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IntegriSign Capture SDK (Java) Developer's Guide



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1. Introduction

IntegriSign is a handwritten signature Capture and Verification System, using an ePad device. IntegriSign SDK (Java) is bundled with capture components. Signatures are captured and data is presented as a BASE64 string, facilitating the host application to store in any database/file system. Flexible and yet powerful API calls are provided to convert and optimize captured signatures to various image formats like BMP, JPEG, PNG and GIF.

2. Abstract

Desktop signature capture system, developed using IntegriSign Java Developer's Kit, is described. This application allows users to sign and authenticate java forms, with the ability to store and retrieve signatures in the server database as well as the ability to generate image files of the signature.

3. Key Features

- Option of converting signature data into image formats (JPEG, GIF, BMP and PNG).
- Allows signature capture through ePad device.
- Enables the verification of content integrity of signed documents or forms.

4. System Requirements

- **Client:** Windows 10 / Windows 11 (all 64-bit) operating systems
- JDK 1.4 RUNTIME or higher

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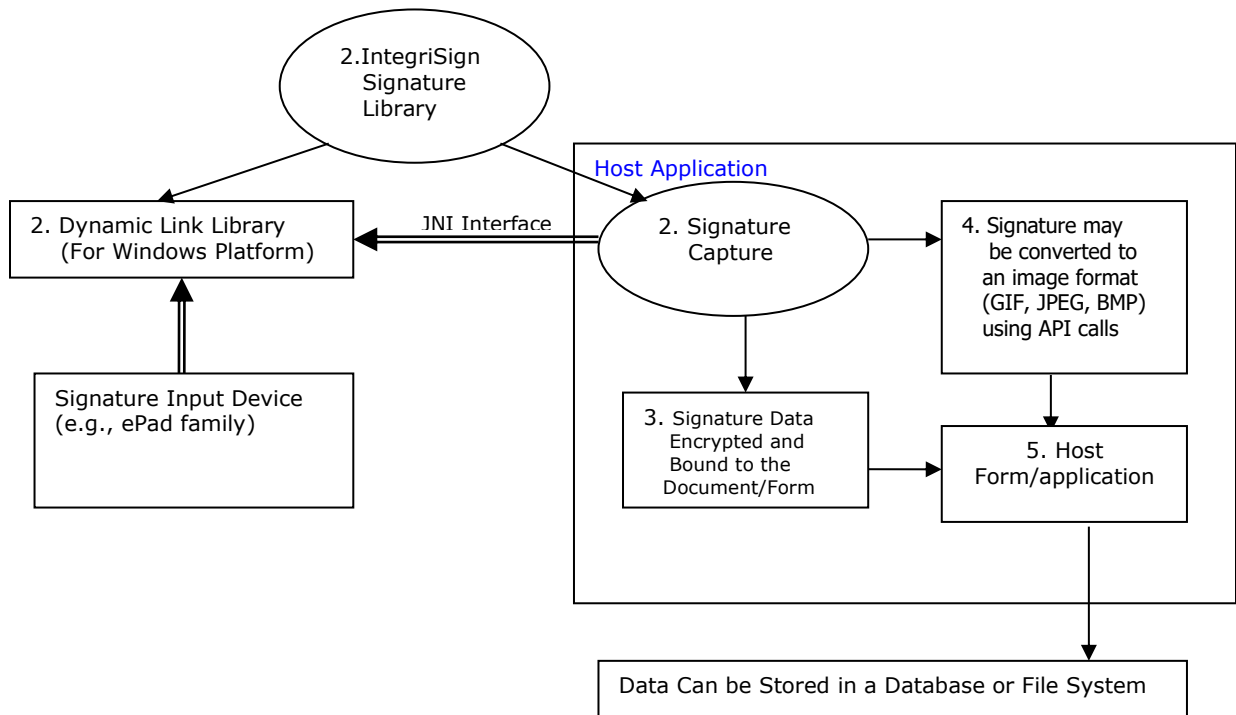
5. Process

Steps are illustrated in the flow diagram below:

1. **Installation:** The IntegriSign Desktop Library along with the support dlls loaded onto the client machine.
2. **Client setup:** JNI calls are used for signature input from ePad devices.
3. **Signature capture and processing:** The signature capture component calls the Windows DLLs through the Windows JNI (Java Native Interface) and gets the signature data from the input device. The input device is ePad. The raw data captured from the input device is processed and encrypted using the IntegriSign client library and generated in a BASE64 string format, along with content hash generated by an MD5 hashing algorithm, which binds the signature to the content. This makes it possible for the signature data to be stored in any database or transmitted through any kind of network/protocol.
4. **Conversion of signature as an Image:** The developer has the option of converting the signature data into an image format (JPEG, GIF, BMP and PNG) using API calls.
5. **Assign signature to form:** The signature data (BASE64 string) is assigned to one of the fields of Host application.
6. **Storage:** The signature data along with the rest of the application data is stored in database server.

