IBM XL Fortran for AIX V8.1 and IBM XL Fortran Run-Time Environment for AIX V8.1 — Provides Full Support for OpenMP Fortran API V2.0

Overview
IBM XL Fortran (XLF) for AIX® V8.1:
- Provides support for the full OpenMP Fortran API V2.0
- Provides partial support for the Fortran 2000 standard
- Provides support for features of Fortran 2000
  - Allocatable components
  - IEEE Floating Point Exception Handling
  - Pointer with INTENT attribute
- Exploits the new POWER4™ multiprocessor
- Provides the full functionality of XLF for AIX V7.1.1
- Supports the full implementation of the Fortran 95 standard
- Provides enhanced porting features — Enhanced source-code and command line options compatibility with non-IBM compilers
- Exploits the RS/6000® symmetric multiprocessing (SMP) architecture
- Exploits IBM POWER, POWER2™, POWER3™, and PowerPC® architectures

XLF for AIX V8.1 also provides a license management tool that allows you to customize your license depending on your business and system environment.

Key prerequisites
- RS/6000 systems and RS/6000 SP™ systems
- CD-ROM drive
- 80 MB RAM
- 100 MB disk storage
- 64 MB paging space
- TCP/IP
- AIX V4.3.3, or later, operating system
- Frames-capable browser to access HTML-based, online documentation
- Adobe Acrobat reader to view the PDF documentation

Planned Availability Dates
- July 5, 2002: Electronic Package
- July 12, 2002: Program Package (Build-to-Plan)
- July 26, 2002: Program Package (Build-to-Order)

At a glance
XL Fortran (XLF) for AIX V8.1 features:
- Full functionality of XLF for AIX V7.1.1
- Support for the OpenMP Fortran API V2.0
- Support for select features of Fortran 2000:
  - Allocatable components
  - IEEE Floating Point Exception Handling
  - Pointer with INTENT attribute
- Support for the full Fortran 95 standard
- Support for SMP programming
- Exploits IBM POWER, POWER2, POWER3, POWER4, and PowerPC architectures
- New performance enhancements
- Enhanced porting features:
  - Record structure
  - TYPE I/O Statement

For ordering, contact:
Your IBM representative, an IBM Business Partner, or the Americas Call Centers at 800-IBM-CALL Reference: RE001
In V8.1, XLF has enhanced porting features. It not only provides source code compatibility with existing Fortran 95, Fortran 90 and FORTRAN 77 standards, but also has enhanced source code and command line options compatibility with non-IBM compilers. It supports both the automatic parallelization of a Fortran program and explicit parallelization through a set of directives so the user can parallelize selected program sections.

XLF for AIX V8.1 provides:

- Full functionality of XLF for AIX V7.1.1
- Full support for the OpenMP Fortran API V2.0, an industry-standard API for multi-platform SMP programming on UNIX-based platforms
- Enhanced porting features provide:
  - Allocatable components
  - IEEE Floating Point Exception Handling
  - Pointer with INTENT attribute
- Performance improvements
  - Collapse directive
  - Subscriptorder directive
  - -qlargepage compiler option
  - -qunwind/-qnounwind compiler option
  - -qsmallstack compiler option
- High-resolution system clock
- Enhanced porting features provide:
  - Source code compatibility with Fortran application written with existing versions of XLF for AIX
  - Enhanced source code and command line options compatibility with non-IBM compilers
- Support for the full Fortran 95, Fortran 90 and FORTRAN 77 standards
- Support for SMP programming:
  - Automatically parallelizes DO loops
  - Allows the user to explicitly “parallelize” Fortran codes through the use of supported SMP directives
- Exploits IBM POWER, POWER2, POWER3, POWER4, and PowerPC architectures

SMP Programming: Codes that can be “parallelized” may be parallelized automatically (through the use of a compiler option) or parallelized explicitly (through the use of SMP directives). XLF for AIX supports the following SMP directives:

- Assertion: ASSERT, CNCALL, PERMUTATION, INDEPENDENT
- Prescriptive: DO SERIAL, SCHEDULE
- Thread safing: THREADLOCAL

In addition to these SMP directives, XLF for AIX V8.1 now provides support for the full OpenMP Fortran API V2.0.

64-Bit Support: XLF for AIX provides 64-bit pointer and 64-bit addressability support for SMP and serial codes:

- High optimization levels -O5, -O4, and -qhot
- Interprocedural analysis
- SMP support for 64-bit codes

Asynchronous I/O: XLF for AIX supports asynchronous I/O. Asynchronous I/O may be useful for programs that perform I/O for large amounts of data. Asynchronous I/O may make it possible for other program statements to be executed while the data transfer is taking place.

