

HostBridge

CICS Web Services for Oracle

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Founder, CEO

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Agenda

- Explore the integration capabilities of HostBridge using a sample application
- Starting point will be a CICS BMS application
- Ending point will be the deployment of the application as a web service

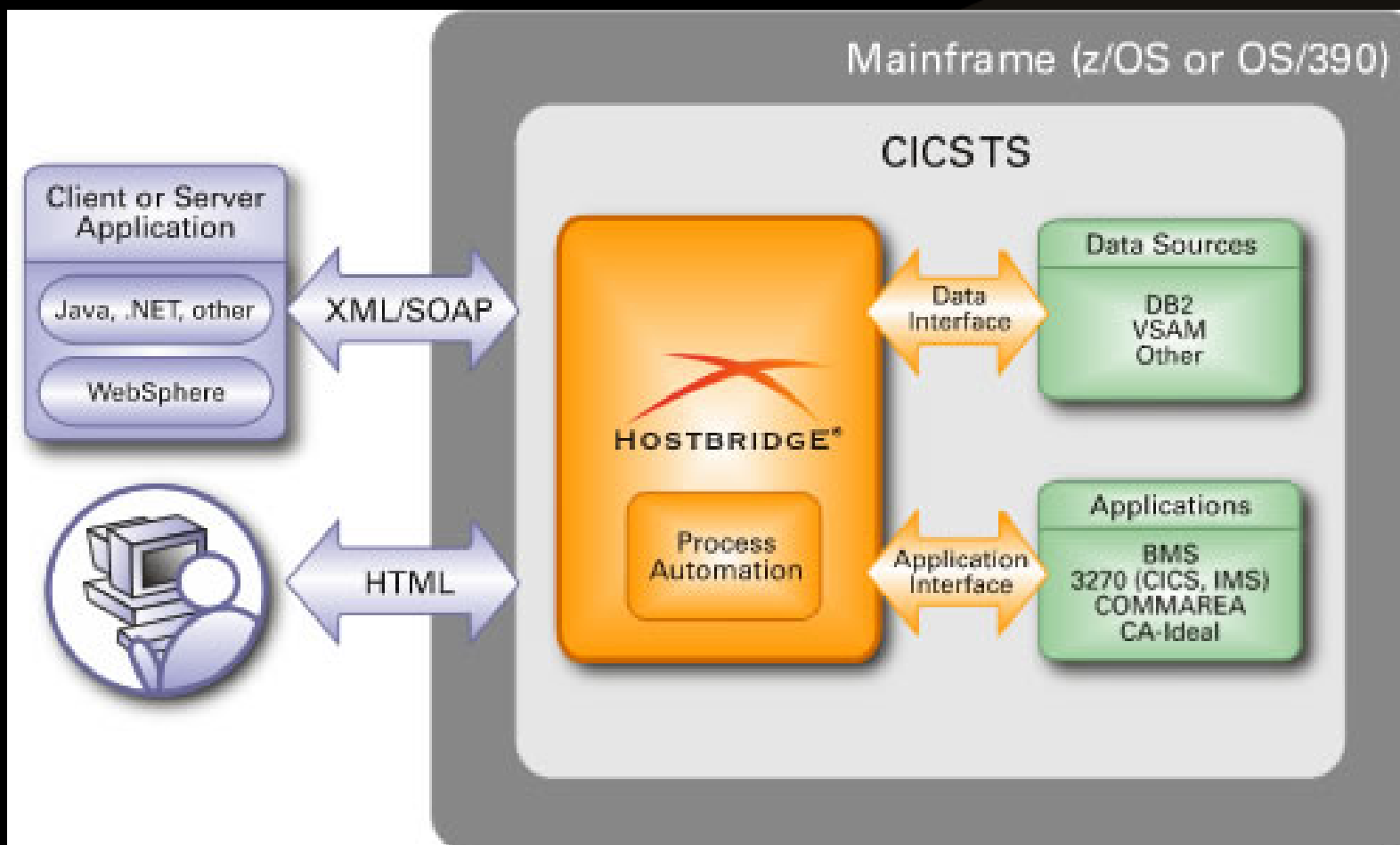


What is HostBridge?

- Software that allows CICS applications and data to be integrated with client, server, mainframe, or web-based applications.
 - Runs under CICS Transaction Server
 - Supports industry standards
 - No distributed client or server software at run-time
 - US and EU Patent Pending
- HostBridge Base Product
 - Allows CICS transactions and programs to be invoked and deliver their output as a standard XML document.
- HostBridge Extended (optional features)
 - Complete CICS-based transaction and process automation
 - Direct access to data sources (VSAM, DB2, DL/I, other)
 - Enhanced MRO and MQ Support
 - Integrated Development Environment for Workstation



What is HostBridge?

