

## PC/SC - MCard - Integration Documentation

### Description

Access/Detect Card

### SCARD Command

Card, Info

### MCARD Command

MCardInitialize

### SCARD VB Example

```
'Retrieves Infomation About the SmartCard itself
Dim tmp As String
tmp = String(200, 0)
Ret = SCardComand(0, "Card,Info", 0, 0, 0, tmp, 200)
If Ret = 0 Then StatsLabel.Caption = tmp Else DisplayError (Ret)
```

### SCARD C++ Example

```
CString cardInfo(CString sField)
{

//////////
//the sField parameter is the <InfoField> if only one piece of card information is necessary
//if all info fields are needed pass NULL
//////////

    char buffer [2048];
    CString sCmdRtrn, sCommand;

    // creation of SCard command
    if (sField != NULL)
        sCommand = "Card,Info," + sField;
    else
        sCommand = "Card,Info";

    // call Scard command
    SCardCommand(sCommand,NULL,0,buffer,sizeof(buffer));
    sCmdRtrn= buffer;

//////////
//if the entire set of fields are returned, each field is delimited by a carriage return
//(#13 - ascii) + line feed (#10 - ascii) making the parsing rather easy
//////////

    return sCmdRtrn;
}
```

### MCARD VB Example

```
Private Declare Function MCardInitialize Lib "MCSCM.dll" ( _  
    ByVal hSCardContext As Long, _  
    ByVal scReaderName As String, _  
    ByRef phMCardContext As Long, _  
    ByRef pdwDLLVersion As Long _  
) As Long
```

```
Dim hSCardCtx As Long  
Dim hMCardCtx As Long  
Dim ReaderName As String  
Dim dwDLLVersion As Long
```

```
IReturn = MCardInitialize(hSCardCtx, ReaderName, hMCardCtx, dwDLLVersion)
```

### MCARD C++ Example

```
/* ScardContext is the context obtained through SCardEstablishContext */  
MCARDCONTEXT hMCardContext;  
DWORD dwDLLVersion;  
char szReader[] = "CCID SCM Microsystems Reader";  
IReturn;  
IReturn = MCardInitialize (  
    ScardContext, szReader, &hMCardContext, &dwDLLVersion );
```

(Please refer to Mcard API Specification pdf for further reference)

### Description

Read from card

### SCARD Command

Card, MemRead

### MCARD Command

MCardReadMemory

### SCARD VB Example

```
'Reads 9 bytes from the SmartCard  
Dim tmp As String  
tmp = Space(9)  
Ret = SCardComand(0, "Card,MemRead,0,9", 0, 0, 0, tmp, 9)  
If Ret = 0 Then StatsLabel.Caption = tmp Else DisplayError (Ret)
```

### SCARD C++ Example

```
CString cardRead(int address, int length)  
{
```

```

char buffer [2048];
CString text, command, getAddress, getLength;

// convert address and length integers to strings for use in SCard command
getAddress.Format("%d",address);
getLength.Format("%d",length);

// creation of SCard command
command = "Card,MemRead," + getAddress + "," + getLength;

// call SCard command
SCardCommand(command,NULL,0,buffer,sizeof(buffer));
text = buffer;

return text;
}

```

### MCARD VB Example

```

Private Declare Function MCardReadMemory Lib "MCSCM.dll" ( _
    ByVal hMCard As Long, _
    ByVal bMemZone As Byte, _
    ByVal dwOffset As Long, _
    ByVal pbReadBuffer As String _
    ByVal pbReadLen as long _
) As Long

Dim buf as String
Dim buflen as Long

Data = String(200,0)
Buflen = 50

LRet = MCardReadMemory(hMCardContext, 0, 50, buf, Buflen)

```

### MCARD C++ Example

```

LONG IReturn;
BYTE abyData [20];
DWORD dwLen = 20;

LReturn = MCardReadMemory ( /* Read 20 bytes from offset 0x80 in mem zone 0 */
    HMCard,
    0,
    0x80,
    abyData,

```

```
);
```

(Please refer to Mcard API Specification pdf for further reference)

