addFingerImage()

- **Parameter**

Parameter	Description
image	Input image data
fIndex	Bit-pattern of finger index of input image. ex) IBSU_FINGER_LEFT_LITTLE IBSU_FINGER_LEFT_RING
imageType	Image type of input image

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securityLevel	security level for the duplicate checks
---------------	---

- **Return**

Bit-pattern matched index variable that will receive result of duplicate

1.1.5.43. isValidFingerGeometry()

- **Signature**

Method	public long isValidFingerGeometry (IBScanDevice.ImageData image, long flIndex, IBScanDevice.ImageType imageType) throws IBScanException
--------	--

- **Description**

Check for hand and finger geometry whether it is correct or not

- **Parameter**

Parameter	Description
image	Input image data
flIndex	Bit-pattern of finger index of input image. ex) IBSU_FINGER_LEFT_LITTLE IBSU_FINGER_LEFT_RING
imageType	Image type of input image

- **Return**

Variable that will receive whether it is valid or not. True to valid; false to invalid.

1.1.6. Interface IBScanListener

1.1.6.1. Summary

Listener for device management events on an IBScan. This listener should be registered by an application with the `setScanListener()` method.

Special functions are provided for device attachment and detachment and permission status on Android, where the app may be explicitly responsible for soliciting permission.

1.1.6.2. `scanDeviceAttached()` (Android only)

- **Signature**

Method	void scanDeviceAttached (int deviceId)
--------	---

- **Description**

Device attached notification.

- **Parameter**

Parameter	Description
deviceId	ID of the device. This is the ID that Android assigns to the device, obtained through the <code>UsbDevice</code> <code>getDeviceId()</code> method

1.1.6.3. `scanDeviceDetached()` (Android only)

- **Signature**

Method	void scanDeviceDetached (int deviceId)
--------	---

- **Description**

Device detached notification.

- **Parameter**

Parameter	Description
deviceId	ID of the device. This is the ID that Android assigns to the device, obtained through the <code>UsbDevice</code> <code>getDeviceId()</code> method

1.1.6.4. `scanDevicePermissionGranted()` (Android)

- **Signature**

Method	void scanDevicePermissionGranted (int deviceId, boolean granted)
--------	---

- **Description**

Device access granted or denied notification. This notification occurs after

requestPermission() has been called. Only scan devices for which permission has been granted can be opened or be described with getDeviceDescription().

- **Parameter**

Parameter	Description
deviceId	ID of the device. This is the ID that Android assigns to the device, obtained through the UsbDevice getId() method
granted	true if permission was granted; false if permission was denied

1.1.6.5. scanDeviceCountChanged ()

- **Signature**

Method	void scanDeviceCountChanged (int deviceCount)
--------	--

- **Description**

Device count change notification.

- **Parameter**

Parameter	Description
deviceCount	new count of devices

1.1.6.6. scanDeviceInitProgress ()

- **Signature**

Method	void scanDeviceInitProgress (int deviceIndex, int progressValue)
--------	---

- **Description**

Device initialization progress notification. This notification occurs while the openDevice() is executing; or after openDeviceAsync() has been called before initialization completes or an error occurs.

- **Parameter**

Parameter	Description
deviceIndex	zero-based index of device
progressValue	initialization progress between 0 and 100. A value of 100 indicates that that initialization is complete

1.1.6.7. scanDeviceOpenComplete ()

- **Signature**

Method	void scanDeviceOpenComplete (int deviceIndex, IBScanDevice device, IBScanException exception)
--------	--

- **Description**

Device open complete notification. This notification occurs after `openDeviceAsync()` has been called when initialization completes or an error occurs.

- **Parameter**

Parameter	Description
<code>deviceIndex</code>	zero-based index of device
<code>device</code>	opened device, if successful; otherwise, null
<code>exception</code>	exception, if any, encountered while opening device; otherwise, null

1.1.7. Interface `IBScanDeviceListener`

1.1.7.1. Summary

Listener for scan events on a `IBScanDevice`. This listener should be registered by an application using the `setScanDeviceListener(IBScanDeviceListener)` method.

