CONFIGURING A WEB SERVER AND TESTING WEBSPEED

John Sadd
Fellow and OpenEdge Evangelist
Document Version 1.0
August 2010

Extending Your OpenEdge Application Using an RIA User Interface

Configuring a Web Server, WebSpeed Broker, and Architect Project for Testing WebSpeed

John Sadd

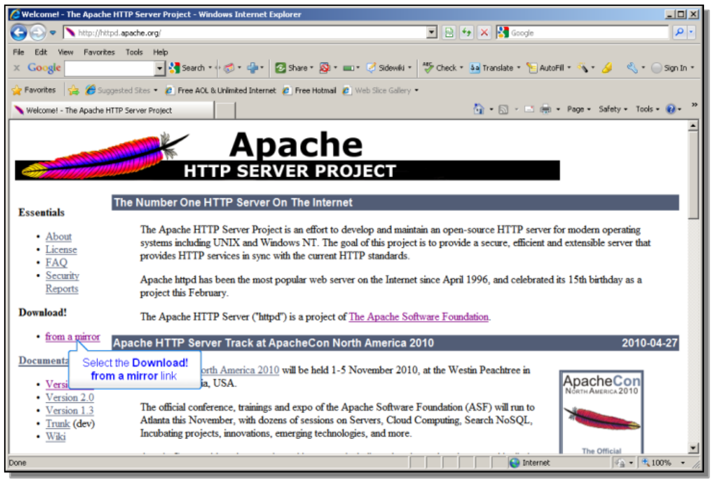
BUSINESS
MAKING
PROGRESS™
Progress
OpenEdge®
PROGRESS
SOFTWARE

DISCLAIMER

This paper accompanies a two-part video presentation which is part of a series that covers the fundamentals of how to set up OpenEdge to prepare for a Rich Internet Application (RIA) user interface. One of the tools you can use to communicate requests and data between an RIA toolkit running in a browser and OpenEdge is of course WebSpeed, and this paper introduces you to what's involved in setting up WebSpeed for that purpose. I first show how to install the Apache Web server as one option for running WebSpeed. If you've already got WebSpeed and a Web server installed, then you can skip to the second part of this paper, but otherwise I am assuming here that you haven't used WebSpeed before.

There are of course a number of choices for a Web server for use with OpenEdge. In another of the sessions in this series I installed the Apache Tomcat server, which is an appropriate choice for exposing ABL procedures as Web services. You can also use it for WebSpeed, but a more popular choice is the Apache HTTP Server, which is generally just referred to as Apache, even though there are many Apache projects.

So if you wish to install the Apache server, you start out at **`www.apache.org`**, the parent page for all Apache projects. Note that normally the Microsoft IIS server is installed and running by default on a PC running Windows, but there are various reasons, including security concerns, why it may not be the best option to simply use the IIS server that's already there. So to install and use Apache as a Windows Service, you must first stop the IIS Admin service on your Windows PC, and also the World Wide Web Publishing service, which also uses IIS, and make both of them Manual, so that they don't start up again on their own. IIS runs on the same port number, 80, that the Apache server uses by default, so they would conflict with one another. After making sure that the IIS services are stopped, you select the HTTP Server project at **`apache.org`**.


http://httpd.apache.org/

Apache HTTP SERVER PROJECT

The Number One HTTP Server On The Internet

Essentials

- About
- License
- FAQ
- Security Reports

Download!

- from a mirror

Select the **Download! from a mirror** link

The Apache HTTP Server Project is an effort to develop and maintain an open-source HTTP server for modern operating systems including UNIX and Windows NT. The goal of this project is to provide a secure, efficient and extensible server that provides HTTP services in sync with the current HTTP standards.

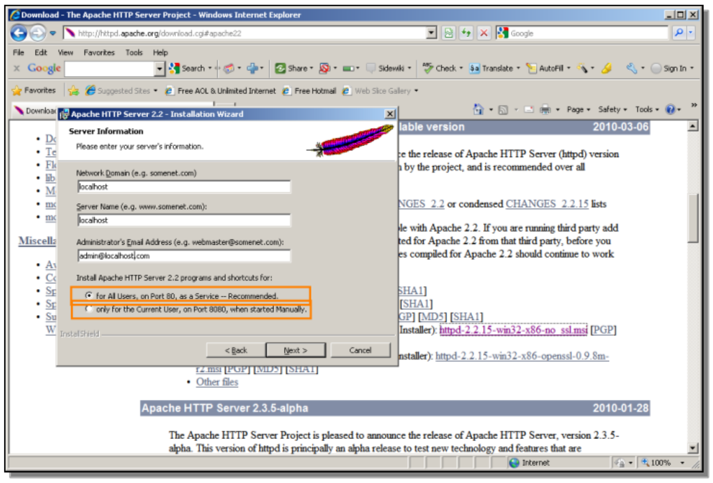
Apache httpd has been the most popular web server on the Internet since April 1996, and celebrated its 15th birthday as a project this February.

The Apache HTTP Server ("httpd") is a project of The Apache Software Foundation.

Apache HTTP Server Track at ApacheCon North America 2010 2010-04-27

The official conference, trainings and expo of the Apache Software Foundation (ASF) will run to Atlanta this November, with dozens of sessions on Servers, Cloud Computing, Search NoSQL, Incubating projects, innovations, emerging technologies, and more.

Then select the option to download the HTTP Server from a mirror. Select the appropriate version for your machine. Here are a few things to note as you do the install. First, during the install you'll see this Server Information dialog:


http://httpd.apache.org/download.cgi#apache22

Apache HTTP Server 2.2 - Installation Wizard

Server Information

Please enter your server's information.

Network Domain (e.g. somenet.com): localhost

Server Name (e.g. www.somenet.com): localhost

Administrator's Email Address (e.g. webmaster@somenet.com): admin@localhost.com

Install Apache HTTP Server 2.2 programs and shortcuts for:

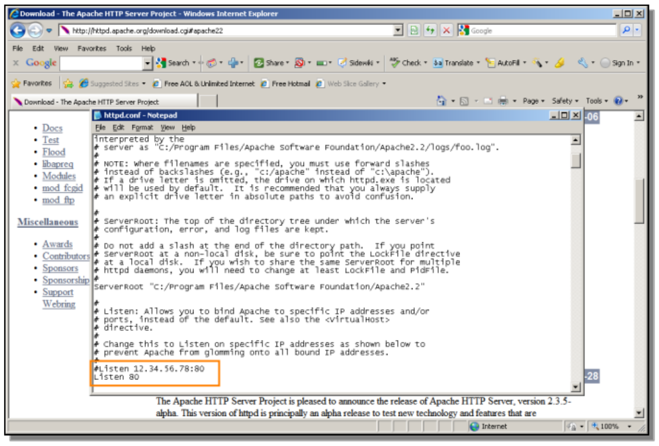
[✓ for All Users, on Port 80, as a Service -- Recommended.]

only for the Current User, on Port 8080, when started Manually.

