Weber on CA/400

- **Who will benefit?** iSeries managers and desktop administrators who want to Web-enable their iSeries applications.
- **What you'll learn:** Weber's step-by-step article details how shops can use iSeries Access for the Web to provide browser-based access to iSeries applications and data. Because iSeries Access for Web is implemented as a set of Java servlets that run on the iSeries server, only a browser is required on the client.
- **Bottom line:** If your iSeries server is part of your company's Intranet, you can use iSeries Access for Web to provide access to your resources for others within your company. If your iSeries server is part of the Internet, you can use iSeries Access for Web to provide access to your resources for your customers and suppliers. In this case, you also need to provide your customers and suppliers with a user profile to access your iSeries server. Regardless, through iSeries Access for Web, iSeries shops to extend their host applications and data to a browser-based environment and give both users and business partners access over the Web.

Build a quick and easy Web site with iSeries Access for Web

by Janet Weber

You can build a quick and easy Web site for your company with the customization support of iSeries Access for Web. No Java programming is required. You simply create HTML files and set configuration options. In this article, I demonstrate this capability by creating a Web site to sell boats. This information is based on the functionality available with the V5R2 release of iSeries Access for Web. First introduced by IBM in September 2001, it provides a browser interface to iSeries resources, such as DB2 UDB, printer output, and OS/400 CL commands.

Home page and template files

iSeries Access for Web ships a default home page. This page is displayed when you access the home page URL: http://<system>/webaccess/iWAHome. The default home page is stored in the iSeries integrated file system in the following location: /QIBM/ProdData/Access/Web2/html/homepage.html

iSeries Access for Web also ships a default template file. The template file contains the HTML source displayed at the top and bottom of each iSeries Access for Web content page. The location of the default template file is /QIBM/ProdData/Access/Web2/html/webaccess.html. The %% values in the template file are replacement tags. We will discuss these later in the article.

First of all, we need to create a customized home page and a customized template file. We do not want to modify or update the files under /QIBM/ProdData since this directory tree is intended only for product files. Instead, we create a new directory named /boats/homepage and place our files in it. Our customized home page contains links to view and order boats. Our customized template file contains the company's logo. We discuss details of the file contents later in the article.

Janet Weber

Janet Weber is an advisory software engineer in the IBM Rochester, Minnesota laboratory. She has had a variety of roles on the PC Support, Client Access, and iSeries Access products. Her focus has been on programming interfaces. Janet is currently a member of the iSeries Access for Web development team.

Figure 1. Default home page

Figure 2. Default template file

Figure 3. Customize – General

Proper file authority

Our new files, and the directory containing them, must have the proper file authority. The following profiles require *RX authority to the home page, the template file, and the directories containing them:
QEJBSVR (for WebSphere)
QTMHTTP (for Tomcat)

To verify the authority, start a 5250 session, run the following command, and use option #9:
WRKLNK OBJ('*/boats/homepage*')

Next, we need to use the customization function to replace the default files with our customized files. To do this, we go to the iSeries Access for Web Main page: http://<system>/webaccess/iWAMain. From the navigation bar, we choose **Customize -> Selected Profile -> *your profile name* -> General**. Then we replace the default file names with the new fully-qualified names.

Application server restarts

iSeries Access for Web caches the home page and template files to improve performance. This means we need to restart the application server every time we change our home page or template file. If we want to test incremental versions of our home page, this can be time-consuming. If we are running our business on the same server, this might not even be an option. To avoid application restarts, we add a version number to each file name. When we change the file, we rename the file with an updated version number (e.g., home2.html), update the home page or template file customization setting, and delete the old file.

Images

Our home page and template file both contain images. In order for the HTTP server to locate our images, we need to publish the directory containing these files. The steps needed to do this vary based on the version of OS/400 we are running and the type of HTTP server we are using. The steps needed for each supported environment are listed below.

