

IBM XL Fortran Advanced Edition V9.1 for Linux[®]



Installation Guide

Version 9.1

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Version 9.1

Note!

Before using this information and the product it supports, read the information in "Notices" on page 19.

First Edition (June 2004)

This edition applies to IBM XL Fortran Advanced Edition V9.1 for Linux and to all subsequent releases and modifications until otherwise indicated in new editions.

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Installation guide

This document contains essential information about installing IBM XL Fortran Advanced Edition V9.1 for Linux. Please read it carefully before installing IBM XL Fortran Advanced Edition V9.1 for Linux. Please also read the **README** file on the CD-ROM, which contains the most current information about IBM XL Fortran Advanced Edition V9.1 for Linux. After you install the product, you can find the **README** file in the *compiler-path/xlf/9.1* directory.

XL Fortran Version 9.1 packaging and filesets

The following packages are supplied on the CD. Use rpm to review them:

Required packages

Package Name	Package Description
xlsmp.msg.rte	SMP run-time messages
xlsmp.rte	SMP run-time dynamic libraries
xlsmp.lib	SMP run-time static libraries
xlmass.lib	IBM Mathematical Acceleration Subsystem (MASS) component
xlf.msg.rte	XL Fortran run-time environment messages
xlf.rte	XL Fortran run-time environment
xlf.rte.lnk	XL Fortran run-time environment links
xlf.lic	XL Fortran license
xlf.lib	XL Fortran compiler libraries
xlf.cmp	XL Fortran compiler
xlf.samples	XL Fortran samples
xlf.help	XL Fortran documentation

The supported locales are as follows:

- en_US
- en_US.utf8
- ja_JP
- ja_JP.eucjp
- ja_JP.utf8

Installing IBM XL Fortran Advanced Edition V9.1 for Linux

The IBM XL Fortran Advanced Edition V9.1 for Linux installation uses the Red Hat Package Manager (RPM), which is the standard tool for installing Linux packages. RPM is shipped with the operating system.

The high-level steps are:

1. Become the root user, or a user with administrator privileges.
2. Install the packages.
3. Enable the compiler man pages.
4. Set the correct NLSPATH.

5. Configure the compiler.
6. Set up the environment for the invocation commands.
7. Test the installation.

System prerequisites

- **Operating system:** A supported Linux distribution:
 - Red Hat Linux Enterprise Server 3 (RHEL3), Update 3
 - SUSE Linux Enterprise Server 9 (SLES9)
- **Hardware:** An IBM pSeries™, iSeries™ or BladeCenter™ computer that is supported by the Linux distribution.
- **Required hard disk space:**
 - Approximately 150 MB for product packages.
 - High levels of optimization, may require significant amounts of additional paging and temporary disk space.
- **Required software:**
 - HTML browser (to access documentation)
 - PDF viewer (to access documentation)

Prerequisite tasks or conditions

You must have root user access to install XL Fortran.

Checking for required packages

You must install the following packages before you install the compiler packages:

RHEL3	
GCC prerequisites	Version Requirements
gcc	3.2.3
gcc-c++	3.2.3
glibc-devel	2.3.2
libstdc++-devel	3.2.3

SLES9	
GCC prerequisites	Version Requirements
gcc	3.3.3
gcc-c++	3.3.3
gcc-64bit	9
glibc-devel-64bit	9
libstdc++-devel-64bit	9
java2	1.3.1
java2-jre	1.3.1

Note:

For installing on RHEL3, both 32-bit and 64-bit glibc-devel and libstdc++-devel packages are required. To make sure you have these packages installed before you install the compiler, follow the instruction in “Troubleshooting for RHEL3” on page 15. You cannot use the following command to check whether these packages are installed, because the names

of the RPM packages on RHEL3 are structured in a way that they have the same name regardless whether they are 32-bit or 64-bit RPM packages. As a result, the output does not indicate whether 32-bit, 64-bit or both RPM packages are installed.

Use the following command to determine if a package is installed:

```
rpm -qa | grep package_name
```

For example, to see whether xlf.cmp is installed, query xlf.cmp package as follows:

```
rpm -qa | grep xlf.cmp
```

If xlf.cmp version 9.1 is installed, you will get the following output as the result of query:

```
xlf.cmp-9.1.0-0
```

Checking for other packages

The following items require other components or are themselves prerequisites for other components. The xlf_configure utility is required because it must be run after the initial installation in order for the compiler to work. The KDE desktop environment and viewers for accessing the compiler documentation are optional.

Other package dependencies

Optional?	Component	Prerequisite RPM package(s)	Query
Required	xlf_configure utility	perl	<code>rpm -qf /usr/bin/perl</code>
Optional	Mozilla or Konqueror browser	RPM packages for the KDE environment	<code>rpm -q mozilla</code> <code>rpm -q kdebase3-konqueror</code>
Optional	PDF document viewer	RPM packages for the KDE environment	<code>rpm -q xpdf</code>

Verifying space requirements

XL Fortran packages require about 150 MB of hard disk space. This amount includes the optional samples and documentation. Compiling at higher levels of optimization may require large amounts of temporary disk space.

