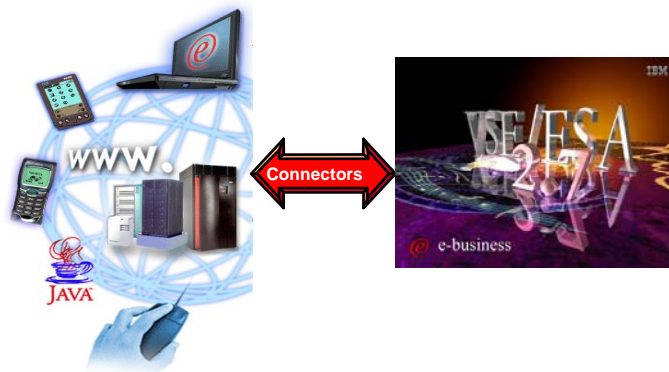


# VSE Connectors Workshop

## E03 - Setup of Connections to VSE CICS TS from Windows



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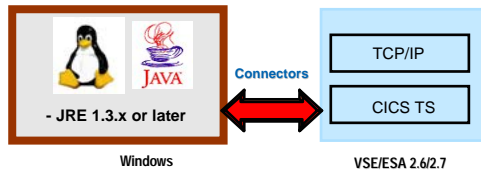
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## Chapter 1. Basic Software prerequisites for Windows



### STEP1.1: Verification if Java environment installed

To install the VSE Connector Client, a Java Virtual Machine (JVM) must be installed in Windows.

The JVM can be installed in different flavors.

- 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 higher is needed (Java Developer Kit, which includes the JRE).

To verify if a Java Virtual Machine is installed, open a Command prompt and enter 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 [Chapter 2](#).

### STEP1.2 Install a Java Environment

If following message (or similar) is shown:

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

then your system has no Java virtual machine (Runtime Environment) installed or it can not be found in the path.

To install a Java Virtual machine download the code from IBM:

<http://www.ibm.com/developerworks/java/>

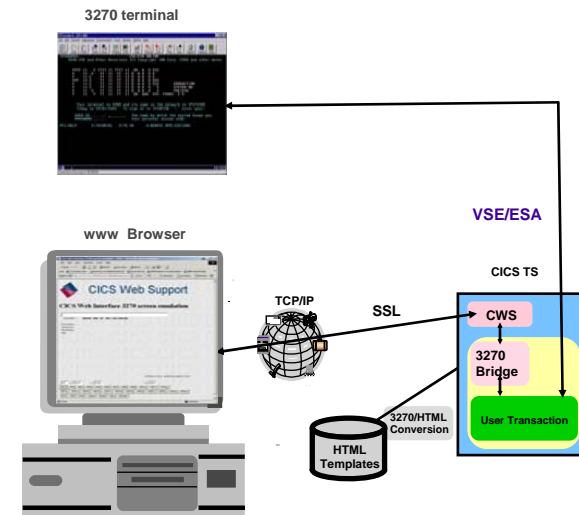
or download a SUN Version from <http://www.sun.com>

Install the downloaded JDK 1.3.x. or later.

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## Chapter 2. Setup CICS Web Support

Access to VSE/ESA transactions via terminal and browser



Goal of this chapter:

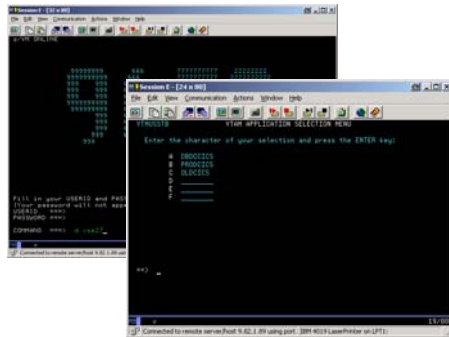
- ▶ Traditional way to access a CICS transaction
- ▶ direct access to VSE/ESA transactions via web Browser
- ▶ Without the need of a web server on VSE/ESA
- ▶ Software requirements:
  - ▶ VSE/ESA 2.5 and newer
  - ▶ CICS Transaction Server

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## Traditional access to a CICS transaction