Most of these events occur after `beginCaptureImage()` has been called. If fingers are touching the platen when the capture is begun, `deviceImagePreviewAvailable()` will be called immediately and again once no fingers are touching. Periodically, until a final image is achieved, `deviceImagePreviewAvailable()` will return the current scanner image. Changes in the quantity and quality of finger presses will result in `deviceFingerCountChanged()` or `deviceFingerQualityChanged()` calls. If the selected scan type is a rolled finger scan, then `deviceAcquisitionBegan()` will be called when a flat finger scan has been acquired and the user should begin rolling his or her finger to the left; when the left-roll is complete, `deviceAcquisitionCompleted()` will be called, and the user should begin rolling back toward the right. When a quality scan with the correct number of fingers (and a full finger roller, if applicable) is available or `captureImageManually()` is called, `deviceImageResultAvailable()` or `deviceImageResultExtendedAvailable()` will supply a final scan image to the application.

1.1.7.2. `deviceCommunicationBroken()`

- **Signature**

Method	<code>void deviceCommunicationBroken(IBScanDevice device)</code>
--------	--

- **Description**

Communication break notification. This method is called when communication with the device is broken while a capture is in progress.

- **Parameter**

Parameter	Description
-----------	-------------

device	device with which communication has been broken
--------	---

1.1.7.3. deviceImagePreviewAvailable()

- **Signature**

Method	void deviceImagePreviewAvailable (IBScanDevice device, IBScanDevice.ImageData image)
--------	---

- **Description**

Image preview available notification.

- **Parameter**

Parameter	Description
device	device for which preview image is available
image	preview image

1.1.7.4. deviceFingerCountChanged()

- **Signature**

Method	void deviceFingerCountChanged (IBScanDevice device, IBScanDevice.FingerCountState fingerState)
--------	---

- **Description**

Finger count change notification.

- **Parameter**

Parameter	Description
device	device for which finger count has changed
fingerState	state of finger count

1.1.7.5. deviceFingerQualityChanged()

- **Signature**

Method	void deviceFingerQualityChanged (IBScanDevice device, IBScanDevice.FingerQualityState[] fingerQualities)
--------	---

- **Description**

Finger quality change notification.

- **Parameter**

Parameter	Description
-----------	-------------

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device	device for which finger quality has changed
fingerQualities	array of qualities for fingers

1.1.7.6. deviceAcquisitionBegan()

- **Signature**

Method	void deviceAcquisitionBegan (IBScanDevice device, IBScanDevice.ImageType imageType)
--------	--

- **Description**

Device roll acquisition begun notification. If an image type of ROLL_SINGLE_FINGER is being captured, this method will be called when a flat-finger scan has been acquired and the user should begin rolling his or her finger to the left.

- **Parameter**

Parameter	Description
device	device for which acquisition has begun
imageType	type of image

1.1.7.7. deviceAcquisitionCompleted()

- **Signature**

Method	void deviceAcquisitionCompleted (IBScanDevice device, IBScanDevice.ImageType imageType)
--------	--

- **Description**

Device roll acquisition complete notification. If an image type of ROLL_SINGLE_FINGER is being captured, this method will be called when the left-roll has been completed and the user should begin roller his or her finger to the left to capture the right side of the finger.

- **Parameter**

Parameter	Description
device	device for which acquisition has completed
imageType	type of image

1.1.7.8. deviceImageResultAvailable()

- **Signature**

Method	void deviceImageResultAvailable (IBScanDevice device,
--------	--

	IBScanDevice.ImageData image, IBScanDevice.ImageType imageType, IBScanDevice.ImageData[] splitImageArray)
--	---

- **Description**

Result image available notification.

- **Parameter**

Parameter	Description
device	device for which result image is available
image	result image data
imageType	type of image
splitImageArray	array of split result image data

1.1.7.9. deviceImageResultExtendedAvailable()

- **Signature**

Method	void deviceImageResultExtendedAvailable (IBScanDevice device, IBScanException imageStatus, IBScanDevice.ImageData image, IBScanDevice.ImageType imageType, int detectedFingerCount, IBScanDevice.ImageData[] segmentImageArray, SegmentPosition[] segmentPositionArray)
--------	--

- **Description**

Result extended image available notification.