Use the following command to determine the amount of space available for the compiler installation in the default installation location:

```
df -h /opt
```

Installation

By default, the compiler installs in the `/opt/ibmcmp` directory.

Installation of all the packages using a single command

If your current working directory contains all of the RPM packages for XL Fortran and no other RPM packages, you can install XL Fortran using one single command as follows:

```
rpm -ivh *.rpm (default installation)
```

```
rpm -ivh *.rpm --prefix=installation-path (non-default installation)
```

The following table lists the packages and their prerequisites for both RHEL3 and SLES9.

XL Fortran packages and their prerequisites

Package name	Prerequisites	Description	Relocation
xlsmp.msg.rte	none	SMP run-time messages	must be installed in the same location
xlsmp.rte	xlsmp.msg.rte	SMP run-time dynamic libraries	
xlsmp.lib	xlsmp.msg.rte xlsmp.rte	SMP run-time static libraries	
xlmass.lib	none	IBM Mathematical Acceleration Subsystem (MASS) component	any location
xlfc.lic	none	XL Fortran license	any location
xlfc.msg.rte	none	XL Fortran run-time messages	must be installed in the same location
xlfc.rte	xlfc.msg.rte	XL Fortran run-time	
xlfc.rte.lnk	xlfc.rte	XL Fortran run-time links	
xlfc.cmp	xlfc.lib xlfc.lic xlfc.msg.rte xlfc.rte xlfc.rte.lnk xlmass.lib xlsmp.lib xlsmp.msg.rte xlsmp.rte	XL Fortran compiler	xlfc.cmp and xlfc.lib must be installed in the same location
xlfc.lib	none	XL Fortran compiler libraries	
xlfc.samples	none	Example programs	any location (optional)
xlfc.help	none	Compiler documentation in HTML and PDF formats	any location (optional)

Default installation on RHEL3

Issue the following commands to install XL Fortran to the default location, `/opt/ibmcmp`. To avoid dependency errors during installation, install the compiler packages in the following order:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64pseries.rpm
rpm -ivh xlsmp.rte-1.5.0-0.ppc64pseries.rpm
rpm -ivh xlsmp.lib-1.5.0-0.ppc64pseries.rpm
rpm -ivh xlmass.lib-4.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.msg.rte-9.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.rte-9.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.rte.lnk-9.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.lic-9.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.lib-9.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.cmp-9.1.0-0.ppc64pseries.rpm
```

The sample programs and product documentation packages have no dependency on other RPM packages and can be installed in any order using the following commands:

```
rpm -ivh xlfc.help-9.1.0-0.ppc64pseries.rpm
rpm -ivh xlfc.samples-9.1.0-0.ppc64pseries.rpm
```

Note: If you have already installed the XL C/C++ compiler, `xlsmp.msg.rte`, `xlsmp.rte`, `xlsmp.lib` and `xlmass.lib` will already be installed. RPM will prevent you from installing these components a second time.

Non-default installation on RHEL3

Issue the following commands to install XL Fortran to a non-default location. To avoid dependency errors during installation, install the compiler packages in the following order:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64pseries.rpm --prefix=smprt-path
rpm -ivh xlsmp.rte-1.5.0-0.ppc64pseries.rpm --prefix=smprt-path
rpm -ivh xlsmp.lib-1.5.0-0.ppc64pseries.rpm --prefix=smprt-path
rpm -ivh xlmass.lib-4.1.0-0.ppc64pseries.rpm --prefix=xlmass-path
rpm -ivh xlf.msg.rte-9.1.0-0.ppc64pseries.rpm --prefix=xlfprt-path
rpm -ivh xlf.rte-9.1.0-0.ppc64pseries.rpm --prefix=xlfprt-path
rpm -ivh xlf.rte.lnk-9.1.0-0.ppc64pseries.rpm --prefix=xlfprt-path
rpm -ivh xlf.lic-9.1.0-0.ppc64pseries.rpm --prefix=xlflic-path
rpm -ivh xlf.lib-9.1.0-0.ppc64pseries.rpm --prefix=xlf-path
rpm -ivh xlf.cmp-9.1.0-0.ppc64pseries.rpm --prefix=xlf-path
```