### **STEP 2.1: Access FFST sample transaction via Terminal.**

Logon to your VSE system using the 3270 icon on your desktop:



On Command line Enter:

**d vse27**

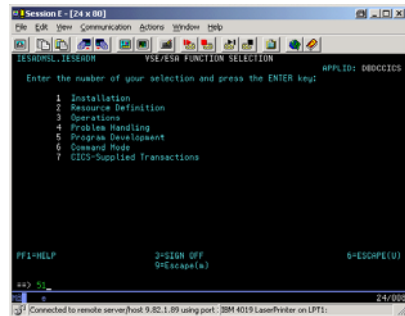
**A**

On the CICS logon screen enter:

User: **LLxx** (xx- is your team number )

Password: **linlabxx**

You are now in the **Interactive User Interface (UI)** main panel of VSE.

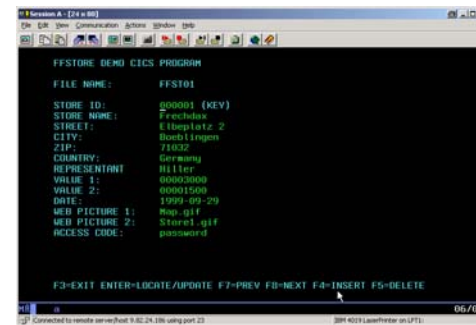


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Hit: **PF6** (to go into CICS mode)

Enter: **FFST FFSTxx** (where FFSTxx is the VSAM file for team xx)

Now you have traditional access to VSAM data via a 3270 terminal emulation.



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## Setup of CICS Web Support

- CICS Web Support is a function of CICS Transaction Server in VSE.
- It is accessible via a TCP/IP service that has to be enabled.
- For each separate CICS partition in your system the CICS Web Support can be enabled .

### The following system changes were done already for this workshop:

-Parameter change in **DFHSITSP** for the CICS TS partition **DBDCCICS**, to enable CWS.

- Intersystem communication enabled **ISC=YES**
- TCP/IP protocol enabled **TCPIP=YES**

- Build of the Conversion table **DFHCNV**

- The BMS map for transaction FFST was compiled with option **SYSPARM='TEMPLATE'**

- In the **LIBDEF** statement in *CICS startup job*, **PRD2.DFHDOC** was added for the HTML Templates used

- More details of these changes are described in [Appendix A](#)

The next Steps will guide you to enable CWS and browser access to the CICS Transaction **FFST**.

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## STEP 2.2: Define a TCP/IP service for CWS (xx – Team Number )

From the IUI main panel (as described in Step 2.1)

Hit: **PF6** (to go into the CICS mode)

Enter: **CEDA DEF TCPIPS(CWSxx)**

where xx is your team number.

```

CEDA DEFINE TCpipservice( CWSxx )
TCpipservice : CWSxx
Group       : VSESPG
Description ==> SERVICE FOR CWS
Urm        ==> DFHWBADX
Portnumber ==> 80xx           1-65535
Certificate ==>
Status     ==> Open         Open | Closed
SSL       ==> NO           Yes | No |
Clientauth
Attachsec ==> Local        Local | Verify
Transaction ==> CWXN
Backlog   ==> 00009        0-32767
TSqprefix ==>
IpAddress ==>
Socketclose ==> No         No | 0-240000
    
```

## STEP 2.3: Install the TCP/IP service in a CICS group

To activate the definition **install** the service:

From a CICS Command ( see STEP 2.1) enter

**CEDA install TCPIPService (CWSxx)** in the group you specified in the definition:

```

CICS
OPERATE TO MODIFY
CEDA install
CEDA install
All
Connection ==>
Doctype ==>
File ==>
Lsrpool ==>
Maset ==>
PARTITIONSET ==>
PARTNER ==>
PROFILE ==>
PROGRAM ==>
TCpipservice ==> CWSxx
TCPIPRVAL ==>
TRANCLASS ==>
TRANSDATA ==>
TRIPETERA ==>
Group ==> VSESPG

3 No GROUP value has been previously specified so there is no current value
to assume. 3131B=CICI APPRID=9802CIC
PF 1 HELP 3 END 6 CDSN 7 DSM 8 SPN 9 MSG 10 SK 11 SF 12 CANCEL
    
```