Original HTTP Server – V5R2 iSeries Server

1. Open your browser to http:// <system>:2001.
2. Select **IBM HTTP Server for iSeries**.
3. In the **Server** list, select *your HTTP server*.
4. Select **Request Processing -> Request Routing**.
5. Choose the **Insert before** option and choose an **index** at or before the pass with a URL template of /*. This is the default pass. Any pass after this is not processed. You can insert before other passes if you want your directory processed before them.
6. In the **Action** field, choose **PASS**.
7. For the **URL template** field, enter the path used within your HTML files to access

images. This becomes an alias for the actual path containing the images. You also need to add an asterisk at the end of the URL template. For example, we use */boats/**.

8. For the **Replacement file path** field, enter the actual location of your image directory followed by an asterisk. For example, we use */boats/homepage/**.

9. Press the **Apply** button.

10. In the **Server** list, select **All servers**.

11. Select *your HTTP server*.

12. Press the **Stop** button.

13. Press the **Refresh** button until the status shows your server is stopped.

14. Enter "-nolastmod" in the **Server startup parameters** field.

15. Press the **Start** button.

Original HTTP Server – V5R1 iSeries Server

1. Open your browser to http://<system>:2001.

2. Select **IBM HTTP Server for iSeries -> Configuration and Administration -> Configuration.**

3. In the **Configuration for server** list, select *your HTTP server*.

4. Select **Request Processing -> Request Routing**.

5. Choose the **Insert before** option and choose an **index** at or before the pass with a URL template of /*. This is the default pass. Any pass after this is not processed. You can insert before other passes if you want your directory processed before them.

6. In the **Action** field, choose **PASS**.

7. For the **URL template** field, enter the path used within your HTML files to access images. This becomes an alias for the actual path containing the images. You also need to add an asterisk at the end of the URL template. For example, we use */boats/**.

8. For the **Replacement file path** field, enter the actual location of your image directory followed by an asterisk. For example, we use */boats/ homepage/**.

9. Press the **Apply** button.

10. Select **Administration -> Manage HTTP Servers**.

11. Select *your HTTP server*.

12. Press the **Stop** button.

13. Press the **Refresh** button until the status shows your server is stopped.

14. Enter "-nolastmod" in the **Server startup parameters** field.

15. Press the **Start** button.

Apache HTTP Server – V5R2 iSeries Server

1. Open your browser to http://<system>:2001.

2. Select **IBM HTTP Server for iSeries**.

3. In the **Server** list, select *your HTTP server*.

4. For the **Server area**, choose **Global configuration**.

5. Choose **Tasks and Wizards -> Serve New Directory wizard**. Press the **Next** button.

6. Choose **Static Web pages and files.** Press the Next button.

7. In the **Name** field, enter the actual location of your image directory. Do not add an asterisk to the end of the name. For example, we use */boats/homepage/*. Press the **Next** button.

8. In the **Alias** field, enter the path used within your HTML files to access images. This becomes an alias for the actual path containing the images. Do not add an asterisk to the end of the alias. For example, we use */boats/*. Press the **Next** button.

9. Press the **Finish** button.

10. Press the OK button.

11. In the **Server** list, select **All servers**.

12. Select *your HTTP server*.

13. Press the **Stop** button.

14. Press the **Refresh** button until the status shows your server is stopped.

15. Press the **Start** button.

Apache HTTP Server – V5R1 iSeries Server

1. Open your browser to http://<system>:2001.

2. Select **IBM HTTP Server for iSeries -> Configuration and Administration -> Configuration**.

3. In the **Configuration for server** list, select *your HTTP server*.

4. Under **Configuration structure**, choose **global settings**.

5. Under **Web Site Definition**, choose **Serve New Directory**

wizard. Press the **Next** button.

6. Choose **Static Web pages and files**. Press the **Next** button.

7. In the **Name** field, enter the actual location of your image directory. Do not add an asterisk to the end of the name. For example, we use */boats/homepage/*. Press the **Next** button.