Apache HTTP Server 2.3.5-alpha 2010-01-28

The Apache HTTP Server Project is pleased to announce the release of Apache HTTP Server, version 2.3.5-alpha. This version of httpd is principally an alpha release to test new technology and features that are

If you just want to use Apache initially on your local machine for WebSpeed testing, you can just enter `localhost` for both the **Network Domain** and the **Server Name**. There's no need to specify an **Administrator's Email Address**, so you can enter a bogus email value like `admin@localhost.com`. Below that, you have a choice between installing Apache as a Windows Service, which you can set up to start automatically, or you can install it so that you have to start it from the Windows task bar each time you want to enable it for use. You can make either choice, but in this example I chose the first option, which as indicated, means it will use port 80. After the install completes, you can check out the configuration file in the the Apache `conf` folder, which confirms that it has set up Apache to listen on port 80, the default port for HTTP Services.

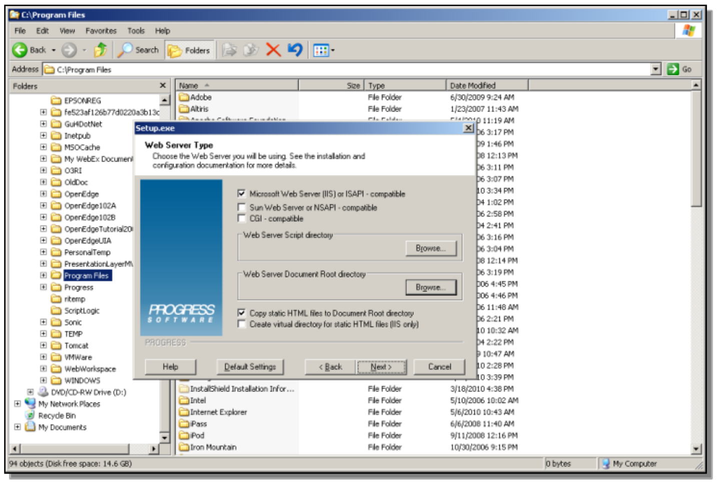


```
interpreted by the
# server as "C:/Program Files/Apache Software Foundation/Apache2.2/logs/foo.log".
#
# NOTE: Where filenames are specified, you must use forward slashes
# instead of backslashes (e.g., "c:/apache" instead of "c:\apache").
# If a drive letter is omitted, the drive on which httpd.exe is located
# will be used by default.  It is recommended that you always supply
# an explicit drive letter in absolute paths to avoid confusion.

#
# ServerRoot: The top of the directory tree under which the server's
# configuration, error, and log files are kept.
#
# Do not add a slash at the end of the directory path.  If you point
# ServerRoot at a non-local disk, be sure to point the LockFile directive
# at a local disk.  If you wish to share the same ServerRoot for multiple
# httpd daemons, you will need to change at least LockFile and PidFile.
#
ServerRoot "C:/Program Files/Apache Software Foundation/Apache2.2"

#
# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on specific IP addresses as shown below to
# prevent Apache from glomming onto all bound IP addresses.
#
#Listen 12.34.56.78:80
Listen 80
```

The Apache HTTP Server Project is pleased to announce the release of Apache HTTP Server, version 2.3.5-alpha. This version of httpd is principally an alpha release to test new technology and features that are

To check that the install succeeded, you just need to enter **`localhost`** in the browser, and see a simple html page that just says, *It Works!*, which is an **`index.html`** file in the Apache **`htdocs`** folder. If you check the **Services** in the **Windows Control Panel**, you can see the new service called **`Apache2.2`**. And if you have not installed it as a service, you would start and stop Apache from the task bar.

If you know how you're going to configure WebSpeed and what Web server you're going to use at the time when you install OpenEdge, then there's a dialog that is part of the OpenEdge install where you can specify whether you're going to use an ISAPI server like Microsoft IIS, an NSAPI server, or a CGI-compatible server like the Apache server I just installed. And you can identify the script directory and document root directory for your server, as shown here:



Web Server Type

Choose the Web Server you will be using. See the installation and configuration documentation for more details.

[✓] Microsoft Web Server (IIS) or ISAPI - compatible
[ ] Sun Web Server or NSAPI - compatible
[ ] CGI - compatible

Web Server Script directory

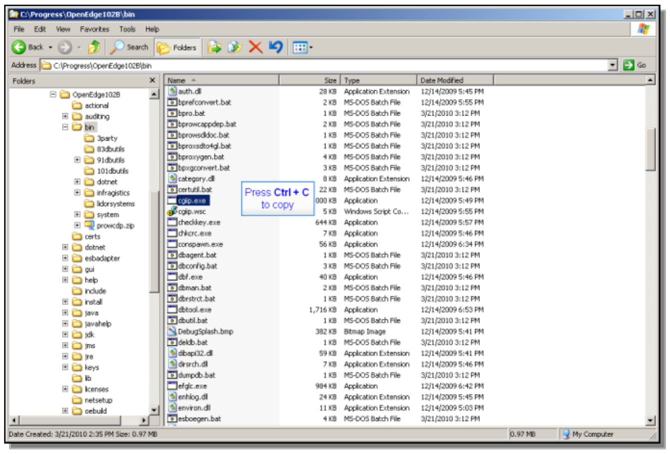
Web Server Document Root directory

[✓] Copy static HTML files to Document Root directory
[ ] Create virtual directory for static HTML files (IIS only)

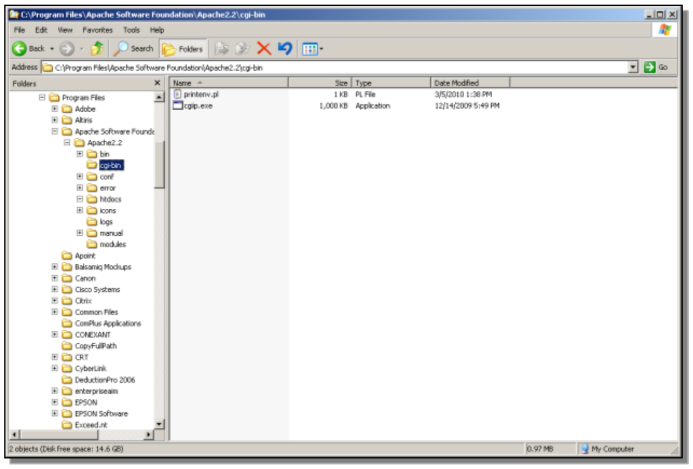
But if you knew you were going to install and use WebSpeed when you installed OpenEdge, then you wouldn't need this presentation, so I'm going to show you what you need to do if you already have OpenEdge installed, and didn't know what values to enter in that Web server configuration dialog, and then decide you want to configure a web server so that you can use it to test out WebSpeed with one or more RIA toolkits. There's not much to it.