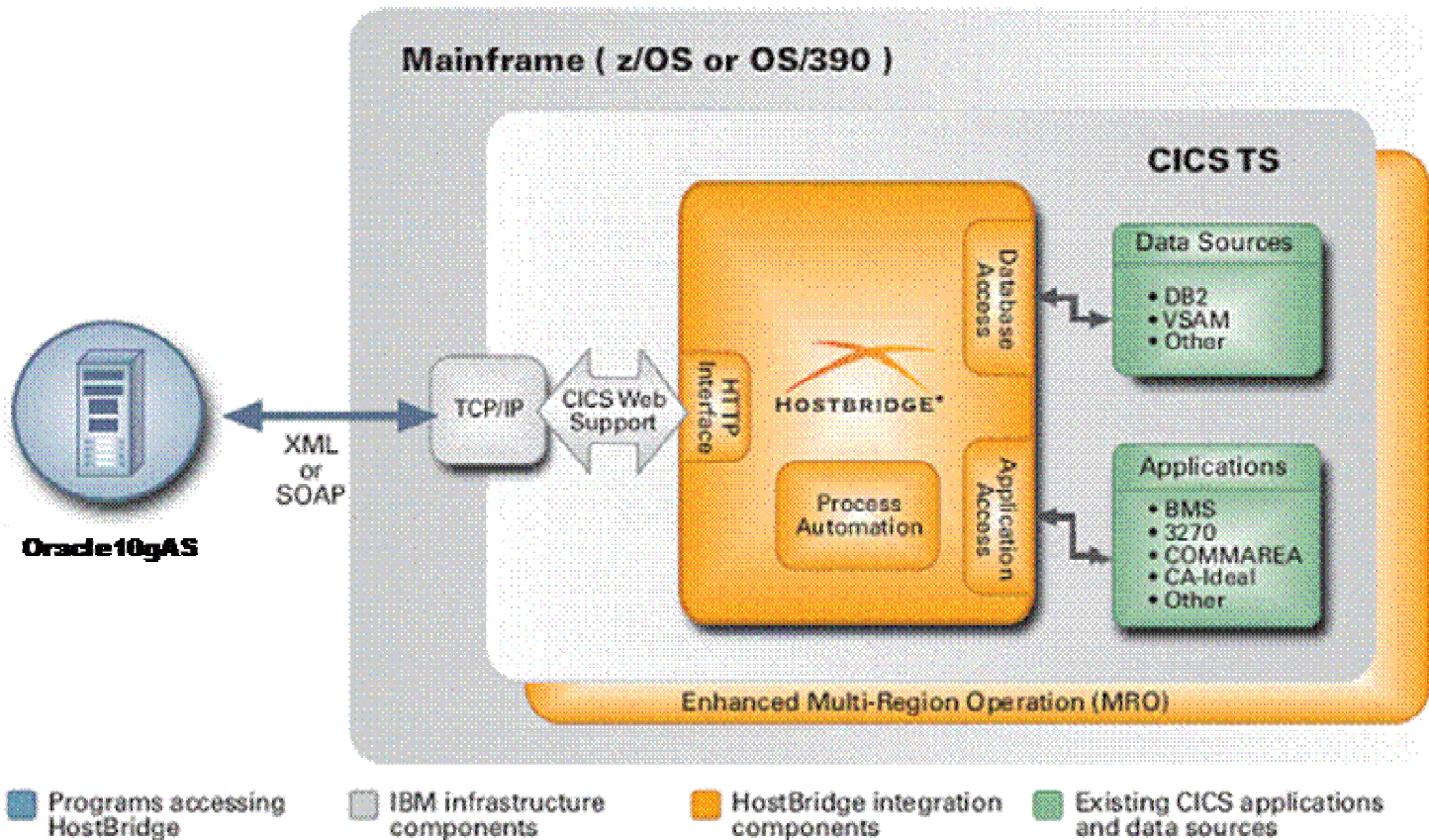


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Who Uses HostBridge?

- Largest privately held investment securities firm in the world
- Largest tractor trailer manufacturer in the world
- Largest credit union in the world
- Largest dental insurance carrier in the US
- Largest composite roofing manufacturer in the US
- One of the largest public education institutions in the US
- One of the largest defense contractors in the world



Sample Application Overview

- The “Trader” application
- Sample financial services application (stock quotes and trading)
- Originally developed by IBM
 - COBOL
 - Pseudo-conversational
 - Uses BMS to handle presentation logic
- The following screens illustrate use of the Trader application from a terminal (not using HostBridge).



