IBM System i™

Session: 410068

Agenda Key: 35MI

System i Access for Web Setup and Configuration

http://www.ibm.com/eserver/iseries/access/web/

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i want stress-free IT.
i want control.
i want an i.

System i Access for Web Sessions/LABs

22CC	409136		Get to the Web Fast with System i Access for Web
25LA	520027		LAB: Getting Started with System i Access for Web
32MI	409160		Database Access with System i Access for Web
33MI	500121		System i Access for Web – Security Considerations
35MI	410068		System i Access for Web – Setup and Configuration
36MF	440281		Run 5250 through a Browser using System i Access for Web
41LA	450047		LAB: System i Access for Web: Installation and Configuration
42LA	450047		LAB: System i Access for Web: Installation and Configuration
44MN	420016		Build a Home Page to i5/OS using System i Access for Web
45MN	420015		Tips and Techniques for System i Access for Web
53LA	420063		LAB: Test Drive System i Access for Web
55MM	470021		System i Access for Web runs in a Portal
56MM	480144		Programming with System i Access for Web

 Voted "Best Traditional Lab" at Spring and Fall 2005 COMMON

Try out System i Access for Web for yourself!

Start your browser and connect to the following web site:

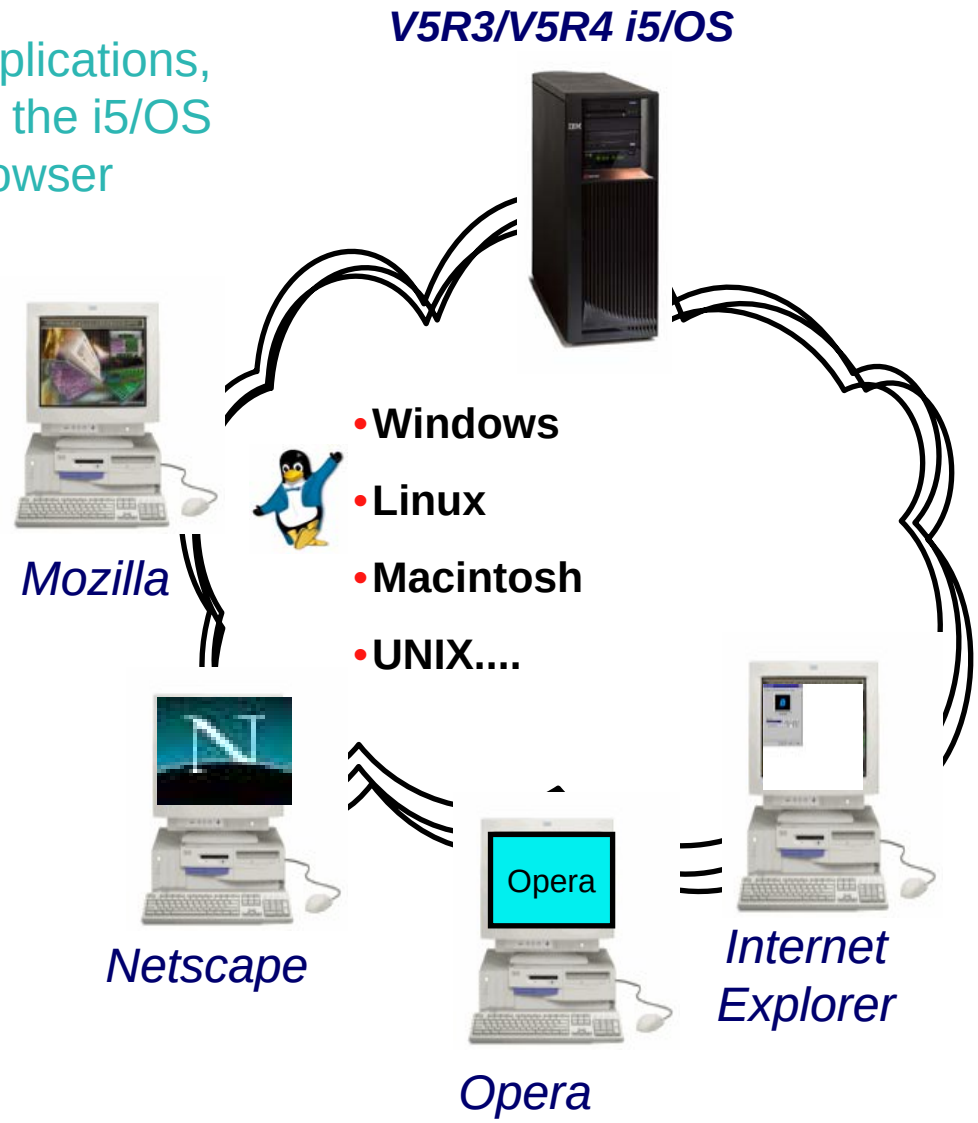
http://iseriesd.dfw.ibm.com/webaccess/iWAHome (case sensitive)

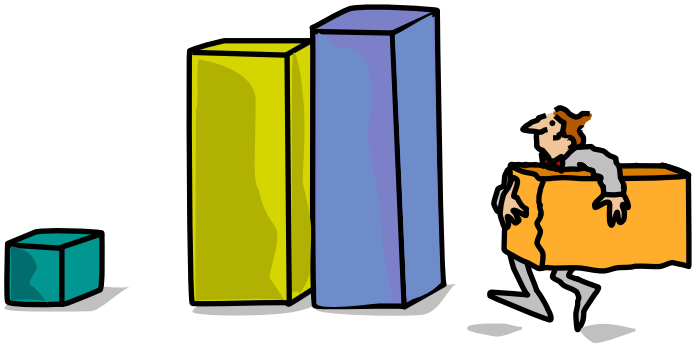
User ID = WUSER **Password = DEMO2PWD**	**This shows the basic look of Access for Web as we ship it. You can try various functions -- including working with printer output, creating database requests, etc. Click on the 5250 tab, sign onto the i5/OS, then start an RPG application called BOATS and run it.**
User ID = BOATADMIN **Password = DEMO2PWD**	**This is an example of how a customer might design a web page for their use. You will see that an end user could start the same BOATS application by clicking on the 5250 session -- or they could have used WebFacing to run the application. You will also see other links that would let a user work with spoolfile information, work with IFS, run database requests, etc..**

What is System i Access for Web?

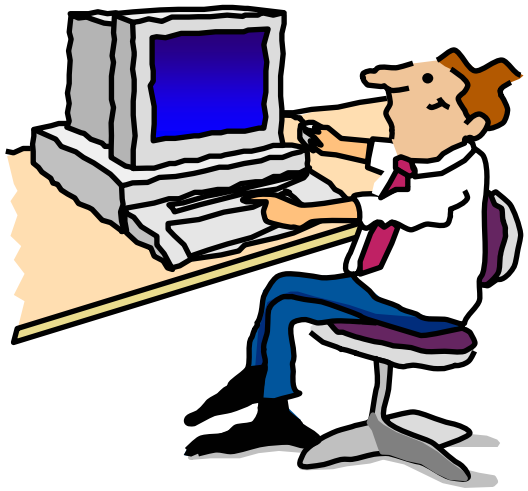
End users can leverage business information, applications, and resources across an enterprise by extending the i5/OS resources to the client desktop through a web browser

- Provides access to i5/OS through a browser
  - 5250 access
  - Access to database, integrated file system, printers, output queues, jobs
  - Can run batch commands and send/receive messages
- It has the following advantages:
  - Is System i based
  - Requires only a browser on the client, no configuration required at desktop, no applets installed on desktop
  - Uses industry standard protocols - HTTP, HTTPS and HTML





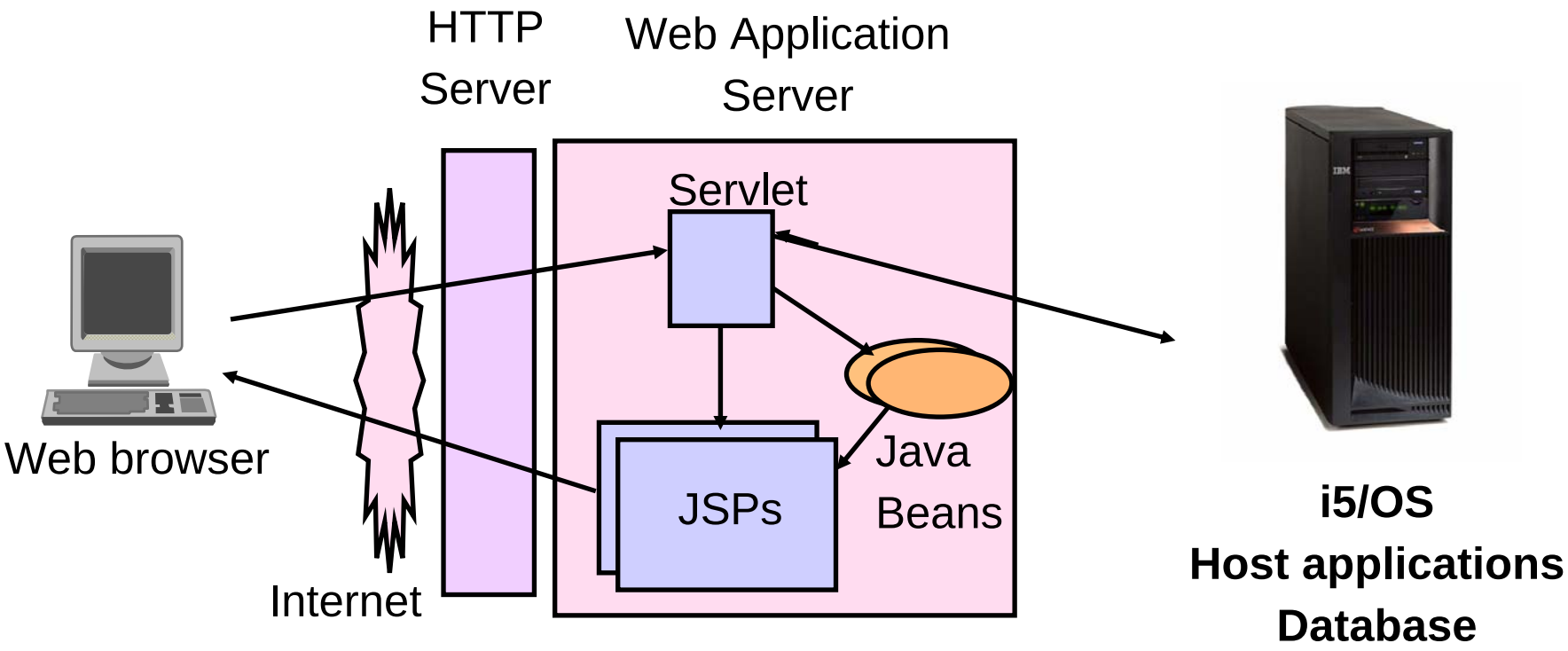
Ordering & Packaging



System i Access Family - Packaging

V5R4 5722-XW1 System i Access Family	V5R3 5722-XW1 System i Access Family
System i Access for Windows, 5722-XE1, V5R4	System i Access for Windows, 5722-XE1, V5R3
System i Access for Web, 5722-XH2, V5R4	System i Access for Web, 5722-XH2, V5R3
	HATS Limited Edition V5.0, 5724-F97-01
System i Access for Linux, 5722-XL1	System i Access for Linux, 5722-XL1, V1.10
System i Access for Wireless, 5722-XP1, V5R4	System i Access for Wireless, 5722-XP1, V5R3
	V5R3 customers not wanting to upgrade to i5/OS V5R4 but want the new V5R4 System i Access Family clients can order no-charge Feature No. 2648 of Product No. 5722-XW1

First you need a web-serving environment



Pieces of the web-serving environment

- HTTP Server (powered by Apache)
  - Front door for your system into your web serving environment
  - HTTP/HTTPS (SSL)
  - Listens for web requests on a specific TCP/IP port
  - Routes web requests between an end-user browser and a web application sever
- Web application server
  - WebSphere Application Server
  - Provides a java virtual machine environment where web applications run
- Web application
  - System i Access for Web
  - Provides specific function that users access using a web browser
  - Deployed/installed within a web application server
- WebSphere Portal/Workplace
  - Web application deployed to WebSphere Application Server
  - Provides environment in which portlets are deployed and run.

Client Browser Requirements

- These browsers have been tested with **V5R4** iSeries Access for Web:
  - Firefox 1.0.2 (Windows, Linux)
  - Internet Explorer 6.0 with Service Pack 1 (Windows)
  - Opera 7.54 (Windows, Linux)
  - Mozilla 1.7 (Windows, Linux, AIX)
  - Other browsers that support the current HTTP and HTML specifications should work, but have not been tested with System i Access for Web.

- These browsers have been tested with **V5R3** iSeries Access for Web:
  - Netscape 4.7 (AIX)
  - Netscape 7.0 (Windows, Linux)
  - Internet Explorer 6.0 with Service Pack 1 (Windows)
  - Opera 7.11 (Windows, Linux)
  - Mozilla 1.3 and 1.4 (Windows, Linux)
  - Other browsers that support the current HTTP and HTML specifications should work, but have not been tested with System i Access for Web.

- **Set browser to allow 'Cookies'**
  - **System i Access for Web requires that the web browser allow cookies. Set the cookie configuration option to allow cookies.**

System i Hardware Requirements

- Models/Processor features/Memory

  Refer to the web application server documentation to determine what server models, processor features, and the memory requirements are for your web serving environment

  - WebSphere Application Server
    - http://www.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/
  - ASF Tomcat
    - http://www.ibm.com/servers/eserver/iseries/software/http/
  - WebSphere Portal Express/Express Plus for iSeries V5.0.2.2
    - http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/index.html
  - WebSphere Portal V5.1.0.1
    - http://publib.boulder.ibm.com/infocenter/wp51help/index.jsp
  - WebSphere Portal V6.0
    - http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp
  - Workplace Services Express V2.5
    - http://publib.boulder.ibm.com/infocenter/wseic/v2r5/index.jsp
  - Workplace Services Express V2.6
    - http://publib.boulder.ibm.com/infocenter/wseic/v2r6/index.jsp

- Server disk space

Server disk space	Software product
275MB	V5R3 System i Access for Web
470MB	V5R4 System i Access for Web

i5/OS Software Requirements

Product Number	Product Name	Option	$
5722-SS1	V5R3 System i Access for Web: V5R2 OS/400 or V5R3 i5/OS V5R4 System i Access for Web: V5R3 and later i5/OS	Base	w/HW
5722-SS1	i5/OS - Extended Base Directory Support	3	N/C
5722-SS1	i5/OS - AFP Compatibility Fonts	8	N/C
5722-SS1	i5/OS - Host Servers	12	N/C
5722-SS1	i5/OS QShell Interpreter	30	N/C
5722-SS1	If you plan to use Secure Sockets Layer (SSL)… • i5/OS Digital Certificate Manager • Cryptographic Service Provider	 34 35	N/C N/C
5722-DG1	IBM HTTP Server for iSeries	Base	N/C
5722-JV1	Developer Kit for Java Developer Kit for Java Version 1.3 Developer Kit for Java Version 1.4 Developer Kit for Java Version 5.0 J2SE 5.0 32 bit (**Check WebSphere doc for required version**)	Base 5 6 7 8	N/C N/C N/C N/C
5722-JC1	Toolbox for Java	Base	N/C
5722-TC1	TCP/IP Connectivity Utilities for iSeries	Base	N/C

i5/OS Software Requirements (continued)

Product Number	Product Name	Option	$
5722-XW1	System i Access Family	Base	$
5722-XH2	System i Access for Web • Ships with 5722-XW1 iSeries Access Family • V5R3 iSeries Access for Web runs on OS/400 V5R2 and i5/OS V5R3 • V5R4 iSeries Access for Web runs on i5/OS V5R3 and V5R4	Base	part of XW1
5722-IP1	IBM Info Print Server (**Optional** -- enables best PDF output but **is not** required to view PDF output)	Base	$

i5/OS Software Requirements (continued)

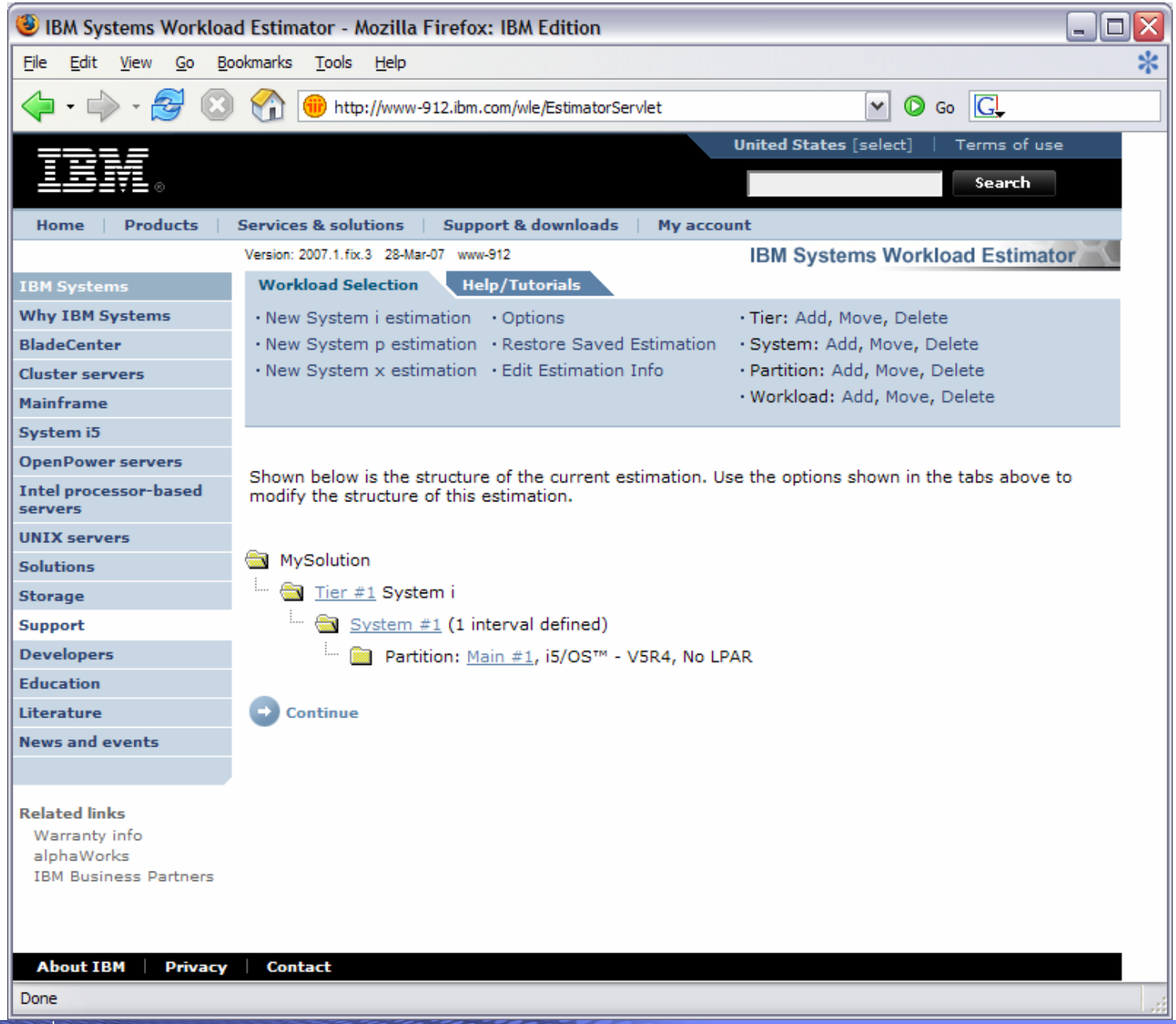
Product Number	Product Name	Option	$
	One, or more, of the following web servers		
5733-W61	• WebSphere Application Server V6.1 for i5/OS (all three editions)		
5733-W60	• WebSphere Application Server V6.0 for OS/400 (all three editions)	See	
5722-E51	• WebSphere Application Server V5.1 - Express for iSeries	documentation	
5733-W51	• WebSphere Application Server V5.1 for iSeries (Base and ND)		
5722-IWE	• WebSphere Application Server V5.0 - Express for iSeries		
5733-WS5	• WebSphere Application Server V5.0 for iSeries (Base and ND)		
5722-DG1	• integrated Web application server • Apache Software Foundation Tomcat		
*	• WebSphere Portal for iSeries (Express and Express Plus) V5.0.2.2		
*	• WebSphere Portal Enable for Multiplatforms V5.1.0.1		
*	• WebSphere Portal V6.0		
*	• IBM Workplace Services Express V2.5, V2.6		

- Refer to the documentation for the individual web serving environments additional requirements that may not be listed above.
  - WebSphere http://www.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/
  - Portal V5.0.2.2 http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/index.html
  - Portal V5.1.0.1 http://publib.boulder.ibm.com/infocenter/wp51help/index.jsp
  - Portal V6.0 http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp
  - Workplace V2.5 http://publib.boulder.ibm.com/infocenter/wseic/v2r5/index.jsp
  - Workplace V2.6 http://publib.boulder.ibm.com/infocenter/wseic/v2r6/index.jsp
  - ASF Tomcat http://www.ibm.com/servers/eserver/iseries/software/http/

Performance...???

- Does running System i Access for Web affect performance?
  - Products like System i Access for Web don't put much load on i5/OS...
- How does the web application server affect performance?
  - If you have an older, under-powered System i5, then performance may not be good...if you have a newer, bigger System i5, then performance won't be an issue (unless you already are running your System i5 at maximum capacity).
  - Use the IBM Systems Workload Estimator to see what performance will be if WAS is added to your System i5 at: http://www-912.ibm.com/wle/EstimatorServlet
  - There is a Workload Estimator for WebFacing Workloads. iSeries Access for Web will be similar (depending on what functions of System i Access for Web are being used).
- Fine-tuning your web application server
  - If you are running WebSphere Application Server, refer to Chapter 4 of the Buying and Selling Guide for WAS. It has many good tips for getting WAS to perform optimally.
  - Go to the WebSphere Application Server web page at http://www.ibm.com/servers/eserver/iseries/software/websphere/index2.html

http://www-912.ibm.com/wle/EstimatorServlet



3 Options setting up Access for Web environment

- Step by Step
  - Greatest flexibility
  - Choice of WebSphere Application Server version
  - May already have components on your system

- Express Runtime Web Environments
  - All components provided in a single package
  - Greatly simplifies the complexity of the environment
  - Most automated
  - Running web environment when installation completes
  - Desktop icon linking to the deployed web environment

- Integrated Web application server
  - Simplest to set up
  - Preconfigured HTTP web server

Step by Step
Formula for successful setup and configuration

- You need to do the following in this order:

1. Decide what web application server environment to run
2. Install System i Access for Web on your i5/OS system
3. Verify, load, apply any additional PTFs
   - Cumulative PTF package
   - WebSphere, HTTP web server for i5/OS
   - System i Access for Web
4. Setup web-serving environment
5. Configure System i Access for Web
6. Verify the installation and configuration

Information resources:
- These steps are detailed in System i Access for Web InfoCenter information
- 450047 LAB: System i Access for Web Installation and Configuration
- Examples at http://www.ibm.com/servers/eserver/iseries/access/web/doc.html

Decide what web application server environment to run

IBM WebSphere

Step by Step

Decide what web application server environment to run

- System i Access for Web can be deployed to a variety of web serving environments.

- Servlets
  - WebSphere Application Server V6.1 for i5/OS (Express, Base, Network Deployment)
  - WebSphere Application Server V6.0 for OS/400 (Express, Base, Network Deployment)
  - WebSphere Application Server V5.1 - Express for iSeries
  - WebSphere Application Server V5.1 for iSeries (Base and Network Deployment)
  - WebSphere Application Server V5.0 - Express for iSeries
  - WebSphere Application Server V5.0 for iSeries (Base and Network Deployment)
  - ASF Tomcat
    - The ASF Tomcat included as part of the no-charge IBM HTTP Server for iSeries (5722-DG1)
    - ASF Tomcat PTFs are delivered within the IBM HTTP Server for iSeries Group HTTP PTFs.

- Portlets
  - IBM WebSphere Portal – Express/Express Plus for Multiplatforms V5.0.2.2
  - IBM WebSphere Portal Enable for Multiplatforms V5.1.0.1
  - IBM WebSphere Portal V6.0
  - IBM Workplace Services Express V2.5, V2.6

Install System i Access for Web on your i5/OS system

Step by Step
Install System i Access for Web on your i5/OS system

- Installing System i Access for Web
  - Use the RSTLICPGM command to restore (install) product 5722-XH2
  - RSTLICPGM LICPGM(5722XH2) DEV(OPT01) OPTION(*BASE)

- The restore will...
  - Create library QIWA2 and objects in QIWA2
  - Create file system directories
    - /QIBM/ProdData/Access/Web2/...
    - /QIBM/UserData/Access/Web2/...
  - Set basic ownership/authorities for library and file system objects

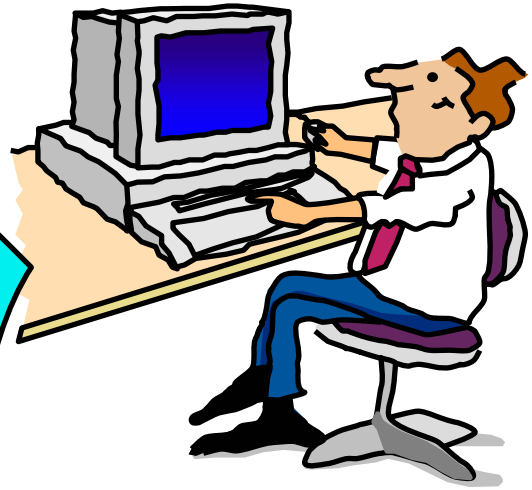
- The restore will not...
  - Make any changes to HTTP server configurations
  - Make any changes to web application server configurations
  - Enable use of System i Access for Web

Step by Step

Install System i Access for Web on your i5/OS system (continued)

- No coexistence between V5R2, V5R3, and V5R4 System i Access for Web

- If System i Access for Web is already installed on the i5/OS system…
  - Installing/upgrading to a later release will replace the installed version.
  - QIWA2/CFGACCWEB2 must be run after installing a newer release of System i Access for Web.
  - Running CFGACCWEB2 enables/deploys new functions.
  - The web application server must be restarted after CFGACCWEB2 is run.
  - Refer to the InfoCenter information for information on upgrading from a previous release to V5R4 System i Access for Web.



Verify, load, apply any additional PTFs

Step by Step
Verify, load, apply any additional PTFs

- Each component of the web application serving environment has PTFs
  - WebSphere Application Server
  - i5/OS Cumulative PTF package
  - HTTP web server
  - WebSphere Portal/Workplace Services Express
  - System i Access for Web
- PTFs for the above components should be verified and updated as needed

Step by Step
Verify, load, apply any additional PTFs (continued)

- WebSphere Application Server

  – http://www.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/
  – Click the PTFs link, click the link for i5/OS release/WebSphere version

  – V5R4 i5/OS
    - WRKPTFGRP SF99323 v6.1 for i5/OS
    - WRKPTFGRP SF99312 v6.0 for OS/400
    - WRKPTFGRP SF99311 v5.1 Express for iSeries
    - WRKPTFGRP SF99308 v5.1 Base Edition
    - WRKPTFGRP SF99309 v5.1 Network Deployment Edition

  – V5R3 i5/OS
    - WRKPTFGRP SF99322 v6.1 for i5/OS
    - WRKPTFGRP SF99301 v6.0 for OS/400
    - WRKPTFGRP SF99275 v5.1 Express for iSeries
    - WRKPTFGRP SF99285 v5.1 Base Edition
    - WRKPTFGRP SF99286 v5.1 Network Deployment Edition
    - WRKPTFGRP SF99272 v5.0 Express for iSeries
    - WRKPTFGRP SF99287 v5.0 Base Edition
    - WRKPTFGRP SF99288 v5.0 Network Deployment Edition

Step by Step

Verify, load, apply any additional PTFs (continued)

- i5/OS Cumulative PTF package
  - The WebSphere Application Server group PTF identifies an i5/OS Cumulative PTF package.
  - The i5/OS PTF package specified is the level the WebSphere group PTF was tested with.
  - You may be able to successfully run with an earlier or later cumulative PTF package.

