IBM Software Group

Debugging HTTP 404 Response Code in an IHS/WebSphere Topology

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Agenda

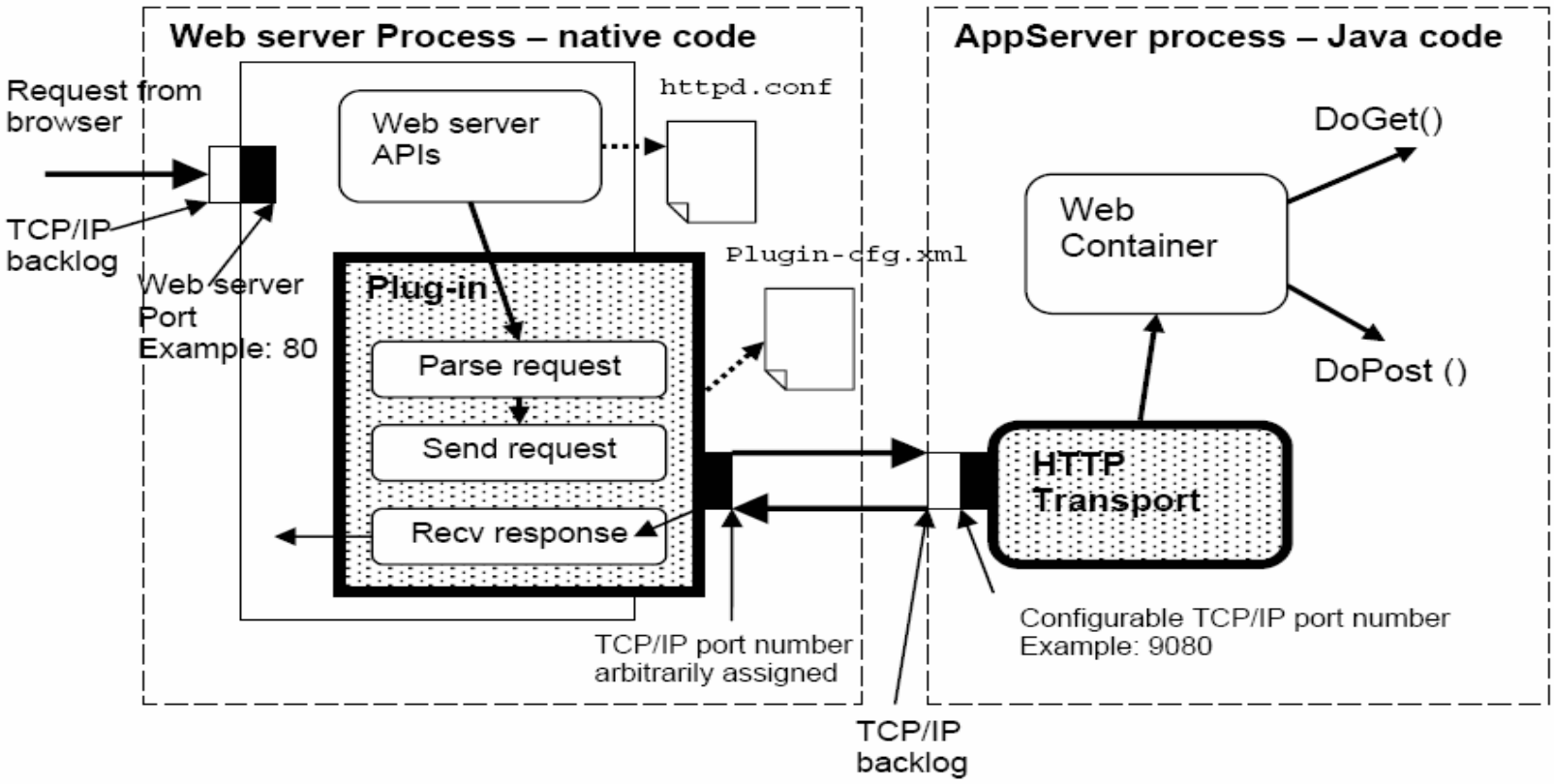
- What is http 404
- IHS/Plugin/WebSphere topology and some terms.
- Conditions under which a HTTP 404 error is seen
- Preliminary System Integrity Check
- What to collect ? Diagnostics.
- Debug procedures for http 404?
- Measures to address the issue
- Sumary

What is a Http 404 Error

- A http 404 or Not Found error message simply means the client was able to communicate with the server, but the requested resource was not found.
- In the 404 error code, the 1st digit indicates a client error such as mis-typed URL. The following 2 digits indicate the specific error.
- A http 404 is commonly used when the server does not wish to reveal exactly why the request has been refused, or when no other response is applicable.

