



Eliminating the Use of Port Numbers in Websphere/HTTP

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Overview

To meet high availability needs and to optimize performance in an ERP/Websphere environment, J.D. Edwards recommends creating multiple Java Application Server (JAS) instances in WebSphere Application Server (WAS). Also, in order to address the Path Code caching issue (Refer to "Implement a Single Path Code per Virtual Machine" appendix in JAS Install Guide), it is recommended that multiple JAS instances be created. To support these needs, an elaborate addressing structure must be created. The choices for creating this addressing structure are either port-based or name-based addresses. This paper presents name-based addressing as an alternative to port-based addressing.

Current Recommendation

The current recommendation calls for the utilization of separate TCP port numbers for each JAS instance:

http://erp8.company.com:80 - for the Production Instance

http://erp8.company.com:81 - for a Vertical Clone

http://erp8.company.com:82 - for another Vertical Clone

http://erp8.company.com:83 - for a Prototype Instance

While this is a suitable solution, some issues compel us to find an alternate solution.

- **Firewall Complexity** - The use of multiple ports in a firewalled network environment forces the opening of those ports and any firewall between the user and the HTTP server. This results in a less secure environment and higher administrative cost for the customer. The current emphasis on corporate security increases the likelihood of network administrators responding negatively to requests for firewall port openings.
- **URL Complexity** - The use of port numbers in a Uniform Resource Locator (URL) makes the URL more complex and less descriptive. Users may have difficulty remembering the address and could get confused by what is now considered a non-standard type of Internet address. There is nothing in the URL that describes what instance they are using. The use of aliases increases the descriptiveness of the URL.
- The use of port numbers is considered inelegant and dated. With the availability of HTTP VirtualHost methods, using port numbers in an Internet Address implies a lack of sophistication. Using aliases instead shows customers that JD Edwards remains on the leading edge of software implementation practices.

Solution

The use of aliasing and Virtual Hosting techniques in DNS, IBM HTTP Server (Apache), and WebSphere 4 allows JAS instances to be referenced by name instead of by TCP Port Number. DNS mappings, [Apache VirtualHosts](#), and [WAS Host Aliases](#) are created to enable this solution.

You create multiple HTTP servers by the use of [Apache Named Virtual Hosts](#). Each named Virtual Host is on the same physical web server but appears to be a different URL and can have a different setting. The process is described below.

- An HTTP URL is entered in the browser, which prompts a DNS lookup to be performed. The matching DNS entry points to the IP address of a server.
- Since the server is running an HTTP server, it accepts the HTTP request on the default port 80.
- The WAS Plugin intercepts the HTTP request and evaluates it for matching routes.
- If the URI requested does not match any existing route, the WAS Plugin allows the HTTP request to continue to the HTTP server (figure 1). (e.g., `http://erp8dv/jde/owhtml/index.html`)
- The HTTP server then parses the `httpd.conf` file searching for a `ServerName` or `ServerAlias` in a `VirtualHosts` section that matches the server name specified in the URL and serves the requested document

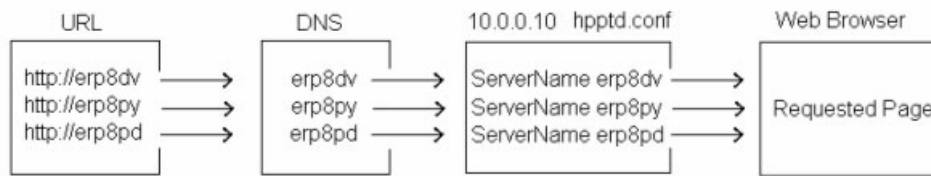


Figure 1 – Path for a request that does not match a WAS route

- If the URI requested matches an existing route in WAS, the Plugin routes the request to the appropriate WAS Virtual Host based on the matching WebSphere Host Alias (figure 2). (e.g., `http://erp8dv/jde/servlet/com.jdedwards.virtual.LoginServlet`)

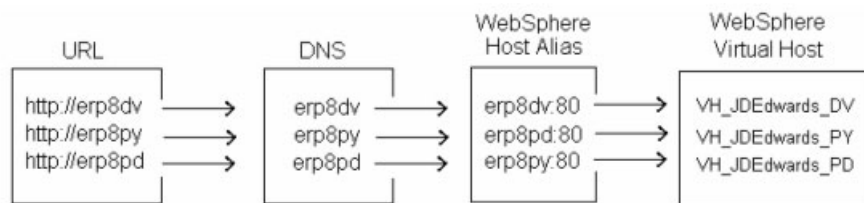


Figure 2 – Path for a request that matches a WAS route

Both scenarios require the presence of a

- DNS entry
- `httpd.conf` Virtual Host
- WAS Host Alias

For more information on WAS Plugin behavior, see IBM WebSphere Application Server 4.0 - Advanced Edition Problem Determination Chapter 4 - The HTTP server plug-in

Assumptions

For the purposes of this document the following assumptions are made:

- IBM WebSphere 4 and higher
- IBM HTTP Server
- ERP8/SP20 and higher
- Microsoft Windows platform

Setup for alternative platforms/configurations is similar as the basic principles are applicable.

