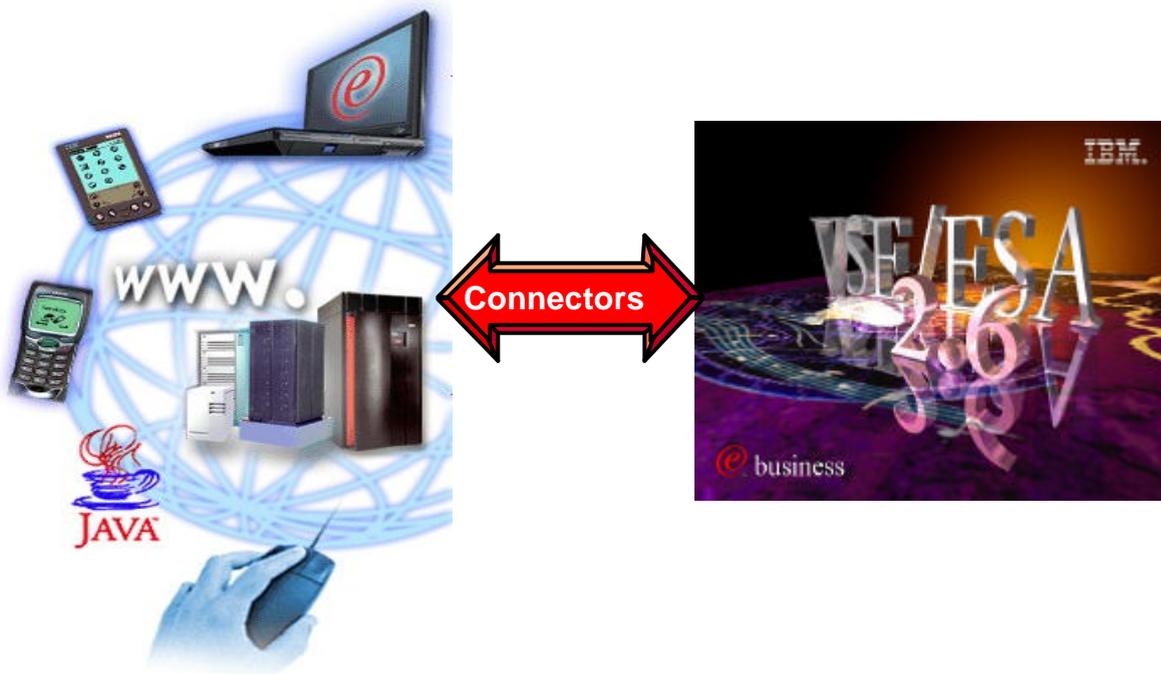


# VSE/ESA e-business Connectors Lab

## Basic Setup of VSE e-business Connectors

z/VM, VSE, and Linux on WAVV Conference  
Winston-Salem, NC - April 25-29, 2003



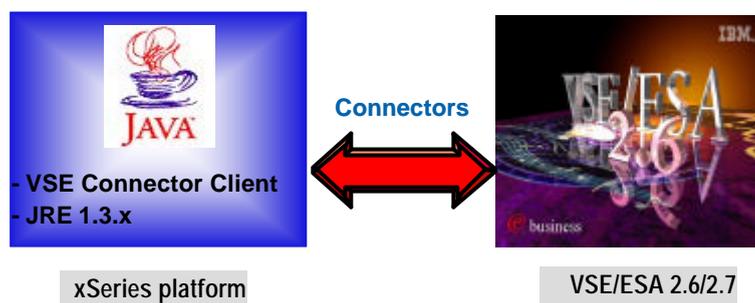
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# VSE/ESA 2.6/2.7

## e-business Connectors

Real time access to various VSE resources is implemented using Connector technologies to embed the VSE/ESA services. These implementations are needed by today's heterogeneous IT environments. The Connector technology implements a software component on the remote system and an access component on the VSE/ESA host.



