

IBM WebSphere Business Connection



Installation and Configuration Guide for UNIX

Version 1.1.0

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 19.

First Edition (September 2002)

This edition applies to Version 1, Release 1, Modification 0, of *IBM® WebSphere® Business Connection* (5724-D26) and to all subsequent releases and modifications until otherwise indicated in new editions.

IBM welcomes your comments. You can send them to the following address:

IBM Canada Ltd. Laboratory
Information Development
8200 Warden Avenue
Markham, Ontario, Canada L6G 1C7

Include the title and order number of this book, and the page number or topic related to your comment.

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© Copyright International Business Machines Corporation 2002. All rights reserved.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Installation and Configuration Guide for

UNIX 1

How this document is organized 1

Part I - Base Prerequisites 3

Hardware requirements. 3

Installation introduction 3

Installation Assistance 3

Part II - Installing and configuring prerequisite software 5

Installing DB2 5

 Creating the DB2 Administration Server and db2inst1 instance 5

Configuring DB2 6

 Setting DB2 JDBC drivers to JDBC 2.0 6

 Creating a database 6

 Using EXTSHM with DB2 (AIX only) 7

 Setting the maximum concurrent databases 7

Verifying DB2 installation and configuration. 7

Installing WebSphere Application Server 8

Configuring WebSphere Application Server 8

Verifying the WebSphere Application Server

configuration 8

Part III - Installing Business Connection Express Edition 11

Installing the JMS component for WebSphere

Application Server 4.1 11

Starting the Business Connection installation program 12

Configuring the Web Services Gateway 13

Deploying channels into the Web Services Gateway 13

Part IV - Uninstalling, starting up, shutting down 17

Uninstalling WebSphere Business Connection 17

Starting up and shutting down 17

Notices 19

Programming interface information 20

Trademarks and service marks 21

Installation and Configuration Guide for UNIX

This guide contains information and instructions for installing and testing the IBM[®] WebSphere[®] Business Connection Express Edition on UNIX (Solaris[®] and AIX[®]) operating systems.

Base Business Connection services consist of the WebSphere Web Services Gateway.

To install Business Connection and its prerequisite software, you should have experience with installing the Solaris and AIX operating systems, DB2[®], and the WebSphere Application Server. Personnel assigned to administration tasks should have experience using UNIX-based applications.

How this document is organized

This document is divided into four parts.

In “Part I - Base Prerequisites” on page 3 you will find the hardware and software requirements for the Business Connection Express Edition, along with installation information.

“Part II - Installing and configuring prerequisite software” on page 5 will provide instructions for installing and configuring the prerequisite programs (such as DB2) that you will need for the Express Edition. You will use this book in conjunction with the installation instructions that come with those programs.

“Part III - Installing Business Connection Express Edition” on page 11 describes how to install and configure the Business Connection Technology components. Installation and configuration are largely automatic, although you will perform some manual configuration steps.

In “Part IV - Uninstalling, starting up, shutting down” on page 17 you will learn how to remove an installation and how to start the system.

Part I - Base Prerequisites

Prior to starting, you must ensure that you have access to the versions of the base prerequisite software appearing in the table below.

Note: e-Fixes and FixPacks are available on the IBM Website: www.ibm.com.

	Solaris	AIX
Operating System Level	8 Patch cluster 2/4/2002	Version 5.1
DB2 UDB Enterprise Edition	Version 7.2 with FixPack 6 or above XML extensions required	Version 7.2 with FixPack 6 or above XML extensions required
WebSphere Application Server Advanced Edition	Version 4.0.1, FixPack 3, and e-Fix PQ61654	Version 4.0.1, FixPack 3, and e-Fix PQ61654
Web Services Gateway	Version 1.1	Version 1.1
IBM WebSphere Enterprise Extensions	Version 4.0 (Messaging extensions)	Version 4.0 (Messaging extensions)

Hardware requirements

To properly install and configure **WebSphere Business Connection Express Edition on UNIX (Solaris and AIX) operating systems**, the following minimum hardware is recommended:

- Solaris: Sparc at 400 Mhz
- AIX: RS/6000 at 375 Mhz
- 10 GB of disk space
- 512 MB RAM

Installation introduction

The procedures in this guide are for performing an initial installation. The sections in this document are arranged in the order you must follow to correctly install the Business Connection Express Edition components on a UNIX (Solaris and AIX) operating system.

Installation Assistance

If you find that some element of the installation process does not work correctly, or you have trouble configuring the systems for IBM WebSphere Business Connection, call 1-888-IBM-HELP (888-426-4357).