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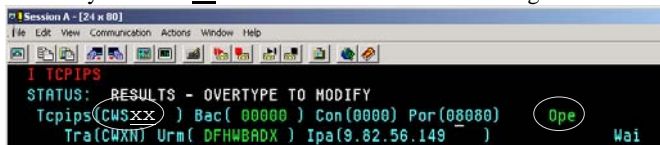
**STEP 2.4: Invoke FFST transaction from Browser**

Check if the TCP/IP service in VSE is open. In the main VSE IUI Panel (as described in *Step 2.1*):

Hit **PF6** an then

**Cemt I TCPIPService**

Look for your **CWS<sub>xx</sub>** name. You should see something like:



If the status is **CLO**sed, open it by overtyping it with **OP**En .

From a browser window you can now call CICS transactions. The one prepared for the workshop is called **FFST**. As parameter this transaction accepts the VSAM file name for your team **ffst<sub>xx</sub>**.

Based on your team number using **Internet Explorer**:

Enter URL:

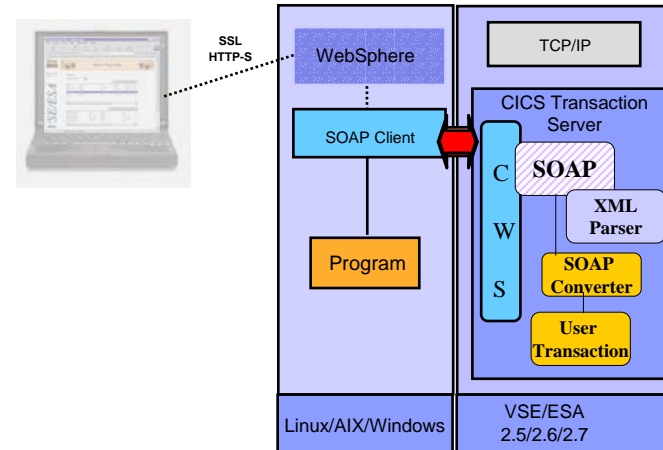
**http://9.82.56.225:80<sub>xx</sub>/cics/cwba/dfhwbtta/FFST+FFST<sub>xx</sub>**

You should be able to work with the transaction FFST now from browser (xx is your team number).



**Chapter 3. Setup Web services with VSE transactions**

Integration of VSE/ESA business logic with distributed transaction processes



To have platform independent data interchange, the XML data representation is used with SOAP (Simple object access protocol) as the communication protocol and HTTP as the transport protocol.

You have to:

- Setup VSE Web Services support (included in VSE/ESA 2.7 and via PTF In VSE 2.6)
- customize and run the SOAP sample program

### STEP 3.1: Setup Web Services in VSE

The VSE Web services Support is based on VSE CICS Web Support (CWS) which is a function of VSE CICS TS .

Therefore the CWS interface must be setup (done in Chapter 2).

The SOAP Engine on VSE doesn't need any setup. For the CICS program **FFSTIO** which is accessible via CICS **commarea**, a SOAP converter was coded (**FFSTSOAP**) to make the translation from the incoming XML data to a commarea. The SOAP engine on VSE will get the XML data stream, will parse it using the VSE internal XML parser and then calls the SOAP Converter (FFSTSOAP) for the FFSTIO program. FFSTSOAP builds the commarea to communicate with FFSTIO program in CICS TS. ( see application structure on page 4) The Commarea structure of FFSTIO is described in [Appendix C](#)

To run SOAP requests a TCP/IP service on VSE is needed.

We will use the same TCPIP Service and Port from CWS, already defined in Chapter 2:

TCPIPService: CWSxx

Port: 80xx          where xx is the team number

Note: A separate TCP/IP Service and port can also be defined for SOAP requests.

