



MSO SDK

SOFTWARE RELEASE NOTE

Revision 6.47.10

For online updates: please connect to our web site <https://biometricdevices.idemia.com>

For support: please contact our hotline support.bioterminals@idemia.com

Note: MSO SDK is on export control constraint EAR 99

Compatibility

MSO SDK version 6.47.10 is compatible with:

- **MSO USB driver version 4.8.1 (and later versions)**
- **MSO firmware versions 11.03.g or 13.01.d (and later versions)**
- **MSO 330, MSO 331, MSO OEM 330 and MSO OEM 331 firmware version 01.01.a (and later versions)**
- **CBM-E3 firmware version 03.05.e (and later versions)**

Cots

COTS in Windows

MSO SDK binaries dependencies:

- | | |
|------------|-------------|
| • openssl | 3.0.13 |
| • vcredist | 14.28.29914 |

COTS in Linux

- Compilation of the MSO SDK code for Linux requires the presence of OpenSSL 3.0.13 version installed on the system.

COTS in Android

- | | |
|-----------|--------|
| • libusb | 1.0.24 |
| • openssl | 3.0.13 |

Supported Platforms

- Microsoft Windows 10 (32 and 64 bits), Windows 11.
- Ubuntu 18.04 (32 & 64 bits), Ubuntu 20.04 and 22.04 (64 bits).
- Android NDK19: Android 11 to Android 14.

Version 6.47.10—August 2024

New Features:

- N.A.

Bug-fix:

- Fixed crash issue observed during soft reboot on android

Improvement

- Management of errors occurring in specific use cases on some Android devices.

Warning:

- For the commands involving Biometric operations sent with infinite timeout value, if user does not respond and comply to Async messages sent by FW within 20 seconds, this could break the synchronization between SDK and device.

Limitations:

- With “Default” security level, FFD Host feature is deactivated. It is recommended to use relevant security level for enhanced security.
- MSO devices in secure mode (tunneling) is not compatible with multiprotect service.
- Device will not work properly in sleep mode if the option “Stop devices when my screen is off to save battery” is enabled in Windows-Power management settings.
- Export image feature for Sagem_V1 format is not supported on android platforms.
- MSO_SECU APIs for Windows certificate store are available only in C++ windows.
- Reboot feature is not supported in secure mode.
- MSO350 and MSO1350 E2 are not supported on windows 10 and later with USB driver 4.x.
- MsoServerPipe application will not work properly if MSO Android service is started.

[Previous versions:](#)

Version 6.47.7 ----- Release Version: March 2024

New Features:

- N.A.

Bug-fix:

- Fixed crash issue observed during enumeration of MSO1350 CL devices on Linux platform

Version 6.47.6 ----- Release Version: February 2024
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New Features:

- Support of MSO 330/331 devices for Android platform.

Non-functional evolutions:

- Upgrade of OpenSSL to version 3.0.13

Deprecated features:

- VC120 variant of MSO SDK are removed completely.
- The following APIs are not supported any more. If the integrator calls these APIs, the default values as mentioned below shall be returned.

API	Return values
EnableCS()	0 (ok)
Bool IsCSEnabled()	False
INSTANCE_LIB GetInstanceMSOCS()	null

Version 6.47.3 ----- Release Version: December 2023
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New Features:

- Support of Fake finger detection for FAP30 devices via FFD Host on Windows platform.
- Support of asymmetric key loading mechanism for Privacy key for FAP30 devices. (when device is in secure mode).

Non-functional evolutions:

- Upgrade of OpenSSL to version 3.0.12
- Support of Android 14 platform.

Bug fixes:

- MSO Android SDK 6.46.2: MorphoSampleAndroid Sample code is not buildable.

Deprecated features (Removed):

- Support of Android 5 (MorphoTablet V2)

Version 6.46.2 ----- Release Version: July 2023
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New Features:

- *Support in MSO SDK to retrieve Minutiae Count of fingerprint templates (only for Android Platform).*

Non-functional evolutions:

- Updated OpenSSL to 1.1.1u

Bug fixes:

- MSO SDK sample (Android) was not able to overwrite a raw image that was created by the previous installation of the Sample Application

Deprecated features (Removed):

- The following API are removed from MSOSECUC
 - MSOSECUC_encrypt_3des_cbc_nopad_norand
 - MSOSECUC_TripleDesCryptByKey
 - MSOSECUC_encrypt_3des_cbc_nopad
 - MSOSECUC_decrypt_3des_cbc_nopad
 - MSOSECUC_DesCrypt
- Demonstration of following features from all the SDK Samples (across all platforms)
 - “Biometric data encryption” option in the capture API (replaced by privacy mode).
 - MOC and Smart card Support
- Support for MSO FVP devices.

Version 6.45.0 ----- Release Version: April 2023

New Features:

- Serial communication support added for CBM devices on Android (firmware upgrade on android with serial communication is not supported).
- MSO SDK supports to modify the sleep timeout configuration for RS232 Connection.
- MSO_Version application will display the VID and PID of connected biometric device (in USB connection only).

Non-functional evolutions:

- Updated OpenSSL to 1.1.1t
- Added support for Ubuntu 20 and 22
- Added support for Android 13

Bug fixes:

- Compilation issue in SDK_java project due to missing files CustomInteger.java and CustomLong.java.
- MSO Version Application - GUI scaling not aligned with dynamic screen resolution.

Deprecated features (will be removed from next release of MSO SDK):

- The API "MSOSECU_encrypt_3des_cbc_nopad_norand()" provided in MSOSECU.
- Support for cards using 3DES encryption.
- "Biometric data encryption" option in the capture API (replaced by privacy mode).
- Support for MSO FVP devices.