For example:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64pseries.rpm --prefix=/common
rpm -ivh xlsmp.rte-1.5.0-0.ppc64pseries.rpm --prefix=/common
rpm -ivh xlsmp.lib-1.5.0-0.ppc64pseries.rpm --prefix=/common
rpm -ivh xlmass.lib-4.1.0-0.ppc64pseries.rpm --prefix=/common_xlmass
rpm -ivh xlf.msg.rte-9.1.0-0.ppc64pseries.rpm --prefix=/runtime
rpm -ivh xlf.rte-9.1.0-0.ppc64pseries.rpm --prefix=/runtime
rpm -ivh xlf.rte.lnk-9.1.0-0.ppc64pseries.rpm --prefix=/runtime
rpm -ivh xlf.lic-9.1.0-0.ppc64pseries.rpm --prefix=/license
rpm -ivh xlf.lib-9.1.0-0.ppc64pseries.rpm --prefix=/compiler
rpm -ivh xlf.cmp-9.1.0-0.ppc64pseries.rpm --prefix=/compiler
```

Default installation on SLES9

Issue the following commands to install XL Fortran to the default location, `/opt/ibmcmp`. To avoid dependency errors during installation, install the compiler packages in the following order:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64.rpm
rpm -ivh xlsmp.rte-1.5.0-0.ppc64.rpm
rpm -ivh xlsmp.lib-1.5.0-0.ppc64.rpm
rpm -ivh xlmass.lib-4.1.0-0.ppc64.rpm
rpm -ivh xlf.msg.rte-9.1.0-0.ppc64.rpm
rpm -ivh xlf.rte-9.1.0-0.ppc64.rpm
rpm -ivh xlf.rte.lnk-9.1.0-0.ppc64.rpm
rpm -ivh xlf.lic-9.1.0-0.ppc64.rpm
rpm -ivh xlf.lib-9.1.0-0.ppc64.rpm
rpm -ivh xlf.cmp-9.1.0-0.ppc64.rpm
```

The sample programs and product documentation packages have no dependency on other RPM packages and can be installed in any order.

```
rpm -ivh xlf.help-9.1.0-0.ppc64.rpm
rpm -ivh xlf.samples-9.1.0-0.ppc64.rpm
```

Note: If you have already installed the XL C/C++ compiler, `xlsmp.msg.rte`, `xlsmp.rte`, `xlsmp.lib` and `xlmass.lib` will already be installed. RPM will prevent you from installing these components a second time.

Non-default installation on SLES9

Issue the following commands to install XL Fortran to a non-default location. To avoid dependency errors during installation, install the compiler packages in the following order:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64.rpm --prefix=smprt-path
rpm -ivh xlsmp.rte-1.5.0-0.ppc64.rpm --prefix=smprt-path
rpm -ivh xlsmp.lib-1.5.0-0.ppc64.rpm --prefix=smprt-path
rpm -ivh xlmass.lib-4.1.0-0.ppc64.rpm --prefix=xlmass-path
rpm -ivh xlf.msg.rte-9.1.0-0.ppc64.rpm --prefix=xlfprt-path
rpm -ivh xlf.rte-9.1.0-0.ppc64.rpm --prefix=xlfprt-path
```

```
rpm -ivh xlf.rte.lnk-9.1.0-0.ppc64.rpm --prefix=xlfrte-path
rpm -ivh xlf.lic-9.1.0-0.ppc64.rpm --prefix=xlfllic-path
rpm -ivh xlf.lib-9.1.0-0.ppc64.rpm --prefix=xlf-path
rpm -ivh xlf.cmp-9.1.0-0.ppc64.rpm --prefix=xlf-path
```

For example:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64.rpm --prefix=/common
rpm -ivh xlsmp.rte-1.5.0-0.ppc64.rpm --prefix=/common
rpm -ivh xlsmp.lib-1.5.0-0.ppc64.rpm --prefix=/common
rpm -ivh xlmass.lib-4.1.0-0.ppc64.rpm --prefix=common_xlmass
rpm -ivh xlf.msg.rte-9.1.0-0.ppc64.rpm --prefix=/runtime
rpm -ivh xlf.rte-9.1.0-0.ppc64.rpm --prefix=/runtime
rpm -ivh xlf.rte.lnk-9.1.0-0.ppc64.rpm --prefix=/runtime
rpm -ivh xlf.lic-9.1.0-0.ppc64.rpm --prefix=/license
rpm -ivh xlf.lib-9.1.0-0.ppc64.rpm --prefix=/compiler
rpm -ivh xlf.cmp-9.1.0-0.ppc64.rpm --prefix=/compiler
```

Product migration installation for RHEL3

Note: As XL Fortran version 9.1 is the first version supported on SLES9, product migration installation does not apply to SLES9.

Product migration installation

If you have the previous version of the compiler installed, it is recommended that you uninstall any previous versions of the compiler prior to installation. However, if you want to have more than one version of the compiler on the system, you can follow one of the methods described in this section.

Method 1: Installing to a different location: You can install version 9.1 to a different location from version 8.1.

For example, if you installed version 8.1 to the default location, `/opt/ibmcmp`, follow the instructions in “Non-default installation on RHEL3” on page 5 to install version 9.1 packages to a different location.

