

IBM HTTP Server for iSeries (Powered by Apache)

Jim Fall

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Agenda

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- **What is an HTTP Server?**
- **History of HTTP Servers**
- **IBM's HTTP strategy**
- **What is Apache?**
- **Benefits of Apache over Original**
- **Apache Features and iSeries Customization**
- **Configuration, migration, Apache concepts**
- **Product Packaging**
- **More Information**

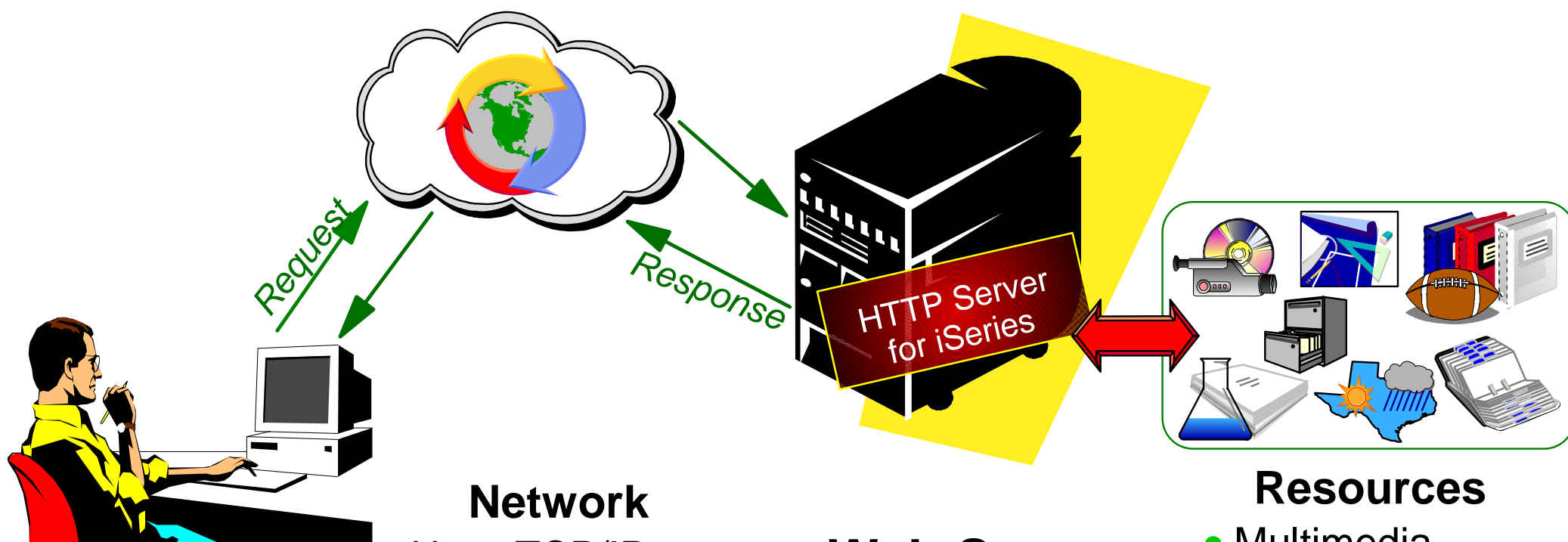
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What is an HTTP Server?

- Web Server
- Listens for requests
- Accepts requests from Web clients (browsers and other applications)
- Processes the request (finds the file, generates a dynamic web page, runs a CGI program)
- Returns a "Web page" to the requester
- HTTP is Hyper Text Transfer Protocol
 - Protocol for communication between client-server
- Most allow secure transactions
- Most track requests in log files
- Most support CGI (Common Gateway Interface) programs

What is an HTTP Server?

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Browser

- Application Client
- Talks HTTP
- Issues Requests
- Renders Responses

Network

- Uses TCP/IP
- Routes Requests & Responses
- *Possibly the Internet*

Web Server

- Application Server
- Talks HTTP
- Handles Requests
- Sends Response

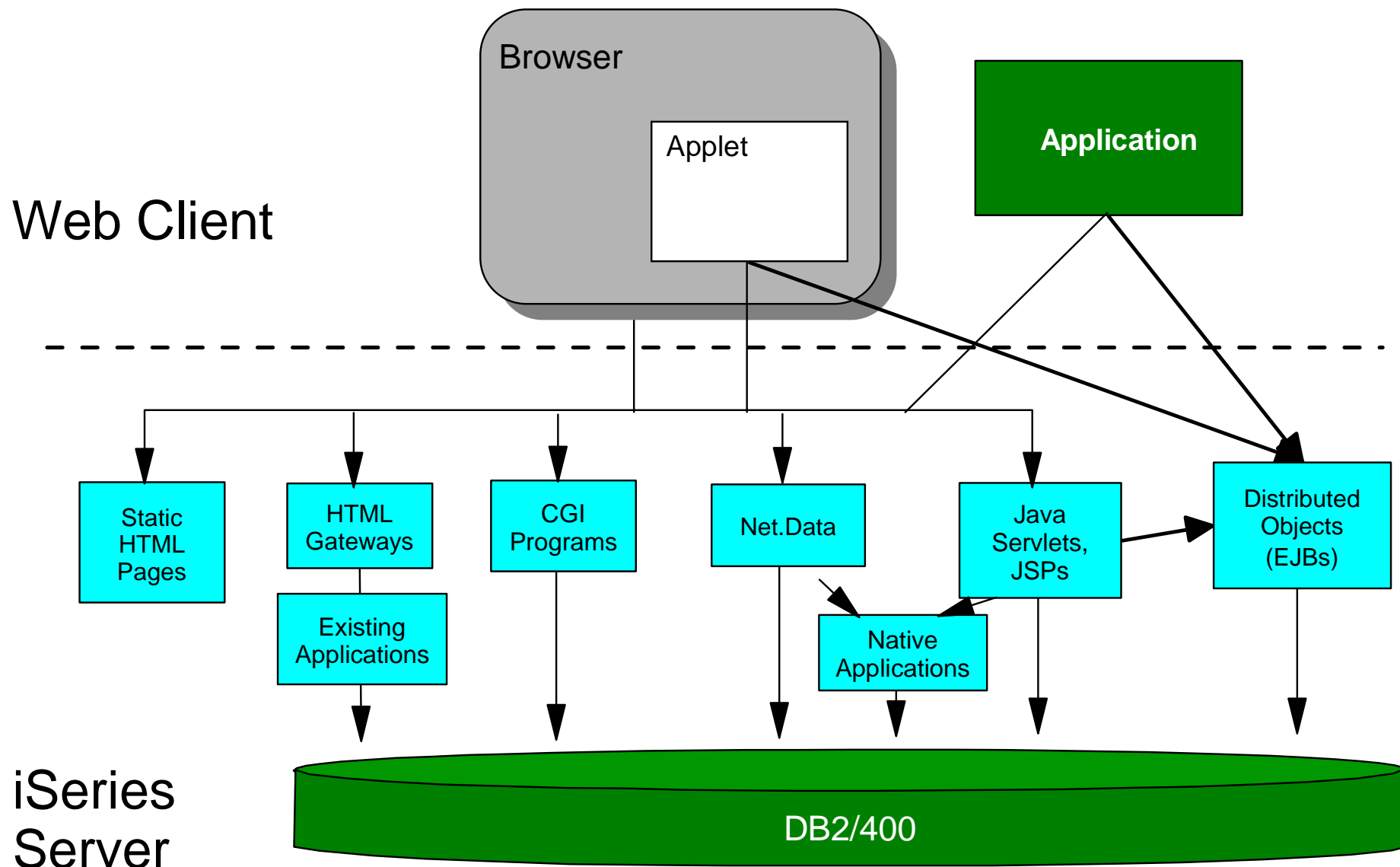
Resources

- Multimedia
- Blueprints & Diagrams
- Files & Reports
- Applications
- Forecast Data
- Marketing Data

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What is an HTTP Server?

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History of HTTP Servers

Industry

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- Most HTTP servers originated from CERN or NCSA
 - CERN - European Lab for Particle Physics, origination of the world wide web
 - NCSA - National Center for Supercomputing Application, discontinued in 1994
- 2 different implementations provide similar services
- Prior to 2001 IBM's HTTP server products were CERN-based
- Apache is NCSA-based
- Name originated from "a patchy NCSA server"
- Apache Software Foundation formed in 1995
- Apache is available on 30+ platforms
- Platforms that provide all source code to users are true "Apache"
- IBM iSeries does not provide source code
- IBM iSeries HTTP product is "Powered by Apache"

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History of HTTP Servers

Server usage

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Top servers for active Web sites on Internet:

56% Apache

26% Microsoft IIS

1% iPlanet

1% Zeus

Source: February 2002 Netcraft <http://www.netcraft.com/survey/>

What server is that Web site running?