8. In the **Alias** field, enter the path used within your HTML files to access images. This becomes an alias for the actual path containing the images. Do not add an asterisk to the end of the alias. For example, we use */boats/*. Press the **Next** button.

9. Press the **Finish** button.

10. Select **Administration -> Manage HTTP Servers**.

11. Select *your HTTP server*.

12. Press the **Stop** button.

13. Press the **Refresh** button until the status shows your server is stopped.

14. Press the **Start** button.

Assuming that our images are stored in /boats/homepage/images/, the source we use to include the company logo as part of our home page or template file is:

<img SRC="/boats/images/boathead.gif" height=43 width=614>

Relative links

The image location must be an absolute path beginning with the alias defined above. iSeries Access for Web does not currently support paths relative to the directory containing the current file. For example, the following will not work: <img SRC=" images/boathead.gif" height=43 width=614>. This is also true for relative paths to other HTML files. If we use a Web site development tool to build our HTML files, we need to go back and ensure that all paths to images and other HTML files are absolute paths accessible by the HTTP server.

Figure 4. Display database table with default template

Figure 5. Display database table with custom template

Template example

Figure 4 shows the contents of a database table using the default iSeries Access for Web template. **Figure 5** shows the same table using our customized template. We also use a customization setting to hide the navigation bar. To do this, we go to the iSeries Access for Web main page, choose **Customize -> Selected Profile -> your profile name -> General -> Navigation bar**, and select the Hide option.

Our customized template must include the following tag: %%CONTENT%%. **(Listing 1)**. When the page is displayed, this tag is replaced with the iSeries Access for Web content. In our example, the header is replaced with the company logo and a link to the home page. We now use the home page to navigate between pages, in place of the iSeries Access for Web navigation bar.

Home page example – Customer view

Figure 6 shows the customer view of our customized home page. It contains links to iSeries Access for Web functions. We discuss each link below. This home page demonstrates one way to implement each of the services listed. Often, there are multiple ways to accomplish a single task using iSeries Access for Web. You can find documentation on the

```
<HTML>
<BODY>
<table>
  <tr><td><img SRC="/boats/images/boathead.gif" height=43
width=614></td></tr>
  <tr><td align="right"><a
href="/webaccess/iWAHome">Home</a></td></tr>
</table>
<br>
%%CONTENT%%
<br>
<table width="100%" border="0" cellspacing="0" cellpadding="0"
mm_noconvert="TRUE">
  <tr align="center" bgcolor=#000000>
    <td width="50" bgcolor="#1B89AD"><a href="http://www.ibm.com">
      <font color=#ffffff>IBM</font></a>
    </td>
    <td width="1" bgcolor=#ffffff><img src="transparent.gif" width="1"
height="1"></td>
    <td width="70" bgcolor="#1B89AD">
      <a href="http://www.ibm.com/server/eserver/iseries/"><font
color=#ffffff>iSeries</font></a>
    </td>
    <td width="1" bgcolor=#ffffff><img src="transparent.gif" width="1"
height="1"></td>
    <td width="70" bgcolor="#1B89AD">
      <a href="http://www.ibm.com/server/eserver/iseries/support/"><font
color=#ffffff>Service</font></a>
    </td>
    <td width="1" bgcolor=#ffffff><img src="transparent.gif" width="1"
height="1"></td>
    <td width="750" bgcolor="#1B89AD"> </td>
  </tr>
</table>
<BODY>
</HTML>
```

Listing 1. Contents of our customized template

Figure 6. Home page – Customer view

supported URL interfaces at http://www.ibm.com/servers/eserver/iseries/access/web/inteface.

View available boats

The first link, *View available boats*, displays all available boats. The source for this link is:
View available boats

We use the database support to display the contents of a database table. The *caption* parameter identifies the customized table heading.