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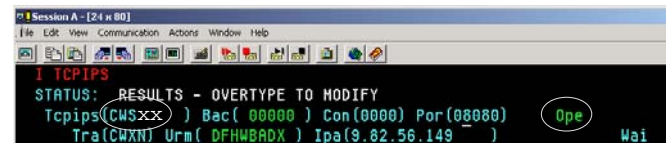
### STEP 3.2: Check TCPIP Service in VSE is opened

Check if the TCP/IP service in VSE is open. In the main VSE IUI Panel (as described in [Step 2.1](#)):

Hit **PF6** and then

**cemt I TCPIPService**

Look for your **CWSxx** name. You should see something like:



If the status is **CLO**sed, open it by overtyping it with **OP**En .

### STEP 3.3: Setup the SOAP sample

The Web Services ( SOAP ) sample will communicate with the SOAP engine on VSE.

It was already copied into **C:\soap**

**Note:** The components needed for Web Services can be downloaded from internet as described in Appendix B.

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### STEP3.5 Invoke the VSE program FFST as Web Service

Edit the batch script runsoap.bat and change the values below:  
In a windows command prompt enter:

**C:**  
**cd soap**

**Notepad runsoap.bat** (make the changes required and save them)

Adapt the following values (xx is your team number):

VSE IP address: **9.82.56.225**

Port: **80xx**

VSAM file name for your team: **FFSTxx**.

```
REM -----
REM Sample for CICS access via WEB Services with SOAP and XML
REM -----
set CLASSPATH=.;j2ee.jar;soap.jar;xerces.jar;mail.jar;activation.jar
java FFSToresSOAP http://9.82.56.225:80xx/cics/CWBA/IESSOAPS FFSTxx
```

Enter: **runsoap.bat**

You should see something like this:

```

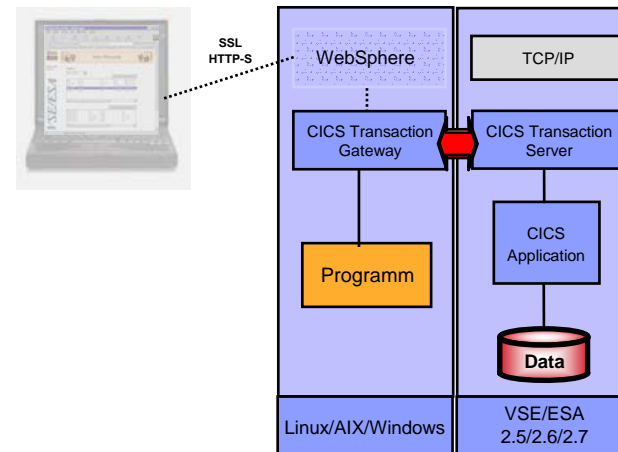
C:\WINDOWS\System32\cmd.exe
store name = Frechdax
loc street = Elbplatz 23
loc city = Berlin
loc zip = 71832
loc country = Germany
loc rep = Halle
wall = 3888
wall2 = 1588
date = 1999-09-29
web pic 1 = Map.gif
web pic 2 = Store1.gif
acode = password
Get the next record
soapURL = http://9.152.88.233:80/cics/CWBA/IESSOAPS
Duration = 159
storeid = 888882
store name = Hugo
loc street = Beepachau 15
loc city = Hamburg
loc zip = 20888
loc country = Germany
loc rep = Sunina
wall = 3888
wall2 = 1588
date = 1999-09-30
web pic 1 = Map.gif
web pic 2 = Store2.gif
acode = password
Update record
soapURL = http://9.152.88.233:80/cics/CWBA/IESSOAPS
Duration = 1823

```

*This sample uses the most modern internet technology and accessed the VSE CICS transaction as Web Service. 15*  
*The data interchange between VSE and Windows was done in XML.*

## Chapter 4. Setup CICS Transaction Gateway (CTG)

Integration of VSE/ESA transaction processes



Integration of CICS business logic in distributed transaction processes

- ▶ Remote CICS program invocation
- ▶ Remote transaction security

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### STEP 4.1: Setup CTG

CICS Transaction Gateway is the remote Component necessary to communicate with CICS TS on VSE.