Basically, you just have to copy two things from the OpenEdge install to the Web server folders. If you expand the DLC directory, which in this example is called

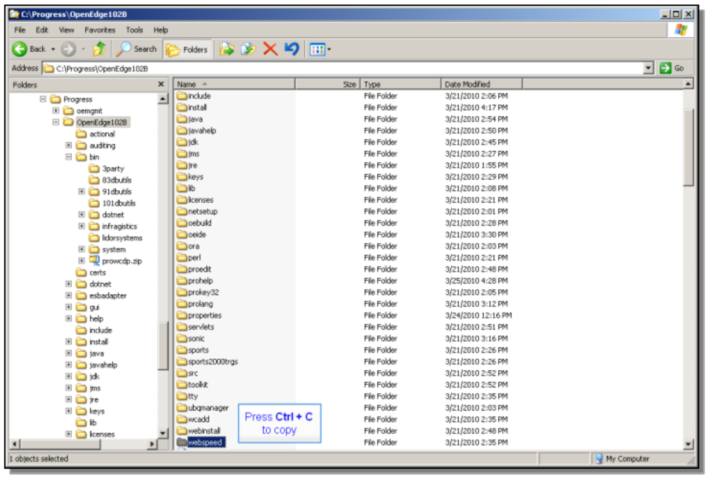
OpenEdge102B, then in the **bin** directory, select the CGI Web server messenger file, **cgiip.exe**, and copy that, as shown here:


```
C:\Progress\OpenEdge102B\bin
Address  C:\Progress\OpenEdge102B\bin

Folders
 OpenEdge102B
   actional
   auditing
   bin
     3party
     83dbutils
     91dbutils
     101dbutils
     dotnet
     infragistics
     lidorsystems
     system
     prowcdp.zip
   certs
   dotnet
   esbadapter
   gui
   help
   include
   install
   java
   javahelp
   jdk
   jms
   jre
   keys
   lib
   licenses
   netsetup
   oebuild

Name                   Size  Type                   Date Modified
auth.dll              28 KB  Application Extension  12/14/2009 5:45 PM
bprefconvert.bat       2 KB  MS-DOS Batch File      12/14/2009 5:55 PM
bpro.bat               1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
bprowcappdep.bat       2 KB  MS-DOS Batch File      3/21/2010 3:12 PM
bprowsdldoc.bat        1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
bproxsdto4gl.bat       1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
bproxygen.bat          4 KB  MS-DOS Batch File      3/21/2010 3:12 PM
bpxgconvert.bat        3 KB  MS-DOS Batch File      3/21/2010 3:12 PM
category.dll           8 KB  Application Extension  12/14/2009 5:46 PM
certutil.bat          22 KB  MS-DOS Batch File      3/21/2010 3:12 PM
cgiip.exe            000 KB  Application            12/14/2009 5:49 PM
cgiip.wsc              5 KB  Windows Script Co...   12/14/2009 5:55 PM
checkkey.exe         644 KB  Application            12/14/2009 5:57 PM
chkcrc.exe             7 KB  Application            12/14/2009 5:46 PM
conspawn.exe          56 KB  Application            12/14/2009 6:34 PM
dbagent.bat            1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
dbconfig.bat           3 KB  MS-DOS Batch File      3/21/2010 3:12 PM
dbf.exe               40 KB  Application            12/14/2009 5:46 PM
dbman.bat              2 KB  MS-DOS Batch File      3/21/2010 3:12 PM
dbrstrct.bat           1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
dbtool.exe         1,716 KB  Application            12/14/2009 6:53 PM
dbutil.bat             1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
DebugSplash.bmp      382 KB  Bitmap Image           12/14/2009 5:41 PM
deldb.bat              1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
dlbapi32.dll          59 KB  Application Extension  12/14/2009 5:41 PM
dirsrch.dll            7 KB  Application Extension  12/14/2009 5:46 PM
dumpdb.bat             1 KB  MS-DOS Batch File      3/21/2010 3:12 PM
efglc.exe            984 KB  Application            12/14/2009 6:42 PM
enhlog.dll            24 KB  Application Extension  12/14/2009 5:45 PM
environ.dll           11 KB  Application Extension  12/14/2009 5:03 PM
esboegen.bat           4 KB  MS-DOS Batch File      3/21/2010 3:12 PM

Date Created: 3/21/2010 2:35 PM Size: 0.97 MB     0.97 MB     My Computer
```

In the Apache install directory, which by default will be under the folder **Apache Software Foundation** in **Program Files**, and then **Apache2.2**, select the **cgi-bin** folder, and paste **cgiip.exe** there.


```
C:\Program Files\Apache Software Foundation\Apache2.2\cgi-bin
Address  C:\Program Files\Apache Software Foundation\Apache2.2\cgi-bin

Folders
 Program Files
   Adobe
   Altiris
   Apache Software Founda
     Apache2.2
       bin
       cgi-bin
       conf
       error
       htdocs
       icons
       logs
       manual
       modules
   Apoint
   Balsamiq Mockups
   Canon
   Cisco Systems
   Citrix
   Common Files
   ComPlus Applications
   CONEXANT
   CopyFullPath
   CRT
   CyberLink
   DeductionPro 2006
   enterpriseaim
   EPSON
   EPSON Software
   Exceed.nt

Name            Size  Type         Date Modified
printenv.pl     1 KB  PL File      3/5/2010 1:38 PM
cgiip.exe   1,000 KB  Application  12/14/2009 5:49 PM

2 objects (Disk free space: 14.6 GB)     0.97 MB     My Computer
```

The second thing you have to copy from the files installed with OpenEdge is the entire **webspeed** folder:

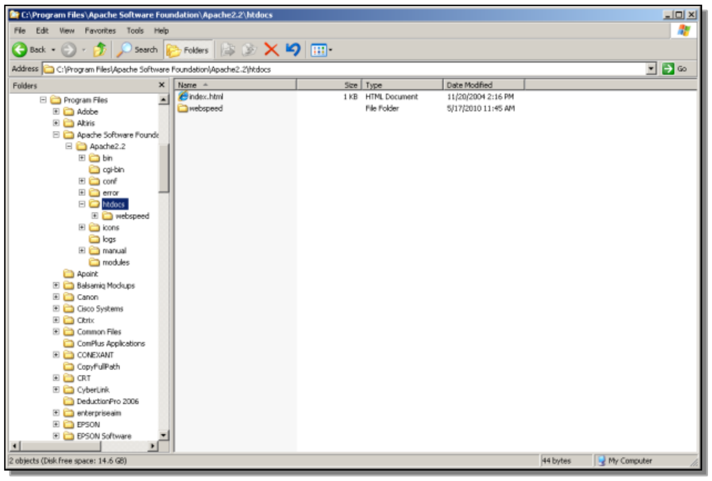


C:\Progress\OpenEdge102B

```
Progress
  oemgmt
  OpenEdge102B
    actional
    auditing
    bin
      3party
      83dbutils
      91dbutils
      101dbutils
      dotnet
      infragistics
      lidorsystems
      system
      prowcdp.zip
    certs
    dotnet
    esbadapter
    gui
    help
    include
    install
    java
    javahelp
    jdk
    jms
    jre
    keys
    lib
    licenses
```

Name	Size	Type	Date Modified
include		File Folder	3/21/2010 2:06 PM
install		File Folder	3/21/2010 4:17 PM
java		File Folder	3/21/2010 2:54 PM
javahelp		File Folder	3/21/2010 2:50 PM
jdk		File Folder	3/21/2010 2:45 PM
jms		File Folder	3/21/2010 2:27 PM
jre		File Folder	3/21/2010 1:55 PM
keys		File Folder	3/21/2010 2:29 PM
lib		File Folder	3/21/2010 2:08 PM
licenses		File Folder	3/21/2010 2:21 PM
netsetup		File Folder	3/21/2010 2:01 PM
oebuild		File Folder	3/21/2010 2:28 PM
oeide		File Folder	3/21/2010 3:30 PM
ora		File Folder	3/21/2010 2:03 PM
perl		File Folder	3/21/2010 2:21 PM
proedit		File Folder	3/21/2010 2:48 PM
prohelp		File Folder	3/25/2010 4:28 PM
prokey32		File Folder	3/21/2010 2:05 PM
prolang		File Folder	3/21/2010 3:12 PM
properties		File Folder	3/24/2010 12:16 PM
servlets		File Folder	3/21/2010 2:51 PM
sonic		File Folder	3/21/2010 3:16 PM
sports		File Folder	3/21/2010 2:26 PM
sports2000trgs		File Folder	3/21/2010 2:26 PM
src		File Folder	3/21/2010 2:52 PM
toolkit		File Folder	3/21/2010 2:52 PM
tty		File Folder	3/21/2010 2:35 PM
ubqmanager		File Folder	3/21/2010 2:03 PM
wcadd		File Folder	3/21/2010 2:35 PM
webinstall		File Folder	3/21/2010 2:48 PM
webspeed		File Folder	3/21/2010 2:35 PM

Back in the Apache install area, in the document directory **`htdocs`**, paste the **`webspeed`** folder:



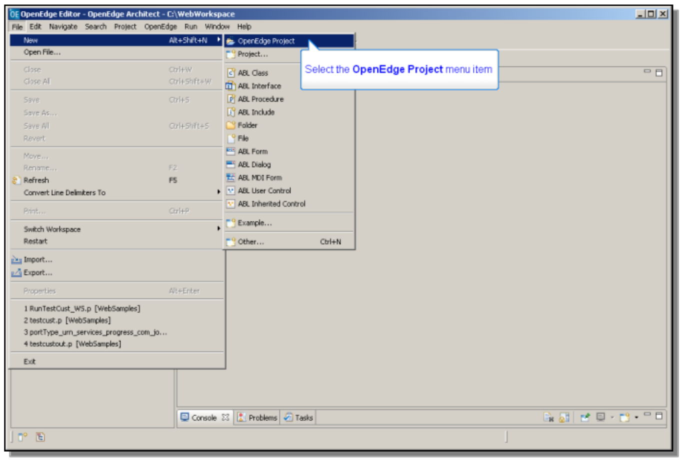
C:\Program Files\Apache Software Foundation\Apache2.2\htdocs

```
Program Files
  Adobe
  Altiris
  Apache Software Founda
    Apache2.2
      bin
      cgi-bin
      conf
      error
      htdocs
        webspeed
      icons
      logs
      manual
      modules
  Apoint
  Balsamiq Mockups
  Canon
  Cisco Systems
  Citrix
  Common Files
  ComPlus Applications
  CONEXANT
  CopyFullPath
  CRT
  CyberLink
  DeductionPro 2006
  enterpriseaim
  EPSON
  EPSON Software
```

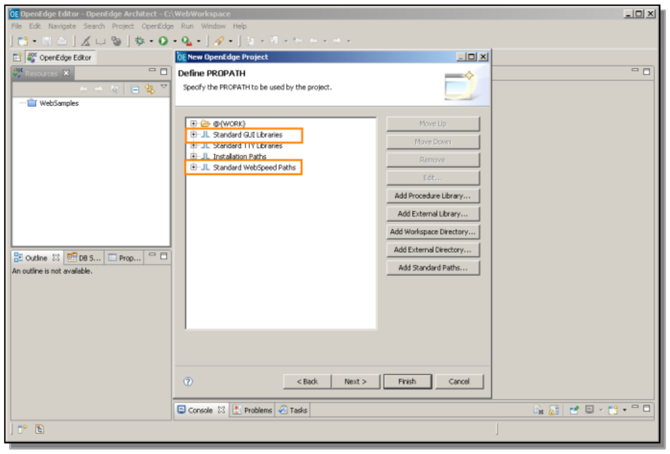
Name	Size	Type	Date Modified
index.html	1 KB	HTML Document	11/20/2004 2:16 PM
webspeed		File Folder	5/17/2010 11:45 AM

That's all you have to do to enable Apache as the WebSpeed Web server in an existing OpenEdge install. Now you're ready to create a project in OpenEdge Architect to try out some sample WebSpeed code, and to configure the WebSpeed broker in OpenEdge Explorer, which is covered in the second of the two videos that this paper is based on. In this second part of the paper I show how to create a new project in OpenEdge Architect, and adapt it to support HTML source files and a non-GUI interface. Then I configure the default WebSpeed broker in OpenEdge Explorer, and create a sample HTML file in Architect to test the WebSpeed connection.