See boat details

The next link, *See boat details*, starts a traditional 5250 application. The source for this link is:
See boat details

We use the 5250 interface to start a 5250 session with the iSeries server. The *sessname* parameter identifies a configured 5250 session containing connection, appearance, and behavior settings. The *sessname* parameter also causes a new session to start each time the link is chosen. If we omit the sessname parameter, this link reconnects to the most recently used 5250 session for the current user. If there are no active sessions for the current user, a new session is started.

We use the *initmac* parameter to play a macro when the session is started. In this case, our macro signs onto the server and starts the 5250 application. If we don't want the sign-on information stored in the macro, we could have the customer sign onto the server and have the 5250 application start as the customer's initial program. To set the initial program, we use the change user profile command (CHGUSRPRF). In this case, we would also use the change system value command (CHGSYSVAL) to change the *Display sign on information* (QDSPSGNINF) system value to '0'. This prevents the sign-on status information from displaying before the initial program is started.

The 5250 user interface is just one way to handle existing 5250 applications. Another option is to use a tool, such as IBM Host Publisher or IBM WebFacing, to transform the application into a modern Web application.

Figure 7. Run traditional 5250 application

Figure 8. Display database query results

Order a boat

The next link, *Order a boat*, provides a way for customers to enter information to place an order. We use a database table insert to store the information. The source for this link is:

```
<a href="/webaccess/iWADbInsert?table=BOATS.ORDERS">Order a boat</a>
```

This Week's Special

The next link, *This Week's Special*, shows a video clip of the boat featured for the week. The source for this link is:

```
<a href="/webaccess/iWAFileDownload?filepath=/boats/carver.mpg">here</a>
```

We store the video clip in the iSeries Integrated File System and use the file download support to display it. We could also add links to other images stored in the integrated file system, such as pictures of the boat's interior.

Great Deals

The *Great Deals* link displays information about all boats priced under $75,000. The source for this link is:

```
<a href="/webaccess/iWADbExec/sqloutput.html?access=*PUBLIC&request=bargains">View our selection of modestly priced boats.</a>
```

We use a saved database request to return a subset of the contents of a database table. In preparation for building this link, we use the SQL Wizard to build a query to retrieve all boats costing less than $75,000 and order them by increasing price. We are interested in only a subset of the table columns. The resulting statement is:

```
SELECT "BNAME", "BFEET", "BYEAR", "BCOST", "BNT01"
FROM BOATS.BOATS
WHERE ( (BOATS.BOATS."BCOST" < 75000) )
ORDER BY "BCOST"
```

We use the HTML SQL output type to display the results. The HTML output type supports the use of a template file to display a custom header and footer around the results. In our case, we use the template created in "Template Example" above. To do this, we go to Run SQL, choose HTML as the output type, and choose Settings. Next, we set the Template file to /boats/homepage/temp1.html and we change the *Template tag* from <!—TABLE1 —> to %%CONTENT%%.

The *access* and *request* parameters identify a public shortcut to our saved database request. A public shortcut can be accessed by any user profile on the server, but only the user who created the request can modify or delete it.

Site Support

The *Site Support* link provides a way for customers to submit comments and questions. Our company could have someone monitoring these messages or it could have an application processing them. The source for this link is:

```
<a href="/webaccess/iWASendMessage">Send us a message</a>
```

We use the iSeries message support to send the messages.

Weather Conditions

The *Weather Conditions* link does not use any iSeries Access for Web support. It is part of this example to demonstrate that home page content is not restricted to iSeries Access for Web functions.