Version 6.44.0 ----- Release Version: January 2023

New Features:

- Support for Windows 11.
- AES256 GCM algorithm used for encryption/decryption in tunneling secure mode (for MSO 330/331 devices only).
 - Introduced a new GetCrypto() API to list the supported cryptographic algorithms for tunneling secure mode.
- AES256 CBC algorithm used for encryption/decryption in Privacy mode (for MSO 330/331 devices only).
 - Introduced a new GetPrivacy() API to list the supported cryptographic algorithm for privacy mode.
 - Supported DB migration for MSO 330/331 Devices in MSO SDK. In case a user with pre-existing database with privacy mode activated updates the firmware, the access to biometric database is suspended. To resume access to the database, DB Migration is required. Please refer the Programmer's Guide.chm for more information.
- Added the support for certificates signed with SHA 256 in Tunneling\Offered Security mode.

Improvement:

- Add a menu item in sample, to decrypt the exported templates that were encrypted in privacy mode.

Bug Fix:

- MSO Demo crashes when FFD logs are activated and Security Level is enabled.

Version 6.43.3 ----- Release Version: November 2022
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New Features:

- Android 12 API 31 support.

- Due to implication of Scoped Storage Starting from Android 11, the locations where the SDK can read/write in the file system needs to be updated. Hence there have been changes in the SDK/Sample for input-output files. Refer readme.txt for details.
- Introduced a new API SetMainFolderPath(), this interface must be invoked to set the path on main folder which is used to save the log files and configuration files.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.43.2 ----- Release Version: September 2022

New Features:

- Support for MSO 330, MSO 331, MSO OEM 330 and MSO OEM 331 for Linux,(these devices are supported with legacy license with older versions of MSO SDK)

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.43.0 ----- Release Version: June 2022
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New Features:

- Support for MSO 330, MSO 331, MSO OEM 330 and MSO OEM 331,(these devices are supported with legacy license with older versions of MSO SDK)

Improvement:

- N/A

Update:

- Openssl updated to 1.1.1o
- MorphoImageConvert updated to 4.7.0 for vs142.
- Libspp updated to 2.16.0 for vs142.

Bug Fix:

- Fix for: Device not usable once PC resumes from Sleep Mode (on windows)
- FVP:4586 Biometric operation failed after reboot soft on linux with secure device

Version 6.42.0----- Release Version: February 2022

New Features:

- Android 11 API 30 support.
 - Storage management has been modified as a consequence of which there has been changes in the SDK/Sample for input-output files. Refer readme.txt for details

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- Optimisation of the time taken to add users in dataBase.
- Resolved Issue in Java demo application when loading Privacy key.

Version 6.41.2----- Release Version: January 2022
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New Features:

- N/A

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- Resolved the security issue with Trace files.

Version 6.41.1----- Release Version: October 2021
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New Features:

- Supports CBM E3 Firmware 05.00.d

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- If the security level is none or default, FFD CNN feature will be deactivated even if the SDK and device are FFD Compliant.
In the last version, SDK used to throw "Invalid parameter" error in such scenario

Version 6.41.0----- Release Version: September 2021
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New Features:

- Supports the toolset vs142 (Visual studio 2019).
- Separate installer provided for vs142 and vs120 respectively.

Improvement:

- N/A

Update:

- MSO SDK integrates new MSO USB driver 4.5.0.0

Bug Fix:

- N/A

Version 6.40.0----- Release Version: July 2021

New Features:

- Support of a new algorithm that is providing Improved Detection of False finger, on Android platform with device firmware version 03.07.b
 - Sample is able to display FFD capabilities of CBM/MSO device
 - Sample is able to display FFD capabilities of host system
 - Sample is able to display Force Activate host on host system
- The dll have been signed in this version of MSO SDK
- ©
- Protection of MSO SDK binary using epona for Android
- Integrate openssl 1.1.1k in MSO SDK

Improvement:

- Fix memory leak issues to avoid random crashing issues.
- MorphoSmart Programmers Guide updated for False finger detection on Android platform.
- In case where secu host dll is not available (or user omits it due to its big size) And, then user force enables FFD option, Sample shows FFD Module Not Present. The biometric operations will continue further with FFD Feature disabled.

Update:

- MSO SDK integrates new MSO USB driver 4.4.1.0

Bug Fix:

- Crash of Mso_SpUsb.dll 32bits when OMNIKEY 5321 card reader is unplugged
- Biometric operations fails after Reboot soft command is executed with Mso_ServerPipe on Windows platform.
- If user force enables FFD Secu Host feature on CBMV3 or other device which are not capable, it will be accepted but the biometric operations will fail.
- MorphoSDKService will not work on the handsets that are API29 and above.

Version 6.39.0----- Release Version: April 2021
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New Features:

- Support of a new algorithm that is providing Improved Detection of False finger, on Windows platform with device firmware version 03.07.b
 - Sample is able to display FFD capabilities of CBM device
 - Sample is able to display FFD capabilities of host system
- The dll have been signed in this version of MSO SDK

Improvement:

- Integration of new MorphoImageConvert version, with image libraries update.
- MorphoSmart Installation Guide updated for some obsolete information

Update:

- MSO SDK integrates new MSO USB driver 4.4.0.

Bug Fix: NA

Version 6.38.0----- Release Version: March 2021
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New Features:

- N/A

Improvement:

- Upgrade of OpenSSL COTS to version 1.1.1i due to vulnerabilities on previous version.

Update:

- Removal of the redundant Morpho sample apk built using Eclipse (which is deprecated).

Bug Fix:

- Issue regarding Ping and Set License on Android 64 bits fixed.
- Included the missing Mso_SpUsb.dll and MSO_Sprs232.dll

Version 6.36.2----- Release Version: January 2021
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New Features:

- N/A

Update:

- N/A

Improvement:

- Support of a new algorithm that is providing Improved Detection of False finger, on Windows platform with device firmware version 03.07.a:
 - Ability to display FFD capabilities of CBM device
 - Ability to display FFD capabilities of host system

Bug Fix:

- N/A

Version 6.37.0----- Release Version: January 2021
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New Features:

- N/A

Improvement:

- Support "Android API level 29" in MSO SDK + Sample:

- This involves below type changes in all concerned APIs parameters (it is detailed in the pdf MSOSDK_6_37_Android_API29.pdf).
 - CustomInteger used in place of java Integer
 - CustomLong used in place of java Long
- As Android 10 has stopped support of sdCard. To use sdCard storage, add Android:requestLegacyExternalStorage="true" in AndroidManifest.xml

Bug Fix:

- N/A

Version 6.36.1----- Release Version: October 2020
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New Features:

- N/A

Improvement:

- N/A

Update:

- N/A

BugFix:

- Exception management issue resolved in MSO SDK on Android ARM V8.