<http://www.netcraft.com>

Top left, click on link: [What's that site running?](#)

Examples:

www.ibm.com AIX: IBM_HTTP_Server/1.3.12.2 Apache/1.3.12 (Unix)

www.ignite400.com AS/400: IBM-HTTP-Server/1.0

www.common.org AS/400: IBM-HTTP-Server/1.0

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NetCraft - Production Site Usage Survey

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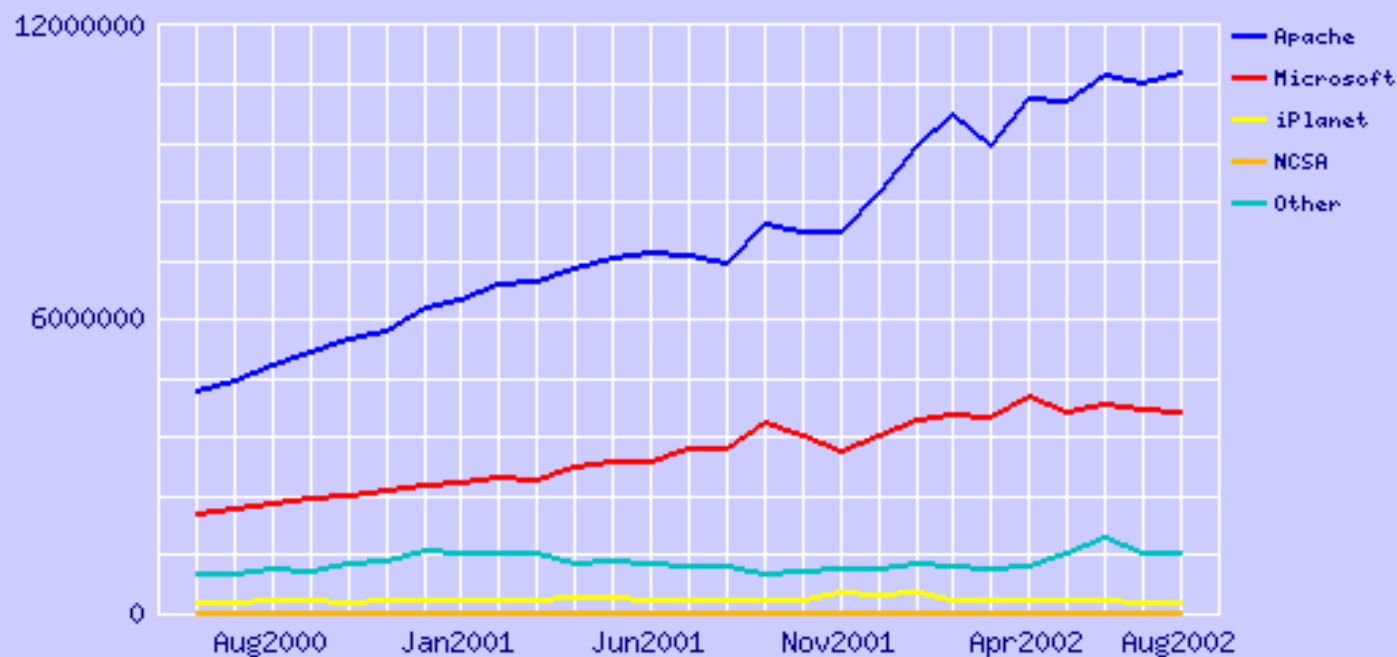


<http://www.netcraft.com/survey>

Active Sites

Developer	July 2002	Percent	August 2002	Percent	Change
Apache	10811987	65.21	11001650	66.64	1.43
Microsoft	4176048	25.19	4074058	24.68	-0.51
iPlanet	214063	1.29	208968	1.27	-0.02
Zeus	183921	1.11	184143	1.12	0.01

Totals for Active Servers Across All Domains June 2000 - August 2002



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History of HTTP Servers

IBM and iSeries

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- AS/400 shipped its first HTTP server in V3R7
- Product is: **5769-DG1 HTTP Server for iSeries**
- Ships with OS/400, but does not come installed
- Based on CERN implementation
- HTTP Server for iSeries (Powered by Apache) debut Dec 15, 2000 on V4R5 via PTF
- Packaged as part of same product
- 2 HTTP servers in one product: **Original** and **Powered by Apache**
- They can coexist on the same iSeries system
- Based on Apache 2.0 (alpha version)
- First platform to support Apache 2.0!!

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IBM's HTTP Strategy

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- IBM strategic direction is Powered by Apache for all platforms
- IBM funds 4 employees as members of ASF (60 member group)
- Close relationship to ASF (email, BBs, mailing lists, ApacheCon)
- Leverage large Apache install base and development community
- Contributes open source code to ASF

iSeries Plan

- ✓ Port to OS/400 ILE environment
- ✓ Integrate with OS/400 (FS, security, SSL, LDAP, etc)
- ✓ Provide equivalent function to original HTTP Server for iSeries
- ✓ Provide a migration wizard and task oriented GUI administration
- ✓ Maintain currency with Apache V2 and beyond
- Eventually replace the original HTTP Server for iSeries

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What is Apache?

- Collaborative SW development implementation of HTTP server
- Robust, commercial-grade, full-featured, freely available source code
- Supports HTTP/1.1
- Highly configurable
- Highly extensible with 3rd party modules
- Customizable with user-written modules using Apache API
- Has APR (Application Portable Runtime) to hide platform-specific code
- Version 2.0 is under development (First Beta was 4/4/01)
- Core group encourages large development community (share ideas, bug reports, code fixes)
- Implements frequently requested features

Benefits of Apache over Original

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- **SKILLS:** Students learn Apache in college
 - Easier for iSeries customers to attract Webmasters
- **IMAGE:** Recognized industry leader
 - Easier to justify putting Web server on iSeries
- **MAINTAINABILITY:** Easier to debug and maintain code (modular structure)
 - Faster response time for customer/problem resolution
- **EASE OF USE:** More advanced web-based GUI (wizard driven)
 - Easier for customers to configure
- **FUNCTION:** Collaborative code development
 - More features available quicker
- **CUSTOMIZATION:** Highly configurable
 - Highly extendable code base
- **QUALITY:** Wide user base (for testing/fixing)
 - Higher quality product

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Powered by Apache Features

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Functions in iSeries Powered by Apache not in iSeries Original

- Authorization enhancements (denying specific users, groups, etc)
- SSL enhancements and more customization
- Headers control (expires, etc)
- URL rewriting
- Dynamic virtual hosting
- Control over the number of prestart CGI jobs
- More customization of directory listings
- Support for TRCTCPAPP
- Support config files in threadsafe IFS file systems (not just QSYS)
- Reverse proxy
- WebDAV

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Powered by Apache Features

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Functions in iSeries Apache not available in Apache on other platforms

- Secure by default
- Browser-based GUI
- Hot-backup
- Extended authentication (LDAP, user profiles, etc)
- Extended SSL/TLS support (client certs assoc. profiles, etc)
- Static and dynamic local file caching
- Extended CGI support (APIs, persistence, named act groups)
- Net.Data support
- Configuration, instance, group APIs
- Search engine and webcrawler support
- Support for TRCTCPAPP and serviceability
- User-defined methods
- Highly available HTTP server

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Powered by Apache Features

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Functions in iSeries Original not supported in iSeries Apache

- Access log reporting
- Web usage mining
- PICS (Platform for Internet Content Selection)
- Server API => Must convert to Apache modules using Apache API

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Support and Compatibility

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- "Powered by Apache" is the strategic HTTP server for iSeries
 - PTF's to deliver future betas when available from ASF
 - PTF to deliver future 2.0 GA level when available from ASF
 - iSeries reported problems
 - Low severity problems fixed with a monthly PTF
 - High severity problems fixed as required
- Release to Release compatibility
 - Preserved for CGI and WebSphere applications
 - Not necessarily preserved for Apache modules
- Original HTTP server will continue to be shipped by IBM. No plans have been made at this time to phase out the original server, but that is very likely in the future.

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iSeries Scalable Web Serving

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SPECweb99 and SPECweb99 SSL

- www.spec.org
- iSeries numbers published September 3, 2002
- As of September 3, iSeries is first in secure web serving (SPECweb99SSL)
- As of September 3, iSeries is third in non-secure web serving (SPECweb99)
- Numbers achieved with the Apache web server iSeries customers will be using
- Apache Web server: 65% of production Web sites; Zeus: <2% of production Web sites*

Notes:

1. <http://www.spec.org/>. SPECweb99 is a trademark of the Standard Performance Evaluation Corp. (SPEC).

