How to connect to SAP R/3 and call BAPI from MS Excel VBA

Summary
This paper describes how to extract data from R/3 and present the results in MS Excel. The paper demonstrates by means of a code sample how easy it is to use VBA as the underlying technology for logon and data extraction. The example allows one to define R/3 systems and to retrieve/present all user locks + types from one individual system.

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Author Bio
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Table of Contents

Excel sheet ...................................................................................................................................... 3
    System Definition and Logon .................................................................................................... 3
    Lock Overview ......................................................................................................................... 4
Macro ............................................................................................................................................... 6
    GetUserList .................................................................................................................................. 6
Related Content ............................................................................................................................. 10
Disclaimer and Liability Notice ....................................................................................................... 11
Excel sheet

The example is based on the usage of 3 sheets:

- Logon Data: allows one to select the system of interest and click on the submit button to retrieve the system’s user locks
- Lock Overview: automatically launched after having clicked the submit button: It is the result of the BAPI calls
- System Definition: contains all system details. Data is copied to the 1st sheet. This sheet can be protected as it contains userids and passwords.

Obviously, you can create your own look-and-feel (change columns and rows) to identify your systems, but be aware that you’ll need to modify the sample VBA code in that case. This example is a quick how-to guide that demonstrates the power of VBA. The goal was not to make the winning ultimate UI.

System Definition and Logon

First of all, you need to declare the systems you want to retrieve data from. To do so, start MS Excel and create the following sheet:

Note that I created a separate Tab for ‘System Definition’, because I don’t want the CPIC user passwords to be visible in the ‘Logon Data’ Tab in the spreadsheet. In fact I’ve hidden the rows (4 and 5) that are referenced in the ‘Logon Data’ sheet (see below).
Lock Overview

After having defined your systems, you can call the VBA module by clicking on the button ‘Submit List’. To put a button on your worksheet you 1st have to check that the ‘Forms’ toolbar is activated (View > Toolbars > Forms).

Simply drag-and-drop the button (4th icon from the left) on your worksheet.
To assign a Macro to the button, right-click on it and click on ‘Assign Macro’.
This button is associated with the macro ‘Locked_Users.xls!getUserList’.
Macro

‘GetUserList’ is the macro used to retrieve the lock information from the system selected in the ‘Logon Data’ screen. To edit a macro, in the menu bar click on Tools > Macro > Visual Basic Editor).

GetUserList

The macro executes 2 BAPI calls: one to retrieve the list of users defined for one system (BAPI_USER_GETLIST), and one to retrieve the details (BAPI_USET_GET_DETAIL) for each of the users. Remark that parameters defined as import for the BAPI, are referenced as export parameters for the calling object.