SOURCE DATA SET = ADCD.ZOSV1R4.VTAM.SOURCE(USSN)

W E L C O M E T O

Logon to CICS

```
ZZZZZZZZZZ // 0000000 SSSSSS
      ZZ // 00 00 SS
      ZZ // 00 00 SS
      ZZ // 00 00 SSSSS
      ZZ // 00 00 SS
      ZZ // 00 00 SS
ZZZZZZZZZZ // 0000000 SSSSSS
```

TERMINAL NAME = SCOTCP17
SSCPNAME =

NETWORK-QUALIFIED NAME =
NETWORK-ID = 68.97.167.182

ZOS APPLICATION DEVELOPMENT SYSTEM - RELEASE 1.4.0

===> ENTER "LOGON" FOLLOWED BY THE TSO USERID. EXAMPLE "LOGON IBMUSER" OR
===> ENTER L FOLLOWED BY THE APPLID
===> EXAMPLES: "L TSO", "L CICS", "L IMS3270"

l cics_

Clear screen

```
*****\  *****\  *****\  *****\ (R)
*****\  *****\  *****\  *****\
**\|\|\|**\  **\|\|  **\|\|\|**\  **\|\|\|**\
**\  \|\|  **\  **\  \|\|  **\  \|\|
**\  \|\|  **\  **\  \|\|  *****\
**\  \|\|  **\  **\  \|\|  *****\
**\  \|\|  **\  **\  \|\|  \|\|\|**\
**\  **\  **\  **\  **\  **\  **\
*****\  *****\  *****\  *****\
*****\|  *****\  *****\|  *****\|
\|\|\|\|  \|\|\|\|  \|\|\|\|  \|\|\|\|
```

trad_



***Invoke Trader
Transaction***

Share Trading Manager: Company Selection

1. Casey Import Export
2. Glass and Luget Plc
3. Headworth Electrical
4. IBM

Select company



Please select a company (1,2,3 or 4) : 1

Share Trading Manager: Options

1. New Real-Time Quote
2. Buy Shares
3. Sell Shares

Request quote



Please select an option (1,2 or 3): 1_

Share Trading Manager: Real-Time Quote

User Name: CICSUSER

Company Name: Casey Import Export

*Quote obtained.
Press PF12 to exit.*

Share Values:

NOW: 00079.00
 1 week ago: 00059.00
 6 days ago: 00063.00
 5 days ago: 00065.00
 4 days ago: 00070.00
 3 days ago: 00072.00
 2 days ago: 00078.00
 1 day ago: 00077.00

Commission Cost:

for Selling: 007
 for Buying: 010

Number of Shares Held: 0077
 Value of Shares Held: 000006083.00

Request Completed OK

PF3=Return

PF12=Exit

Trader: Session Over



*Trader
transaction
terminated*

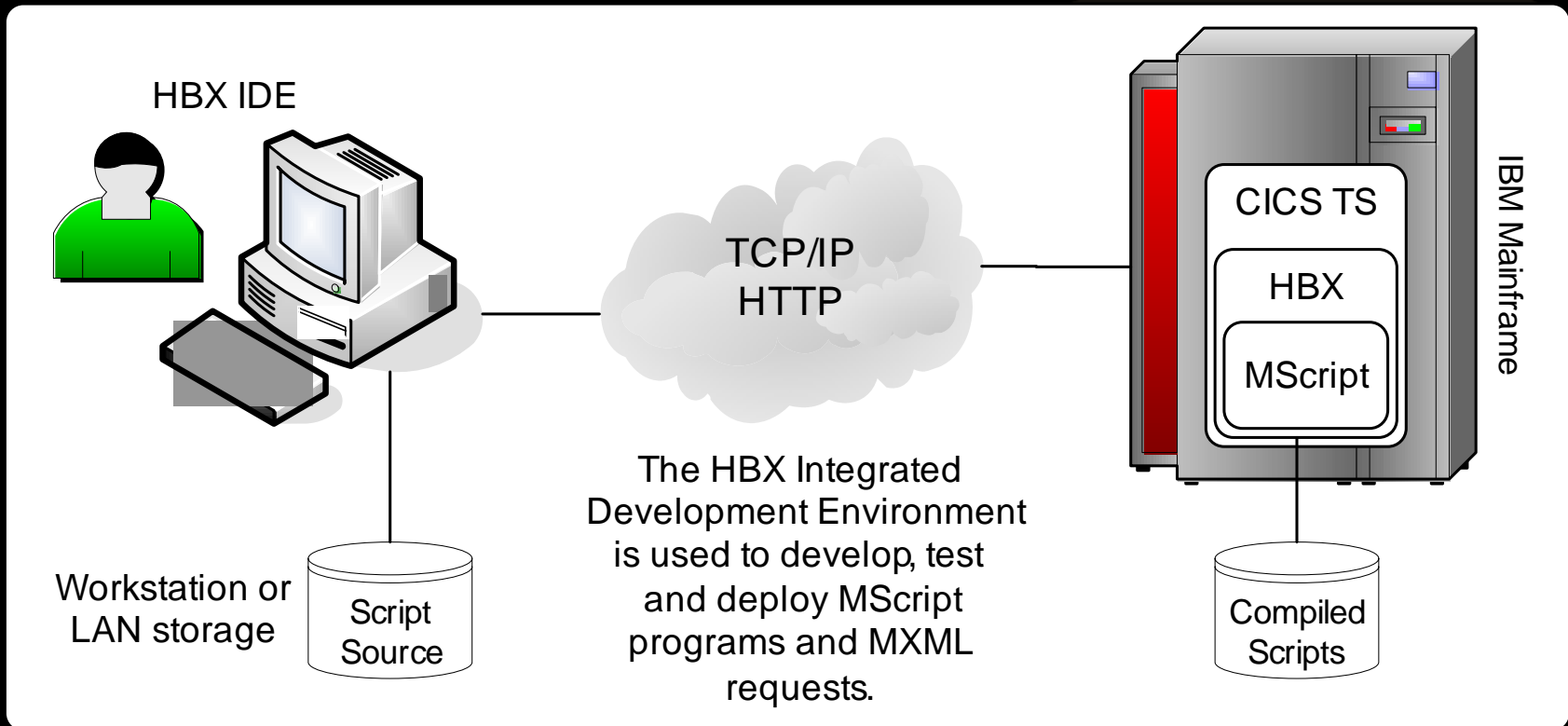
HostBridge Example

- Create a SOAP web service, based on the Trader application
 - Inputs
 - Company number
 - Outputs
 - Company name
 - Share price
 - Number of shares held
 - Share value
- Create sample SOAP request for testing and WSDL for deployment

What process does the web service need to perform?

1. Access CICS
2. Run TRAD
3. Select the menu item associated with the company number
4. Select the option to get a quote
5. Return the current price and number of shares held
6. Terminate session

