

IBM @server™ xSeries™ and J.D. Edwards
OneWorld® Xe HTML Tuning
Recommendations

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Executive Summary

This paper will discuss tuning on a variety of levels. However, based on current J.D. Edwards testing tools, we will primarily focus on tuning for the Web-based client. Since the HTML client has such a small footprint, requiring only a Web browser, it has become a very popular client choice for J.D. Edwards OneWorld®. For the best performance of the HTML client, parameters in the IBM WebSphere® Application Server, the HTTP Server, the OneWorld JAS and enterprise servers need to be set. Many of these configurable parameters are based on the number of users.

This document describes the hardware configuration and software settings that were used during testing to provide the best overall end-user response time, while keeping the system load as low as possible.

We will include useful Web sites and references to other documents throughout this paper. For additional marketing documents or to perform an online IBM @server xSeries™ sizing based on our test results, please refer to **Appendix D: Related Publications and Web Sites**.

Background Information

The primary objective of the test was to gather sizing data for the xSeries and OneWorld Xe SP16 Web in a WebSphere Application Server HTML environment. A secondary objective was to determine and document the tuning techniques to optimize end-user response time performance.

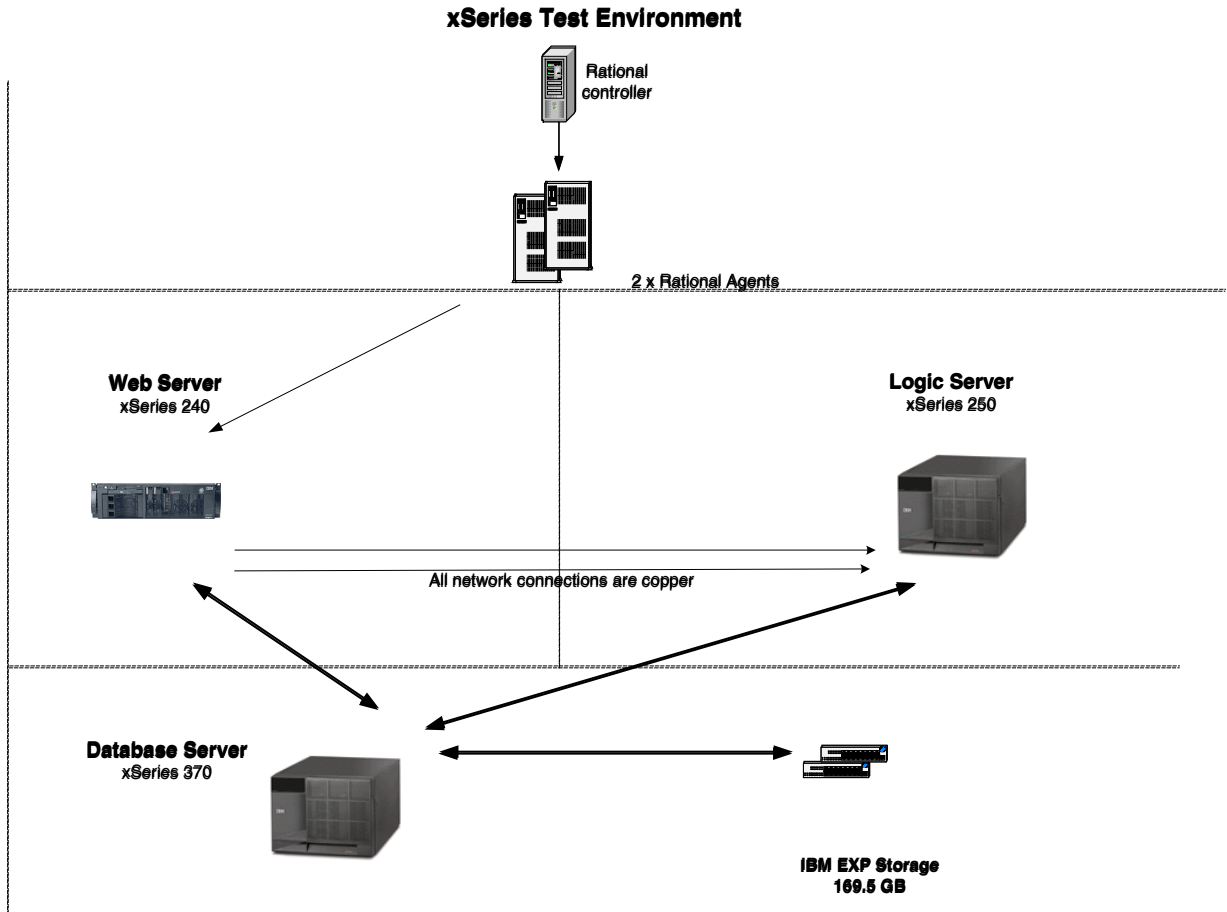
We tested the OneWorld environment using the Rational Load Test tool using scripts provided by J.D. Edwards to simulate real-world use of the OneWorld applications and measure end-user response time.

All tests were completed using a Physical Three-Tier OneWorld implementation with separate IBM xSeries Database, Application and JAS Servers.