Step by Step

Verify, load, apply any additional PTFs (continued)

- HTTP web server
  - http://www.ibm.com/servers/eserver/iseries/software/http
    - Click the Support tab
  - V5R4 i5/OS
    - WRKPTFGRP SF99114
  - V5R3 i5/OS
    - WRKPTFGRP SF99099

Step by Step
Verify, load, apply any additional PTFs (continued)

- WebSphere Portal/Workplace Services Express
  - Refer to the Portal and Workplace Information Center documentation
  - IBM WebSphere Portal – Express/Express Plus for iSeries V5.0.2.2
    - http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/index.html
  - IBM WebSphere Portal V5.1.0.1
    - http://publib.boulder.ibm.com/infocenter/wp51help/index.jsp
  - IBM WebSphere Portal V6.0
    - http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp
  - IBM Workplace Services Express V2.5
    - http://publib.boulder.ibm.com/infocenter/wseic/v2r5/index.jsp
  - IBM Workplace Services Express V2.6
    - http://publib.boulder.ibm.com/infocenter/wseic/v2r6/index.jsp

Step by Step
Verify, load, apply any additional PTFs (continued)

- System i Access for Web
  - http://www.ibm.com/eserver/iseries/access/web/servicepacks.htm

  - V5R4 - **SI25551**
    - Contains support for WAS V6.1, Workplace Services Express V2.6, Portal V6.0, integrated web application server
    - Linux i386.rpm - SI24993
    - Linux ppc.rpm - SI24994
    - Linux ppc64.rpm - SI24995
    - Linux x86-64.rpm - SI24996
    - AFP Plugin Viewer - SI22919

  - V5R3 - **SI23771**
    - Contains support for WAS V6.1, WAS V6.0, Portal V5.1.0.1, Workplace Services Express V2.5
    - Linux i386 rpm - SI24517
    - Linux ppc rpm - SI24518
    - AFP Plugin Viewer - SI14371

  - Always check the cover letter special instructions, often will have to run CFGACCWEB2 to enable changes.
  - Always check the website for latest PTF numbers

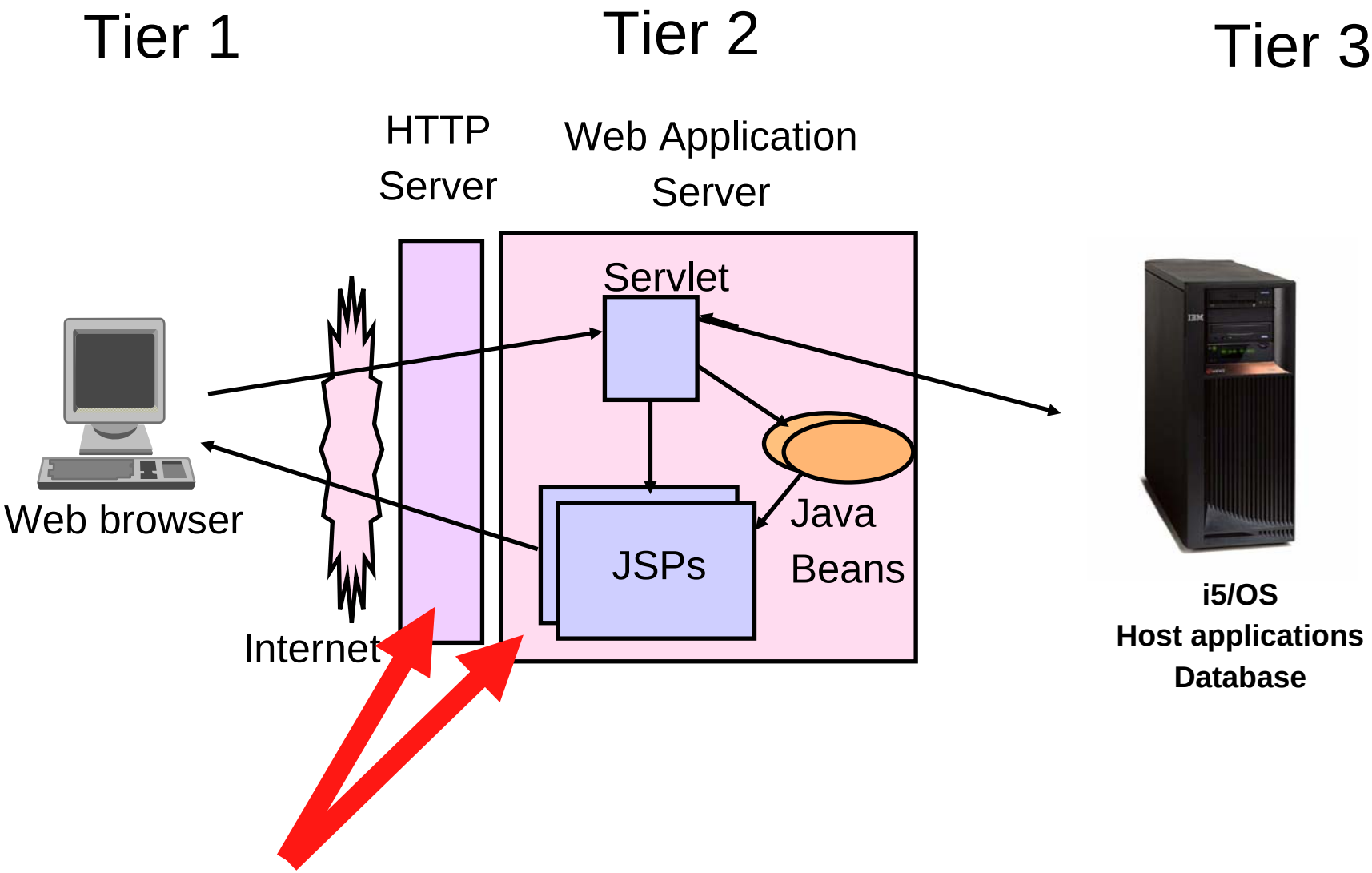
Setup up web-serving environment

HTTP Server for iSeries

IBM WebSphere

Step by Step

Setup web-serving environment



Step by Step
Setup web-serving environment (continued)

- HTTP web server
  - Front door for into your web serving environment
  - HTTP/HTTPS (SSL)
  - Listens for web requests on a specific TCP/IP port
  - An HTTP server is configured to "talk" to a specific web application server
  - Routes web requests between and end-user browser and a web application sever

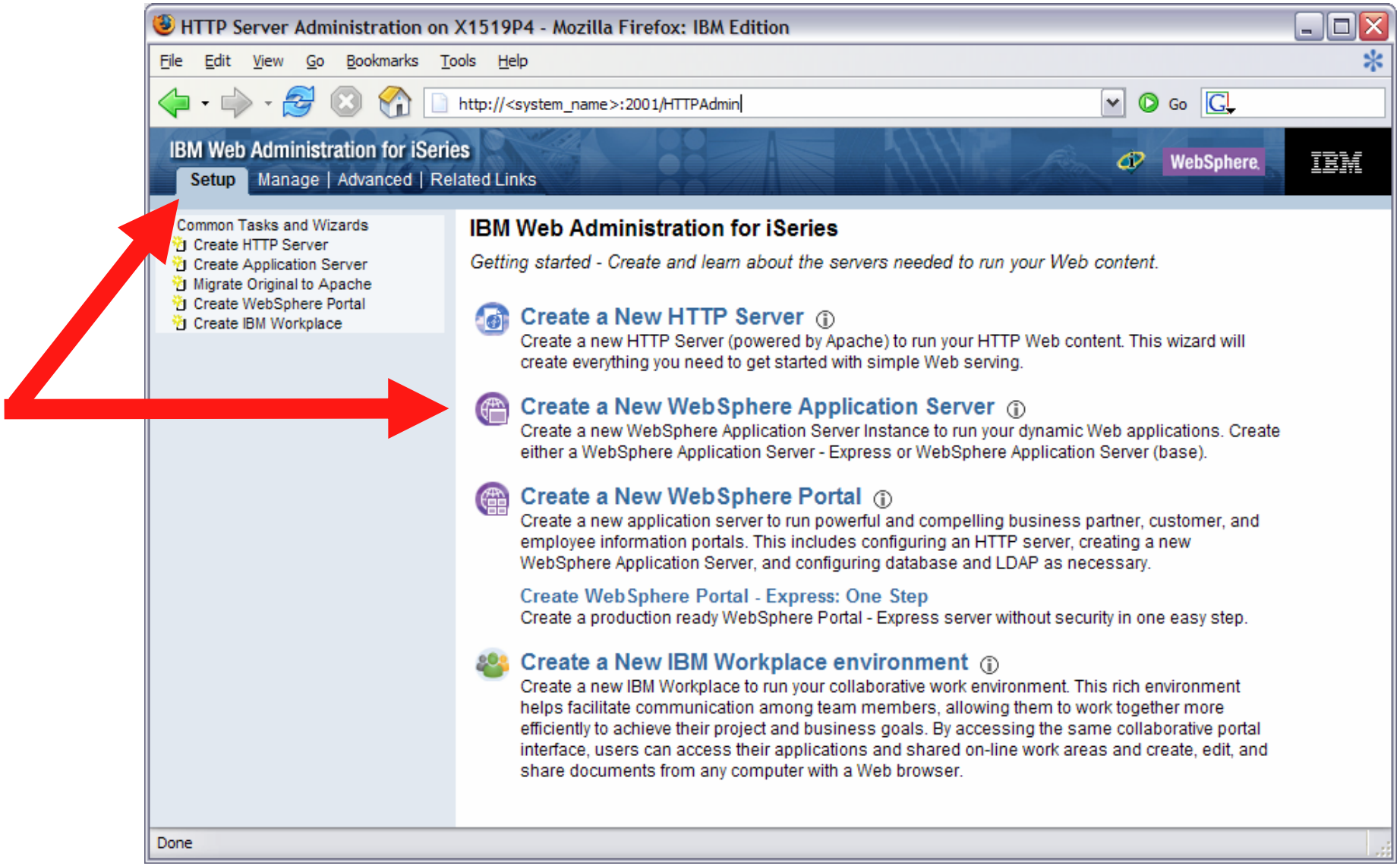
- WebSphere web application server (WAS)
  - Profiles (instances) are created containing a web application server
  - The web application server provides an environment for the deployment and management of web applications
  - Many different WAS versions can be installed and coexist on an i5/OS system
  - All web applications running within a web application server share the same name space.
  - You could create multiple profiles (instances) on a single i5/OS for the following reasons:
    - To create separate development environments for different developers. This allows them to have different versions of the same objects in their own name space.
    - To create separate development and test environments

Step by Step
Setup web-serving environment (continued)

- Use IBM Web Administration for i5/OS
  - Easy to use wizard that prompts for required information and does all the work
  - STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
  - http://<system_name>:2001/HTTPAdmin

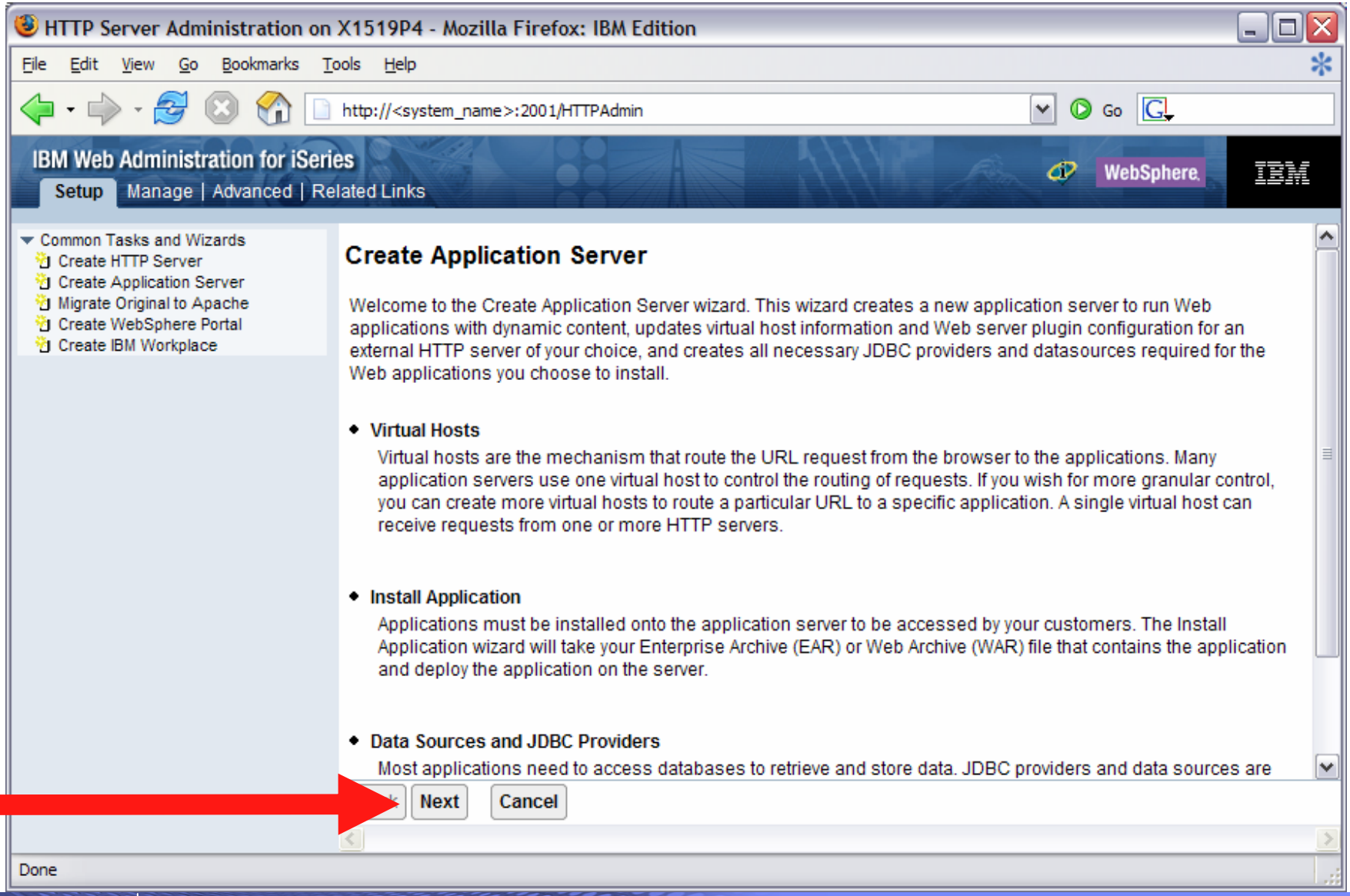
Step by Step
Setup web-serving environment (continued)

- Setup → Create a New WebSphere Application Server



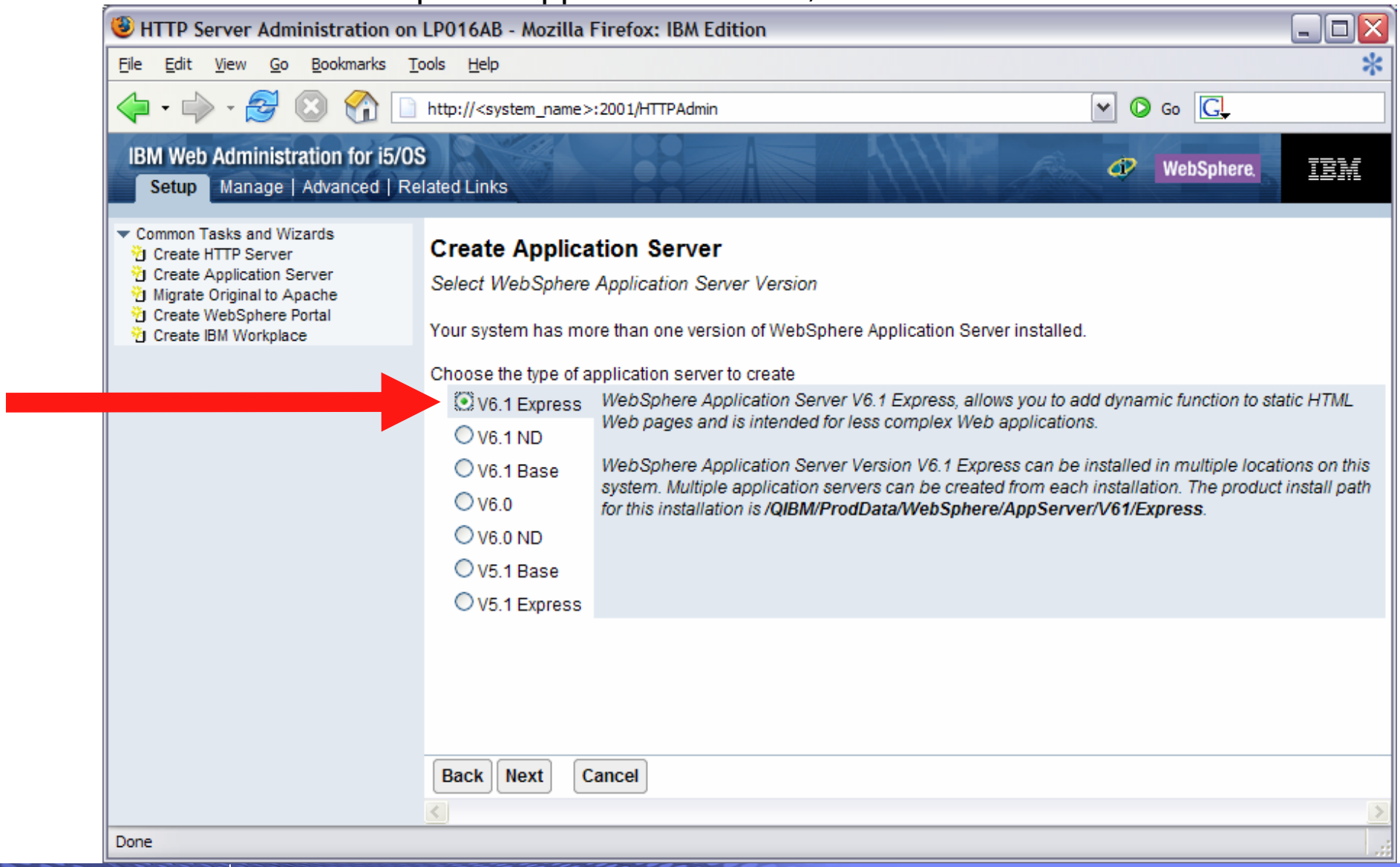
Step by Step
Setup web-serving environment (continued)

- Click Next



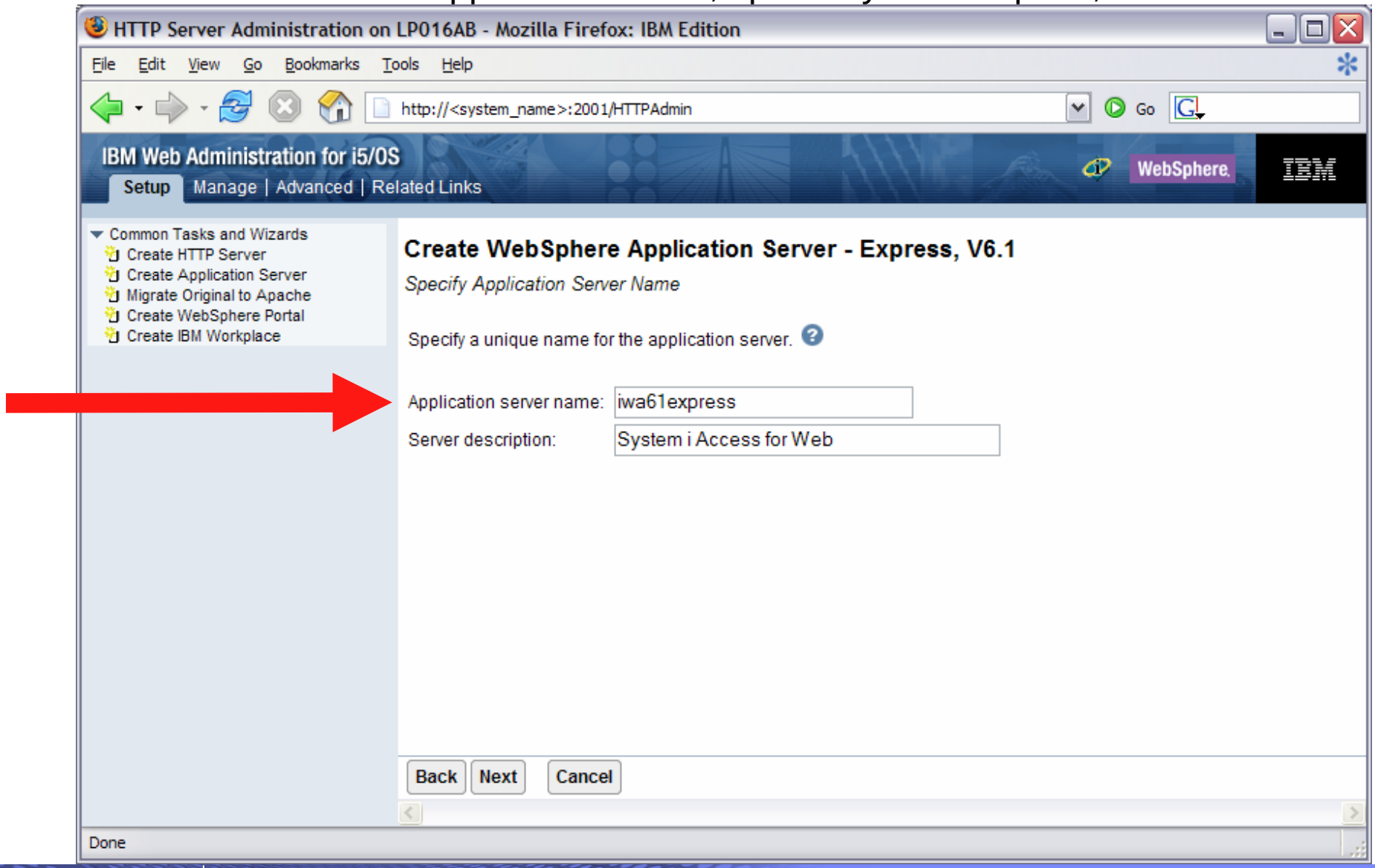
Step by Step
Setup web-serving environment (continued)

- Select version of WebSphere Application Server, click Next



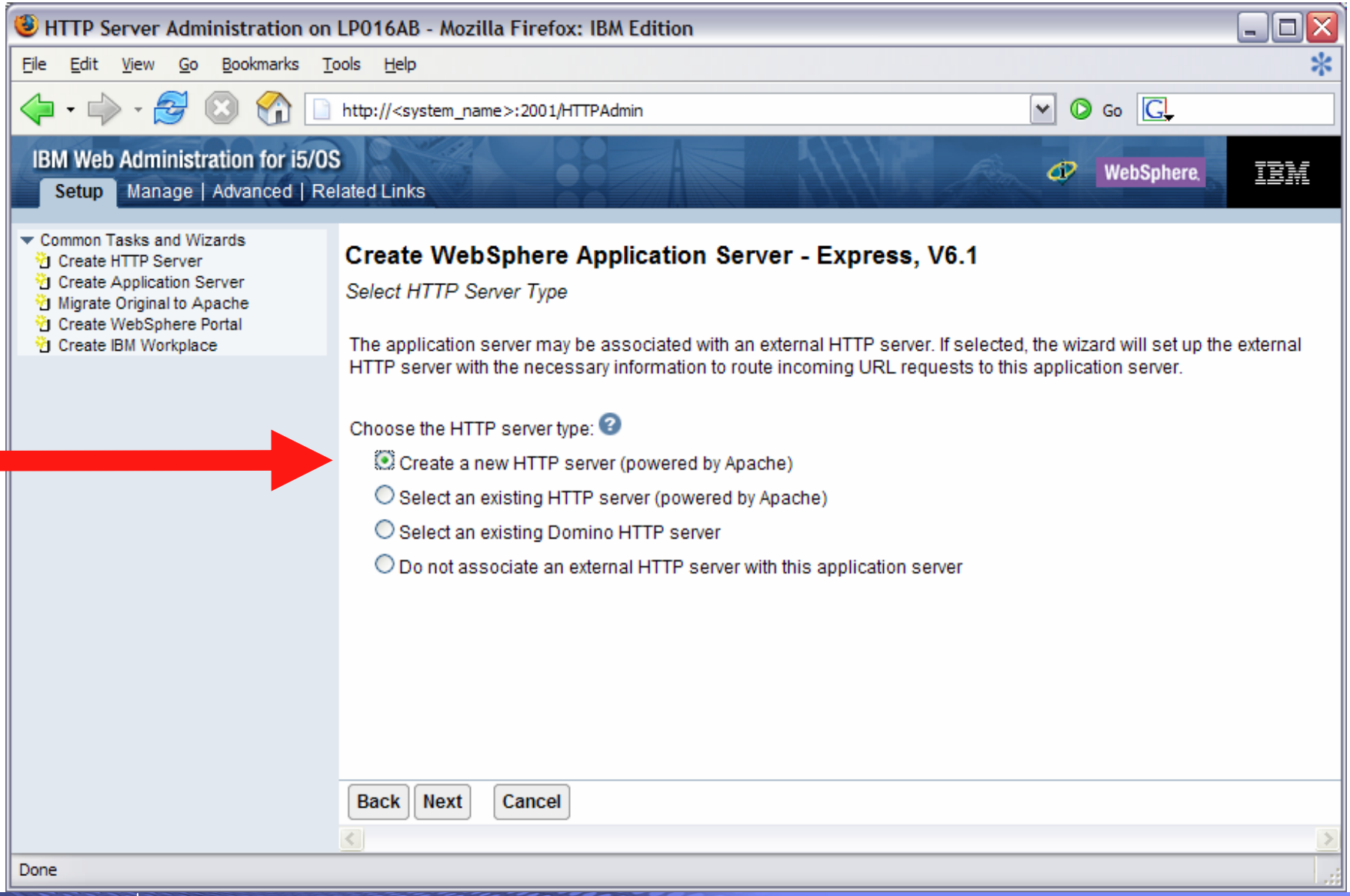
Step by Step
Setup web-serving environment (continued)

- Enter a name for the web application server, optionally a description, click Next



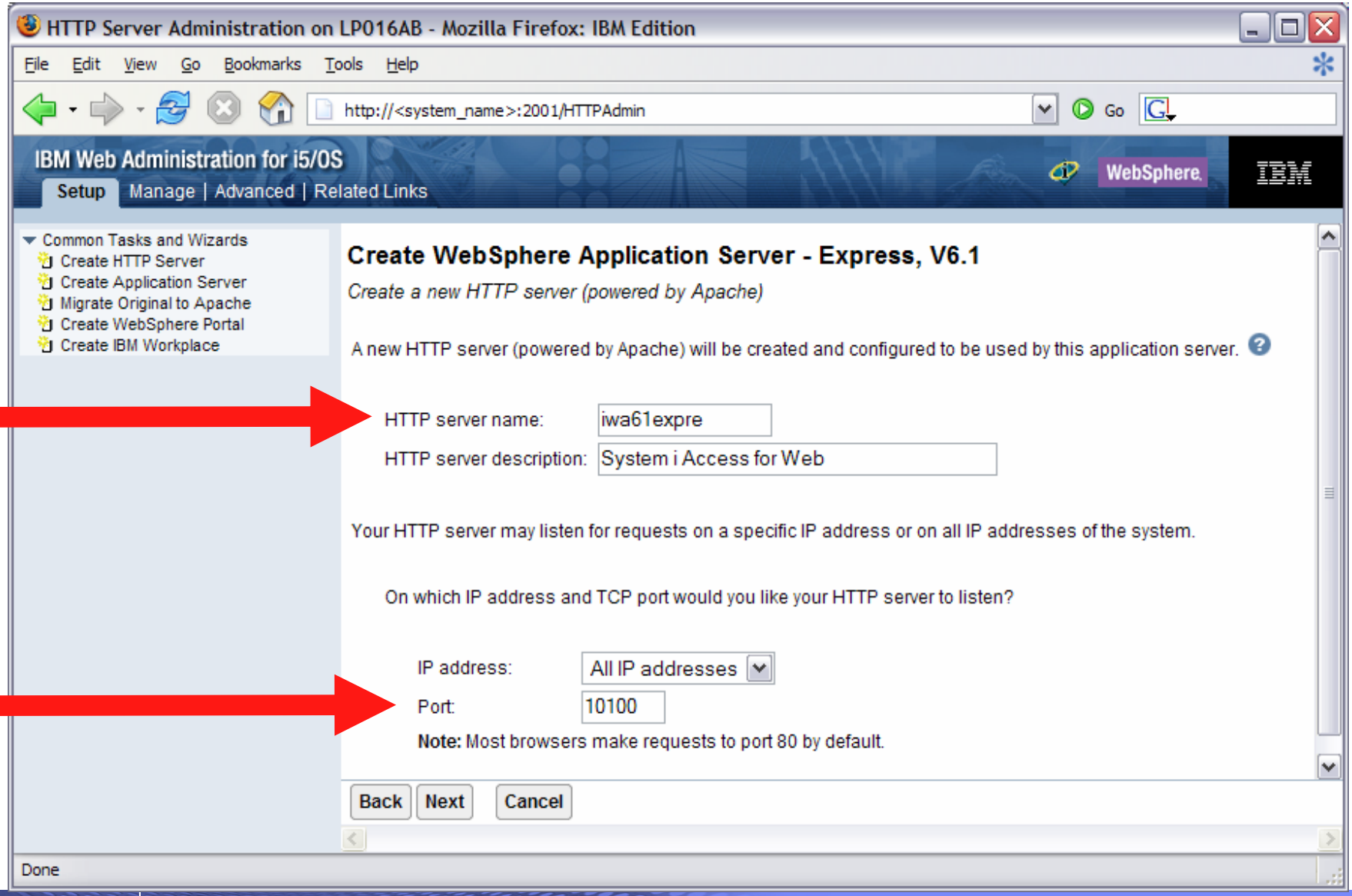
Step by Step
Setup web-serving environment (continued)