The installation of CTG was already done on your workstation  
Into the default directory:

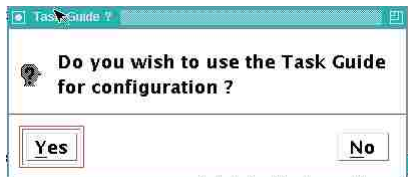
**C:\Program Files\IBM\IBM CICS Transaction Gateway**

### STEP 4.2 Customize CTG on Windows

Run the CTG Configuration Tool:

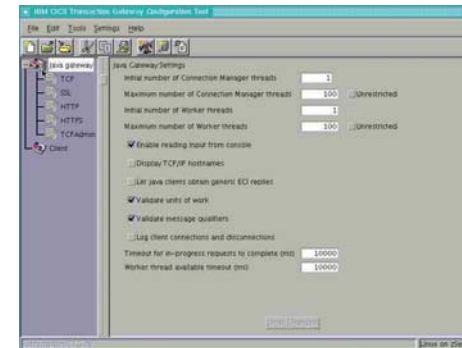
**START -> Programms – IBM CICS Transaction Gateway -> Configuration Tool**

Hit: **NO** for use of the Task Guide for configuration

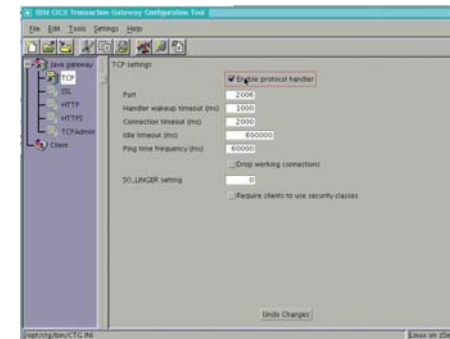


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The CTG configuration tool is shown as below:



### STEP 4.2-1 Setup CTG to VSE TCP protocol

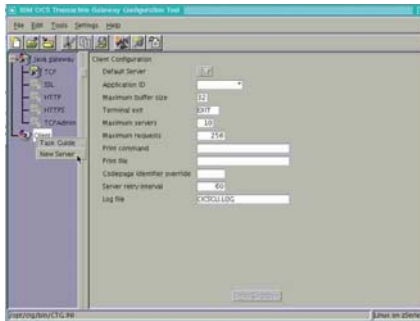


Click on: **Enable protocol handler**  
and verify the parameters

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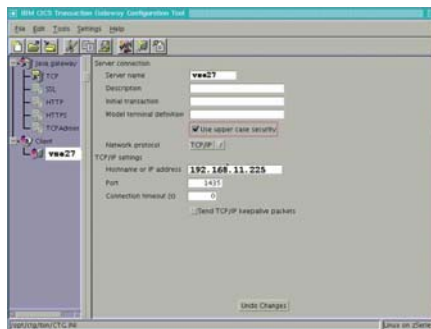
### STEP 4.2-2 Setup new Server

Right click on **Client** -> **New Server**



Enter the following parameters as shown:

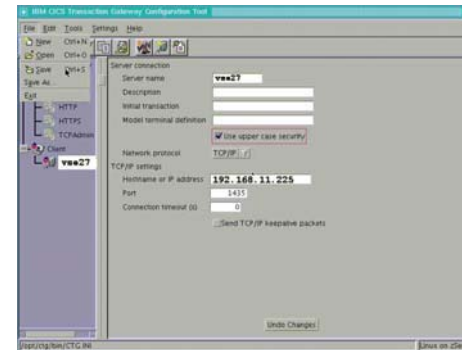
Server Name: **vse27**  
Hostname or IP address: **9.82.56.225**  
Port: **1435**



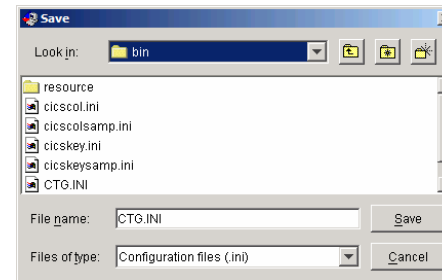
19

### STEP 4.2-3 Save the configuration

Click on **File** -> **Save**



Leave the default configuration file name (CTG.INI).  
Press Save.



Now, CTG is configured and you may close the configuration tool.