HostBridge Extended IDE

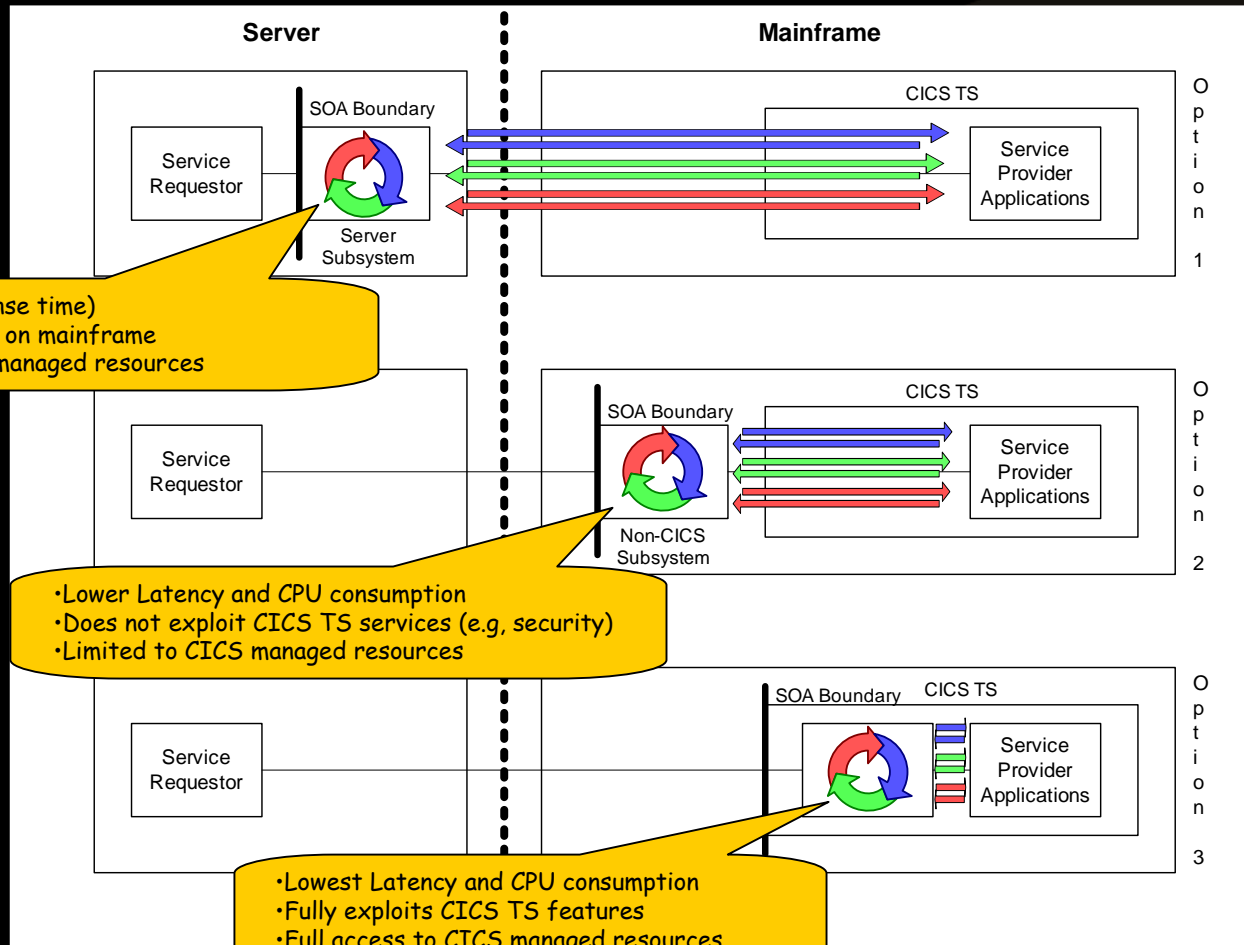


HostBridge Process Automation Overview

- Process automation language is based on the industry-standard ECMAScript (aka JavaScript)
- A script is developed and tested interactively using a client-based development tool
- Compiled scripts are saved in a VSAM file under CICS (no different than any other VSAM file)
- A compiled script can be invoked via any supported transport (HTTP, SOAP, MQ, EXCI, EXEC CICS LINK)



Alternatives for deployment of a services oriented architecture and process automation to compose CICS services



- High latency (response time)
- High CPU utilization on mainframe
- No access to CICS managed resources

- Lower Latency and CPU consumption
- Does not exploit CICS TS services (e.g, security)
- Limited to CICS managed resources

- Lowest Latency and CPU consumption
- Fully exploits CICS TS features
- Full access to CICS managed resources

What process does the web service need to perform?

1. Access CICS
2. Run TRAD
3. Select the menu item associated with the company number
4. Select the option to get a quote
5. Return the current price and number of shares held
6. Terminate session

```
C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx
File Edit Connection Script Source Cntl HTML Templates View Help
HostLib(hb,"MSCRHBR",soap,"MSCRSOAP");

function getData(fieldName,tagName) {
  hb.getBmsField(fieldName,fieldValue); //Retrieve the field value
  write(soap.tag(soap.rpcns+tagName)); //start a tag
  write(fieldValue); //add our data to tag
  write(soap.tag()); //end the tag
}

function getQuote(CompanyNumber) {

  hb.create();
  hb.setBmsSupport(true);

  xmlResponse = hb.send("hb_tranid=trad"); //Start the trad transaction
  xmlResponse = hb.send("&option="+CompanyNumber); //Select a company
  xmlResponse = hb.send("&opt2=1"); //Select real-time quote

  write(soap.envelope()); //Open the SOAP envelope
  write(soap.rpc("getQuote"));

  getData("COMP41","CompanyName"); //Extract and return data
  getData("SHRNOW","ShareNow");
  getData("HELD","SharesHeld");
  getData("VALUE","SharesValue");

  writeln(soap.rpc());
  write(soap.envelope()); //Close the SOAP envelope

  xmlResponse = hb.send("&hb_aid=pf12"); //Exit trad
  hb.free();
}

ok.
```

HostBridge Object

HostBridge Methods

```
C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx
File Edit Connection Script Source Cntl HTML Templates View Help
HostLib(hb,"MSCRHBR",soap,"MSCRSOAP");
function getData(fieldName,tagName) {
  hb.getBmsField(fieldName,fieldValue);           //Retrieve the BMS field
  write(soap.tag(soap.rpcns+tagName));           //start a tag
  write(fieldValue);                             //add our data to tag
  write(soap.tag());                             //end the tag
}
function getQuote(CompanyNumber) {
  hb.create();
  hb.setBmsSupport(true);

  xmlResponse = hb.send("hb_tranid=trad");       //Start the trad transaction
  xmlResponse = hb.send("&option="+CompanyNumber); //Select a company
  xmlResponse = hb.send("&opt2=1");               //Select real-time quote

  write(soap.envelope());                       //Open the SOAP envelope
  write(soap.rpc("getQuote"));

  getData("COMP41","CompanyName");             //Extract and return data
  getData("SHRNOW","ShareNow");
  getData("HELD","SharesHeld");
  getData("VALUE","SharesValue");

  writeln(soap.rpc());
  write(soap.envelope());                       //Close the SOAP envelope

  xmlResponse = hb.send("&hb_aid=pf12");         //Exit trad
  hb.free();
}
ok.
```