So first in OpenEdge Architect, create a **`New OpenEdge Project`**:

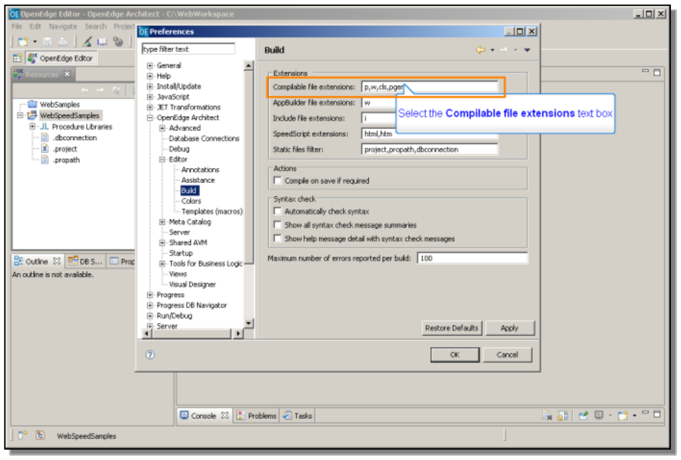


In this example it's called **`WebSpeedSamples`**. The one special option to select in the New Project wizard page is **Use TTY for Runtime**, since WebSpeed uses the character-mode client and can't process any graphical UI statements. In the **ProPath** wizard page, you first confirm that the **Standard WebSpeed** paths are here, which should always be the case:



Then you can select the **Standard GUI Libraries**, and because they're not needed for WebSpeed, you can remove them. Architect may display a warning message when you do this, because it thinks that it needs them, but for this TTY project that's not actually the case, so you can dismiss the warning message. And as with any other project, you can select one or more databases that you've configured in your workspace to connect to when you open this new project. In this example there's just the **`sports2000`** database. That's all you have to do to set up the new project.

The next change you need to make is at the level of the workspace preferences, which are under the **Window** menu. Under **Preferences**, expand **OpenEdge Architect**, and the **Editor** section, and select the **Build** option.


Build

Extensions

Compilable file extensions: p,w,cls,pgen

AppBuilder file extensions: w

Include file extensions: i

SpeedScript extensions: html,htm

Static files filter: project,propath,dbconnection

Actions

- [ ] Compile on save if required

Syntax check

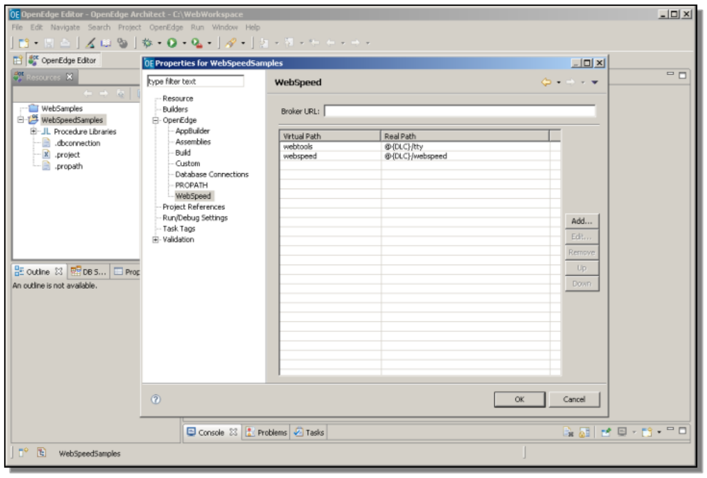
- [ ] Automatically check syntax
- [ ] Show all syntax check message summaries
- [ ] Show help message detail with syntax check messages

Maximum number of errors reported per build: 100

Select the **Compilable file extensions** text box

To the list of compilable file extensions, you need to add **`html`** and **`htm`**, so that when you create HTML source files and save them, Architect will know to compile them.

You have one more job to do to set up the project to run procedures in WebSpeed. Under **Project Properties**, select **OpenEdge** and **WebSpeed**. You need to fill in the URL of the WebSpeed broker.


Properties for WebSpeedSamples

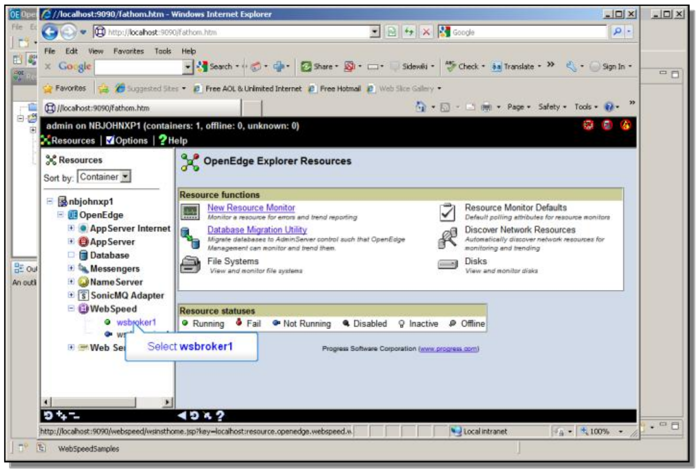
WebSpeed

Broker URL:

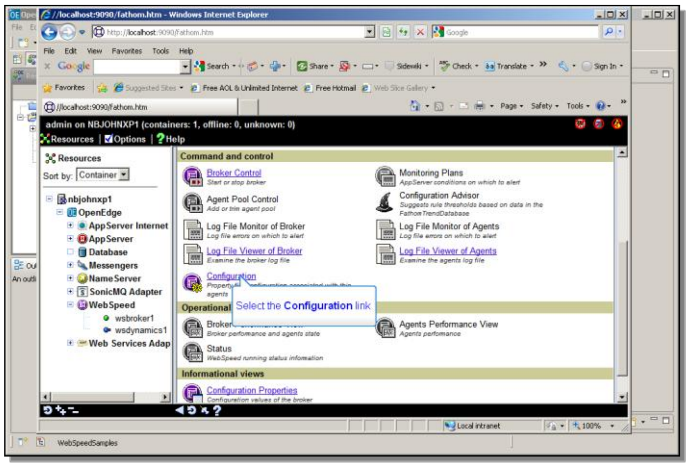
Virtual Path	Real Path
webtools	@{DLC}/tty
webspeed	@{DLC}/webspeed