Version 6.36.0----- Release Version: August 2020

New Features:

- N/A

Improvement:

- Eclipse to Android Studio Migration of MorphoSample
- Support on Windows10 Update 2004

Update:

- N/A

Bug Fix:

- N/A

Version 6.35.0----- Release Version: July 2020

New Features:

- N/A

Improvement:

- Fixed a random issue reported by customer while trying to export WSQ image with SDK java as customer did not get WSQ image sometimes. Customer gets template every time.

Update:

- N/A

Bug Fix:

- N/A

Version 6.34.1----- Release Version: May 2020
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New Features:

- N/A

Improvement:

- Allow using secured MSO devices with customer certificates chain by reading certificates from local folder or from Windows Certificate Store.

Update:

- N/A

Bug Fix:

- N/A

Version 6.33.0----- Release Version: March 2020
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New Features:

- N/A

Improvement:

- Upgrade OpenSSL to version 1.1.1d

Update:

- N/A

Bug Fix:

- N/A

Version 6.32.0----- Release Version: February 2020

New Features:

- N/A

Improvement:

- Support of Android 10.
- New version of Libusb Android
- New version of MorphoImageConvert with below COTS libraries updates:
 - giflib from 5.1.4 to 5.2.1
 - libjpeg-turbo from 2.0.0 to 2.0.3
 - libpng from 1.6.35 to 1.6.37
 - libtiff from 4.0.10 to 4.1.0
 - libjpeg was no more used

Update:

- N/A

Bug Fix:

- N/A

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Version 6.31.0----- Release Version: January 2020
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New Features:

- N/A

Improvement:

- A new "CAPTURE_FAILED" error is handled, when some residual fingerprints are presents on the sensor panel with additional light, and False Finger Detection (FFD) activated.

- Integration of MSO USB Driver 4.3.0.0.

Update:

- N/A

Bug Fix:

- N/A

Version 6.30.1----- Release Version: December 2019

New Features:

- N/A

Improvement:

- N/A

Update:

- N/A

Bug:

- The errors constants in MSO_SECU Java Linux, have incorrect values.

Version 6.30.0----- Release Version: December 2019

New features:

- USB Full Speed configuration capability for FINGER VP sensors
- Removal of optional header in exported WSQ images

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.29.0----- Release Version: November 2019

New features:

- New MSO_SECU interface that get the privacy key from Windows Certificate Store.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.28.0----- Release Version: September 2019
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New features:

- New callback notifying the user that the device is busy during a capture operation (Enroll, Verify, Identify).
- Integrate 03.05.e NEMO FW.
- Update libspp.dll to 1.12.3.
- Add MSO_VersionCmdLine to Windows & Linux package.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.27.1----- Release Version: August 2019

New features:

- Integration of driver 4.2.2
- Integration of CBM-E3 / CBM-V3 firmware: 03.05.c.
- Support of Android Xamarin.
- Reading certificates from Windows Certificate Store.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.25.0----- Release Version: May 2019
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New features:

- Provide WSQ optional header in the WSQ images returned by MSO SDK.
- MSO SDK supports Fedora 27.
- MSO SDK supports ARMV8 - Android 64 bits.
- Change the default installation path of Windows package to “C:\Program Files\Idemia”.

Fix Bug: CBM suspend mode.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.25.0----- Release Version: May 2019
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New features:

- Provide WSQ optional header in the WSQ images returned by MSO SDK.
- MSO SDK supports Fedora 27.
- MSO SDK supports ARMV8 - Android 64 bits.
- Change the default installation path of Windows package to “C:\Program Files\Idemia”.

Fix Bug: CBM suspend mode.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.24.1----- Release Version: April 2019
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New features:

- Support of VerifyMatch function using MorphoAcquisition component
- Upgrade OpenSSL to version 1.1.1b
- Provide two installers of the driver (release 4.2.1) for 64-bit and 32-bit OS. For Windows 10 / Server 2016 and further versions, the Microsoft generic driver (USBSER) will be used instead of the Biometric Driver along with the MSO USB Service.
- QuickLoader is compatible with MSO USB Driver 4.2.1 with MSO USB service enabled.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.23.0----- Release Version: February 2019

Miscellaneous :

- MorphoSmart SDK becomes MSO SDK.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.22.0----- Release Version: February 2019

New features:

- MSO SDK integrates MorphoImageConvert 1.11.2.
- New interfaces in C_MORPHO_Device Class for setting user data in the internal device area memory (New PKI for Malaysian card)
- MSO SDK supports Windows Server 2016 x64
- MSO SDK supports Ubuntu 16.04 x64 and x86
- MSO SDK supports Ubuntu 18.04 x64

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.21.3----- Release Version: December 2018

New features:

- MSO SDK integrates signed MSO USB driver based on Microsoft USBSER

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.20.1----- Release Version: October 2018
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New features:

- MorphoSmart SDK Support for Android 7 & 8.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.19.4----- Release Version: August 2018

New features:

- SDK conformity with GDPR.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.19.4----- Release Version: August 2018

New features:

- SDK conformity with GDPR.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.19.0----- Release Version: June 2018

Bug fix : WSQ image extraction after capture on Android

Version 6.18.0----- Release Version: April 2018
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New features:

- FFD LED support :
 - Add “Critical” to supported security levels
 - New finger warnings : “Moved”, “Saturated” and “Invalid”

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.17.6----- Release Version: February 2018

New feature:

- New application MsoServerPipe to support device connection over TCP network in Android and Linux.
- Enable/Disable ‘Power supply configuration’ for CBM-E3 in MorphoSmart SDK Windows, Linux and Android.
- Add new interface:
 - initialize (Context context, String packagePath, boolean enableWakeLock)
- When the tablet is entering in standby mode, the CPU is kept awake until terminating the ongoing read or write operations on the device, this is done for the operations requiring read and write in flash memory, except for biometrics operations, a cancel is sent to the device.