If you did not use the default installation for version 8.1 and installed it to a non-default location, you can install version 9.1 to the default location. Follow the instructions in “Default installation on RHEL3” on page 4. You can also install version 9.1 to a non-default location by following the instructions in “Non-default installation on RHEL3” on page 5.

Method 2: Installing the compiler to the same location: You can also install version 9.1 packages to the same location that version 8.1 packages reside in. In this case, you will only have version 9.1 run-time packages installed on that location and the version 8.1 compiler will use version 9.1 run-time shared libraries.

To avoid future dependency errors, you must remove the following packages before you install version 9.1 packages to the same location.

```
rpm -e xlsmp.msg.rte-1.3.7-2 --nodeps
rpm -e xlf.msg.rte-8.1.1-0 --nodeps
```

Assuming all the packages for version 8.1 are installed, use the following commands to install the version 9.1 packages to the same location. To avoid dependency errors during installation, install the compiler packages in the following order:

```
rpm -ivh xlsmp.msg.rte-1.5.0-0.ppc64pseries.rpm --prefix <V1.3_smprt_path>
rpm -ivh xlsmp.rte-1.5.0-0.ppc64pseries.rpm --prefix <V1.3_smprt_path> --force
rpm -ivh xlsmp.lib-1.5.0-0.ppc64pseries.rpm --prefix <V1.3_smprt_path>
```

```

rpm -ivh xlmass.lib-4.1.0-0.ppc64pseries.rpm --prefix <xlmass_path>
rpm -ivh xlf.msg.rte-9.1.0-0.ppc64pseries.rpm --prefix <V8.1_runtime_path>
rpm -ivh xlf.rte-9.1.0-0.ppc64pseries.rpm --prefix <V8.1_runtime_path> --force
rpm -ivh xlf.rte.lnk-9.1.0-0.ppc64pseries.rpm --prefix <V8.1_runtime_path>
rpm -ivh xlf.lic-9.1.0-0.ppc64pseries.rpm --prefix <V8.1_license_path>
rpm -ivh xlf.lib-9.1.0-0.ppc64pseries.rpm --prefix <V8.1_license_path>
rpm -ivh xlf.cmp-9.1.0-0.ppc64pseries.rpm --prefix <V8.1_compiler_path>

```

where:

<V1.3_smprt_path> is where version 1.3 of smprt was installed.

<V8.1_compiler_path> is where version 8.1 of the compiler was installed.

<V8.1_license_path> is where version 8.1 of the compiler license was installed.

<V8.1_runtime_path> is where version 8.1 of the compiler run-time was installed.

<xlmass_path> can be any location on the system.

Notes:

1. The **--force** option must be used on the run-time packages to avoid file conflicts. If you do not use the **--force** option you will get warnings such as the following:

```
file /opt/ibmcmp/lib/libxlf90.so.1 from install of xlf.rte-9.1.0-0
conflicts with file from package xlf.rte-8.1.1-0.
```
2. If you use method 2 for migration installation, you must use **xlf_configure** manually. You can not use **new_install** when more than one version of the compiler is installed on the system.
3. When you use method 2, version 9.1 run-time packages will be used by both versions of the compiler. If you need version 8.1 run-time packages to run with version 8.1 run-time packages, you must use Method 1.

PTF updates

With the PTF (Program Temporary Fix) updates, all of the packages except **xlf.lic** are shipped.

It is recommended that you uninstall any previous version of the compiler prior to applying PTF updates. In this case, you should use the **xlf.lic** you have from your previous version. However, you have the option to keep the previous version of the compiler or uninstall it based on your preferences when applying PTF updates.

Method 1: keeping the previous version of the compiler and applying the PTF

updates: If you want to keep the previous version of the compiler on your system, you must install the PTF to a different location. In this case, there will be no need to reinstall **xlf.lic**, but note that if you do not uninstall the previous version of the compiler, you must use **xlf_configure** option. Do not use **new_install**.

Later, once you have verified that the PTF is what you want and decide to uninstall the previous version, you can uninstall everything except **xlf.lic**. If you do not uninstall the previous version of the compiler from the system, and attempt to apply the PTF in the same install location, the installation fails, because the packages are installed in a common location, which is not specific to the version of the product. You can follow these steps to apply the PTF:

1. Complete the instructions with the new RPM packages as mentioned in the “Installation” on page 3. Since the `xlf.lic` package is already installed, you do not need to install it again.
2. Configure the compiler using `xlf_configure`. Do not use the `new_install` utility.
3. If you decided to keep the previous version of the compiler when applying the PTF updates and later, you want to uninstall the old compiler, follow the instructions in “Uninstalling XL Fortran” on page 13. Do not uninstall `xlf.lic`. If you try to uninstall this package, you will receive an error message because this package is a prerequisite for other packages that are installed on your system.