Architectural Design

At a high level, the architecture of the benchmark environment consisted of:

- *Database Server*: Microsoft® SQL Server 2000 Fix Pack 1 database—this database server housed the J. D. Edwards database and service request for information.
- *Application Server*: This serviced OneWorld Xe logic requests.
- *Web Server*: Web servers serviced HTML-based transactions from Web-based users.
- *Rational Controller*: This machine controlled the number of users accessing the Web server. This is not a normal component of a customer implementation.
- *Rational Agents*: These machines were used to simulate Web users.



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Three-Tier Architecture Diagram

Hardware Configuration

The next pages highlight the IBM xSeries configurations used for testing.

Database Server

IBM xSeries 370

Component	Detail
System	IBM xSeries 370 (8681-2RX)
Processors	8 x 550 MHz Intel® Pentium® III Xeon, 2 MB L2 Cache
Cache Coherency Filters	2 x 4X Accelerator Filters
Memory	4 x 1GB PC100-compliant 3.3v SDRAM RDIMMS
Disk Internal	2 x 18.2 GB
Disk External	20 x 9.1 GB via IBM EXP Enclosures
Disk Configuration	See Disk Configuration Detail
Network	IBM 10/100 Ethernet PCI Adapter

Physical Slot Detail

1 Bus D	2 Bus D	3 Bus D	4 Bus D	5 Bus D	6 Bus C	7 Bus C	8 Bus B	9 Bus B	10 Bus A	11 Bus A	12 Bus A
Empty	Empty	Empty	Empty	Empty	Empty	Empty	10/100 Ethernet	Empty	ServeRAID 3H	Empty	Empty

Disk Configuration Detail

RAID Level	Physical HDD	Controller	External Enclosures	Drive Letter(s)	Function	(GB) Size	(GB) Free
1	2 x 18.2 GB	ServeRAID 3H	N/A	C:	OS / Paging	16.94	8.67
5	10 x 9.1 GB	Same	EXP 200	D: / R:	Data / Backup	50.0 / 38.1	24.03 / 4.2
5	10 x 9.1 GB	Same	EXP 200	E: / T:	Index / Temp	50.0 / 38.1	35.7 / 6.8

Windows Settings

Component	Detail
OS	Microsoft Windows® 2000 Advanced Server
Service Pack	2
Boot.INI switches	/3GB
Application Response	Optimize performance for background services
Network Server Optimization	Maximize data throughput for network applications

Paging Files (4GB)	C: , D: , E:
--------------------	--------------

Application Server

IBM xSeries 250

Component	Detail
System	IBM xSeries 250 (8665-61Y)
Processors	4 x 700 MHz Intel Pentium III Xeon, 1 MB L2 Cache
Memory	4 x 1GB 100MHz ECC SDRAM RDIMMs
Disk Internal	5 x 18.2 GB
Disk External	None
Disk Configuration	See Disk Configuration Detail
Network	IBM 10/100 Ethernet PCI Adapter

Physical Slot Detail

1 Bus A	2 Bus A	3 Bus B	4 Bus B	5 Bus B	6 Bus B
Empty	10/100 Ethernet	ServeRAID 3H	Empty	Empty	Empty

Disk Configuration Detail

RAID Level	Physical HDD	Controller	External Enclosures	Drive Letter(s)	Function	(GB) Size	(GB) Free
1	2 x 9.1 GB	ServeRAID-4M	N/A	C:	OS / Paging	8.7	3.2
5	3 x 18.2 GB	Same	N/A	D:	Data	17.4	4.1

Windows Settings

Component	Detail
OS	Microsoft Windows 2000 Advanced Server
Service Pack	2
Boot.INI switches	/3GB
Application Response	Optimize performance for background services
Network Server Optimization	Maximize data throughput for network applications
Paging File (4GB)	C:

JAS Server

IBM xSeries 340

Component	Detail
System	IBM xSeries 340 (8656-1RY)
Processors	2 x 1 GHz Intel Pentium III 256 KB L2 Cache
Memory	4 x 1GB 133 MHz SDRAM ECC RDIMM II
Disk Internal	2 x 18.2 GB
Disk External	None
Disk Configuration	See Disk Configuration Detail
Network	IBM 10/100 Ethernet PCI Adapter

Physical Slot Detail

1 Bus A	2 Bus A	3 Bus B	4 Bus B	5 Bus B
Empty	10/100 Ethernet	Empty	Empty	Empty

Disk Configuration Detail

RAID Level	Physical HDD	Controller	External Enclosures	Drive Letter(s)	Function	(GB) Size	(GB) Free
0	18.2 GB	SCSI Ultra 160	N/A	C:	OS / Paging	17.4	9.4
0	18.2 GB	Same	N/A	D:	Data / Paging	17.4	11.7

Windows Settings

Component	Detail
OS	Microsoft Windows 2000 Advanced Server
Service Pack	2
Boot.INI switches	/3GB
Application Response	Optimize performance for background services
Network Server Optimization	Maximize data throughput for network applications
Paging Files (4GB)	C: , D:

Software Configuration

The next pages highlight the software configuration used for testing.

