Serving tn5250j in Web Documents from the HTTP Server for iSeries

Bill (toeside) Middleton,

1 Introduction

The iSeries (AS/400) operating system OS/400, as part of its TCP/IP application suite, includes a built-in web server called the HTTP Server for iSeries. By configuring and starting an instance of this server, one can serve HTML documents that allow users to run a display sessions from browser windows.

This function is particularly useful in situations where it is not practical to deploy a connectivity product like Client Access Express.

For example, if you're an iSeries administrator, developer or power user who roams far and wide in the course of your activity, there's a certain comfort in knowing that with just a browser and some kind of network access, you can get a green-screen session going to the host. tn5250j's ability to run as a Java applet is the key.

2 Prerequisites

Setting up the HTTP Server is an administrative task that requires *IOSYSCFG special authority. If you don't have this authority, you will need to work closely with an administrator who does.

You will also need the following:

1. A workstation with a Java-enabled web broswer that has TCP/IP network access to the host AS/400. This is also required for any client computer that will be using the tn5250j applet.
2. A general understanding of the Integrated File System (IFS) and how it provides the Unix-like directory and file naming convention to OS/400 data resources. The File Systems and Management topic on IBM's iSeries Information Center web site explores covers this in more detail:

   http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/info/rzaiaifsover.htm

To begin exploring the IFS from the OS/400 command line, enter the command GO FILESYS.

3. - A method to copy the tn5250j application, HTML, and other "stream" files to the IFS. This can be done using FTP or via a network drive mapped to an IFS directory.

   To use FTP, the host must have the FTP server active. Use command STRTCPSVR SERVER(*FTP) to start it. In order for FTP client to reach the IFS root and its subdirectories, "name format 1" must be used. The FTP server can be set to use this format via this command: CHGFTPA NAMEFMT(*PATH). Alternatively, the FTP client can toggle the name format using the FTP subcommand 'na 1'. See this link for more information on FTP:

   http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/info/RZAIQRZAIRQGETSTART.HTM

   To map network drives, the desktop OS must have a set of SMB (system message block / Microsoft Networking) protocol drivers installed. For Windows desktops, these are installed when TCP/IP and the Client for Microsoft Networks are configured in Network.

   On the host system, the AS/400 NetServer must be started. Use command STRTCPSVR SERVER(*NETSVR) to start it. See this link for more information on NetServer:

   http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/info/RZAIINETSERVERADM.HTM

   Note to Windows 95/98/Me users: To successfully map a network drive into the IFS, the user ID used for your Windows logon *must* match your AS/400 user profile. To be seamless, the passwords should match also.
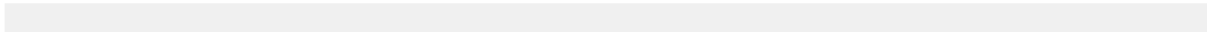
4. - (optional) A Windows workstation with the IBM Client Access Express Operations Navigator administrative tool installed. OpNav provides a consolidated GUI interface for administering the iSeries. All of the host admin tasks required in this guide can be done point-and-click style with OpNav rather than using display session commands. This guide, however, does *not* include task step instuctions using OpNav. For more information on Operations Navigator:

   http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/info/rzahgicopnav.htm

3 Creating Directories

You will need a directory structure in the IFS to house tn5250j and the HTML documents you plan to serve. Users will also need at least read access to the directories and/or the files contained there.

Say for example, you would like to create the following directory hierarchy:

```
MyStuff ---+--- ftp  ---+
           |
           |
           |
           +--- java ---+
           |            |
           |            +--- tn5250j
           |
           +--- www  ---+
                        |
                        +--- images
```

The 'MyStuff' directory would be secure from public access, but public read access would be allowed to 'ftp', 'java', 'www' and their subdirectories. The structure can be created with this set of OS/400 commands:

```
CRTDIR DIR('MyStuff') DTAAUT(*EXCLUDE) OBJAUT(*NONE)
CRTDIR DIR('MyStuff/ftp') DTAAUT(*RX) OBJAUT(*OBJREF)
CRTDIR DIR('MyStuff/java') DTAAUT(*RX) OBJAUT(*OBJREF)
CRTDIR DIR('MyStuff/www') DTAAUT(*RX) OBJAUT(*OBJREF)
CRTDIR DIR('MyStuff/java/tn5250j')
CRTDIR DIR('MyStuff/www/images')
```

Once these directories are created, they can be subsequently managed using Work with Object Links. Enter this command to start:

```
WRKLNK
```

The above can also be accomplished (more or less) using your FTP client, Operations Navigator, Window Explorer or your desktop OS file and directory management function (with network drive mapping.)

4 Copy tn5250j to the IFS

You will need to place the tn5250j application files into the into the directory from which it will be served by the HTTP Server. In our example, these files (tn5250j.jar, etc.) will be copied/uploaded to '/MyStuff/java/tn5250j'.

Use your FTP client or desktop file management function to copy the files.

5 Create an HTML Document

Using your favorite text editor, create a text document with an 'htm' or 'html' extension that contains the
```
<APPLET>
```

tags needed to load tn5250j into the client's browser window.

Here's a simple example:

```
<HTML>
<HEAD>
<TITLE>AS/400 Display Session</TITLE>
</HEAD>
<BODY>
<H2>AS/400 Display Session</H2>
```

The below Telnet 5250 session is made possible by tn5250j, an open-source Java application.