Method 2: uninstalling the previous version of the compiler and applying the PTF updates: If you do not want to have the previous version of the compiler when you apply the PTF updates, follow the instructions described in the “Uninstalling XL Fortran” on page 13 and apply the PTF updates using the instruction in “Installation” on page 3. You should use the `xlf.lic` that you have from the previous version.

Querying for installed packages

To query an individual package, issue a command such as the following:

```
rpm -q xlf.cmp
```

If the installation is not successful, you will get a message indicating that the package has not been installed. If the package has been installed properly, the result should be:

```
xlf.cmp-V.R.M-F
```

Where *V.R.M-F* is the Version.Release.Modification.Fix level of the compiler installed on the system.

To query all packages and search for *xlf*, issue the following command:

```
rpm -qa | grep xlf
```

If the package is not installed, the output of the command will be null.

Enabling the XL Fortran man pages

Man pages are provided for the compiler invocation commands and other utilities that are provided with the compiler.

Before you can read the man pages, you must add the XL Fortran man directory to the `MANPATH` environment variable as follows:

1. Open a terminal window.
2. Enter the following command:

```
export LANG=locale
```

The supported locales are as follows:

- `en_US`
- `en_US.utf8`
- `ja_JP`
- `ja_JP.eucjp`

For example, to view man pages in English, enter the following command:

```
export LANG=en_US
```

3. Add `/opt/ibmcmp/xlf/9.1/man` to the beginning of the MANPATH environment variable, as shown in the following table.

How to update the MANPATH environment variable

Shell	Command
bash	<code>export MANPATH=/opt/ibmcmp/xlf/9.1/man:\$MANPATH</code>

To invoke a man page, enter `man` followed by the command; for example:

```
man xlf
```

To leave the man page, type: `q`.

Setting the correct NLSPATH

After installation, you must set the NLSPATH environment variable so that the run-time environment finds the appropriate message catalogs.

Issue the following command:

```
export NLSPATH=$NLSPATH:  
  smprt-path/msg/%L/%N:  
  xlfprt-path/msg/%L/%N:  
  xlf-path/xlf/9.1/msg/%L/%N
```

where:

- *smprt-path* is the installation location of the SMP run-time
- *xlfprt-path* is the installation location of the XL Fortran run-time environment
- *xlf-path* is the installation location of the XL Fortran compiler

Note: If the default installation location is used, then *smprt-path*, *xlfprt-path*, and *xlf-path* will all be `/opt/ibmcmp`.

Configuring the compiler

In order to configure the compiler, you should have root or administrator privileges if you run `new_install`. However, if you configure the compiler using `xlf_configure` and your output configuration file, `xlf.cfg`, is written to a location where you have write permission, you do not need root or administrative privileges.

You can use `new_install` to generate the default configuration file automatically. The `new_install` command queries the RPM database to search for the paths to the XL Fortran packages and also search for the path to the 32-bit GCC (*gcc32path*) and the 64-bit GCC (*gcc64path*) in the PATH environment variable and generates the `/etc/opt/ibmcmp/xlf/9.1/xlf.cfg` configuration file. It uses the values obtained to execute `xlf_configure`. When running `new_install` on SLES9 platform, you will be required to accept the license agreement before the configuration file is generated. This step is not required on the RHEL3.

1. Change to the directory that contains the `new_install` and `xlf_configure` executables:

```
cd /opt/ibmcmp/xlf/9.1/bin
```

or, if you installed XL Fortran in a non-default location:

```
cd xlf-path/xlf/9.1/bin
```

2. Run the following command:


```
./new_install
```

The **new_install** command executes the following commands:

```
xlf_configure
-gcc gcc32path
-gcc64 gcc64path
-install
-mass xlmass-path/xlmass/4.1
-smprt smprt-path/xlsmpr/1.5
-xlflic xlflic-path/xlf/9.1
-xlfrt xlfrt-path/xlf/9.1
-xlf xlf-path/xlf/9.1
xlf-path/xlf/9.1/etc/xlf.base.cfg
```

If the default configuration file exists before you invoke **new_install**, **new_install** will back up the existing configuration file. The name of the back-up file will be displayed to the screen.

Note: You should use **xlf_configure** manually if multiple instances of XL Fortran compiler or GCC are installed on your system.

If **new_install** exits with an error, you will need to run the **xlf_configure** utility manually, as described in the “The xlf_configure utility.”

The following table describes some of the attributes in the generated configuration file.