Operating System Software Overview

Windows 2000 Advanced Server version 5.0.2195 Service Pack 2 Build 2195 was used on all systems.

Internet Explorer 5.5 SP2 including all current compatibility and critical fixes.

Event Logs were configured for 1MB and set to: Overwrite events as needed.

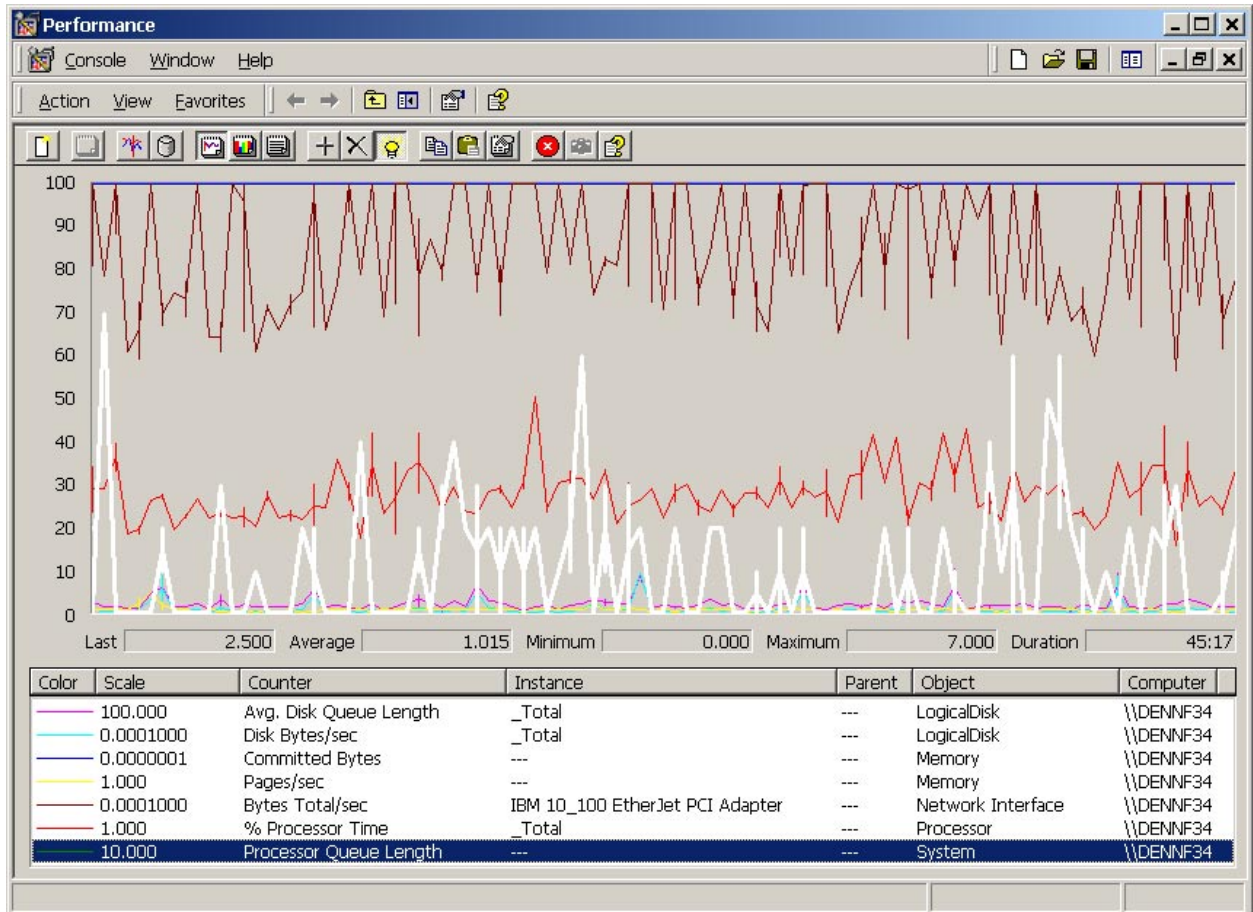
All anti-virus software was disabled during testing which allowed us to meet our target end-user response time objective of < 1 second.

TCP/IP was the only installed protocol. The physical network was isolated to a private virtual local area network (LAN) supplied via CISCO Router. In addition, all servers were configured for 100MB / Full Duplex using a single IBM Ethernet PCI Adapter.

4GB Paging files were available on all defined logical drives for this test. This enables Windows to use the nearest drive available if paging becomes necessary. Microsoft best practices aside, for the best end-user response time, paging should be kept to an absolute minimum.

Available Memory and CPU speed are the key factors for Web server performance. We will discuss memory tuning in more detail in the WebSphere Application Server section.

Although we may recommend single processor solutions for small user counts, response time can suffer adversely because of processor queuing. To clarify, below is a Windows Performance Monitor screen capture from the JAS server during a 150-user test. It includes recommended counters to log when monitoring server performance:



The average CPU utilization during this test was 28.03% and the response time 0.8 sec. Thanks to two 1GHz processors the average Processor Queue Length was 1.015 threads.

