

FEITIAN

bR301 Smart Card Reader iOS

Developer Guide



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Chapter 1. Overview

This chapter describes how to develop bR301 reader applications, including the development interfaces supported by the product (bR301) and how to develop applications based on these interfaces.

FEITIAN bR301 is specially engineered to accommodate a range of smart card applications. Developers use it as a platform to generate and deploy related products and services. Moreover, FEITIAN bR301 is a terminal unit which is seamlessly integrated to all major systems of operation. Additional features such as the built-in inclusive support for different smart card interfaces has facilitated the wide scale and cross industry adoption of bR301.

bR301 suits customers where security concerns are the most salient and satisfies the demand for a flexible solution for ID authentication, e-commerce, e-payment, information security and access control.

bR301 and the rest of FEITIAN's line of smart card readers offer each customer a complete solution for all manner of utilizations.

Chapter 2. Definitions

2.1 Error codes

Below list down commonly used errors. All errors from different cards must map over to these error messages.

SCARD_S_SUCCESS
SCARD_E_INVALID_VALUE
SCARD_E_INVALID_PARAMETER
SCARD_E_INVALID_HANDLE
SCARD_E_INSUFFICIENT_BUFFER
SCARD_E_NO_SMARTCARD
SCARD_E_READER_UNAVAILABLE
SCARD_E_UNSUPPORTED_FEATURE
SCARD_F_COMM_ERROR
SCARD_E_NOT_TRANSACTED

Chapter 3. API Reference

3.1 SCardEstablishContext

Synopsis:

```
#include <winscard.h>

LONG SCardEstablishContext(DWORD dwScope,
    /*@unused@*/ LPCVOID pvReserved1,
    /*@unused@*/ LPCVOID pvReserved2,
    LPSCARDCONTEXT phContext);
```

Parameters:

dwScope	IN	Scope of the establishment
pvReserved1		unused
pvReserved2		unused
phContext	OUT	Returned reference to this connection

Description:

This function creates a communication context to the PC/SC Resource Manager. This must be the first function called in a PC/SC application.

Value of dwScope Meaning

SCARD_SCOPE_USER	Not used
SCARD_SCOPE_TERMINAL	Not used
SCARD_SCOPE_GLOBAL	Not used
SCARD_SCOPE_SYSTEM	Services on the local machine

Example:

```
SCARDCONTEXT    hContext;
LONG            rv;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_VALUE	Invalid scope type passed
SCARD_E_INVALID_PARAMETER	Invalid parameter

3.2 SCardReleaseContext

Synopsis:


```
#include <winscard.h>
LONG SCardReleaseContext(SCARDCONTEXT hContext);
```

Parameters:

hContext IN Connection context to be closed

Description:

This function destroys a communication context to the PC/SC Resource Manager. This must be the last function called in a PC/SC application.

Example:

```
SCARDCONTEXT    hContext;
LONG            rv;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardReleaseContext(hContext);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hContext handle

3.3 SCardIsValidContext

Synopsis:

```
#include <winscard.h>
LONG SCardIsValidContext(SCARDCONTEXT hContext);
```

Parameters:

hContext IN Connection context to be checked

Description:

This function determines whether a smart card context handle is still valid. After a smart card context handle has been set by SCardEstablishContext(), it may become not valid if the resource manager service has been shut down.

Example:

```
SCARDCONTEXT    hContext;
LONG            rv;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardIsValidContext(hContext);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hContext handle

3.4 SCardListReaders

Synopsis:

```
#include <winscard.h>

LONG SCardListReaders(SCARDCONTEXT hContext,
    /*@null@*/ /*@out@*/ LPCSTR mszGroups,
    /*@null@*/ /*@out@*/ LPSTR mszReaders,
    /*@out@*/ LPDWORD pcchReaders);
```

Parameters:

hContext	IN	Connection context to the PC/SC Resource Manager
mszGroups	IN	List of groups to list readers (not used)
mszReaders	OUT	Multi-string with list of readers
pcchReaders	OUT	Size of multi-string buffer including NULL's

Description:

This function returns a list of currently available readers on the system. mszReaders is a pointer to a character string that is allocated by the application. If the application sends mszGroups and mszReaders as NULL then this function will return the size of the buffer needed to allocate in pcchReaders. The reader names is a multi-string and separated by a nul character ('\0') and ended by a double null character. "Reader A\0Reader B\0\0".

Example:

```
SCARDCONTEXT    hContext;
LPSTR           mszReaders;
DWORD           dwReaders;
LONG            rv;

rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardListReaders(hContext, NULL, NULL, &dwReaders);
mszReaders = malloc(sizeof(char)*dwReaders);
rv = SCardListReaders(hContext, NULL, mszReaders, &dwReaders);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid Scope Handle
SCARD_E_INSUFFICIENT_BUFFER	Reader buffer not large enough
SCARD_E_INVALID_PARAMETER	Invalid parameter

3.5 SCardConnect

Synopsis:

```
#include <winscard.h>

LONG SCardConnect( SCARDCONTEXT hContext,
```

```

LPCSTR szReader,
DWORD dwShareMode,
DWORD dwPreferredProtocols,
LPSCARDHANDLE phCard,
LPDWORD pdwActiveProtocol);

```

Parameters:

hContext	IN	Connection context to the PC/SC Resource Manager
szReader	IN	Reader name to connect to
dwShareMode	IN	Mode of connection type: exclusive or shared
dwPreferredProtocols	IN	Desired protocol use
phCard	OUT	Handle to this connection
pdwActiveProtocol	OUT	Established protocol to this connection.

Description:

This function establishes a connection to the friendly name of the reader specified in szReader. The first connection will power up and perform a reset on the card. Value of dwShareMode Meaning

SCARD_SHARE_SHARED This application will allow others to share the reader

SCARD_SHARE_EXCLUSIVE This application will NOT allow others to share the reader

SCARD_SHARE_DIRECT Direct control of the reader, even without a card

SCARD_SHARE_DIRECT can be used before using SCardControl() to send control commands to the reader even if a card is not present in the reader.

Value of dwPreferredProtocols Meaning

SCARD_PROTOCOL_T0 Use the T=0 protocol

SCARD_PROTOCOL_T1 Use the T=1 protocol

SCARD_PROTOCOL_RAW Use with memory type cards

dwPreferredProtocols is a bit mask of acceptable protocols for the connection. You can use (SCARD_PROTOCOL_T0 | SCARD_PROTOCOL_T1) if you do not have a preferred protocol.

Example:

```

SCARDCONTEXT    hContext;
SCARDHANDLE     hCard;
DWORD           dwActiveProtocol;
LONG            rv;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
SCARD_PROTOCOL_T0, &hCard, &dwActiveProtocol);

```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hContext handle
SCARD_E_INVALID_PARAMETER	Invalid parameter
SCARD_E_NO_SMARTCARD	no smart card
SCARD_E_READER_UNAVAILABLE	Could not power up the reader or card

SCARD_E_UNSUPPORTED_FEATURE Protocol not supported

3.6 FtGetSerialNum(private interface)

Synopsis:

```
#include <winscard.h>
LONG FtGetSerialNum(unsigned int reader_index,
    unsigned int length,
    char * buffer);
```

Parameters:

reader_index	IN	reader index
length	IN	length of buffer(>=8)
buffer	OUT	Serial number

Description:

This function used to get serial number of reader.

Example:

```
SCARDCONTEXT      hContext;
SCARDHANDLE      hCard;
DWORD              dwActiveProtocol;
LONG               rv;
Char               buffer[20] = {0};
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
SCARD_PROTOCOL_T0, &hCard, &dwActiveProtocol);
rv = FtGetSerialNum(0, sizeof(buffer), buffer);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_F_COMM_ERROR	Get serial Num failed
SCARD_E_INVALID_PARAMETER	Invalid parameter

3.7 FtWriteFlash (private interface)

Synopsis:

```
#include <winscard.h>
LONG FtWriteFlash(unsigned int reader_index,
    unsigned char bOffset,
    unsigned char blength,
    unsigned char buffer[]);
```

Parameters:

reader_index	IN	reader index
bOffset	IN	Offset of flash to write
blength	IN	The length of data
buffer	IN	The data for write

Description:

This function used to write data to flash.

Example:

```
SCARDCONTEXT    hContext;
SCARDHANDLE     hCard;
DWORD           dwActiveProtocol;
LONG            rv;
unsigned char buffer[255] = {0};
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED, SCARD_PROTOCOL_T0, &hCard,
&dwActiveProtocol);
for (int i=0; i< 255; i++) {
    buffer[i]= i;
}
rv = FtWriteFlash(0, 0, 255, buffer);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_F_COMM_ERROR	write data failed
SCARD_E_INVALID_PARAMETER	Invalid parameter

3.8 FtReadFlash(private interface)

Synopsis:

```
#include <winscard.h>
LONG FtReadFlash(unsigned int reader_index,
    unsigned char bOffset,
    unsigned char blength,
    unsigned char buffer[]);
```

Parameters:

reader_index	IN	reader index
bOffset	IN	Offset of flash to write
blength	IN	The length of read data
buffer	OUT	The read data

Description:

This function used to read data from flash.