The VSE e-business Connectors included in VSE/ESA 2.6/2.7 are platform independent because the remote software component is written in Java. These e-business Connectors are fully compatible with WebSphere technologies, and provide real time access to:

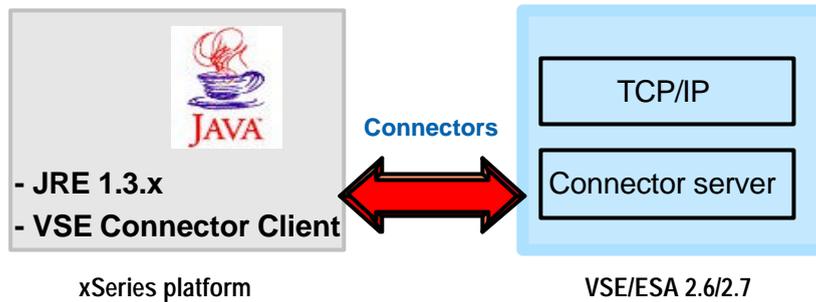
- VSAM
- Power queues
- Librarian
- Console
- ICCF
- DL/I (VSE 2.7)

In Addition to the functions of these Connectors, the VSE/ESA applications can:

- Transparently access remote data
- Synchronize different data stores
- Use the Virtual Tape support delivered with VSE/ESA 2.6/2.7

By using Java technologies these Connectors enable the integration of VSE data into distributed processes and Web transactions in a heterogeneous environment and exploit the advanced functions of the IBM WebSphere Application Server.

# Setup Connector Server on VSE



## Setup correct TCP/IP system ID for VSE Connector server on VSE/ESA

- ✓ TCP/IP for VSE/ESA has been started with a **system ID** (default is **00**), specification in TCP/IP startup Job:

```
// EXEC IPNET,SIZE=IPNET,PARM='ID=00',INIT=.....
```

- ✓ To use the TCP/IP services from another partition (i.e. Connector Server) this partition has to 'know' the system ID. This is specified as follows:

```
// OPTION SYSPARM='nn' - where nn is the system ID.
```

- ★ **Recommendation:** Copy the skeleton SKVCSSTJ from ICCF lib 59 in your primary library and adjust it.
- ★ It's the startup job of VSE Connector server.

## Start connector server

```
r rdr,STARTVCS
```

several messages will appear on the console. The server is ready for e-business when the following messages are shown:

```
IESC1002I FINISHED STARTUP OF VSE CONNECTOR SERVER  
IESC1003I WAITING FOR CONNECTIONS OF CLIENTS...
```

# Steps for installation on a workstation

## STEP1:

Open the VSE Homepage with a web browser:

<http://www-1.ibm.com/servers/eserver/zseries/os/vse/>

Click on "[Service and Support](#)" on the left side and then on "[e-business connectors and utilities](#)".

The page opened contains the VSE Connector Client and the tools that can be downloaded for free.

In the upper left corner you see the **VSE Connector Client** which represents the remote component of the e-business Connectors.

Connector Components	
<b>VSE Connector Client</b>	<b>Updated: 03/2003</b>
Provides the VSE Java Beans class library, together with extensive online doc, Javadoc, and coding samples for all kinds of Java programs, like small applications, servlets, applets, and EJBs.	
<b>W-book:</b> IESINCON.W in PRD1.BASE	
<b>Platform:</b> VSE/ESA 2.5 or later	
 <a href="#">Details and Download</a>	
 <a href="#">FAQ and troubleshooting tips</a>	

Click on:

[Details and Download](#)

The page explains the most important functions of the VSE Connector Client, which is the Java part of the VSE e-business Connectors.

# Steps for installation on a workstation (2)

## STEP2:

To install the Connectors, a Java Virtual Machine must be installed on your PC.

- To just run Java programs, the JRE 1.3.x or later is needed (Java Runtime Environment),
- to develop/compile Java programs, JDK 1.3.x or later is needed (Java Developer Kit, which includes the JRE).

To verify if a Java Virtual Machine is installed, open a command prompt (DOS Window) and hit command:

**java -version**

You should see something like:

*Java version "1.3.1"*

*Java(TM) 2 Runtime Environment, Standard Edition*

If the messages above are shown go to STEP4.

## STEP3

If following message is shown:

*'Java' is not recognized as an internal or external command, operable program or batch file.*

- > your system has no Java virtual machine (Runtime Environment) installed

To install a Java Virtual machine on the PC do:

On the same HTML page (*Service and Support -> VSE e-business Connectors*):

**[VSE Connector Client -> Details and Download](#)**

in section: **Installation** you will find a link where you can download the Java Developer Kit from IBM.

**<http://www.ibm.com/java/jdk/download/index.html>**

or you can download a SUN Version from <http://www.sun.com>

Install the downloaded JDK 1.3.x. and reboot the workstation.