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### STEP 4.3 Start CTG and CICS Client

CTG is build of a CICS Client and the CICS Transaction Gateway (CTG). CTG uses the CICS client to communicate with VSE. Each of these components runs in a separate process on Windows.

Starting CTG will automatically start CICS client:

#### START -> Programs -> IBM CICS Transaction Gateway -> IBM CICS Transaction Gateway

You will see some messages like these:

```
10/20/04 : 14:13:28:816 : CICS Transaction Gateway, Version 5.0.1, 5724-D12, Build Level c501-20030716.
10/20/04 : 14:13:28:816 : (C) Copyright IBM Corporation 1999, 2002. All rights reserved.
10/20/04 : 14:13:28:826 : CCL84001: Using ini file C:\Program Files\IBM\IBM CICS Transaction Gateway\bin\CTG.INI.
10/20/04 : 14:13:28:826 : CCL65771: Java version is 1.3.1.11.
10/20/04 : 14:13:28:826 : CCL65021: Initial ConnectionManagers = 1, Maximum ConnectionManagers = 100.
10/20/04 : 14:13:28:826 : CCL65021: Initial Workers = 1, Maximum Workers = 100,top: Port = 2006
10/20/04 : 14:13:28:826 : CCL65741: Connection logging has been disabled.
10/20/04 : 14:13:28:836 : CCL65051: Successfully created the initial ConnectionManager and Worker threads.
10/20/04 : 14:13:28:917 : CCL65241: Successfully started handler for the tcp: protocol.
```

After each configuration change, CTG have to be recycled (stopped / started)

#### Note:

Stopping CTG will NOT stop CICS client.

To stop CTG enter **Q** in the command prompt where CTG is running.

To stop the client use command:

```
"C:\Program Files\IBM\IBM CICS Transaction Gateway\bin\cicscli" -X
```

### STEP 4.4 Setup VSE for CTG (External Call Interface - ECI access)

External CICS calls from CTG (ECI calls) use the CWS interface.

Therefore CWS has to be setup and a TCP/IP service has to be defined for CTG.

For the workshop, following TCP/IP service was defined:

TCP/IP Service: **ECI**

Port: **1435** (This port has to be specified in the CTG Server definition)

Details for this definition are specified in [Appendix D](#).

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### STEP4.5 Execute CTG sample program (ECI access)

A sample program was copied to your directory **C:\ctg**

In a Windows command prompt edit the batch script *runeci.bat* and adapt it for your team:

Enter: **Notepad runeci.bat** (make the changes described below and save them)

Adapt these values (xx is your team number):

VSE Server name in CTG: **vse27**

Host for Gateway: **local**:

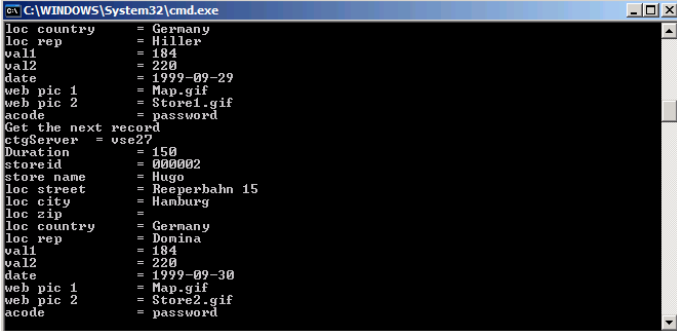
Port: **2006**

VSAM file name for your team: **FFSTxx**.

```
REM -----
REM Sample for CICS access via ECI interface
REM -----
set CTGDIR=C:\Program Files\IBM\IBM CICS Transaction Gateway
set CLASSPATH=.%CTGDIR%\classes\ctgclient.jar;%CTGDIR%\classes\ctgserver.jar;%CLASSPATH%
java FFStoresECI local: 2006 vse27 FFSTxx
```