Linux-specific configuration attributes

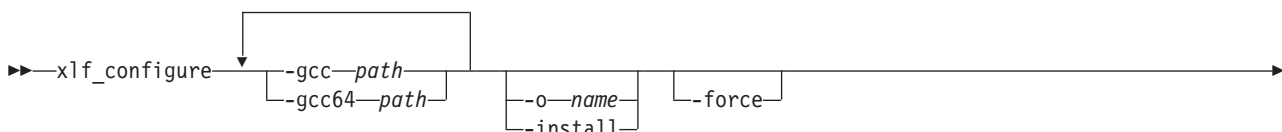
Attribute	Contents	Additional information
gcc_path gcc_path_64	The location of the GCC executable , in 32-bit mode or 64-bit mode	The gcc command must be located in the bin directory under the specified path.
gcc_libs gcc_libs_64	A comma-separated list of GCC libraries, in 32-bit mode or 64-bit mode	The gcc returns this list to the xlf_configure utility.
gcc_libdirs gcc_libdirs_64	A comma-separated list of directories that contain GCC libraries, in 32-bit mode or 64-bit mode	The gcc returns this list to the xlf_configure utility.

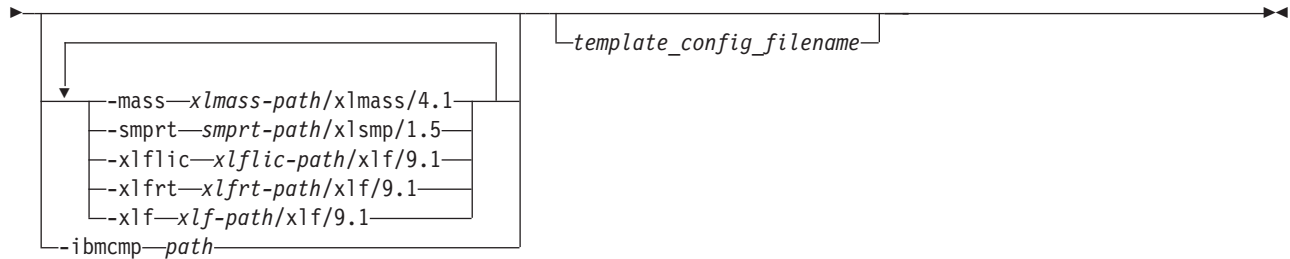
The xlf_configure utility

The **xlf_configure** utility is automatically invoked by the **new_install** command. You can invoke the **xlf_configure** utility directly in the following situations:

- You receive an error from the **new_install** command.
- You successfully run **new_install** but later want to change the default configuration file, for example if you install a new version of the GCC.
- You want to create additional configuration files.

The **xlf_configure** command has the following syntax:





where:

-gcc path

Specifies the path where the GCC bin directory is installed. In the configuration file, the `gcc_path` attribute is set equal to this path.

For example, if the GCC command is `/usr/bin/gcc`, you would specify

-gcc /usr

-gcc64 path

Specifies the path where the 64-bit GCC bin directory is installed. In the configuration file, the `gcc_path_64` attribute is set equal to this path.

-o name

Specifies the name of the configuration file to generate. By default, output is written to the display.

-install

Generates a file with the required name and the required location for the default configuration file: `/etc/opt/ibmcmp/xlf/9.1/xlf.cfg`

-force

Forces the `xlf_configure` utility to overwrite any existing output file with the specified name and path. By default, if you do not use `force`, `xlf_configure` issues an error message and stops if the specified file already exists.

-mass xlmass-path/xlmass/4.1

Specifies the path for the `xlmass.lib` package. By default the path is `/opt/ibmcmp/xlmass/4.1`.

-smprt smprt-path/xlsmp/1.5

Specifies the path for the `xlsmp.msg.rte`, `xlsmp.rte`, and `xlsmp.lib` packages. By default, this is `/opt/ibmcmp/xlsmp/1.5`.

-xlflic xlflic-path/xlf/9.1

Specifies the path for the `xlf.lic` package. By default, this is `/opt/ibmcmp/xlf/9.1`.

-xlfprt xlfprt-path/xlf/9.1

Specifies the path for the `xlf.msg.rte`, `xlf.rte` and `xlf.rte.lnk` packages. By default, this is `/opt/ibmcmp/xlf/9.1`.

-xlf xlf-path/xlf/9.1

Specifies the path for the `xlf.cmp` package. By default, this is `/opt/ibmcmp/xlf/9.1`.

-ibmcmp path

Alternatively specifies the path where all of the XL Fortran packages (`xlsmp.msg.rte`, `xlsmp.rte`, `xlsmp.lib`, `xlf.lic`, `xlf.msg.rte`, `xlf.rte`, `xlf.rte.lnk`

and **xlfcmp**) are installed. In this case, *path* is the same as *smpprt-path*, *xlflc-path*, *xlfrt-path*, and *xlfp-path*. You cannot specify **ibmcmp** and also specify the individual paths.

template_config_filename

The input file that is used to construct the configuration file. By default, this is **/opt/ibmcmp/xlf/9.1/etc/xlf.base.cfg**. If you relocated the **xlfcmp** package but want to use the default template, specify:

xlfp-path/xlf/9.1/etc/xlf.base.cfg.