Part II - Installing and configuring prerequisite software

This section describes the software you must install before you implement the Business Connection Express Edition.

Perform the steps that follow in the prescribed sequence. Note that some of the products require the previous installation and configuration of other, prerequisite products.

Installing DB2

To install DB2 v7.2.1 for UNIX (Solaris or AIX) operating systems do the following:

1. Run the db2setup from the install CD. Follow the installation steps using the DB2 installation document for the platform to install the DB2 UDB Enterprise Edition and the DB2 Administration Client components. **DO NOT** create the db2 instance and the administration server before installing the DB2 FixPack 6. (Use the space bar to select items during the DB2 installation and the tab key to navigate.)
2. If you are using Solaris, refer to the *Quick Beginnings* book, Updating Solaris kernel configuration parameters (which is part of the documentation that is installed with DB2) and make the required changes to the kernel.
3. Install DB2 FixPack 6 for UNIX. Refer to the FixPackReadme.txt file under the FixPack install source directory and follow the steps to install the DB2 FixPack 6.
4. After installing DB2 Fixpack 6, manually install the DB2 Control Center (it is not part of an automatic install program).
5. Log in as the root user before you perform the following steps to create the DB2 Administration Server and db2inst1 instance.

Creating the DB2 Administration Server and db2inst1 instance

The following steps must be followed to create the DB2 Administration Server and db2inst1 instance:

1. For AIX: from /usr/lpp/db2_07_01/install, run **db2setup**.
2. For Solaris: from /opt/IBMdb2/V7.1/install, run **db2setup**.
3. Select **Create** to create a DB2 Instance and an Administration Server.
4. Select **Create a DB2 Instance**.
5. Accept the db2inst1 defaults for the DB2 Instance panel and enter a password.
6. Select **OK**.
7. Accept the db2fenc1 defaults for the Fenced User panel and enter a password.

After you have entered a password, do the following:

1. Select **OK**.
2. Select **Do not set up DB2 Warehouse Control Database**.

3. Select **OK**.
4. Select **Create the Administration Server**.
5. Accept **DB2** as default for the Administration Server panel and enter a password.

When a password has been entered, do the following:

1. Select **OK**.
2. Select **OK** for the DB2SYSTEM name notice.
3. Select **OK** on the Create DB2 Service panel.
4. Select **Continue** on the DB2 Setup Utility Summary Report panel.
5. Select **OK** on the Warning panel to start the installation.
6. Select **OK** on the *Completed Successfully* notice.
7. Select **OK** to exit from the Status Report.
8. Select **Close** to exit from the DB2 Setup Utility panel.
9. Select **OK** to exit from the DB2 Setup Utility.

Note: If you had created, or had existing db2 instances and administration servers prior to installing Fixpack 6, please refer to the DB2 FixPack 6 readme file to update them before you proceed to the next step.

Configuring DB2

The operations that follow are required to properly configure DB2.

Setting DB2 JDBC drivers to JDBC 2.0

1. Go to the <DB2_HOME>/java12 directory (where DB2_HOME is the location where DB2 was installed).
2. Execute the *usejdbc2* script to set up the DB2 JDBC Driver to JDBC 2.0 environment.

Creating a database

Next, you will create a database for the IBM WebSphere Application Server.

The following table shows information about this database:

Prerequisite	Database Name	DB2 Parameters
WebSphere Application Server	WAS40	Db2_rr_to_rs = yes Maxagents = 50

To create and configure the database, the following steps should be performed by the DB2 instance user:

1. Create a database for WebSphere Application Server by entering the **db2 create db was40 alias was40** command.
2. Configure the instance with the following two commands in the DB2 command window:
 - **db2 update db manager config using maxagents 50**
 - **db2set db2_rr_to_rs=yes**

3. Stop and start the database manager with the following three commands in the DB2 command window:
 - **db2 force applications all**
 - **db2stop**
 - **db2start**

Using EXTSHM with DB2 (AIX only)

The support of EXTSHM has been added to DB2 V7.2 (V7.1 Fixpak 3). By default AIX does not permit 32-bit applications to attach to more than 11 shared memory segments per process, of which a maximum of 10 can be used for local DB2 connections.