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6. Running IntegriSign Enabled Sample

1. Copy the 'integrisign' package from SDK folder to a directory where class path is set to JVM.
2. Copy 'eSJDeskPad.dll', 'JMsgBox.dll', 'ESUtil.dll' to windows system folder (e.g. c:\windows\system or c:\winnt\system32).
3. Run the DeskSignTest.class from the Samples folder.

The Sample application demonstrates:

- Signature capture (Signature can be captured after entering userid and message. userid will be used to store the images with that name. user name and Message are used for hashing.)
- Content binding to the signature. (The data entered in the user name and message field is bound to the signature. Clicking VerifyIntegrity button



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after the act of signing can check content integrity status. Data can be altered to cross check the hash).

- Generating GIF, JPEG, BMP and PNG images from the captured signatures. (When SaveImages button is pressed image files will be written to the application directory with the userid entered as file name.
- Opening and displaying signature from already persisted signature data. (After the act of signing click GetSignData button to get the data, then click clearsign to clear the signature. Finally press openSign button to redisplay the signature. After opening the signatures verifyintegrity can be checked.
- Clearing the signature (By clicking clearsign button clears the signature on the form.
- GetSignData (This demonstrates how to get the encrypted Base64 signature string)

JAVA Run time 1.2 or higher is required to run these samples.

7. Customizing applications to use IntegriSign

Follow these steps to Customize applications to use IntegriSign.

1. Import integrisign package into the host application (drag the integrisign bean on to application if integrisign Bean is added to the IDE).
2. Create DeskSign object and add it to the host application, in case import integrisign is used.
3. Host application must implement the **integrisign.IdocInfo** interface.
4. Refer to the sample application shipped for more help on how to implement the all the functions of **IdocInfo interface**.
5. In case data binding is not required host application must implement the **IdocInfo** interface and provide null implementation to all the methods.

8. API Model

8.1 integrisign package

integrisign package is collection API calls for capture of the signature.

8.1.1 integrisign.IdocInfo

public [interface](#) **IdocInfo**

Description

This interface defines methods that needs to be implemented by the host application to bind the content to the signature that is being captured.

Incase no hashing is required all the methods should be implemented as shown in the sample

```
public void feedGrabber (integrisign.IGrabber ig){  
  
}  
public byte getVersion(){  
    return 1;  
}  
public String getDocID(){  
    return "";  
}
```

8.1.2 integrisign.desktop.DeskSign

public **class** **DeskSign** extends **Jcomponent** implements **integrisign.IGrabber**

Description

DeskSign component is responsible for capturing the Signature dynamics, and processes the signature data and paints the signature on the host form. This component internally uses IntegriSign SDK components for capture and has methods for signing and also to get the Signature info as a BASE64 format string by which the sign info can be easily stored in a database or transmitted via different networks. This class is also capable of generating different image formats (BMP, GIF, JPEG and PNG) from the captured signature. Captured and stored signatures can be opened with this class. Once the signature is captured or opened using existing signature info, user details like Name, Designation, Organization, Address can be queried if they are set.

DeskSign component is also capable of generating MD5 hash of the content to be authenticated optionally. The host Application should implement **integrisign.IdocInfo** interface. Even if no hashing is required the above interface should be implemented and **feedGrabber()** method can be null Implemented.

This Component class is shipped as a part of SDK along with supporting windows dlls.

The component background can be set to be transparent using the **setOpaque** method. This function sets the transparency if the opaqueness is set to false.

8.1.3 Methods

- public **void** **clear ()**

This method clears the current signature on the component and reinitializes the component.

Arguments

None

Return value

This method returns void.

- public **String** **getString** ()

This method is for getting the signature info as encrypted BASE64 String. This method should be called if the `isSigned()` method returns true.

Arguments

None

Return value

Returns the signature information as encrypted BASE64 String.

- public **boolean** **isSigned** ()

This method returns the status of signing as a boolean.

Arguments

None

Return value

Returns boolean value depending on whether the form is signed or not. Returns true if the Signature is done otherwise returns false.