This example uses the default WebSpeed broker, **`wsbroker1`**, and it is accessed relative to the Web server messenger that I configured previously, **`cgiip.exe`**, so this is the URL you have to enter: http://localhost/cgi-bin/cgiip.exe/WService=wsbroker1

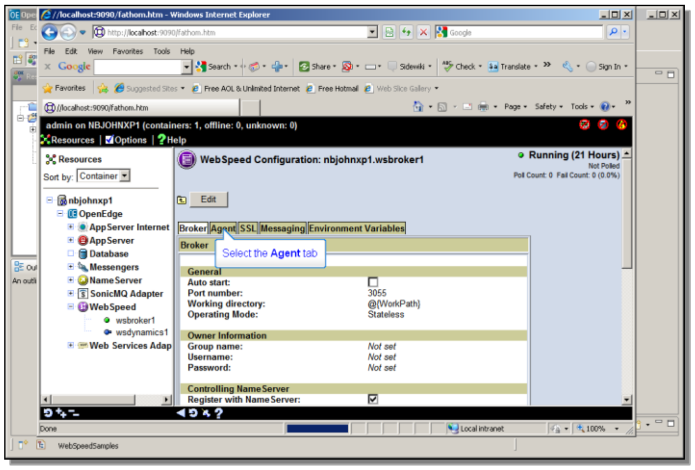
Making this change brings up a character mode window for any message output from Webspeed. You can minimize that, but it shouldn't be closed while you're using this project. Now you need to configure the WebSpeed broker in OpenEdge Explorer, so start that tool, and drill down to the WebSpeed broker list. The default broker is **`wsbroker1`**.



Scroll down in its command and control information, and select the **Configuration** link.



In the **Configuration** section, select the **Agent** tab.



WebSpeed Configuration: nbjohnxp1.wsbroker1

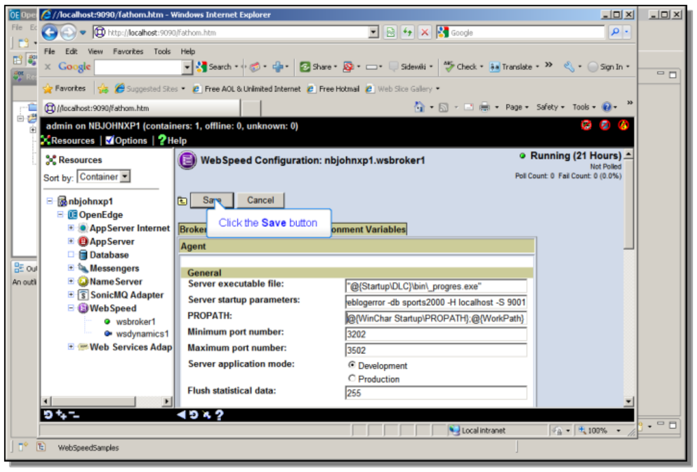
Broker | Agent | SSL | Messaging | Environment Variables

General
Auto start: ☐
Port number: 3055
Working directory: @{WorkPath}
Operating Mode: Stateless

Owner Information
Group name: Not set
Username: Not set
Password: Not set

Controlling NameServer
Register with NameServer: ✓

Here you need to edit a couple of the agent properties. First, for this example you need to add the database connection to the **`sports2000`** database – or whatever databases your project uses -- to the broker, so that it can access the database when you run ABL procedures. So add the **-db** parameter to the startup parameters, along with the host and server port number that you specify when you start the database server. Then in the ProPath, you need to add your project directory, such as the **`WebSpeedSamples`** directory for this example, to the head of the ProPath, since that's where Architect will save files you create in that project. And that's all you have to do.



WebSpeed Configuration: nbjohnxp1.wsbroker1

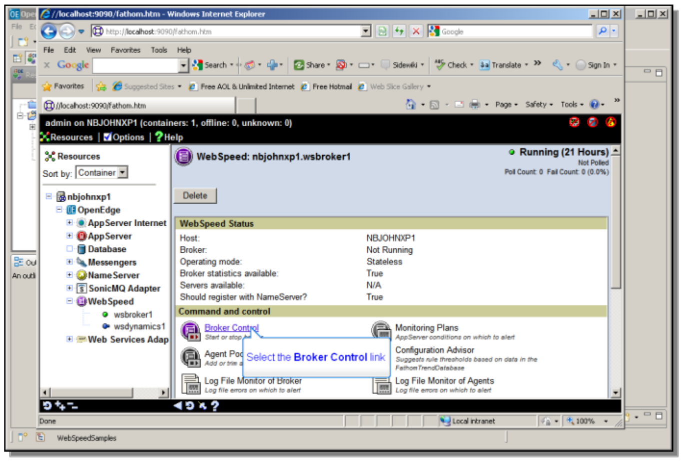
Running (21 Hours)

Agent

General

Server executable file:	"@{Startup\DLC}\bin_progres.exe"
Server startup parameters:	eblogerror -db sports2000 -H localhost -S 9001
PROPATH:	@{WinChar Startup\PROPATH};@{WorkPath}
Minimum port number:	3202
Maximum port number:	3502
Server application mode:	[✓ Development] Production
Flush statistical data:	255

Back in the **Command and Control** section for **`wsbroker1`**, you now select **Broker Control**.



WebSpeed: nbjohnxp1.wsbroker1

Running (21 Hours)

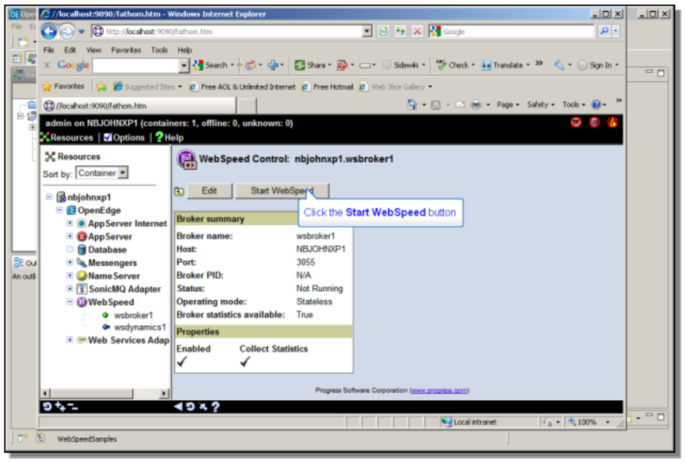
WebSpeed Status

Host:	NBJOHNXP1
Broker:	Not Running
Operating mode:	Stateless
Broker statistics available:	True
Servers available:	N/A
Should register with NameServer?	True