While initializing WebSphere Application Server you might see a DB2 exception (SQL 1224N) and the service may fail to start. To resolve the exception use EXTSHM with DB2 by doing the following:

1. Log on as the DB2 Instance User.
2. Execute the following DB2 commands:
 - a. **db2stop.**
 - b. **export EXTSHM=ON.**
 - c. **db2set DB2ENVLIST=EXTSHM.**
 - d. **db2start.**

Note: The above steps may need to be applied at each restart of the server.

Setting the maximum concurrent databases

The default for the maximum number of concurrently active databases in DB2 is 8. To use DB2 with the Business Connection components, you must change this value to 16. Do the following:

1. Open the DB2 Control Center (run **db2cc**). If you are using a Control Center on another machine, add your DB2 system and retrieve its Instances prior to the next step.
2. Expand the **Instances** tree and highlight **DB2INST1**.
3. Right-click **DB2INST1** and then click **Configure**.
4. From the **Environment** tab, change the number under **Maximum number of concurrently active databases** from 8 to 16.
5. Select **OK**.

Verifying DB2 installation and configuration

You can verify that DB2 was installed and configured correctly by doing one of the following:

- Use *First Steps* to create the sample database that comes with DB2
- Let the WebSphere Application Server “verify the install” when it creates its tables in the WebSphere Application Server database

Installing WebSphere Application Server

Installing WebSphere Application Server 4.0.3 involves installing FixPack3 over WebSphere Application Server 4.0.1 installation.

1. Set DB2 JDBC drivers to JDBC 2.0 if you have not already done so. (See “Installing DB2” on page 5).
2. Create a database for WebSphere Application Server if it has not already been done. (See “Configuring DB2” on page 6).
3. Run `install.sh` to start the installation GUI. Follow the steps in the *WebSphere Application Server (WAS) Installation Guide* to install WAS 4.0.1 and provide the DB2 database information for the WAS database that you just created. (For AIX this database is in `/home/db2inst1`. For Solaris it is in `/export/home/db2inst1`.)
4. Install WebSphere Application Server FixPack3:
 - a. Go to the directory where you downloaded the eFix.
 - b. Run `install.sh`.
 - c. Enter **Y** to upgrade the WebSphere Application Server, and enter the directory where it is installed, for example `/usr/WebSphere/AppServer`.
 - d. Enter **Y** to upgrade the HTTP Server, and enter the directory where the HTTP Server is installed, for example `/usr/IBMHttpServer`.
 - e. Enter **Y** to upgrade and use the WebSphere JDK field.
 - f. Enter **Y** to **install the Connector Architecture**.
5. Install eFix PQ61654
 - a. Go to the directory where you downloaded the eFix.
 - b. Issue the command: `<WAS_HOME>/java/bin/java -jar PQ61654_eFix_AEsServer.jar -target <WAS_HOME>` (where `WAS_HOME` is the directory in which WebSphere is installed).
 - c. Restart WebSphere and IBM Http Server.

Configuring WebSphere Application Server

To configure WebSphere Application Server go to `WebSphere/AppServer/bin`:

1. Verify that the `admin.config` file contains:
 - a. The correct DB2 settings (the `dbName`, `dbUser`, and encrypted `dbPassword` that were created earlier).
 - b. DB JDBC classes in the `classpath` line.
2. Ensure that WebSphere Application Server has been started. When the server starts for the first time, it creates and loads the tables in the DB2 database.

Verifying the WebSphere Application Server configuration

To verify that the WebSphere Application Server configuration is correct:

1. Check the install log for any errors.
2. Start the default application server.

3. From the WebSphere installation directory go to WebSphere/AppServer/bin and run startupServer.sh.
4. From the WebSphere installation directory go to the bin directory and run adminclient.sh to bring up the Administrative Console.

Part III - Installing Business Connection Express Edition

Starting here presumes you have installed all the prerequisite programs, and have them configured and customized according to the current computer setup. You will now begin installing the IBM WebSphere Business Connection components.

If you have not yet read the “**Installation introduction**” on page 3, please do so now. It contains information you need to know.

Installing the JMS component for WebSphere Application Server 4.1

The first part of the actual Business Connection Express Edition installation process involves the installing of the Java Message Service (JMS) component. Two sample installation scripts, both named `install.script`, are provided on your *Enterprise Edition Server and Client* CD; one is for server installations and one is for client installations. To perform an unattended installation on UNIX platforms, copy the relevant `install.script` file to a temporary directory and modify it as explained below.

Note: For any server installation, you must already have the Advanced Edition application server installed as a base. For Java and ActiveX client installations, you must already have the Advanced Edition J2EE application client installed. The CORBA client installation does not require an Advanced Edition base.