- **Parameter**

Parameter	Description
device	device for which result image is available
imageStatus	status from result image acquisition
image	result image data
imageType	type of image
detectedFingerCount	Detected finger count
segmentImageArray	array of segment result image data
segmentPositionArray	array of segment position data

1.1.7.10. devicePlatenStateChanged()

- **Signature**

Method	void devicePlatenStateChanged(IBScanDevice device,IBScanDevice.PlatenState platenState)
--------	---

- **Description**

Platen state changed notification. If fingers are touching the platen when a capture is begun, this method will be called immediately and once again when no fingers are touching. Subsequent state changes from touches will not be notified.

- **Parameter**

Parameter	Description
device	device for which platen state has changed
platenState	new platen state

1.1.7.11. deviceWarningReceived()

- **Signature**

Method	void devicePlatenStateChanged(IBScanDevice device,IBScanDevice.PlatenState platenState)
--------	---

- **Description**

Warning message notification.

- **Parameter**

Parameter	Description
device	device for which warning was received
warning	warning received from device

1.1.7.12. devicePressedKeyButtons()

- **Signature**

Method	void devicePressedKeyButtons (IBScanDevice device,int pressedKeyButtons)
--------	--

- **Description**

Key button notification.

- **Parameter**

Parameter	Description
device	device for which key button was pressed
pressedKeyButtons	The key button index which is pressed

1.1.8. Nested Classes

1.1.8.1. Class IBScan.DeviceDesc

- **Description**

Basic device description structure.

- **Uses**

IBScan method `getDeviceDescription()`

- **Fields**

Field	Description
int deviceId	ID of the device. This is the ID that Android assigns to the device, obtained through the <code>UsbDevice</code> <code>getDeviceId()</code> method.
String devRevision	Device revision
String fwVersion	Device firmware version
String interfaceType	Device interface type (USB, Firewire)
boolean isOpened	Indicates whether device is opened
String productName	Device product name
String serialNumber	Device serial number

1.1.8.2. Class IBScan.SdkVersion

- **Description**

Container to hold version information.

- **Uses**

IBScan method `getSdkVersion()`

- **Fields**

Field	Description
String file	File version string
String product	Product version string

1.1.8.3. Enumeration IBScanDevice.EventType

- **Description**

Event types.

- **Uses**

IBScanDevice method enableEvent()

- **Values**

Value	Description
COMMUNICATION_BROKEN	Communication with a device is interrupted.
PREVIEW_IMAGE_AVAILABLE	A new preview image is available from a device.
ACQUISITION_BEGUN	Rolled print acquisition when rolling should begin.
ACQUISITION_COMPLETED	Rolled print acquisition when rolling completes.
RESULT_IMAGE_AVAILABLE	Result image is available for a capture.
FINGER_QUALITY_CHANGED	A finger quality changes.
FINGER_COUNT_CHANGED	The finger count changes.
PLATEN_STATE_CHANGED	The platen was not clear when capture started or has since become clear.
WARNING_RECEIVED	A warning message is generated.
RESULT_IMAGE_EXTENDED_AVAILABLE	Result image is available for a capture (with extended information).

1.1.8.4. Enumeration IBScanDevice.FingerCountState

- **Description**

Finger count state definitions.

- **Uses**

IBScanDeviceListener method deviceFingerCountChanged()

- **Values**

Value	Description
FINGER_COUNT_OK	Expected number of fingers on platen
TOO_MANY_FINGERS	Too many fingers on platen
TOO_FEW_FINGERS	Too few fingers on platen
NON_FINGER	No fingers on platen

1.1.8.5. Enumeration IBScanDevice.FingerQualityState

- **Description**

Finger quality state definitions.