Command and control

Broker Control — Start or stop
Monitoring Plans — AppServer conditions on which to alert
Configuration Advisor — Suggests rule thresholds based on data in the FathomTrendDatabase
Log File Monitor of Broker — Log file errors on which to alert
Log File Monitor of Agents — Log file errors on which to alert

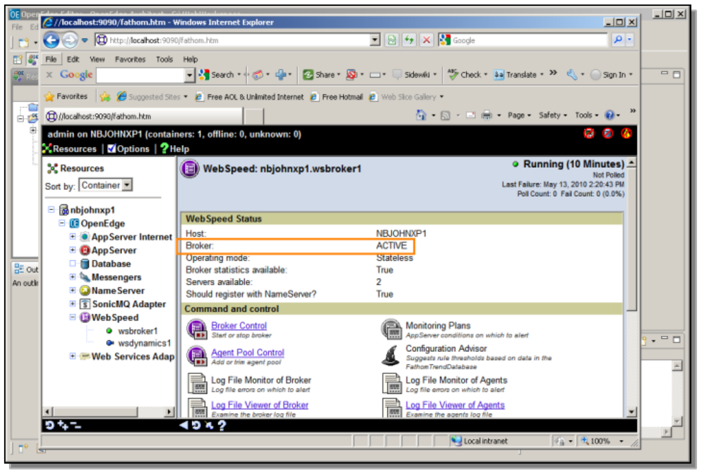
Then press the button to **Start WebSpeed**.


admin on NBJOHNXP1 (containers: 1, offline: 0, unknown: 0)
Resources | Options | Help
WebSpeed Control: nbjohnxp1.wsbroker1
Edit
Start WebSpeed
Click the **Start WebSpeed** button

Broker summary	
Broker name:	wsbroker1
Host:	NBJOHNXP1
Port:	3055
Broker PID:	N/A
Status:	Not Running
Operating mode:	Stateless
Broker statistics available:	True

Enabled	Collect Statistics
✓	✓

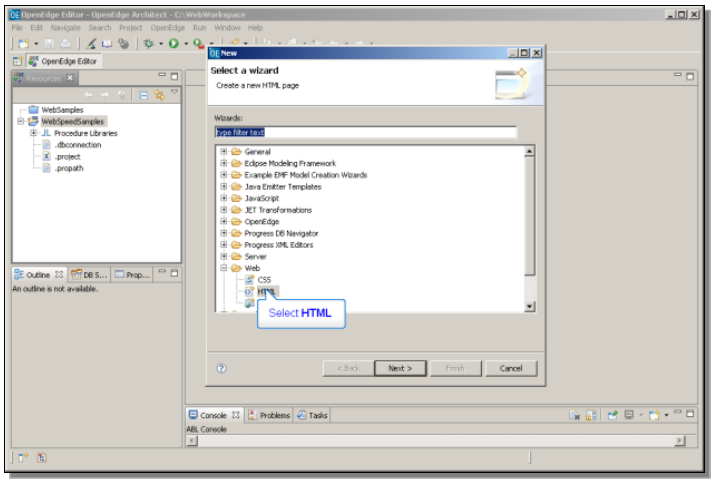
Now you can confirm that the broker is active.


admin on NBJOHNXP1 (containers: 1, offline: 0, unknown: 0)
WebSpeed: nbjohnxp1.wsbroker1
Running (10 Minutes)
Not Polled
Last Failure: May 13, 2010 2:20:43 PM
Poll Count: 0 Fail Count: 0 (0.0%)
Command and control
Broker Control
Start or stop broker
Agent Pool Control
Add or trim agent pool
Log File Monitor of Broker
Log file errors on which to alert
Log File Viewer of Broker
Examine the broker log file
Monitoring Plans
AppServer conditions on which to alert
Configuration Advisor
Suggests rule thresholds based on data in the FathomTrendDatabase
Log File Monitor of Agents
Log file errors on which to alert
Log File Viewer of Agents
Examine the agents log file

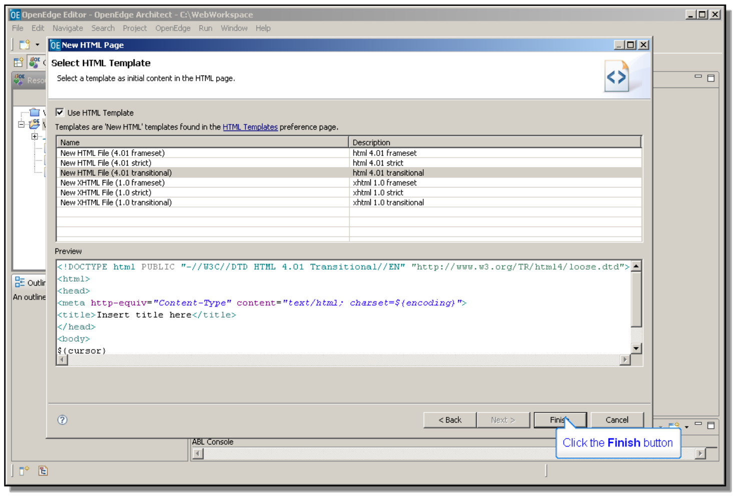
WebSpeed Status	
Host:	NBJOHNXP1
Broker:	ACTIVE
Operating mode:	Stateless
Broker statistics available:	True
Servers available:	2
Should register with NameServer?	True

That's all it takes to configure and enable a WebSpeed broker so that you can go back into Architect and create a test file to try to retrieve data from the database through WebSpeed.

Exit Explorer and get back into OpenEdge Architect, and create a new source file to test with WebSpeed. In this case it won't be a standard ABL procedure or class, but rather an HTML document, and you can find a list of the HTML file templates under the **Web** group.