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# Steps for installation on a workstation (3)

## STEP4:

With Java installed, navigate on [VSE Connector Client -> Details and Download](#) to:

### Download latest Code

and click on: [vsecon270-pq71095a.zip](#) (VSE 2.7) or [vsecon26-pq70859a.zip](#) (VSE 2.6). The file name may vary since it contains a APAR number. Please make sure you have applied the corresponding APAR on your VSE system.

The download process will be started. You will be prompted to specify where to save the code. *Save it in a place you remember later on.*

After the code is *downloaded it must be unzipped*. The ZIP file contains the following files:

**install.class, install.bat, install.cmd, install.sh**

**Note:** The VSE Connector client is also shipped and installed with the VSE base product in Library PRD1.BASE as member *iesincon.w*

You can download it from there in binary format and rename it to *install.class* (VSE 2.6) or *vsecon27.zip* (VSE 2.7). But the newest level will always be on the Internet.

## STEP5:

To install the VSE Connector Client, open a *Command prompt* (DOS window) and change current directory to the one where *install.class* resides.

Enter **java install** or start one of the **install batch files** (e.g. install.bat).

This will guide you through the installation process of the VSE Connector client. The VSE connector client consists of:

- a Java class library (Java Beans) - Connector functions
- a detailed HTML documentation about the functions and possibilities
- concepts for development, deployment and implementation
- a lot of commented and ready to run samples

**Reboot your system after installing.**

# Verify installation of Connector Client

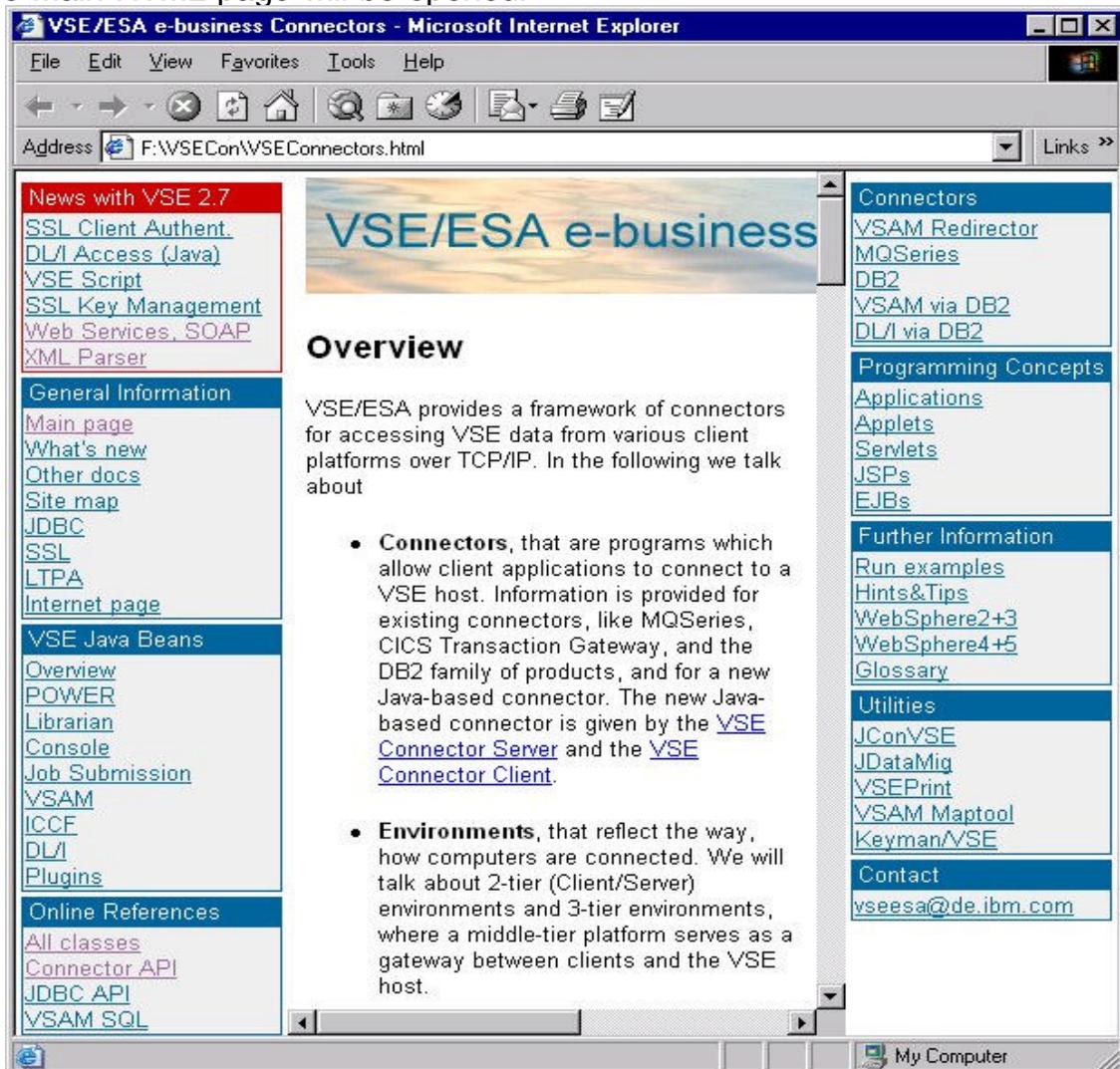
## STEP6:

To verify that the VSE Connector Client is installed properly, open the VSE Connector Client HTML Documentation.

(For Windows:

**START -> Programs -> VSE Connector -> VSE Connectors.html)**

The Main HTML page will be opened.



Verify your CLASSPATH and VSECONN variables :

*f* set classpath (in Linux: echo \$CLASSPATH)

It must include something like:

.;c:\vsecon\VSEConnector.jar;c:\vsecon\ibmjsse.jar;c:\vsecon\cci.jar

*f* set vsecon (in Linux echo \$VSECONN)

It must contain the installation path

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# Run Samples

## **STEP7: Verify that VSE Connector Client is installed**

To verify that the VSE e-business Connectors are properly installed we will run a sample.

Make sure you know the IP address of the VSE system, the userid and password to use. Make sure the VSE Connector server is started on VSE. To see how to start VSE Connector server see *Setup Connector Server on VSE* at the beginning of this presentation.

From the main HTML page VSE Connectors, ( see STEP6)

Click:

[Run Examples](#) in the right frame under **Further Information**.

Navigate to **Librarian Example** and click:

### [Run Librarian API example](#)

for the platform your workstation is running on:

For Windows users a command prompt window (DOS Window) will be opened (choose "Open", not "Download") and you will be prompted for the needed information like VSE IP address, user and password, and the sample will return a list of libraries in the system.

Similar, the other samples in this section can be run.

You may alternatively run the samples by executing the batch files in a command prompt.

To see how the just executed program looks, on the main Connector Client HTML page click on

[Applications](#) in section **Programming Concepts** in right frame.

Click on [Examples](#) -> [How to work with Power queues](#)

The commented source code explains the steps of this program.

The link [PowerApiExample.java](#) shows the entire source code of the executed program.

In next steps we will then modify a sample.

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# Run Samples (2)

## STEP8: execute Java program VsamDisplayExample

All samples are stored on your PC in the folder: <vsecon>\samples

The Java source code is in: <vsecon>\samples\com\ibm\vselsamples

### We will work with VsamDisplayExample.java

Make sure you know the IP address of the VSE system  
userid and password.

The program displays the content of a VSAM file using a MAP.

The Map FLIGHTS\_MAP contains the following fields:

Offset	Length	Type	Key	Field Name	Description
0	4	UNSIGNED	yes	FLIGHT_NUMBER	Flight Number
4	20	STRING	no	START	Start
24	20	STRING	no	DESTINATION	Destination
44	5	STRING	no	DEPARTURE	Departure (hh:mm)
49	5	STRING	no	ARRIVAL	Arrival (hh:mm)
54	4	UNSIGNED	no	SEATS	Seats
58	4	UNSIGNED	no	RESERVED	Seats reserved
62	4	PACKED	no	PRICE	Price
66	20	STRING	no	AIRLINE	Airline

### First, run the program.

execute: <vsecon>\samples\VsamDisplayExample.bat

Did you get errors ?