- First version of MSO_SECU library for Android and Linux: management of cryptography operations
- Support the Offered security and Tunneling mode on Android and Linux platform.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- Unable to use MorphoSmart SDK without MSO_SECU library.
- Image encryption of WSQ and RAW image doesn't work in Java interface.
- Unable to use secured devices if MorphoSmart Android service is started.
- Freeze of the sample when the MorphoTabletteV2 is exiting from standby mode.
- Capture/Identify returns error code -1 when asynchronous messages are disabled.
- Crash of MorphoSample Android after open device.

Version 6.16.0----- Release Version: March 2017
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New Features:

- Supports Android 6.0.1 (Marshmallow).
- Improvement of MorphoSample Android GUI by adding a vertical scrollbar in database management and file management areas.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- FINGER VP-1753: [Marshmallow: CBM-E3] openDevice returns timeout_error in the second call of the method.

Version 6.15.4----- Release Version: January 2017
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New Features:

- N/A

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- FINGER VP-1573: RS232: parameter and display issues.

Version 6.15.3----- Release Version: October 2016
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New Features:

- N/A

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- FINGER VP-1578: Freeze Morpho Smart Android Sample after tablet standby, when Morpho Smart Android Service is started.

Version 6.15.1----- Release Version: July 2016

New Features:

- MorphoSmart SDK Linux: Support of oracle JDK 1.6u45.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.15.0----- Release Version: July 2016

New Features:

- Generation of MorphoSmart SDK to support java 6_u45 and Ubuntu 10.04 32 bit.

Improvement:

- N/A

Update:

- N/A

Fixed issues:

- FINGER VP-1501: Database 5000 users with 2 templates stops at 2500 and 5000 templates.

Version 6.14.1.0----- Release Version: February, 2016.

New Features:

- Support of Windows 10.

Fixed issues:

- FINGER VP-1233: Possibility to limit the size of templates or the number of minutiae in templates, in Enroll API for Android SDK as described in the documentation.

Version 6.14.0.0----- Release Version: January, 2016.
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New Features:

Version 6.13.3.0_Android_5.1----- Release Version: November, 2015.

New Features:

- Support of Android Lollipop

Issues fixed:

- FINGER VP-1181: Add MorphoSample.apk to MorphoSmart™ SDK Android Delivery
- FINGER VP-1191: Build of SDK Android in Linux

Errata:

- 200 successive calls to Open and Close interface causes the device to fail.

Deprecated API:

- Refer to “**Deprecated List**” chapter in “**MorphoSmart SDK Android Programmer's Guide**” document.

Version 6.13.3.0----- Release Version: May, 2015

Issues fixed:

- FINGER VP-1081: Crash of MSO_ServerPipe.exe tool on Windows Server 2008 R2
- Some minor bug fixes in SDK layer.

Version 6.13.2.0_Android_4.1----- Release Version: May, 2015.
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New Features:

- The Android MorphoSmart SDK is compatible with Linux MorphoSmart SDK version 6.13.2.0

Issues fixed:

- FINGER VP-986: Application crashing after finger print capture.
- FINGER VP-1000: Android API parameters not checked.
- FINGER VP-1075: Unable to access SQL database after using CBM.
- FINGER VP-1076: Java system values corrupted by Android SDK.
- Some minor bug fixes in SDK layer.

Version 6.13.2.0 ----- Release Version December, 2014.

New Features:

- Added Java Wrapper over SDK and demonstration applications

Issues fixed:

- FINGER VP-964: GenericAcquisitionComponent sample on a 64bits platform could be launched normally with the solution's file.
- FINGER VP-982: In MSO_Demo after a « Destroy Base » command, it's no more necessary to restart the sample.
- FINGER VP-940: Verify_Match using 2 PKMAT templates with MSO_Demo no longer returns error.
- Some minor bug fixes in SDK layer.

Version 6.6.6.1 Android 3.3 ----- Release Version December, 2014.
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Issues fixed:

- FINGER VP-1057: Android MorphoSmart SDK: Compilation error on Linux.
- FINGER VP-979: SDK Android MorphoSample stops responding after unplugging an external sensor.

Version 6.11.1.0 ----- Release Version November, 2014
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Improvement:

- Added new version of MorphoSmart Driver: 3.59.1.0 (see Driver release note).

Deprecated:

- Mobile device section
- OS
 - Windows XP
 - Windows Vista

- Windows Server 2003
- Windows Server 2008

Version 6.11.0.1----- Release Version September, 2014
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New Features:

- Added new version of MorphoSmart Driver 3.59.0.2 (Win 8.1 and Server 2012)
- Added support of Windows 8.1 32/64bits, Windows Server 2012 64bits and Windows Server 2012 R2 64bits
- CBME2 FFD message handling in MorphoAcquisition

Improvement:

- BioAPI 1.1: has been updated.

New API for logging:

- [C_MORPHO_Device::SetLoggingLevelOfGroup\(UI i_ui_GroupId, T_MORPHO_LOG_Level i_x_Level\)](#) : For modifying the logging level of a group.
- [C_MORPHO_Device::SetLoggingMode\(T_MORPHO_LOG_Mode i_x_Mode\)](#) : For enabling/disabling the logging.

Issues fixed:

- CETX_N3-21: When using win32 MSO_Demo.exe under Win7 64 bits (WoW64 context), if tunneling is needed because device is secured, the tunneling initialization always failed.

