

COBOL for AIX



Installation Guide

Version 5.1

COBOL for AIX



Installation Guide

Version 5.1

Note

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 35.

First Edition (June 2015)

This edition applies to Version 5.1 of IBM COBOL for AIX (program number 5724-Z87) and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

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Contents

Tables v

Preface vii

About this information	vii
Who should read this information.	vii
How to use this information	vii
How this information is organized	viii
How to read the syntax diagrams	viii
How to send your comments	x
Accessibility	x
Interface information	x
Keyboard navigation	x
Accessibility of this information	x
IBM and accessibility	x

Chapter 1. Before installing COBOL for AIX 1

Upgrading the evaluation copy of the COBOL for AIX compiler	1
Installation image and filesets	1
IBM Debugger for AIX installation	4
System prerequisites	6
Previewing the installation and license agreements	7

Chapter 2. Installing COBOL for AIX 9

Tasks for installation.	9
Using SMIT.	9
Using installp	10

Chapter 3. Updating the installation of COBOL for AIX 13

Tasks for updating installation	13
Preparing a PTF package for installation.	13
Using SMIT	14
Using installp	14
Product version migration	15

Chapter 4. After installing COBOL for AIX 17

Checking compiler and fileset information	17
Enabling IBM License Metric Tool (ILMT) and Tivoli Asset Discovery for Distributed (TADd).	17
Setting environment variables	18
Enabling the COBOL for AIX error messages	19
Enabling the man pages	19
Accessing the information	19
Accessing the Installation Guide, Quick Start Guide and License Agreement	19

Accessing the online information	20
Accessing PDF files.	20
Viewing the man pages	20
Testing the installation of COBOL for AIX	21
COBOL for AIX library components	21
Accessing additional information	22

Chapter 5. Uninstalling COBOL for AIX 23

Uninstalling an installation	23
Uninstalling the electronic license agreement	24

Chapter 6. COBOL Runtime Environment for AIX 25

Before installing COBOL Runtime Environment for AIX	25
Installation image and filesets	25
System prerequisites	26
Previewing the installation and license agreements	28
Installing COBOL Runtime Environment for AIX	28
Using installp	29
Updating the installation of COBOL Runtime Environment for AIX	30
Tasks for updating installation	30
Preparing a PTF package for installation.	30
Using SMIT	31
Using installp	31
After installing COBOL Runtime Environment for AIX	32
Checking fileset information.	32
Enabling IBM License Metric Tool (ILMT) and Tivoli Asset Discovery for Distributed (TADd).	32
Accessing the information	33
Uninstalling COBOL Runtime Environment for AIX	34
Uninstalling an installation	34
Uninstalling the electronic license agreement	34

Notices 35

Trademarks	37
----------------------	----

List of resources 39

COBOL for AIX	39
Related publications	39

Index 41

Tables

1. Phases of a COBOL for AIX installation	viii	8. Steps for installation: new or upgrade COBOL for AIX installation	9
2. Phases of a COBOL Runtime Environment for AIX installation	viii	9. Steps for installation: update COBOL for AIX installation	13
3. COBOL for AIX compiler filesets and installation locations	1	10. COBOL Runtime Environment for AIX filesets and installation locations	25
4. COBOL for AIX non-production runtime environment filesets and installation locations	2	11. XL C++ runtime environment filesets and installation locations	26
5. XL C++ runtime environment filesets and installation locations	2	12. SdU filesets and installation locations	26
6. SdU filesets and installation locations	2	13. Steps for installation: update COBOL Runtime Environment for AIX installation	30
7. IBM Debugger filesets	3		

Preface

About this information

This information provides installation instructions for IBM® COBOL for AIX®, V5.1 and IBM COBOL Runtime Environment for AIX, V5.1. It also shows you how to test the installation, and view different types of product information. Read it carefully before installing. Also read the README files in the root directory of your installation media, which contains current information about the compiler and runtime environment.

IBM COBOL Runtime Environment for AIX, V5.1 is a new separately orderable runtime product for execution of developed IBM COBOL applications. Deployment of IBM COBOL applications will require the COBOL Runtime Environment to execute the applications. With this orderable COBOL Runtime Environment, the redistribution of runtime libraries in the COBOL for AIX, V5.1 product is not required nor permitted. For details about IBM COBOL Runtime Environment for AIX, V5.1, see Chapter 6, “COBOL Runtime Environment for AIX,” on page 25.

The term *VSAM file system* is a generic reference to either the SdU (SMARTdata Utilities) or Encina SFS (Structured File Server) file system.