To perform an unattended installation on UNIX, complete the following steps. These steps assume that you have already installed Advanced Edition where necessary (on Java servers, CORBA C++ servers, and Java or ActiveX clients).

These steps apply to both new installations, and migration from an existing Version 4.0.x installation.

1. Insert your *Enterprise Edition Server and Client* CD into the CD-ROM drive.

Note: This next step applies to AIX installations only. If you are not installing on an AIX operating system, go to Step 3.

2. If you have not mounted the CD-ROM drive, enter the following mount command now:

```
mount -r -v cdrfs &lt;CD_device> cdrom
```

3. Change to the installation image directory on the CD:

- UNIX server: `cd /cdrom/enterprise/your_platform/EnterpriseEdition`
- UNIX client (all one line): `cd /cdrom/enterprise/your_platform/EnterpriseEdition/client/your_platform`

4. Locate the sample response file, `install.script`, in the installation image directory, and copy this file to a temporary directory.
For example: `cp install.script/tmp`.

5. Modify the `install.script` file in your temporary directory to include only the enterprise services that you want to install. If you are migrating from an existing Version 4.0.x installation, you must include all existing enterprise services, but you can also add new ones at this time:
 - a. Open `install.script` in a text editor.
 - b. Near the top of the `install.script` file is a section marked "User modifiable area." Within this section is a list of installable packages, in the format `package_XXX=false`, where XXX is the name of the package. Change the value of the Extended Messaging Support package from `false` to **true**. Do not change anything below the line marked as "END User modifiable area."
 - c. Save and exit from the file.
6. To start the unattended installation, enter the following command in your installation image directory: `./setup /p /tmp/install.script`.

An alternative method for generating the modified `install.script` file is to run the desired installation in interactive mode using the record parameter. For example: `./setup /r /tmp/install.script`. This generates an `install.script` file that you can copy to other machines to run identical unattended installations.

To verify that you have the correct level of WebSphere Application Server, do the following:

1. Display the WebSphere Administrative Console.
2. Click **Help > About**.
3. Make sure that the version listed is *Advanced Edition for Multiplatforms with Enterprise Edition Services*, as shown in the following illustration:

Figure: The WebSphere Application Server administrative console

If your screen shows only "Advanced Edition for Multiplatforms" (without "with Enterprise Edition Services"), the correct level is not installed. To reinstall, stop the WebSphere Application Server and rerun the procedure.

Starting the Business Connection installation program

To begin the installation of the Business Connection components, do the following:

1. From the WBC Express directory, run `setupaix.bin` (for AIX) or `setupsolaris.bin` (for Solaris).
2. When prompted, provide the path where you want to install Web Services Gateway as `<BCT_HOME>/Gateway_Name` (where BCT_HOME is the location in the file system that the WebSphere Business Connection files were installed).
3. After the setup program has been completed, go to "Configuring the Web Services Gateway" on page 13

Configuring the Web Services Gateway

After the setup program has completed, the next step is to configure the Web Services Gateway (WSGW). For all editions of Business Connection (including the Business Connection Express Edition), follow these steps for each computer in your configuration.

1. Run `configure.sh` from the `<WSGW_HOME>` install directory (where `WSGW_HOME` is the location where the gateway is installed).
2. When prompted for the DB2 path, specify where you installed DB2.

You will also be asked for the `db2userid` and the `db2password` that you defined in “Installing DB2” on page 5.

3. Wait for the configuration program to finish, then stop the HTTP server.
4. If it is open, close the WebSphere Administrative Console, then stop the WebSphere Application Server.
5. Check your `<WAS_HOME>` directory to make sure that the following files are *not* installed in the directory.
 - `uddi4j.jar`
 - `wsif.jar`
 - `wsdl4j.jar`

These files should have been removed automatically by the installation program. If these files *are* in the `<WAS_HOME>/lib` directory, move them to the `<WAS_HOME>/WSGW_BACKUP` directory.

6. Start the HTTP server, then the WebSphere Application Server, and run `adminclient.sh` to **Start Administrator’s Console**.
7. Make sure the Web Services Gateway Application Server has the Working Directory set to `<WAS_HOME>/bin` and the Module Visibility set to **Application**.
8. If it is not started, start the Web Services Gateway Application Server.