Viewing the documentation

The following documentation is provided with XL Fortran:

- README file** A README file is located in the root directory of the installation CD. This file is installed in the **/opt/ibmcmp/xlf/9.1** directory.
- PDF books** The PDF versions of the XL Fortran documentation are stored in the **/doc/\$LANG/pdf** directory of the installation CD. When you install the **xlf.help** package, the PDF files are copied to the **/opt/ibmcmp/xlf/9.1/doc/\$LANG/pdf** directory. To view these files, you need a PDF viewer. The **gv** viewer is included in the Linux distribution.
- HTML files** When you install the **xlf.help** package, an HTML version of the XL Fortran documentation is installed in the **/opt/ibmcmp/xlf/9.1/doc/\$LANG/html** directory. To view the HTML files, open the file **index.htm** in a browser such as Mozilla or Konqueror.
- Man pages** Man pages are provided for the compiler invocation commands (such as **xlf**) and the following additional commands: **xlf_configure**, **new_install**, **showpdf**, **mergepdf**, **resetpdf**, and **cleanpdf**. The man pages are installed in the **/opt/ibmcmp/xlf/9.1/man/\$LANG/man1** directory.

Setting up the environment for the invocation commands

XL Fortran is not automatically installed in **/usr/bin**. To invoke the compiler without having to specify the full path, do one of the following steps:

- Create symbolic links for the specific driver contained in **/opt/ibmcmp/xlf/9.1/bin** (or *xlfp-path/xlf/9.1/bin*) to **/usr/bin** as follows:

```
ln -s <TARGET> <LINKNAME>
```

For example:

```
ln -s /opt/ibmcmp/xlf/9.1/bin/xlf /usr/bin/xlf
```
- Add **/opt/ibmcmp/xlf/9.1/bin** or (*xlfp-path/xlf/9.1/bin*) to the PATH environment variable.

Testing the installation

To test the product install and the critical search paths, try building the following simple application.

1. Create the following Fortran program and name the source file **hello.f**:

```
PRINT *, "Hello World!"  
END
```

- Note:** Each line must have six blank spaces before the first text character.
2. Compile the program by entering the command:
`xlf hello.f -o hello`
 3. Run the program:
`./hello`
The expected result is that "Hello World!" is displayed on the screen.
 4. Check the exit code of the program:
`echo $?`
The result should be zero.

Uninstalling XL Fortran

You must have root user access to uninstall this product. Note that the order of uninstalling packages is the reverse of that in which they were installed (LIFO). Uninstall the compiler packages in the following order to avoid dependency errors during uninstallation (both default and non-default install location use the same set of commands) :

```
rpm -e xlf.cmp-9.1.0-0
rpm -e xlf.lib-9.1.0-0
rpm -e xlf.lic-9.1.0-0
rpm -e xlf.rte.lnk-9.1.0-0
rpm -e xlf.rte-9.1.0-0
rpm -e xlf.msg.rte-9.1.0-0
rpm -e xlmass.lib-4.1.0-0
rpm -e xlsmp.lib-1.5.0-0
rpm -e xlsmp.rte-1.5.0-0
rpm -e xlsmp.msg.rte-1.5.0-0
```

Notes:

1. Some packages may not uninstall if they are required by other packages. For example, the SMP runtime (xlsmp.rte) is a shared component if IBM® XL C/C++ compiler is also installed on the same system.
2. The above commands will not remove any xlf.cfg that was generated by `new_install` or `xlf_configure`.

The sample programs and product documentation do not have any package dependencies. To uninstall them, you can issue the following commands in any order.

```
rpm -e xlf.samples-9.1.0-0
rpm -e xlf.help-9.1.0-0
```

Troubleshooting

This section describes possible problems you may encounter when you install IBM XL Fortran Advanced Edition V9.1 for Linux

Troubleshooting for RHEL3

You must have both ppc and ppc64 glibc-devel and libstdc++devel packages installed to successfully install and configure the product. If you only have the ppc RPM packages installed but not the ppc64 RPM packages when you run **new_install** or **xlf_configure**, you will receive one of the following error messages:

```
Could not determine location of 64-bit gcc.  
Suggestion: 64-bit glibc-devel, 64-bit libstdc++-devel might need to be  
installed
```

```
Could not determine location of 32-bit gcc.  
Suggestion: 32-bit glibc-devel, 32-bit libstdc++-devel might need to be  
installed
```

In this case, you should check whether both of the 64-bit and 32-bit RPM packages of glibc-devel and libstdc++-devel are installed on the system. On RHEL3 you cannot tell whether the 32-bit or the 64-bit version of GCC is installed by querying the packages because both the 32-bit and 64-bit packages have the exact same RPM name. You can, however, check this by compiling a test case in 32-bit and 64-bit mode.