Below the full code sample block:

```vba
Private Sub GetUserList()

    'Declaration

    Dim Destination_System As Integer
    Dim objBAPIControl As Object 'Function Control (Collective object)
    Dim objConnection As Object 'Connection object
    Dim sDestinationSystem As String
    Dim i As Integer, j As Integer, k As Integer
    Dim sServer As String
    Dim sUser As String
    Dim sPassword As String
    Dim sSystem As String
    Dim sDest As String
    Dim sUserDetail As String
    Dim sError As String

    Dim sConnection As String
    sConnection = ActiveSheet.Cells(1, 1).Value
    sServer = ActiveSheet.Cells(2, 1).Value
    sSystem = ActiveSheet.Cells(3, 1).Value
    sUser = ActiveSheet.Cells(4, 1).Value
    sPassword = ActiveSheet.Cells(5, 1).Value

    On Error GoTo ErrorHandler

    'Logon with initial values

    sDestinationSystem = sServer
    objBAPIControl = CreateObject("SAP.functions")
    objConnection = objBAPIControl.CreateConnection
    objConnection.Language = sLanguage
    objConnection.Client = sServer
    objConnection.Destination = sDestinationSystem
    objConnection.Password = sPassword
    objConnection.System = sSystem
    objConnection.Destination = sDestinationSystem
    objConnection.Password = sPassword

    'BAPI_USER_GETLIST
    objBAPIControl.CallBAPI("BAPI_USER_GETLIST", 1, Destination_System, True)
    objBAPIControl.CallBAPI("BAPI_USER_GET_DETAIL", 2, Destination_System, True)

    For i = 1 To 5000
        sName = ActiveSheet.Cells(i, 1).Value
        sSurname = ActiveSheet.Cells(i, 2).Value
        sUserDetail = ActiveSheet.Cells(i, 3).Value
        sUserDetail = Right(sUserDetail, InStrRev(sUserDetail, ";") - InStrRev(sUserDetail, ";")) + ";" + Left(sUserDetail, Len(sUserDetail) - Len(Right(sUserDetail, Len(sUserDetail) - InStrRev(sUserDetail, ";"))))
        ActiveSheet.Cells(i, 10).Value = sUserDetail
        Next i

    Exit Sub

ErrorHandler:
    sError = Err.Description
    MsgBox "Error: 
    Exit Sub

    End if

    Exit Sub
End Sub

Private Sub GetUserList()
'Declaration

Dim Destination_System As Integer
Dim objBAPIControl As Object 'Function Control (Collective object)
Dim sapConnection As Object 'Connection object
Set objBAPIControl = CreateObject("SAP.Functions")
Set sapConnection = objBAPIControl.Connection

'Logon with initial values
'ActiveSheet is the sheet calling the Macro / Cells(x, y) refers to the row, column in the spreadsheet

Destination_System = ActiveSheet.Cells(11, 2).Value + 2 'Add 2 to retrieve the column that contains the definition
sapConnection.client = ActiveSheet.Cells(3, Destination_System).Value
sapConnection.user = ActiveSheet.Cells(4, Destination_System).Value
sapConnection.Language = ActiveSheet.Cells(7, Destination_System).Value
sapConnection.hostname = ActiveSheet.Cells(6, Destination_System).Value
sapConnection.Password = ActiveSheet.Cells(5, Destination_System).Value
sapConnection.SystemNumber = ActiveSheet.Cells(9, Destination_System).Value
sapConnection.System = ActiveSheet.Cells(8, Destination_System).Value
sapConnection.Destination = ActiveSheet.Cells(8, Destination_System).Value
If sapConnection.logon(1, True) <> True Then
    MsgBox "No connection to R/3!"
    Exit Sub 'End program
End If

Set objUserList = objBAPIControl.Add("BAPI_USER_GETLIST")
Set objUserDetail = objBAPIControl.Add("BAPI_USER_GET_DETAIL")

'Prepare output to the EXCEL worksheet

Worksheets(2).Select
Cells.Clear
Range("A1").Font.Italic = True
Range("A2:E2").Font.Bold = True
ActiveSheet.Cells(2, 1) = "User Name"
ActiveSheet.Cells(2, 2) = "Wrong Logon"
ActiveSheet.Cells(2, 3) = "Local Lock"
ActiveSheet.Cells(2, 4) = "Global Lock"
ActiveSheet.Cells(2, 5) = "No UserPwd"
'Define the import parameters for BAPI_USER_GETLIST
'
objUserList.exports("MAX_ROWS") = "99999"
objUserList.exports("WITH_USERNAME") = ""

'call the 1st BAPI to retrieve the list of users: BAPI_USER_GETLIST
'
returnFunc = objUserList.Call

If returnFunc = True Then
    Dim objTable As Object
    Set objTable = objUserList.Tables("USERLIST")
    ActiveSheet.Cells(1, 1) = "User count :" & objTable.RowCount
    For i = 1 To objTable.RowCount
        'Alternate row colors
        If i Mod 2 = 0 Then
            For j = 1 To 5
                ActiveSheet.Cells(2 + i, j).Interior.Color = RGB(165, 162, 165)
            Next j
        Else
            For j = 1 To 5
                ActiveSheet.Cells(2 + i, j).Interior.Color = RGB(214, 211, 206)
            Next j
        End If
        ActiveSheet.Cells(2 + i, 1) = objTable.Cell(i, 1)
    'Define the import parameters for BAPI_USER_GET_DETAIL
    '
    objUserDetail.exports("USERNAME") = objTable.Cell(i, 1)
    'Call the 2nd BAPI to retrieve the details for each user
    '
    returnFunc = objUserDetail.Call
    If returnFunc = True Then
        Dim isLocked As Object
        Set isLocked = objUserDetail.imports("ISLOCKED")
        If isLocked.Value("WRNG_LOGON") = "L" Then
            ActiveSheet.Cells(2 + i, 2).Font.Color = RGB(255, 0, 0)
            ActiveSheet.Cells(2 + i, 2) = "X"
        End If
        If isLocked.Value("LOCAL_LOCK") = "L" Then
            ActiveSheet.Cells(2 + i, 3).Font.Color = RGB(255, 0, 0)
            ActiveSheet.Cells(2 + i, 3) = "X"
        End If
If isLocked.Value("GLOB_LOCK") = "L" Then
    ActiveSheet.Cells(2 + i, 4).Font.Color = RGB(255, 0, 0)
    ActiveSheet.Cells(2 + i, 4) = "X"
End If
If isLocked.Value("NO_USER_PW") = "L" Then
    ActiveSheet.Cells(2 + i, 5).Font.Color = RGB(255, 0, 0)
    ActiveSheet.Cells(2 + i, 5) = "X"
End If
Else
    MsgBox "Error when accessing BAPI_USER_GET_DETAIL in R/3 ! "
    Exit Sub
End If
Next i
Else
    MsgBox "Error when accessing BAPI_USER_GETLIST in R/3 ! "
    Exit Sub
End If
'Close connection to R/3 !
'
objBAPIControl.Connection.logoff
'
'Release the objects to free storage space
'
Set sapConnection = Nothing
Set functionCtrl = Nothing
MsgBox "Program terminated!", 0, "Exit"
End Sub
Related Content

- SAP and VBA: http://abap.mirrorz.com/
- Thread: Sample code needed to call BAPI from VB https://www.sdn.sap.com/irj/sdn/thread?threadID=73856
- Read any SAP table with Microsoft Excel https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/c043d836-166c-2910-b99e-ae3633dec547
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