*Next Step will help you to correct them.*

# Run Samples of Java-Based Connector (3)

## STEP9: Modify Java program VsamDisplayExample

**Exercise:** The name of the VSAM file must be modified.

The source program is in <vsecon>\samples\com\ibm\vse\samples

- Edit Java program VsamDisplayExample.java (with Notepad) and change the cluster name:

**FLIGHT.ORDERING.FLIGHTS**

to **FLIGHT.ORDERING.FLIGHTS.DEMO**

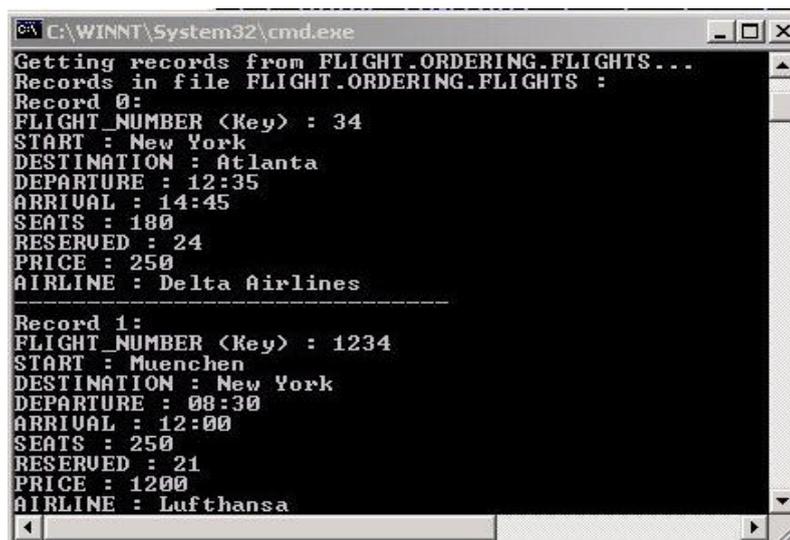
- Save the modified source.
- Compile the changed program

To compile the source open a command prompt (DOS window) and change directory to <vsecon>\samples\

Enter: **javac com\ibm\vse\samples\VsamDisplayExample.java**

**Note: the compile must be done from the <vsecon>\samples directory because all samples belong to the Java package com.ibm.vse.samples**

If the compile returns no errors, execute the program again (in Windows) <vsecon>\samples\VsamDisplayExample.bat



```
C:\WINNT\System32\cmd.exe
Getting records from FLIGHT.ORDERING.FLIGHTS...
Records in file FLIGHT.ORDERING.FLIGHTS :
Record 0:
FLIGHT_NUMBER (Key) : 34
START : New York
DESTINATION : Atlanta
DEPARTURE : 12:35
ARRIVAL : 14:45
SEATS : 180
RESERVED : 24
PRICE : 250
AIRLINE : Delta Airlines
-----
Record 1:
FLIGHT_NUMBER (Key) : 1234
START : Muenchen
DESTINATION : New York
DEPARTURE : 08:30
ARRIVAL : 12:00
SEATS : 250
RESERVED : 21
PRICE : 1200
AIRLINE : Lufthansa
```

Try to modify the program to retrieve a specific record only.

# Graphical interface to VSE/ESA, VSE Navigator

A wide range of functions of the VSE e-business Connectors, are incorporated in the VSE Navigator.

With this graphical interface, VSE resources can be displays and changed.

There are also other tools free downloadable from the [VSE Home page](#).  
([Service and Support -> VSE Connectors](#) )

You can download the VSE Navigator in similar way from the homepage.

Save the downloaded file and unzip it. The ZIP file contains the following files:  
**install.class, install.bat, install.cmd, install.sh**

*To run the Navigator, the Connector client must be installed on your workstation.*

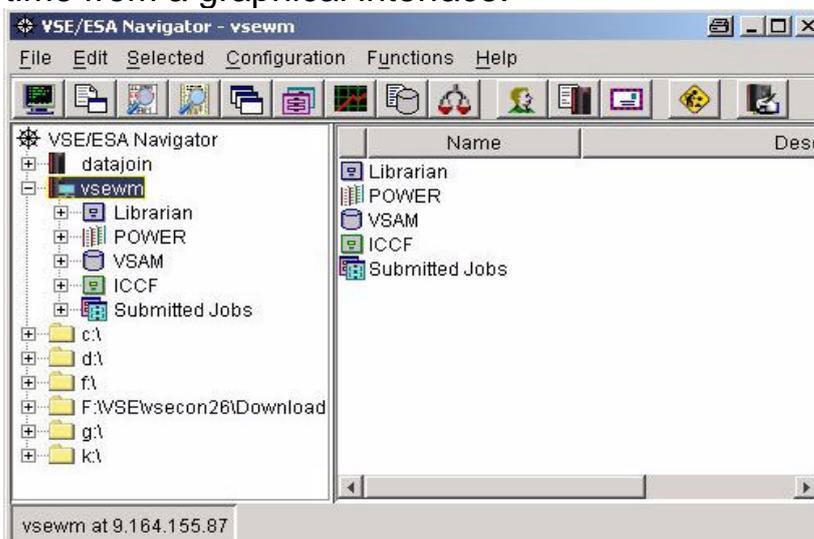
Install Navigator in the same directory <vsecon> with VSE Connector client.