- Select Create a new HTTP server, click Next



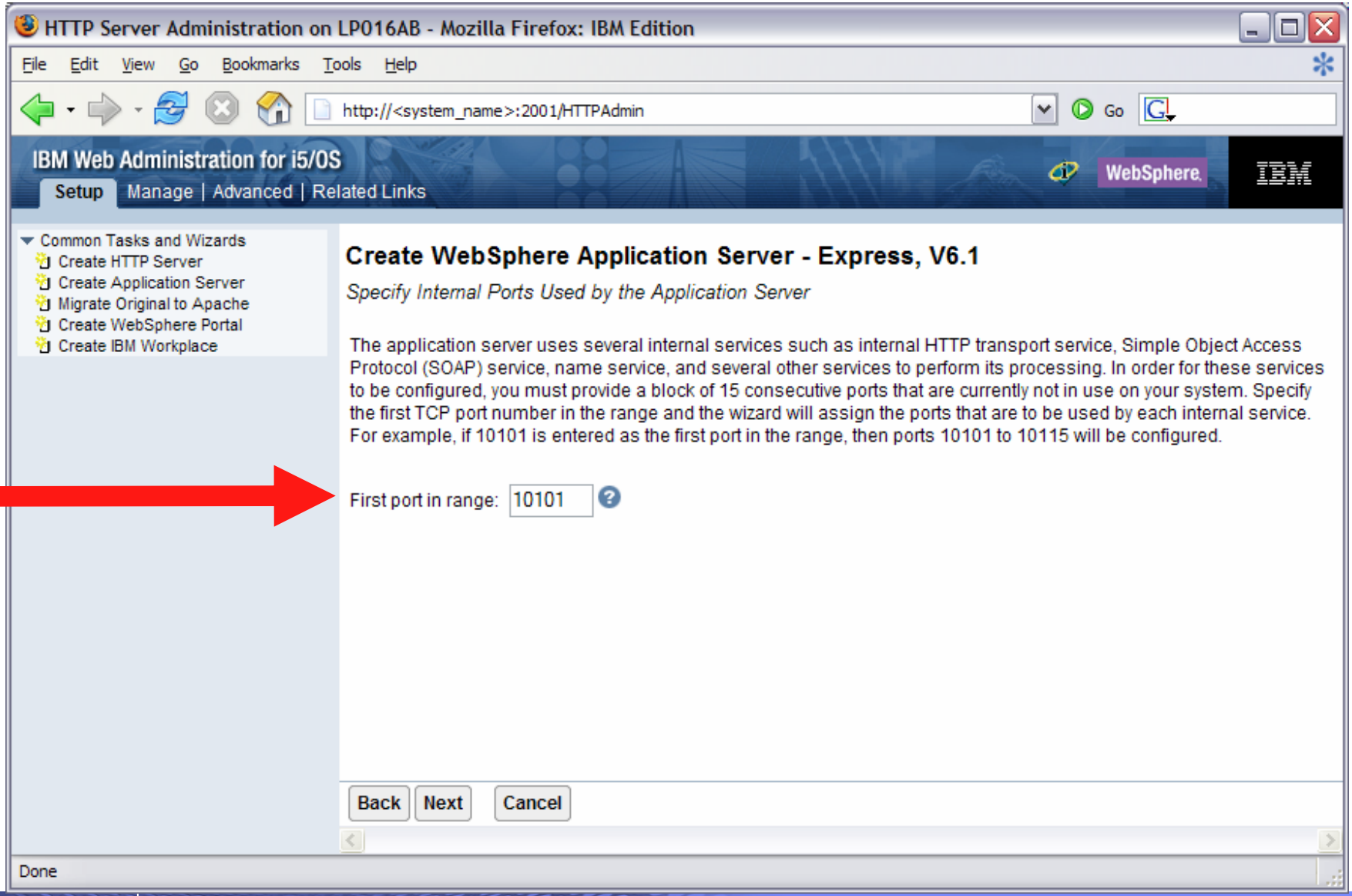
Step by Step
Setup web-serving environment (continued)

- Enter name for HTTP server, optionally description, port for this HTTP web server, click Next



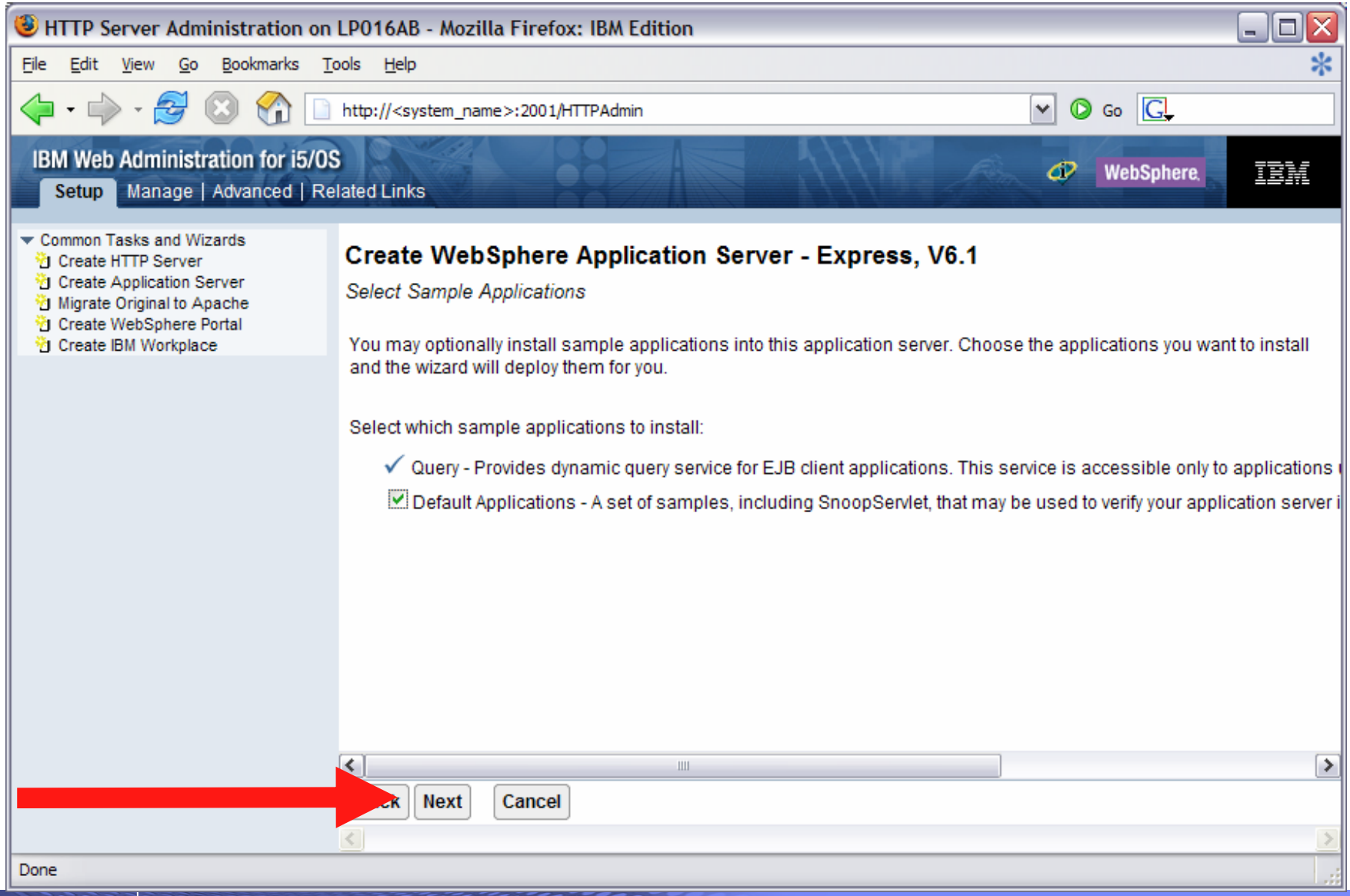
Step by Step
Setup web-serving environment (continued)

- Enter first port in a range of available ports, click Next



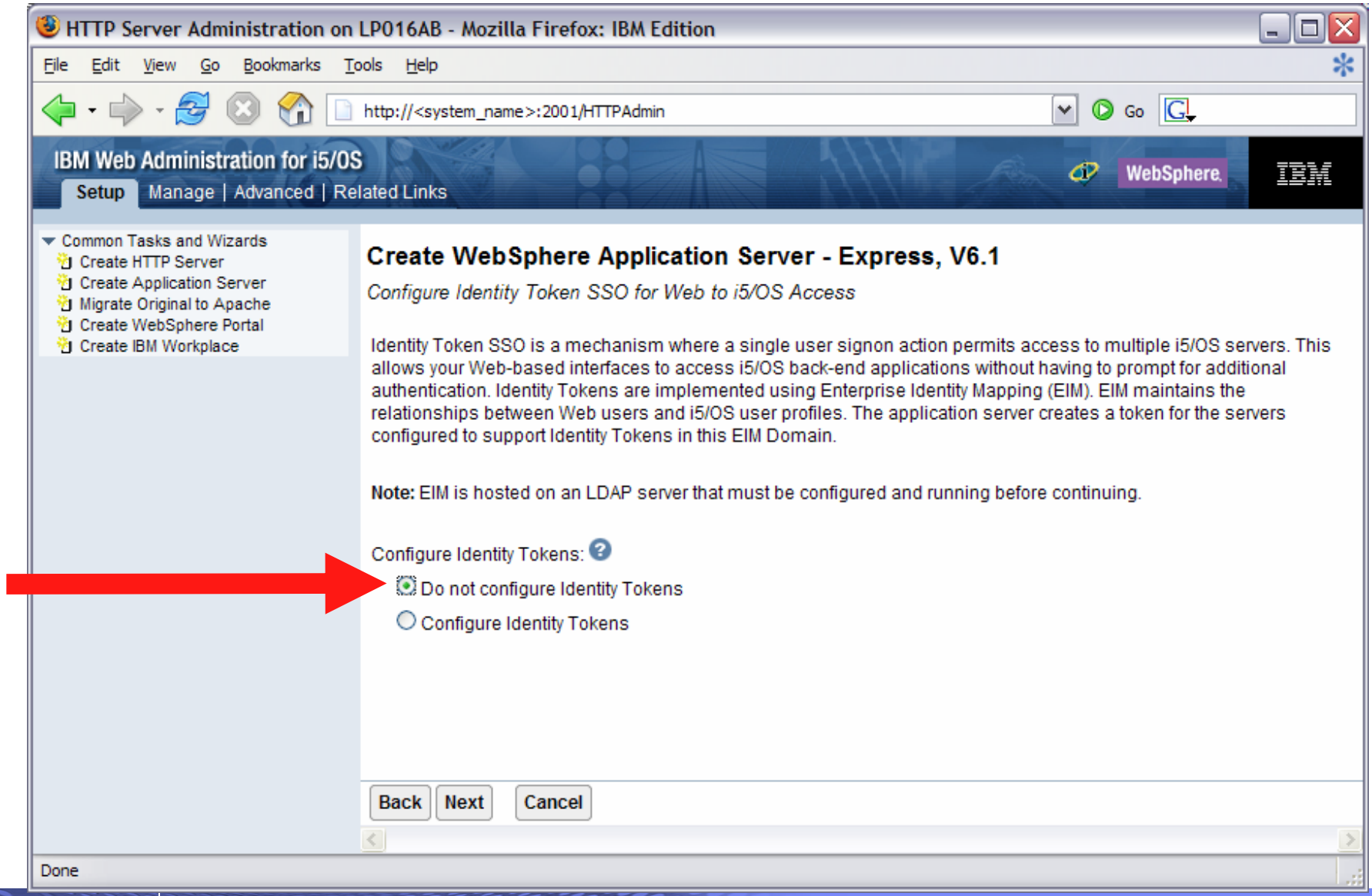
Step by Step
Setup web-serving environment (continued)

- Click Next



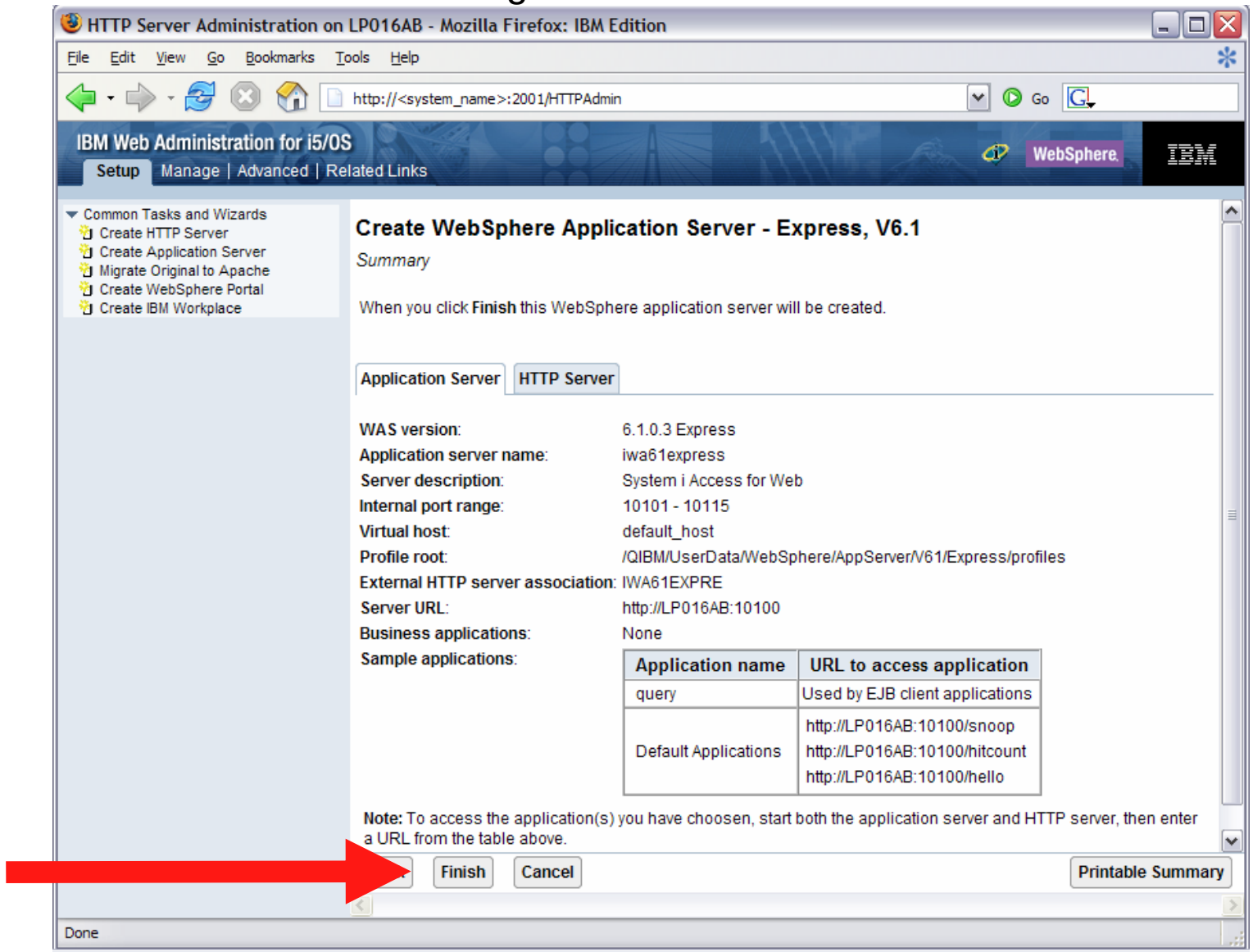
Step by Step
Setup web-serving environment (continued)

- Information Center has an example for configuring SSO environment



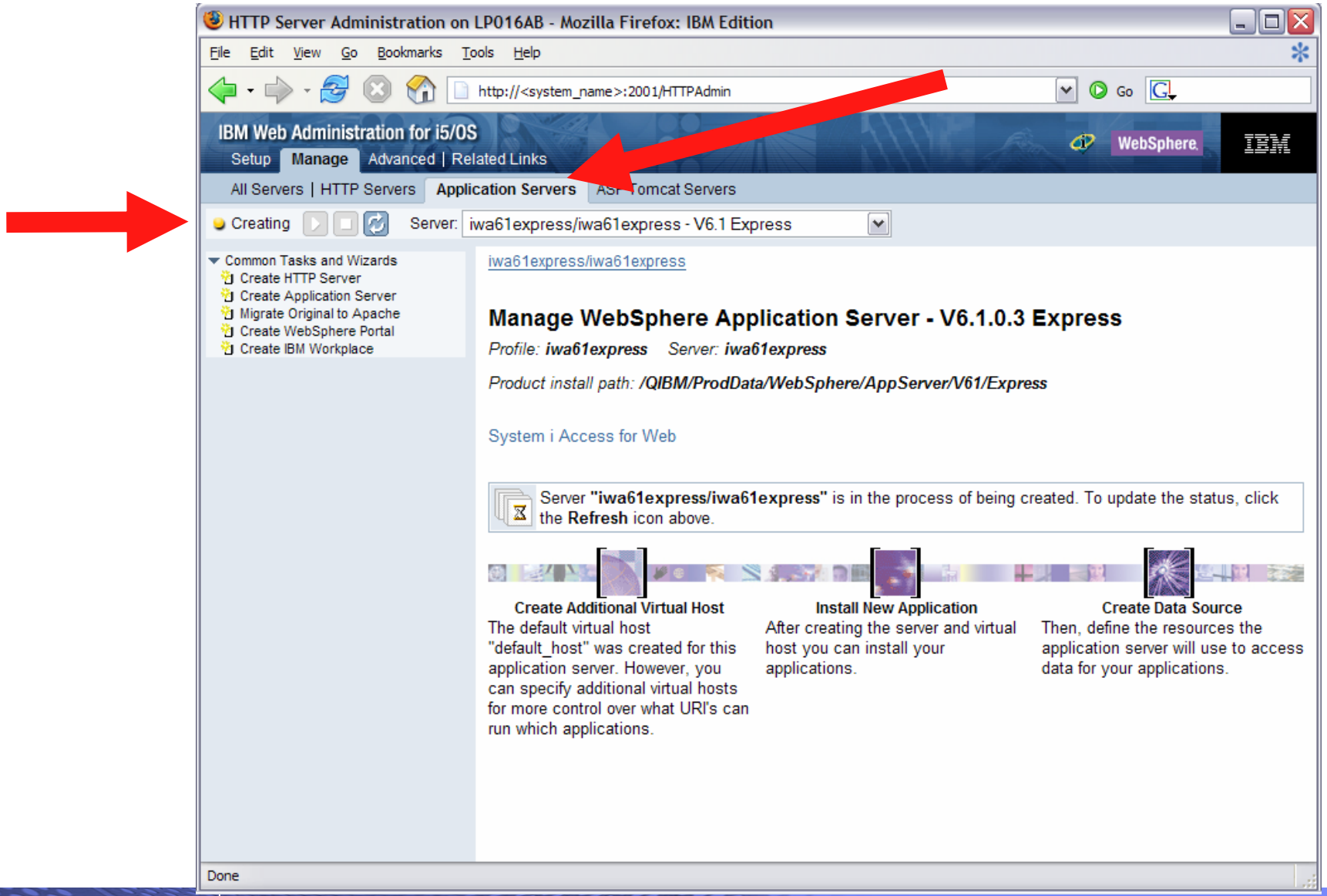
Step by Step
Setup web-serving environment (continued)

- Click Finish to create the web-serving environment



Step by Step
Setup web-serving environment (continued)

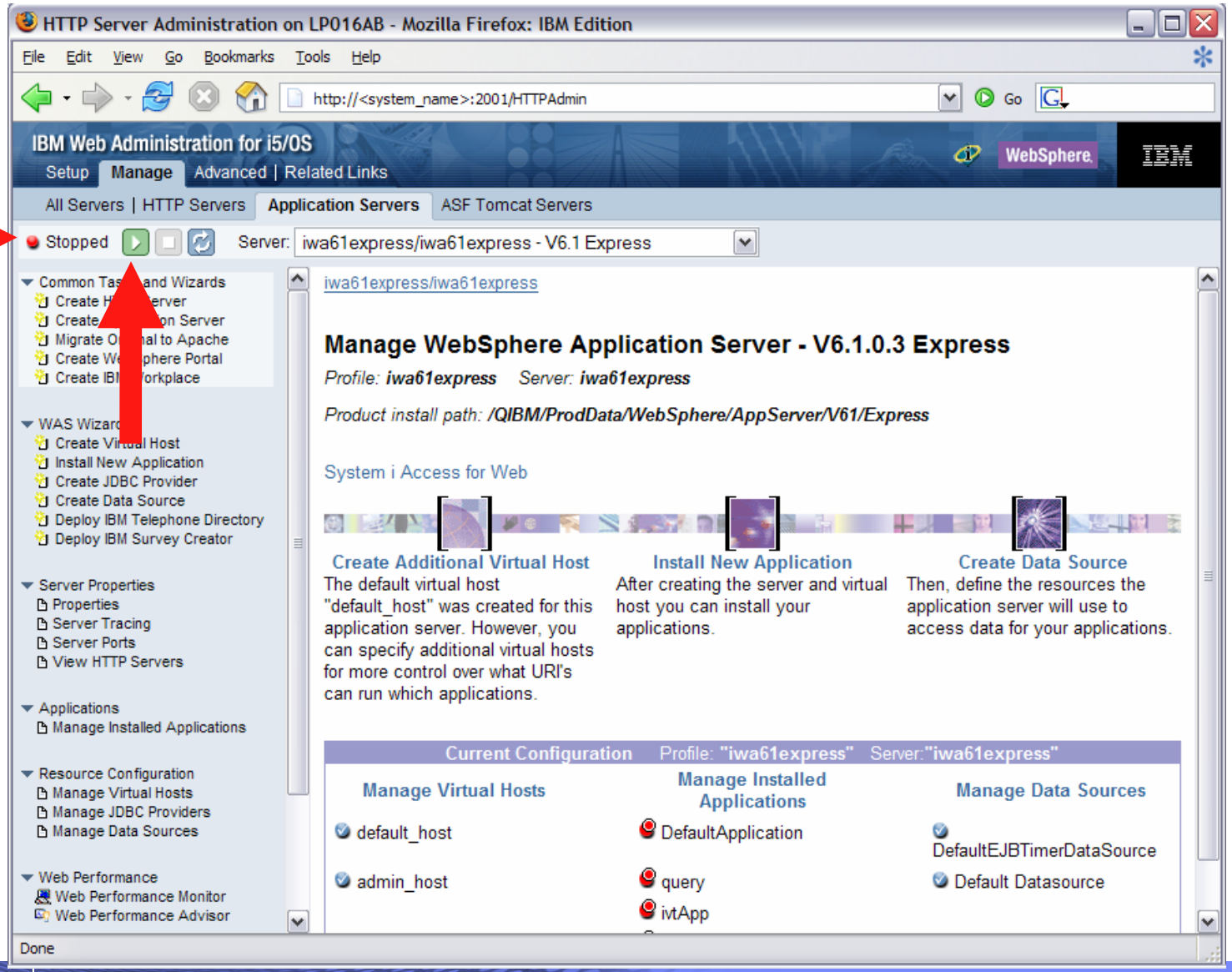
- Page refreshes to Application Servers tab, status of Creating…



Step by Step

Setup web-serving environment (continued)

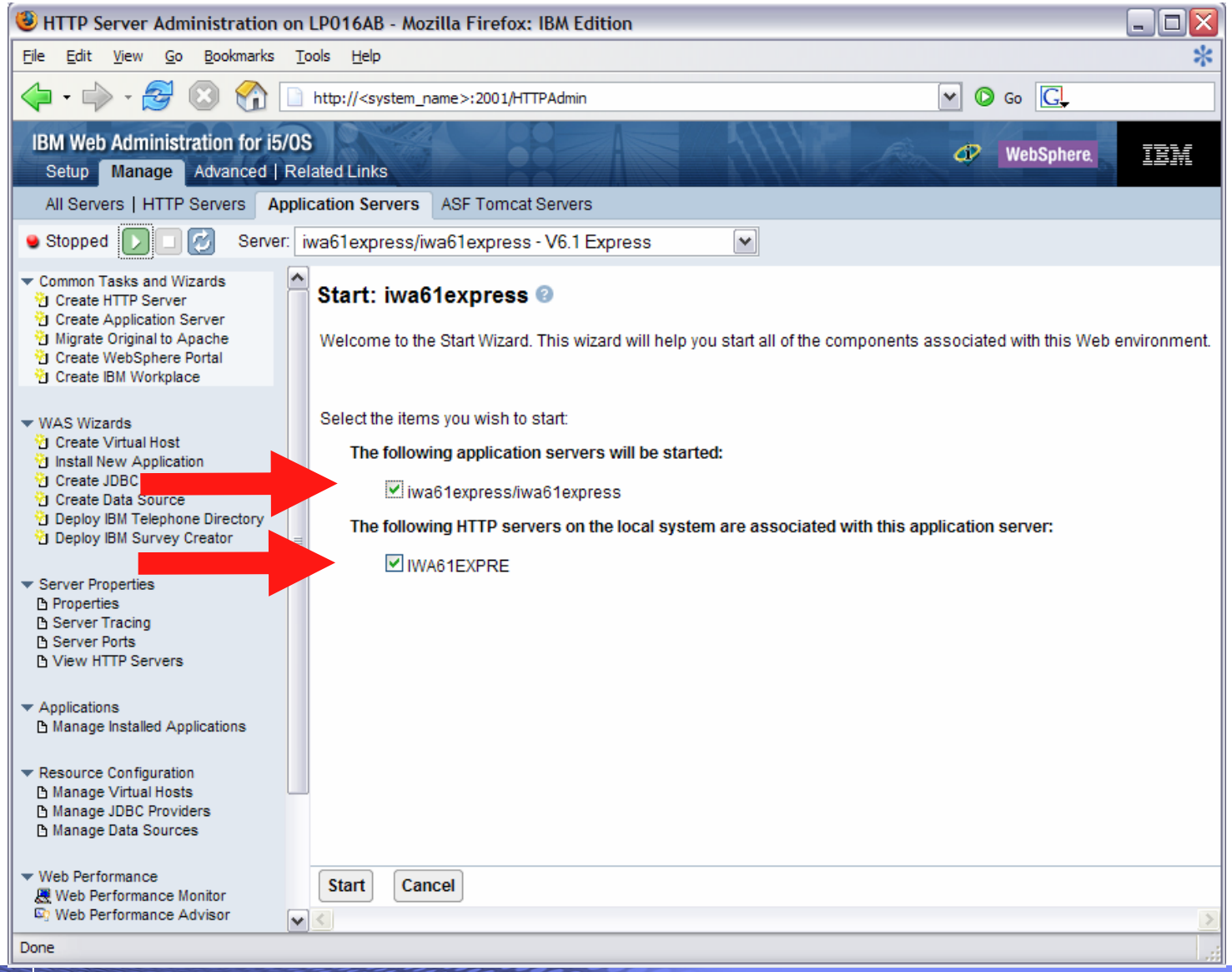
- Environment is created when status reaches Stopped, Click start icon to start



Step by Step

Setup web-serving environment (continued)