Configuration

The following configuration uses Server Names, IP Addresses, and File & Directory Paths that are examples and may not reflect your actual servers or IP Addresses. They are not to be construed as official JD Edwards recommended naming conventions.

The configuration steps facilitate both separated path codes and name-based addressing. Since the separation of path codes is one of the main reasons for doing name-based addressing, the configuration will be included here. More information can be found about separating path codes in the appendix section of the JAS Install Guide.

The presence of clones is not necessary but can be accommodated with this type of configuration.

1. In DNS create the following entries:

```
erp8dv      10.0.0.10
erp8py      10.0.0.10
erp8pd      10.0.0.10
```

2. In the httpd.conf create the following directives:

```
NameVirtualHost 10.0.0.10
<VirtualHost 10.0.0.10>
ServerAdmin ds6842049@sduitsiwick.com
DocumentRoot "C:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\owhtml"
ServerName erp8dv
ServerAlias erp8dv.domain.com
ErrorLog "C:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\error.log"
Alias /jde "C:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war"
</VirtualHost>
```

```
<VirtualHost 10.0.0.10>
ServerAdmin ds6842049@sduitsiwick.com
DocumentRoot "C:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\owhtml"
ServerName erp8py
ServerAlias erp8py.domain.com
ErrorLog "C:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\error.log"
Alias /jde "C:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war"
</VirtualHost>
```

```
<VirtualHost 10.0.0.10>
ServerAdmin ds6842049@sduitsiwick.com
DocumentRoot "C:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\owhtml"
ServerName erp8pd
ServerAlias erp8pd.domain.com
ErrorLog "C:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\error.log"
Alias /jde "C:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war"
</VirtualHost>
```

3. Install J.D. Edwards JAS to the following directories to match directory settings in **DocumentRoot**, **ErrorLog**, and **Alias** sections of the appropriate **VirtualHost** directive in httpd.conf.