License Use Management (LUM): XLF for AIX V8.1 uses LUM as its license management tool. LUM lets users track and manage the use of the XLF for AIX V8.1 compiler. The LUM keys are provided with the media package. Two kinds of LUM keys are available in the media:

- Concurrent-nodelocked
- Concurrent-network

You can choose the type of LUM key that best meets your requirements.

XLF Run-Time Environment (RTE) for AIX V8.1

XLF RTE for AIX V8.1 provides a run-time environment to support library modules, asynchronous I/O, thread safe I/O, and I/O services and utilities.

Technology Preview — IBM Distributed Debugger

The Distributed Debugger is provided as a technology preview with the XLF for AIX product. It is unwarranted.

IBM Distributed Debugger application allows you to find problems in a program. Also used as a tool to understand a program, you can control the program being debugged. You can trace through the flow of program execution and, at any desired point, stop and examining the program’s internal state. The values of variables and expressions can be examined using the monitors available in the debugger.

Withdrawal of Tools

In V7.1.1, XLF uses the GUI-based Common Desktop Environment (CDE) in the AIX operating system. CDE integration consists of an XLF application folder integrated within the CDE Application Manager.

With XLF for AIX V8.1, IBM will withdraw the CDE and the following related tools:

- Live Parsing Extensible (LPEX) editor
- Program Builder
- GUI-based command-line builder (xxlf)
- xldb debugger
POWER4, POWER2, POWER3, and SP are trademarks of International Business Machines Corporation in the United States or other countries or both.
AIX, RS/6000, and PowerPC are registered trademarks of International Business Machines Corporation in the United States or other countries or both.
UNIX is a registered trademark of the Open Company in the United States and other countries.
Other company, product, and service names may be trademarks or service marks of others.
Offering Information

Product information is available through Offering Information (OITOOL) at:

http://www.ibm.com/common/ssi

Publications

All of the following publications can be ordered after product’s general available. To order, contact your IBM representative.

Two sets of publications will be shipped with the XLF for AIX® V8.1 under the program package (Build-to-Order):

Set 1:

<table>
<thead>
<tr>
<th>Title</th>
<th>Order Number or Part Number</th>
<th>Language</th>
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<tbody>
<tr>
<td>XL Fortran for AIX License Information Booklet</td>
<td>CT1C4ML</td>
<td>Multilingual</td>
</tr>
<tr>
<td>IBM International Program License Agreement</td>
<td>04L6067</td>
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<tr>
<td>XL Fortran for AIX Memorandum to Users</td>
<td>CT1C8NA</td>
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Set 2:

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<tr>
<td>XL Fortran for AIX User’s Guide</td>
<td>SC09-4946</td>
<td>English</td>
</tr>
<tr>
<td>XL Fortran for AIX Language Reference</td>
<td>SC09-4947</td>
<td>English</td>
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</tbody>
</table>

Under the program package (Build-to-Plan), Set 1 publications will be shipped with Media Pack. Additional copies of the publications in Set 2 can be ordered separately by requesting Doc Pack or by Publication Notification System (PNS).

The publications in Set 2 are available in HTML-format and can be viewed online using a frames-capable Web browser. The HTML files are shipped on the same CD-ROM as the basic machine-readable material.

The following set of publications is shipped with the XLF RTE for AIX V8.1:

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<tr>
<td>XL Fortran RTE for AIX License Information Booklet</td>
<td>CT1CCML</td>
<td>Multilingual</td>
</tr>
</tbody>
</table>

Technical information

**Hardware requirements:** RS/6000® or RS/6000 SP™, which runs on AIX V4.3.3, or later.

**Software requirements:** AIX Operating System V4.3.3, or later.

**Compatibility:** XLF for AIX V8.1 not only provides source code compatibility with existing Fortran 95, Fortran 90, and FORTRAN 77 programs written using existing versions of XLF for AIX, but also enhances source-code and command line options compatibility with non-IBM compilers.

**Limitations**

**SMP:** SMP applications may be run on a single SMP node on an SP system. Automatic parallelization is not supported across multiple SMP nodes on an SP system. The user may manually distribute the code across SP SMP nodes using Message Passing Interface (MPI).

Planning information

XLF for AIX V8.1 is licensed based on a charge unit of one authorized user. The program may be stored on more than one machine, provided that the program is not in active use on more than one machine at the same time. An authorized user is an individual or specific named user authorized to have local or remote access to the program or any portion of the program. The Proof of Entitlement

This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: http://www.ibm.com.
(PoE) for this program is evidence of your authorization. Each individual or specific named user must obtain a PoE. The number of users allowed to use the XLF for AIX V8.1 compiler is determined by the number of PoE purchased by the customer.