Who should read this information

This information is intended for anyone responsible for installing the following products:

- IBM COBOL for AIX, V5.1
- IBM COBOL Runtime Environment for AIX, V5.1

How to use this information

This information provides procedures for two installation scenarios:

- Installation

This scenario tells you how to install a single version of COBOL for AIX or COBOL Runtime Environment for AIX.

For an overview of the steps to perform an installation of a single version of COBOL for AIX, refer to Chapter 2, “Installing COBOL for AIX,” on page 9.

For an overview of the steps to perform an installation of a single version of COBOL Runtime Environment for AIX, refer to “Installing COBOL Runtime Environment for AIX” on page 28.

- Update installation

This scenario tells you how to install a Program Temporary Fix (PTF) package for an existing COBOL for AIX or COBOL Runtime Environment for AIX installation.

For an overview of the steps required to install a PTF for COBOL for AIX, refer to Chapter 3, “Updating the installation of COBOL for AIX,” on page 13.

For an overview of the steps required to install a PTF for COBOL Runtime Environment for AIX, refer to “Updating the installation of COBOL Runtime Environment for AIX” on page 30.

How this information is organized

This information is organized to reflect the following procedures:

- Pre-installation, installation, post-installation, and product removal phases of a COBOL for AIX installation, see Table 1.
- Pre-installation, installation, post-installation, and product removal phases of a COBOL Runtime Environment for AIX installation, see Table 2.

Table 1. Phases of a COBOL for AIX installation

Phase	Chapters	User segment
Pre-installation	Chapter 1, "Before installing COBOL for AIX," on page 1	All users
Installation	Chapter 2, "Installing COBOL for AIX," on page 9	Users who want to install COBOL for AIX, V5.1
Post-installation	Chapter 3, "Updating the installation of COBOL for AIX," on page 13	Users who want to update COBOL for AIX, V5.1 to the next fix level
	Chapter 4, "After installing COBOL for AIX," on page 17	All users
Product removal	Chapter 5, "Uninstalling COBOL for AIX," on page 23	Users who want to uninstall COBOL for AIX, V5.1

Table 2. Phases of a COBOL Runtime Environment for AIX installation

Phase	Chapters	User segment
Pre-installation	"Before installing COBOL Runtime Environment for AIX" on page 25	All users
Installation	"Installing COBOL Runtime Environment for AIX" on page 28	Users who want to install COBOL Runtime Environment for AIX, V5.1
Post-installation	"Updating the installation of COBOL Runtime Environment for AIX" on page 30	Users who want to update COBOL Runtime Environment for AIX, V5.1 to the next fix level
	"After installing COBOL Runtime Environment for AIX" on page 32	All users
Product removal	"Uninstalling COBOL Runtime Environment for AIX" on page 34	Users who want to uninstall COBOL Runtime Environment for AIX, V5.1

How to read the syntax diagrams

Use the following description to read the syntax diagrams in this information:

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line.

The >>--- symbol indicates the beginning of a syntax diagram.

The ---> symbol indicates that the syntax diagram is continued on the next line.

The >--- symbol indicates that the syntax diagram is continued from the previous line.

The --->< symbol indicates the end of a syntax diagram.

Diagrams of syntactical units other than complete statements start with the >--- symbol and end with the ---> symbol.

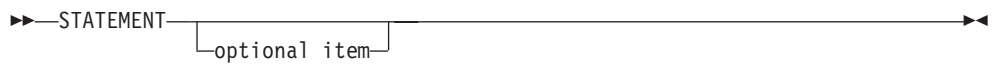
- Required items appear on the horizontal line (the main path).

Format



- Optional items appear below the main path.

Format



- When you can choose from two or more items, they appear vertically, in a stack. If you *must* choose one of the items, one item of the stack appears on the main path.

Format



If choosing one of the items is optional, the entire stack appears below the main path.

Format



- An arrow returning to the left above the main line indicates an item that can be repeated.

Format



A repeat arrow above a stack indicates that you can make more than one choice from the stacked items, or repeat a single choice.

- Variables appear in italic lowercase letters (for example, *paramx*). They represent user-supplied names or values.
- If punctuation marks, parentheses, arithmetic operators, or other such symbols are shown, they must be entered as part of the syntax.

How to send your comments

Your feedback is important in helping us to provide accurate, high-quality information. If you have any comments about this document or any other COBOL for AIX documentation, contact us in one of these ways:

- Use the Online Readers' Comment Form at www.ibm.com/software/awdtools/rcf/.
- Send your comments to the following address: compinfo@ca.ibm.com.