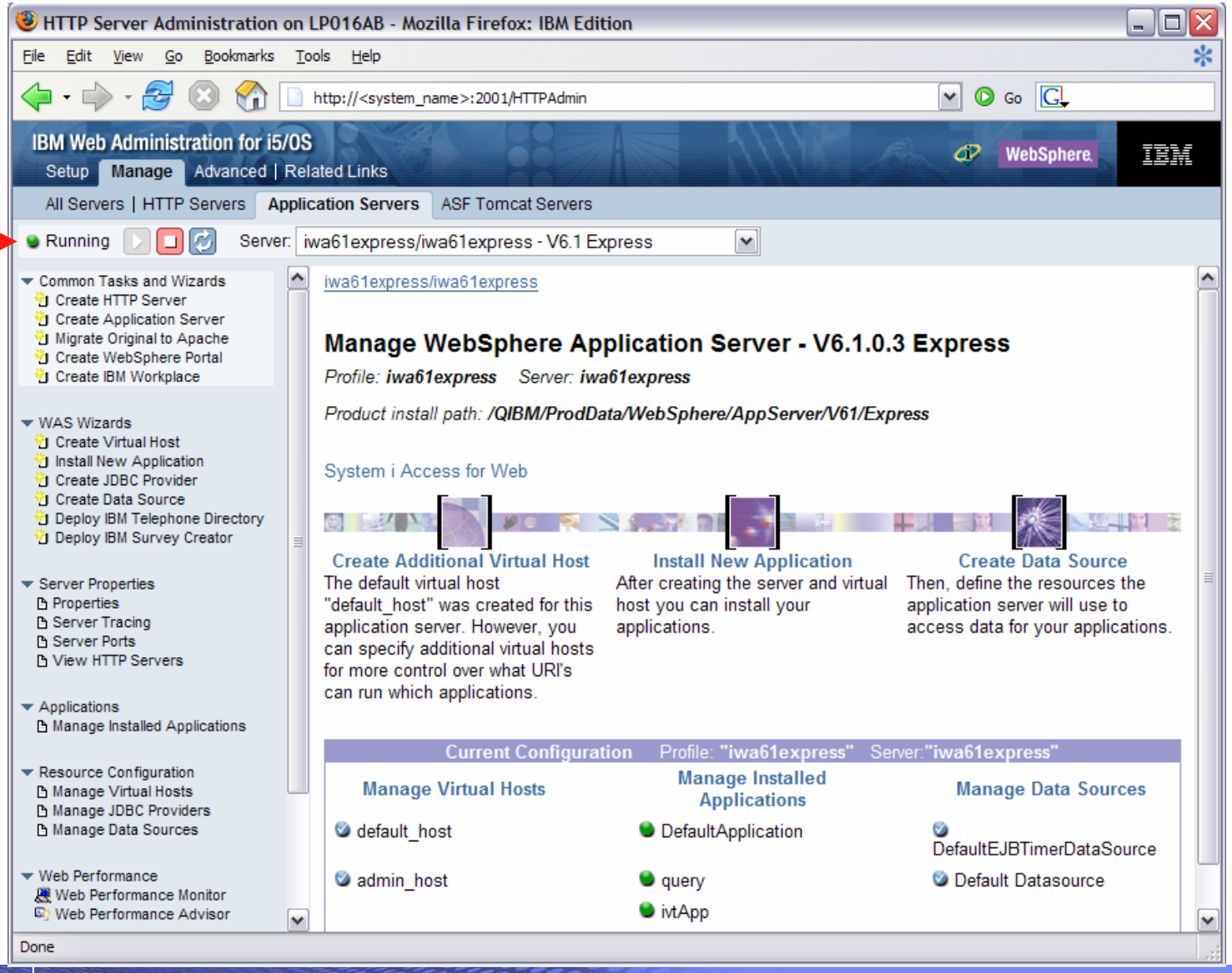
- Page is refreshed listing the application servers and HTTP web server that will be started



Step by Step

Setup web-serving environment (continued)

- Environment is ready for use when status reaches Running



Step by Step
Setup web-serving environment (continued)

- Tips for managing the Web Administration for i5/OS and HTTP web servers
  - To start/stop the IBM Web Administration for i5/OS interface
    - STRTCPSVR *HTTP HTTPSVR(*ADMIN)
    - ENDTCPSVR *HTTP HTTPSVR(ADMIN)
  - To access the IBM Web Administration for i5/OS interface
    - http://<system_name>:2001/HTTPAdmin
  - CL commands to start/stop the HTTP web servers
    - STRTCPSVR *HTTP HTTPSVR(<my_http_server_name>)
    - ENDTCPSVR *HTTP HTTPSVR(<my_http_server_name>)
  - HTTP servers run within the QHTTPSVR subsystem

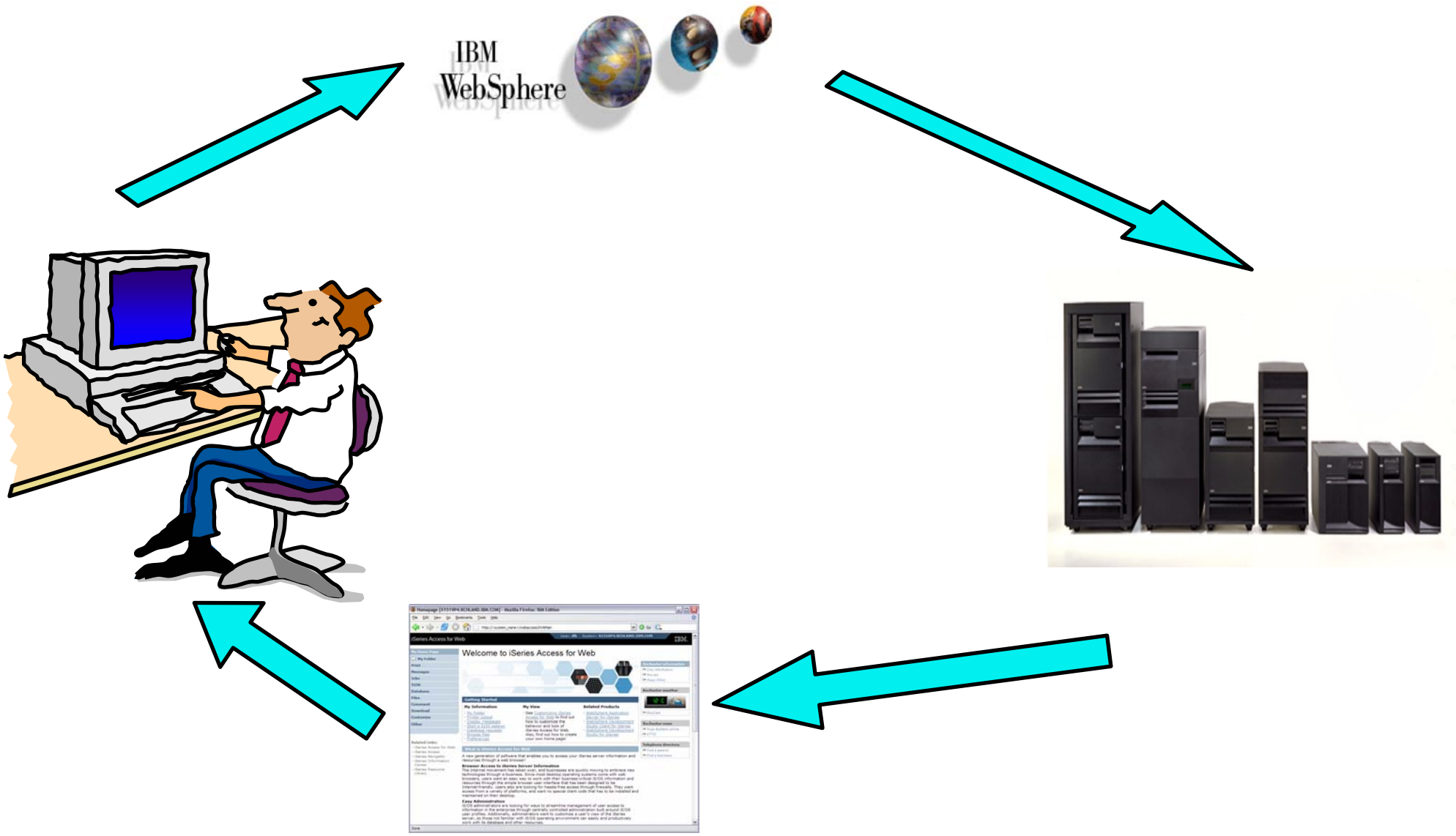
Step by Step
Setup web-serving environment (continued)

- WebSphere Application Server V6.1 information
  - Subsystem
    - Runs in QWAS61 subsystem
    - WRKACTJOB SBS(QWAS61)
    - Jobs (web application server) are named with the name of the web application server
  - Instances vs. profiles
    - Previous WAS versions had “instances”. V6.1 has “profiles”.
    - A default profile is created named “default”. The web application server it contains is named “server1”.
  - IFS
    - /QIBM/ProdData/WebSphere/AppServer/V61/Base/...
    - /QIBM/UserData/WebSphere/AppServer/V61/Base/...
    - /QIBM/ProdData/WebSphere/AppServer/V61/Express/...
    - /QIBM/UserData/WebSphere/AppServer/V61/Express/...
    - /QIBM/ProdData/WebSphere/AppServer/V61/ND/...
    - /QIBM/UserData/WebSphere/AppServer/V61/ND/...
    - These paths are defaults.
      - WAS 6.1 can be installed anywhere in the IFS
      - WAS 6.1 profiles can be created anywhere in the IFS.
  - If using WAS Network Deployment product, the profile cannot be federated/managed in the Network Deployment environment

Step by Step
Setup web-serving environment (continued)

- WebSphere Application Server V6.0 information
  - Subsystem
    - Runs in QWAS6 subsystem
    - WRKACTJOB SBS(QWAS6)
    - Jobs (web application server) are named with the name of the web application server
  - Instances vs. profiles
    - Previous WAS versions had “instances”. V6.0 has “profiles”.
    - A default profile is created named “default”. The web application server it contains is named “server1”.
  - IFS
    - /QIBM/ProdData/WebSphere/AppServer/V6/Base/...
    - /QIBM/UserData/WebSphere/AppServer/V6/Base/...
      - Note: Profiles can be created to user specified paths, above is the default path.
  - If using WAS Network Deployment product, the profile cannot be federated/managed in the Network Deployment environment

Configure System i Access for Web



Step by Step
Configure System i Access for Web

- System i Access for Web must be deployed (configured) to a running web application server
- System i Access for Web provides CL/QShell commands
  - CL commands – QIWA2 library
    - CFGACCWEB2 Configure System i Access for Web
    - STRACCWEB2 Start System i Access for Web
    - ENDACCWEB2 End System i Access for Web
    - RMVACCWEB2 Remove System i Access for Web
  - QShell - /QIBM/ProdData/Access/Web2/install
    - cfgaccweb2 Configure System i Access for Web
    - straccweb2 Start System i Access for Web
    - endaccweb2 End System i Access for Web
    - rmvaccweb2 Remove System i Access for Web
- Commands are provided to…
  - Ease the complexity of deploying a web application
  - Check dependencies
  - Invoke appropriate WebSphere tool to deploy a web application
  - Perform additional required setup
  - Setup /QIBM/UserData/Access/Web2/… structure
  - Allows for PTFs that make use of the normal i5/OS PTF tools

Step by Step
Configure System i Access for Web (continued)

- Use available documentation
  - System i Access for Web – V5R4 Information Center
    - Place to start to get V5R4 System i Access for Web installed and running
    - Examples included for each web application server environment
    - http://www.ibm.com/eserver/iseries/access/web/doc.html

- When the commands are run
  - The WebSphere web application server must be running before running CFGACCWEB2/RMVACCWEB2
  - The WebSphere web application server will need to be restarted after CFGACCWEB2/RMVACCWEB2
  - No updates are made to the HTTP web server configuration.

- Notes
  - Do not use the web administration interface or WebSphere Admin. console to configure (deploy) or remove System i Access for Web
  - Do not attempt to migrate a WebSphere environment to another WebSphere environment when System i Access for Web is configured

Step by Step
Configure System i Access for Web (continued)

- To configure the web-serving environment created above using the CL command
  - QIWA2/CFGACCWEB2 APPSVRTYPE(*WAS61EXP) WASPRF(iwa61express) APPSVR(iwa61express)
- To configure the web-serving environment created above using the QSH command
  - QSH
  - cd /QIBM/ProdData/Access/Web2/install
  - cfgaccweb2 –appsvrtype *WAS61EXP –wasprf iwa61express –appsvr iwa61express
- Now the web-serving environment must be stop/restarted to load the configuration changes that were made for System i Access for Web
- Note
  - Use the help text for the commands to learn more about the command and individual parameters
    - Some help is available for the for the QSH commands
    - cfgaccweb2 -? -help

Step by Step
Configure System i Access for Web (continued)

- The CFGACCWEB2/cfgaccweb2 commands accept other parameters…
  - The following parameter tells Access for Web to connect and serve data from a backend i5/OS system. If not specified, the local i5/OS running the web environment will be used.
    - **TGTSVR** - *DEFAULT, fully qualified system name
  - Specifies whether the web application (System i Access for Web) or the web application server (WebSphere) will authenticate the user.
    - **AUTHTYPE** - *APP, *APPSVR
    - **AUTHMETHOD** - *FORM, *BASIC
  - Input a WAS user ID/password for WAS profiles where WAS security has been enabled
    - **WASUSRID**
    - **WASPWD**
  - To configure new web application servers based on existing web application where Access for Web is configured
    - **SRCSVRTYPE** - *ASFTOMCAT, *WAS50, *WAS50EXP, *WAS51, *WAS51EXP, *WAS60, etc.
    - **SRCSVRINST** – Name of the WAS instance/profile, or Tomcat server
    - **SRCAPPSVR** – Name of WAS application server within the instance/profile
    - **SRCINSDIR** – Install path of WAS V6.1 profile
    - **SHRUSRDTA** – Copy the user data to the new configuration or share the user data between the old and new configurations.

Step by Step
Configure System i Access for Web (continued)

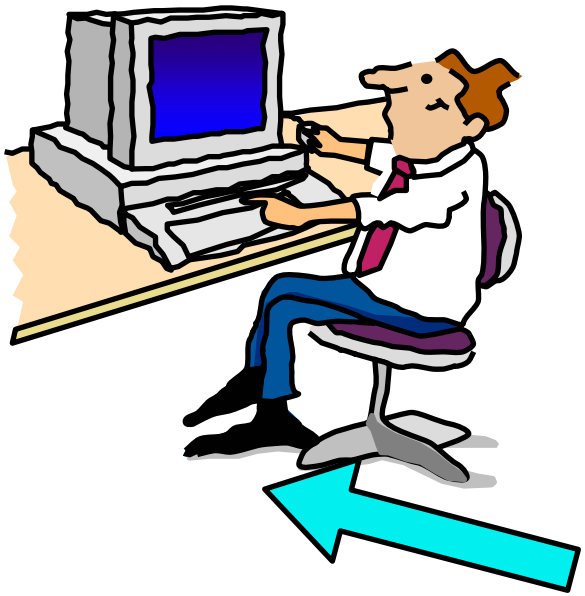
- Note
  - When upgrading from one WAS version to another where Access for Web is configured, **do not** migrate the WAS instance/profile where Access for Web is configured.
  - To migrate System i Access for Web from WAS 5.1 Express to WAS 6.1 Express
    - Install WAS 6.1 Express
    - Create a WAS 6.1 Express profile
    - Configure Access for Web to WAS 6.1 Express based on the WAS 5.1 Express configuration.

```
cfgaccweb2–appsvrtype *WAS61EXP
                      –wasprf iwa61express
                      –appsvr iwa61express
                      -wasinsdir /QIBM/ProdData/WebSphere/AppServer/V61/Express
                      -srcsvrtype *WAS51EXP
                      -srcsvrinst iwa51exp
                      -srcappsvr iwa51exp
                      -shrusrdta *NO
```

    - Remove the WAS 5.1 Express configuration if it's no longer needed.

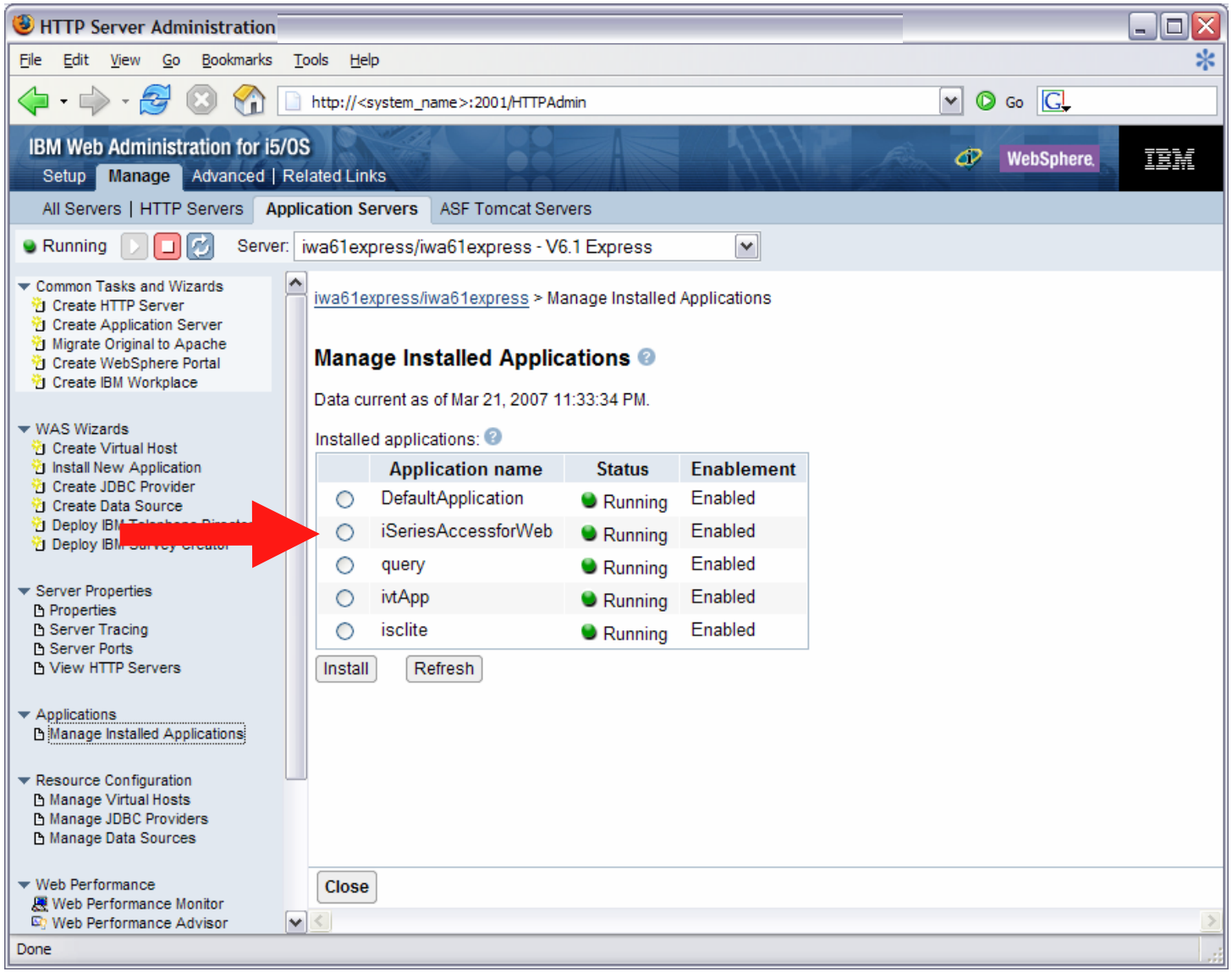
```
rmvaccweb2            –appsvrtype *WAS51EXP
                      –wasprf iwa51exp
                      –appsvr iwa51exp
```

Verify the installation and configuration



Step by Step
Verify the installation and configuration

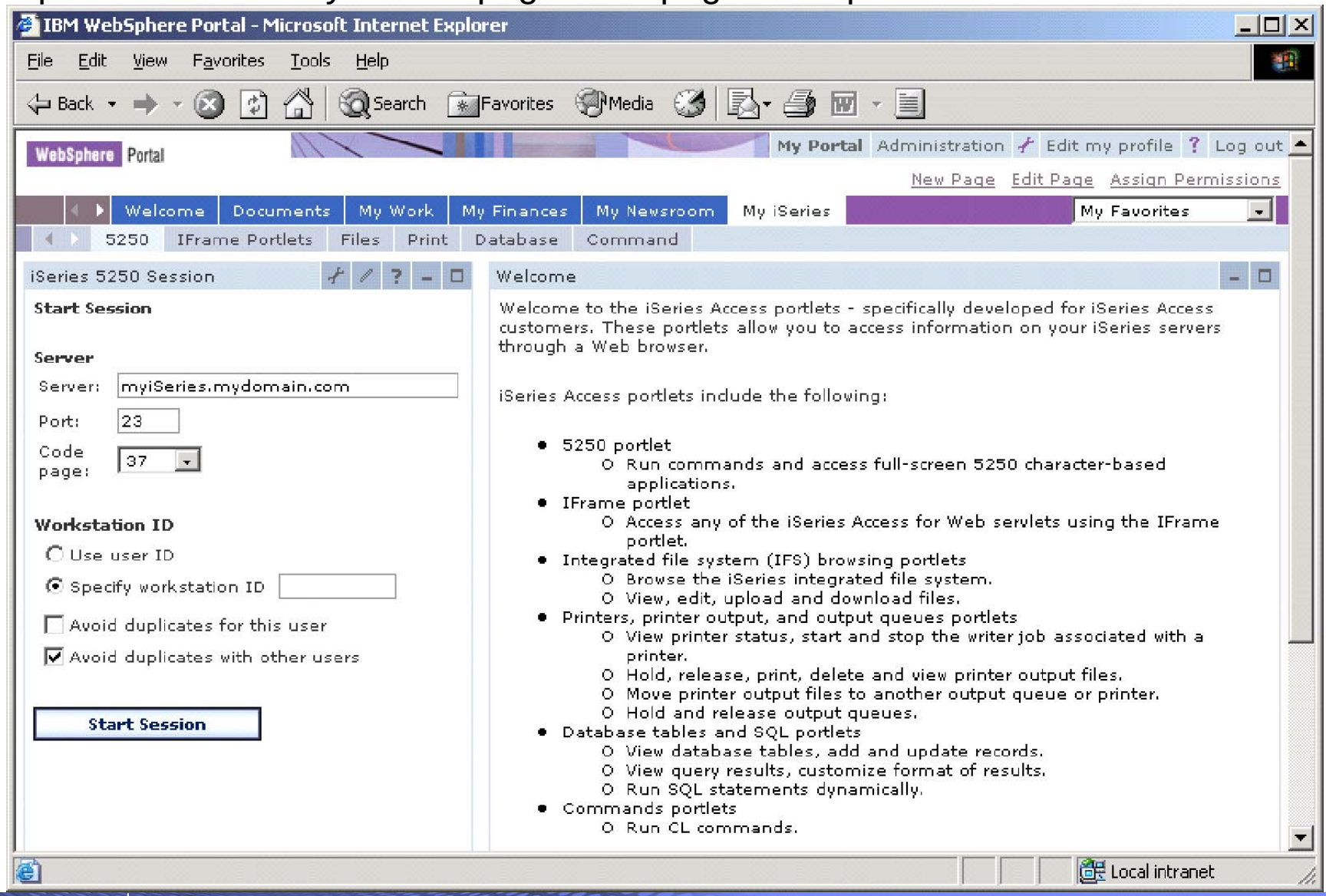
- IBM Web Administration for i5/OS → Applications → Manage Installed Applications



Step by Step

Verify the installation and configuration (continued)

- WebSphere Portal → My iSeries page + subpages with portlets



Step by Step
Verify the installation and configuration (continued)

- HTTP Server
  - Verify several jobs are running with the name of your HTTP server
    - WRKACTJOB SBS(QHTTPSVR)

- WebSphere Application Server
  - Verify the application server is running
    - WRKACTJOB SBS(QWAS61) V6.1 - WAS for i5/OS
    - WRKACTJOB SBS(QWAS6) V6.0 - WAS for OS/400

- System i Access for Web
  - Open browser to http://<system_name>:<port>/webaccess/iWAHome
  - Open browser to http://<system_name>:<port>/webaccess/iWAMain

Step by Step
Verify the installation and configuration (continued)

- When things do not work
  - Verify the HTTP server is running
  - Verify the WebSphere application server was restarted after running CFGACCWEB2
  - Verify the WebSphere application server running
  - That you have the latest group PTFs for the HTTP server and WebSphere Application Server.
  - That System i Access for Web is listed as an installed application in the WebSphere application server (via the IBM Web Administration for i5/OS interface)
  - System i Access for Web logs
    - /QIBM/UserData/Access/Web2/logs/cmds.log — High level translated log
    - /QIBM/UserData/Access/Web2/logs/cmdstrace.log — Low level untranslated log
    - /QIBM/UserData/Access/Web2/logs/<appsvrtype>/<wasprf>/<appsvr>/logs/*
      - Logs for specific WAS servers. Note: some logs may be EBCDIC requiring use of **WRKLNK** i5/OS command to view them

Step by Step
Verify the installation and configuration (continued)

- When things do not work
  - WAS V6.0
    - /QIBM/UserData/WebSphere/AppServer/V6/Base/profiles/<profile_name>/logs/wsadmin.traceout
    - /QIBM/UserData/WebSphere/AppServer/V6/Base/profiles/<profile_name>/logs/activity.log
    - /QIBM/UserData/WebSphere/AppServer/V6/Base/profiles/<profile_name>/logs/<app_server_name>/SystemOut.log
    - /QIBM/UserData/WebSphere/AppServer/V6/Base/profiles/<profile_name>/logs/<app_server_name>/SystemErr.log
  - WAS Network Deployment V6.0
    - /QIBM/UserData/WebSphere/AppServer/V6/ND/profiles/<profile_name>/logs/wsadmin.traceout
    - /QIBM/UserData/WebSphere/AppServer/V6/ND/profiles/<profile_name>/logs/activity.log
    - /QIBM/UserData/WebSphere/AppServer/V6/ND/profiles/<profile_name>/logs/<app_server_name>/SystemOut.log
    - /QIBM/UserData/WebSphere/AppServer/V6/ND/profiles/<profile_name>/logs/<app_server_name>/SystemErr.log
  - WAS V6.1 (base edition)
    - /QIBM/UserData/WebSphere/AppServer/V61/Base/profiles/<profile_name>/logs/wsadmin.traceout
    - /QIBM/UserData/WebSphere/AppServer/V61/Base/profiles/<profile_name>/logs/activity.log
    - /QIBM/UserData/WebSphere/AppServer/V61/Base/profiles/<profile_name>/logs/<app_server_name>/SystemOut.log
    - /QIBM/UserData/WebSphere/AppServer/V61/Base/profiles/<profile_name>/logs/<app_server_name>/SystemErr.log

Step by Step
Verify the installation and configuration (continued)

- When things do not work
  - WAS V6.1 - Express
    - /QIBM/UserData/WebSphere/AppServer/V61/Express/profiles/<profile_name>/logs/wsadmin.traceout
    - /QIBM/UserData/WebSphere/AppServer/V61/Express/profiles/<profile_name>/logs/activity.log
    - /QIBM/UserData/WebSphere/AppServer/V61/Express/profiles/<profile_name>/logs/<app_server_name>/SystemOut.log
    - /QIBM/UserData/WebSphere/AppServer/V61/Express/profiles/<profile_name>/logs/<app_server_name>/SystemErr.log
  - WAS V6.1 Network Deployment
    - /QIBM/UserData/WebSphere/AppServer/V61/ND/profiles/<profile_name>/logs/wsadmin.traceout
    - /QIBM/UserData/WebSphere/AppServer/V61/ND/profiles/<profile_name>/logs/activity.log
    - /QIBM/UserData/WebSphere/AppServer/V61/ND/profiles/<profile_name>/logs/<app_server_name>/SystemOut.log
    - /QIBM/UserData/WebSphere/AppServer/V61/ND/profiles/<profile_name>/logs/<app_server_name>/SystemErr.log

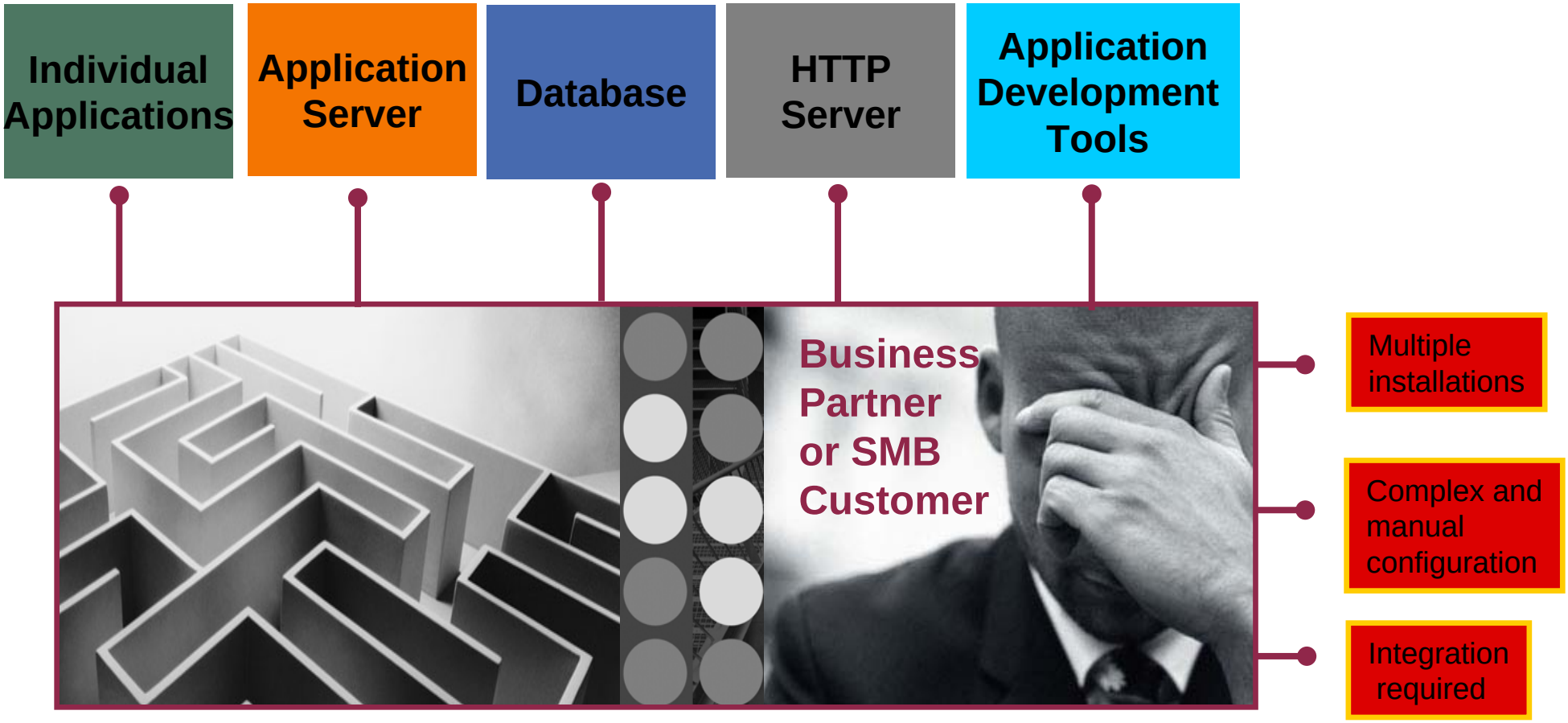
Step by Step

Questions regarding the Step by Step option?