SOAP Object

SOAP Methods

line 3 col 1 Wrap OFF File opened at 798 bytes Connection Info-t3.hostbridge.com:80 as james

```
C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx
File Edit Connection Script Source Cntl HTML Templates View Help
Run
Make
Debug
Remove
Convert Copybook
HostLib(hb,"MSCRHI
function getData(
  hb.getBmsField
  write(soap.tag
  write(fieldVal
  write(soap.tag
)
}
function getQuote(CompanyNumber) {
  hb.create();
  hb.setBmsSupport(true);
  xmlResponse = hb.send("hb_tranid=trad"); //Start the trad transaction
  xmlResponse = hb.send("&option="+CompanyNumber); //Select a company
  xmlResponse = hb.send("&opt2=1"); //Select real-time quote
  write(soap.envelope()); //Open the SOAP envelope
  write(soap.rpc("getQuote"));
  getData("COMP41","CompanyName"); //Extract and return data
  getData("SHRNOW","ShareNow");
  getData("HELD","SharesHeld");
  getData("VALUE","SharesValue");
  writeln(soap.rpc());
  write(soap.envelope()); //Close the SOAP envelope
  xmlResponse = hb.send("&hb_aid=pf12"); //Exit trad
  hb.free();
}
ok.
line 3 col 1 Wrap OFF File opened at 798 bytes Connection Info-t3.hostbridge.com:80 as james
```

**Compile the script
and save as a
service**

C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx

File Edit Connection Script Source Cntl HTML Templates View Help

```
HostLib(hb,"MSCRHBR",soap,"MSCRSOAP");

function getData(fieldName,tagName) {
    hb.getBmsField(fieldName,fieldValue);           //Retrieve the BMS field
    write(soap.tag(soap.rpcns+tagName));           //start a tag
    write(fieldValue);                             //add our data
    write(soap.tag());                             //end the tag
}

function getQuote(CompanyName) {
    hb.create();
    hb.setBmsSupp(CompanyName);

    xmlResponse = hb.getTransaction(CompanyName);
    xmlResponse = hb.getQuote(CompanyName);
    xmlResponse = hb.getShareValue(CompanyName);

    write(soap.envelope());
    write(soap.rpc("getQuote"));

    getData("COMP41","CompanyName");           //Extract and return data
    getData("SHRNOW","ShareNow");
    getData("HELD","SharesHeld");
    getData("VALUE","SharesValue");

    writeln(soap.rpc());
    write(soap.envelope());                     //Close the SOAP envelope

    xmlResponse = hb.send("&hb_aid=pf12");       //Exit trad
    hb.free();
}
}
```

Enter Name

Name:

OK Cancel

line 3 col 1 Wrap OFF File opened at 798 bytes Connection Info-t3.hostbridge.com:80 as james

Name the service



C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx

File Edit Connection Script Source Cntl HTML Templates View Help

Soap RPC
WSDL

```
HostLib(hb,"MSCRHBR",soap,"MSCRSOAP");

function getData(fieldName,tagName) {
    hb.getBmsField(fieldName,fieldValue);
    write(soap.tag(soap.rpcns+tagName));
    write(fieldValue);
    write(soap.tag());
}

function getQuote(CompanyNumber) {

    hb.create();
    hb.setBmsSupport(true);

    xmlResponse = hb.send("hb_tranid=trad");
    xmlResponse = hb.send("&option="+CompanyNumber);
    xmlResponse = hb.send("&opt2=1");

    write(soap.envelope());
    write(soap.rpc("getQuote"));

    getData("COMP41","CompanyName");
    getData("SHRNOW","ShareNow");
    getData("HELD","SharesHeld");
    getData("VALUE","SharesValue");

    writeln(soap.rpc());
    write(soap.envelope());

    xmlResponse = hb.send("&hb_aid=pf12");
    hb.free();
}
```

//Retrieve the BMS field
//start a tag
//add our data to tag
//end the tag

//Start the trad transaction
//Select a company
//Select real-time quote

//Open the SOAP envelope

//Extract and return data

//Close the SOAP envelope

//Exit trad

line 3 col 1 Wrap OFF File opened at 798 bytes Connection Info-t3.hostbridge.com:80 as james

Generate sample SOAP request to invoke the service.



C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx

File Edit Connection Script Source Cntl HTML Templates View Help

```
HostLib(hb, "MSCRHBR", soap, "MSCRSOAP");

function getData(fieldName, tagName) {
    hb.getBmsField(fieldName, fieldValue);           //Retrieve the BMS field
    write(soap.tag(soap.rpcns+tagName));           //start a tag
    write(fieldValue);                             //add our data to tag
    write(soap.tag(soap.rpcns+tagName));
}

function getQuote(companyNumber) {
    hb.create();
    hb.setBmsSupplier(companyNumber);

    xmlResponse = hb.send("&hb_aid=pf12");
    write(soap.tag(soap.rpcns+tagName));
}

getQuote("1");
writeLn(soap.tag(soap.rpcns+tagName));
write(soap.tag(soap.rpcns+tagName));

xmlResponse = hb.send("&hb_aid=pf12");           //Exit trad
hb.free();
}
```

transaction
quote

envelope

line 3 col 1 Wrap OFF File opened at 798 bytes Connection Info-t3.hostbridge.com:80 as james

Create Soap RPC

RPC Name:

Path:

Arguments:

Example: Name='Fantastic Tires',Amount.decimal=29.95

Types: string(default),integer,float,decimal,boolean,byte,short

Specify parameters

```
<?xml version="1.0" encoding="UTF-8" ?>
```

```
- <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">  
  <soap:Header />  
  - <soap:Body>  
    - <m:getQuote  
      soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"  
      xmlns:m="http://default">  
        <companyNumber>1</companyNumber>  
      </m:getQuote>  
    </soap:Body>  
  </soap:Envelope>
```

*SOAP request
generated by IDE to
test the service.*

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```
<?xml version="1.0" encoding="UTF-8" ?>
```

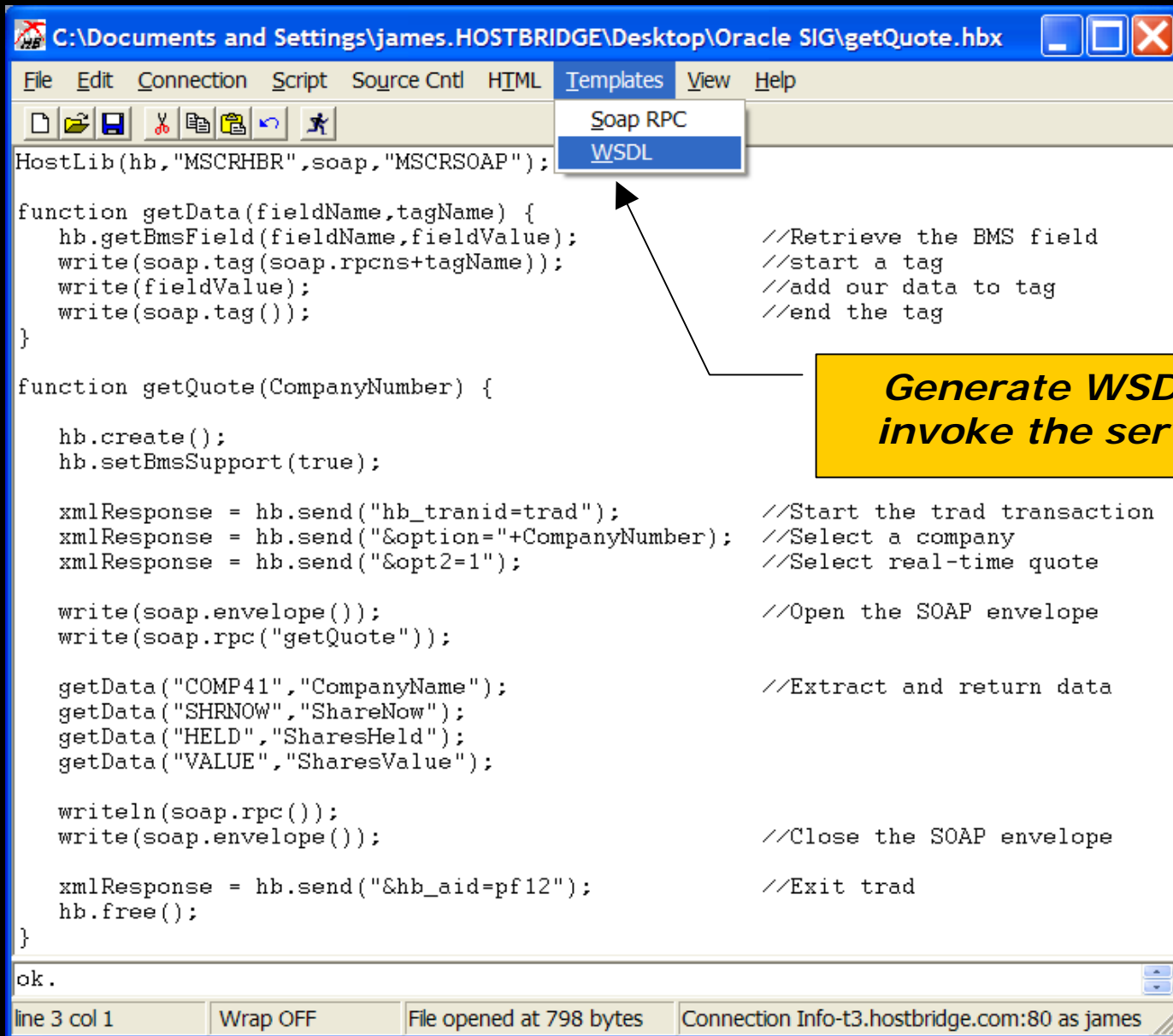
```
- <soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"  
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"  
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">  
  <soap:Header />  
  - <soap:Body>  
    - <m:getQuote  
      soap:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"  
      xmlns:m="http://default">  
        <m:companyName>Casey Import Export</m:companyName>  
        <m:shareNow>79.00</m:shareNow>  
        <m:sharesHeld>1322</m:sharesHeld>  
        <m:sharesValue>104438.00</m:sharesValue>  
      </m:getQuote>  
    </soap:Body>  
  </soap:Envelope>
```

*Output from web
service when invoked
via SOAP request.*

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The screenshot shows a Notepad window with the following content:

```
HostLib(hb,"MSCRHBR",soap,"MSCRSOAP");

function getData(fieldName,tagName) {
  hb.getBmsField(fieldName,fieldValue);
  write(soap.tag(soap.rpcns+tagName));
  write(fieldValue);
  write(soap.tag());
}

function getQuote(CompanyName) {

  hb.create();
  hb.setBmsSupport(true);

  xmlResponse = hb.send("hb_tranid=trad");
  xmlResponse = hb.send("&option="+CompanyName);
  xmlResponse = hb.send("&opt2=1");

  write(soap.envelope());
  write(soap.rpc("getQuote"));

  getData("COMP41","CompanyName");
  getData("SHRNOW","ShareNow");
  getData("HELD","SharesHeld");
  getData("VALUE","SharesValue");

  writeln(soap.rpc());
  write(soap.envelope());

  xmlResponse = hb.send("&hb_aid=pf12");
  hb.free();
}

ok.
```

The 'Templates' menu is open, showing 'Soap RPC' and 'WSDL' options. An arrow points from a yellow callout box to the 'WSDL' option.

Generate WSDL to invoke the service.

StatusBar: line 3 col 1 | Wrap OFF | File opened at 798 bytes | Connection Info-t3.hostbridge.com:80 as james

C:\Documents and Settings\james.HOSTBRIDGE\Desktop\Oracle SIG\getQuote.hbx

File Edit Connection Script Source Ctrl HTML Templates View Help

```
HostLib(hb,"MSCRHBR",soap,"MSCRSOAP");

function getData(fieldName,tagName) {
  hb.getBm
  write(so
  write(fi
  write(so
}

function ge
  hb.creat
  hb.setBm

xmlRespo
xmlRespo
xmlRespo

write(so
write(so

getData (
getData (
getData (
getData (

writeln(
write(so

xmlResponse = hb.send("&hb_aid=pf12"); //Exit trad
hb.free();
}

ok.
```

line 3 col 1 Wrap OFF File opened at 798 bytes Connection Info-t3.hostbridge.com:80 as james

Create WSDL document

RPC Name:

Name Space:

Path:

Input Tags and Output Tags:

Tags have the format tagname:tagtype

Types: string(default), integer,float, decimal,boolean, byte,short

Specify parameters

```

<?xml version="1.0" encoding="UTF-8" ?>
- <definitions targetNamespace="http://default" xmlns:tns="http://default" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns="http://schemas.xmlsoap.org/wsdl/">
- <message name="getQuote">
  <part name="companyNumber" type="xsd:string" />
</message>
- <message name="getQuoteResponse">
  <part name="companyName" type="xsd:string" />
  <part name="shareNow" type="xsd:string" />
  <part name="sharesHeld" type="xsd:string" />
  <part name="sharesValue" type="xsd:string" />
</message>
- <portType name="getQuote">
- <operation name="getQuote">
  <input message="tns:getQuote" />
  <output message="tns:getQuoteResponse" />
</operation>
</portType>
- <binding name="getQuote" type="tns:getQuote">
  <soap:binding style="rpc" transport="http://schemas.xmlsoap.org/soap/http" />
- <operation name="getQuote">
  <soap:operation soapAction="tns:getQuote" style="rpc" />
- <input>
  <soap:body use="encoded" encodingStyle="http://schemas.xmlsoap.org/soap/encoding/" namespace="tns:getQuoteResponse" />
</input>
- <output>
  <soap:body use="encoded" encodingStyle="http://schemas.xmlsoap.org/soap/encoding/" namespace="tns:getQuoteResponse" />
</output>
</operation>
</binding>
- <service name="getQuote">
- <port name="getQuote" binding="tns:getQuote">
  <soap:address location="http://t3.hostbridge.com:80/MSCRFILe/getQuote" />
</port>
</service>
</definitions>

```

***WSDL generated by
IDE. Disseminated
or published per
company standards.***

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Why HostBridge?

- The Company
 - Pioneers in the mainframe and CICS integration market.
 - Focused exclusively on CICS integration and web enablement.
 - Actively work with IBM and our customers to enhance and extend our products.
 - Very happy customers!



Why HostBridge?

- The Product
 - Clean sheet design to create the most functional and efficient CICS TS integration product possible.
 - Complements your investment in CICS TS (as opposed to duplicating functionality provided by IBM).
 - Leverages existing skills within your organization to accelerate web enablement of CICS resources.
 - Simple, Elegant and Fast.



Summary

- Highlights for this example
 - No Changes to CICS applications
 - No screen scraping (Dynamic XML)
 - Standards based: JavaScript, XML, HTML, SOAP
 - Mainframe performance & reliability
 - Easy to use

Q & A



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