DV7334

Installation Directory - C:\Program Files\JDEdwards\JAS_DV

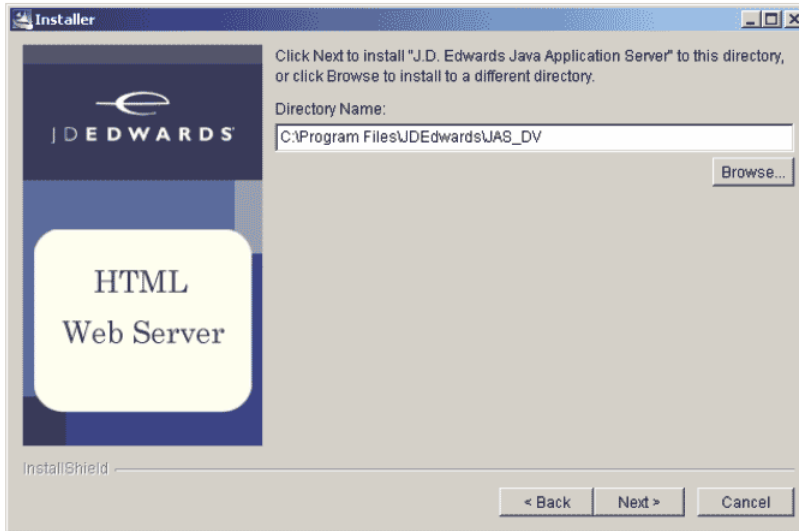


Figure 3 – DV Installation Directory

Virtual Host - VH_JDEdwards_DV

Application Server - AS_JDEdwards_DV

Web Application Name - EA_JDEdwards_DV

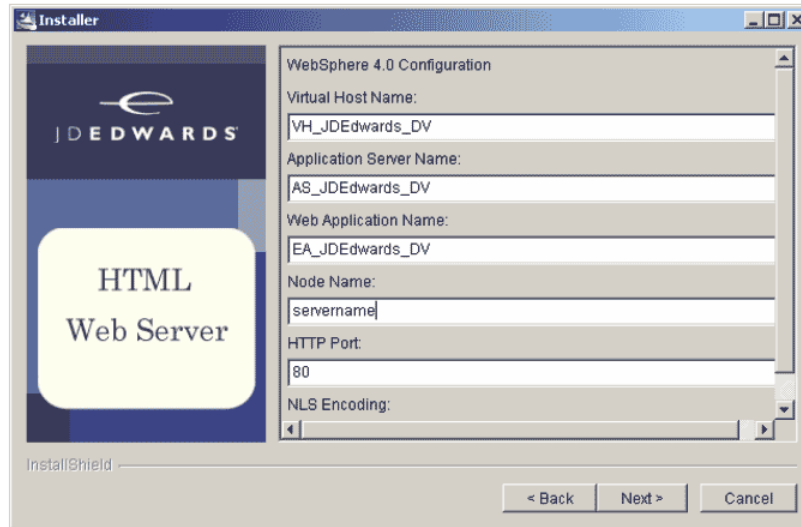


Figure 4 – DV Installation Options

PY7334

Installation Directory - C:\Program Files\JDEdwards\JAS_PY

Virtual Host - VH_JDEdwards_PY

Application Server - AS_JDEdwards_PY

Web Application Name - EA_JDEdwards_PY

PD7334

Installation Directory - C:\Program Files\JDEdwards\JAS_PD

Virtual Host - VH_JDEdwards_PD

Application Server - AS_JDEdwards_PD

Web Application Name - EA_JDEdwards_PD

4. Make the following changes to each installed instance's jas.ini to support the separated path codes:

For the DV instance

(C:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\WEB-INF\jas.ini)-

Change paths for logs, etc. to match directories specified during install and in httpd.conf VirtualHost directive:

```
jde=c:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war
servlet=c:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\WEB-INF/classes
log=c:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\jas.log
debuglog=c:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\jasdebug.log
rtlog=e:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\rt.log
rtdebug=e:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\rtdebug.log
stdout=c:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\stdout.txt
stderr=c:\Program Files\JDEdwards\JAS_DV\EA_JDEdwards_DV.ear\webclient.war\logs\stderr.txt
PathCodes=('DV7334')
```

For the PY instance

(C:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\WEB-INF\jas.ini)-

Change paths for logs, etc. to match directories specified during install and in httpd.conf VirtualHost directive:

```
jde=c:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war
servlet=c:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\WEB-INF/classes
log=c:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\jas.log
debuglog=c:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\jasdebug.log
rtlog=e:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\rt.log
rtdebug=e:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\rtdebug.log
stdout=c:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\stdout.txt
stderr=c:\Program Files\JDEdwards\JAS_PY\EA_JDEdwards_PY.ear\webclient.war\logs\stderr.txt
PathCodes=('PY7334')
```

For the PD instance

(C:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\WEB-INF\jas.ini)-

Change paths for logs, etc. to match directories specified during install and in httpd.conf VirtualHost directive:

```
jde=c:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war
servlet=c:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\WEB-INF/classes
log=c:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\jas.log
debuglog=c:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\jasdebug.log
rtlog=e:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\rt.log
rtdebug=e:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\rtdebug.log
stdout=c:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\stdout.txt
stderr=c:\Program Files\JDEdwards\JAS_PD\EA_JDEdwards_PD.ear\webclient.war\logs\stderr.txt
PathCodes=('PD7334')
```

5. In the WebSphere Administration Console perform the following actions:

Verify the creation of a WebSphere Virtual Host named VH_JDEdwards_DV and add host aliases:

- erp8dv: 80
- erp8dv: 443 (If using SSL)