- **Uses**

IBScanDeviceListener method deviceFingerQualityChanged()

- **Values**

Value	Description
FAIR	Fair quality
FINGER_NOT_PRESENT	No finger on platen
GOOD	Good quality
POOR	Poor quality
INVALID_AREA_TOP	Finger position is not valid on top side.
INVALID_AREA_LEFT	Finger position is not valid on left side.
INVALID_AREA_RIGHT	Finger position is not valid on right side.

1.1.8.6. Class IBScanDevice.ImageData

- **Description**

Container to hold image data together with meta information.

- **Uses**

IBScanDeviceListener methods `deviceImagePreviewAvailable()` and `deviceImageResultAvailable()`; IBScanDevice method `captureImage()`

- **Fields**

Field	Description
short bitsPerPixel	Number of bits per pixel
byte[] buffer	Byte-array holding image data
IBScanDevice.ImageFormat format	Image color format
double frameTime	Image acquisition time (in seconds). The value contains the time taken for acquisition from device (excluding processing time).
int height	Image vertical size
boolean isFinal	Marks image as finally processed. A value of false disqualifies image from further processing, e.g., interim or pre-processed result images
int pitch	Image line pitch (in bytes). Positive values indicate top-down line order, negative values indicate bottom-up line order
double resolutionX	Horizontal image resolution (in pixels per inch)
double resolutionY	Vertical image resolution (in pixels per inch)

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int width	Image horizontal size)
Int processThres	Threshold of image processing

- **Methods**

Description
public Bitmap toBitmap () Create image from image data.
public Bitmap toBitmapScaled (int dstWidth, int dstHeight) Create scaled image from the image data.
public Bitmap toBitmapScaled (int dstWidth, int dstHeight, IBScanDevice.RollingState rollingState, int rollingLineX) Create scaled image from the image data with rolling line.
public boolean saveToFile (java.io.File output, java.lang.String fileFormat) throws java.io.IOException Save image to file.

1.1.8.7. Enumeration IBScanDevice.ImageFormat

- **Description**

Image format constants.

- **Uses**

IBScanDevice.ImageData nested class

- **Values**

Value	Description
GRAY	Gray scale image
RGB24	24-bit RGB color image
RGB32	True color RGB image
UNKNOWN	Format not known or set

1.1.8.8. Enumeration IBScanDevice.ImageResolution

- **Description**

Image resolution types.

- **Uses**

IBScanDevice methods isCaptureModeAvailable(), beginCaptureImage().

- **Values**

Value	Description
RESOLUTION_1000	1000 pixels-per-inch
RESOLUTION_500	500 pixels-per-inch

1.1.8.9. Enumeration IBScanDevice.ImageType

- **Description**

Supported image types. This is an enumeration of the image types supported by the SDK, and particular scanner models may not supported all types.

- **Uses**

IBScanDevice methods isCaptureModeAvailable(), beginCaptureImage().

- **Values**

Value	Description
FLAT_FOUR_FINGERS	Four flat fingers
FLAT_SINGLE_FINGER	Flat single finger
FLAT_TWO_FINGERS	Two flat fingers
ROLL_SINGLE_FINGER	Rolled fingerprint image
TYPE_NONE	Not supported yet

1.1.8.10. Class IBScanDevice.LedState

- **Description**

Container to hold LED information.

- **Uses**

IBScanDevice method getOperableLEDs().

- **Fields**

Field	Description
int ledCount	Number of LEDs
IBScanDevice.LedType ledType	Type of LEDs
long operableLEDs	Bit pattern of operable LEDs

1.1.8.11. Enumeration IBScanDevice.LEOperationMode

- **Description**

Definitions of light emitting film's operation modes.

- **Uses**

IBScanDevice methods getLEOperationMode(), setLEOperationMode().

- **Values**

Value	Description
AUTO	
OFF	
ON	

1.1.8.12. Enumeration IBScanDevice.PlatenState

- **Description**

Platen state definitions.

- **Uses**

IBScanDevice method getPlatenStateAtCapture(); IBScanDeviceListener method devicePlatenStateChanged().