According to Microsoft, Processor Queue Length is the number of threads in the processor queue. There is a single queue for processor time even on computers with multiple processors. Unlike the disk counters, this counter counts ready threads only, not threads that are running. A sustained processor queue of greater than two threads generally indicates processor congestion.

Database Server

Microsoft SQL Server 2000 was the installed database for this test. In addition, these tests were conducted using the Microsoft JDBC driver for SQL Server. Your database choice will impact nearly every aspect of your OneWorld implementation, including the JDBC connection to the Web server. In addition to SQL Server, J.D. Edwards supports IBM DB2 and Oracle on the xSeries platform.

To simulate a typical customer environment IBM ServeRAID™ hardware RAID technology was used to support all disk drives. A single ServeRAID-3H adapter was configured to support Windows and the test database.

Application Server

OneWorld Xe SP16 was installed for this test. Again, memory and CPU are the most important subsystems to consider for the Application Server. OneWorld Xe is architected to run most business functions on the application server. Therefore, our recommended configurations have increased for this server.

To simulate a typical customer environment, IBM ServeRAID hardware RAID technology was used to support all disk drives. A single ServeRAID-4M controller was configured to support Windows and OneWorld.

Java Application Server (JAS)

OneWorld Xe SP16 and SQL Server 2000 were used for this test. Your database choice will impact nearly every aspect of your OneWorld implementation including the JDBC connection to the Web server. In addition to SQL Server, JD Edwards also supports Oracle and most recently IBM DB2 on the xSeries platform.

To simulate a typical customer environment, the on-board SCSI support was used to support all disk drives. IBM ServeRAID technology may also be used for disk fault-tolerant environments.

HTTP Server

Microsoft Internet Information Server (IIS) was used as the HTTP Server for this test. The HTTP Server is the first component installed on the JAS Server. IIS 5.0 is standard on Windows 2000 Server. Installation, test and configuration instructions are included in the OneWorld JAVA Server Installation Guide available from J.D. Edwards.

JDBC Driver

These tests were conducted using the Microsoft JDBC driver for SQL Server, currently available from Microsoft. Recommendations and sample files are available from Microsoft. For more information regarding updated features, please contact Microsoft directly.

WebSphere Application Server

IBM WebSphere 3.5.4 Advanced Edition was installed for this test using DB2 as the repository database.

The following parameter guidelines are meant to be a good starting point. However, your environment will be different from our lab setup and your results may vary. For example, if you also have fat or TSE clients, run a different mix of batch jobs (UBEs), or have other applications running on your network, additional iterations may be required to optimize the performance of your implementation. Keep in mind that there are steady improvements and fixes in the WebSphere and OneWorld applications, so, over time, the guidelines established by our ongoing testing will continue to improve as well.

Tuning Parameters

For each configurable parameter, we have included:

- An explanation.
- Where practical, the actual settings for 100 users (50 users running distribution applications, 25 users running manufacturing applications and 25 users running financial applications). You should extrapolate these settings to your environment based on actual users.
- The recommendation summarized in general terms.

Note: Most of the following settings are controlled through the WebSphere Administrative Console on the JAS Server.

1. Number of WebSphere Application Server instances (or JVMs)

HTML Clients use a Web browser running Internet Explorer, which connects through the HTTP Server running on the JAS server to pass requests to WebSphere running OneWorld JAS servlets and JSPs. We followed the JAS installation instructions for creating the JAS server instance (referred to as a JVM because each instance runs in its own Java™ Virtual Machine). We found that each JVM provided the best performance if it supported up to 100-150 users. Running 100 or fewer users per JVM reduces the memory contention within WebSphere and therefore reduces the response time for the HTML clients. To support more than 150 users, you will want to create additional JVMs to provide faster response time for all users, as needed.

100-user example: We created one JVM to accommodate our 100 users.

Recommendation: Follow the JAS installation instructions and create one JVM instance to test prior to creating all you may need to accommodate your users. JVM instances may be cloned by exporting them to an editor and making the necessary changes. This procedure is outlined in **Appendix B: JVM Clone Procedure**.

2. Heap size memory settings

You can control how much of the xSeries server's total memory is available for the JAS server by varying the heap size. The way you vary the heap size for each instance is via the command line arguments within each JVM. WebSphere allows for an initial heap setting and a maximum heap setting. We found that WebSphere on the xSeries server performed best when both the initial and maximum heap size setting were the same.

In our testing, we varied the heap size between 256MB and 1GB and found the 512MB size to be the optimal setting. The heap size may be reviewed by using OneWorld's "Web" Server Administration Workbench (SAW).

100-user example: We set the JVM's command line parameter to `-ms512m -mx512m`.

From your WebSphere administrative console, expand your node (Machine, Hostname) and double-click on your JVM (JDEJAS1). Review the command line arguments by scrolling left and right within them and either change or add the initial memory setting to reflect the size you have chosen. Then left click **Apply** and watch for the console message below that says "Command JDEJAS1.ModfiyAttributes completed successfully." Remember to stop and restart your JVM for

these changes to take effect.