Express Runtime Web Environments

What is the problem?

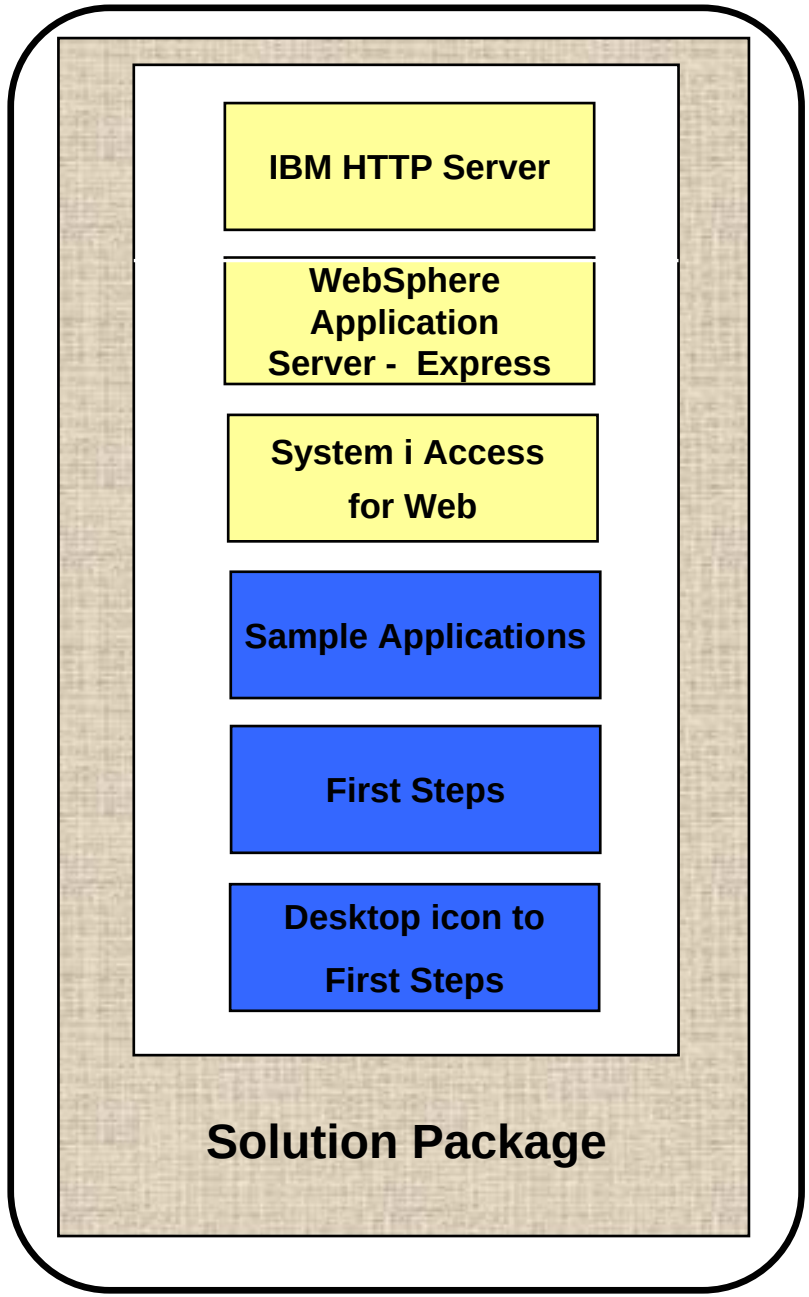
- The complexity of the web-serving environment
  - Several parts/pieces to install
  - Can be challenging to configure all the parts/pieces



Express Runtime Web Environments

What is the solution?

- Wrap all the parts/pieces into a single package
  - Middleware components
    - HTTP web server
    - WAS Express 6.0.2.9
    - V5R4 System i Access for Web
    - PTFs are included
  - Sample applications – modernizing an RPG application (flight400) using the following technologies:
    - HATS, WebFacing, Web Services
  - First Steps
    - Web page with links to System i Access for Web, Samples, web administration, Information
  - Getting Started Document, Deployment help text
  - Product licenses
- Make the package easily deployable
  - Easy to use wizard run from Windows workstation
  - Middleware is uploaded, installed/configured
  - System i Access for Web is set up
  - Sample applications are set up
  - FirstSteps webpage is deployed
  - Web-serving environment is ready for immediate use
  - Desktop icon to FirstSteps web page



Express Runtime Web Environments
Target audience

- V5R4 i5/OS customers and partners
  - Anyone wanting/needing a simple way to setup web-serving on their i5/OS

- Users of the following:
  - System i Access for Web – end user web browser access to i5/OS resources
  - WDHT / HATS / WebFacing applications
  - J2EE web applications (JSF, JSP, servlets, EJBs, etc)
  - SOA applications (web services, including RPG/COBOL integration)
  - Demo of an application modernized using SOA, HATs and WebFacing

- Partners
  - Modify a similar solution to include their applications
    - Obtain SAT and source from PartnerWorld
    - Rebuild solution to include their application

Express Runtime Web Environments
Packaging/Ordering

- 5722-WE2 Express Runtime Web Environments
  - Ships with all V5R4 i5/OS orders
    - Since October 2006
    - DVD only
    - All media contained in a single shrink wrapped package
      - Packaged along with WebSphere Application Server - Express product CDs
      - Label on package identifies the two products and their purposes
      - Products identified on media labels
      - Look for DVD labeled: Express Runtime Web Environments V1R1, contains everything you need
  - Can also be ordered separately
    - No-charge feature of 5722-WE2 Web Enablement for i5/OS
      - Order feature 5905 for CDs
      - Order feature 5906 for a DVD

Express Runtime Web Environments
Installation/Setup process

- Read the ReadMe packaged with the product
  - Verify requirements for Windows workstation and i5/OS system
- From a Windows workstation, launch the deployment wizard
  - Provide credentials
  - Specify i5/OS system to deploy
  - Name the HTTP web server, WebSphere profile/application server, ports
  - Optionally a backend i5/OS for System i Access for Web to connect
- Deployment wizard runs
  - Pushing middleware from workstation/media to the i5/OS system
  - Installs/configures middleware
  - Install/configures System i Access for Web, sample applications, FirstSteps web page
  - Creates desktop icon on Windows workstation
- Deployment wizard complete
  - Click desktop icon named **Web_Enablement_Environment_V5R4M0**
  - FirstSteps webpage provides links to web environment, System i Access for Web, sample applications
  - Administrator can then distribute web browser URL to users
  - GO LICPGM will list
    - 5733-SO1 Base Express Runtime Web Environments
    - 5733-SO1 1 Web Enablement Environment

Express Runtime Web Environments

Windows workstation software/hardware requirements

- Windows operating systems
  - Windows XP Professional SP2
  - Windows 2000 Server SP4
  - Windows 2000 Advanced Server SP4
  - Windows 2000 Professional SP3
  - Windows Server 2003, Standard Edition SP1
  - Windows Server 2003, Enterprise Edition SP1

- Web browser
  - Windows Internet Explorer 6 or later
  - Firefox 1.5 or later

- Windows workstation hardware requirements:
  - Minimum 512MB of memory; 1GB recommended
  - At a minimum, an Intel Pentium III class processor with a minimum clock speed of 600MHz. A Pentium IV class processor with a minimum clock speed of 1.2GHz is recommended
  - A local area network (LAN) connection
  - At least 1.5GB of free disk space

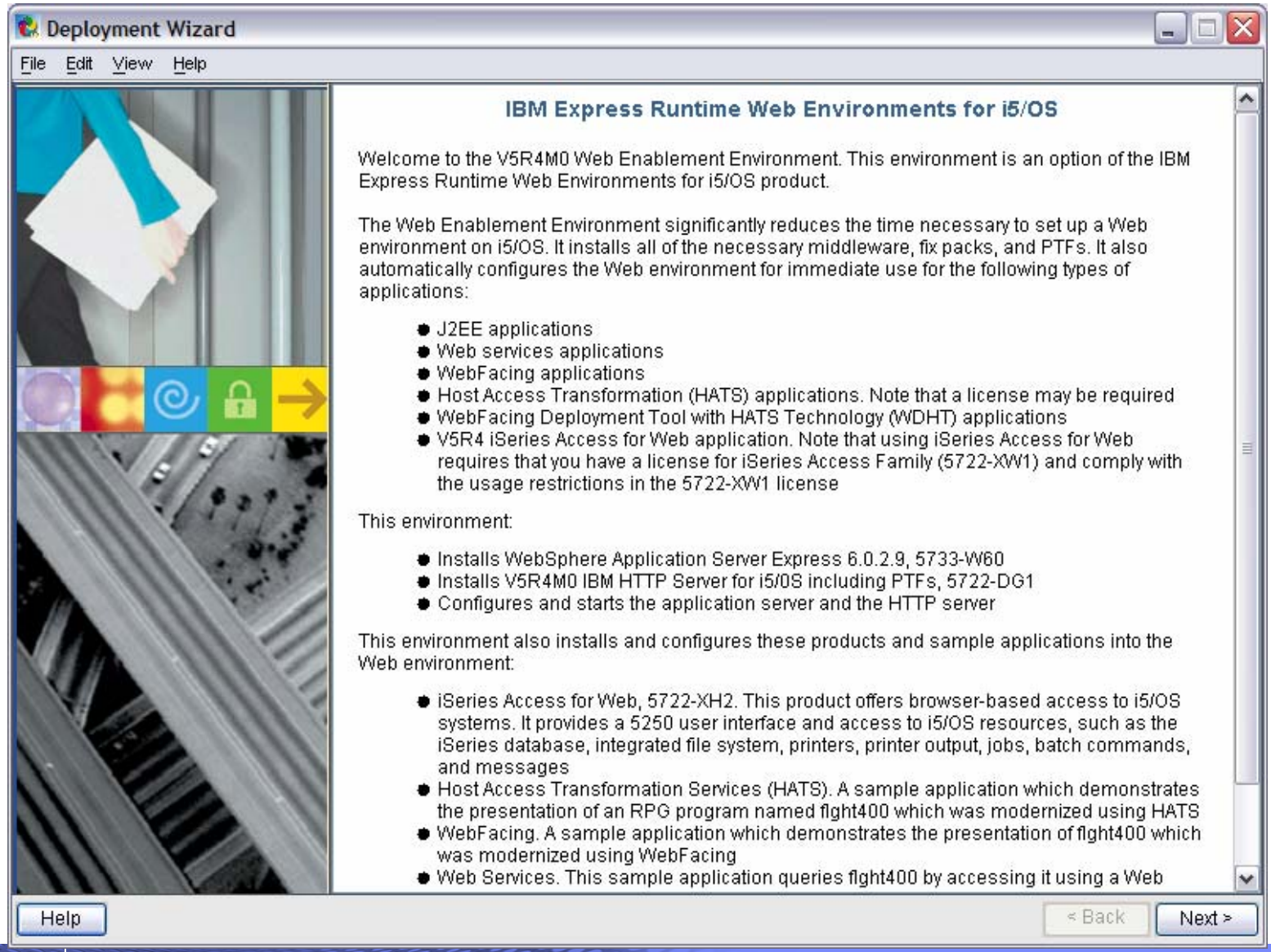
Express Runtime Web Environments
i5/OS software/hardware requirements

- 5/OS V5R4 (5722-SS1)
  - option 3 - Extended Base Directory Support
  - option 8 - AFP(TM) Compatibility Fonts
  - option 12 - Host Servers
  - option 30 - QShell
- Software products
  - 5722-JV1 Java Developer Kit 1.4 - *BASE, option 5, option 6
  - 5722-JC1 Toolbox for Java
  - 5722-TC1 TCP/IP Connectivity Utilities
  - 5722-XW1 System i Access Family
  - 5722-QU1 Query - if you want to run reports using the HATS or WebFacing sample applications
- Recommended PTFs:
  - i5/OS Cumulative PTF Group SF99540 Level 6066 or later
  - Java Group PTF SF99291 Level 2 or later
  - DB2 Universal Database for iSeries Group PTF SF99504 Level 2 or later

- i5/OS hardware requirements: It is recommended that you use the IBM Systems Workload Estimator to help estimate your hardware needs.

Express Runtime Web Environments
Demonstration

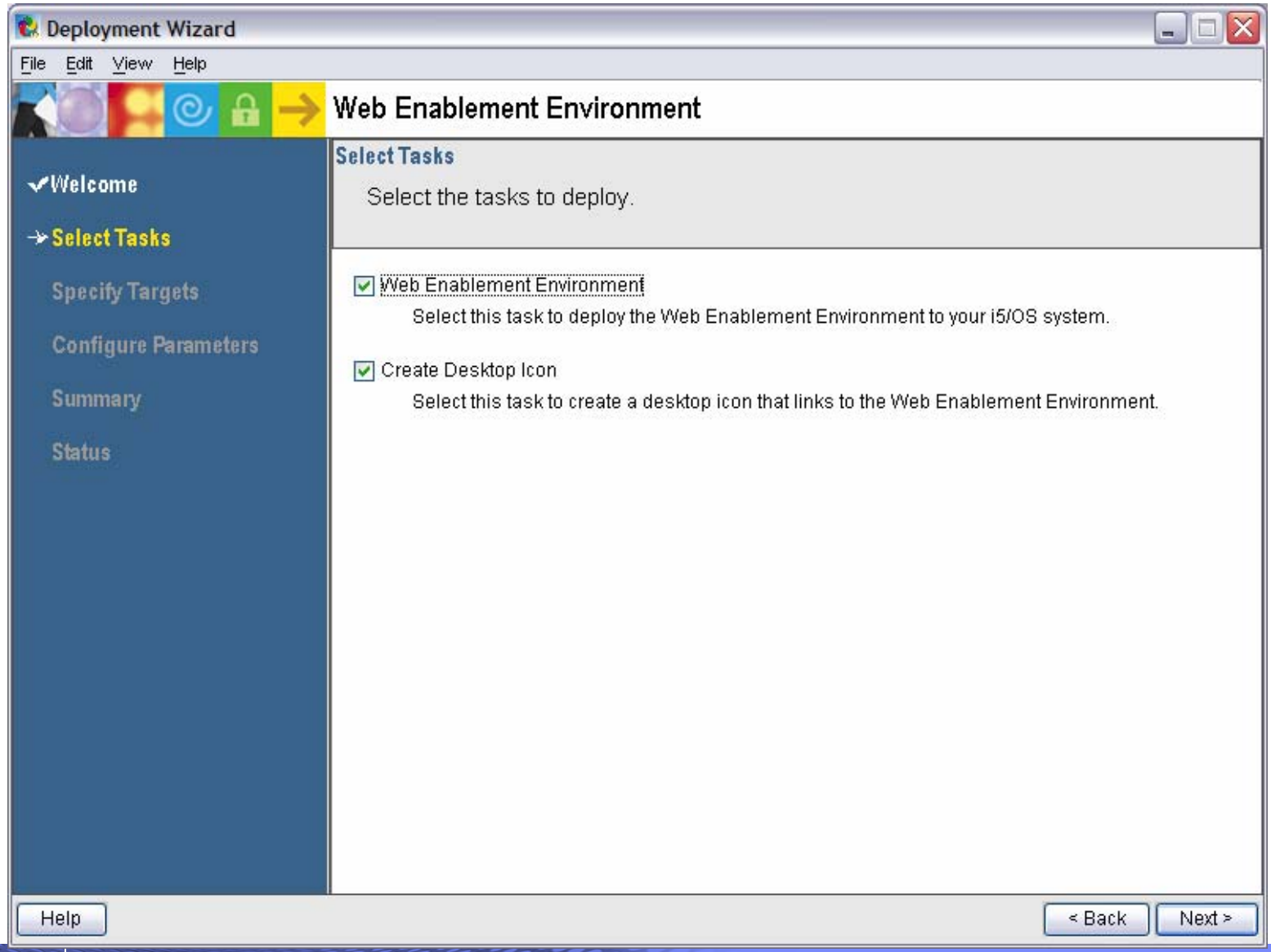
- After accepting the license agreements, this is the first page of the deployment wizard



Express Runtime Web Environments

Demonstration (continued)

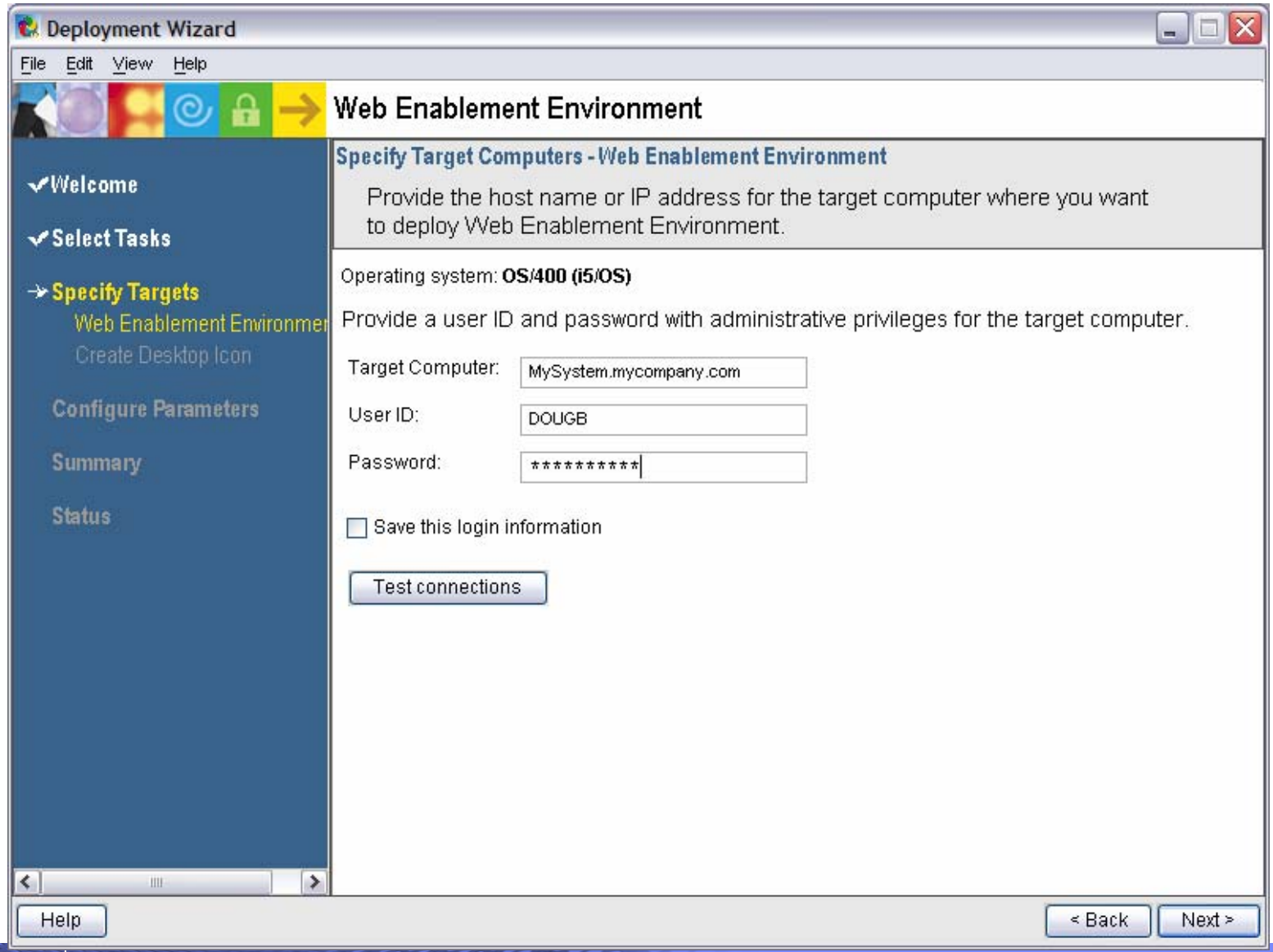
- Deploy the web environment and create the desktop icon to the FirstSteps webpage



Express Runtime Web Environments

Demonstration (continued)

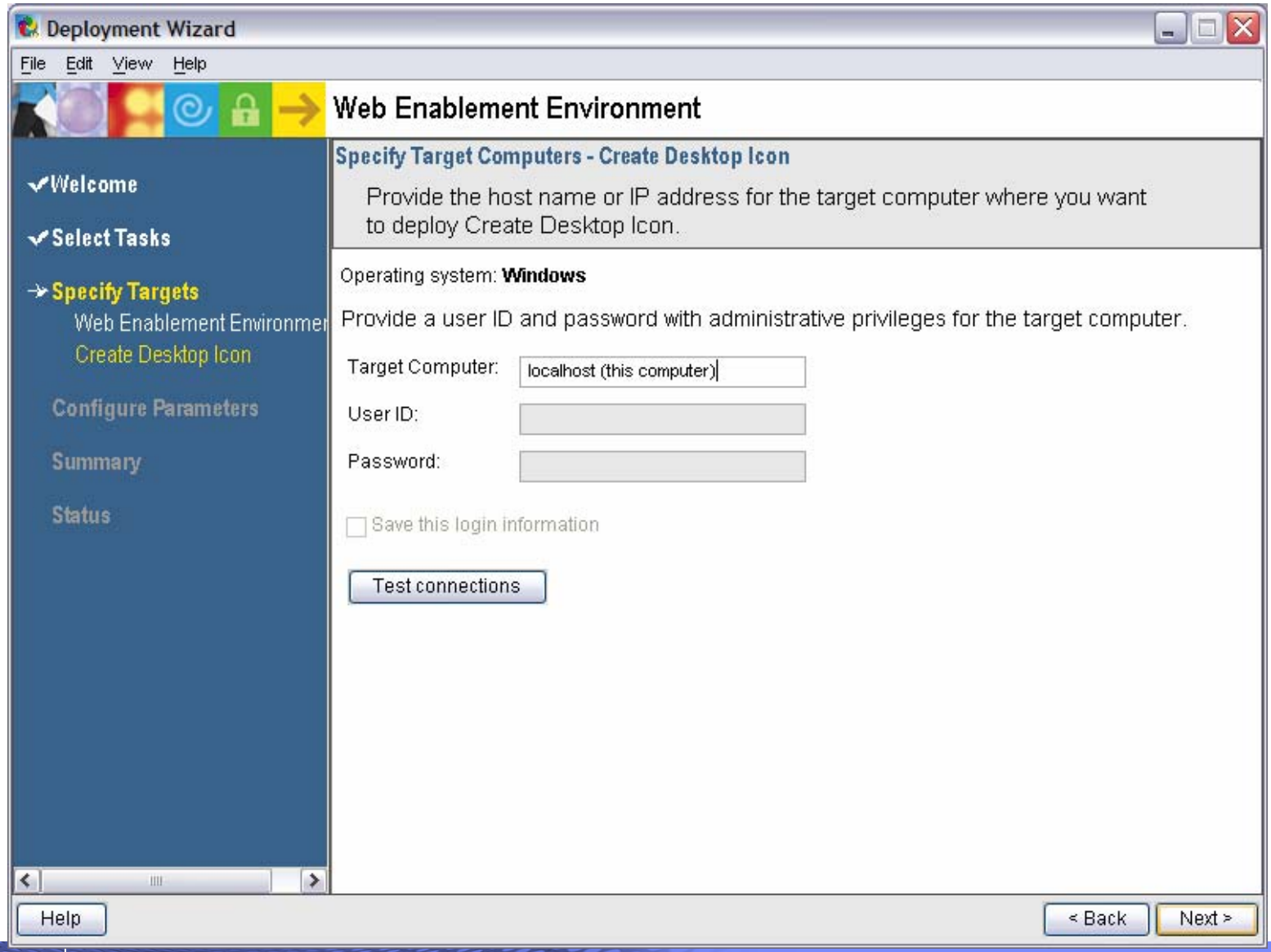
- Name of i5/OS system to deploy the environment to



Express Runtime Web Environments

Demonstration (continued)

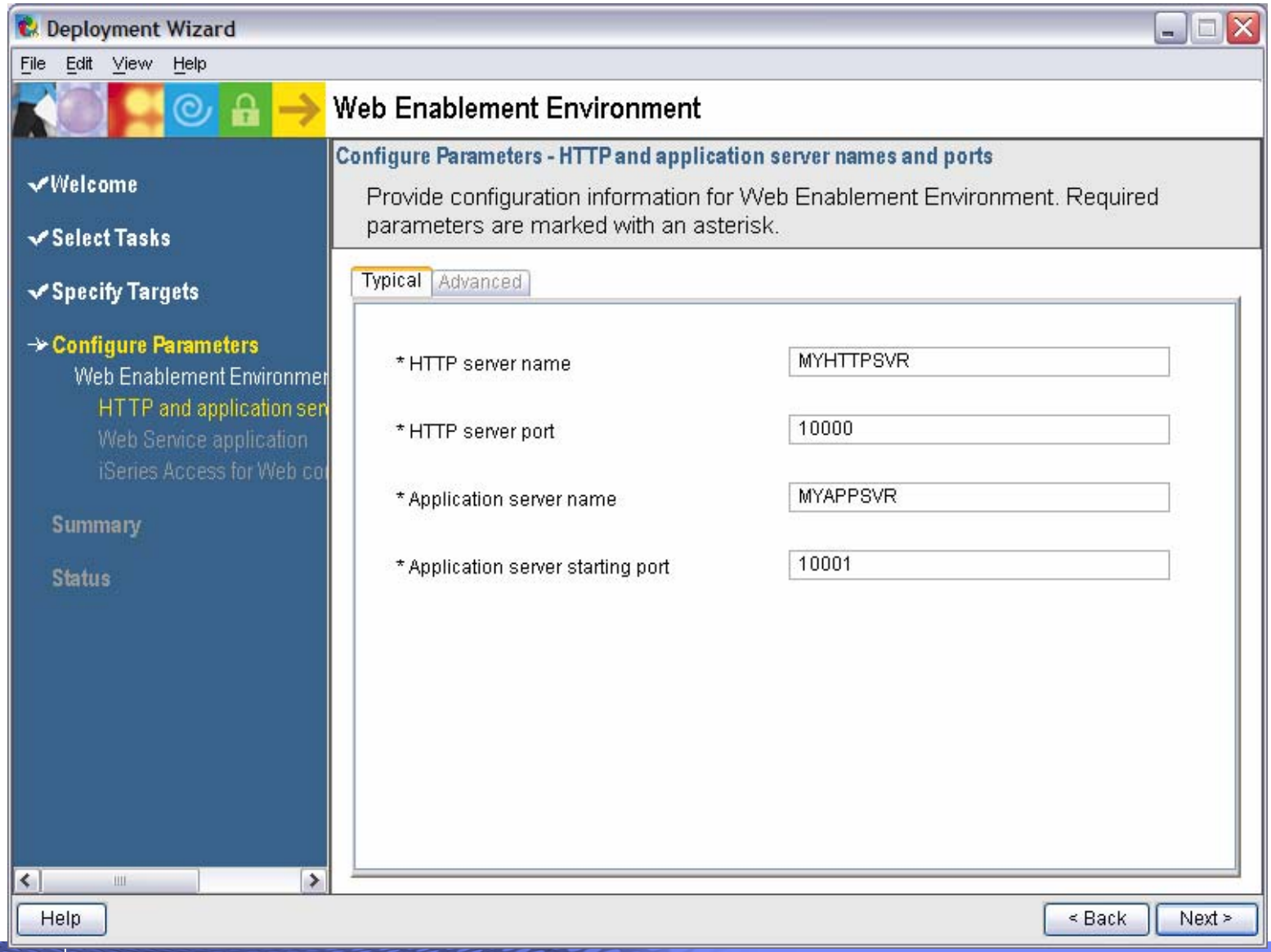
- The deployment wizard displays this page for the desktop icon, click Next