- **Values**

Value	Description
CLEARD	
HAS_FINGERS	

1.1.8.13. Enumeration IBScanDevice.PropertyId

- **Description**

General property definitions. Property values of an IBScanDevice are set with setProperty() and gotten with getProperty().

- **Uses**

IBScanDevice methods getProperty() and setProperty().

- **Values**

Value	Description
ENABLE_POWER_SAVE_MODE	(get/set) Power save mode. Specify the value "TRUE" to enable or "FALSE" to disable. By default, power save mode is disabled.
FIRMWARE	(get) Firmware version string
IBIA_DEVICE_ID	(get) IBIA device ID
IBIA_VENDOR_ID	(get) IBIA vendor ID
IBIA_VERSION	(get) IBIA version information

IGNORE_FINGER_TIME	(get/set) The time in milliseconds to acquire the finger print in the auto capture mode regardless of the number of fingers. The capture option OPTION_AUT_CAPTURE must be given when capture is begun (with beginCaptureImage()). The default value is 4000-ms and the value may range between 2000- and 10000-ms.
IMAGE_HEIGHT	(get) Image height value
IMAGE_WIDTH	(get) Image width value
POLLINGTIME_TO_BGETIMAGE	(get) Polling time for blocking image capture (with captureImage()).
PRODUCT_ID	(get) Product name string (e.g., "Watson").
PRODUCTION_DATE	(get) Production date string
RECOMMENDED_LEVEL	(get/set) Auto contrast level value
RETRY_WRONG_COMMUNICATION	(get/set) The retry count for communication failures. The default value is 6, and the value may range between 1 and 120.
CAPTURE_TIMEOUT	The maximum wait time for image capture, in seconds. If -1, the timeout is infinite. Otherwise, the valid range is between 10- and 3600-seconds, inclusive. The default is -1.
ROLL_MIN_WIDTH	[get/set] Minimum distance of rolled fingerprint, in millimeters. The valid range is between 10- and 30-mm, inclusive. The default is 15-mm.
REVISION	(get) Device revision string
SERIAL_NUMBER	(get) Serial number string
SERVICE_DATE	(get) Last service date string
VENDOR_ID	(get) Device manufacturer identifier
ROLL_MODE	(get/set) roll mode. The valid range is between 0 ~ 1. The default is 1. 0 : no use smear 1 : use notice
ROLL_LEVEL	(get/set) roll level. The valid range is between 0 ~ 2. The default is 1. 0 : low level 1 : medium level 2 : high level
CAPTURE_AREA_THRESHOLD	(get/set) The area threshold for image capture for flat fingers. The area threshold for beginning rolled finger. The valid range is between 0 and 12,

	inclusive, with the default of 6.
ENABLE_DECIMATION	(get/set) Enable decimation mode (TRUE to enable or FALSE to disable). Some of devices (or firmware version) does not support this feature.
ENABLE_CAPTURE_ON_RELEASE	(get/set) Enable capture on release (TRUE to enable or FALSE to disable). The default is FALSE. TRUE : the result callback will be called when user release the finger from the sensor. FALSE : the result callback will be called when the quality of finger become good
DEVICE_INDEX	(get) The device index
DEVICE_ID	(get) The device ID which has same information with UsbDevice class of Android
SUPER_DRY_MODE	(get/set) Some of devices (or firmware version) does not support this feature. The default is FALSE. TRUE : Enable dry mode. FALSE : Disable dry mode
MIN_CAPTURE_TIME_IN_SUPER_DRY_MODE	(get/set) It is a minimum capture time when the dry mode is enabled with the property ENUM_IBSU_PROPERTY_SUPER_DRY_MODE. Some of devices (or firmware version) does not support this feature. The valid range is between 600- and 3000-ms, inclusive, with the default of 2000-ms.
ROLLED_IMAGE_WIDTH	(get) Rolled image width value
ROLLED_IMAGE_HEIGHT	(get) Rolled image height value
NO_PREVIEW_IMAGE	(get/set) Enable the drawing for preview image
ROLL_IMAGE_OVERRIDE	(get/set) Enable to override roll image
WARNING_MESSAGE_INVALID_ID_AREA	(get/set) Enable the warning message for invalid area for result image
ENABLE_WET_FINGER_DETECT	(get/set) Enable wet detect function
WET_FINGER_DETECT_LEVEL	(get/set) Change wet detect level. The valid range is between 1 and 5. The default is 3. 1 : Lowest level for detect wet finger : less sensitive 5 : Highest level for detect wet detect : more sensitive
RESERVED_IMAGE_PROCESSING_THRESHOLD	(get/set) The previmage processing threshold. The