A Schematic of WebSphere Plugin Operation.

Figure 2. Detailed view of the plug-in operation



Some Plugin Terms and Definitions

- httpd.conf
- Plugin
- plugin-cfg.xml
- Plugin Elements
- VirtualHost
- Http Transport
- Web Container

Causes of Http 404

- HTTP 404 errors can have different underlying causes. Some examples of these causes are:
- External factors, such as a problem in the Web server
- Configuration problems, such as an incorrect Web server plug-in or virtual
- host configuration
- Run-time problems, such as an application or application server not started
- User or application problems, such as an incorrectly specified URL

Check system integrity

When users receive HTTP 404 error codes and you know the application at the root of the problem, the first thing to check is the integrity of the following system components:

Web server

Application server

Application

Verify that the Web server is responding

- If you are using IBM HTTP Server, a quick test is to access the URL for the Web server from a Web browser:
- http://server_name
- If Web server is running and responding to requests, you should see the Welcome page.
- Else, the problem is most likely in the Web server
- Resolve Web server problems

Verify that the application server is started

To verify the health of the hosting application server:

- 1. Determine the server or cluster that hosts the application.
- 2. Check the status of the application server.
- 3. The status of an application can be seen in the administrative console. Select Applications → Enterprise Applications.
- 4. Start the application server if it is not running.

Verify that the application is started

- The status of an application can be seen in the administrative console. Select Applications → Enterprise Applications.
- A Started status means the application is running
- If not started, select application and click start.
- Make sure application starts up without exceptions thrown in the System

Diagnostics/logs

Collect the following diagnostic data:

- Errors displayed by the user browser, including the URL that failed
- If your application is deployed to a cluster, you might need to collect the WebContianer traces logs from each active server in the cluster.
- Web server Access log and Debug level Error log
- Trace Level plugin log
- MustGather link
  - http://www-01.ibm.com/support/docview.wss?uid=swg21141306

Analyze diagnostics

- The URL that failed
- Where the failure occurred (Web server, plug-in, application server)

- Analyze the diagnostics in the following order:

  1. The browser error display

  2. SystemOut

  3. Plugin Trace

  4. Web server log

- If no other error indications are found, look at the Web server log, which can tell you the type of error (404 or 500) and the URL that caused the error.

Errors displayed by the browser

- The page cannot be displayed
- JSP error or JSF error
- Failed to find resource
- File not found
- WebGroup/virtual host not defined