For example, to check whether the 32-bit or the 64-bit version of GCC is installed you can create two test cases `helloWorld.c` and `helloWorld.cpp` and try to compile the files as follows:

For 32-bit mode:

```
gcc helloWorld.c  
gcc helloWorld.cpp
```

If the program compiles successfully without any error message, it indicates that you have 32-bit RPM packages installed. Otherwise if you get an error message, it means that you do not have the 32-bit RPM packages installed and you need to install the necessary packages, using the following commands:

```
rpm -ivh glibc-devel-V.R.M-F.ppc.rpm  
rpm -ivh libstdc++-devel-V.R.M-F.ppc.rpm
```

Where *V.R.M-F* is the Version.Release.Modification.Fix level of the package installed on the system.

For example, you can use the following commands:

```
rpm -ivh glibc-devel-2.3.2-95.3.ppc.rpm  
rpm -ivh libstdc++-devel-3.2.3-20.ppc.rpm
```

For 64-bit mode:

```
gcc -m64 helloWorld.c  
gcc -m64 helloWorld.cpp
```

If the programs compile successfully without any error message, it indicates that you have 64-bit RPM packages installed. Otherwise if you get an error message, it means that you do not have the 64-bit RPM packages installed and you need to install the necessary packages, using the following commands:

```
rpm -ivh glibc-devel-V.R.M-F.ppc64.rpm
rpm -ivh libstdc++-devel-V.R.M-F.ppc64.rpm
```

Where *V.R.M-F* is the Version.Release.Modification.Fix level of the package installed on the system.

For example, you can use the following commands:

```
rpm -ivh glibc-devel-2.3.2-95.3.ppc64.rpm
rpm -ivh libstdc++-devel-3.2.3-20.ppc64.rpm
```

After you install the packages, run **new_install** again and the product should install without any error.

Troubleshooting for SLES9

Java2 packages are required to run **new_install**. If you do not have java2 or java2-jre installed on your machine and try to run **new_install**, you will get the following error message:

```
Could not determine the install location of java2 package.
java2 package is required to run the license accept tool of this program.
Suggestion: install java2 and java2-jre packages provided by the operating
system install media.
```

You should install the java2 and java2-jre packages that can be obtained from the operating system installation media and run **new_install** again.

Troubleshooting for both RHEL3 and SLES9

- If you have any problem running **new_install** or **xlf_configure**, you can use the following options to get a more verbose output:
 - v (verbose) provides some debug information.
 - vv (very verbose) provides a more detailed debug information than -v.
- In order to run **new_install** properly, you must have both gcc and gcc-c++ RPM packages installed so that their paths can be found by PATH environment variable. Otherwise when you run **new_install**, you may receive the following error message:

```
Could not determine location of gcc
```

or

```
Could not determine location of g++
```

If you do not want gcc and g++ to be found in the PATH environment variable, you can run **xlf_configure** using your preferred gcc path by using the -gcc and -gcc64 manually. You can use the following command to determine if gcc and g++ can be found from PATH:

```
which gcc
```

For example, you may get the following output when you execute the above command:

```
/usr/bin/gcc
```

The output indicates that gcc can be found in one of the locations listed in the PATH environment variable. If the output is null, you must run `xlf_configure` manually if you know the path to gcc/g++.

- If you have already installed the XL C/C++ compiler, `xlsmp.msg.rte`, `xlsmp.rte`, `xlsmp.lib` and `xlmass.lib` packages have already been installed and RPM will prevent you from installing them for the second time. For example, if you have XL C/C++ installed and try installing `xlsmp` and `xlmass` packages using the following command:

```
rpm -ivh xlsmp*.rpm xlmass*.rpm
```

You will get an error message similar to the following:

```
package xlsmp.lib-1.5.0-0 is already installed
package xlsmp.msg.rte-1.5.0-0 is already installed
package xlsmp.rte-1.5.0-0 is already installed
package xlmass.lib-4.1.0-0 is already installed
```

This is an expected message and you do not have to do anything to resolve it.

- If you try to install a package without installing its prerequisites, it will not be installed and you will get an error message. For example, if you try to install `xlf.cmp` before `xlsmp` packages, `xlf.cmp` will not be installed and the error message indicates the required packages as the prerequisite. Run the following command to install `xlf.cmp`:

```
rpm -ivh xlf.cmp-9.1.0-0.ppc64.rpm
```

If you do not have the `xlsmp` packages, you will get an error message similar to the following:

```
xlsmp.lib >= 1.5 is needed by xlf.cmp-9.1.0-0
xlsmp.rte >= 1.5 is needed by xlf.cmp-9.1.0-0
```

You should install the prerequisites first and try installing the package again. To avoid dependency errors during installation, install the compiler packages in the correct order mentioned in the default installation or non-default installation sections of this document.

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