OMNIKEY AG

SCard3WBP Component

Documentation

Version 1.0

Author: TB
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Contents

HOWTO: start using 3WBP cards

Description

Note
For more information about the parameters, use MSDN.

First of all you have to call the function SCardEstablishContext to establish the resource manager context

```
LONG SCardEstablishContext(
    IN  DWORD dwScope,
    IN  LPCVOID pvReserved1,
    IN  LPCVOID pvReserved2,
    OUT LPSCARDCONTEXT phContext
);
```

If these function returns SCARD_S_SUCCESS, the context has been successfully created. Now you are able to list all installed readers. To do this you need SCardListReaders.

```
LONG SCardListReaders(
    IN SCARDCONTEXT hContext,
    IN LPCTSTR mszGroups,
    OUT LPTSTR mszReaders,
    IN OUT LPDWORD pcchReaders
);
```

After you have listed the readers you have to select one of them. You can to that through a dialog or in your application.
Then you are able to connect to the card with SCardConnect.

```
LONG SCardConnect(
    IN SCARDCONTEXT hContext,
    IN LPCTSTR szReader,
    IN DWORD dwShareMode,
    IN DWORD dwPreferredProtocols,
    OUT LPSCARDHANDLE phCard,
    OUT LPDWORD pdwActiveProtocol
);
```

dwPreferredProtocols has to be SCARD_PROTOCOL_T0

After you finished this function successfully you are connected to the card. Now you can read the data, change the PIN or anything else.
If you finished working with the card you should close the connection.

```
LONG SCardDisconnect(
    IN SCARDHANDLE hCard,
    IN DWORD dwDisposition
);
```

Read data from 3WBCards:

```
OKERR ENTRY SCard3WBPReadData(
    IN  SCARDHANDLE ulHandleSmartCard,
    IN  ULONG ulBytesToRead,
    OUT LPBYTE pbData,
    IN  ULONG ulAddress,
);
```

ulHandleSmardCard has to be the cardhandle you got from SCardConnect.
ulBytesToRead sets how many bytes will be read from card.
ulAddress define the start offset where the function starts to read, and **pbData** is a pointer to an array (bytearray) and contains the read memory from the card if function was successfull.

The following functions are available in the SCard3WBP module:

- ***SCard3WBPReadData***
- ***SCard3WBPVerifyProtectBit***
- ***SCard3WBPWriteData***
- ***SCard3WBPCompareAndProtect***
- ***SCard3WBPPresentPIN***
- ***SCard3WBPChangePIN***
- ***SCard3WBPIsPinPresented***

SCard3WBP - General Overview

Description
The abbrevation SCard3WBP is used here to refer to the following smart cards from Siemens which are supported by this shared library:

SLE4418
SLE4428 (with PIN security logic)

For a full understanding of the operation and functions of these cards, please refer to the Siemens technical manual:

Siemens IC's for Chip cards, SLE4418 / SLE 4428
intelligent 8-Kbit EEPROM, Data Sheet 09.92

The SCard3WBP module provides access to the services of the SLE 4418/4428 card. The function calls deal with the communications with the SLE 4418/4428 and passing of the parameters.

You can use SLE4418 / SLE 4428 cards with following readers:

Cardman 2010
Cardman 2011
Cardman 2020
Cardman 4000
Cardman 6020

The following functions are available in the SCard3WBP module:

- ***SCard3WBPReadData***
- ***SCard3WBPVerifyProtectBit***
- ***SCard3WBPWriteData***
- ***SCard3WBPCompareAndProtect***
- ***SCard3WBPPresentPIN***
- ***SCard3WBPChangePIN***
- ***SCard3WBPIsPinPresented***
- ***SCard3WBPVerifyProtectBitEx***

Function SCard3WBPChangePIN

Prototype

OKERR ENTRY SCard3WBPChangePIN
(
IN SCARDHANDLE *ulHandleSmartCard*,
IN ULONG *ulOldPINLen*,
IN LPBYTE *pbOldPIN*,
IN ULONG *ulNewPINLen*,
IN LPBYTE *pbNewPIN*
)

Description

This function changes the PIN of the card. The length of the old (current) and the new PIN must be two bytes.

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card (get from SCardConnect)
ulOldPINLen	in	Length of the old PIN (must be 2)
pbOldPIN	in	Pointer to the old PIN
ulNewPINLen	in	Length of the new PIN (must be 2)
pbNewPIN	in	Pointer to the new PIN

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPPresentPIN

Function SCard3WBPCompareAndProtect

Prototype

OKERR ENTRY SCard3WBPCompareAndProtect
(
IN SCARDHANDLE *ulHandleSmartCard*,
IN BYTE *bData*,
IN ULONG *ulAddress*
)

Description

This function corresponds to the 'Data comparison and write protect bit' operation (see manual) to set a byte 'read only'.

This function is used to compare the byte *bData* and a byte in the card referenced by *ulAdress*. If they do match byte is write-protected.

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card (get from SCardConnect)
bData	in	Byte to be matched
ulAddress	in	Memory address

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPWriteData

Function SCard3WBPIsPinPresented

Prototype

OKERR ENTRY SCard3WBPIsPinPresented
(
IN SCARDHANDLE *ulHandleSmartCard*,
OUT LPBOOL *pfPinPresented*
)

Description

This function checks and returns if the PIN of the card is already presented.