Be sure to include the name of the document, the publication number of the document, the version of the product, and, if applicable, the specific location (for example, page number or section heading) of the text that you are commenting on.

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.

Accessibility

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully. The accessibility features in AIX provide accessibility for COBOL for AIX and COBOL Runtime Environment for AIX.

The major accessibility features in AIX are:

- Interfaces that are commonly used by screen readers and screen-magnifier software
- Keyboard-only navigation
- An accessible command-line interface through a directly attached or networked remote Windows or Linux system using AT and terminal emulation software

Interface information

Assistive technology products work with the user interfaces that are found in AIX. For specific guidance information, see the documentation for the assistive technology product that you use to access AIX interfaces.

Keyboard navigation

For information about accessing AIX interfaces, see Accessibility features for AIX in the AIX Information Center.

Accessibility of this information

The English-language XHTML format of this information that will be provided in the IBM COBOL for AIX Knowledge Center is accessible to visually impaired individuals who use a screen reader.

To enable your screen reader to accurately read syntax diagrams, source code examples, and text that contains the period, comma, or PICTURE symbols, you must set the screen reader to speak all punctuation.

IBM and accessibility

See the IBM Human Ability and Accessibility Center for more information about the commitment that IBM has to accessibility.

Chapter 1. Before installing COBOL for AIX

Before you install IBM COBOL for AIX, V5.1:

- Familiarize yourself with the installation image, which contains the installable compiler filesets.
- Ensure that system prerequisites such as disk space and operating system are met.
- Determine the tasks you need to perform, depending on your installation requirements.
- Become either the root user or a user with administrator privileges.

Upgrading the evaluation copy of the COBOL for AIX compiler

You can upgrade the evaluation version of the compiler to the licensed version by installing the licensed product package on top of the evaluation package. By following the installation procedure for the licensed product package, the compiler license can be installed. Shared filesets between the evaluation and licensed versions that have already been installed are reported as already installed.

Installation image and filesets

The installation image for COBOL for AIX is available physically on an installation DVD, and electronically in the cobol.5.1.GM.aix.tar.Z installation package in the /usr/sys/inst.images directory.

The image includes filesets for the following compiler components:

- “COBOL for AIX compiler filesets 5.1”
- “COBOL for AIX non-production runtime environment filesets 5.1” on page 2
- “XL C++ runtime environment filesets 11.1” on page 2
- “SMARTdata Utilities filesets” on page 2
- “IBM Debugger filesets 7.1” on page 3

Filesets

The following tables list the filesets included in the installation image and the directories to which the fileset contents are installed during an installation. All filesets are automatically installed.

COBOL for AIX compiler filesets 5.1

Table 3. COBOL for AIX compiler filesets and installation locations

Fileset name	Fileset description	Installation locations
cobol.cmp	COBOL for AIX compiler	/usr/lpp/cobol/ /usr/lpp/cobol/bin/ /usr/lpp/cobol/samples/ /usr/lpp/cobol/samples/oo/ /usr/lpp/cobol/samples/odbc/ /usr/lpp/cobol/samples/msgexit/ /usr/lpp/cobol/properties/ /usr/lpp/cobol/properties/version/ /usr/lpp/cobol/include/ /usr/bin/

Table 3. COBOL for AIX compiler filesets and installation locations (continued)

Fileset name	Fileset description	Installation locations
cobol.dbg	COBOL for AIX debugger support	/usr/lpp/cobol/lib /usr/lib/
cobol.tools	COBOL tools	/usr/lpp/cobol/ /usr/lpp/cobol/bin/
cobol.license	COBOL for AIX electronic license LANG = [en_US, ja_JP, ja_JP]	/usr/lpp/swlag/cobolGM/51/LANG/ cobol.la
cobol.lic	COBOL for AIX license files	/usr/lpp/cobol/lib/
cobol.man	COBOL for AIX compiler invocation command man pages COBOL for AIX utility (scu and gdgmgr) man pages	/usr/share/man/man1 /usr/lpp/cobol/man/man1
cobol.msg.LANG	COBOL for AIX compiler messages LANG = [en_US, ja_JP, ja_JP]	/usr/lib/nls/msg/LANG/

COBOL for AIX non-production runtime environment filesets 5.1

Table 4. COBOL for AIX non-production runtime environment filesets and installation locations