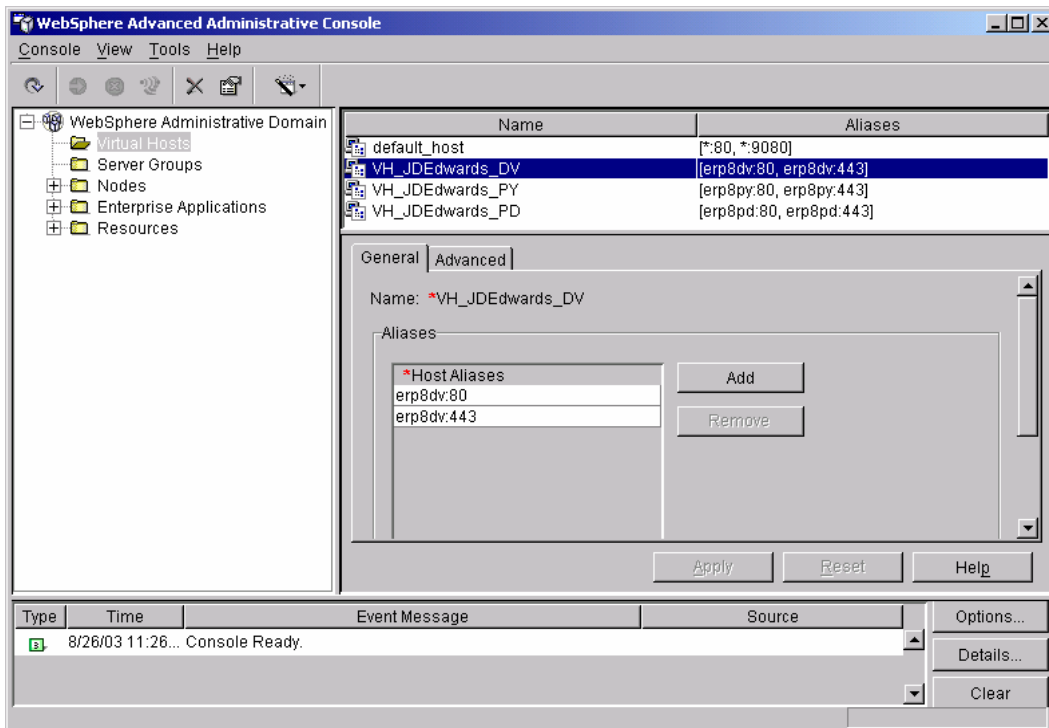


Figure 7 – DV Websphere Virtual Host Configuration

Verify the creation of a WebSphere Virtual Host named VH_JDEdwards_PY and add host aliases:

erp8py: 80

erp8py: 443 (If using SSL)

Verify the creation of a WebSphere Virtual Host named VH_JDEdwards_PD and add host aliases:

erp8pd: 80

erp8pd: 443 (If using SSL)

Associate either AS_JDEdwards_DV or SG_JDEdwards_DV (if cloned) with:

VH_JDEdwards_DV

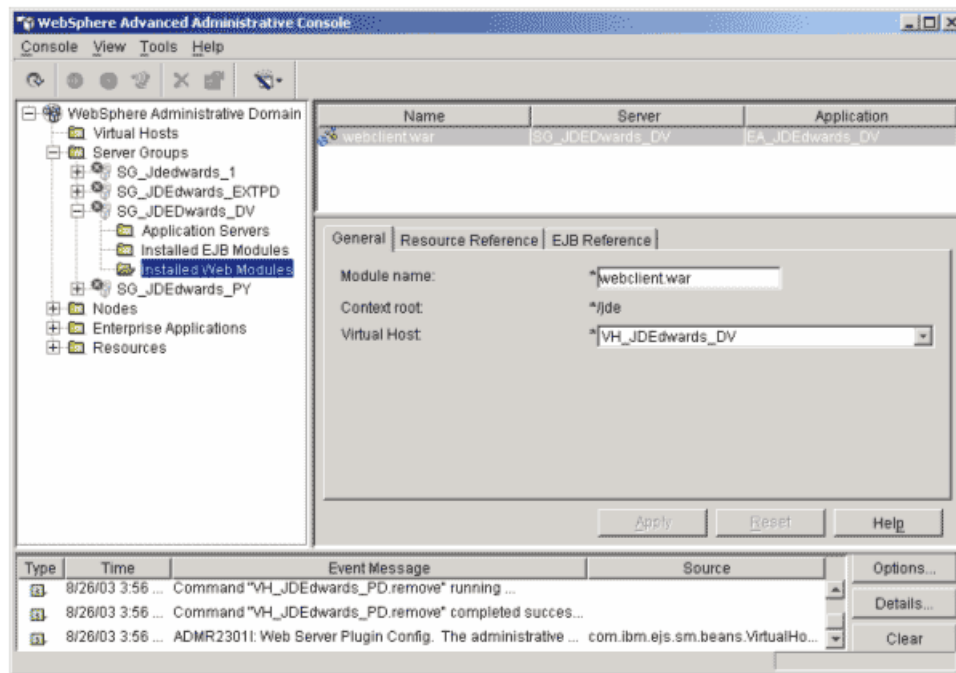


Figure 8 – Installed Web Modules

Associate either AS_JDEdwards_PY or SG_JDEdwards_PY (if cloned) with:

VH_JDEdwards_PY

Associate either AS_JDEdwards_PD or SG_JDEdwards_PD (if cloned) with:

VH_JDEdwards_PD

Verification

Open a web browser and test the J.D. Edwards HTML client using

- http://erp8dv
- http://erp8py
- http://erp8pd

References

Apache Virtual Hosts

<http://httpd.apache.org/docs/vhosts>

Apache Named Virtual Hosts

<http://httpd.apache.org/docs/vhosts/name-based.html>

Websphere InfoCenter

<http://www-3.ibm.com/software/webservers/appserv/doc/v40/ae/infocenter/index.html>

J.D. Edwards Web Administration Guide

<https://knowledge.jdedwards.com/content/KG/Documentation/Private/webadmin.pdf>

J.D. Edwards Web Server Installation Guide

https://kgapps2.jdedwards.com/softwaredownloads/sp/docs/SP22_CLIENT.pdf

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