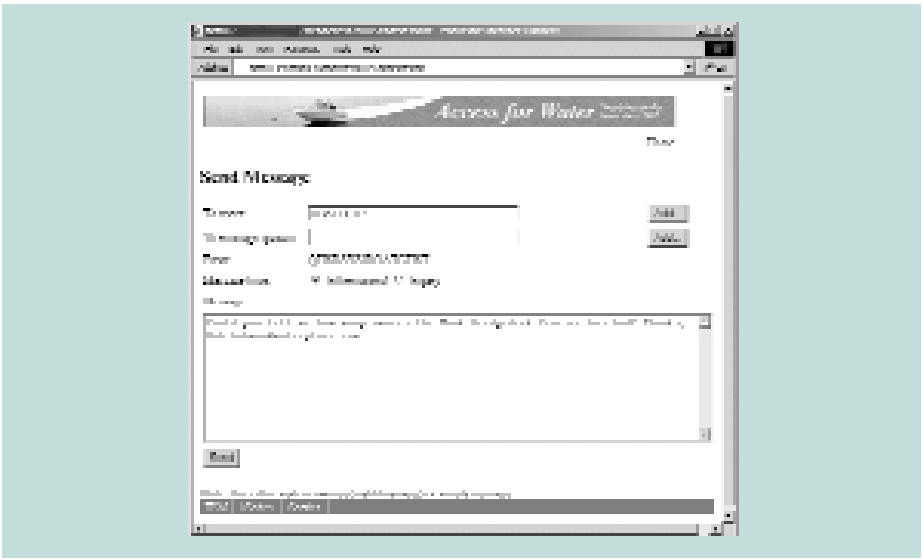

Figure 9. Send a message

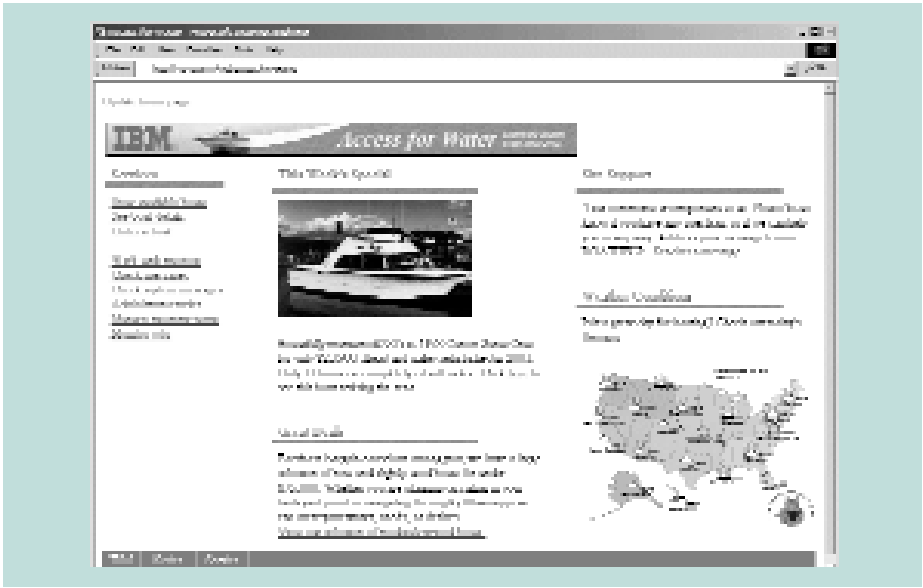

Figure 10. Home page – Administrator view

Home page example – Administrator view

Figure 10 shows the administrator view of our customized home page. It contains the links which are available from the customer view, plus additional links accessible by the company administrator.

Different content for different users

In our example, the only difference between the customer view and the administrator view is the existence of additional service links in the administrator view. We use a single HTML file to implement both pages. This is possible with the *include list* support of iSeries Access for Web. Like the %%CONTENT%% replacement tag in our template file, we have an include list replacement tag in our home page. The format of this tag is:
%%include list=*file*%%

file identifies the file containing list items to include as links in a table. This list of items can be tailored to an individual user, a group of users, or all users (*PUBLIC). When our home page is displayed, this tag is replaced with the appropriate set of links for the current user profile. You can find a sample include list in:
/QIBM/ProdData/Access/Web2/config/info.policies

Our example adds links for the BOATADMIN user profile. To do this, we add the following line to our home page:
<tr><td>%%include list=/boats/homepage/adminserv.policies%%</td></tr> See Listing 2 for content of the adminserv.policies file.

If we want to add links which only customers can access, we can add another profile section to this file.