Recommendation: For the heap size in each JVM, on the command line, match the initial and maximum heap sizes. Use 512MB memory for these initial settings. Total memory utilization is approximately 5MB per user in our example using these settings.

3. Garbage collection setting

Java manages its memory usage by periodically cleaning up storage that is not in use, which is referred to as garbage collection. WebSphere loads the OneWorld Java classes and garbage collects them as needed. Because these classes are constantly used in this environment, we set the command line arguments to prevent the classes from being garbage collected by using `-noclassgc`.

Review the command line arguments by scrolling left and right within them and add the `-noclassgc` argument, if it is not there already. Then left click **Apply** and watch for the console message below that says Command “JDEJAS1.ModfiyAttributes” completed successfully. You must then stop and restart your JVM for this change to take effect.

Recommendation: Use the `-noclassgc` setting in the WebSphere instance command line arguments.

4. JAS servlet connections

Within the instance, we configured the servlet running the OneWorld JAS code to control how many users can run concurrently within the JVM. Because we ran 100 users in our JVM, we set the maximum number of connections for the servlet to be 100. The maximum should be equal to the number of the users. This setting should not exceed 400 per instance because each user uses a thread and we only want to allow 400 threads per instance. Because more of a user’s time is spent on data input than running the servlet, changing this setting did not significantly affect performance.

100-user example: We set the maximum number of connections for the servlet to 100.

From your WebSphere administrative console, expand your node (DENNF85.MLAB.JDEWARDS.COM), expand your JVM (JDEJAS1), left click the JDEJASServlet, then left click on the Advanced tab, and change the max connections. Then left click **Apply** and watch for the console message below that says Command “JDEJASServlet.ModifyAttributes” completed successfully. You must then stop and restart your JVM for this change to take effect.

Recommendation: Set the number of OneWorld servlet connections to equal the number of users connecting to the WebSphere instance, with a maximum of 400.

5. JAS.INI - MaxConnection

The JAS.INI file is the configuration file for the JAS Server. Most settings specified in the “*OneWorld JAVA Server Installation Guide*” are a good starting point. However, we do recommend the following setting under the DB CONNECTION POOL heading.

100-user example: We changed the MaxConnection setting from 50 to 150.

Edit the JAS.INI file with Notepad or WordPad and search on the MaxConnection parameter. Save your changes and restart your JVM for this change to take effect.

Recommendation: Set the maximum number of connections to 150 from 50 in the JAS.INI file.

Conclusions and Recommendations

Analysis

Our test environment produced excellent response times of 0.61 seconds via Web browsers with 100 users. During this test, the IBM xSeries eight-way database system had an average CPU utilization of only 3.92%. The IBM xSeries OneWorld Xe Application Server had an average CPU utilization of 19.45%, while the xSeries JAS Server had an average CPU utilization of only 18.09%. Processor performance is only one facet of this testing. Memory use on the JAS server is controlled primarily by the size of the JVM specified by the minimum and maximum tuning parameters. Performance analysis data was gathered using Windows Performance Monitor logging. J.D. Edwards provided test scripts and OneWorld Xe tuning assistance.

Conclusion

While most benchmarks and sizing tests have focused on the database server, the purpose of this exercise was to concentrate on the JAS Server. The popularity and flexibility of the web client interface has changed the way we work. The data gathered during this test environment should enable you to get the best performance in a similar JAS Server environment. We hope to revise this document in the near future with four-way, as well as partitioned system data, as those products mature. If you have any feedback, please contact us regarding additional parameters and configurations you would like to see included. The IBM / J.D. Edwards International Competency Center welcomes your comments and suggestions. We strive to work together with J.D. Edwards and provide solutions to simplify customers' buying decisions. Our testing has concluded that IBM and J.D. Edwards OneWorld Xe can meet and exceed a user's response time expectation in a Web environment.

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Appendix A: JAS.INI file example

```

# Please refer to the JAS Installation Guide for detailed information on
# this file.
#
#
[DB SYSTEM SETTINGS]
Version=43
Default User=JDE
Default Env=JPD7333
Default PathCode=PD7333
Base Datasource=System - B7333
Object Owner=SYS7333
Server=DENNF85
Database=System - B7333
Load Library=JDBODBC.DLL
Decimal Shift =Y
Julian Dates=Y
Use Owner=Y
Secured=Y
Type=S
Library List=

[SECURITY]
DataSource=System - B7333
SecurityServer=DENNF5
UseLogonCookie=FALSE
CookieLifeTime=7

[OWWEB]
PathCodes=('PD7333')
MO QUEUE=d:\JDEdwardsOneWorld\B7333\internet\jedwww\moqueue
#OracleTNS=D:\Oracle\Ora81\network\ADMIN\tnsnames.ora
MssqlTNS=D:\JDEdwardsOneWorld\B7333\internet\jas\tnsnames.sql
MAXUser=200
UseMOWinNTShare=TRUE
SystemDateFormat=MDE
SystemDateSeparator=/

# The HelpPath key determines where JAS looks for help files.
# Syntax: "http://[machine]/[path]/".
# Note, if you specify "/jde/owhelp/", this machine is assumed.
HelpPath=/jde/owhelp/

[CACHE]
# These intervals are in milliseconds. For example, 60000ms = 1 minute
UserSession=1200000
ResultSet=60000
CacheCheck=60000
DDItem=3600000