The page cannot be displayed or found

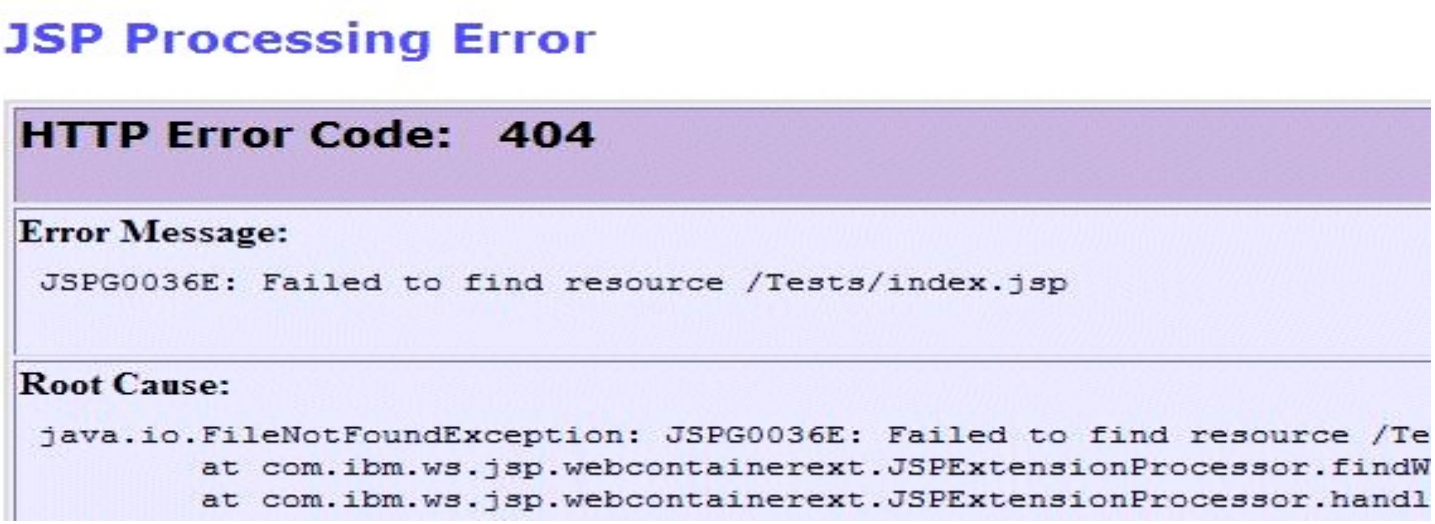
- The display varies, depending on the browser
- Instead might see “The page cannot be found.”
- Possible root causes for this error include a URL that was specified incorrectly and the unavailability of a component that is required to access the page

The page cannot be displayed

The page you are looking for is currently unavailable. The Web site might be experiencing technical difficulties, or you may need to adjust your browser settings.

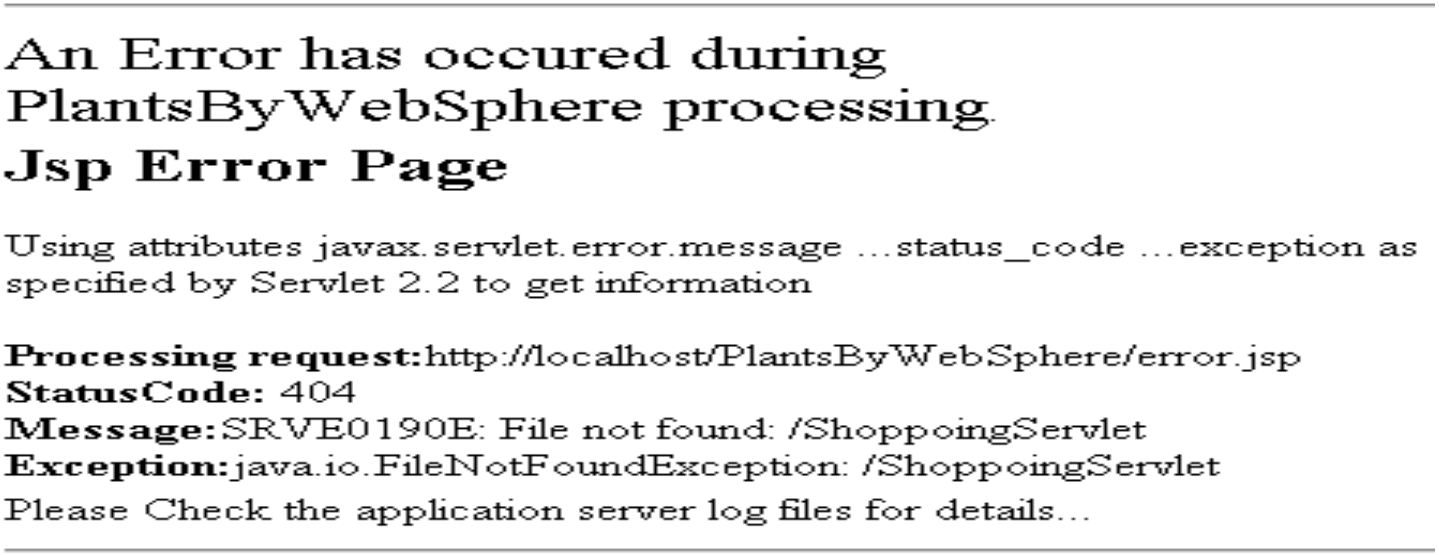
JSP and JSF errors

- JSP and JSF errors are usually accompanied by a message from the application server that indicates the problem.
- JSPG0036E: Failed to find resource



JSP error with an "SRVE0190E: File not found

- Possible root causes for this error include an incorrectly specified URL, the page is not available on the server, and a Web server plug-in configuration problem.