Express Runtime Web Environments

Demonstration (continued)

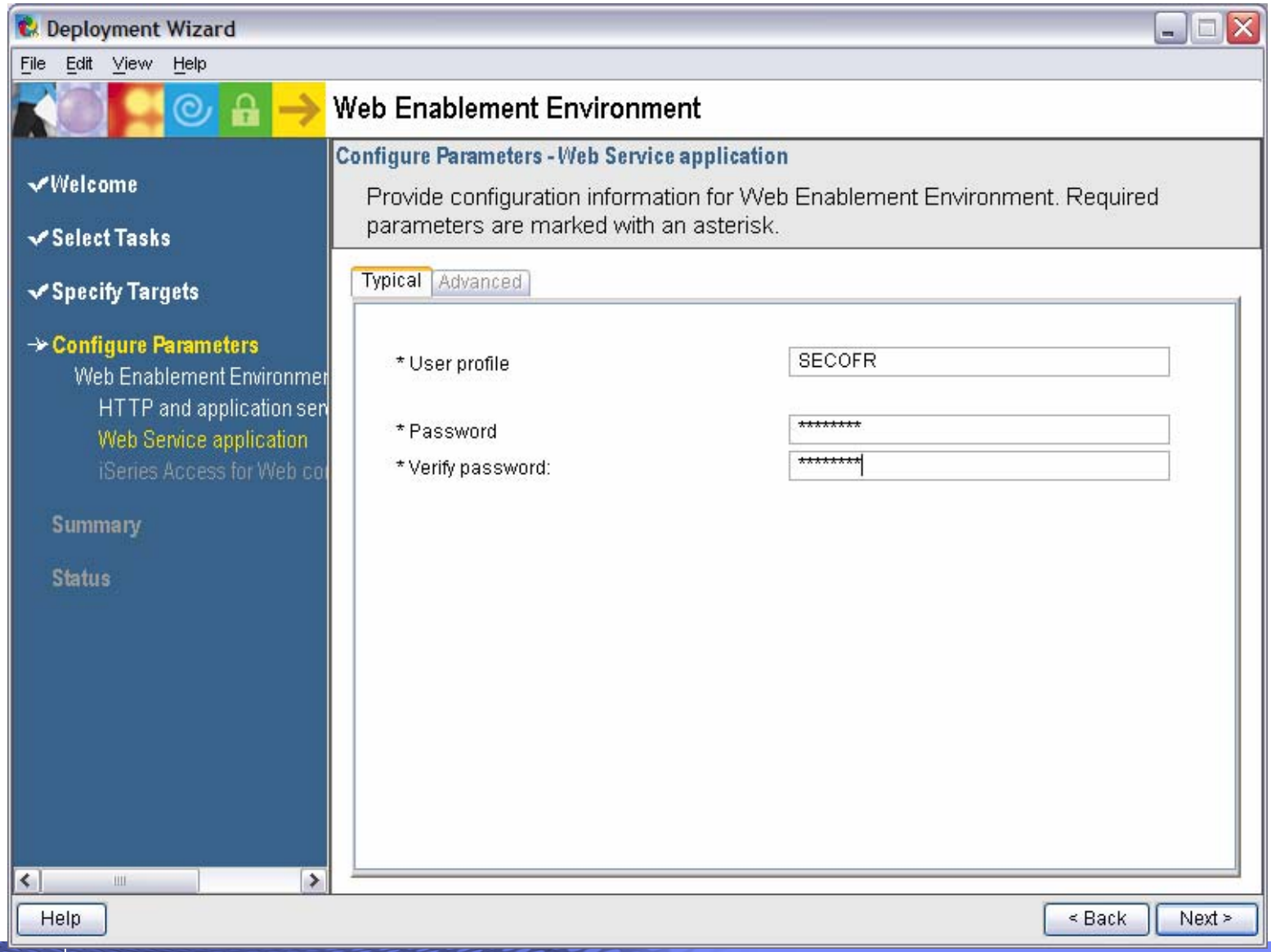
- Name the HTTP web server and it's port, name WebSphere profile/app server and it's port range



Express Runtime Web Environments

Demonstration (continued)

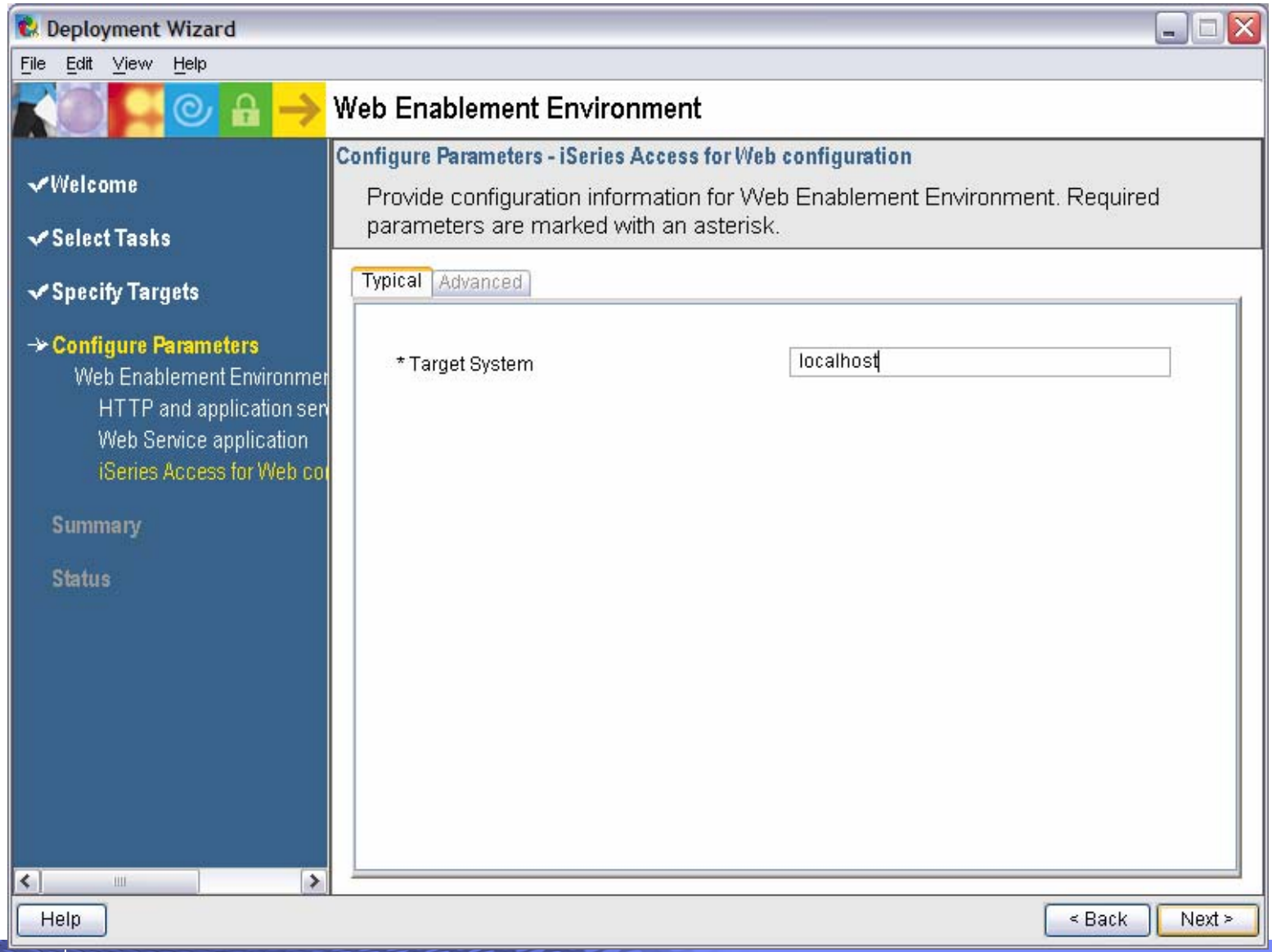
- Deployment of the sample applications requires a security officer level user ID/password



Express Runtime Web Environments

Demonstration (continued)

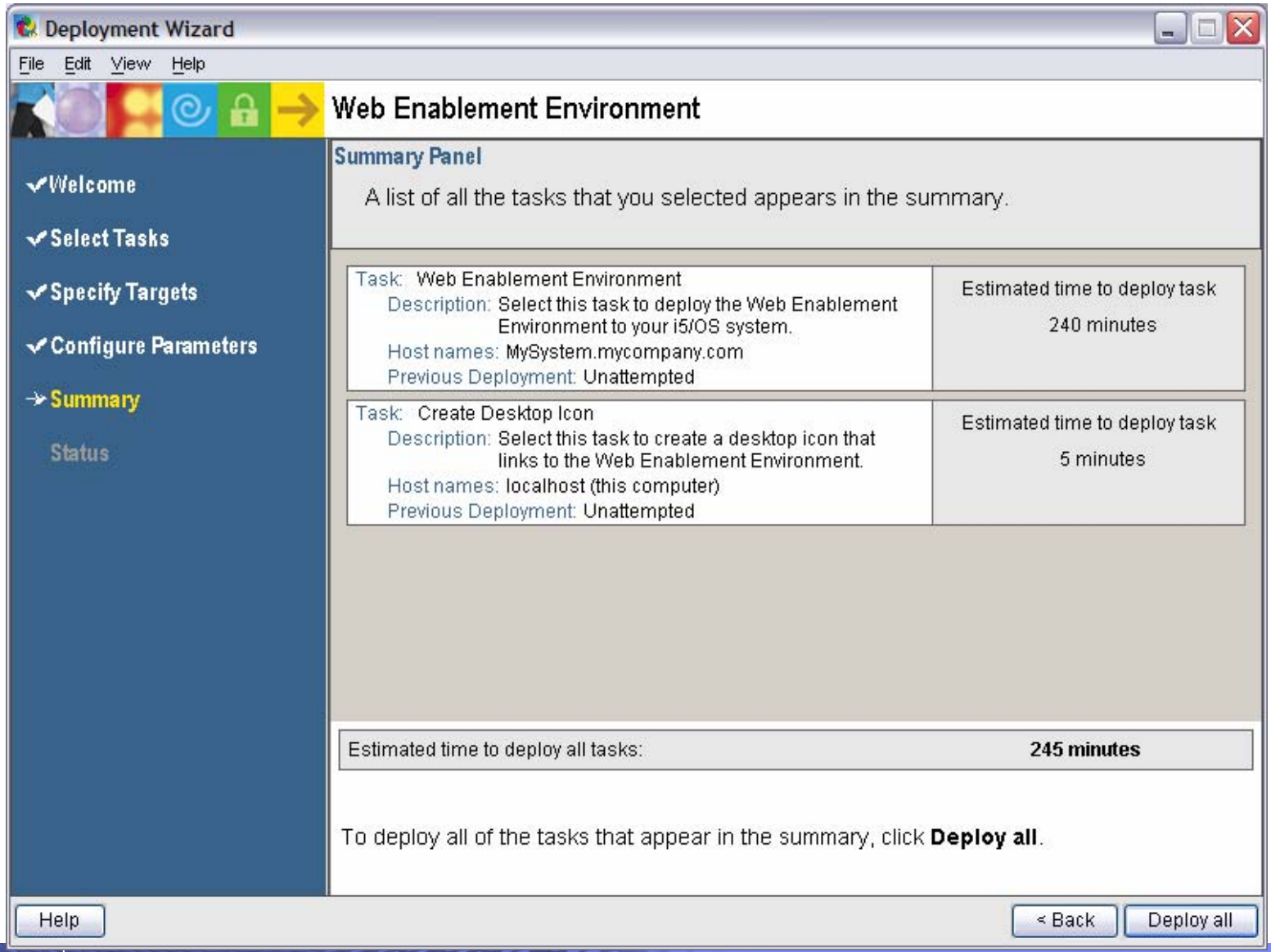
- System i Access for Web can connect to the i5/OS system deploying to or another in the network



Express Runtime Web Environments

Demonstration (continued)

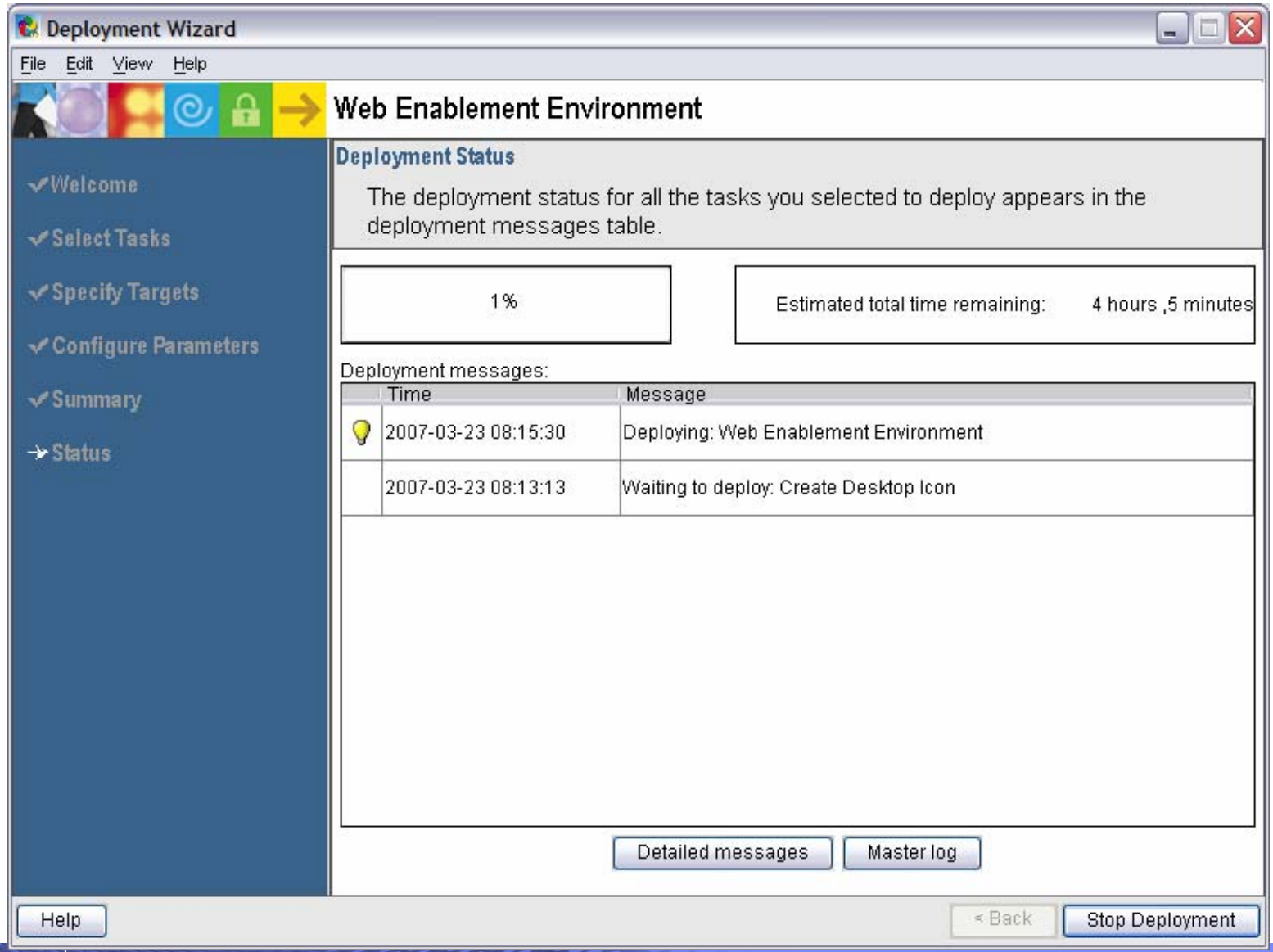
- Summary page, click Deploy all



Express Runtime Web Environments

Demonstration (continued)

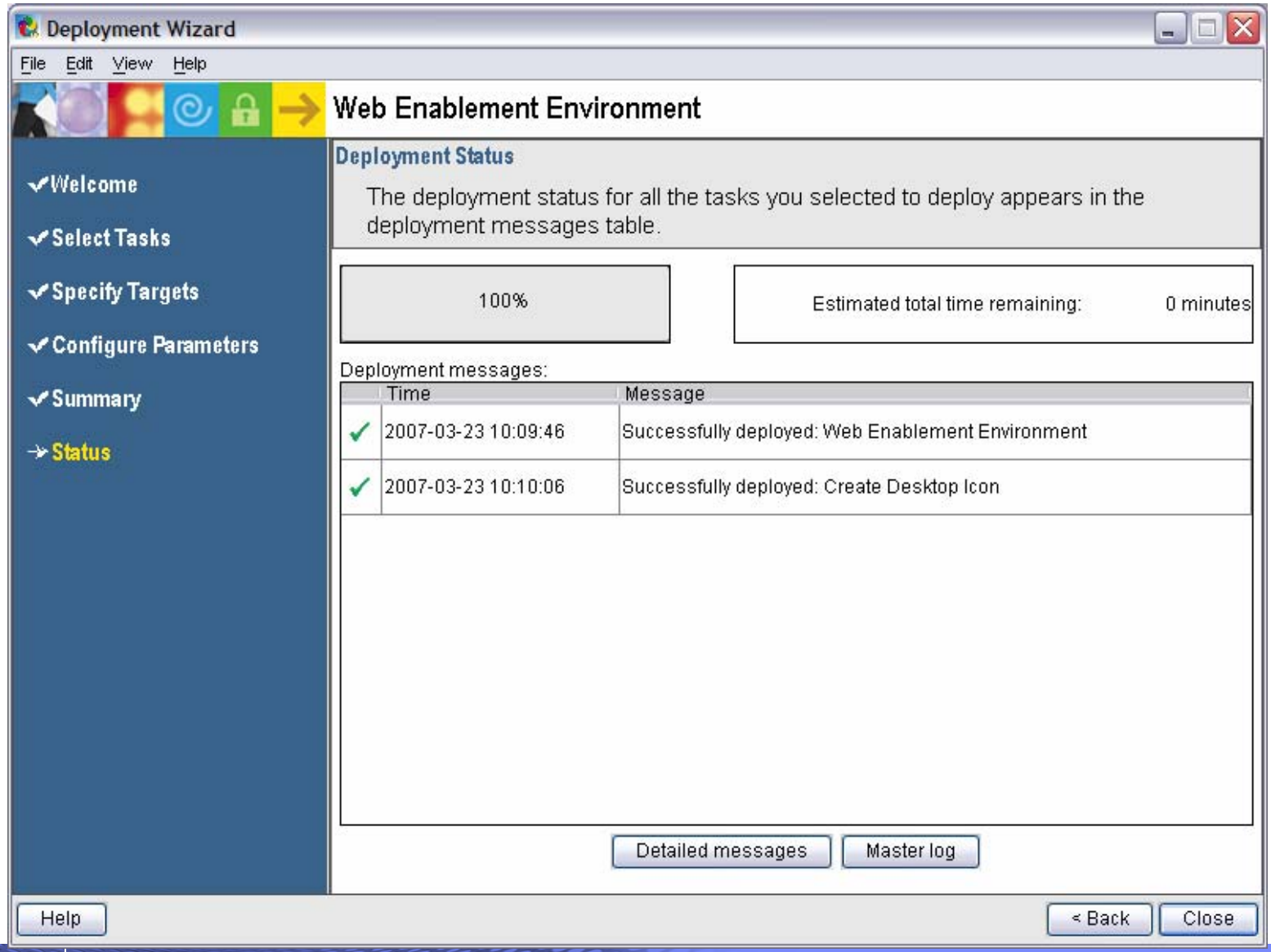
- Progress of the deployment



Express Runtime Web Environments

Demonstration (continued)

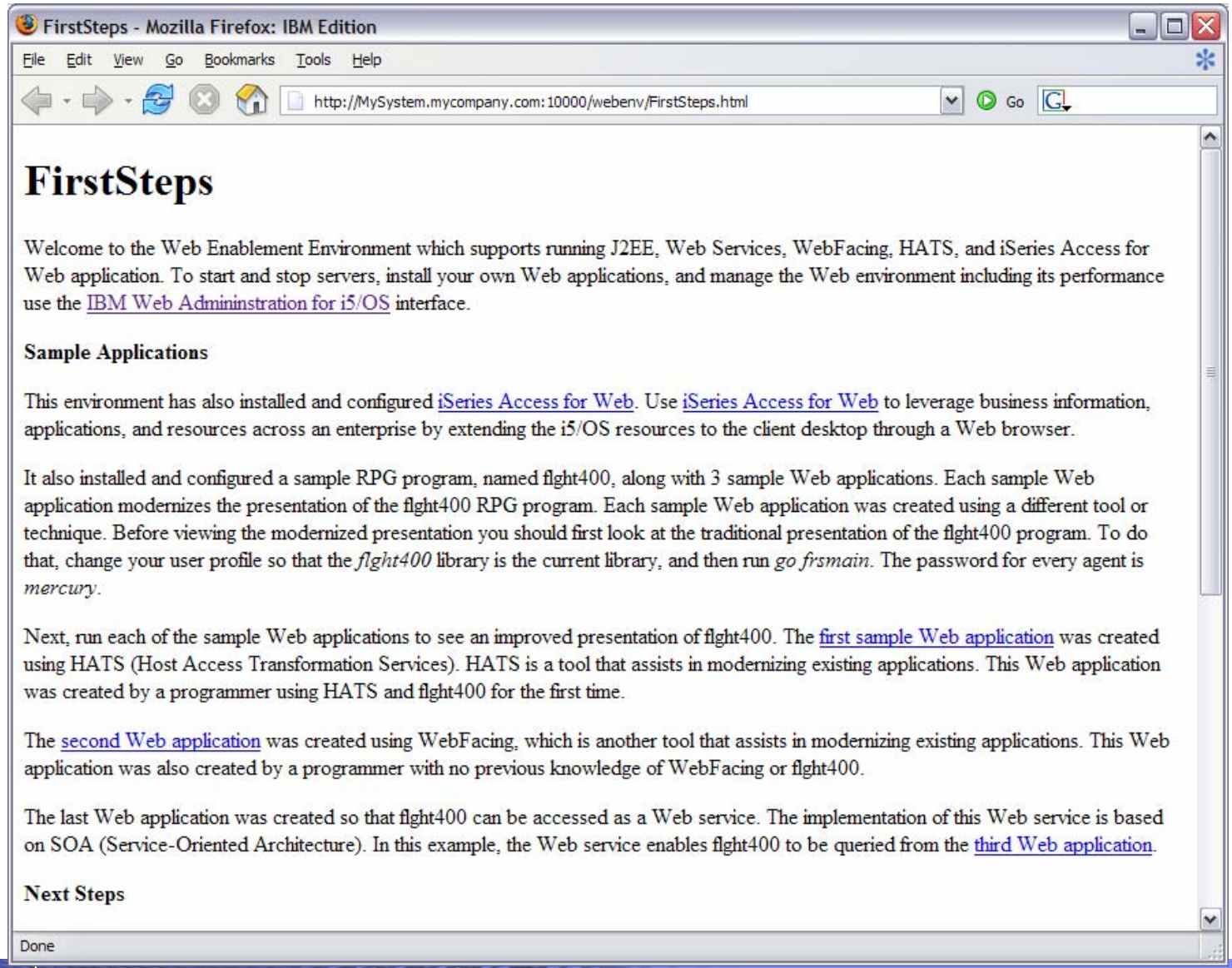
- Successful completion



Express Runtime Web Environments

Demonstration (continued)

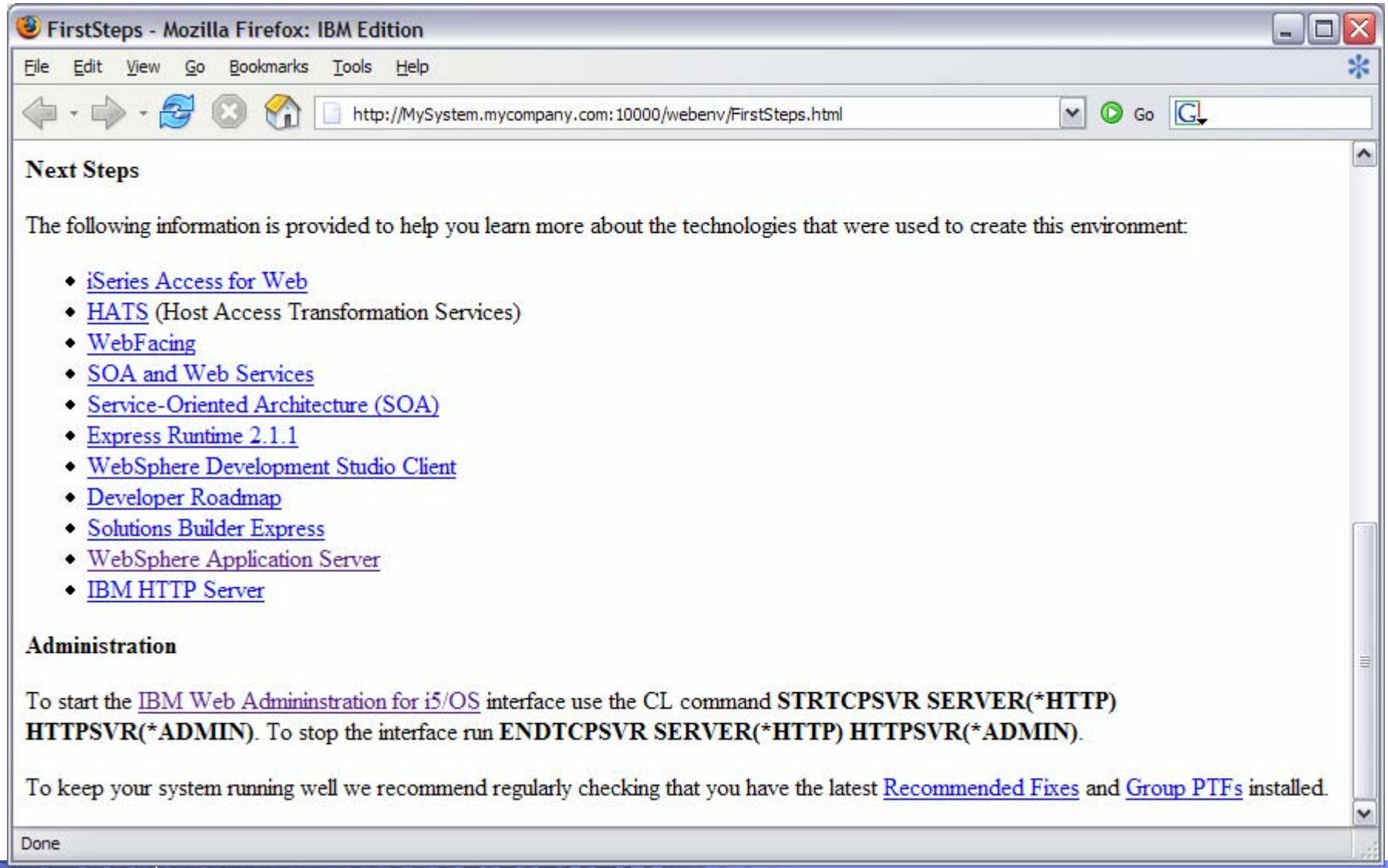
- Click the desktop icon named **Web_Enablement_Environment_V5R4M0**



Express Runtime Web Environments

Demonstration (continued)

- Click the desktop icon named **Web_Enablement_Environment_V5R4M0**



Express Runtime Web Environments

Questions regarding the Express Runtime Web Environments option?

Integrated Web application server
What is it, does System i Access for Web support it?