Example:

```
SCARDCONTEXT    hContext;
SCARDHANDLE     hCard;
DWORD           dwActiveProtocol;
LONG            rv;
unsigned char buffer[255] = {0};
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED, SCARD_PROTOCOL_T0, &hCard,
&dwActiveProtocol);
rv = FtReadFlash (0, 0, 255, buffer);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_F_COMM_ERROR	write data failed
SCARD_E_INVALID_PARAMETER	Invalid parameter

3.9 SCardReconnect

Synopsis:

```
#include <winscard.h>
LONG SCardReconnect(SCARDHANDLE hCard,
    DWORD dwShareMode,
    DWORD dwPreferredProtocols,
    DWORD dwInitialization,
    LPDWORD pdwActiveProtocol);
```

Parameters:

hCard	IN	Handle to a previous call to connect
dwShareMode	IN	Mode of connection type: exclusive/shared
dwPreferredProtocols	IN	Desired protocol use
dwInitialization	IN	Desired action taken on the card/reader
pdwActiveProtocol	OUT	Established protocol to this connection

Description:

This function reestablishes a connection to a reader that was previously connected to using SCardConnect(). In a multi application environment it is possible for an application to reset the card in shared mode. When this occurs any other application trying to access certain commands will be returned the value SCARD_W_RESET_CARD. When this occurs SCardReconnect() must be called in order to acknowledge that the card was reset and allow it to change it's state accordingly.

Value of dwShareMode Meaning

SCARD_SHARE_SHARED This application will allow others to share the reader

SCARD_SHARE_EXCLUSIVE This application will NOT allow others to share the reader

Value of dwPreferredProtocols Meaning

SCARD_PROTOCOL_T0 Use the T=0 protocol

SCARD_PROTOCOL_T1 Use the T=1 protocol

SCARD_PROTOCOL_RAW Use with memory type cards

dwPreferredProtocols is a bit mask of acceptable protocols for the connection. You can use (SCARD_PROTOCOL_T0 | SCARD_PROTOCOL_T1) if you do not have a preferred protocol.

Value of dwInitialization Meaning

SCARD_LEAVE_CARD Do nothing

SCARD_RESET_CARD Reset the card (warm reset)

SCARD_UNPOWER_CARD Unpower the card (cold reset)

SCARD_EJECT_CARD Eject the card

Example:

```

SCARDCONTEXT    hContext;
SCARDHANDLE     hCard;
DWORD           dwActiveProtocol, dwSendLength, dwRecvLength;
LONG            rv;
BYTE            pbRecvBuffer[10];
BYTE            pbSendBuffer[] = {0xC0, 0xA4, 0x00, 0x00, 0x02, 0x3F, 0x00};
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
SCARD_PROTOCOL_T0, &hCard, &dwActiveProtocol);
dwSendLength = sizeof(pbSendBuffer);
dwRecvLength = sizeof(pbRecvBuffer);
rv = SCardTransmit(hCard, SCARD_PCI_T0, pbSendBuffer, dwSendLength,
&pioRecvPci, pbRecvBuffer, &dwRecvLength);
/* Card has been reset by another application */
if (rv == SCARD_W_RESET_CARD)
{
    rv = SCardReconnect(hCard, SCARD_SHARE_SHARED, SCARD_PROTOCOL_T0,
        SCARD_RESET_CARD, &dwActiveProtocol);
}

```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hContext handle
SCARD_E_INVALID_PARAMETER	Invalid parameter
SCARD_E_NO_SMARTCARD	no smart card
SCARD_E_READER_UNAVAILABLE	Could not power up the reader or card
SCARD_E_UNSUPPORTED_FEATURE	Protocol not supported

3.10 SCardDisconnect

Synopsis:

```
#include <winscard.h>
LONG SCardDisconnect(SCARDHANDLE hCard,
    DWORD dwDisposition);
```

Parameters:

hCard	IN	Connection made from SCardConnect
dwDisposition	IN	Reader function to execute

Description:

This function terminates a connection to the connection made through SCardConnect.

dwDisposition can have the following values:

Value of dwDisposition Meaning

SCARD_LEAVE_CARD	Do nothing
SCARD_RESET_CARD	Reset the card (warm reset)
SCARD_UNPOWER_CARD	Unpower the card (cold reset)
SCARD_EJECT_CARD	Eject the card

Example:

```
SCARDCONTEXT hContext;
SCARDHANDLE hCard;
DWORD dwActiveProtocol;
LONG rv;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
    SCARD_PROTOCOL_T0, &hCard, &dwActiveProtocol);
rv = SCardDisconnect(hCard, SCARD_UNPOWER_CARD);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hCard handle
SCARD_E_INVALID_VALUE	Invalid dwDisposition

3.11 SCardStatus

Synopsis:

```
#include <winscard.h>
LONG SCardStatus(SCARDHANDLE hCard,
    LPSTR mszReaderNames,
    LPDWORD pcchReaderLen,
```



```

LPDWORD pdwState,
LPDWORD pdwProtocol,
LPBYTE pbAtr,
LPDWORD pcbAtrLen);

```

Parameters:

hCard	IN	Connection made from SCardConnect
mszReaderNames	IN OUT	Friendly name of this reader
pcchReaderLen	IN OUT	Size of the szReaderName multistring
pdwState	OUT	Current state of this reader
pdwProtocol	OUT	Current protocol of this reader
pbAtr	OUT	Current ATR of a card in this reader
pcbAtrLen	OUT	Length of ATR

Description:

This function returns the current status of the reader connected to by hCard. It's friendly name will be stored in mszReaderNames. pcchReaderLen will be the size of the allocated buffer for mszReaderNames, while pcbAtrLen will be the size of the allocated buffer for pbAtr. If either of these is too small, the function will return with SCARD_E_INSUFFICIENT_BUFFER and the necessary size in pcchReaderLen and pcbAtrLen. The current state, and protocol will be stored in pdwState and pdwProtocol respectively. pdwState is a DWORD possibly OR'd with the following values:

Value of pdwState Meaning

SCARD_ABSENT	There is no card in the reader
SCARD_PRESENT	There is a card in the reader, but it has not been moved into position for use
SCARD_SWALLOWED	There is a card in the reader in position for use. The card is not powered
SCARD_POWERED	Power is being provided to the card, but the reader driver is unaware of the mode of the card
SCARD_NEGOTIABLE	The card has been reset and is awaiting PTS negotiation
SCARD_SPECIFIC	The card has been reset and specific communication protocols have been established

Value of pdwProtocol Meaning

SCARD_PROTOCOL_T0	Use the T=0 protocol
SCARD_PROTOCOL_T1	Use the T=1 protocol

Example:

```

SCARDCONTEXT  hContext;
SCARDHANDLE    hCard;
DWORD          dwActiveProtocol;
DWORD          dwState, dwProtocol, dwAtrLen, dwReaderLen;
BYTE           pbAtr[MAX_ATR_SIZE];
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
SCARD_PROTOCOL_T0, &hCard, &dwActiveProtocol);
dwAtrLen = sizeof(pbAtr);
rv=SCardStatus(hCard, NULL, &dwReaderLen, &dwState, &dwProtocol,pbAtr, &dwAtrLen);

```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INSUFFICIENT_BUFFER	Not enough allocated memory for mszReaderNames or for pbAtr

3.12 SCardGetAttrib

Synopsis:

```
#include <winscard.h>
LONG SCardGetAttrib(SCARDHANDLE hCard,
    DWORD dwAttrId,
    LPBYTE pbAttr,
    LPDWORD pcbAttrLen);
```

Parameters:

hCard	IN	Connection made from SCardConnect
dwAttrId	IN	Identifier for the attribute to get
pbAttr	OUT	Pointer to a buffer that receives the attribute
pcbAttrLen	IN/OUT	Length of the pbAttr buffer in bytes

Description:

This function get an attribute from the IFD Handler. The list of possible attributes is:

- SCARD_ATTR_ATR_STRING

Example:

```
LONG            rv;
SCARDCONTEXT    hContext;
SCARDHANDLE     hCard;
DWORD           dwActiveProtocol;
unsigned char    pbAtr[MAX_ATR_SIZE];
DWORD           dwAtrLen;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
SCARD_PROTOCOL_RAW &hCard, &dwActiveProtocol);
rv = SCardGetAttrib(hCard, SCARD_ATTR_ATR_STRING, pbAtr, &dwAtrLen);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hCard handle
SCARD_E_INVALID_PARAMETER	Invalid parameter
SCARD_E_INSUFFICIENT_BUFFER	receive buffer not large enough
SCARD_E_NOT_TRANSACTED	Data exchange not successful
SCARD_E_SHARING_VIOLATION	Someone else has exclusive rights

SCARD_E_READER_UNAVAILABLE The reader has been removed

3.13 SCardTransmit

Synopsis:

```
#include <winscard.h>
LONG SCardTransmit(SCARDHANDLE hCard,
    const SCARD_IO_REQUEST *pioSendPci,
    LPCBYTE pbSendBuffer,
    DWORD cbSendLength,
    SCARD_IO_REQUEST *pioRecvPci,
    LPBYTE pbRecvBuffer,
    LPDWORD pcbRecvLength);
```

Parameters:

hCard	IN	Connection made from SCardConnect
pioSendPci	IN/OUT	Structure of protocol information
pbSendBuffer	IN	APDU to send to the card
cbSendLength	IN	Length of the APDU
pioRecvPci	IN/OUT	Structure of protocol information
pbRecvBuffer	OUT	Response from the card
pcbRecvLength	IN/OUT	Length of the response

Description:

This function sends an APDU to the smart card contained in the reader connected to by SCardConnect(). The card responds from the APDU and stores this response in pbRecvBuffer and it's length in SpcbRecvLength. SSendPci and SRecvPci are structures containing the following:

```
typedef struct {
    DWORD dwProtocol; /* SCARD_PROTOCOL_T0 or SCARD_PROTOCOL_T1 */
    DWORD cbPciLength; /* Length of this structure - not used */
} SCARD_IO_REQUEST;
```

Value of pioSendPci Meaning

SCARD_PCI_T0	Pre-defined T=0 PCI structure
SCARD_PCI_T1	Pre-defined T=1 PCI structure

Example:

```
LONG                   rv;
SCARDCONTEXT    hContext;
SCARDHANDLE     hCard;
DWORD           dwActiveProtocol, dwSendLength, dwRecvLength;
SCARD_IO_REQUEST   pioRecvPci;
BYTE     pbRecvBuffer[10];
```

```

BYTE    pbSendBuffer[] = { 0xC0, 0xA4, 0x00, 0x00, 0x02, 0x3F, 0x00 };
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rv = SCardConnect(hContext, "Reader X", SCARD_SHARE_SHARED,
    SCARD_PROTOCOL_T0, &hCard, &dwActiveProtocol);
dwSendLength = sizeof(pbSendBuffer);
dwRecvLength = sizeof(pbRecvBuffer);
rv = SCardTransmit(hCard, SCARD_PCI_T0, pbSendBuffer, dwSendLength,
    &pioRecvPci, pbRecvBuffer, &dwRecvLength);

```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_INVALID_HANDLE	Invalid hCard handle
SCARD_E_INSUFFICIENT_BUFFER	receive buffer not large enough
SCARD_E_NOT_TRANSACTED	Data exchange not successful
SCARD_E_INVALID_PARAMETER	invalid parameter
SCARD_E_INVALID_VALUE	Invalid Protocol, reader name, etc

3.14 SCardGetStatusChange

Synopsis:

```
#include <winscard.h>
```

```

LONG SCardGetStatusChange(SCARDCONTEXT hContext,
    DWORD dwTimeout,
    LPSCARD_READERSTATE rgReaderStates,
    DWORD cReaders);

```

Parameters:

hContext	IN	Connection context to the PC/SC Resource Manager
dwTimeout	IN	Maximum waiting time (in milliseconds) for status change, zero (or INFINITE) for infinite
rgReaderStates	IN/OUT	Structures of readers with current states
cReaders	IN	Number of structures

Description:

This function blocks execution until the current availability of the cards in a specific set of readers changes.

The caller supplies a list of readers to be monitored through an `SCARD_READERSTATE` array and the maximum amount of time, in seconds, that it is willing to wait for an action to occur on one of the listed readers. The function returns when there is a change in availability, having filled in the *dwEventState* members of the `SCARD_READERSTATE` structures appropriately.

Example:

```
SCARDCONTEXT      hContext;
SCARD_READERSTATE_A  rgReaderStates[1];
LONG      rv;
rv = SCardEstablishContext(SCARD_SCOPE_SYSTEM, NULL, NULL, &hContext);
rgReaderStates[0].szReader = "Reader X";
rgReaderStates[0].dwCurrentState = SCARD_STATE_UNAWARE;
rv = SCardGetStatusChange(hContext, INFINITE, rgReaderStates, 1);
printf("reader state: 0x%04X\n", rgReaderStates[0].dwEventState);
```

Returns:

SCARD_S_SUCCESS	Successful
SCARD_E_READER_UNAVAILABLE	The reader is unavailable