Deploying channels into the Web Services Gateway

Channels are the entry points to the Web services Gateway and carry requests and responses between Web services and the Web services Gateway. To deploy channels:

1. Start the Web Services Gateway console from your Web browser. Invoke `http://hostname/wsgw/admin/index.html` from your Web browser.
2. Click the **Deploy** link that is under the **Channels** link in the left side of the browser window. You will see the Configure Channels page and a list of the currently deployed channels. If you are deploying your first channel, the list is empty.

3. Installation has installed the EAR files for the channels on your machine. To deploy a channel, fill in the first three fields of the deploy screen. Use values from the following table for the channel names, JNDI names, and endpoint URLs. Note that for each endpoint URL, you should substitute your own host name or IP address. Do not use localhost unless you are making a single Gateway configuration for testing purposes. The endpoint URL is used in the generated Gateway Web Services Description Language (WSDL) for your Web services. If you use localhost in the endpoint URL, the generated Gateway WSDL cannot be used to connect to your machine from another.

You do not need to fill in the deployment fields related to Reply Context. These fields are used only with the JMS Gateway Channel.

Note: Because of size limitations in the following table, some names to enter appear wrapped. Be sure to enter them in one continuous string, with no spaces.

Channel type	Channel name (enter exactly as shown - no spaces)	JNDI Name(enter exactly as shown - no spaces)	Endpoint URL (substitute your hostname or IP address)
SOAP Channel 1	ApacheSOAPChannel1	ApacheSOAPChannel1Bean	http://your_hostname/wsgwsoap1
SOAP Channel 2	ApacheSOAPChannel2	ApacheSOAPChannel2Bean	http://your_hostname/wsgwsoap2
Axis Channel 1	ApacheAxisChannel1	ApacheAxisChannel1Bean	http://your_hostname/wsgwaxis1
Axis Channel 2	ApacheAxisChannel2	ApacheAxisChannel2Bean	http://your_hostname/wsgwaxis2
LFT Channel 1	LFTChannel1	LFTChannel1Bean	http://your_hostname/wsgwlft1
LFT Channel 2	LFTChannel2	LFTChannel2Bean	http://your_hostname/wsgwlft2

Two versions of each type of channel are supplied so that, for each channel type, you can set up separate channels for inbound and outbound requests. This provides a simple mechanism for giving different access rights to users from outside of your organization, as opposed to the rights you give to users within your organization. The versions are:

- To ensure that users outside of your organization can only access those internal services that you choose to publish externally, you deploy those services on the public channel.
- To give users inside your organization access to the full range of internal and external services, you deploy those services on the private channel.

Notes:

- If you are going to use LFT (Large File Transfer) support, refer to the *Using the Web Services Gateway* document, which contains sample procedures you can use to verify your LFT installation.

- If you are going to use JMS support, refer to the *Web Services Gateway* documentation for instructions on setting it up.

Part IV - Uninstalling, starting up, shutting down

The information that follows will aid you in uninstalling, starting up, and shutting down the WebSphere Business Connection.

Uninstalling WebSphere Business Connection

To uninstall Business Connection, run uninstaller.bin from
<WSGW_HOME>/_uninst

Some files might not be removed. If this is the case, manually remove files related to Business Connection.

Starting up and shutting down

To start and stop these applications or their individual components, the WebSphere Administrator's Console may be used. Alternatively, entire Application Servers (not components) may be controlled via the WebSphere Business Connection System Management console.

Notices

IBM may not offer the products, services, or features discussed in this document in all countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

WebSphere Business Connection Lab Director
IBM RTP Laboratory
3039 Cornwallis Road
P.O. BOX 12195

Raleigh, NC 27709-2195
U.S.A

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples may include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. You may copy, modify, and distribute these sample programs in any form without payment to IBM for the purposes of developing, using, marketing, or distributing application programs conforming to IBM's application programming interfaces.

Programming interface information

Programming interface information is intended to help you create application software using this program.

General-use programming interfaces allow you to write application software that obtain the services of this program's tools.

However, this information may also contain diagnosis, modification, and tuning information. Diagnosis, modification and tuning information is provided to help you debug your application software.

Warning: Do not use this diagnosis, modification, and tuning information as a programming interface because it is subject to change.

Trademarks and service marks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both:

IBM
alphaWorks
AIX
CrossWorlds
DB2
DB2 OLAP Server
DB2 Universal Database
DeveloperWorks
MQSeries
SecureWay
WebSphere

Lotus is a trademark of International Business Machines Corporation and Lotus Development Corporation in the United States, other countries, or both.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

MMX, Pentium and ProShare are trademarks of Intel Corporation in the United States, other countries, or both.

Other company, product or service names may be trademarks or service marks of others.