- Public **void** **openSign1** (**String** signstring)

This method facilitates to open and display previously captured and stored signatures.

Arguments

signstring: The raw signature information as a BASE64 String.

Return value

This method returns void.

- Public **String getGifString** (*string* signstr, *int* width, *int* height);

This method returns the gif information as BASE64 String from the raw signature.

Arguments

signstr: Signature string in BASE64 Format.

width: Width of the GIF image to be returned.

height: Height of the GIF image to be returned.

Return value

This method returns Gif Image data as a BASE64 String, which can again be converted to byte array using Base64 class.

- Public **String getJpegString** (*string* signstr, *int* width, *int* height, *int* quality);

This method returns the jpeg bytes as an array.

Arguments

signstr: Signature string in BASE64 Format.

width: Width of the JPEG image to be returned.

height: Height of the JPEG image to be returned.

Quality: Quality of the JPEG image to be returned on a scale of 1 to 100 (100 being best quality)

Return value

This method returns JPEG Image data as a BASE64 String, which can again be converted to byte array using Base64 class.

- Public **String getBMPString** (*string* signstr, *int* width, *int* height);

This method returns the BMP bytes as an array.

Arguments

signstr: Signature string in BASE64 Format.

width: Width of the BMP image to be returned.

height: Height of the BMP image to be returned.

Return value

This method returns BMP Image data as a BASE64 String, which can again be converted to byte array using Base64 class.

- Public **String getPNGString** (*string* signstr, *int* width, *int* height, Boolean transparency);

This method returns the PNG image information as BASE64 String from the raw signature.

Arguments

signstr: Signature string in BASE64 Format.

width: Width of the PNG image to be returned.

height: Height of the PNG image to be returned.

Transparency: Image background transparency. If set to true, the image generated will have the transparent background.

Return value

This method returns PNG Image data as a BASE64 String, which can again be converted to byte array using Base64 class.

- public **String** **getSignerName ()**

Arguments

None

Return Value

This method returns the Signer Name bound to the signature.

- public **String** **getSignerDesignation ()**

Arguments

None

Return Value

This method returns the Signer designation bound to the signature, if it was set.

- public **String** **getSignerOrganisation ()**

Arguments

None

Return Value

This method returns the Signer Organisation bound to the signature, if it was set.

- public **String** **getSignerAddress ()**

Arguments

None

Return Value

This method returns the Signer Address bound to the signature, if it was set.

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- public void **setSignThickness**(byte signthickness)

This function sets the thickness to be used while drawing the signature trace on the component as well as during the image generation. This can be set prior to signNow and image generation calls. The thickness can be in the range of 1 – 9. Any value beyond these will be set to the default value of 2.

Arguments

Byte : The pen thickness to be used while drawing the signature. The value should be in the range of 1 -9.

Return Value

This method returns void.

- public boolean **CheckDeviceStatus**()

This method returns the status of ePad device connected as a boolean.

Arguments

None

Return value

Returns boolean value depending on whether the ePad device is connected or not. Returns true if the ePad device is connected otherwise returns false.

SignNow Description

The signNowEx method is overloaded, depending on the information needs to bind to the Signature object, one of the signNowEx methods can be chosen. When SignNowEx is called a SignPad appears for capturing the signature. User can choose a different signature color from options button, depending on the privileges set to him in signNowEx method.

These methods allow the developer to choose different options like

A. Whether signature options can be enabled/disabled?

Set the showOptions to true/false depending on whether to the allow user to choose options or not.

NOTE: It is recommended to use the signNowEx method instead of the signNow method. signNow methods are maintained to support the legacy applications.

- public void **signNowEx** (integrisign.IdocInfo idinfo) throws ValidationException

Arguments

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface and pass empty bytes to grabBytes () method called inside the **feedGrabber ()** method of IdocInfo.

Return Value

This method returns void.

Note: In case of this method all the Signer Details are set to none.

- public void **signNowEx** ([string](#) name, [string](#) designation, [string](#) organisation, [string](#) address, [string](#) footer, showOptions, [integrisign.IdocInfo](#) idinfo) throws ValidationException

Arguments

name: Name of the Signer. It cannot be empty.

designation: Designation of the Signer.

organization: Organisation of the Signer.

address: Address of the Signer.

footer: Any other information of the Signer like phone no., e-mail id etc...

showOptions: Whether the Options button needs to be enabled or not, to set the signing options like choosing the color.

