



BSAPI SDK for
Linux

AuthenTec Biometric Services SDK for Linux

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1 Introduction

The Biometric Services API (BSAPI) is a mid-level SDK for application developers, allowing them to use AuthenTec fingerprint readers from their applications. The set of provided functions includes biometry (e.g. swiping fingers, matching finger templates etc.), navigation (i.e. using the fingerprint reader as a pointing device in similar way as touchpad) and other functions (e.g. controlling LEDs on the fingerprint reader).

2 Supported Systems

BSAPI SDK for Linux supports Linux system based on x86 (32-bit) or x86_64 (32 and 64bits) architectures.

3 Supported Devices

- Intelligent readers based on the following chipsets: TCD21 (TFM), TCD41, TCD42, TCD50A, TCD50D (TCD58) and TCD51A (TCD59). This includes EIKON, EIKON II and EIKON-To-Go external readers.
- Sensor-only readers based on the following sensors: TCS4B, TCS4C, TCS5B, TCS4K, TCS5D
- Area sensor readers: TCRU (using ST9 controller), EIKON Touch (using STM32 controller), TCEFC/TCEFD modules (using TCD50D controller)

4 SDK Contents

- `Readme.pdf` - This introductory document
- `AuthenTec_EULA.PDF` - AuthenTec SDK EULA
- `Redistributables.txt` - List of redistributables (if any) as required by `AuthenTec_EULA.PDF`
- `RelNotes.txt` - Version information and release notes.
- `bclib` subdirectory - a helper dynamic library for converting AuthenTec biometric template formats.
- `doc` subdirectory - BSAPI documentation
- `include` subdirectory - BSAPI headers
- `lib` subdirectory - BSAPI 32-bit libraries
- `lib64` subdirectory - BSAPI 64-bit libraries
- `samples` subdirectory - BSAPI example applications

5 Advanced Configuration

5.1 NVM Emulation

NVM contents for EEPROMless sensors is stored in files. There is one file per sensor. The location of these files is determined by 'nvmprefix' configuration parameter. This parameter contains a path to NVM-emulation files and a prefix of their names. This allows (for example) to make the files hidden (names start by '.'). The 'nvmprefix' parameter can be set the following way:

1. DSN parameter used in `ABSOpen()`: Example of DSN string: `"usb,timeout=1000,nvmprefix=/var/upek_data/.NVM"` This example sets NVM-emulation to the `/var/upek_data/` directory and each file name to start with '.NVM' prefix. The setup directory must have read and write access rights set for everyone who can use BSAPI.

2. `/etc/upek.cfg` configuration file: As root create this file and put following line in it (example): `nvm-prefix="/var/upek_data/.NVM"`. This example sets the same directory for NVM-emulation as in the previous example. The setup directory must have read and write access rights set for everyone who can use BSAPI. The `/etc/upek.cfg` file must have read access right set for everybody.
3. If none of two previous configuration ways were used, then the default value is used: `nvmprefix=/var/upek/`

Note

If you want to set the file name prefix to an empty string (so that the `nvmprefix` contains only the path), do not forget to put the slash (/) at the end of the `nvmprefix` value. Otherwise, the `nvmprefix` may be wrongly parsed.

Example: You want to have all NVM-emulation files in `/var/nvm_emulation/` directory, but you set `nvmprefix=/var/nvm_emulation` (which is wrong). In this case only directory `/var/` would be used for NVM-emulation files and each file name would be prefixed by `nvm_emulation`.

5.2 Additional DSN Parameters

The EEPROMless sensors are preconfigured for dual direction swipes. If you prefer to swipe only in one direction, you can override this setting by using `dualswipe=0` parameter. This parameter should be added to the `nvmprefix` parameter:

1. In the DSN string. Example:
`"usb,timeout=1000,nvmprefix=/var/upek_data/.NVM,dualswipe=0"`
2. In the `/etc/upek.cfg` configuration file: Add the following line to the file: `dualswipe=0`

Note

Use the `dualswipe` parameter only in the configuration where you have used the `nvmprefix` parameter. Following configurations are invalid:

1. The parameter `nvmprefix` is in the DSN string and the parameter 'dualswipe' in the configuration file - the 'dualswipe' parameter is ignored.
2. The parameter `nvmprefix` is in the configuration file and the parameter 'dualswipe' in the DSN string - the `dualswipe` parameter is parsed as invalid, because the parameter `nvmprefix` is missing in the DSN string.

5.3 Device File Permissions

Most modern Linux distributions use `udev` system to manage device special files. When supported by Linux kernel and configured properly, the system then automatically creates ad-hoc new special files for any device, which user plugs into system.

By default `udev` assigns file permissions which allow only root to use the device properly as a security measure. Usually, this is not the desired behavior for fingerprint readers.

In order to allow other users to use the device, some `udev` rules should be added into `udev` configuration - valid for Linux kernels version 2.6.26 and above.

The rules below are an example, allowing users belonging to the group `plugdev` to use a fingerprint device manufactured by AuthenTec. You may need to use other group (or create a group of that name, and add intended

users into the group), or adapt the rules in other way in order to fit in your Linux system properly, and to meet your requirements.

```
# Rules enabling to use AuthenTec fingerprint devices by members of group 'plugdev':
SYSFS{idVendor}=="0483", SYSFS{idProduct}=="2015", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="0483", SYSFS{idProduct}=="2016", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="2015", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="2016", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="2020", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="1000", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="1001", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="1002", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="5002", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="1003", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="5003", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="3000", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
SYSFS{idVendor}=="147e", SYSFS{idProduct}=="3001", \
    SYMLINK+="input/touchchip-%k", MODE="0660", GROUP="plugdev"
```

For Linux kernels older than 2.6.26 it is necessary to setup access permissions for both fingerprint devices, and USB hubs.

```
BUS=="usb", MODE="0666"
```

These rules should be added in a file in appropriate place (usually in `/etc/udev/rules.d` or in `/lib/udev/rules.d`, depending on your Linux distribution). You may create a new file there, e.g. `60-touchchip.rules`, or add the rules in already existing file, if appropriate.

After changing the rules you may need to run `udevadm control --reload-rules` and reconnect fingerprint device or restart udev system in order to apply the new rules