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Tomcat

- Servlet container that is used in the official reference implementation for the Java Servlet and JavaServer Pages technologies
- Java Servlet and JavaServer Pages specifications are developed by Sun under the Java Community Process
- Developed by the Apache Software Foundation
- Is included with 5722-DG1 as of V4R5
- Mechanism for iSeries users to get started with servlet and JSP applications

The Integrated iSeries HTTP Solution

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- Getting started with Apache on other platforms
 - Many platforms require that you download, compile, and build the Apache server
 - User must then also understand the Apache configuration and set up the rules for the operation of Apache server
 - User is solely responsible for the software service and maintenance of the Apache server
- Getting started with Apache on iSeries
 - Apache is built and shipped with the operating system
 - Integrated with OS/400 in areas such as security, file systems (IFS, including QSYS.LIB), serviceability, etc.
 - A graphical interface is provided to assist the user with the configuration of the HTTP server
 - A sample configuration is shipped
 - Fully supported through IBM service

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- Use GO LICPGM command to look for the IBM HTTP Server product
 - Option 10 = "Display installed licensed programs"
 - Product in OS/400 version 5 is 5722-DG1 *BASE
 - Product is no-charge
 - Shipped with the media containing OS/400
 - DG1 is now preloaded on all iSeries systems coming off the IBM manufacturing line

Verify Desired Software is Installed

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```

common
Display Installed Licensed Programs
System:
Licensed Program Installed Status Description
5722SS1 *COMPATIBLE DS/400 - Digital Certificate Manager
5722SS1 *COMPATIBLE DS/400 - Cryptographic Service Provider
5722SS1 *COMPATIBLE DS/400 - PSF/400 1-20 IPM Printer Support
5722SS1 *COMPATIBLE DS/400 - PSF/400 1-45 IPM Printer Support
5722SS1 *COMPATIBLE DS/400 - PSF/400 Any Speed Printer Support
5722SS1 *COMPATIBLE DS/400 - International Components for Unicode
5722SS1 *INSTALLED DS/400 - PSF/400 One Printer Only, 1-45 IPM
5722SS1 *COMPATIBLE DS/400 - HA Switchable Resources
5722AC3 *INSTALLED Crypto Access Provider 128-bit for AS/400
5724A23 *NOPRIMARY MQSERIES FOR DS/400 AM
5733A38 *INSTALLED MQSeries for AS/400
5733B2B *INSTALLED IBM Connect LPP OPTI
5733B2B *INSTALLED IBM Connect 1.1 LPP I
5722CM1 *COMPATIBLE Communications Utili
Press Enter to continue.
F3=Exit F11=Display release F12=Cancel
  
```

```

common
Display Installed Licensed Programs
System:
Licensed Program Installed Status Description
5648CS0 *NOPRIMARY MQSeries classes for Java and JMS - non-XA
5722DF1 *INSTALLED CICS for AS/400
5722DG1 *COMPATIBLE IBM HTTP Server
5722DG1 *COMPATIBLE Triggered Cache Manager
5722JC1 *COMPATIBLE Toolbox for Java
5722JV1 *COMPATIBLE Developer Kit for Java
5722JV1 *COMPATIBLE Java Developer Kit 1.2
5722JV1 *COMPATIBLE Java Developer Kit 1.1.8
5722JV1 *COMPATIBLE Java Developer Kit 1.3
5700NT1 *NOPRIMARY
5700NT1 *NOPRIMARY
5700NT1 *NOPRIMARY
5700NT1 *NOPRIMARY
5700NT1 *NOPRIMARY
  
```

- RSTLICPGM LICPGM(5722DG1) DEV(OPT01) OPTION(*BASE) *Required*
- RSTLICPGM LICPGM(5722AC3) DEV(OPT01) OPTION(*BASE) *Optional*
- RSTLICPGM LICPGM(5722SS1) DEV(OPT01) OPTION(34)

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- That's It!
- Other optional software can be installed to extend your HTTP server.
 - Crypto Access Provider 56-bit for iSeries (5722-AC2)
 - Crypto Access Provider 128-bit for iSeries (5722-AC3)
 - Option 34 OS/400 - Digital Certificate Manager option (5722-SS1)
 - IBM Developer Kit for Java
 - IBM WebSphere Application server.
- See the Information Center at
<http://publib.boulder.ibm.com/series/v5r1/ic2924/index.htm?info/rzaie/rzaiemain.htm>
 - Click on "e-business and web serving"
 - Click on "Web serving"
 - Click on "Install the licensed program:"

TCP/IP Requirements

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- A TCP/IP interface is required
- CFGTCP

```
Work with TCP/IP Interface Status

Type options, press Enter.
 5=Display details      8=Display associated routes  9=Start  10=End
12=Work with configuration status  14=Display multicast groups

System:

Opt  Internet      Network      Line      Interface
     Address      Address      Description Status
---  ---          ---          ---          ---
  1  9.5.8.21       9.5.8.0     ETHLINE   Active
  2  9.5.149.238   9.5.149.128 ETHLINE   Active
  3  127.0.0.1     127.0.0.0  *LOOPBACK Active

F3=Exit      F4=Prompt      F9=Command line  F11=Display line information
F12=Cancel   F13=Sort by column  F24=More keys

Bottom

MA  b  09/002
```

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Set up authorities for your WebMaster

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- Need a user profile that will be used by your web administrator
 - *IOSYSCFG special authority
 - *CHANGE authority to the library object QUSRSYS
 - *SERVICE special authority if you plan to use the trace TCP application (TRCTCPAPP) function
 - The following file objects require *ALL authority:
 - QUSRSYS/QATMHINSTA
 - QUSRSYS/QATMHINSTC
 - The following command objects require *USE authority:
 - CRTVLDL
 - STRTCPSVR
 - ENDTCPSPVR
- A user profile with *ALLOBJ will due, although that's not recommended

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■ Configuration Directives

- A large set of user-defined instructions stored in a uniquely named file (your configuration file)
- Used to set most of HTTP server's settings
- Define rules for the behavior of your HTTP server
- Example

Display Configuration File