Version 6.6.6.0 Android_3.1----- Release Version August, 2014
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Improvement:

- A new service provides a MorphoSmart™ multi-access management.

Version 6.9.7.1 ----- Release Version June, 2014

New Features:

- Add five Acquisition Modes. [C_MORPHO_Device::SetStrategyAcquisitionMode](#) and [C_MORPHO_Device::GetStrategyAcquisitionMode](#)
- User will need to select any one of the mode for Enroll, Capture, Verify and Identify methods
- Default mode is compatible with legacy installations

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.9.6.0: ----- Release Version April, 2014

New Features:

- Removed MorphoSmart™ MSO firmware 10.00.g
- Added security level **None** which serves to disable FFD control in sensor without a license MSO_FFD_FW (reserved for MorphoSmart™ CBM-E2 since v13.01).
- Update fingerprints for an existing user in a database through [C MORPHO User::Enroll](#) and [C MORPHO User::DbStore](#) methods by calling [C MORPHO User::SetTemplateUpdateMask](#) first
- Evolution related to [C MORPHO Device::VerifyMatch](#), [C MORPHO Database::IdentifyMatch](#) and [C MORPHO TemplateList](#) features for MorphoSmart™ MSO/CBM
 - SDK : Support for a new fingerprint templates [MORPHO PK ANSI 378 2009](#) and [MORPHO PK ISO FMR 2011](#) (import only).

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.6.6.0_Android_2.0----- Release Version April, 2014

Improvement:

- MorphoSample android supports FFD Firmware message.
- Evolution related to MorphoDevice.rebootSoft
- New APIs:
 - MorphoDevice.ping
 - MorphoDevice.resumeConnection

Issues fixed:

- FINGER VP-835: setConfigParam: This function is returning -5 or -9.
- FINGER VP-834: getConfigParam: This function is not returning any value.
- FINGER VP-811: The field "Maximum Number Of Record" is not updated in MorphoSample.

- FINGER VP-802: Reboot SW is not working when launched from MSO SDK Android Sample.
- FINGER VP-801: Sometimes sensor is not detected after a tablet reboot.
- FINGER VP-800: Sometimes sensor is not detected after tablet standby or sleep mode.
- FINGER VP-695: The function MorphoDevice::closeDevice() returns -4 instead of 0.
- FINGER VP-646: MorphoUser::dbVerifyAndUpdate() failed when verifying and updating a record of database.

Version 6.6.6.0_Android_1.8_RC ----- Release Version December, 2013
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Issues fixed:

- FINGER VP-800: Sometimes sensor is not detected after tablet standby or sleep mode.
- FINGER VP-801: Sometimes sensor is not detected after a tablet reboot.

Version 6.8.1.0 ----- Release Version July, 2013.
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New Features:

- Evolution for Windows 8 compatibility
 - Updated MultiProtect version 4.0.0 (license management tool)
 - Installation: Digital signature of the MSI installer

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.6.6.0_Android_1 July, 2013

Initial release

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.7.3.1: June, 2013

New Features:

- Evolution related to [C_MORPHO_Device::VerifyMatch](#) features for MorphoSmart™ FINGER VP
 - SDK : Support for a new multimodal template (PK_FINGER VP_MATCH)
 - SDK : Handles security level for request of type [C_MORPHO_Device::VerifyMatch](#) by calling [C_MORPHO_Device::SetSecurityLevel](#) before [C_MORPHO_Device::VerifyMatch](#)

- Updated MultiProtect version 3.4.0 (license management tool).

Limitations:

- BioAPI: Only 32-bit libraries (win32 dll) are provided.
- BioAPI sample MorphoBSPDemo does not support MorphoSmart™ FINGER VP.
- Fingerprint quality and advanced security levels compatibility (MorphoSmart™ FINGER VP only) are only available if export of templates is activated.
- MorphoSmart™ SDK APIs related to DataBase feature can only access the database #0, even on devices supporting multiple databases.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.6.6.0: March, 2013

New Features:

- Evolution related to [C_MORPHO_Database::IdentifyMatch](#) features for MorphoSmart™ FINGER VP
 - SDK : Support for a new multimodal template (PK_FINGER VP_MATCH)
 - SDK : Handles security level for request of type [C_MORPHO_Database::IdentifyMatch](#) by calling [C_MORPHO_Device::SetSecurityLevel](#) before [C_MORPHO_Database::IdentifyMatch](#)
- Updated OpenSSL to version 1.0.1.
- OpenSSL is now provided in both 32-bit and 64-bit binaries.
- Added Libisofir library version 1.0.
- Added support for X9.84 signed files containing standard fingerprint templates and Morpho proprietary multimodal templates
- Fixed bug FINGER VP-195: [C_MORPHO_Device::GetSecuConfig](#) does not retrieve the Minimum Multimodal Security Level (MorphoSmart™ FINGER VP only).
- Fixed bug FINGER VP-315 : [C_MORPHO_Device::GetKCV](#) does not retrieve the KCV of KS key
- Fixed bug FINGER VP-297: Memory leaks in [C_MORPHO_Database::ReadPublicFields](#), [C_MORPHO_Device::Capture](#), [C_MORPHO_FieldList::DeleteField](#), [C_MORPHO_TemplateList::GetFullImageRetrieving](#), [C_MORPHO_TemplateList::PutFullImageRetrieving](#), [C_MORPHO_User::Enroll](#), [C_MORPHO_User::~C_MORPHO_User](#)

New Samples Features:

- MSO_Demo : Added, in Capture tab, the possibility to export the new multimodal template (PK_FINGER VP_MATCH) when the option capture type ("Verif" - Capture one pose) is enabled.
- MSO_Demo : Added in Security menu ability to load a new KS key and to retrieve its KCV
- Fixed bug FINGER VP-218: fingerprint images displayed in MSO_FINGER

VP_login are distorted.