Fileset name	Fileset description	Installation locations
cobol.rte	COBOL for AIX non-production runtime libraries	/usr/lpp/cobol/ /usr/lpp/cobol/lib/ /usr/lib/
cobol.rte.msg.LANG	COBOL for AIX non-production runtime messages LANG = [en_US, ja_JP, ja_JP]	/usr/lib/nls/msg/LANG/

XL C++ runtime environment filesets 11.1

Table 5. XL C++ runtime environment filesets and installation locations

Fileset name	Fileset description	Installation locations
xlC.rte	XL C++ runtime libraries	/usr/lpp/xlC/lib/ /usr/lpp/xlC/lib/profiled/ /usr/ccs/lib/libp/
xlC.aix61.rte	XL C++ runtime environment for AIX 6.1 and AIX 7.1 libraries	/usr/lpp/xlC/lib/aix61/ /usr/lpp/xlC/lib/profiled/aix61/
xlC.msg.LANG	XL C++ runtime messages LANG = [en_US, ja_JP, ja_JP]	/usr/lib/nls/msg/LANG/

SMARTdata Utilities filesets

Table 6. SdU filesets and installation locations

Fileset name	Fileset description	Installation locations
SdU.sfs	SMARTdata Utilities SFS	/usr/lpp/SdU/ /usr/lpp/SdU/sfs/ /usr/lpp/SdU/sfs/lib/ /usr/lib/
SdU.vsam	SMARTdata Utilities VSAM	/usr/lpp/SdU/ /usr/lpp/SdU/vsam/ /usr/lpp/SdU/vsam/lib/ /usr/lib/

Important: SdU filesets are compatible with previous releases of COBOL for AIX, Version 2 or later and PL/I for AIX, Version 2 or later.

IBM Debugger filesets 7.1

Table 7. IBM Debugger filesets

Fileset name	Fileset description
ibmdebugger	IBM Debugger for AIX
ibmdebugger.engine	IBM Debugger for AIX Compiled Languages Engine
ibmdebugger.engine.msg.LANG	IBM Debugger messages <i>LANG = [de_DE, en_US, es_ES, fr_FR, it_IT, ja_JP, ko_KR, pt_BR, zh_CN, zh_TW]</i>
ibmdebugger.jre	Supersede entry, not installed
ibmdebugger.ui	Supersede entry, not installed

The IBM Debugger for AIX, V7.1 is included with the COBOL for AIX installation image. This source-level debugger uses a client/server model:

- The debug engine is a server component that is installed on AIX.
- The debug client is a graphical user interface that is installed on Windows workstations.

The installation file, `idebug.install_7.1.0.zip`, of the Windows debug client is in the `IBMdebugger/windows/` directory of the installation image.

Notes:

- The IBM Debugger for AIX, V7.1 supersedes the IBM Distributed Debugger. If the IBM Distributed Debugger V9.2 is installed on your system, it will be removed upon installation of the IBM Debugger for AIX, V7.1. The post-installation script then modifies the `idebug` fileset levels in the Object Data Manager (ODM) database to 99.99.9999.9999 to prevent future installations of `idebug.*` filesets.
- The AIX client of the IBM Debugger for AIX is discontinued.
- The IBM Debugger for AIX, V7.1 debug engine filesets, `ibmdebugger.*`, are automatically installed during a basic compiler installation. To install the Windows debug client of the IBM Debugger, see “Installation information for the Windows client” on page 5.

Preparing the electronic distribution package

If you have downloaded the COBOL for AIX electronic distribution package, `cobol.5.1.GM.aix.tar.Z`, follow these steps before attempting to install:

Remember: You must be logged in as root user or have superuser authority.

1. To uncompress and unpack the file, use the command:

```
zcat cobol.5.1.GM.aix.tar.Z | tar -xvf -
```
2. Use the command `inutoc directory_name` to generate a `.toc` file in the specified directory.

The following example shows the steps to prepare the electronic distribution package, `cobol.5.1.GM.aix.tar.Z`, located in the new directory, `/compiler/install/` for installation.

```
cd /compiler/install
zcat cobol.5.1.GM.aix.tar.Z | tar -xvf -
cd usr/sys/inst.images
inutoc .
```

Refer to “System prerequisites” on page 6 to ensure that system prerequisites are met and the installation method described in Chapter 2, “Installing COBOL for AIX,” on page 9 to install the compiler.

National language support

The COBOL for AIX compiler and runtime messages support the following language locales:

- en_US (ISO8859-1)
- ja_JP (IBM-eucJP)
- Ja_JP (IBM-943)

English (en_US) is the default national language. Following installation, you can set the NLSPATH so that messages are displayed in a different language. See “Enabling the COBOL for AIX error messages” on page 19.