```

```

[DB CONNECTION POOL]
MaxConnection=150
MinConnection=0
PoolGrowth=5
InitialConnection=5
# These items control the connection pool cleaner. The interval is stated in
# milliseconds. Only those data sources that have a validation string
# will be cleaned.
# Validation string is in the form: ValidationString_x=<statement>
#   where x   is I for DB2/400, S for SQL Server, or O for Oracle
#   and statement is a SQL statement that any user can execute.
#CleanPoolInterval=300000
#ValidationString_I=Select * from QSYS2.SYSCOLUMNS WHERE 1=2
#ValidationString_S=Select @@connections
#ValidationString_O=Select sysdate from dual

[JDBC URL]
#
# This section defines the connection string(s) that are used to access the
# the serialized objects for a specific environment.
# This section overrides the OCM settings for the serialized object
# tables (F989998, F989999).
#
# JDBC URL syntax per database. Use this syntax when creating a JDBC URL.
#
#       DB2: "jdbc:as400://<host>|<I/4/R>|user|password"
#   Microsoft SQL Server: "jdbc:ff-
microsoft://<host>:<port>/<database>|S|<dbowner>|user|password"
#       Oracle:
"jdbc:oracle:thin:@<host>:<port>:<database>|O|<dbowner>|user|password"
#
# Note: Type O = Oracle
#       Type I, 4 or R = DB2
#       Type S = Microsoft SQL Server
#
# Combining the JDBC URL syntax with an environment informs JAS of the location
# of the serialized objects.
#
# Syntax: <environment>=<jdbcurl|typelowner|user|password>
#
# Examples: DEFAULT=jdbc:as400://server|I|JDE|JDE
#
JCRP7333=jdbc:oracle:thin:@server:1521:orcl|O|ISYSB733|web733|web733
#       JPD7333=jdbc:ff-microsoft://server:1433/PRODISISYSB733|JDE|JDE
#
#DEFAULT=jdbc:sequelink://DENNF85:19996/JDE_PD7333|S|IPD7333|JDE|JDE
#DEFAULT=jdbc:merant:sqlserver://DENNF85:19996/JDE_PD7333|S|IPD7333|JDE|
JDE

#DEFAULT=jdbc:merant:sqlserver://DENNF85:1046/JDE_PD7333|S|IPD7333|JDE|J
DE

#DEFAULT=jdbc:merant:sqlserver://DENNF85:1046|S|IPD7333|JDE|JDE

```

[JDBC DRIVERS]

```
# Define the JDBC drivers that JAS will load to access a database.
# Uncomment the JDBC driver(s) for every type of database that JAS will access.
#
# Note:
# Type O = Oracle
# Type I,4 or R = DB2
# Type S = Microsoft SQL Server
# Type A = ODBC, Access (used in development only)
#
#A=sun.jdbc.odbc.JdbcOdbcDriver
#A=com.ms.jdbc.odbc.JdbcOdbcDriver
#O=oracle.jdbc.driver.OracleDriver
#I/4/R=com.ibm.as400.access.AS400JDBCdriver
#S=com.merant.sequelink.jdbc.SequeLinkDriver
S=com.microsoft.jdbc.sqlserver.SQLServerDriver
```

[SERVER COMPONENTS]

```
#
# Do not modify this section
#
com.jdedwards.jas.UserManager
com.jdedwards.jas.JDBCProxy
com.jdedwards.jas.JDEORB
com.jdedwards.jas.DDValidation
com.jdedwards.jas.sql.VTManager
com.jdedwards.jas.security.SecurityBroker
com.jdedwards.jas.UDCJDBC
com.jdedwards.jas.JDEUDCText
com.jdedwards.jas.JDEUpdates
com.jdedwards.jas.JDEQueries
com.jdedwards.jas.JDEOWDirect
com.jdedwards.jas.MenuServer
com.jdedwards.jas.ServerQuery
com.jdedwards.jas.JDESignon
```

[JDENET]

```
# Enterprise Server JDENET port
serviceNameConnect=6009

# Time out value for requests sent to the Enterprise Server
# 2001/04/19 5:10pm by Mark Chaney enterpriseServerTimeout=90000
enterpriseServerTimeout=900000

# Directory for JDENET temporary file
tempFileDir=c:\temp
```

[SERVER]

Enterprise Server and port providing Glossary Text information
glossaryTextServer=DENNF85:6009

Encoding scheme
1252- English and Western European
932- Japanese
950- Traditional Chinese
936- Simplified Chinese
949- Korean
codePage=1252

[LOGS]

log=d:\JDEdwardsOneWorld\B7333\internet\jas.log
debuglog=d:\JDEdwardsOneWorld\B7333\internet\jasdebug.log
Debug=FALSE
JasDBLogging=0
jdbcTrace=FALSE