When XLF for AIX V8.1 is ordered, its run-time component is shipped with the compiler on the same media. The XLF Run-Time component should be installed on the RS/6000 where the Fortran program will be compiled and executed.

XLF RTE for AIX V8.1 is licensed based on a charge unit of one copy installed. Charges for this program are based on the number of copies installed on different machine regardless of the number of processors or LPARs machine contains. Each individual install must obtain a PoE. The total number of copies installed may not exceed the number of PoE purchased by the customer. If the total number exceeds the quantity customer purchased, you must notify IBM or its resellers as stated in the IPLA.

The files/modules listed below or located in the directory named below, may be copied onto your media, in object code only, when your application is dependent upon them, subject to the following terms and conditions:

You agree:

1. That copies of these modules are provided “as is.” You are responsible for all technical assistance for your application;

2. To indemnify IBM from and against any third-party claim arising out of the use or redistribution of your application;

3. Not to use IBM’s name or trademarks in connection with the marketing of your applications without IBM’s prior written consent;

4. To prohibit the recipient from copying (except for backup purposes), reverse assembling, reverse compiling, or otherwise translating the application; and

5. Not to use the same path name as the original files/modules.

   • libxlf.a
   • libxlf90.a
   • libxlf90_r.a
   • libxlf90_t.a
   • libxlfpad.a
   • libxlfpad_r.a
   • libxlfpad_t.a
   • libxlfpm4.a
   • libxlfpm4_r.a
   • libxlfpm4_t.a
   • libxlfpm8.a
   • libxlfpm8_r.a
   • libxlfpm8_t.a
   • libxlfpthrds_compat.a
   • libxlfutil.a
   • libxlsmp.a
   • libxlsmp_ser.a
   • libxlsmpdebug.a
   • smprt.cat
   • xrfmsg.cat
   • xrfmsg90.cat

Your application, containing a copy of the above referenced files/modules, should be labeled as follows:

“Contains IBM XL Fortran for AIX V8.1 Runtime Modules © Copyright IBM Corporation 1990-2002 All Rights Reserved.”

Solution developers who sell applications that “pre-req” or pre-require XLF RTE for AIX V8.1, may redistribute it to their customers according to the above terms but their customers will not receive support directly from IBM. Solution developers wanting their customers to receive support directly from IBM should require their customers to purchase XLF RTE for AIX V8.1 licenses.

**Installability:** XLF for AIX V8.1 uses a licensing system called LUM. LUM is a “customer-managed” system. This means that the customer does not need to call any key center for information.

Full details and information can be downloaded from the following site:

http://www.ibm.com/software/is/lum

The readme.first memo-to-users that comes with the program describes how to install and set up LUM.

The license certificate is located in:

/usr/lpp/xlf/DOC

It is available after installing the image.

**Packaging**

XLF for AIX V8.1 Media Package (English):

- XLF for AIX License Information Booklet in multiple languages (part number CT1C4ML)
- IPLA Booklet in multiple languages (part number 04L6067)
- One CD
- XL Fortran for AIX V8.1 memorandum to users (part number CT1C8NA)

XL Fortran for AIX V8.1 Doc Package (English):

- XL Fortran for AIX Language Reference (SC09-4947)
- XL Fortran for AIX User’s Guide (SC09-4946)

XL Fortran RTE for AIX V8.1 Media Package (English):

- XL Fortran RTE for AIX License Information Booklet in multiple languages (part number CT1CCML)
- IPLA Booklet in multiple languages (part number 04L6067)
- One CD
- XL Fortran RTE for AIX V8.1 memorandum to users (part number CF09XNA)

**Security, auditability, and control**

XLF for AIX V8.1 uses the security and auditability features of the AIX operating system. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.
Ordering information

XLF for AIX V8.1 has one charge unit: Authorized User. It is available in fixed order quantities of one user and 250 users.

XLF for AIX V8.1 is licensed based on a charge unit of one authorized user. The program may be stored on more than one machine, provided that the program is not in active use on more than one machine at the same time. An authorized user is an individual or specific named user authorized to have local or remote access to the program or any portion of the program. The PoE for this program is evidence of your authorization. Each individual or specific named user must obtain a PoE. The number of users allowed to use the XLF for AIX V8.1 compiler is determined by the number of PoE purchased by the customer.

When XLF for AIX V8.1 is ordered, its run-time component is shipped with the compiler on the same media. The XLF Run-Time component should be installed on the RS/6000 where the Fortran program will be compiled and executed.