The **New HTML Page** wizard page shows you the parent folders for open projects, in this case just the new **`WebSpeedSamples`** one. For this example I create a file called **`ShowCustomers.html`**. For this simple example, this choice among the HTML templates will do fine:


New HTML Page
Select HTML Template
Select a template as initial content in the HTML page.
Use HTML Template
Templates are 'New HTML' templates found in the HTML Templates preference page.
Preview
< Back
Next >
Finish
Cancel
Click the Finish button

Name	Description
New HTML File (4.01 frameset)	html 4.01 frameset
New HTML File (4.01 strict)	html 4.01 strict
New HTML File (4.01 transitional)	html 4.01 transitional
New XHTML File (1.0 frameset)	xhtml 1.0 frameset
New XHTML File (1.0 strict)	xhtml 1.0 strict
New XHTML File (1.0 transitional)	xhtml 1.0 transitional

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=${encoding}">
<title>Insert title here</title>
</head>
<body>
${cursor}
```

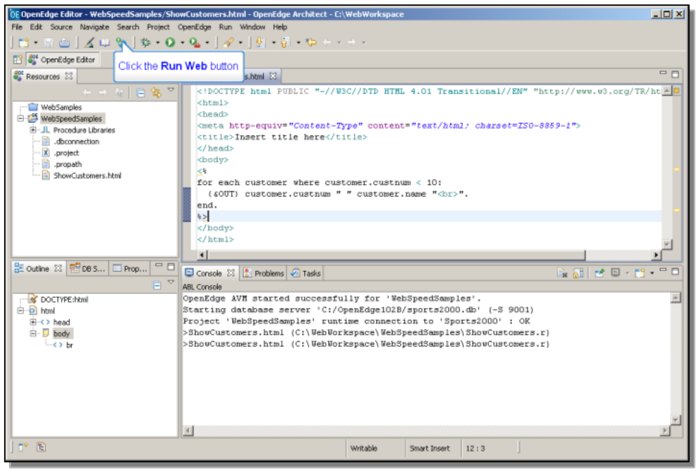
Now in the body of the HTML, you can insert lines of embedded ABL, or SpeedScript, if you will. Note as you do this that Architect provides an HTML editor with color-coding for HTML, as it does for ABL editing. As you type, you get content completion assistance from the HTML editor as well.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
```

Here in the body of this example I just type a **`FOR EACH`** statement for the **`Customer`** table. The **`{&OUT}`** convention causes WebSpeed to return the data to the client session where the HTML file runs. I'll have it return the customer number and name with a line break after each one. The **`end`** statement terminates the **`for each`** block, and the **`%>`** symbol terminates the embedded code.

```
<%
for each customer where customer.custnum < 10:
  {&OUT} customer.custnum " " customer.name "<br>".
end.
%>
</body>
</html>
```

When you run this by pressing the **Run Web** button, the output appears in a new View that shows up as a tab in the same pane of the Architect window as the Console here:

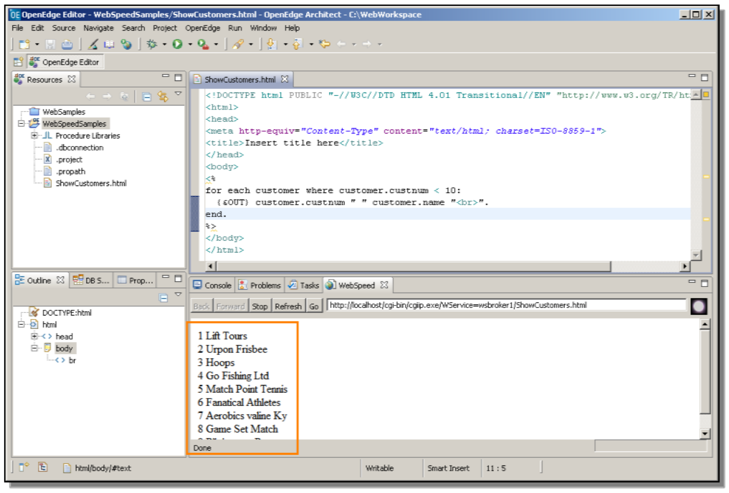


```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/ht
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<%
for each customer where customer.custnum < 10:
  {&OUT} customer.custnum " " customer.name "<br>".
end.
%>
</body>
</html>
```

```
OpenEdge AVM started successfully for 'WebSpeedSamples'.
Starting database server 'C:/OpenEdge102B/sports2000.db' (-S 9001)
Project 'WebSpeedSamples' runtime connection to 'Sports2000' : OK
>ShowCustomers.html (C:\WebWorkspace\WebSpeedSamples\ShowCustomers.r)
>ShowCustomers.html (C:\WebWorkspace\WebSpeedSamples\ShowCustomers.r)
```

Now if you hadn't defined a value for the Broker URL when you configured your project, pointing to the **`cgiip.exe`** file under Apache, this **Run Web** button would use a simple built-in web server that comes with Architect. But since in this example I did define the broker URL, the **Run Web** button uses the Apache server I installed, which of course is a better option.

Here you can see the sample output:



```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN" "http://www.w3.org/TR/ht
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
<%
for each customer where customer.custnum < 10:
  {&OUT} customer.custnum " " customer.name "<br>".
end.
%>
</body>
</html>
```

http://localhost/cgi-bin/cgiip.exe/WService=wsbroker1/ShowCustomers.html

```
1 Lift Tours
2 Urpon Frisbee
3 Hoops
4 Go Fishing Ltd
5 Match Point Tennis
6 Fanatical Athletes
7 Aerobics valine Ky
8 Game Set Match
```

You can see the pathname to **`cgi-bin/cgiip.exe`** here under **`localhost`**, in the URL displayed in the WebSpeed tab, which maps to the Apache Web server.

This completes the summary of what it takes to set up WebSpeed in Architect. I've set up an Architect project to use a WebSpeed broker to provide access from HTML to a separate OpenEdge session. And I've configured and started that WebSpeed broker using OpenEdge Explorer. I've used some of Architect's support for Web projects to edit, compile, and run an HTML file to access data through the Web server and the WebSpeed broker. Now I'm ready to try out any RIA toolkit with samples that access ABL data and business logic through WebSpeed. The two-part video series on setting up a Web project to support writing code using the ExtJS toolkit serves as an example of how you can create a browser-based user interface that uses WebSpeed to retrieve data and execute business logic in OpenEdge.

```
/* ***************************  Definitions  ************************** */

DEFINE TEMP-TABLE ttEmployee
    FIELD EmployeeID           AS CHARACTER
    FIELD EmployeeFirstName    AS CHARACTER
    FIELD EmployeeLastName     AS CHARACTER
    FIELD EmployeePosition     AS CHARACTER
    FIELD EmployeeStartDate    AS DATE
    FIELD EmployeeNotes        AS CHARACTER
    FIELD EmployeeBirthCountry AS CHARACTER
    FIELD EmployeeGender       AS CHARACTER.

DEFINE DATASET     dsEmployee  FOR ttEmployee.
DEFINE DATA-SOURCE srcEmployee FOR AutoEdge.Employee.

DEFINE QUERY qEmployee FOR ttEmployee.

DEFINE VARIABLE cAssignedCountry AS CHARACTER NO-UNDO.
```