```
HTTP server: TESTING1
Selected file: /www/testing1/conf/httpd.conf

1 # Configuration originally created by Apache Setup Wizard Tue Sep 25 21:58:14 GMT+00:00 2001
2 Alias /docs/ /mydir/
3 Alias /icons/ /www/testing1/icons/
4 ScriptAlias /cgi-bin/ /qsys.lib/mycgi.lib/
5 Listen 8101
6 DocumentRoot /www/testing1/htdocs
7 DefaultType text/plain
8 Options +ExecCGI -FollowSymLinks -SymLinksIfOwnerMatch -Includes -IncludesNOEXEC -MultiViews +Indexes
9 ErrorLog logs/basic_error_log
10 LogLevel warn
11 UseCanonicalName On
12 HostNameLookups off
```

Configuration

Browser-based graphical configuration and administration

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- Enhanced web-based GUI for configuration using ADMIN server
- Simplifies the configuration
- Wizards for creating new servers, serving directories, and migrating original HTTP server configs to Apache
- Web forms for doing specific configuration
- Forms for Apache server management
 - Start/Stop/Restart servers
 - Display status of all servers
- Creates new servers "secure by default"
- APIs are available to monitor servers and update configuration files from a program



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Configuration

- The Admin server is the server instance that is used to manage your webserver configurations (including the ADMIN server)
- To start the Admin server, you will need to run a CL command
 - STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
 - Alternatively use Operations Navigator
- The Admin server "listens" on port 2001 for normal HTTP traffic
- It is "secured" by iSeries profile for all requests
 - Your profile must have *IOSYSCFG special authority to perform configuration activities
- On your browser, enter this url to get the "Tasks" page
 - <http://system:2001/>

Accessing the Administration Server

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iSeries Tasks - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://system|2001 Go

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iSeries Tasks

-  [IBM HTTP Server for iSeries](#)
Configure the iSeries HTTP Server and SSL
-  [Digital Certificate Manager](#)
Create, distribute, and manage Digital Certificates
-  [IBM IPP Server for iSeries](#)
Configure the IBM IPP Server
-  [4758 Cryptographic Coprocessor](#)
Configure the 4758 coprocessor

[Related task information](#)

 [Help](#)
(Requires JavaScript)

This is the
iSeries Tasks
page

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Accessing the Administration Server

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HTTP Server Administration on RCHASIHF - Microsoft Internet Explorer

File Edit View Favorites Tools Help

HTTP Server for iSeries

Welcome Setup **Manage** TCM Related Links

Welcome to IBM HTTP Server for iSeries

- Getting Started**
How do I get started? What do I need to get my web site up and running? Let "Getting Started" show you how.
- What's New**
Find out what's new in the latest release of IBM HTTP Server for iSeries.
- Fundamental Apache Concepts**
Understanding some fundamental concepts will make managing your HTTP server (powered by Apache) much easier to do.
- Beyond the Basics**
Dig into more advanced HTTP server topics such as virtual

IBM HTTP Server for iSeries

Link to product documentation in Information Center

This is the first panel of the configuration and administration forms.

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Managing HTTP Servers

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Server: All servers

Tasks and Wizards

- Create New HTTP Server
- Migrate Original Server to Apache
- Create ASF Tomcat Server

Manage All Servers ?

Data current as of 09:19:08 PM UTC on 09/11/2002

Server	Type	Status	Autostart	Address
<input checked="" type="radio"/> A51CGINONE	Apache	Running	Global	9.5.61.228:10108
<input type="radio"/> A51CGIPBIP	Apache	Stopped	Global	9.5.8.27:11111
<input type="radio"/> A51CGIPBND	Apache	Stopped	Global	9.5.61.235:10135
<input type="radio"/> A51CGIPP	Apache	Stopped	Global	9.5.61.235:10135
<input type="radio"/> A51HAW158A	Apache	Stopped	Global	9.5.61.228:10108
<input type="radio"/> A51HAW158B	Apache	Stopped	Global	9.5.61.228:10108

Refresh Stop Restart Manage Details

Start

Stop

Restart

Delete

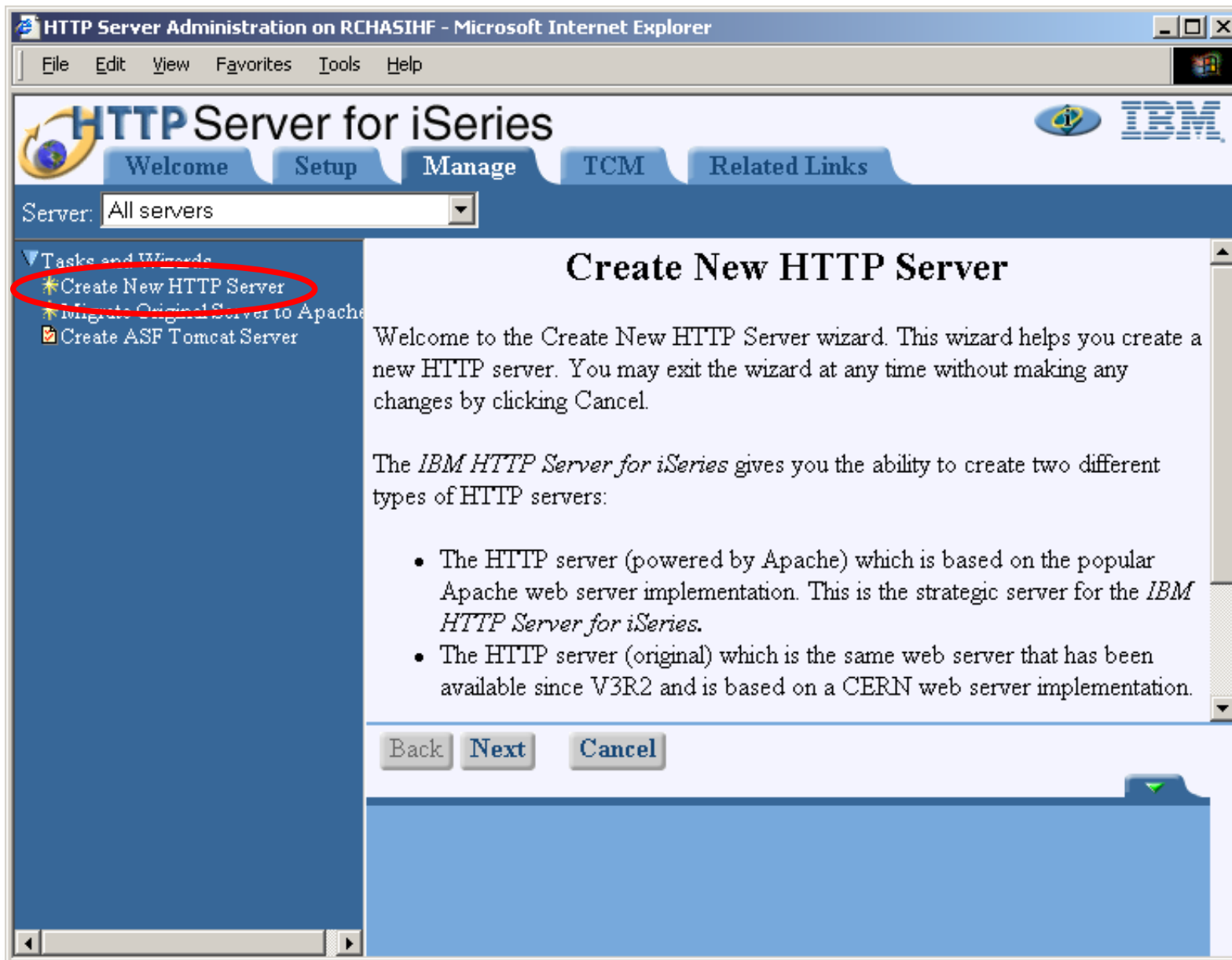
Rename

Manage Details

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Example of a Wizard

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This wizard will take you through a few questions and create a new Apache server for you.

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Manage Servers

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HTTP Server Administration on RCHASYXM - Microsoft Internet Explorer

File Edit View Favorites Tools Help

HTTP Server for iSeries

Welcome Setup **Manage** TCM Related Links

Server: JJFALL - Apache Server area: Global configuration

Stopped [Start] [Stop] [Refresh] [Restart]

- Tasks and Wizards
 - Create New HTTP Server
 - LDAP Configuration
 - Add a Directory to the Web
 - Servlet and JSP Enablement
- Server Properties
 - General Server Configuration
 - Container Management
 - Virtual Hosts
 - URL Mapping
- Request Processing
 - HTTP Responses
 - Content Settings
 - Directory Handling
- Security
 - Dynamic Content and CGI
 - Logging
- Proxy
- System Resources

All servers -> JJFALL

Manage Apache server 'JJFALL'



This "Manage" tab allows you to manage your HTTP servers (original and powered by Apache), as well as out-of-process ASF Tomcat servers.

Server and Server area

Select a particular server to manage. Or, select to manage "All servers". When an HTTP server (powered by Apache) is selected, the "Server area" will show the area of the server that you are managing.

Status

Below the selected server you will see the current status of the server. The icons allow you to start, restart and stop the server, or refresh the displayed status.

Tasks and Wizards

This section contains tasks and wizards which aid in the configuration of your

◀ Mechanism to start and stop

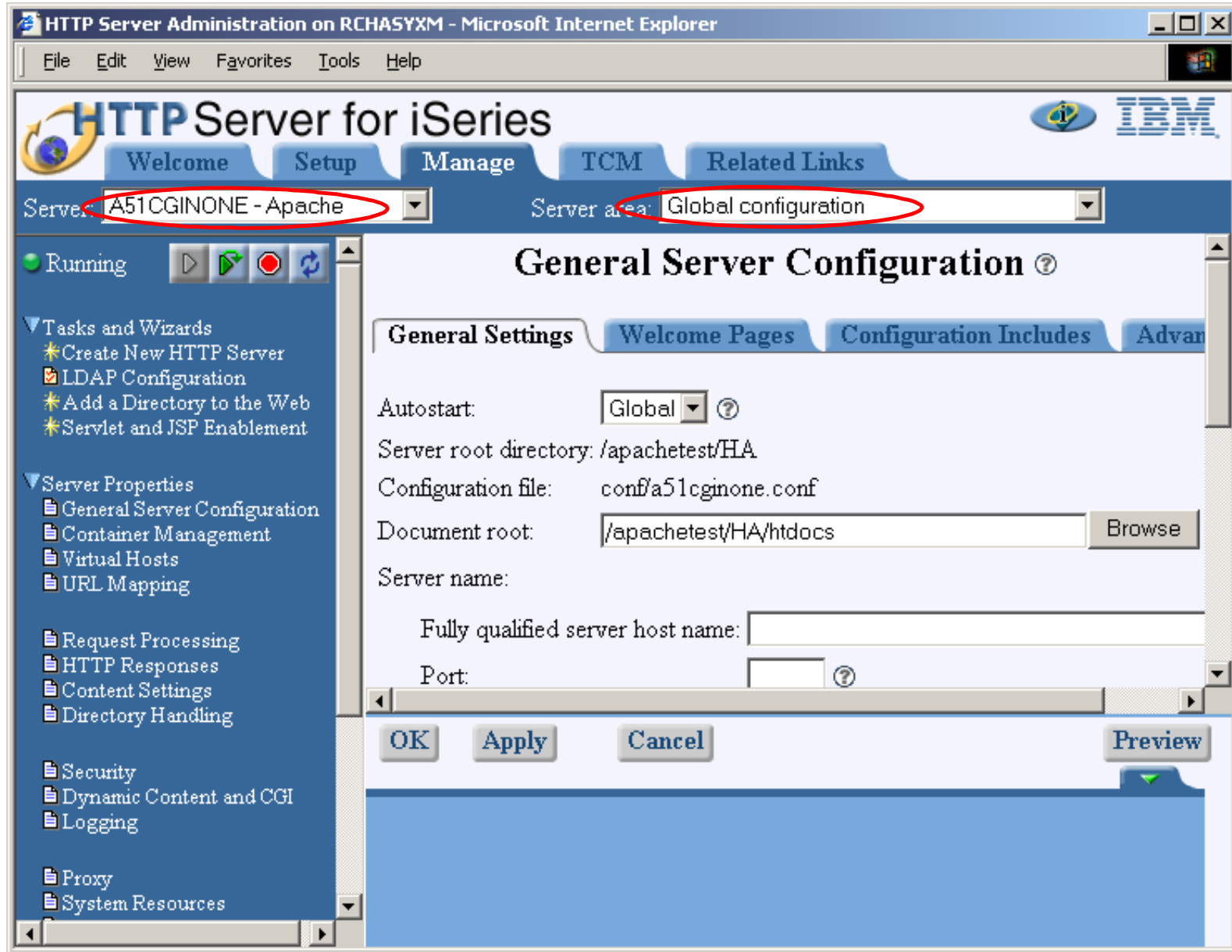
◀ Links to wizards

◀ Configuration of server properties

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Example of a Configuration Form

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◀ Help text

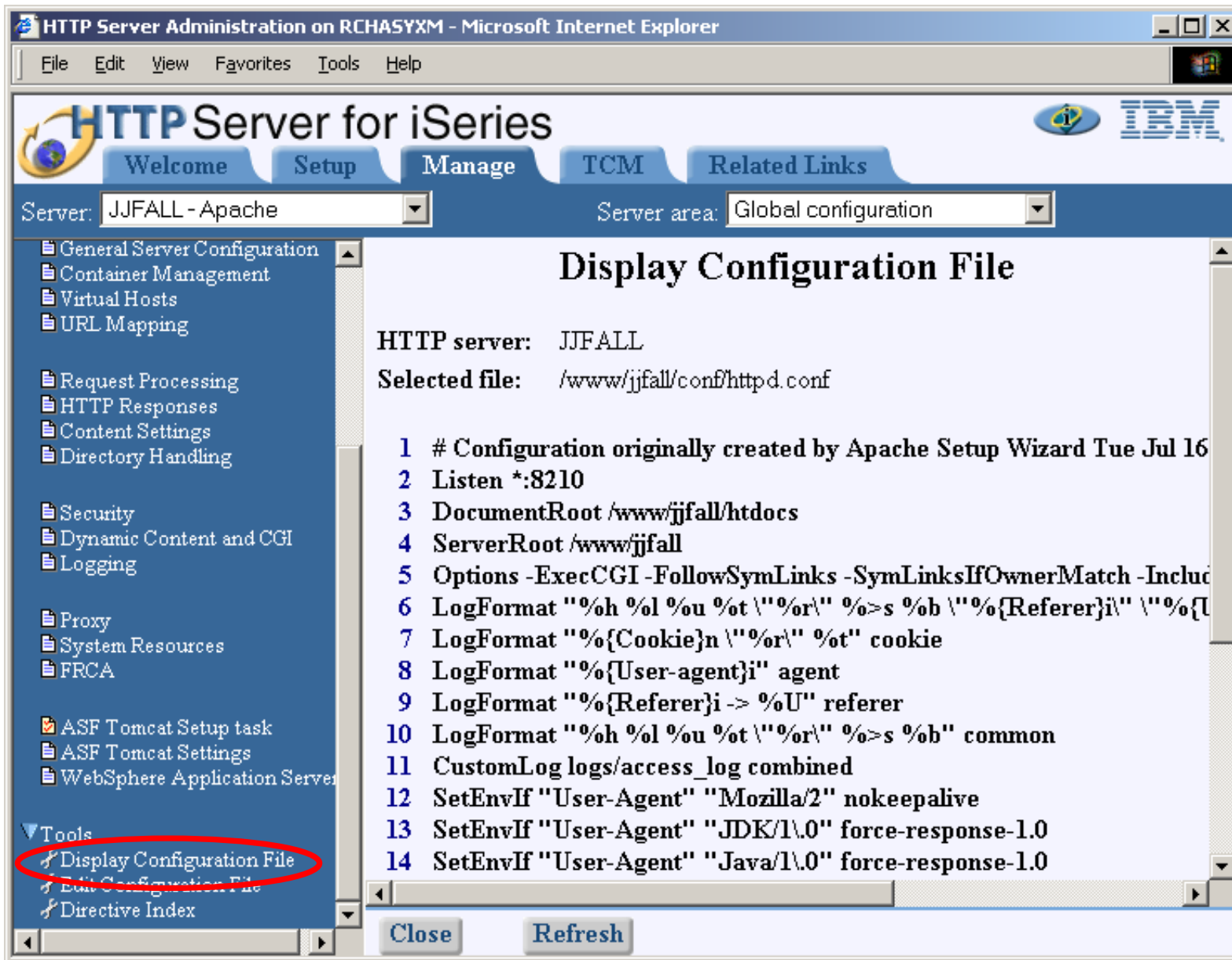
◀ Parameter validation and range checking

◀ Message area for error information

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Displaying an Apache configuration

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The screenshot shows the 'HTTP Server Administration on RCHASYXM' interface in Microsoft Internet Explorer. The main content area is titled 'Display Configuration File' and shows the contents of the file `/www/jjfall/conf/httpd.conf`. The configuration file content is as follows:

```
1 # Configuration originally created by Apache Setup Wizard Tue Jul 16
2 Listen *:8210
3 DocumentRoot /www/jjfall/htdocs
4 ServerRoot /www/jjfall
5 Options -ExecCGI -FollowSymLinks -SymLinksIfOwnerMatch -Includ
6 LogFormat "%h %l %ou %ot \"%r\" %>s %b \"%{Referer}i\" \"%{U
7 LogFormat "%{Cookie}n \"%r\" %ot" cookie
8 LogFormat "%{User-agent}i" agent
9 LogFormat "%{Referer}i -> %U" referer
10 LogFormat "%h %l %ou %ot \"%r\" %>s %b" common
11 CustomLog logs/access_log combined
12 SetEnvIf "User-Agent" "Mozilla/2" nokeepalive
13 SetEnvIf "User-Agent" "JDK/1.0" force-response-1.0
14 SetEnvIf "User-Agent" "Java/1.0" force-response-1.0
```

In the left-hand navigation pane, the 'Tools' section is expanded, and the 'Display Configuration File' option is highlighted with a red circle.

➤ Graphical interface modifies this file

➤ Display allows you to see the directives

➤ Edit option

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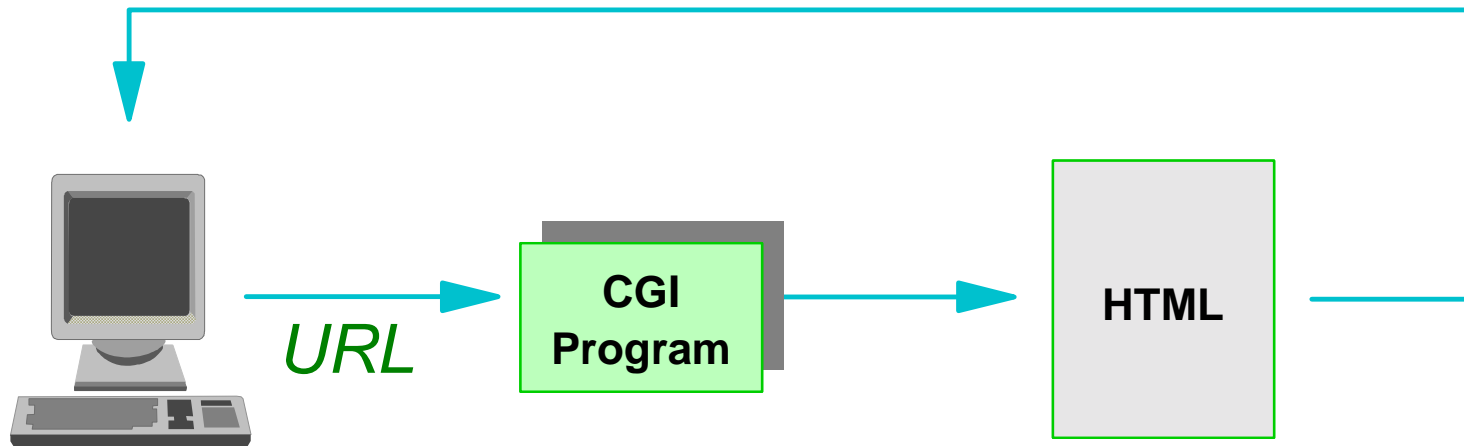
Common Gateway Interface (CGI) programs

- ASCII/EBCDIC codepage conversions
- Prestart and reuse jobs for CGI
- Multithread-capable CGI support
- Net.Data
- Persistent CGI including Net.Data (state management)
- No parsed header CGI program support
- REXX, C, RPG, COBOL, C++, etc. languages
- Support CGI environment variables

CGI Functional Overview

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Invoked by a URL



http://your.server.com/cgi-bin/hello.pgm

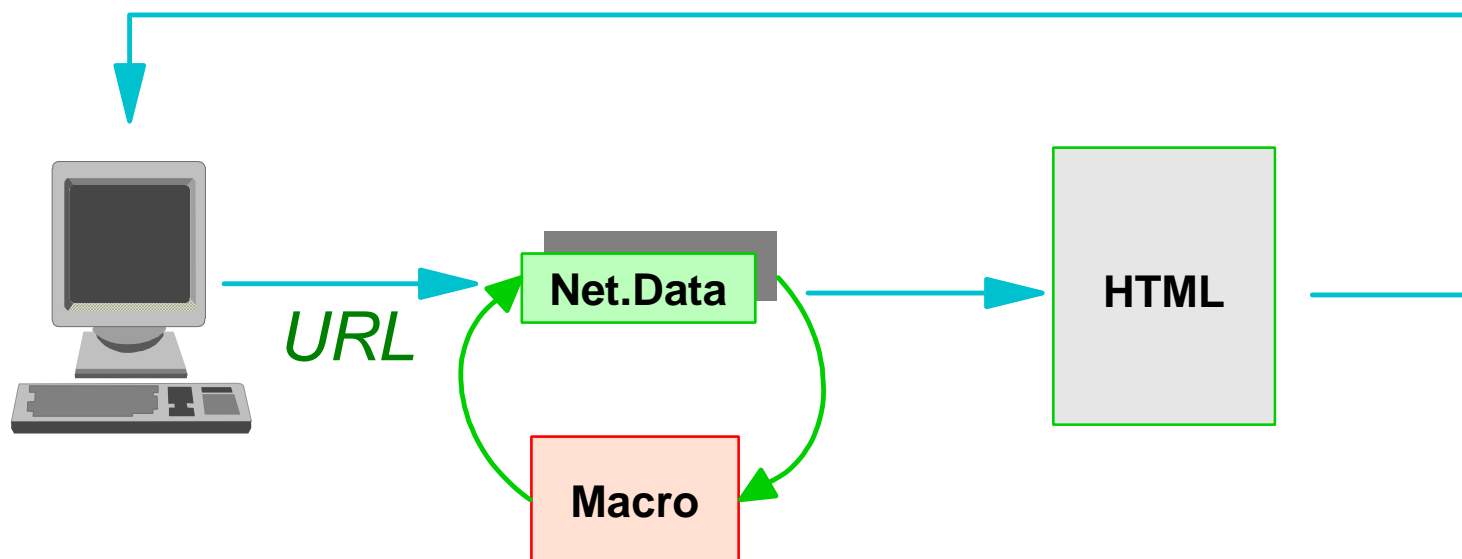
protocol *host server name* *path to CGI programs* *CGI program*

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Net.Data Overview

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- Net.Data is a CGI program, named: "db2www"
- Macros consist of macro directives
- Processes macro files -- output is standard HTML



<http://server.com/cgi-bin/db2www.pgm/my.macro/input>

◆ *Net.Data CGI*

◆ *macro*

◆ *macro section name*

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Dynamic Web pages Using Net.Data

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Net.Data

You create
a Macro



```
%Define {  
Page_Title = "Joe's home page"  
image = "image5.gif"  
%}  
%HTML (report) {  
<html>  
<title>$(Page_Title)</title>  
<body>  
<p>Here is my page.  
  