XLF RTE for AIX V8.1 has one charge unit: Install. It is available in fixed order quantities of one install and 250 installs.

XLF RTE for AIX V8.1 is licensed based on a charge unit of one copy installed. Charges for this program are based on the number of copies installed on different machines regardless of the number of processors or LPARs machine contains. Each individual install must obtain a PoE. The total number of copies installed may not exceed the number of PoE purchased by the customer. If the total number exceeds the quantity customer purchased, you must notify IBM or its resellers as stated in the IPLA.

<table>
<thead>
<tr>
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<tr>
<td>XL Fortran Compiler and Runtime V8.1 for AIX Media Pack — English</td>
<td>BA05LNA</td>
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<td>XL Fortran RTE V8.1 for AIX Media Pack — English</td>
<td>BA05NNA</td>
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<tr>
<td>XL Fortran Compiler and Runtime V8.1 for AIX Doc Pack — English</td>
<td>BA05QNA</td>
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Passport Advantage

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<td>BA05QNA</td>
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<td>XL Fortran for AIX Registered User LIC/SW MAINT 1 ANNIV</td>
<td>D5APSLL</td>
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<td>XL Fortran for AIX Registered User LIC/SW MAINT 2 ANNIV</td>
<td>D5APTL</td>
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Entitled Maintenance Offerings

Description

XLFORTRANAIX (XLF for AIX)

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<th>Media Packs</th>
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Media Packs

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<th>OTC Feature Number</th>
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<tr>
<td>Per Users with 1 Year SW Maintenance</td>
<td>5765-F70</td>
<td>0001</td>
<td>5809</td>
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<tr>
<td>Per 250 Users with 1 Year SW Maintenance</td>
<td>5765-F70</td>
<td>0002</td>
<td>5809</td>
<td>CD-ROM</td>
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XLF for AIX V8.1

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<th>OTC Feature Number</th>
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<tbody>
<tr>
<td>Per Installs with 1 Year SW Maintenance</td>
<td>5765-F71</td>
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<td>Per 250 Installs with 1 Year SW Maintenance</td>
<td>5765-F71</td>
<td>0002</td>
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</tr>
</tbody>
</table>

This software license includes Software Maintenance, previously referred to as Software Subscription and Technical Support.

Extending coverage for a total of three years from date of acquisition may be elected. Order the program number, feature number and quantity to extend coverage.
for your software licenses. If maintenance has expired, specify the after license feature number.

**XLF for AIX**

Maintenance IASP PID: 1-Year 5733-M41

<table>
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<th>Feature Description</th>
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<td>Use Authorizations (to be ordered in quantity)</td>
<td>2678</td>
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<tr>
<td>Per Users SW Maintenance NoCharge Registration</td>
<td>3220</td>
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<td>Per 250 Users SW Maintenance 1-Year Renewal After License</td>
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Maintenance IASP PID: 3-Year 5733-M42

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<tr>
<td>Per Users SW Maintenance 3-Year Registration</td>
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<td>Per 250 Users SW Maintenance 3-Year Renewal After License</td>
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<td>Per 250 Users SW Maintenance 3-Year After License</td>
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**XLF RTE for AIX**

Maintenance IASP PID: 1-Year 5733-M43

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<td>Per 250 Installs SW Maintenance 1-Year Renewal After License</td>
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Maintenance IASP PID: 3-Year 5733-M44

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Customers who purchased V7.1 of XLF or XLF RTE for AIX including Software Maintenance (5733-M41, 5733-M42, 5733-M43, 5733-M44) are entitled to receive V8.1 at no charge. Eligible customers should add the applicable CD media supply and language feature number from the table below, to their existing maintenance record.

**Software Subscription for AIX 5692-SSO**

From V8.1, XLF for AIX will use Software Maintenance instead of Software Subscription for AIX to support subscription.

Customers who purchased protection for XLF (5765-E02) V7.1 under AIX Software Subscription 5692-SSO, are entitled to receive XLF (5765-F70) V8.1 at no charge. Eligible customers should add the applicable CD media supply feature number from the table below, to their existing 5692-SSO record.

**Customization Options:** Select the appropriate feature numbers to customize your order with delivery options desired. These features can be specified on the initial or MES orders. These feature numbers can apply to either XLF for AIX V8.1 or to XLF RTE for AIX V8.1.

### Software Subscription for AIX 5692-SSO

<table>
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<tr>
<th>Program Feature Number</th>
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**CD-ROM Media Supply Features**

From XLF V7.1 (5765-E02) to XLF V8.1 (5765-F70) 6472, 6473, 6474, 6475, 6476, 6477

2 Denotes billing features that a customer must have previously purchased in order to receive this upgrade at no charge. The billing features must currently be on a customer’s record as proof of eligibility.