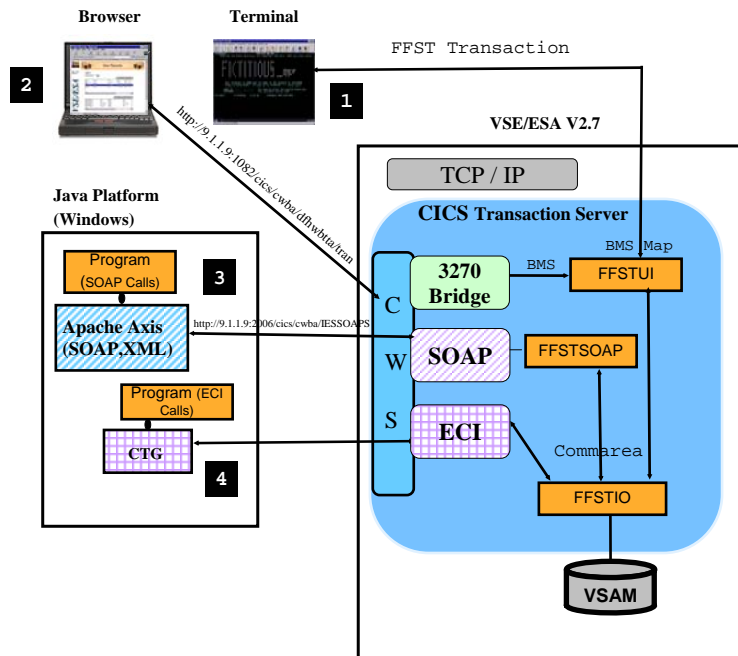
Enter: **runeci.bat**

You should see something like this:



```
C:\WINDOWS\System32\cmd.exe
loc country = Germany
loc rep = Hiller
val1 = 184
val2 = 228
date = 1999-09-29
web pic 1 = Map.gif
web pic 2 = Store1.gif
acode = password
Get the next record
ctgServer = vse27
Duration = 150
storeid = 000002
store name = Hugo
loc street = Reeperbahn 15
loc city = Hamburg
loc zip = 10000
loc country = Germany
loc rep = Domina
val1 = 184
val2 = 228
date = 1999-09-30
web pic 1 = Map.gif
web pic 2 = Store2.gif
acode = password
```

## Structure of the Lab sample Application FFST



Integration of CICS business logic in heterogeneous transaction Processes.

The Lab will guide you to implement the scenarios **1** to **4**

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## Appendix A. Setup VSE for CICS Web Support

- For each CICS partition in your system, the CICS Web Support can be enabled .
- Following System Changes have to be done:

### Step A.1: Required DFHSIT changes

Change the parameters mentioned below in the **DFHSITxx** for the CICS TS you'd like to enable CWS for:

- Enable Intersystem communication

**ISC=YES**

- Enable TCP/IP protocol

**TCPIP=YES**

### STEP A.2: Build the Conversion table

Copy skeleton **DFHCNV** from ICCF Library 59 to your primary library

- run skeleton **DFHCNV**

### STEP A.3: Generate a HTML Template

Compile the BMS map (FFSTMAP) with **SYSPARM='Template'** to generate a HTML template for the map, to be used when the transaction is called from a browser. The template will be stored in **PRD2.DFHDOC**.

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## Appendix A. Continued

- Generate HTML Template for FFSTMAP (BMS map definition)

```
* $$ JOB JNM=FFSTMAP,DISP=D,CLASS=A,NTFY=YES
* $$ LST DISP=D,CLASS=Q,PRI=3
// JOB FFSTMAP COMPILE PROGRAM FFSTMAP
.....
#/ JOB FFSTMAP CATALOG MAP FFSTMAP
.....
#/ JOB FFSTMAP CATALOG HTML FFSTMAP
// EXEC LIBR
ACCESS SUBLIB=PRD2.DFHDOC
* $$ END
// ON SCANCEL OR $ABEND GOTO ENDJ3
// OPTION NOLIST,ALIGN,DECK,SYSPARM='TEMPLATE'
// EXEC ASMA90,SIZE=(ASMA90,64K),PARM='EXIT(LIBEXIT(EDECKXIT)),
SIZE(MAXC-200K,ABOVE)'
PRINT NOGEN
* $$ SLI MEM=FFSTMAP.A,S=PRIMARY.WKS
/*
/. ENDJ3
// EXEC IESINSRT
/*
#&
$$$ EOJ
$$$ END
/. ENDM
/&
$$$ EOJ
```