An Error has occured during PlantsByWebSphere processing.

Jsp Error Page

Using attributes javax.servlet.error.message ...status_code ...exception as specified by Servlet 2.2 to get information

Processing request: http://localhost/PlantsByWebSphere/error.jsp
StatusCode: 404
Message: SRVE0190E: File not found: /ShoppoingServlet
Exception: java.io.FileNotFoundException: /ShoppoingServlet
Please Check the application server log files for details...

WebGroup/Virtual Host has not been defined

- SRVE0017W: WebGroup/Virtual Host has not been defined (V6.0)
- SRVE0255E: A WebGroup/Virtual Host to handle /WebApp has not been defined. (V6.1)
- Error 404: SRVE0295E: Error reported: 404

Errors in the JVM logs

- Web container messages: SRVExxxxE or SRVExxxxW messages
- JSP messages: JSPGxxxxE or JSPGxxxxW messages
- JSF messages: JSFGxxxxE or JSFGxxxxW messages
- Error messages that are related to the application startup

Example of Normal application startup messages

- A normal Application startup should look something as below

```
ApplicationMg A WSVR0200I: Starting application: [application_name]
WebContainer A SRVE0161I: IBM WebSphere Application Server - Web
Container.
Copyright IBM Corp. 1998-2004
WebContainer A SRVE0162I: Servlet Specification Level: 2.4
WebContainer A SRVE0163I: Supported JSP Specification Level: 2.0
WebGroup A SRVE0169I: Loading Web Module: [web_module_name]
ApplicationMg A WSVR0221I: Application started: [application_name]
```

Web group/virtual host errors

- If you see one of the following messages, you might have a problem with the virtual host configuration:
- SRVE0255E: A WebGroup/Virtual Host to handle url has not been defined. (V6.1)
- SRVE0017W: A WebGroup/Virtual Host to handle url has not been defined. (V6.0)
- Error messages with prefixes JSPG, JSFG, or SRVE have information about the error, including the URL that caused the problem

Analyze the Web server logs

- 1. Search for 404 status codes in the access log
  - Remote_host- - date_time "request" status_code bytes
- 2. Search for errors in the error log
  - [date_time] [error] [client Remote_host] error_message
- 3. Evaluate errors in Accesslog and Errorlog

Rules to chase a 404

- 404 in Accesslog and
  - corresponding error in Web Server's errorlog – Check the WebServer error log for further details
  - No error in errorlog, get Plug-in and WebContainer traces. The most likely cause is a problem with the Web server plug-in or at the application server.
  - If WebContainer property fileServingEnabled=false then IHS serves the Static content.
  - If fileServingEnabled=True then static content is served by the Appserver.
  - If true, verify that the resources exist in the proper path in the application server.

When request is passed to WebSphere

- mod_was_ap20_http: as_translate_name: WebSphere will handle: /servlet_name
- This line tells you that the HTTP server matched the incoming request to the rules in the Web server plug-in configuration file and sent the request to WebSphere for processing.
- Either you will see a http 200 (successful) or http error for example a http 404
- In either case both the above http codes are sent by the Appserver.

404 can be narrowed down to

- Based on symptoms that users report, you can usually narrow the problem down to one of two types:
  - 1. Page cannot be displayed or JSP/JSF error
  - 2. WebGroup/virtual host not defined

1. Page cannot be displayed or JSP/JSF error

- Verify that the Web server plug-in is working correctly
- Verify that the URL that is causing the error is specified correctly
- Verify that the Web server is responding
- Verify that the application is running

2. WebGroup/virtual host not defined

- Verify that the virtual host configuration is correct
- Verify that the URL causing the error is specified correctly
- Verify that the application is running

1.Verify that the URL is correct

- The format of the URL is as follows:
  - http://host:port/context_root/servlet_url_pattern

  To find the URL for a servlet or JSP:
- 1. Find the URL pattern for the servlet.
- 2. Find the context root of the Web module that contains the servlet.
- 3. Find the virtual host where the Web module is installed.
- 4. Find the aliases for the virtual host.
- 5. Compare the failing URL with the correct URL for the servlet.