The STDERR and STDOUT keys must point to the same directory that was
supplied for the
STDERR and STDOUT fields when defining the WebSphere Application Server.
This is usually the INTERNET directory under B7333.

stderr=d:\JDEdwardsOneWorld\B7333\internet\stderr.log
stdout=d:\JDEdwardsOneWorld\B7333\internet\stdout.log

[JAS INSTANCE]

This is for JAS redirector only
RoundRobin will be used as default if there is no entry in [JAS WEIGHT].
If redirect based on JAS instance weight, then each instance's weight must
specified,
otherwise, weight 0 will be assumed, which means the server will not get
any redirected request
example: JAS1=http://127.0.0.1/jde
Note: in this example, "JAS1" is the key, if weight will be given,
this key must be used in [JAS WEIGHT] section to match this JAS instance

[JAS WEIGHT]

The key must match the key in [JAS INSTANCE] section
example: JAS1=2
The weight is ratio based, for example:
JAS1=2
JAS2=1
That means JAS1 will take as twice load as JAS2

[REDIRECTOR]

interval unit is milliseconds
Interval=5000
This is the location that Redirector will redirect to, if no server is available.
If it is empty, redirect will display a simple page tells user that no server is
available
example: NoServerAvailableURL=http://servername/path/noserver.html
NoServerAvailableURL=

```
[TRANSACTIONS]
# Configuration settings to customize transaction processing within JAS.
# TransactionLogging: Indicates if logging is on or off. If on, transactions
# that could not be completely rolled back will be logged.
# Valid values: TRUE, FALSE
# Default: FALSE
# TransactionLog : Valid file location for log. Must be provided if
# TransactionLogging is TRUE
# Default: No Default.
# ReapInterval : Interval in minutes of how often the TransactionReaper
# should check for abandoned transactions.
# Valid values: Integer from 1 to n
# Default: 5 minutes
# MaxAge : Maximum age in minutes of a transaction. Transactions
# older than this will be rolled back by the
# TransactionReaper.
# Valid values: Integer from 1 to n
# Default: 10 minutes
#
TransactionLogging=FALSE
TransactionLog=d:\JDEdwardsOneWorld\B7333\internet\Transactions.log
ReapInterval=5
MaxAge=10
```

Appendix B: JVM Clone Procedure

Steps to replicate Java Virtual Machines (JVMs) in IBM WebSphere Application Server (WAS) version 3.5

1. Ensure the WAS AdminServer service is running
2. Open a command prompt
3. Cd \WebSphere\AppServer\bin
4. Enter the command: `xmlconfig -export dennfXX.xml -adminNodeName dennf38`
5. Copy the original configuration file and rename to `dennfXX_1JVM.xml`
6. Edit `dennfXX.xml` with WordPad
7. Copy from `<virtual-host name to /virtual-host`
8. Search and replace 81 with 82
9. Copy from `<application-server to /application-server`
10. Search and replace 81 with 82
11. Increment `<transport-port` by 1 i.e. 8994-8995
12. Increment `<que-name>ibmoselink1` i.e. `ibmoselink2`
13. Save the file to the \WebSphere\AppServer\bin folder
14. Enter the command: `xmlconfig -import dennfXX.xml -adminNodeName dennf38`
15. Bounce WAS and IIS or IBM HTTP Server and verify changes
16. Make another backup copy of your working configuration with `xmlconfig`
17. Good Luck!

Appendix C: JVM Command Line Argument (CLA) example

(SP17)

```
-mx512m -ms512m -Xbootclasspath/a:c:\jdedwardsoneworld\b7333\jde\servlets\nulltoolkit.jar -classpath C:\JDEdwardsOneWorld\B7333\jde\servlets\xerces.jar;C:\JDEdwardsOneWorld\B7333\jde\servlets\xalan.jar;C:\JDEdwardsOneWorld\B7333\internet\jas\msbase.jar;C:\JDEdwardsOneWorld\B7333\internet\jas\mssqlserver.jar; C:\JDEdwardsOneWorld\B7333\internet\jas\msutil.jar
```

Make sure that you set the directories that are specific to your environment. The above is an example.

The location of the drivers should also be included in the class paths, as instructed in the SP 17 install guide.

Appendix D: Related Publications and Web Sites

IBM

IBM / J.D. Edwards Alliance home page

www.ibm-jdedwards.com

IBM Redbooks home page

www.redbooks.ibm.com

IBM @server xSeries home page

www.pc.ibm.com/us/eserver/xseries

J.D. Edwards

OneWorld JAVA Server Installation Guide

www.jdedwards.com

Microsoft

Get Started with Microsoft JDBC (Q313100)

www.microsoft.com

Appendix E: Test Methodology

Data

The test database models a generic mid-to-large scale customer, matching J.D. Edwards' target market of customers with US\$200 million to US\$2 billion in annual revenues. It does not reflect any particular customer or industry, but has the flexibility to model a mixture of Distribution, Manufacturing and Financial users. The table sizes required to model a large customer were determined based on the experience of J.D. Edwards field and corporate personnel.