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface `grabBytes()` method can be null implemented.

Return Value

This method returns void.

- public void **signNowEx** ([string](#) ID, [string](#) name, [boolean](#) showOptions, [integrisign.IdocInfo](#) idinfo) throws ValidationException

Arguments

ID: ID of the signer specific to implementation. Cannot be empty.

name: Name of the Signer. Cannot be empty.

showOptions: Whether the Options button needs to be enabled or not, to set the signing options like choosing the color.

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface `grabBytes()` method can be null implemented.

Return Value

This method returns void.

- public void **signNowEx** (string ID, string name, string desg, string org, string Addr, string Footer, boolean showOptions, integrisign.IdocInfo idinfo) throws ValidationException

Arguments

ID: ID of the signer specific to implementation. Cannot be empty.

name: Name of the Signer. Cannot be empty.

designation: Designation of the Signer.

organization: Organisation of the Signer.

address: Address of the Signer.

footer: Any other information of the Signer like phone no., e-mail id etc...

showOptions: Whether the Options button needs to be enabled or not, to set the signing options like choosing the color.

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface grabBytes() method can be null implemented.

Return Value

This method returns void.

- public void **signNow** (string name, string designation, string organisation, string address, string footer, string reserved, boolean breserved1, boolean showOptions, boolean breserved2, integrisign.IdocInfo idinfo) throws ValidationException

Arguments

name: Name of the Signer. It cannot be empty.

designation: Designation of the Signer.

organization: Organisation of the Signer.

address: Address of the Signer.

footer: Any other information of the Signer like phone no., e-mail id etc...

reserved: reserved parameter

breserved1 : reserved parameter

showOptions: Whether the Options button needs to be enabled or not, to set the signing options like choosing the color.

breserved2: reserved parameter.

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface grabBytes() method can be null implemented.

Return Value

This method returns void.

- public void **signNow** (string ID, string name, boolean breserved1, boolean showOptions, boolean breserved2, **integrisign.IdocInfo** idinfo) throws ValidationException

Arguments

ID: ID of the signer specific to implementation. Cannot be empty.

name: Name of the Signer. Cannot be empty.

breserved1 : reserved parameter

showOptions: Whether the Options button needs to be enabled or not, to set the signing options like choosing the color.

breserved2: reserved parameter.

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface grabBytes() method can be null implemented.

Return Value

This method returns void.

- public void **signNow** (string ID, string name, string desg, string org, string Addr, string Footer, string reserved, boolean breserved1, boolean showOptions, boolean breserved2, [integrism.IdocInfo](#) idinfo) throws ValidationException

Arguments

ID: ID of the signer specific to implementation. Cannot be empty.

name: Name of the Signer. Cannot be empty.

designation: Designation of the Signer.

organization: Organisation of the Signer.

address: Address of the Signer.

footer: Any other information of the Signer like phone no., e-mail id etc...

reserved: reserved parameter

breserved1 : reserved parameter

showOptions: Whether the Options button needs to be enabled or not, to set the signing options like choosing the color.

breserved2: reserved parameter.

idinfo: The host application must implement the **integrism.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface `grabBytes()` method can be null implemented.

Return Value

This method returns void.

- public `int verifyDocument` (`integrisign.IdocInfo` idinfo)

This method checks the integrity of the content that is bound to the signature object and returns the status as an integer.

Note: This method should be called when `GetHashData ()` is implemented in the client script.

Arguments

idinfo: The host application must implement the **integrisign.IdocInfo** interface as shown in the sample. If nothing has to be bound to signature implement the interface `grabBytes()` method can be null implemented.

Return Value

This method returns an integer specifying whether the file is tampered with or not

- 0 ----- Success, contents not changed
- 1 ----- Failure, contents have changed
- 2 ----- Hash generated with different version
- 3 ----- Photographing information is not stored
- 4 ----- No sign string available

8.1.5 `integrisign.desktop.Base64Format`

public `class Base64Format`

This class is mainly for the purpose of encoding and decoding the information into a string from a byte array and vice versa.

Constructor Index

Public `Base64Format ()`

Method Index

- Public **String encode64** (**byte[]** barray)

This method encodes the passed byte array into a BASE64 String.

Arguments

barray: any array of bytes

Return value

This Method returns a BASE64 String.

- Public **byte[] decode64** (**string** str)

This method decodes the passed BASE64 String into a byte array.

Arguments

str: any BASE64 String

Return value

This Method returns a decoded byte[] corresponding to the string passed.