</body>  
</html>  
%}
```

Net.Data

Net.Data IS the CGI program:
It creates the HTML!

```
<html>  
<title>Joe's home page</title>  
<body>  
<p>Here is my page.  
  
</body>  
</html>
```

- Used for interactive pages
- Format and logic separate (like DDS)
- "Live": pages contain live data

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Other Application Support

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- IBM WebSphere Application Server
 - Java servlets
 - Java Server Pages (JSPs)
 - Only support Apache with version 3.5 or greater
 - Apache plug-in module available
 - Delivered in a separate PTF to 5733AS3 and 5733WA3
 - Details: www.ibm.com/eserver/series/software/websphere
- Domino will support Apache in a future release
- Additional HTTP server features
 - Apache API (modules)
 - Server-side includes (SSI)
 - User-defined method support
 - WebDAV collaborative web development

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Server Side Includes

- **Server commands imbedded within HTML documents and CGI output**
- **Dynamic information is inserted**
- **Most common types:**
 - ▶ current date
 - ▶ size of file
 - ▶ date of the last change to the file

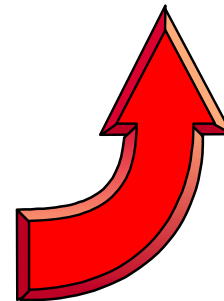
```
<HTML>
<!--#include file="/QIBM/UserData/path/Title.html" -->
<BODY>
Date last changed:<br>
<!--#config timefmt="%T %D" -->
<!--#global var="PARENT_URI" value=&DOCUMENT_URI; -->
<!--#flastmod virtual=&PARENT_URI; -->
<p>This is my document.
</BODY>
<!--#include file="/QIBM/UserData/path/Footer.html" -->
</HTML>
```

My Website Title

Date last changed:
06/28/98 07:58:02
This is my document.

My Corporate Footer

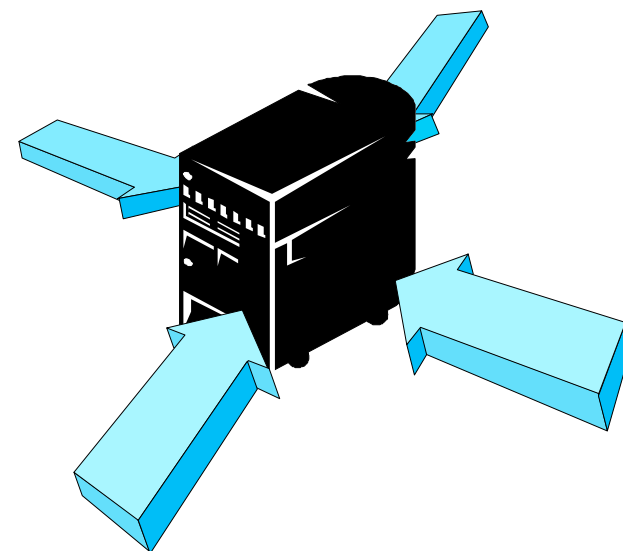
(as viewed from browser)



Hosting Multiple Web Sites

IBM  server iSeries

- Also known as Virtual Hosting
- Multiple HTTP servers on a single iSeries
 - Multiple instances
 - Each instance runs separate jobs/processes
- Supports Multiple IP addresses
 - Use a single instance
 - Or use multiple instances
- Supports Multiple Host names
 - System has multiple host names which all resolve to the same IP address.
 - A single instance can determine which name was used in the URL and handle it accordingly (HTTP 1.1)
- Dynamic Virtual Hosting



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- Server runs under authority of default iSeries user profile
 - QTMHHTTP for file serving
 - QTMHHTTP1 for CGI application processing
- Adheres to iSeries object security
 - Server swaps to the user profile to process the request
- Servers are secure by default on install
- Setup Internet User groups for access control

Authentication Options

IBM  server iSeries

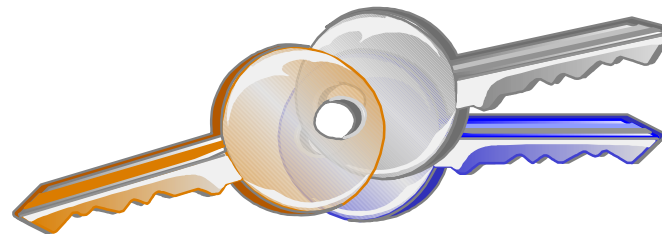
- HTTP Basic Authentication
 - "Intranet Users" using iSeries user profiles
 - "Internet Users" using Validation Lists or LDAP directories to store user authentication information
 - User Profile swap to serve requests
- Requester IP address template protection
 - Not recommended, IP addresses can be "spoofed" easily
- SSL Client Authentication (digital certificates)
 - Valid certificates
 - Certificates with certain "DN" characteristics
 - Associate client certificates with iSeries user profiles
 - Associate client certificates with Validation Lists entries
- No message digest authentication (MD5) on iSeries