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card (get from SCardConnect)
pfPinPresented	out	TRUE if PIN is already presented, FALSE if the PIN is not presented

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPPresentPIN

Function SCard3WBPPresentPIN

Prototype

OKERR ENTRY SCard3WBPPresentPIN
(
IN SCARDHANDLE *ulHandleSmartCard*,
IN ULONG *ulPINLen*,
IN LPBYTE *pbPIN*
)

Description

This function uses the 'Write error counter', the Compare 1st PIN, and the 2nd PIN operation (see manual) to unlock the card (SCARD3W only).

This function is used to enable erasing and writing of the card. The PIN is referenced by *pbPIN* and must be two bytes long, so *ulPinLen* must be two.

Note: the function sets the error counter to the maximum value of 8 retries after enabling (see manual for details on PIN, transport code and error counter).

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card (get from SCardConnect)
ulPINLen	in	Length of the PIN (must be two)
pbPIN	in	Pointer to the PIN

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPChangePIN
SCard3WBPWriteData

Function SCard3WBPReadData

Prototype

OKERR ENTRY SCard3WBPReadData
(
IN ULONG *ulHandleSmartCard*,
IN ULONG *ulBytesToRead*,
OUT LPBYTE *pbReadBuffer*,
IN ULONG *ulAddress*
)

Description

This function corresponds to the 'Read 8 bits data without protect bit' operation (see manual) and reads one or multiple bytes from the card.

This function is used to read a block of data of up to 1024 bytes (the maximum storage capacity) from the card into a buffer referenced by *pbData*.
ulAddress specifies the start address for the read operation on the card. Note that *ulAddress* + *ulBytesToRead* must not be greater than 1024 (e.g. there is no wrap around).

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card (get from SCardConnect)
ulBytesToRead	in	Number of bytes to read
pbReadBuffer	out	Pointer to the buffer
ulAddress	in	Start Offset for read operation

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPWriteData

Function SCard3WBPVerifyProtectBit

Prototype

OKERR ENTRY SCard3WBPVerifyProtectBit
(
IN SCARDHANDLE *ulHandleSmartCard*,
IN ULONG *ulAddress*,
OUT LPBOOL *pfProtected*
)

Description

This function uses the 'Read 9 bits data with protect bit' operation (see manual) to determine if a byte is 'read only'.

This function is used to check a byte in the card referenced by *ulAddress*. The flag referenced by pfProtect holds TRUE if the byte has the write protection set.

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card
ulAddress	in	Memory address
pfProtected	out	Pointer to the result

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPWriteData
SCard3WBPCompareAndProtect

Function SCard3WBPVerifyProtectBitEx

Prototype

OKERR ENTRY SCard3WBPVerifyProtectBitEx
(
IN ULONG *ulHandleSmartCard*,
IN ULONG *ulBytesToRead*,
OUT LPBYTE *pbReadBuffer*,
IN ULONG *ulAddress*
)

Description

This function uses the 'Read 9 bits data with protect bit' operation (see manual) to determine if a byte is 'read only'.

This function is used to check the protection bits of the card starting at *ulAddress*. The values of the protection bits (TRUE or FALSE) are stored in the passed buffer.
e.g. If the protection bits of 10 bytes should be checked, the buffer must have a size of at least 10 bytes . The protection bit of the first byte is stored in the first byte of the buffer, the protection bit of the second byte is stored in the second byte of the buffer,...

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card (get from SCardConnect)
ulBytesToRead	in	Number of bytes to check
pbReadBuffer	out	Pointer to the buffer
ulAddress	in	Start offset for check operation

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPWriteData
SCard3WBPCompareAndProtect

Function SCard3WBPWriteData

Prototype

OKERR ENTRY SCard3WBPWriteData
(
IN SCARDHANDLE *ulHandleSmartCard*,
IN ULONG *ulDataLen*,
IN LPBYTE *pbData*,
IN ULONG *ulAddress*,
IN BOOL *fProtect*
)

Description

This function uses either the 'Erase and write without protect bit' operation or 'Erase and write with protect bit' operation (see manual) to write one or multiple byte to the card.

This is used to write a block of data, referenced by *pbData* of up to 1024 bytes (the maximum storage capacity) to the card .
ulAddress specifies the start address for the write operation on the card. Note that *ulAddress* + *ulDataLen* must not be greater than 1024 (e.g. there is no wrap around).

fProtect = TRUE will set the write protection for every byte written.

Note1: The PIN must have been presented successfully before writing is possible on the SLE 4428 card.

Note2: After writing the block of data the function performs an internal read-back and compare operation, to verify that every byte has been written correctly.

Parameters

The following parameters need to be provided:

Parameter	Type	Description
ulHandleSmartCard	in	Handle of the smart card
ulDataLen	in	Length of the data buffer
pbData	in	Pointer to the data buffer
ulAddress	in	Start offset of write operation
fProtect	in	Write and if 'TRUE' set protect bit

Return Values

This function returns the following:

Value	Description
OK Standard Error Codes	see header file ok.h

See also

SCard3WBPReadData

SCard3WBPPresentPIN