1. Find the URL pattern (servlet_url_pattern)

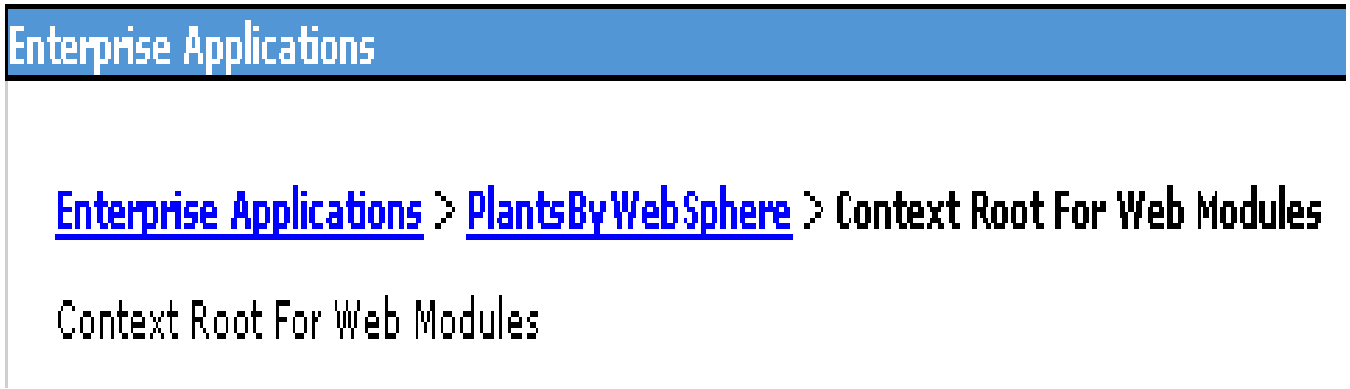
- 1. In the administrative console, select **Applications →Enterprise Applications.**
- 2. Click the application name to open the Configuration page for the application.
- 3. Select **Manage Modules** to list the Web and EJB™ modules in the application. If there is more than one Web module, view the deployment descriptor for each until you find the servlet.
- 4. Click **Web_module_name Web application** to see the general properties.
- 5. Click **View Deployment Descriptor**. This opens the Web module properties window. Look for the servlet in a <servlet-mapping> entry and note the **url-pattern** value.
- 6. If the Web module has security configured, check the <security-constraint> and <security-role> deployment descriptor tags for the role that is needed for access to the selected Web resource.

1. Find the context root (context_root)

- Each WebModule in an Application has a unique ContextRoot.

To find the context root for the URL:

- 1. Select **Applications →Enterprise Applications**.
- 2. Click the application name.
- 3. Click **Context Root for Web Modules**.
- 4. Note the context root for the appropriate Web module.



1. Find the virtual host (host:port)

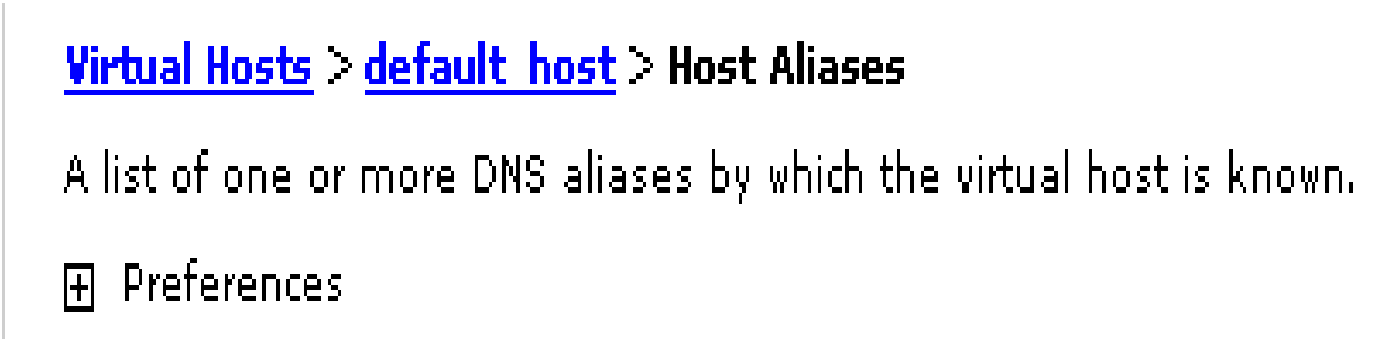
To find the virtual host where the Web module is installed:

- 1. Select **Applications →Enterprise Applications**.
- 2. Click the application name.
- 3. Click **Virtual hosts** under Web Module Properties to see the Web modules in the application and the virtual hosts in which they have been installed.
- 4. Note the virtual host for the Web module.

1.Find the aliases for the virtual host

To find the host aliases for the virtual host:

- 1. From the console navigation tree, select Environment →Virtual Hosts.
- 2. Click the virtual host.
- 3. Select Host Aliases under Additional Properties.
- 4. Note each alias. An alias is composed of a host name and port number. Each
  alias represents a valid host:port combination for the Web module.



Compare the result with the failing URL

- 1. Combine the virtual host alias, context root, and URL pattern to form the correct URL request for the servlet.
- 2. Compare the correct URL for the servlet with the URL that was reported in the problem.
- 3. If they are the same, verify that the resource file exists in the deployed application. If they are not, correct the application that is calling the resource

Verify Web server plug-in is working correctly

- Ensure that the Webserver plug-in was regenerated and propagated to the Web server
- Check other applications on the server
- Access the application directly, bypassing the plug-in.

Resolve Web server plug-in problems

- If you can access the application through the application server but not via the webserver, you are most likely experiencing a problem with the Web server plug-in.
- Review the virtual host mapping for the Web modules
- Review the Web module mapping
- Correct any problems.
- Regenerate the plug-in and propagate it to the Web server.
- Restart the Web server or wait for the new configuration to be activated.

Verify/Fix Virtualhost configuration is correct

If the Web server plug-in receives a request that does not match one of the virtual hosts, then the user receives an HTTP error.

- **Determine the virtual host for the Web module**
  To determine the virtual host associated with the Web module, in the administrative console, select **Enterprise Applications → application_name →Virtual Hosts.**

- **View and modify the virtual host definition**
  Environment → Virtual Hosts ->VH Name → Host Aliases
  Edit the host name or port as needed.
  Restart the application server.
  Regenerate the plug-in and propagate it to the Web server.

Host alias definitions

- Make sure that the host aliases that are defined for a virtual host include the hostname and port number of the WebSphere Application Server and the host names and port numbers that the Web server plug-in is expecting to receive from the browser.
- Mapping HTTP requests to host aliases is case sensitive and the match must be alphabetically exact.
- A * wild card can be used for the host name, the port, or both. When it is used for both, any request matches this rule.

Summary

- Collect MUSTGATHER (Slide 12)
- Analyze Diagnostics in the right Order (slide 13)
- Isolate the root cause of the http 404 to one of the components in the http transport.
- Identify the issue and address the changes requried.
- Custom Error for http 404 can give a more accurate nature of the problem to client browser. Sometimes not desireable.

References:

- http://www-01.ibm.com/support/docview.wss?uid=swg21141306
- http://www-304.ibm.com/support/docview.wss?uid=swg27014498&aid=1
- http://www.redbooks.ibm.com/redpapers/pdfs/redp4309.pdf
- http://pic.dhe.ibm.com/infocenter/wasinfo/v7r0/index.jsp

Additional WebSphere Product Resources

- Learn about upcoming WebSphere Support Technical Exchange webcasts, and access previously recorded presentations at:
  http://www.ibm.com/software/websphere/support/supp_tech.html
- Discover the latest trends in WebSphere Technology and implementation, participate in technically-focused briefings, webcasts and podcasts at:
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