- Fixed bug FINGER VP-61: [MSO_Demo] Unable to select more than one reference template in Verify tab (file simulation) or when clicking Verify Match button
- Fixed bug FINGER VP-279: [MSO_Demo] Memory leak in Get FingerPrint Image tab

New APIs:

- [C_MORPHO_User::SetEnrollmentType](#)
- [C_MORPHO_User::GetEnrollmentType](#)
- [C_MORPHO_Device::LoadKs](#)
- [C_MORPHO_Device::LoadKsSecurely](#)
- [C_MORPHO_TemplateList::PutFINGER VPX984](#)
- [C_MORPHO_TemplateList::GetFINGER VPX984](#)
- [C_MORPHO_Device::EnableDataEncryption](#)
- [C_MORPHO_Device::IsDataEncryptionEnabled](#)

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.4.2.0: December, 2011
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New Features:

- SDK installer is now generic for both 32-bit and 64-bit versions of Windows.
- SDK installer provides now 32-bit libraries (win32 dll) along with 64-bit libraries (x64 dll) making it possible to cross-compile applications for both 32-bit and 64-bit versions of Windows.
- Removed ActiveX AMK_MSO300.
- ActiveX AMK_MSO_FINGER VP is now deprecated and no longer supported.
- Added a new acquisition component MorphoAcquisition replacing deprecated ActiveX interfaces.
- Added MorphoSmart™ firmwares release notes in *Firmware Upgrade* directory.
- Fixed bug 0013160: Unable to manage ISO fingerprint templates larger than 1 kbyte.
- Removed Adobe Reader installer.
- Updated document MorphoSmartCBMModuleIntegration.pdf.
- Updated Snfiq library version 2.0.

New Sample Features:

- MSO_FINGER VP_Login works now with both MorphoSmart™ MSO/CBM and MorphoSmart™ FINGER VP.
- Removed MSO_Login.

- MSO_Demo: Added ability to store the FFD logs.
- Fixed bug 0011619: [MSO_Demo] In Verify tab, reference user is no longer selected after verification ('Check in local base' Authentication Mode).
- Fixed bug 0011584: [MSO_Demo] Unable to add users with two fingers in database.
- Fixed bug 0013181: [MSO_Demo] Unable to set the Sensor Window Position configuration key to 3.
- Fixed bug 0013960: [MSO_Demo] WSQ format in 'Export Image' selectbox of Enroll tab is never usable (WSQ format is only available in Get Fingerprint Image tab).
- Fixed bug 0013812: [MSO_Demo] Fingerprint templates in PKs format are not correctly saved.
- Fixed bug 0013094: [MSO_FINGER VP_Login] Ergonomic defects in the window of enrollment (fingerprint images are distorted).
- Fixed bug 0013309: [MSO_ILVSample] Compilation and execution errors in Debug configuration.

New APIs:

- [C_MORPHO_Device::GetFFDLogs](#)
- [C_MORPHO_Device::ReleaseFFDLogs](#)
- [C_MORPHO_Device::GetDescriptorBin](#)
- [C_MORPHO_Device::ConvertPkFINGER VP](#)

Limitations:

- In order to store the FFD logs, a file MSO_Demo.ini should exist in the same directory as MSO_Demo.exe. This file must contain:
- [Setup]
- LogFilePath=[a valid path to store the log file]
- BioAPI: Only 32-bit libraries (win32 dll) are provided.
- BioAPI sample MorphoBSPDemo does not support MorphoSmart™ FINGER VP.
- Fingerprint quality and advanced security levels compatibility (MorphoSmart™ FINGER VP only) are only available if export of templates is activated.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.3.0.0 August, 2011

Windows XP Professional edition 64-bit is no longer supported (refer to [Installation](#) section to see the list of supported operating systems).

New Features:

- Added support for ISO-19794-4 FIR RAW, BMP, WSQ, JPEG, JPEG 2000 and PNG images.
- Fixed bug 0011650: Some documents relative to SDK are not up to date.
- Fixed bug 0013372: Wrong case of filename [MORPHO_Types.h](#).
- Fixed bug 0013652: The fingerprint quality of the second finger overwrites the fingerprint quality of the first

finger.

- Fixed bug 0013519: Wrong error message is returned on bad finger placement with MorphoSmart™ MSO FFD. Added new error code [MORPHOERR_FFD_FINGER_MISPLACED](#).
- Fixed bug 0013208: Uninstallation does not remove ActiveX directory *C:\Morpho\MorphoSmart SDK\ActiveX\AMK_MSO_FINGER VP* from %PATH% environment variable.

New Sample Features:

- MSO_Demo & MSO_FINGER VP_Login: The video animations are now MS-MPEG4-v2 encoded.
- MSO_Demo: Added support for multimodal templates with MorphoSmart™ MSO/CBM.
- MSO_Demo: Added support for fingerprint quality and advanced security levels compatibility.
- Fixed bug 0013308: [MSO_Demo] Unexpected message in menu "Tools/FINGER VP MMI File/Save as" with MorphoSmart™ MSO/CBM.
- Fixed bug 0013651: [MSO_Demo] The number of records in the database displayed in Database Information tab is sometimes wrong.
- Fixed bug 0013276: [MSO_Demo] Option "Force Finger Placement on Top" is available in Capture and Enroll tabs only.
- Fixed bug 0013306: [AMK_MSO_FINGER VP_Tester] Fake Finger Detection security levels for MorphoSmart™ MSO are Low, Medium and High. Multimodal security levels for MorphoSmart™ FINGER VP are Standard, Medium and High.
- Fixed bug 0013309: [MSO_ILVSample] Execution error.

New APIs:

- [C MORPHO Utils::CreateISO19794_FIR](#)
- [C MORPHO Utils::EncodeISO19794_FIR](#)
- [C MORPHO Utils::WriteISO19794_FIR](#)
- [C MORPHO Utils::ReleaseISO19794_FIR](#)
- [C MORPHO Utils::ReleaseISO19794_FIR_Data](#)

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.2.4.0: June, 2011

Delivery of libraries only, no SDK installer.