Open a Command prompt (DOS window) and change directory to the **install.class** file.

Enter: **java install** or run one of the install batch files.

The installation process will guide you.

After installation you can use the Navigator to work with multiple VSE systems at the same time from a graphical interface.



# Graphical interface to VSE/ESA, VSE Navigator

- ✓ Start Navigator ([run.bat](#) or [run.sh](#))

In Windows

## (**START-Programs- VSE Navigator** )

First start will guide you through the settings:

- ✓ Look and feel
  - ✓ Local directories
  - ✓ Local applications (i.e. Browser, file compare tool)
- 
- ✓ setup a host system

### **Configuration -> Hosts**

enter Name you'd like to give this VSE in **Description**

enter the IP address,

and userid

and click **SAVE** and then **CLOSE**

Right click on the Host Icon and then **Connect**

Enter the *password* and then **OK**.

- To look at the same VSAM file you worked with the Java Program, after connecting to the VSE system:
- expand VSAM Folder
- expand **VSESP.USER.CATALOG** folder
- expand the cluster  
(i.e. **FLIGHT.ORDERING.FLIGHTS.DEMO**)
- right click on the MAP **FLIGHTS\_MAP**
- click: **Display VSAM data**

**At this time, you used the same function as with the Java program, with the advantage of the graphical possibilities of VSE Navigator.**

# Access VSE/ESA resources from Office applications

VSE/ESA 2.7 adds a new function: **VSEScript**

VSEScript allows to access VSE/ESA resources from office applications like MS Word or Excel, as well as from any kind of application.

The VSEScript Server code can be downloaded from the [VSE Home page](#).  
(**Service and Support -> VSE Connectors** )

The ZIP file contains the following files: **install.class, install.bat, install.cmd, install.sh.**

*To run the VSE Script Server, the Connector client must be installed on your workstation.*

**STEP 1:** Install the VSE Script Server in the same directory <vsecon> where VSE Connector client resides.

Open a Command prompt (DOS window) and change directory to the **install.class** file.

Enter: **java install** or run one of the install batch files (i.e. install.bat)  
The installation process will guide you.

**STEP 2:** Setup the **Connection.properties** file. Add a new host or change a VSE host definition for your VSE system (x stands for the connection number):

```
connection.x.name=VSEDEMO
connection.x.ip=9.164.155.15
connection.x.port=2893
connection.x.userid=hugo
connection.x.password=hugospw
```

The password will be encoded during the next start of the VSE Script Server and will be saved like:

```
connection.x.encpassword=kenC3tjOn9heXdKQ
```

# Access VSE/ESA resources from Office applications (2)

**STEP 3:** Start the VSE Script Server ([runserver.bat](#) or [runserver.sh](#)).  
In Windows ([START-Programs- VSE Script Server - Start Server](#) )

**STEP 4:** Open the sample spreadsheet in MS Excel or Lotus 1-2-3:  
[VSEScriptClient.xls](#) or [VSEScriptClient.123](#).