When we create our include list, we need to use character references as necessary. For example, if we have a link with multiple parameters, we need to replace all & characters with & .

Replacement tags

iSeries Access for Web supports additional replacement tags in home page files:

%%TITLE%% is replaced with the page title.
%%USER%% is replaced with the authenticated user name.
%%SYSTEM%% is replaced with the name of the iSeries server being accessed.
%%VERSION%% is replaced with the version of iSeries Access for Web installed.

Update home page

The *Update home page* link exists purely as a design convenience. We will remove it when the home page is complete. When we save a new version of the home page, we use this link as a fast path to the page for updating the home page customization setting. When we press OK on the customize page, it takes us back to the updated home page. We use

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<QiwaPolicies>
  <profile name="BOATADMIN">
    <homepage>
      <listItem name="Work with invoices">
        <href>/webaccess/iWASpool?queue=BOATS/INVOICES</href>
      </listItem>
      <listItem name="Check messages">
        <href>/webaccess/iWAMessages?msgq=BOATS/COMMENTS</href>
      </listItem>
      <listItem name="Check system messages">
        <href>/webaccess/iWAMessages?msgq=QSYS/QSYSOPR</href>
      </listItem>
      <listItem name="Administrator tasks">
        <href>/webaccess/iWACommandList</href>
      </listItem>
      <listItem name="Manage incoming items">
        <href>/webaccess/iWAMyFolder</href>
      </listItem>
      <listItem name="Monitor jobs">
        <href>/webaccess/iWAJobList?jobtype=user</href>
      </listItem>
    </homepage>
  </profile>
</QiwaPolicies>
```

Listing 2. Contents of the adminserv.policies file

Figure 11. View printer output

the %%USER%% replacement tag to update the home page file for the current user. By using the replacement tag, we can use this link to test the customer view as well as the administrator view. This assumes that we enable the customer user profile to update the home page setting during the home page design phase.

The source for this link is: Update home page

Administrator services

In the following topics, we discuss the services available exclusively to the administrator. We do not include these links directly in the home page file, since they are specified in the include list file. We discussed this file in "different content for different users" above.

Work with invoices

The *Work with invoices* link displays current customer invoices. To implement this, we use the printer output support to display all spooled files in an output queue. We also use the customize support to limit the columns displayed and the actions available. The only available actions we use are TIFF and PDF. We use the TIFF action to view invoices. We use the PDF action to mail a PDF version of the invoice to the customer.

Check messages

The *Check messages* link displays questions and comments sent by customers. To implement this, we use the message support to display the contents of a message queue.

Check system messages

The *Check system messages* link displays iSeries system operator messages. To implement this, we use the message support to display messages in the QSYSOPR message queue.

Administrator tasks

The *Administrator tasks* link shows the list of commonly-run tasks. To implement this, we use the command support to display the list of saved commands. In this case, we saved a command to back up the contents of the BOATS library.

We can use the prompt action to view or change the command parameters. In our case, we submit the command as a batch job since it could take a long time to complete.

Manage incoming items

The Manage incoming items link shows items needing the administrator's attention. For this link, we use the folder support to display items in the administrator's folder. In this case, we have the results of a database query for detecting low inventory.

Monitor jobs

The *Monitor jobs* link displays the administrator's active jobs. For this link, we use the job support to show active jobs for the current user. If we submitted the save

Figure 12. View messages on message queue

Figure 13. Display command list

Figure 14. Display items in personal folder

Figure 15. View active jobs

library command as a batch job, we could use this link to monitor the status of the job. We could also use the customize function to switch the type of jobs in the list from active to another status, such as complete.

As you can see from this example, iSeries Access for Web provides a wide scope of functionality and a great deal of flexibility with the customization support built into the product. You can use this support to quickly and easily build a Web site to fit your company's needs. For more information on iSeries Access for Web, including ordering information, see the product Web site at http://www.ibm.com/servers-eserver/iseries/access/web/. EJ

View this article online at www.the400group.com/aej