If all you see is a grey box, it may be because Microsoft took away automatic support for Java in your browser. Click here to get Sun's Java Runtime Edition (JRE). Install it, then restart Internet Explorer.

```
<APPLET
  CODEBASE = "/java/tn5250j"
  CODE     = "org.tn5250j.My5250App.class"
  NAME     = "tn5250j - Java Telnet 5250 Client "
  ALT      = "tn5250j cannot start. Browser may not support Java."
  WIDTH    = 600
  HEIGHT   = 400
  HSPACE   = 0
  VSPACE   = 0
  ALIGN    = top
  ARCHIVE  = "tn5250j.jar"
>
<PARAM NAME ="host" VALUE= "192.168.50.1">
<PARAM NAME ="-e" VALUE= " ">
</APPLET>

</BODY>
</HTML>
```

You may notice that the CODEBASE parameter value seems to be incorrect for our example, however our HTTP server configuration will route the request to the 'MyStuff' directory correctly.

Also, should modify the host address value to be the IP address or host name of your AS/400. The IP address for your host system can be determined by entering the CFGTCP command, then selecting option 1, "Work with TCP/IP interfaces".

Save or upload your document into the IFS directory from which it will be served. For our example, this is '/MyStuff/www/AS400Applet.htm'

6 Configuring the HTTP Server

> **Note:**
>
> Depending on where you're looking, IBM calls this server the "HTTP Server for iSeries", the "IBM HTTP Server for AS/400", and the "HTTP Server (original)". It's all the same. From OS/400 version 5 release 1 and forward, there is also the "HTTP Server (powered by Apache)". That is a different product and is not covered here.
>
> As an adjunct to this section, view the "Getting Started with HTTP Server" topic found at this URL:
>
> http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/info/RZAIEGET.HTM

This task requires starting the ADMIN instance of the HTTP Server, then using your web browser to set up a custom configuration. This configuration is later used to start an instance of the server that serves your tn5250j applet document.

1) Start the ADMIN server instance by entering the command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

2) The ADMIN server listens on port 2001, so point your browser to a URL like this, substituting the correct IP or host:

```
http://192.168.50.1:2001/
```

3) Follow the "IBM HTTP Server for AS/400" hyperlink.

4) Select the "Configuration and Administration" link.

5) Expand the "Configurations" selection, then choose the "Create configuration" option. Type a name for a new configuration. For this example we'll use 'TN5250J'. Choose the "Create based on existing configuration: CONFIG" radio button. Click the "Apply" button. You should receive confirmation that the configuration profile was created.

6) Ensure the 'TN5250J' configuration is selected in the drop-down list under "Configurations" in the lefthand frame. Select "Basic". If you want your server to listen on a specific port (the way ADMIN listens on 2001), enter that port number for the "Default port". If you leave it blank it will listen on the default HTTP port of 80. For our example, we'll leave the default (blank).

If so inclined, you can update other options on this page. Help for the page is provided by clicking the small '?' box in the upper right corner of the frame. When done, click the "Apply" button.

7) Expand the "Directories and Welcome Page" selection, then choose "Welcome Page". Edit

the list so that index 1 is a home page HTML document. It could be 'Welcome.html' or 'index.html' or even 'AS400Applet.htm'. For our example we'll set it as the latter. You'll likely leave the "Server IP address or host name" option blank. Set the "Directory list viewing" options as you see fit. Click the "Apply" button.

8) Expand the "Request Processing" selection, then choose "Request routing". Use the dialog in the righthand frame to set up routing directives. For our example, we'll add these 4 "Pass" directives:

```
Index   Action   URL template   Replacement file path
-----   ------   ------------   ---------------------
  1      Pass    /              /MyStuff/www/AS400Applet.htm
  2      Pass    /ftp/*         /MyStuff/ftp/*
  3      Pass    /java/*        /MyStuff/java/*
  4      Pass    /*             /MyStuff/www/*
```

> **Note:**
> Note that if you had chosen a home page named 'index.html' and used it in the first directive's file path, a hyperlink from the home page to 'AS400Applet.htm' would be located because of directive #4.

Once the list is set up, click the "Apply" button.

9) Expand the "Server Instances" selection, then choose "Create server instance". For "Server instance:", type a name to use when starting your custom server instance. For the example we'll use 'MY5250'. From the drop-down list, select the configuration name from step 5, such as 'TN5250J'. Click the "Create" button. A confirmation message is issued.

The configuration is now complete. You are now ready to start your new server instance.

7 Starting and Testing the Server Instance

One method to start your server is to continue from ADMIN pages used in the above section:

From the expanded "Server Instances" selection in the lefthand frame, choose "Work with server instances". Select your instance name from step 9 above, e.g. 'MY5250', then click the "Start" button. Obviously you may use this same page to stop or restart it.

A second method is from the green screen command line using this command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(MY5250)
```

Once the server instance starts, point your browser to your host system using a URL like this:

```
http://192.168.50.1/
```

Or, let's say you use a host name of SYSTEM1 (as opposed to a straight IP address) and that in step 6 above you used a non-standard port of '2345'. You would use this for your browser's address:

```
http://SYSTEM1:2345/
```

The AS/400 will now send your browser a login request. Enter your AS/400 user ID and password.

At this point, your browser should render all (or most) of your home page. If it includes the tn5250j applet, it will initialize and attempt to open a telnet connection back to the host. You may receive a second login dialog. Complete this with your AS/400 user ID and password. tn5250j will now start the telnet session and display it on the page.

###