New Features:

- Fixed bug 0012628: [C MORPHO Device::GetSecuConfig](#) is now reentrant (i.e. can be called while a biometric command is running on sensor).
- Fixed bug 0012295: [C MORPHO FieldList::PutField](#) accepts a field length longer than 15 bytes.
- [C MORPHO Device::Capture](#) and [C MORPHO User::Enroll](#):
 - Added fingerprint quality threshold.
 - Added required advanced security levels compatibility (MorphoSmart™ FINGER VP only).
- [C MORPHO TemplateList::GetTemplate](#) and [C MORPHO TemplateList::PutTemplate](#):
 - Added fingerprint template quality.

- [C_MORPHO_TemplateList::GetFINGER_VPTemplate](#) and [C_MORPHO_TemplateList::PutFINGER_VPTemplate](#):
 - Added fingerprint quality of multimodal template.
 - Added advanced security levels compatibility (MorphoSmart™ FINGER VP only).

New APIs:

- [C_MORPHO_Database::GetMaxUser](#)
- [C_MORPHO_Database::GetMaxDataBase](#)
- [C_MORPHO_User::GetUserTemplateQuality](#)

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 6.1.5.0: May, 2011

Update:

- Support for new MorphoSmart™ FINGER VP.
- Updated documentation following company name change.
- Microsoft Visual Studio 2008 projects support (except for BioAPI and ActiveX sample project, still using Microsoft Visual Studio 6.0).

New Features:

- New MorphoSmart™ USB Driver v3.56.0.1: Support for both MorphoSmart™ MSO/CBM and MorphoSmart™ FINGER VP.
- Added new document *MorphoSmart FINGER VP DESKTOP series_User Guide.pdf*.
- Added new document *MorphoSmart FINGER VP OEM series_User Guide.pdf*.
- Added new document *MorphoSmart FINGER VP_Finger Placement Sequences.pdf*.
- Added new document *MorphoSmart FINGER VP_Finger Positioning Guide.pdf*.
- Updated ActiveX AMK_MSO300 (see document AMK_MSO300.chm).
- Added new ActiveX AMK_MSO_FINGER VP (see document AMK_MSO_FINGER VP.chm).
- Updated MultiProtect version 2.2.4 (license management tool).
- Fixed bug 0012823: whitespace in %PATH% environment variable after installation.

New APIs:

- [C_MORPHO_Device::SetConfigParam](#)
- [C_MORPHO_Device::GetConfigParam](#)

New Sample Features:

- Updated MSO_Demo to cover new features.

- Updated ActiveX-based samples: updated helpboxes and fixed some bugs.
- Added MSO_FINGER VP_Login which works only with MorphoSmart™ FINGER VP (equivalent to Mso_Login for MorphoSmart™ MSO/CBM).

Limitations:

- BioAPI is available in 32-bit SDK only.
- BioAPI sample MorphoBSPDemo does not support MorphoSmart™ FINGER VP.
- ActiveX AMK_MSO_FINGER VP is available in 32-bit SDK only.
- ActiveX AMK_MSO300 is available in 32-bit SDK only.
- AMK_MSO300.dll is no longer registered at installation time.

Version 5.3.1.0: April, 2010

New Features:

- Support for Windows Seven and Windows Server 2008.
- Support for 64-bit operating systems: SDK is now delivered in 32-bit version and 64-bit version.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 5.2.2.0: March, 2009

New Features:

- Added Match On Card interface.
- Added KCV interface.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 5.1.3.0: September, 2008

Update:

Microsoft Visual Studio 2005 projects support.

Microsoft Visual Studio 6.0 support is obsolete, use SDK 4.5 for support of this development environment.

New Features:

- Added SAGEM_V1 image compression type.

- Added WSQ image compression type.

Version 4.5.1.0: September, 2007

Updated documentation following company name change and functional changes.

New Features:

- Added Utils directory containing NFIQ, quality calculation library that conforms to the NIST standard.
- Added Mobile devices support (Serial link only).
- Added the OATH HOTP implementation.
- MSO_Demo and Mso_ServerPipe include a remote communication scheme sample.

Version 4.4.0.0: April, 2007

New Features:

- New license management tool.
- New matcher mode on identify.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 4.3.3.0: December, 2006

New Features:

- Ability to handle specific smartcards to perform a local (inside device) verification. Please contact Sagem for further details.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 4.3.1.0: July, 2006.

New Features:

- MorphoSmart™ MSOxx1 devices are able to detect finger presence using impedance wake up, a new "led off" mode is selectable.

Evolutions:

- Synchronisation problem corrected in the windows service.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 4.2.3.0: March, 2006

New Features:

- Added standard minutiae formats ISO and ANSI.
- Added unlocking interface for MorphoSmart™ MSO/CBM.
- Added new biometric coder type: juvenile coder.
- The GetImage function can use 2 detection modes.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 4.0.3.0: September, 2005

New Communication Feature:

- MorphoSmart™ communication to the PC is now done through a Windows Service.
- New MorphoSmart™ USB Driver v2.36.19.1: "Sagem MorphoSmart USB Drivers 2.36.19.1.msi" installs the USB driver for the USB MorphoSmart™ MSO300 or CBM and the "Sagem MorphoSmart Service Provider Usb Server".

New Features:

- New error:
 - MORPHOERR_NO_SERVER.
- New type:
 - MORPHO_HANDLE.
- New [C_MORPHO_Device](#) variable member:
 - MORPHO_HANDLE m_h_Mso100Handle.
- New API:
 - [C_MORPHO_Device::GetHandle\(\)](#).
- The following APIs can now return the matching PK number:
 - [C_MORPHO_Device::Verify](#)
 - [C_MORPHO_User::Verify](#)
 - [C_MORPHO_Database::DbCreate](#): two new combinations of number of persons and

number of fingers per person to create a base.