SS_THRESHOLD	valid range is between 0 and 2, inclusive, with the default of 0 on embedded processor (ARM, Android and Windows Mobile), and with the default of 2 on PC. 0 : IMAGE_PROCESS_LOW 1 : IMAGE_PROCESS_MEDIUM 2 : IMAGE_PROCESS_HIGH
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1.1.8.14. Class IBScanDevice.RollingData

- **Description**

Rolling state data.

- **Uses**

IBScanDevice method getRollingState().

- **Fields**

Field	Description
int rollingLineX	Horizontal position of the vertical rolling line.
IBScanDevice.RollingState rollingState	The rolling state

1.1.8.15. Enumeration IBScanDevice.RollingState

- **Description**

Rolling state definitions.

- **Uses**

IBScanDevice.RollingData nested class

- **Values**

Value	Description
COMPLETE_ACQUISITION	Acquisition of scan for roll has completed
NOT_PRESENT	Acquisition has not begun
RESULT_IMAGE	A result image is already available
TAKE_ACQUISITION	Acquisition of scan for roll is occurring

1.1.8.16. Class IBScanDevice.SegmentPosition

- **Description**

Segment position.

- **Uses**

IBScanDevice method `captureImageExtended()` and IBScanDeviceListener method `deviceImageResultExtendedAvailable()`.

- **Fields**

Field	Description
int x1	x-coordinate of the first vertex
int y1	y-coordinate of the first vertex
int x2	x-coordinate of the second vertex
int y2	y-coordinate of the second vertex
int x3	x-coordinate of the third vertex
int y3	y-coordinate of the third vertex
int x4	x-coordinate of the fourth vertex
int y4	y-coordinate of the fourth vertex

1.1.8.17. Enumeration IBScanDevice.CombineImageWhichHand

- **Description**

Enumeration of hand to use for combining two images into one.

- **Uses**

IBScanDevice method `getCombineImage()`

- **Fields**

Field	Description
COMBINE_IMAGE_LEFT_HAND	Left Hand Image.
COMBINE_IMAGE_RIGHT_HAND	Right Hand Image.

1.1.9. Common Nested Classes

1.1.9.1. Class IBCommon.ImageDataExt

- **Description**

Container to hold image data together with extended meta data.

- **Uses**

IBScanDevice method `getResultImageExt()`

- **Fields**

Field	Description
ImageFormat imageFormat	

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ImpressionType impressionType	
FingerPosition fingerPosition	
CaptureDeviceTechId captureDeviceTechId	
short captureDeviceVendorId	
short captureDeviceTypeId	
short scanSamplingX	
short scanSamplingY	
short imageSamplingX	
short imageSamplingY	
short imageSizeX	
short imageSizeY	
byte scaleUnit	
byte bitDepth	
byte[] imageData	

1.1.9.2. Enumeration IBCommon.ImageFormat

- **Description**

Image formats.

- **Uses**

IBCommon.ImageDataExt member imageFormat

- **Values**

Value	Description
NO_BIT_PACKING	
BIT_PACKED	
WSQ	
JPEG_LOSSY	
JPEG2000_LOSSY	
JPEG2000_LOSSLESS	
PNG	

1.1.9.3. Enumeration IBCommon.ImpressionType

- **Description**

Impression type.