- What is the i5/OS integrated Web application server
  - A web application engine much like ASF Tomcat
  - Uses minimal system resources, similar to ASF Tomcat
  - Minimal effort by an Administrator to maintain
  - V5R4 is the last release i5/OS will contain ASF Tomcat
- How is it packaged
  - 5722-DG1 IBM HTTP Server for i5/OS
  - Available in the DG1 group PTF
    - V5R4 SF99114 level 6 or later
    - V5R3 SF99099 level x or later
- System i Access for Web support
  - Only V5R4 System i Access for Web supports the i5/OS integrated Web application server
  - V5R4 System i Access for Web can be installed and is supported on…
    - V5R3 i5/OS
    - V5R4 i5/OS

Integrated Web application server
System i Access for Web within this environment

- To use System i Access for Web within the i5/OS integrated Web application server

1. Stop the Web Administration for i5/OS
   - ENDTCPSVR SERVER(*HTTP) HTTPSVR(ADMIN)
2. Load/apply latest 5722-DG1 group PTF (review cover letters for any additional information)
   - V5R4 SF99114
   - V5R3 SF99099
3. Load/apply latest **V5R4** System i Access for Web PTF
   - SI25551
4. Configure System i Access for Web
   - QSH
   - cd /QIBM/ProdData/Access/Web2/install
   - cfgaccweb2 –appsvrtype *INTAPPSVR
5. Start the Web Administration for i5/OS
   - STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
6. Start preconfigured HTTP web server
   - STRTCPSVR SERVER(*HTTP) HTTPSVR(IWADFT)
7. Open a browser to System i Access for Web using preconfigured HTTP:port
   - http://<system_name>:2020/webaccess/iWAMain
8. Done!

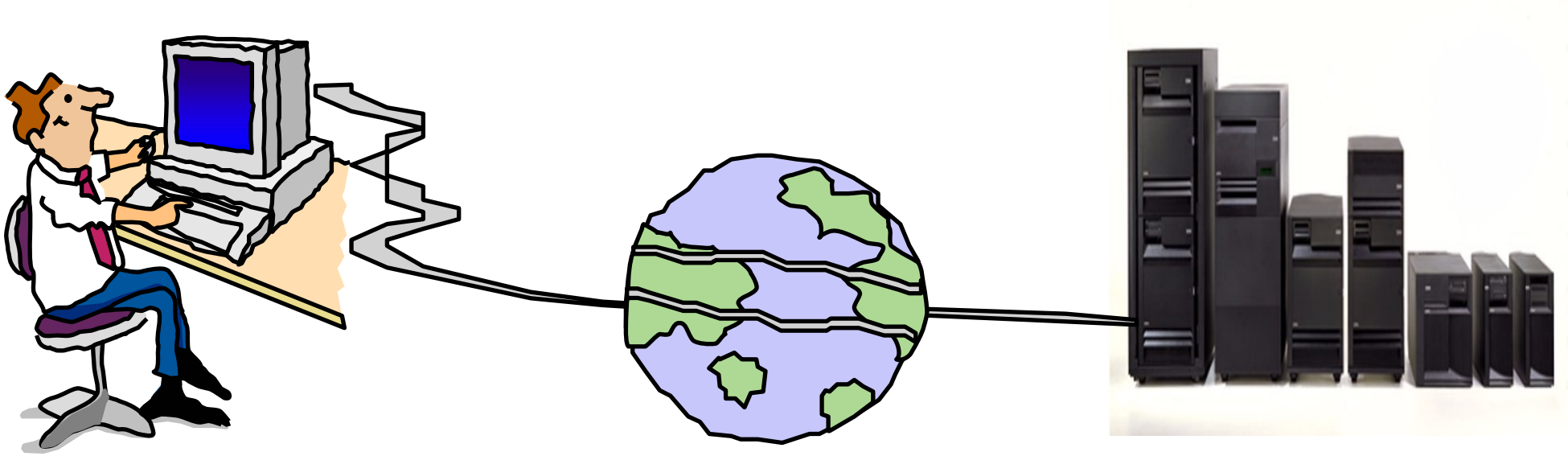
Integrated Web application server

Questions regarding the integrated Web application server option?

3 Options setting up Access for Web environment

- This completes the discussion of the options for setting up Access for Web environments.
- The following charts discuss…
  - Using System i Access for Web to backend to other i5/OS systems
  - Using the 5250 session function to connect to i5/OS systems in the network
  - How to automate the startup of the web environment following a system IPL
  - How to see what users are connected through System i Access for Web
  - Setting limits

System i Access for Web from the Internet and Security



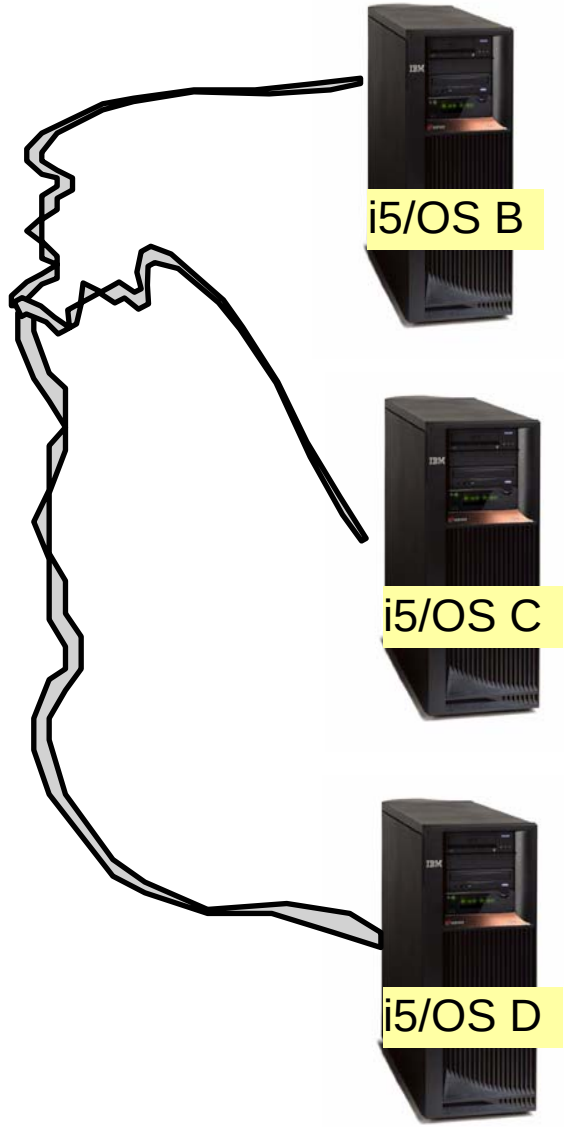
The Question

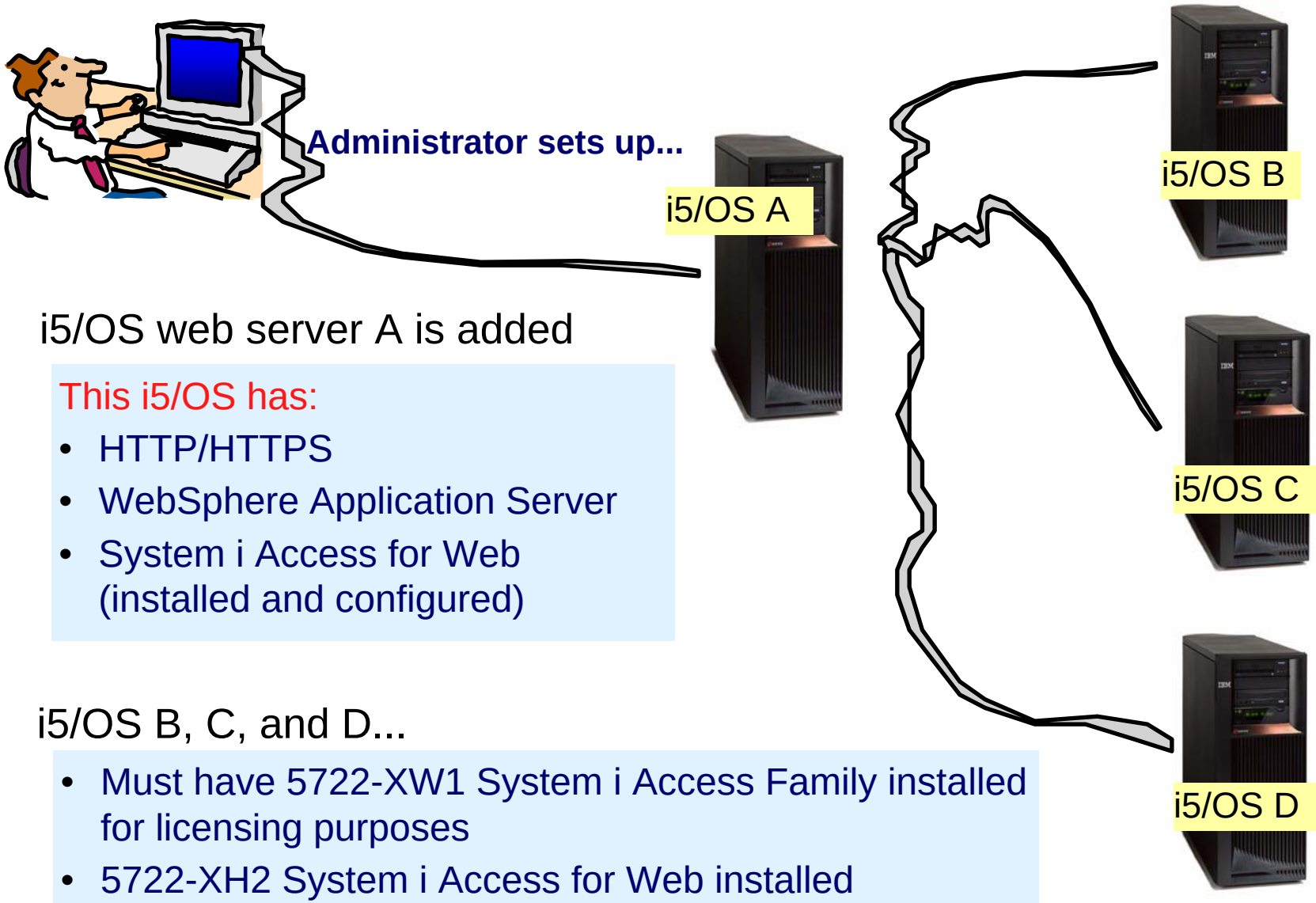
- Would it be possible for my users to access their data from home over the internet? What would the setup/environment look like?
- How would security be enabled to protect the network?
- Could the web environment be isolated from the servers containing data?

Let's look at an example...

Backend i5/OS

- The backend i5/OS B, C, D contain data.
- They are inside the company network.
- i5/OS B, C, D do not have web serving software installed, let's assume they don't.
- I want some users to be able to always connect to i5/OS B, some others to i5/OS C, and some others to i5/OS D





i5/OS web server A is added

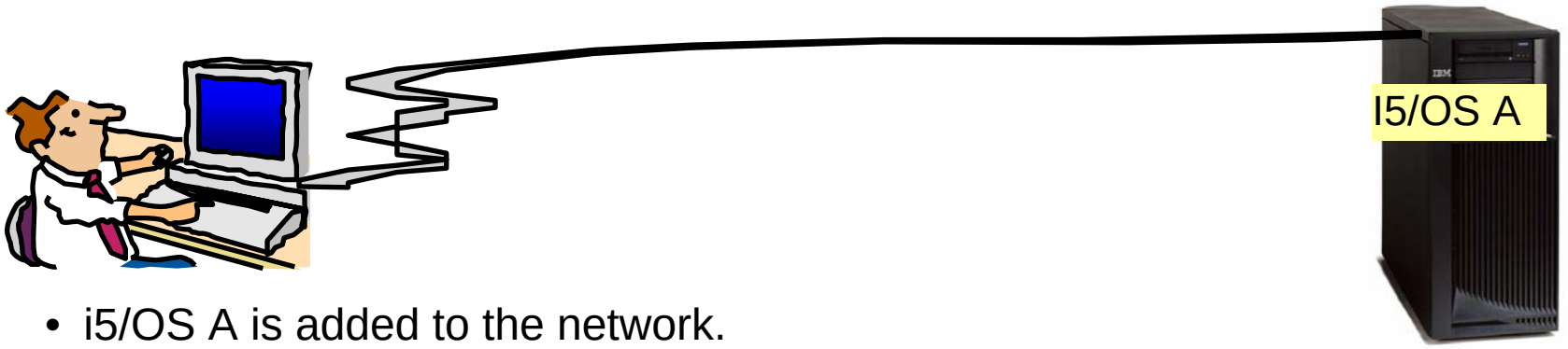
This i5/OS has:

- HTTP/HTTPS
- WebSphere Application Server
- System i Access for Web (installed and configured)

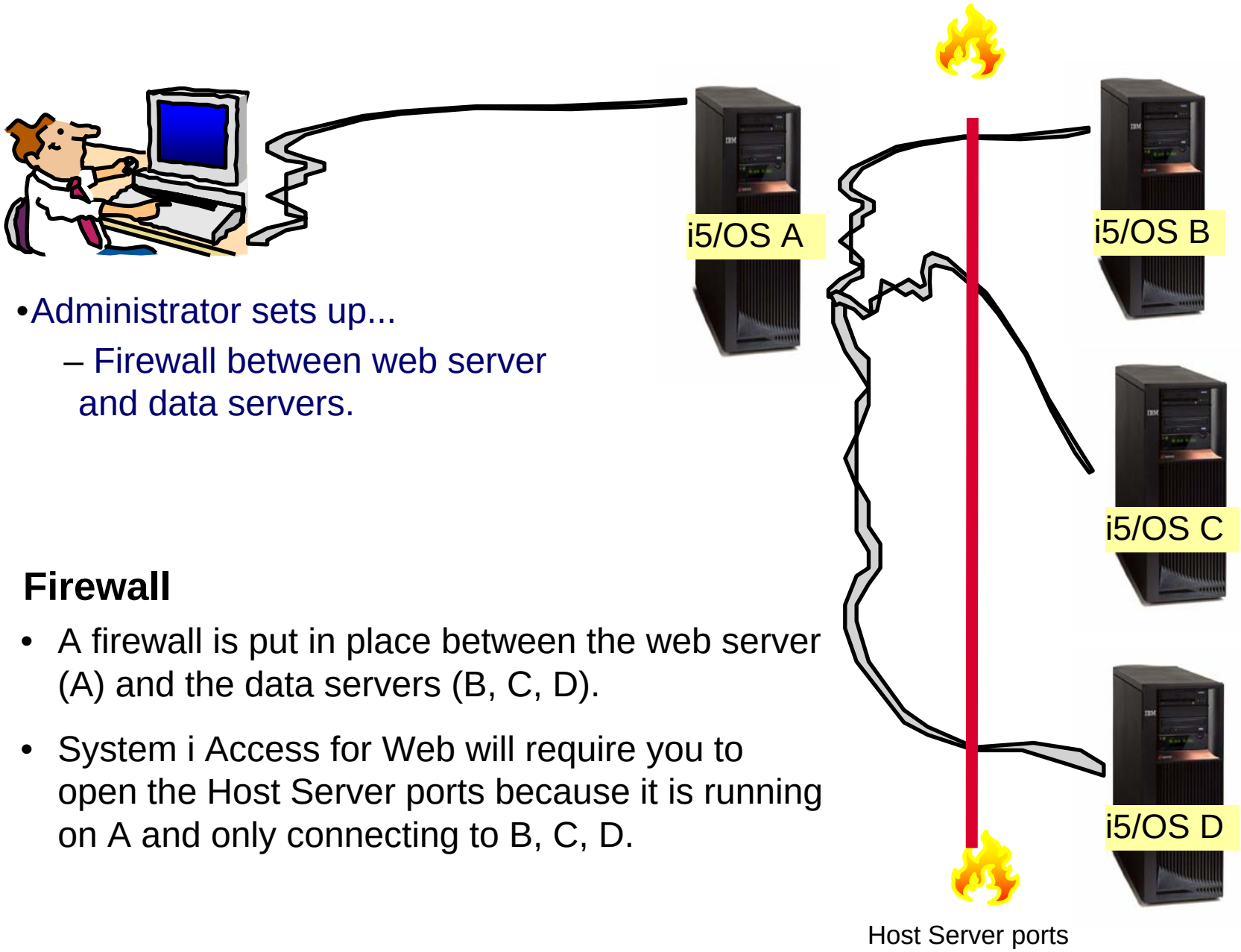
i5/OS B, C, and D...

- Must have 5722-XW1 System i Access Family installed for licensing purposes
- 5722-XH2 System i Access for Web installed (RSTLICPGM) but not configured

Setting up i5/OS A



- i5/OS A is added to the network.
- i5/OS A has HTTP/HTTPS, WebSphere Application Server, System i Access for Web installed/configured.
  - Configure 3 HTTP servers -- one for i5/OS B, one for i5/OS C, and one for i5/OS D
  - 3 WAS instances (one for each server)
  - Configures System i Access for Web in each instance (use TGTSVR parameter on CFGACCWEB2 command)
    - Adds "realm=server_name.mydomain.com" to /QIBM/UserData/Access/Web2/<wasinst>/<appsvr>/config/webaccess.properties

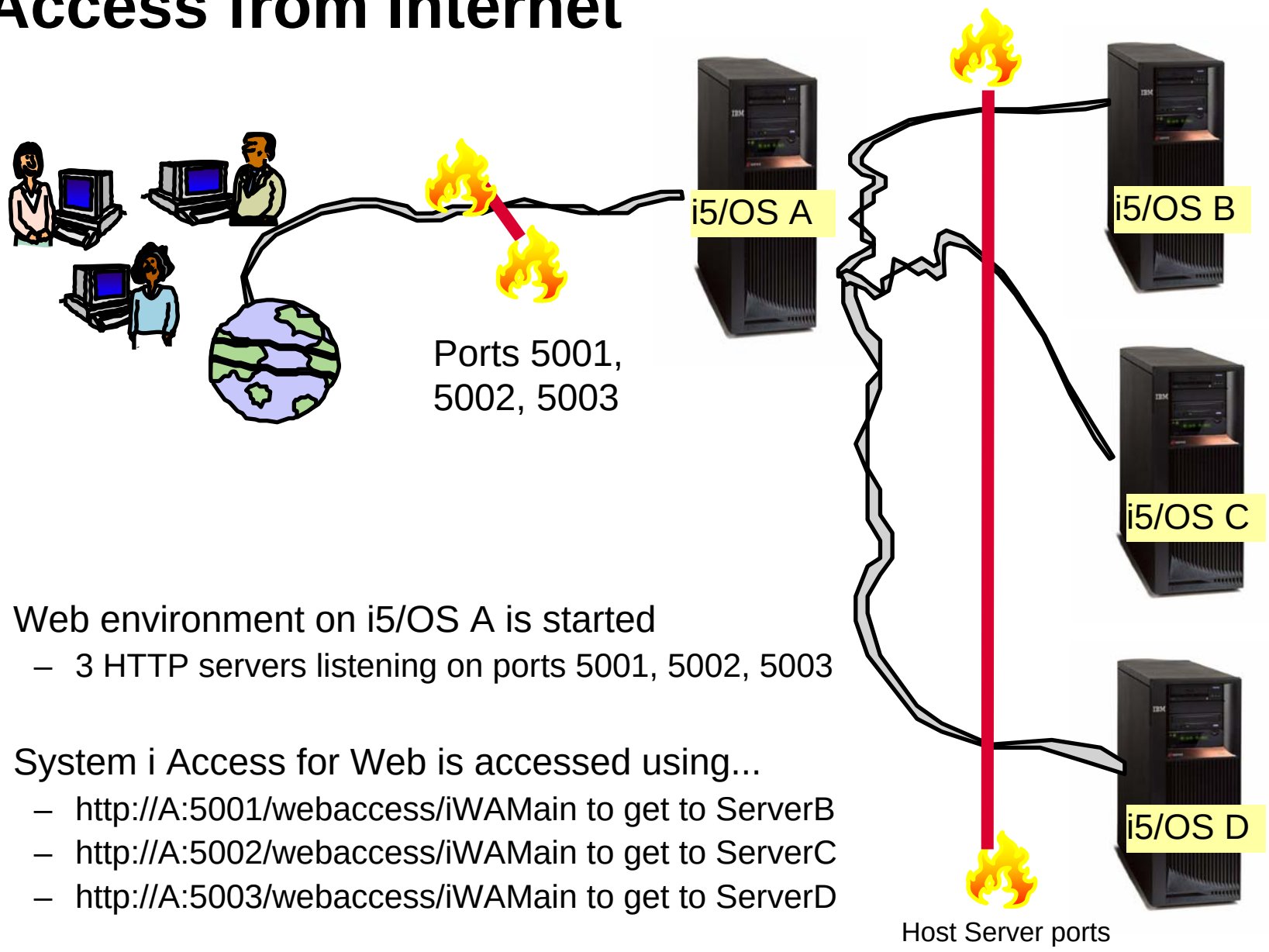


- Administrator sets up...
  - Firewall between web server and data servers.

Firewall

- A firewall is put in place between the web server (A) and the data servers (B, C, D).
- System i Access for Web will require you to open the Host Server ports because it is running on A and only connecting to B, C, D.

Access from Internet

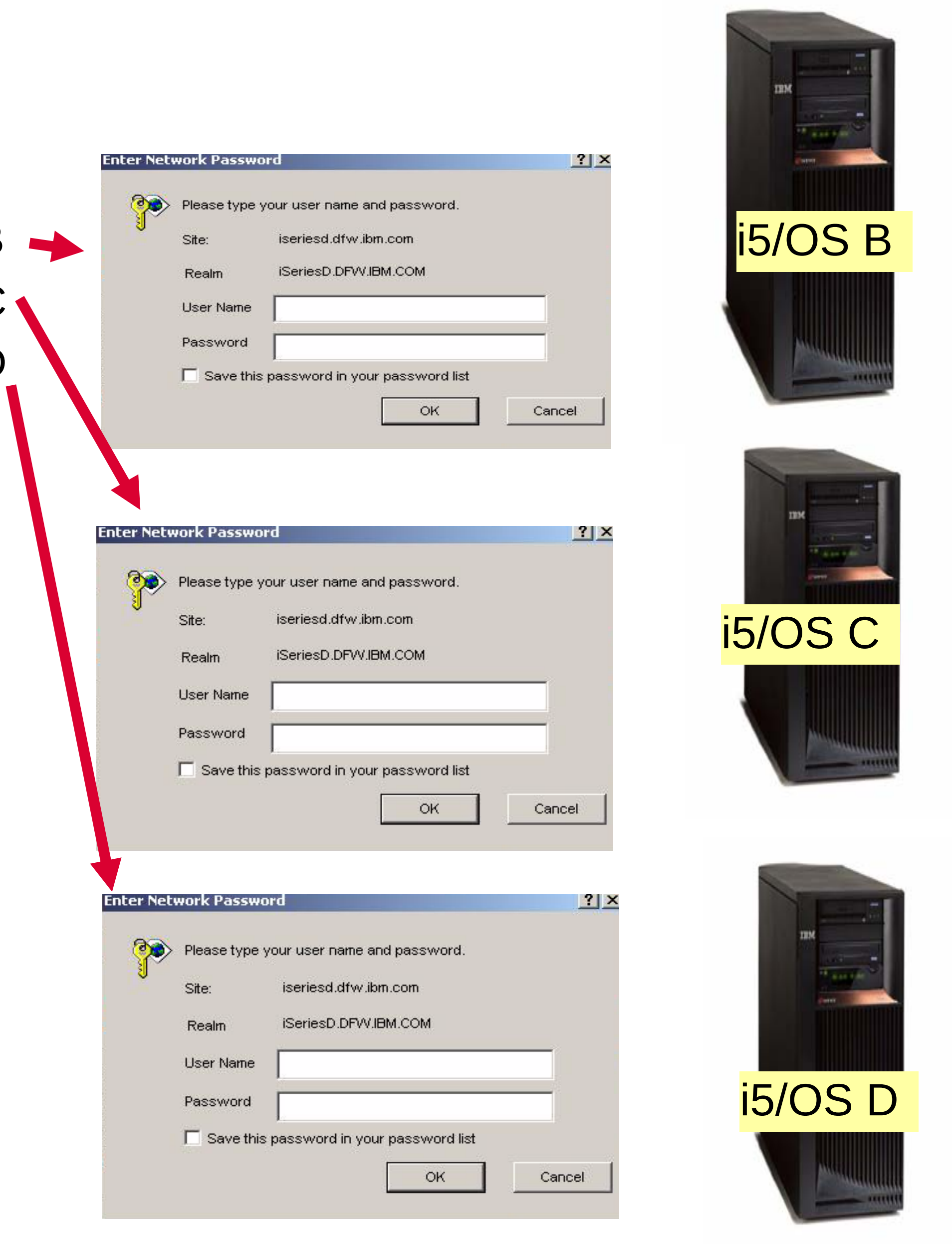


- Web environment on i5/OS A is started
  - 3 HTTP servers listening on ports 5001, 5002, 5003
- System i Access for Web is accessed using...
  - http://A:5001/webaccess/iWAMain to get to ServerB
  - http://A:5002/webaccess/iWAMain to get to ServerC
  - http://A:5003/webaccess/iWAMain to get to ServerD

Please note:
This is only one example of how to configure this environment.

User starts browser and keys in url address...