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https: Encrypted Communication Capabilities

IBM  server iSeries

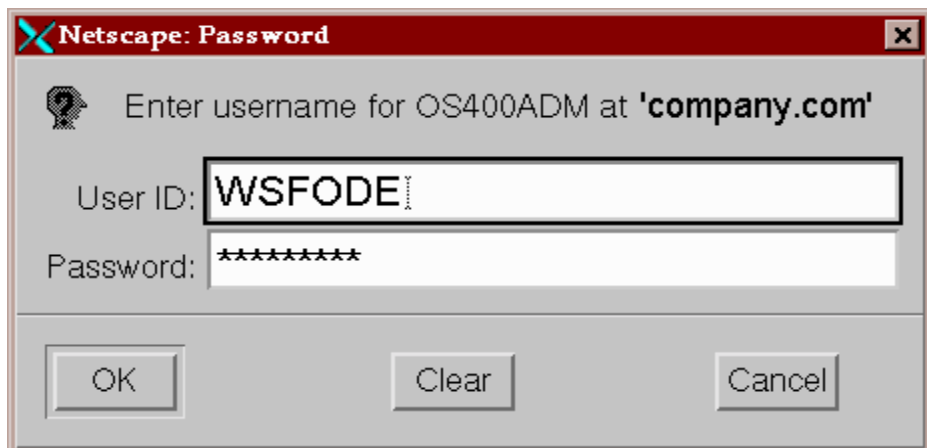
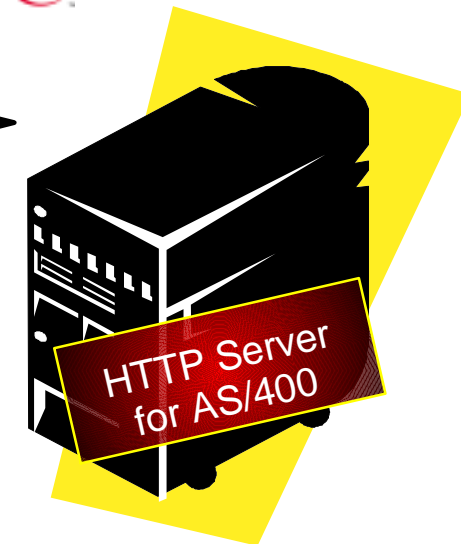
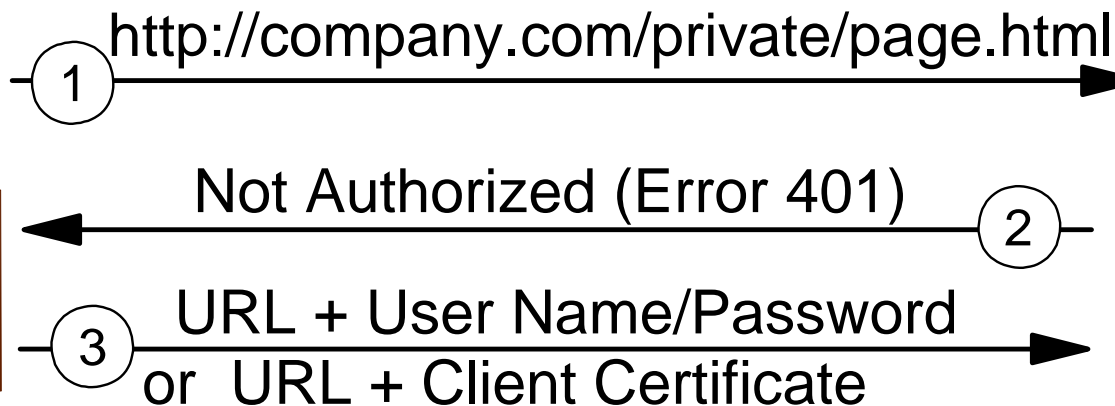
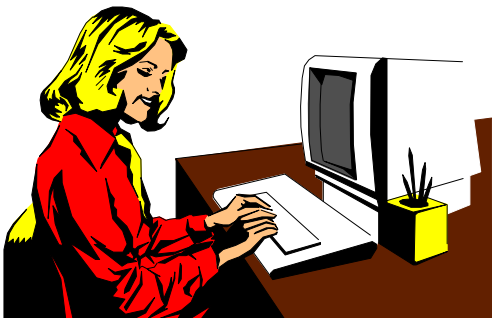
- Secure HTTP: HTTP communication between browser & server is encrypted.
 - When privacy is required!
 - Invoked with https:// protocol in URL
 - Optional Client authentication
 - Required Client authentication
 - SSL Versions 2 and 3, and TLS
- Needs a digital "Server" certificate
- Requires Cryptographic Services on the iSeries
 - (5722AC1, 5722AC2, or 5722AC3)
- Supported by iSeries - Digital Certificate Manager
 - (5722SS1 option 34)



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User Authentication Services (1st tier)

IBM  server iSeries



or



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Logging Capabilities

IBM  server iSeries

- Informational - Access Log
 - Customizable to achieve an Agent, or Referrer log
 - Agent - which browser(s) are being used
 - Referrer - what link or page brought them to your site
 - Combined log format - include Agent and Referrer info in the Access Log
 - Compatible with log analyzers
 - Can be used to monitor who is using the web site
- Error Log - Web site errors
 - Find errors in Web pages & applications
 - CGI errors in error log or can be separate
- Log formats - Common, extended, user-defined
- Configuration of a cookie log allows user tracking based on cookies
- Future capabilities include configurable log rollover and maintenance

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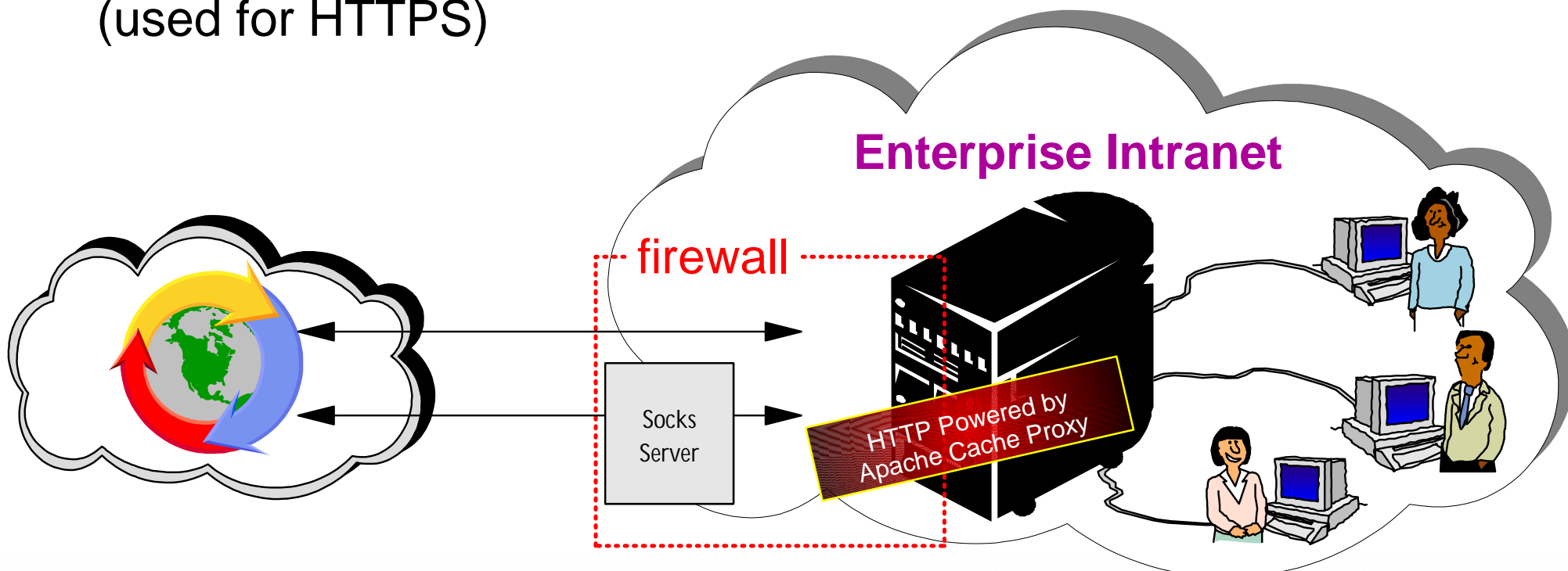
Caching Proxy Server Capabilities

IBM  server iSeries

- Retrieves documents on behalf of clients
- Caches documents
- Can be directed through enterprise Socks server
- Supports SSL Tunneling (used for HTTPS)

Benefits:

- Separate IP infrastructure for internal networks
- Reduce network traffic
- Securable Internet access
- Logs activity

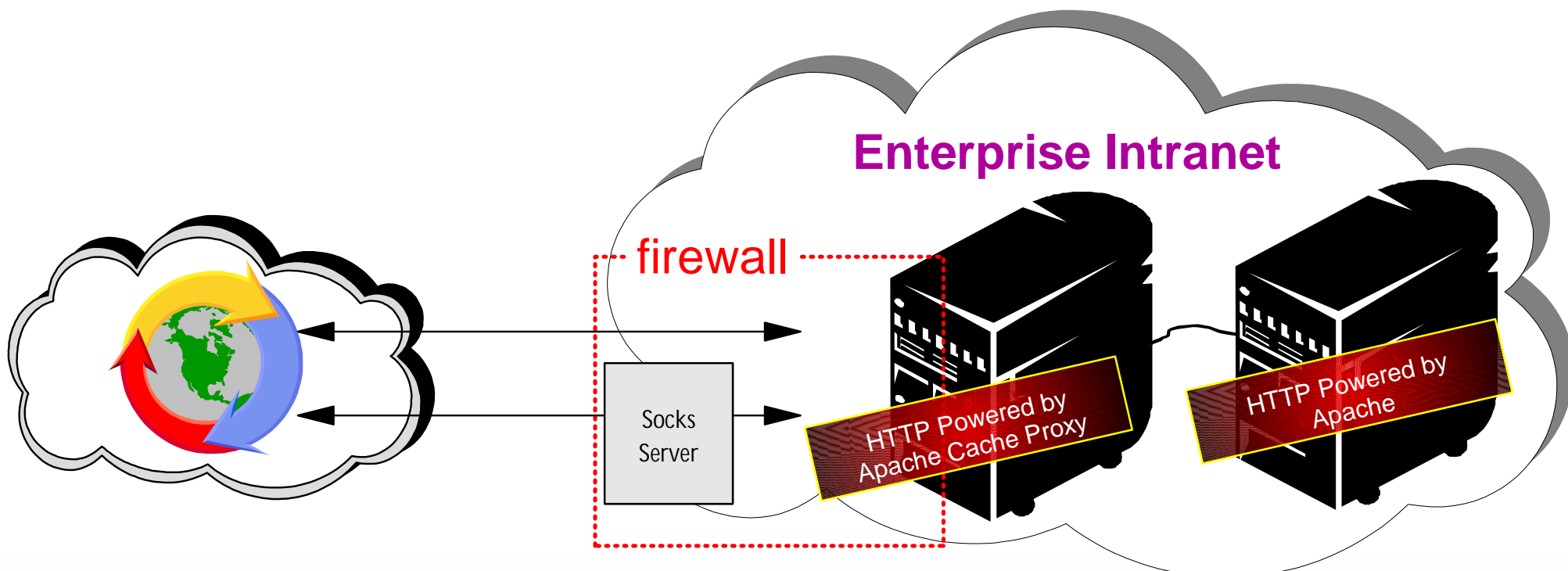


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Reverse Proxy Server Capabilities

IBM  server iSeries

- Caches documents on behalf of your "content server"
- Can be directed through enterprise Socks server
- Supports SSL Tunneling (used for HTTPS)
- Serves as both a proxy server and reverse proxy server at the same time
- Relieve static page workload off your content server

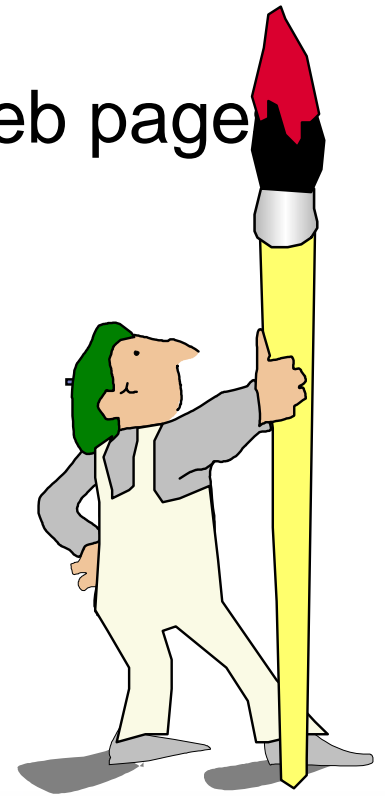


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Other Customization Options

IBM  server iSeries

- Meta Information files
- Directory listings
- User directories
- Custom error messages
- Configure for multiple Welcome Pages
- Use Automatic Browser Detection for serving web page tailored to a particular browser
- Image maps
- User tracking



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Job characteristics

IBM  server iSeries

- Runs in QHTTSPVR subsystems
- One "parent" server job
- Two "child" server jobs
- Multiple "helper" jobs

```
IHF
Work with Active Jobs
09/16/02
CPU %: .6 Elapsed time: 00:00:09 Active jobs: 154
Type options, press Enter.
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message
8=Work with spooled files 13=Disconnect ...