- **Uses**

IBCommon.ImageDataExt member impressionType

- **Values**

Value	Description
LIVE_SCAN_PLAIN	
LIVE_SCAN_ROLLED	
NONLIVE_SCAN_PLAIN	
NONLIVE_SCAN_ROLLED	
LATENT_IMPRESSION	
LATENT_TRACING	
LATENT_PHOTO	
LATENT_LIFT	
LIVE_SCAN_SWIPE	
LIVE_SCAN_VERTICAL_ROLL	
LIVE_SCAN_PALM	
NONLIVE_SCAN_PALM	
LATENT_PALM_IMPRESSION	
LATENT_PALM_TRACING	
LATENT_PALM_PHOTO	
LATENT_PALM_LIFT	
LIVE_SCAN_OPTICAL_CONTACTLESS_PLAIN	
OTHER	
UNKNOWN	

1.1.9.4. Enumeration IBCommon.FingerPosition

- **Description**

Finger positions.

- **Uses**

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IBCommon.ImageDataExt member fingerPosition; IBScanDevice function
getResultImageExt()

- **Values**

Value	Description
UNKNOWN	
RIGHT_THUMB	
RIGHT_INDEX_FINGER	
RIGHT_MIDDLE_FINGER	
RIGHT_RING_FINGER	
RIGHT_LITTLE_FINGER	
LEFT_THUMB	
LEFT_INDEX_FINGER	
LEFT_MIDDLE_FINGER	
LEFT_RING_FINGER	
LEFT_LITTLE_FINGER	
PLAIN_RIGHT_FOUR_FINGERS	
PLAIN_LEFT_FOUR_FINGERS	
PLAIN_THUMBS	
UNKNOWN_PALM	
RIGHT_FULL_PALM	
RIGHT_WRITERS_PALM	
LEFT_FULL_PALM	
LEFT_WRITERS_PALM	
RIGHT_LOWER_PALM	
RIGHT_UPPER_PALM	
RIGHT_OTHER	
LEFT_OTHER	
RIGHT_INTERDIGITAL	
RIGHT_THENAR	
RIGHT_HYPOTHENAR	
LEFT_INTERDIGITAL	
LEFT_THENAR	
LEFT_HYPOTHENAR	

RIGHT_INDEX_AND_MIDDLE	
RIGHT_MIDDLE_AND_RING	
RIGHT_RING_AND_LITTLE	
LEFT_INDEX_AND_MIDDLE	
LEFT_MIDDLE_AND_RING	
LEFT_RING_AND_LITTLE	
RIGHT_INDEX_AND_LEFT_INDEX	
RIGHT_INDEX_AND_MIDDLE_AND_RING	
RIGHT_MIDDLE_AND_RING_AND_LITTLE	
LEFT_INDEX_AND_MIDDLE_AND_RING	
LEFT_MIDDLE_AND_RING_AND_LITTLE	

1.1.9.5. Enumeration IBCommon.CaptureDeviceTechId

- **Description**

Capture device technology ID.

- **Uses**

IBCommon.ImageDataExt member captureDeviceTechId

- **Values**

Value	Description
UNKNOWN_OR_UNSPECIFIED	
WHITE_LIGHT_OPTICAL_TIR	
WHITE_LIGHT_OPTICAL_DIRECT_VIEW_ON_PLATEN	
WHITE_LIGHT_OPTICAL_TOUCHLESS	
MONOCHROMATIC_VISIBLE_OPTICAL_TIR	
MONOCHROMATIC_VISIBLE_OPTICAL_DIRECT_VEIW_ON_PLATEN	
MONOCHROMATIC_VISIBLE_OPTICAL_TOUCHLESS	
MULTISPECTRAL_OPTICAL_TIR	
MULTISPECTRAL_OPTICAL_DIRECT_VIEW_ON_PLATEN	
MULTISPECTRAL_OPTICAL_TOUCHLESS	

ELECTRO_LUMINESCENT	
SEMICONDUCTOR_CAPACITIVE	
SEMICONDUCTOR_RF	
SEMICONDUCTOR_THERMAL	
PRESSURE_SENSITIVE	
ULTRASOUND	
MECHANICAL	
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