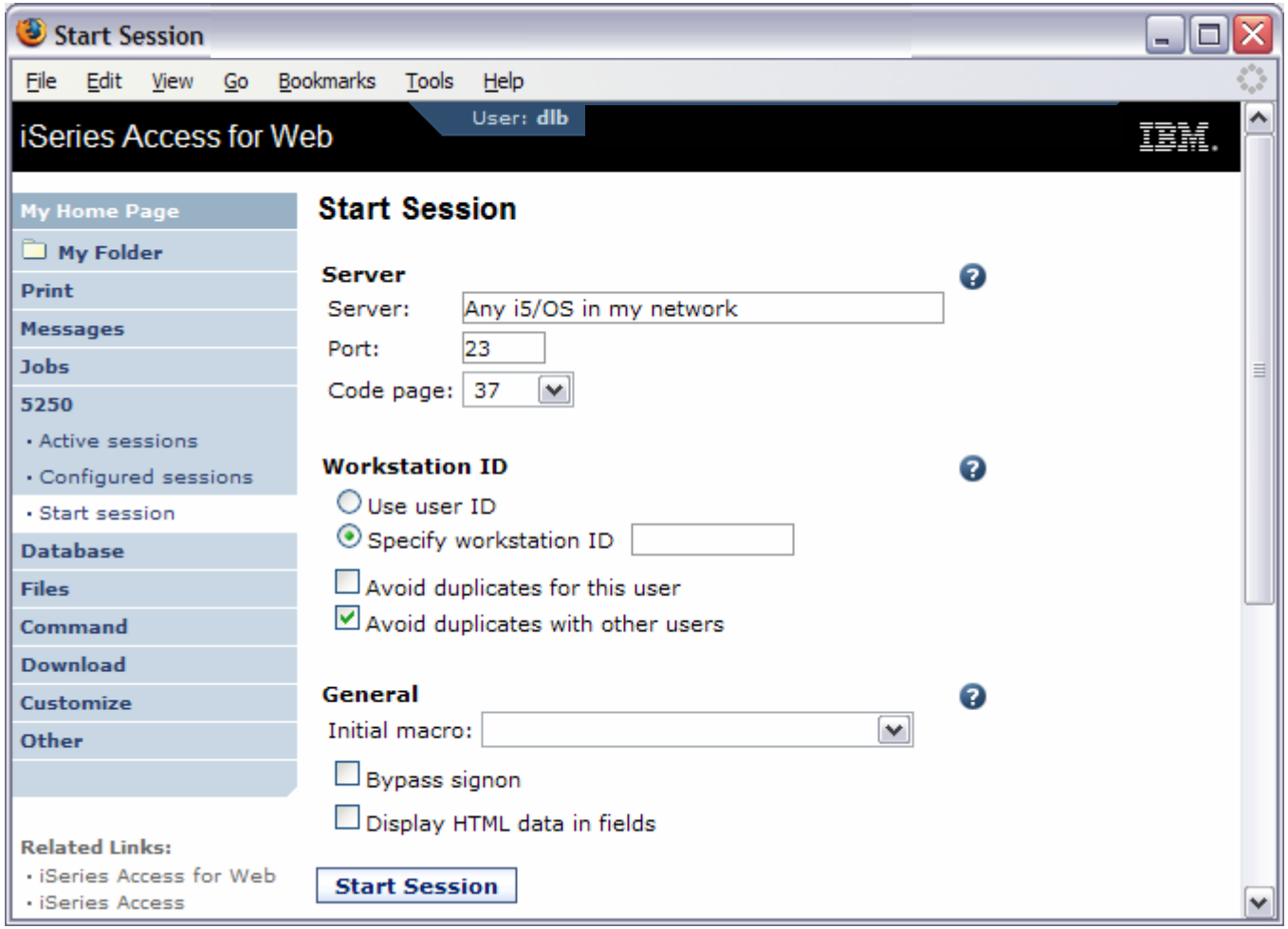
- System i Access for Web user is providing a different address to get to each i5/OS server...
  - http://A:5001/webaccess/iWAMain   to get to ServerB
  - http://A:5002/webaccess/iWAMain   to get to ServerC
  - http://A:5003/webaccess/iWAMain   to get to ServerD



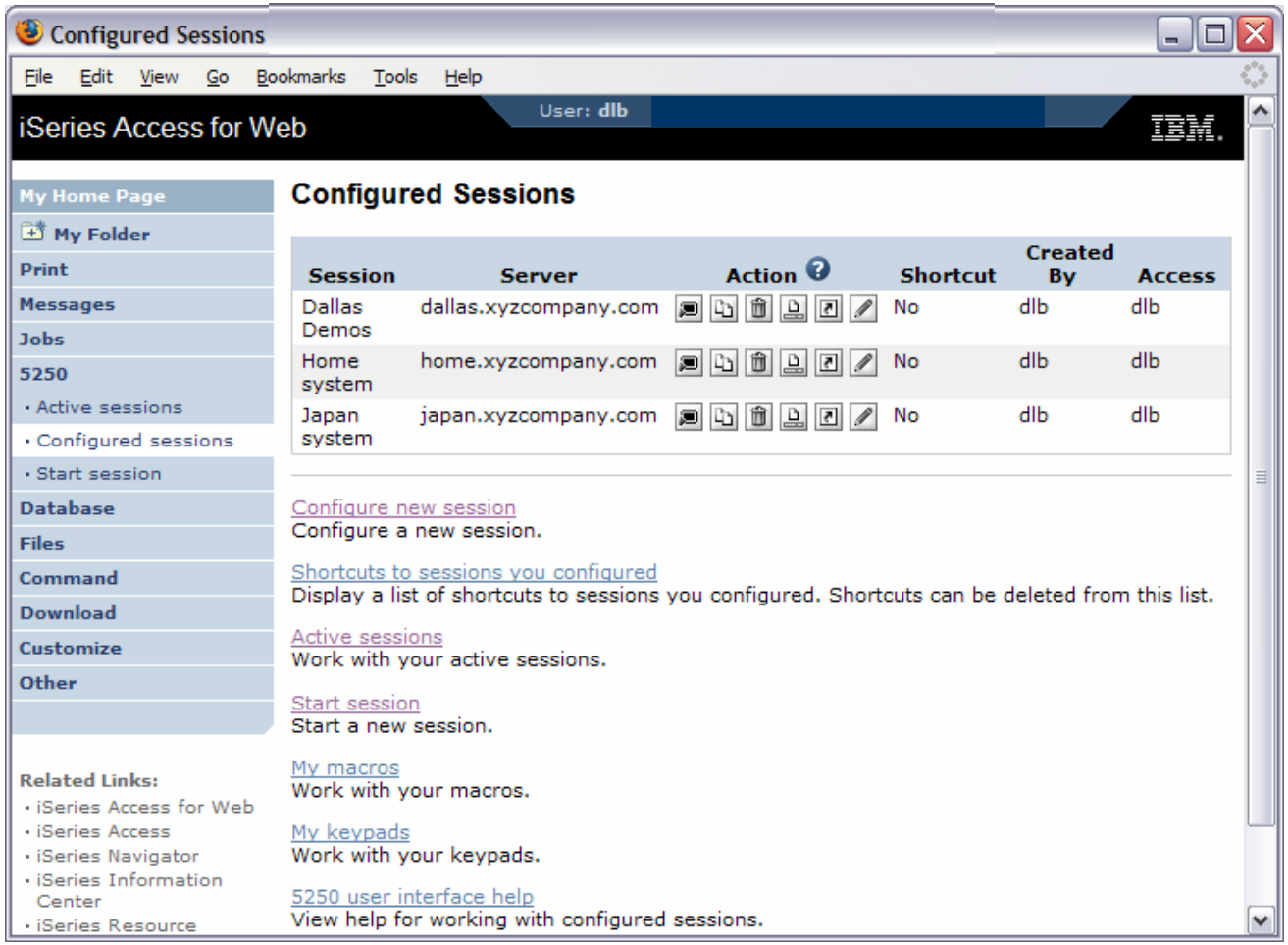
The user must provide the correct i5/OS user ID and password for the backend data server to gain access.

System i Access for Web - 5250 session

- Could be connected to i5/OS B and start a new session from there to i5/OS C or i5/OS D
- Identify i5/OS server
- Determine what workstation (device) ID to use
- Connect to another i5/OS



Or could connect to another i5/OS server through a preconfigured shortcut



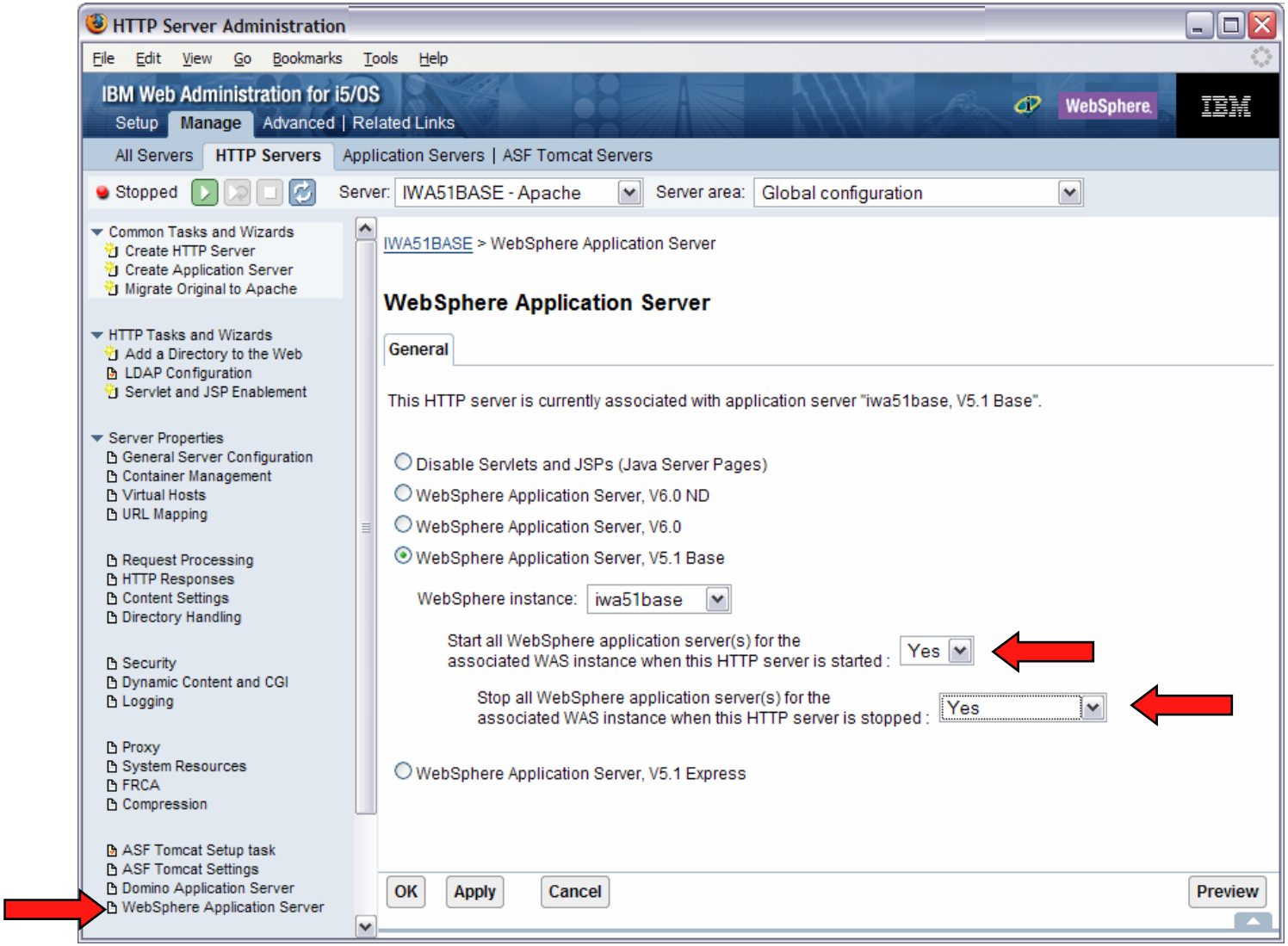
Auto start web environment after an IPL

- You can configure the HTTP server for your WebSphere application server to automatically start the WebSphere application server when it starts

- Use the following command to start the HTTP server as part of your IPL procedures and it will start your WebSphere application server.
  - STRTCPSVR SERVER(*HTTP) HTTPSVR(<http_server_name>)

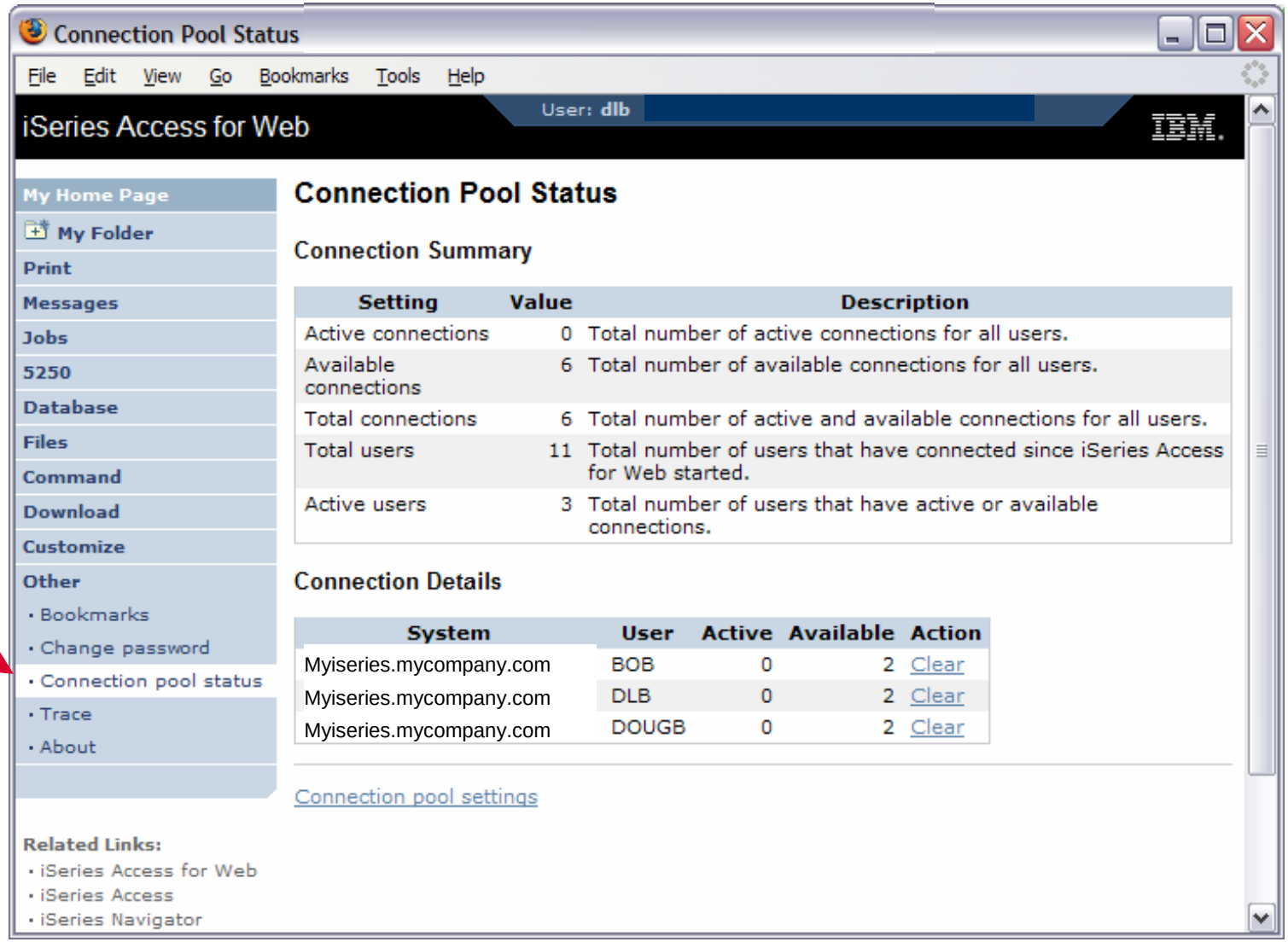
Auto start web environment after an IPL (continued)

STRTCPSVR SERVER(*HTTP) HTTPSVR(IWA51BASE)



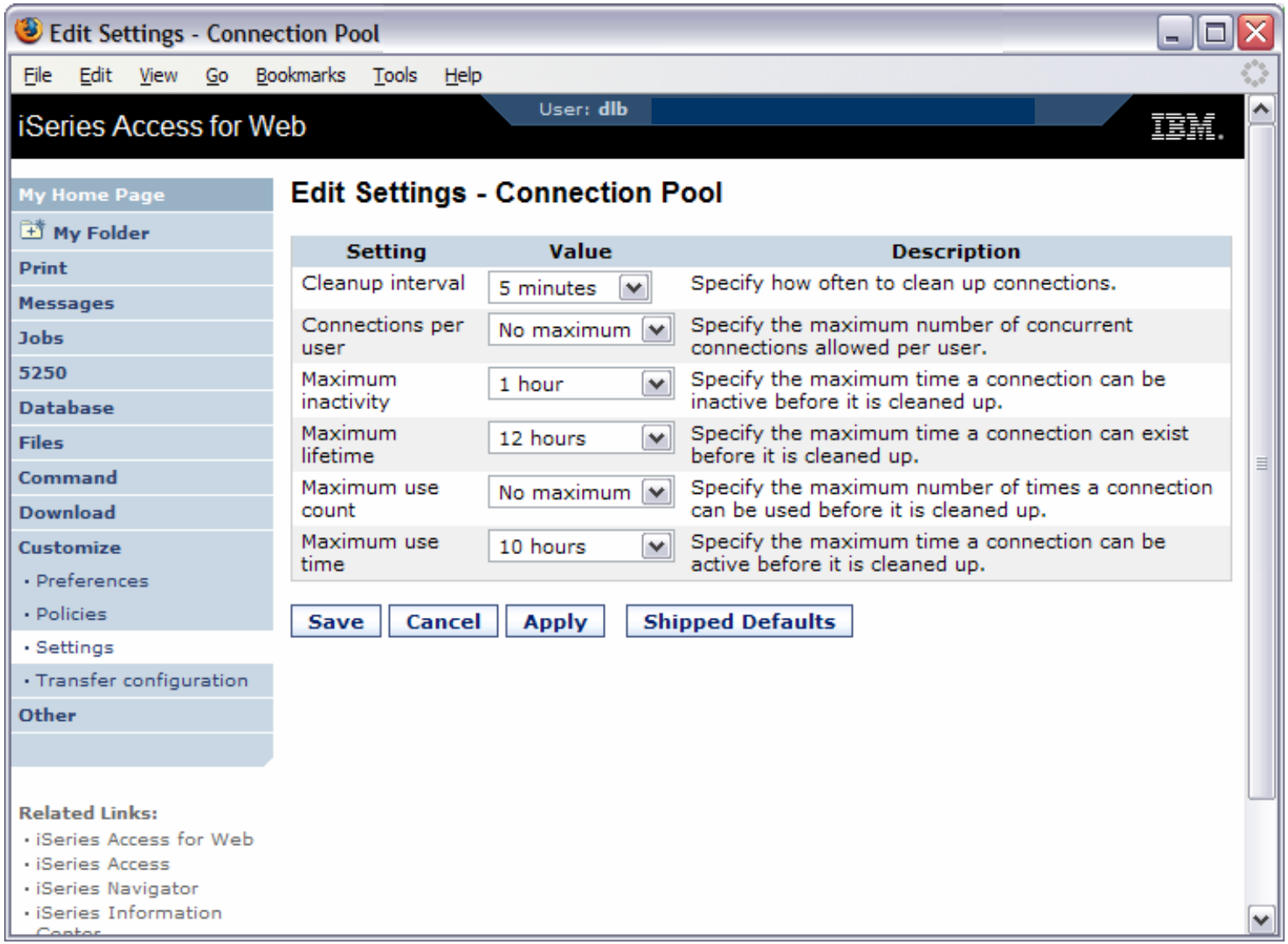
Who is connected using System i Access for Web?

Look in Connection Pool Status



Setting limits for System i Access for Web use...

- Connection Pool Settings
- Can get to this via:
  - Link on Connection Pool Status screen
  - Customize -> Settings



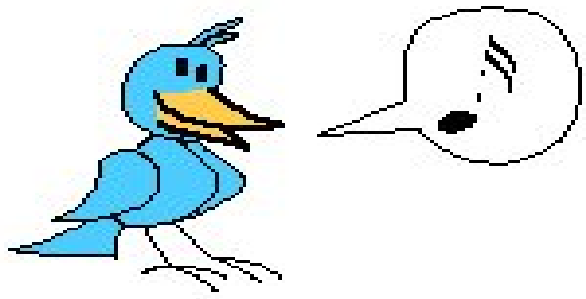
If using WAS Network Deployment for iSeries/i5/OS

- For the WebSphere Application Server Network Deployment for iSeries environment
  - WebSphere v5.0/5.1 Base Edition must be installed
  - WebSphere v6.0 Base/Express Edition must be installed
  - iSeries Access for Web does not support WebSphere instances/profiles that are federated to the WebSphere Network Deployment environment

Additional information

- The following resources are available
  - HTTP Server redbook
    - http://www.redbooks.ibm.com/redpieces/pdfs/sg246716.pdf
      - Section 6.3 Encrypting your data with SSL and TLS
      - Section 6.4 Proxy server: Protecting direct access
  - Information Center - Setting up a reverse proxy for HTTP server
    - http://publib.boulder.ibm.com/iseries/v5r2/ic2924/index.htm?info/rzaie/rzaiereverseproxy.htm
- See Appendix A for additional information

Appendix A. Additional Documentation



Enjoy the rest of your conference!

Notes: HTTP/HTTPS - SSL

The Internet was designed to be an open system and it allows any computer on the network to see the messages passing through. To consider an information transaction secure, it has to have the following characteristics:

Confidentiality
Use encryption if you want to ensure that the contents of the message remain private as they pass through the network.

Integrity
Use encryption and digital signatures if you want to ensure integrity. Messages are not altered while being transmitted.

Accountability
Use digital signatures when both the sender and the receiver agree that the exchange took place to ensure accountability.

Authenticity
OS/400 SSL provides server authentication so you can authenticate with whom you are talking.

You can configure the iSeries server to use a security protocol, called Secure Sockets Layer (SSL), for data encryption and client/server authentication. A client establishes an SSL session by sending an HTTPS request to the server on the SSL port. If SSL client authentication is enabled on the server, a client certificate is requested for any HTTPS request. SSL uses a handshake protocol where the server authenticates and the client authenticates if enabled. When authenticated, they agree on the security keys to use for the session, and the algorithms to be used for encryption and message digests or hashes. When a session has been established, all data exchanged on that session is encrypted.

Below is a highlevel list of steps involved with enabling HTTPS. The steps may not address all issues relative to your environment. It is recommended that the iSeries information center and HTTP server documention be referenced to enable HTTPS.

1. If you are new to SSL, HTTPS, or digital certificates, review the following information before configuring SSL.
   - Security concepts information in the iSeries Information Center (http://www.ibm.com/eserver/iseries/infocenter). Look for information under the topics Networking-->Networking Security.
   - Security and SSL information in the HTTP server documentation at http://www.ibm.com/servers/eserver/iseries/software/http
2. Configure your HTTP server instance to allow SSL connections. You must already have created an HTTP server that you want to enable to run SSL.
3. Configure digital certificates through the Digital Certificate Manager on the iSeries server.
4. Configure the web application server to use the SSL port. The SSL port must be listed within the WebSphere virtual host alias table.
5. Open a browser to one of the following URLs:
   - If using the default SSL port of 443
     https://<server_name>/webaccess/iWAHome
   - If using any other port number, replace the <port> with the port number configured with the HTTP server.
     https://<server_name>:<port>/webaccess/iWAHome

Notes: Firewalls

A firewall is a blockade between a secure internal network and an untrusted network such as the Internet. Most companies use a firewall to connect an internal network safely to the Internet, although you can use a firewall to secure one internal network from another also.

A firewall provides a controlled single point of contact (called a chokepoint) between your secure internal network and the untrusted network. The firewall:

- Lets users in your internal network use authorized resources that are located on the outside network.
- Prevents unauthorized users on the outside network from using resources on your internal network.

When you use a firewall as your gateway to the Internet (or other network), you reduce the risk to your internal network considerably. Using a firewall also makes administering network security easier because firewall functions carry out many of your security policy directives.

How a firewall works

To understand how a firewall works, imagine that your network is a building to which you want to control access. Your building has a lobby as the only entry point. In this lobby, you have receptionists to welcome visitors, security guards to watch visitors, video cameras to record visitor actions, and badge readers to authenticate visitors who enter the building.

These measures may work well to control access to your building. But, if an unauthorized person succeeds in entering your building, you have no way to protect the building against this intruder's actions. If you monitor the intruder's movements, however, you have a chance to detect any suspicious activity from the intruder.

Firewall components

A firewall is a collection of hardware and software that, when used together, prevent unauthorized access to a portion of a network. A firewall consists of the following components:

- Hardware. Firewall hardware usually consists of a separate computer or device dedicated to running the firewall software functions.
- Software. Firewall software provides a variety of applications. In terms of network security, a firewall provides these security controls through a variety of technologies:
- Internet Protocol (IP) packet filtering
- Network address translation (NAT) services
- SOCKS server
- Proxy servers for a variety of services such as HTTP, Telnet, FTP, and so forth
- Mail relay services
- Split Domain name services (DNS)

Notes: Firewalls (continued)

- Logging
- Real-time monitoring

Note: Some firewalls provide virtual private networking (VPN) services so that you can set up encrypted sessions between your firewall and other compatible firewalls.

Using firewall technologies

You can use the firewall proxy servers, SOCKS server, or NAT rules to provide internal users with safe access to services on the Internet. The proxy and SOCKS servers break TCP/IP connections at the firewall to hide internal network information from the untrusted network. The servers also provide additional logging capabilities.

You can use NAT to provide Internet users with easy access to a public server behind the firewall. The firewall still protects your network because NAT hides your internal IP addresses.

A firewall also can protect internal information by providing a DNS server for use by the firewall. In effect, you have two DNS servers: one that you use for data about the internal network, and one on the firewall for data about external networks and the firewall itself. This allows you to control outside access to information about your internal systems

When you define your firewall strategy, you may think it is sufficient to prohibit everything that presents a risk for the organization and allow everything else. However, because computer criminals constantly create new attack methods, you must anticipate ways to prevent these attacks. As in the example of the building, you also need to monitor for signs that, somehow, someone has breached your defenses. Generally, it is much more damaging and costly to recover from a break-in than to prevent one.

In the case of a firewall, your best strategy is to permit only those applications that you have tested and have confidence in. If you follow this strategy, you must exhaustively define the list of services you must run on your firewall. You can characterize each service by the direction of the connection (from inside to outside, or outside to inside). You should also list users who you will authorize to use each service and the machines that can issue a connection for it.

What a firewall can do to protect your network

You install a firewall between your network and your connection point to the Internet (or other untrusted network). The firewall then allows you to limit the points of entry into your network. A firewall provides a single point of contact (called a chokepoint) between your network and the Internet . Because you have a single point of contact, you have more control over which traffic to allow into and out of your network.

Notes: Firewalls (continued)

A firewall appears as a single address to the public. The firewall provides access to the untrusted network through proxy or SOCKS servers or network address translation (NAT) while hiding your internal network addresses. Consequently, the firewall maintains the privacy of your internal network. Keeping information about your network private is one way in which the firewall makes an impersonation attack (spoofing) less likely.

A firewall allows you to control traffic into and out of your network to minimize the risk of attack to your network. A firewall securely filters all traffic that enters your network so that only specific types of traffic for specific destinations can enter. This minimizes the risk that someone could use TELNET or file transfer protocol (FTP) to gain access to your internal systems.

What a firewall cannot do to protect your network

While a firewall provides a tremendous amount of protection from certain kinds of attack, a firewall is only part of your total security solution. For instance, a firewall cannot necessarily protect data that you send over the Internet through applications such as SMTP mail, FTP, and TELNET. Unless you choose to encrypt this data, anyone on the Internet can access it as it travels to its destination

iSeries & WebSphere Resources & Deliverables

iSeries Information Center
http://www.ibm.com/iseries/infocenter

iSeries site
www.iseries.ibm.com/

iSeries WebSphere Application Server
http://www-1.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/

PartnerWorld for Developers, iSeries & WebSphere
http://www.iseries.ibm.com/developer/websphere/

IBM eServer Solutions
http://www-1.ibm.com/servers/eserver/iseries/solutions/

iSeries e-business Solutions
http://www-1.ibm.com/servers/eserver/iseries/ebusiness/

iSeries B2B Solutions
http://www-1.ibm.com/servers/eserver/iseries/btob/

Connect for iSeries
http://www-1.ibm.com/servers/eserver/iseries/btob/connect/v11high.html

WebSphere Commerce Suite for iSeries
http://www-1.ibm.com/servers/eserver/iseries/ebusiness/wcs51.html

iSeries and e-commerce
http://www-1.ibm.com/servers/eserver/iseries/ebusiness/ecommerce.htm

iSeries HTTP Server
http://www-1.ibm.com/servers/eserver/iseries/software/http/index.html

WebSphere Development Studio for iSeries
http://www-3.ibm.com/software/ad/wds400/

iSeries and WebSphere References
http://www.as400.ibm.com/developer/java/solutions/jjem.html
http://www2.software.ibm.com/casestudies/swcsweb.nsf/platform

iSeries Solution Finder
http://www.iseries.ibm.com/btobpartner/

iSeries & Domino
http://www-1.ibm.com/servers/eserver/iseries/domino/

Dedicated Server for Domino
http://www-1.ibm.com/servers/eserver/iseries/domino/dsd.htm

Workload Estimator for iSeries, WAS, WCS & Domino, HTTP Server, Java, etc.
http://as400service.ibm.com/estimator/

iSeries Custom Technology Center
http://www-1.ibm.com/servers/eserver/iseries/service/ctc/

iSeries Technical Support
http://as400service.ibm.com/

iSeries Technical Studio
http://www.as400.ibm.com/tstudio/

1st Install for iSeries & WebSphere Application Server
http://www.iseries.ibm.com/developer/websphere/assistance.html

iSeries ToolsNet (Tools & Middleware)
http://www.iseries.ibm.com/developer/tools/

iSeries & Services Network
http://as400service.ibm.com/supporthome.nsf/document/19251245

iSeries e-business Handbook (SG24-5694-01)
http://www.redbooks.ibm.com/abstracts/sg245694.html

iSeries & WebSphere Resources & Deliverables

WebSphere Commerce Suite With Back-End Order Mgmt.
http://ibm.com/redbooks

iSeries Technology Center
http://www.iseries.ibm.com/service/itc/ebiz.htm

iSeries University
http://www-3.ibm.com/services/learning/community/as400/

WebSphere Application Server Overview
http://www-4.ibm.com/software/webservers/appserv/

iSeries & WebSphere Documentation

Redbooks & Red Pieces

Form Numbers/Web Sites
Building iSeries Applications for WebSphere Advanced Edition
SG24-5691
Building Java Applications for the iSeries with VisualAge for Java SG24-6245
Integrating WCS with Domino Back-End Applications

- **http://ibm.com/redbooks (search for REDP0141)**

Java & WebSphere Performance on iSeries

- **http://publib-b.boulder.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg246256.html?Open**

iSeries Application Development Directions white paper is now available

- **http://www.iseries.ibm.com/developer/tools/documents/addir/index.html**

Connect for iSeries with WebSphere Commerce Suite Red Paper

- **http://www.redbooks.ibm.com/redpapers/pdfs/redp0127.pdf**

Tools for Application Reface and Redesign

- **http://www.as400.ibm.com/developer/comm/pidtechpapers.html?Tools**

Introduction to Enterprise JavaBeans for AS/400
SG24-5192-00
Web enabling AS/400 Applications with WebSphere Studio
SG24-5634-00
Building AS/400 Applications with WebSphere Standard Edition 2.0
SG24-5635-00
Building AS/400 C/S Apps with Java
SG24-2152-02
Building AS/400 Internet-based applications with Java
SG24-5337-00

WebSphere Commerce Suite
www-4.ibm.com/software/webservers/commerce/

WebSphere Payment Manager
www-4.ibm.com/software/webservers/paymgr/

MQSeries
www.ibm.com/software/ts/mqseries
IBM Redbooks
http://www.redbooks.ibm.com/

iSeries Nation
http://www-1.ibm.com/servers/eserver/iseries/announce/form.html

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