Opt Subsystem/Job User Type CPU % Function Status
--- QHTTSPVR QSYS SBS .0 DEQW
--- ADMIN QTMHHTTP BCH .0 PGM-QZHBHTTP SIGW
--- ADMIN QTMHHTTP BCI .0 PGM-QZSRLOG SIGW
--- ADMIN QTMHHTTP BCI .0 PGM-QZSRHTTP SIGW
--- ADMIN QTMHHTTP BCI .0 PGM-QYUNLANG TIMW
--- ADMIN QTMHHTTP BCI .0 PGM-QYUNLANG TIMW
--- ADMIN QTMHHTTP BCI .0 PGM-QYUNLANG TIMW

Parameters or command
===>
F3=Exit F5=Refresh F7=Find F10=Restart statistics
F11=Display elapsed data F12=Cancel F23=More options F24=More keys

Bottom
MA b 10/002
```

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Apache Concepts

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Server root: The base directory where server files (config, logs) are stored.

Document root: The base directory containing Web content files.

Module: A separately loadable server function. It identifies a set of valid directives to configure the function. Ex. SSL, LDAP.

Configuration file: Where a server's configuration is stored. It contains directive values.

Directives: A predefined list of names used to configure the server. Each directive allows one more more values to be specified.

NOTE: The admin/config GUI creates and updates these files based on features you choose to enable using the GUI.

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What Requires Migration

Migration from Original to Powered by Apache

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No migration needed for:

- CGI programs and WebSphere applications
- Web site content
- Users, validation lists and group files

Migration **required** for:

- Original HTTP server configurations are migrated by the wizard
- Server API programs need to be rewritten as Apache modules

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How do I migrate an original configuration?

Migration from Original to Powered by Apache

IBM  server iSeries

- IBM provides a migration wizard
- Wizard can be accessed through the configuration GUI
- Wizard does not destroy original server configuration
- Most directives migrate cleanly
- Wizard will migrate most directives, but in some cases is not able to migrate directives. It tells you what things were not handled in a summary report
- Testing the resultant Apache configuration is important

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New Features in V5R2 (and soon V5R1)

Apache 2.0.39 (Generally Available) version

IBM  server iSeries

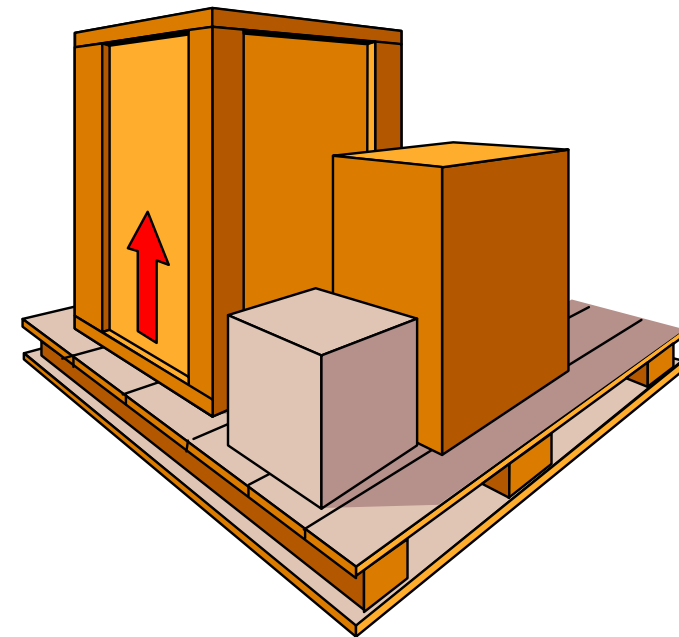
- Fast Response Cache Accelerator (FRCA)
- Highly available HTTP server
- Log rollover and archival
- Logging to QSYS files
- TLS upgrade
- GUI enhancements (usability/accessibility/wizards)
- Support for PASE CGI
- Full function migration wizard
- Supported by Domino 6
- Improved HTTP server management capabilities (server statistics to collection services)

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Product Packaging

IBM  server iSeries

- IBM HTTP Server for iSeries (Powered by Apache)
 - V5R1: In the base for 5722-DG1
- IBM HTTP Server for iSeries Triggered Cache Manager
 - V5R1: Option 1 for product 5722-DG1
- IBM WebSphere Application Server
 - WebSphere Apache Module
 - PTF to product 5733AS3 and 5733WA3
- Crypto Access Provider (SSL support)
 - 5722-AC1 (40-bit)
 - 5722-AC2 (56-bit)
 - 5722-AC3 (128-bit)
- iSeries - Digital Certificate Manager
 - 5722-SS1 option 34



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Web Sites

- IBM iSeries HTTP Server
 - www.ibm.com/eserver/series/software/http
 - Apache info, PTFs, V5R1, getting started, documentation
- Apache
 - www.apache.org
 - www.apachetoday.com
 - www.apacheweek.com

Books

- Configuring and managing Apache servers (not platform specific).

iSeries & WebSphere Resources & Deliverables

iSeries site www.iseries.ibm.com/	iSeries & Domino http://www-1.ibm.com/servers/eserver/series/domino/
iSeries WebSphere Application Server http://www-1.ibm.com/servers/eserver/series/software/websphere/wsappserver/	Dedicated Server for Domino http://www-1.ibm.com/servers/eserver/series/domino/dsd.htm
PartnerWorld for Developers, iSeries & WebSphere http://www.iseries.ibm.com/developer/websphere/	Workload Estimator for iSeries, WAS, WCS & Domino, HTTP Server, Java, etc. http://as400service.ibm.com/estimator/
IBM eServer Solutions http://www-1.ibm.com/servers/eserver/series/solutions/	iSeries Custom Technology Center http://www-1.ibm.com/servers/eserver/series/service/ctc/
iSeries e-business Solutions http://www-1.ibm.com/servers/eserver/series/ebusiness/	iSeries Technical Support http://as400service.ibm.com/
iSeries B2B Solutions http://www-1.ibm.com/servers/eserver/series/btob/	iSeries Technical Studio http://www.as400.ibm.com/tstudio/
Connect for iSeries http://www-1.ibm.com/servers/eserver/series/btob/connect/v11high.html	1st Install for iSeries & WebSphere Application Server http://www.iseries.ibm.com/developer/websphere/assistance.html
WebSphere Commerce Suite for iSeries http://www-1.ibm.com/servers/eserver/series/ebusiness/wcs51.html	iSeries ToolsNet (Tools & Middleware) http://www.iseries.ibm.com/developer/tools/
iSeries and e-commerce http://www-1.ibm.com/servers/eserver/series/ebusiness/ecommerce.htm	iSeries & Services Network http://as400service.ibm.com/supporthome.nsf/document/19251245
iSeries HTTP Server http://www-1.ibm.com/servers/eserver/series/software/http/index.html	iSeries e-business Handbook (SG24-5694-01) http://www.redbooks.ibm.com/abstracts/sg245694.html
WebSphere Development Studio for iSeries http://www-3.ibm.com/software/ad/wds400/	WebSphere Commerce Suite With Back-End Order Mgmt. http://ibm.com/redbooks
iSeries and WebSphere References http://www.as400.ibm.com/developer/java/solutions/jjem.html http://www2.software.ibm.com/casestudies/swcsweb.nsf/platform	iSeries Technology Center http://www.iseries.ibm.com/service/itc/ebiz.htm
iSeries Solution Finder http://www.iseries.ibm.com/btobpartner/	iSeries University http://www-3.ibm.com/services/learning/community/as400/

iSeries & WebSphere Resources & Deliverables

WebSphere Application Server Overview

<http://www-4.ibm.com/software/webservers/appserv/>

IBM Redbooks

<http://www.redbooks.ibm.com/>

WebSphere Commerce Suite

www-4.ibm.com/software/webservers/commerce/

iSeries Nation

<http://www-1.ibm.com/servers/eserver/series/announce/form.html>

WebSphere Payment Manager

www-4.ibm.com/software/webservers/paymgr/

MQSeries

www.ibm.com/software/ts/mqseries

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

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Notes:

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