Methodology

The OneWorld Configurable Network Computing environment provides maximum flexibility to move data and logic among clients and servers. This test evaluated OneWorld version Xe SP17 WEB in a three-tiered configuration using the J.D. Edwards Web/HTML interactive benchmark workload. The typical business enterprise operates in a mixed load environment. To simulate real world conditions, this test ran concurrent users in the following application mix: Manufacturing—25%, Distribution—50%, and Financial—25%.

The test used J. D. Edwards' standard series of 17 scripts that exercise the basic features of OneWorld applications and represent the type of load a typical OneWorld user would generate. Each user script ran approximately one hour, including think time. Scripts were developed in cooperation with J.D. Edwards application experts using the knowledge gained from consultants, Conference Room Pilots (CRPs) and go-live experiences in real world situations.

Test results include response times for each vertical application (Manufacturing, Distribution and Financial), as well as an overall average response time for the tested configuration. This reporting strategy provides both application-specific and more general performance results for OneWorld on the system under test. The response times reported for each vertical represent averages. Each user processes many additional transactions, although the average is based only on the number and type of transactions shown in the table below, *Reported Transactions Processed by Vertical*. The completion time for each series of transactions is recorded and all are averaged to produce vertical response times. Overall, averages are calculated using a simple formula that gives equal weight to every transaction processed during the testing run.

Reported Transactions Processed by Vertical

Vertical	Transaction	Number of Transactions	Total
Manufacturing	Work Order Entry	4	4
	Work Order Completion	4	4
Total Averaged Manufacturing Transactions			8
Distribution	Sales Order Entry	4	4
	Purchase Order Entry	4	4
Total Averaged Distribution Transactions			8
Financial	Journal Entry	4	4
	Voucher Entry	6	6
Total Averaged Financial Transactions			10

For each test, twice as many users process distribution applications as compared to manufacturing or financial applications. This produces the Financial (25%), Distribution (50%) and Manufacturing (25%) ratios reported for the tests.

Calculations of the overall average take into account these variables, producing an average in which each transaction is equally weighted. Specifically, the following formula is used:

$$((10*\text{AvgFIN}) + (16*\text{AvgDIST}) + (8*\text{AvgMFG}))/34$$

Appendix F: J. D. Edwards OneWorld

J.D. Edwards OneWorld is a network-centric, object-oriented, multinational software package. It provides customers with the flexibility to quickly adapt business processes to meet market demands, as well as the ability to capitalize on the latest functionality and lower costs offered by emerging technologies. OneWorld, introduced in 1996, provides true distributed object architecture and an advanced business rules engine that transcend traditional client/server technology.

In the fall of 2000, OneWorld Xe, the latest J.D. Edwards enterprise software suite for collaborative commerce, was released. OneWorld Xe provides unmatched quality and power in automating business processes and communication. The cornerstone of unprecedented efficiency, OneWorld Xe provides a flexible architecture, pre-integrated applications and interoperability to enable true collaboration. OneWorld Xe provides all of the OneWorld tools and applications—ActivEra Solutions Accelerator-process modeling and visualization tools, AutoPilot OneWorld Scripting Tool, and OneWorld Extended Process Integration (XPI).

With J.D. Edwards flexible, component-based solutions, businesses can change their system without programming, which means they can better accommodate the needs of customers and partners. J.D. Edwards OneWorld offers applications that streamline back-office fulfillment tasks, supply chain, manufacturing, distribution/logistics and financials/HR. OneWorld's unique, network-centric architecture separates business functionality from underlying operating systems, communications and database technologies, enabling organizations to embrace new technologies without rethinking or reengineering existing information flow. OneWorld's architectural foundation, advanced graphical user interface, integrated toolset and platform neutrality deliver the stability and flexibility necessary to deal with ever-changing business needs.

Appendix G: IBM xSeries, DB2 and WebSphere Application Server Product Information

IBM xSeries servers are available in a range of products. From small, appliance servers to larger, rack-optimized, eight-way capable systems, such as the Enterprise X-Architecture™ xSeries 440. The xSeries represents the IBM “Industry Standard” or Intel server line and continues to exploit the price-performance segment of the new generation of IBM @server servers. They combine the benefits of the latest processors from Intel, while incorporating the best qualities from the other IBM [eServer logo] families.

IBM DB2 Universal Database is multi-threaded on Windows-based systems and multi-processed on UNIX® systems. On Windows, agents are threads under the db2sysc (system controller) process. There is a 3GB memory limit for the db2sysc process. To avoid reaching the 3GB limit, we used two databases under two separate instances. This enabled us to take advantage of the Windows environment by using up to 6GB of memory for DB2, since this was a dedicated database server. For UNIX-based environments, agents are processed and there is no 3GB limit, so both databases are typically run in one instance.

WebSphere Application Server Advanced Edition is a powerful Java-based development and deployment environment for e-business applications. WebSphere Application Server Advanced Edition provides companies with an open, standards-based Web server deployment platform with support for scaling Web sites into security-enhanced, transactional-based e-business application sites, and offers sophisticated tools to simplify distributed, component-based application development. It also greatly simplifies the separation of business applications from underlying system services.



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