- New asynchronous event status in the T_MORPHO_CALLBACK_COMMAND type for recovering the quality scores from MorphoSmart™:
 - MORPHO_CALLBACK_CODEQUALITY
 - MORPHO_CALLBACK_DETECTQUALITY

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 3.1.2.0: July, 2005

New Security Feature: False Finger Detection (FFD) with MorphoSmart™ MSOxx1.

New Features:

- New APIs:
 - [C MORPHO_Device::Set_FFD_SecurityLevel](#)
 - [C MORPHO_Device::Get_FFD_SecurityLevel](#)
- Added FFD threshold setting in the following APIs:
 - [C MORPHO_Device::Capture](#)
 - [C MORPHO_Device::GetImage](#)
 - [C MORPHO_Device::Verify](#)
 - [C MORPHO_Database::Identify](#)
 - [C MORPHO_User::DbVerifyAndUpdate](#)
 - [C MORPHO_User::Enroll](#)
 - [C MORPHO_User::Verify](#)
- New MorphoSmart™ MSO301 firmware.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 3.0.1.0: April, 2005

New dynamic library MORPHO_SDK_IMAGE.dll containing the [C MORPHO_Image](#) class (which is not anymore in the MORPHO_SDK.dll library). The directories of this new library are: PC\MS-SDK\DLL and PC\MS-SDK\Sample\Exe for the .dll file, and PC\MS-SDK\Lib for the .lib file. If you want to maintain the compatibility, you must link the MORPHO_SDK_IMAGE.lib library in your project.

libey32.dll and MSOSECU.dll files are not anymore in directory PC\MS-SDK\DLL due to the fact that MSOSECU.dll is only a sample and is not mandatory for the SDK. Nevertheless, these files are still in

directory PC\MS-SDK\Sample\Exe.

Biometric tokens are in conformity with the X9.84 format.

Version 2.4.1.0: December, 2004
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New features:

New MorphoSmart™ USB Driver v2.3.6.17: Includes CBM driver.

New documentation that includes MorphoSmart™ CBM functionalities.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 2.3.0.0: July, 2004

New Features:

New MorphoSmart™ USB Driver v2.2.7.13: Installation problems fixed.

Added Sagem biometrics customer support website.

Compatibility with IDENTLITE license.

new API:

- [C_MORPHO_User::SetNoCheckOnTemplateForDBStore](#) (option available for firmware versions upper than 02.05).

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 2.2: June, 2004

New features:

New MorphoSmart™ MSO300 firmware compatible with MSO 350.

New MorphoSmart™ USB Driver v2.2.7.12: Includes MSO 350 driver.

New Sample Features:

- MSO_Demo includes smart card access functions available with PCSC smart card reader like MorphoSmart™ MSO 350. The demo is compatible with smart cards generated by Sagem Morphotouch smart card demonstration software.

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 2.1: March, 2004

New MorphoSmart™ USB Driver v2.1.5.8: Biprocessor and HyperThreading problems fixed.

New Features:

- [C_MORPHO_Device::Capture](#) accepts MORPHO_PK_MAT_NORM and MORPHO_PK_MAT argument (i_x_TemplateType).
- [C_MORPHO_Device::Capture](#) can activate fingerprint latent detection.
- New asynchronous message: MORPHO_FINGER_OK notifies the end of a finger acquisition.

New APIs:

- [C_MORPHO_Device::OfferedSecuOpen](#)
- [C_MORPHO_Device::Capture](#)
- [C_MORPHO_TemplateList::ExtractSignerIdX984](#)
- [C_MORPHO_TemplateList::VerifSignX984](#)

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 2.0: October, 2003

Secure MorphoSmart™ version BETA.

Support for PkMat template format.

New APIs:

- [C_MORPHO_Device::InitUsbDevicesNameEnum](#)
- [C_MORPHO_Device::GetUsbDevicesNameEnum](#)
- [C_MORPHO_Device::OpenUsbDevice](#)

Improvement:

- N/A

Update:

- N/A

Bug Fix:

- N/A

Version 1.90: September, 2003

Secure MorphoSmart™ version ALPHA.

New APIs:

- [C_MORPHO_Device::OpenDevice](#)
- [C_MORPHO_Device::ComSend](#)
- [C_MORPHO_Device::ComReceive](#)
- [C_MORPHO_Device::OfferedSecuOpen](#)
- [C_MORPHO_Device::OfferedSecuClose](#)
- [C_MORPHO_Device::TunnelingOpen](#)
- [C_MORPHO_Device::TunnelingClose](#)
- [C_MORPHO_Device::GetSecuConfig](#)
- [C_MORPHO_Device::SecuReadCertificate](#)
- [C_MORPHO_Device::SecuStoCertif](#)
- [C_MORPHO_Device::SecuStoPkcs12](#)
- [C_MORPHO_Device::Capture](#)
- [C_MORPHO_TemplateList::ExtractDataX984](#)
- [C_MORPHO_TemplateList::ExtractTemplateX984](#)
- [C_MORPHO_TemplateList::PutX984](#)
- [C_MORPHO_TemplateList::GetX984](#)
- [C_MORPHO_TemplateList::SetPkX984Index](#)

Version 1.2: September, 2003.

Support for new MorphoSmart™ MSO300.

new APIs:

- [C_MORPHO_Device::GetImage](#)

The following APIs can optionally return the matching score (available for MorphoSmart™ MSO300/MSO200 firmware versions upper than 01.03):

- [C_MORPHO_Device::VerifyMatch](#)
- [C_MORPHO_Device::Verify](#)
- [C_MORPHO_Database::Identify](#)
- [C_MORPHO_Database::IdentifyMatch](#)
- [C_MORPHO_User::Verify](#)

- Several bugs fixed.

Version 1.1: May, 2003

new APIs:

- [C MORPHO_Device::Capture](#)
- [C MORPHO_Device::OpenDevice](#)
- [C MORPHO_Device::Capture](#) can calculate the minutiae after one fingerprint image acquisition.
- Several bugs fixed.

Version 1.0: December, 2003

Initial release.