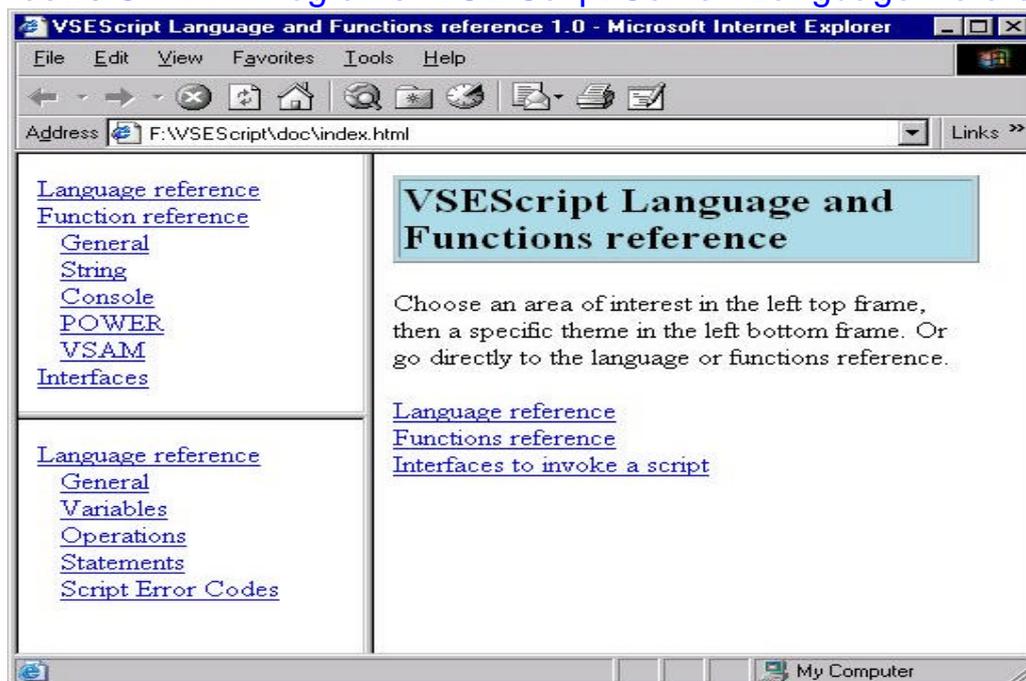
Enter a number (1-7) and press the Button. The VSE Script Server will be called and a script is executed. The script will read a record from a VSAM dataset and pass the results back to the office application.

In case you get an error that [VSEScriptClient.dll](#) could not be found:  
→ Copy the [VSEScriptClient.dll](#) into the WINDOWS main directory

**STEP 5:** Change the script [getdata.src](#). The script is located in the scripts directory in samples: [<vsescrpt>\scripts\samples\](#).

Open the file [getdata.src](#) with notepad. The script is plain text, you can change it and run it without compiling.

Please refer to the [Script Language Reference](#): [<vsescrpt>\doc\index.html](#)  
In Windows [START-Programs- VSE Script Server -Language Reference](#).



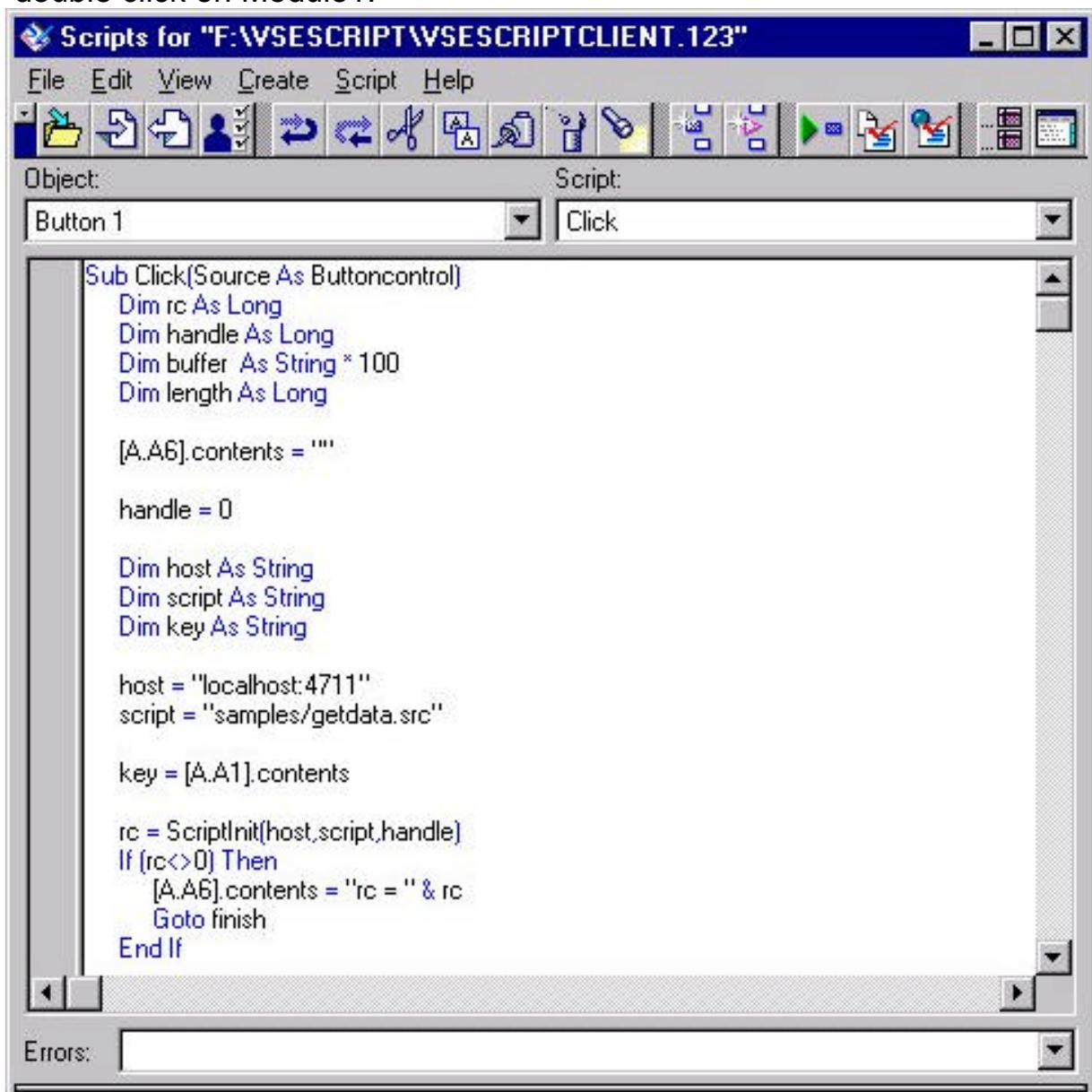
# Access VSE/ESA resources from Office applications (3)