Description  
Write to card

SCARD Command  
Card, MemWrite

MCARD Command  
MCardWriteMemory

### SCARD VB Example

```
'Writes "HelloSelf" to the SmartCard. Is stored in the first 10 bytes of the Card
Dim TxT As String
TxT = "HelloSelf"
Ret = SCardComand(0, "Card,MemWrite,0,9", 0, TxT, Len(TxT), 0, 0)
If Ret = 0 Then StatsLabel.Caption = "OK" Else DisplayError (Ret)
```

### SCARD C++ Example

```
void cardWrite(int address, int length, CString input)
{
    CString command, putAddress, putLength;
    char buffer[2048];

    // convert address and length integers into strings for use in Scard command
    putAddress.Format("%d",address);
    putLength.Format("%d",length);

    // creation of SCard command
    command = "Card,MemWrite," + putAddress + "," + putLength;

    // call SCard command
    SCardCommand(command,input,length,buffer,sizeof(buffer)); // data is written to card
}
```

### MCARD VB Example

```
Private Declare Function MCardWriteMemory Lib "MCSCM.dll" ( _
    ByVal hMCard As Long, _
    ByVal bMemZone As Byte, _
    ByVal dwOffset As Long, _
    ByVal pbWriteBuffer As String _
    ByVal pbWriteLen as long _
) As Long
```

## MCARD C++ Example

```
LONG IReturn;
BYTE abyData [10] = {0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x09, 0x0A};
DWORD dwLen = 10;
IReturn = MCardWriteMemory ( hMCard,
                             0,
                             0x80,
                             abyData,
                             &dwLen
);
```

(Please refer to Mcard API Specification pdf for further reference)

<u>Description</u>	<u>SCARD Command</u>	<u>MCARD Command</u>
Verify Pin on card	Card, MemVerifyPin	MCardVerifyPIN

## SCARD VB Example

```
'Verifies the PIN number on the SmartCard
Ret = SCardComand(0, "Card,MemVerifyPin," + PIN.Text, 0, 0, 0, 0, 0)
If Ret = 0 Then StatsLabel.Caption = "Verified" Else DisplayError (Ret)
```

## SCARD C++ Example

```
BOOL verifyPin(CString sPin, int iPinNum)
{
    CString command, sPinNum;

    if(iNumPin < 0)
        // creation of SCard command without numbered pin
        command = "Card,MemVerifyPin," + sPin;
    else
    {
        // convert pin number to string for use in SCard command
        sPinNum.Format("%d",iPinNum);
        // creation of SCard command with numbered pin
        command = "Card,MemVerifyPin," + sPin + "," + sPinNum;
    }

    ////////////
    //this function only tests for total success,
    //it will not check what type of error is returned from the call of the SCard command
    //to check if the command returned a pin error you need to test the return value
    //of the Scard command; *** a pin error will return a value of 0x1311 ***
    ////////////
```

```

    // call Scard command
    if(SCardCommand(command,NULL,0,NULL,0) == 0)
        return TRUE;
    else if
        return FALSE;
}

```

### MCARD VB Example

```

Private Declare Function MCardVerifyPIN Lib "MCSCM.dll" ( _
    ByVal hMCard As Long, _
    ByVal bPinNumber As Byte, _
    ByVal pbBufferWithPIN as String, _
    ByVal pbCLen as Byte _
) As Long

```

### MCARD C++ Example

```

LONG IReturn;
BYTE PINbuffer [3] = {0x73, 0x58, 0xDE};

IReturn =MCardVerifyPIN ( hMCard,
                          0,
                          PINbuffer,
                          3
);

```

(Please refer to Mcard API Specification pdf for further reference)

## **Programming notes for applications supporting both reader interfaces**

### Visual Basic

Declare your functions as necessary

```

Private Declare Function SCardComand Lib "SCARD32" ( _
    Handle As Long, _
    ByVal cmd As String, _
    CmdLen As Long, _
    ByVal DataIn As String, _
    DataInLen As Long, _
    ByVal DataOut As String, _
    DataOutLen As Long) _
As Long

```

'ex. Calling MCardReadMemory

```
Private Declare Function MCardReadMemory Lib "MCSCM.dll" ( _  
    ByVal hMCard As Long, _  
    ByVal bMemZone As Byte, _  
    ByVal dwOffset As Long, _  
    ByVal pbReadBuffer As Long _  
    ByVal pbReadLen as long _  
    ) As Long
```

C++

Use LoadLibrary to call appropriate DLL