### **STEP A.4: Update LIBDEF search chain**

Update the **LIBDEF** statement in *CICS startup job*  
and add the Library for HTML Templates  
**PRD2.DFHDOC**

**Step A.5:** Define a TCP/IP service for CWS as described in  
*Chapter 2*

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## Appendix B. Download a SOAP Engine from internet

### **STEP B.1: Download the packages for SOAP**

You have to download following packages (into a temp directory):

- Apache SOAP package: <http://xml.apache.org/soap/>  
Change into the directory with the latest version (e.g. version-2.3.1)  
and download the soap-bin package (e.g. soap-bin-2.3.1.zip)
- Apache xerces XML Parser:  
<http://xml.apache.org/xerces-j/index.html>  
Download the latest Xerces-J-bin package, e.g.  
Xerces-J-bin.1.4.4.zip
- Sun Java Mail API: <http://java.sun.com/products/javamail/>
- Sun JavaBeans Activation FrameWork (JAF):  
<http://java.sun.com/products/javabeans/glasgow/jaf.html>

### **STEP B.2: Extract needed SOAP archives**

To simplify the CLASSPATH definition save all .JAR files needed to  
run the SOAP sample into the same directory.

Extract the .JAR files specified from the downloaded .ZIP files.

- Apache SOAP package: extract the file **soap.jar** from the soap-bin-2.3.1.zip file.
- Apache xerces XML Parser: extract the file **xerces.jar** from the Xerces-J-bin.1.4.4.zip file.
- Sun Java Mail API: extract the file **mail.jar** from the javamail-1\_2.zip file.
- Sun JavaBeans Activation FrameWork (JAF): extract the file **activation.jar** from the jaf1\_0\_1.zip file.

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### Appendix C. Comarea for program FFSTIO

\*Commarea for Program FFSTIO:

```
*
* int      Action;      // 4 bytes ofs 0
* int      retcode     // 4 bytes ofs 4
* String   filename    // 8 bytes ofs 8
* String   storeid;    // 6 bytes ofs 16
* String   storename;  // 25 bytes ofs 22
* String   locstreet;  // 25 bytes ofs 47
* String   loccity;   // 25 bytes ofs 72
* String   loczip;    // 10 bytes ofs 97
* String   loccountry; // 25 bytes ofs 107
* String   locrep;    // 20 bytes ofs 132
* int      vall;      // 4 bytes ofs 152
* int      val2;      // 4 bytes ofs 156
* String   date       // 10 bytes ofs 160
* String   webpic1;   // 20 bytes ofs 170
* String   webpic2;   // 20 bytes ofs 180
* String   acode;    // 10 bytes ofs 210
* String   filler;    // 6 bytes; ofs 220
```

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### Appendix D. TCPIP Service definition for CTG

To allow incoming CICS requests from remote sites using CICS Transaction Gateway through External Call Interface (ECI), the CWS interface must be setup. An additional TCP/IP service must be defined with the Port for ECI requests (1435) and the associated initial transaction name (CIEP).

■The TCP/IP service definition parameters in CICS:

```
CEDA DEFINE TCPIPService( ECI      )
TCPIPService : ECI
Group        : VSESPG
Description  ==> SERVICE FOR ECI
Urm          ==>
Portnumber   ==> 01435           1-65535
Certificate  ==>
STatus      ==> Open           Open | Closed
SSL         ==> No             Yes | No | Clientauth
Attachsec   ==> Verify        Local | Verify
Transaction ==> CIEP
Backlog     ==> 00001         0-32767
TSqprefix   ==>
IpAddress   ==>
Socketclose ==> No            No | 0-240000
```

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## 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/ieswue21.pdf>
- e-business connectors tools  
<http://www.ibm.com/servers/eserver/zseries/os/vse/ebus/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
- CICS Transaction Server for VSE      SG24-5997  
– CICS Web support
- **NEW: Linux on zSeries: Connectors to z/OS and VSE**      **SG24-7042**

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