**Initial Shipments**

- Single Pallet Option 3483

**Expedite Shipments**

- Local IBM office expedite (for IBM use only) 3445
- Customer expedite process charge ($30 charge for each product) 3446
Expedite shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

Terms and conditions

Agreement: IPLA. Proofs of Entitlement are required for all authorized use. Part number products only, offered outside of Passport Advantage, where applicable, are license only and do not include Software Maintenance.

This software license includes Software Maintenance, previously referred to as Software Subscription and Technical Support.

The following agreements apply for maintenance and do not require customer signatures:

- IBM Agreement for Acquisition of Support (Z125-6011)
- Addendum for Support (Software Maintenance) for Select IBM @server iSeries and IBM @server pSeries Programs (Z125-6495)

License Information Form Number

- XLF for AIX V8.1 (part number CT1C4ML)
- XLF RTE V8.1 (part number CT1CCML)

Limited warranty: Yes

Money-Back Guarantee: If for any reason you are dissatisfied with the Program, return it within 30 days from the invoice date, to the party (either IBM or its reseller) from whom you acquired it, for a refund. This applies only to your first acquisition of the Program.

Copy and Use on Home/Portable Computer: No

Volume Orders (IVO): Yes, contact your IBM representative.

Passport Advantage Applies: Yes, and through the Passport Advantage Web site at:

http://www.ibm.lotus/software/passportadvantage

Usage Restriction: Yes

XLF for AIX V8.1 is licensed based on a charge unit of one authorized user. The program may be stored on more than one machine, provided that the program is not in active use on more than one machine at the same time. An authorized user is an individual or specific named user authorized to have local or remote access to the program or any portion of the program. The PoE for this program is evidence of your authorization. Each individual or specific named user must obtain a PoE. The number of users allowed to use the XLF for AIX V8.1 compiler is determined by the number of PoE purchased by the customer.

When XLF for AIX V8.1 is ordered, its run-time component is shipped with the compiler on the same media. The XLF Run-Time component should be installed on the RS/6000 where the Fortran program will be compiled and executed.

XLF RTE for AIX V8.1 is licensed based on a charge unit of one copy installed. Charges for this program are based on the number of copies installed on different machine regardless of the number of processors or LPARs machine contains. Each individual install must obtain a PoE. The total number of copies installed may not exceed the number of PoE purchased by the customer. If the total number exceeds the quantity customer purchased, you must notify IBM or its resellers as stated in the IPLA.

The files/modules listed below or located in the directory named below may be copied onto your media, in object code only, when your application is dependent upon them, subject to the following terms and conditions:

You agree:

1. That copies of these modules are provided “as is”. You are responsible for all technical assistance for your application;

2. To indemnify IBM from and against any third-party claim arising out of the use or redistribution of your application;

3. Not to use IBM’s name or trademarks in connection with the marketing of your applications without IBM’s prior written consent;

4. To prohibit the recipient from copying (except for backup purposes), reverse assembling, reverse compiling, or otherwise translating the application; and

5. Not to use the same path name as the original files/modules.

- libxlf.a
- libxlf90.a
- libxlf90_r.a
- libxlf90_t.a
- libxlfpad.a
- libxlfpad_r.a
- libxlfpad_t.a
- libxlfpmt4.a
- libxlfpmt4_r.a
- libxlfpmt4_t.a
- libxlfpmt8.a
- libxlfpmt8_r.a
- libxlfpmt8_t.a
- libxlfpthreads_compat.a
- libxfutil.a
- libxlopt.a
- libxlsmp.a.a
- libxlsmpdebug.a
- smprt.cat_compat.a
- xrfmsg.cat
- xrfmsg90.cat

Your application containing a copy of the above referenced files/modules should be labeled as follows:

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Software Maintenance Applies: Yes
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and

2. Code-related questions

IBM provides assistance via telephone and, if available, electronic access, only to your information systems (IS) technical support personnel during the normal business hours (published prime shift hours) of your IBM support center. (This assistance is not available to your end users.) IBM provides Severity 1 assistance 24 hours a day, every day of the year. Consult your IBM Software Support Guide http://techsupport.services.ibm.com/guides/handbook.html for further details. Software Maintenance does not include assistance for:

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2. Your use of programs in other than their specified operating environment

or

3. Failures caused by products for which IBM is not responsible under this Agreement

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### Prices

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http://www.ibm.com/software/passportadvantage

**XLF for AIX V8.1**

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**XLF RTE for AIX V8.1**

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