**STEP 6:** Change the [VisualBasic](#) or [Lotus Script](#).

When you press the button in the office application, a VisualBasic or Lotus Script is executed. This script uses the VSEScriptClient.dll to contact the VSE Script Server.

**Lotus 1-2-3:** right click the button, select Show Script Editor.

**MS Excel:** Menu: Tools - Macro -> Visual Basic Editor. Expand Modules and double click on Module1.



The screenshot shows a window titled "Scripts for 'F:\VSESCRIPT\VSESCRIPTCLIENT.123'". The menu bar includes File, Edit, View, Create, Script, and Help. The toolbar contains various icons for file operations and editing. Below the toolbar, there are two dropdown menus: "Object:" set to "Button 1" and "Script:" set to "Click". The main text area contains the following Visual Basic code:

```
Sub Click(Source As Buttoncontrol)
    Dim rc As Long
    Dim handle As Long
    Dim buffer As String * 100
    Dim length As Long

    [A.A6].contents = ""

    handle = 0

    Dim host As String
    Dim script As String
    Dim key As String

    host = "localhost:4711"
    script = "samples/getdata.src"

    key = [A.A1].contents

    rc = ScriptInit(host,script,handle)
    If (rc <> 0) Then
        [A.A6].contents = "rc = " & rc
        Goto finish
    End If
End Sub
```

At the bottom of the window, there is an "Errors:" field.

# Summary

## Major Steps to install VSE Connector Client on a workstation

- ✓ install Java Runtime Environment (JRE) or
- ✓ Java Developer Kit (JDK)
  - ✓ free download from SUN or IBM
  - ✓ version 1.3.x
  - <http://www.ibm.com/java/jdk/download/index.html>
  
- ✓ download VSE Connector client
- <http://www-1.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/vsecon.html>
  
- ✓ install VSE Connector client
  - ✓ at a command prompt enter: `java install`
  
- ✓ download VSE Navigator
- <http://www-1.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/vsenavi.html>
- ✓ install VSE Navigator
  - ✓ at a command prompt enter: `java install`
  
- ✓ download VSE Script Server
- <http://www-1.ibm.com/servers/eserver/zseries/os/vse/support/vseconn/vsescript.html>
- ✓ install VSE Script Server
  - ✓ at a command prompt enter: `java install`

# Additional Information

- **VSE/ESA Home Page**

<http://www.ibm.com/servers/eserver/zseries/os/vse/>

- **e-business Connectors User's Guide**

**SC33-6719**

<http://www-1.ibm.com/servers/eserver/zseries/os/vse/pdf/ieswue20.pdf>

- **e-business connectors tools**

<http://www.ibm.com/servers/eserver/zseries/os/vse/e bus/home.html>



- **e-business Connectivity for VSE/ESA**                      **SG24-5950**

- **e-business Solutions for VSE/ESA**                      **SG24-5662**

- **Servlet and JSP Programming**                      **SG24-5755**

- **Linux Web Hosting with WebSphere,  
DB2, and Domino**                      **SG24-6007**

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