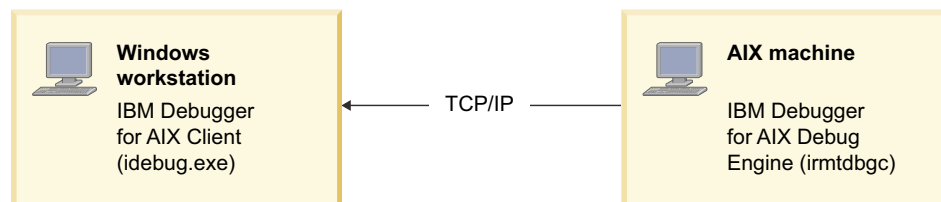
IBM Debugger for AIX installation

The IBM Debugger for AIX is composed of an AIX debug engine and a Windows debug client. The AIX debug engine filesets are automatically installed during a basic compiler installation. You can install the Windows debug client of the IBM Debugger.

Debugger components

The IBM Debugger for AIX uses a client/server model composed of two components:

- The debug engine (irmtdbgc), which is a server component installed on the AIX machine.
- The debug client (idebug.exe), which is a graphical user interface installed on a Windows workstation.



Notes:

- The AIX client of the IBM Debugger for AIX is discontinued. For information about the Windows client, see “Installation information for the Windows client” on page 5.
- The IBM Debugger for AIX, V7.1 debug engine is a 64-bit application.
- The IBM Debugger for AIX, V7.1 supersedes the IBM Distributed Debugger. If the IBM Distributed Debugger V9.2 is installed on your system, it will be removed upon installation of the IBM Debugger for AIX, V7.1. The post-installation script then modifies the idebug fileset levels in the Object Data Manager (ODM) database to 99.99.9999.9999 to prevent future installations of idebug.* filesets.
- Either the debug engine or the debug client reports itself as version 7.1.0. Collectively, these components are referred to as IBM Debugger for AIX, V7.1.

Installation information for the AIX debug engine

Required operating system

IBM Debugger for AIX, V7.1 debug engine must be installed on one of the following AIX operating systems:

- IBM AIX V6.1
- IBM AIX V7.1

Compatibility with previous debugger versions

The installation of the IBM Debugger for AIX debug engine uninstalls any existing debuggers. To restore previous debuggers, do the following steps:

1. Uninstall the IBM Debugger for AIX, V7.1 debug engine with this command:

```
installp -ug ibmdebugger
```
2. Reinstall any previous debuggers according to their documentation.

Installation instructions

Note: The IBM Debugger for AIX, V7.1 debug engine filesets, `ibmdebugger.*`, are installed by default during a basic compiler installation. If you did not do a default compiler installation, you can follow the instructions to install the IBM Debugger for AIX debug engine on your AIX machine.

To install the IBM Debugger for AIX debug engine on your AIX machine, do the following steps:

1. Enter the `usr/sys/inst.images/` directory of the compiler installation image.
2. Run this command:

```
installp -aXgd . ibmdebugger
```

The debug engine will be installed to the `/usr/idebug/` directory.

For all the IBM debugger filesets that are automatically installed, see Table 7 on page 3 in *The installation image and filesets* topic.

Installation information for the Windows client

To install the IBM Debugger for AIX debug client on your Windows workstation, do the following steps:

1. Copy the compressed file, `IBMdebugger/windows/idebug.install_7.1.0.zip`, from the compiler CD-ROM or electronic image to your Windows machine, and uncompress it.
2. Run `install.exe`.

The installation process also installs the IBM Installation Manager.

If previous versions of the IBM Debugger for AIX debug client present, you must uninstall them before you install this version.

To uninstall the debug client, start the IBM Installation Manager and select the **Uninstall** option.

For information about the included Java™ Runtime Environment, see `readmefirst.win32.txt` in the `jre/docs/` directory of the installation image.

System prerequisites

All system prerequisites must be present on your system before COBOL for AIX can be successfully installed and run.

Hardware requirements:

- COBOL for AIX, V5.1 and its generated object programs run on any processors that are supported by AIX V6.1.2.0 or later, or AIX V7.1. These processors must be configured with at least one supported display, keyboard, and mouse.
- An SVGA 800 x 600 display (1024 x 764 recommended).
- 256 MB of memory (512 MB, or higher, recommended).
- 210 MB of disk space for the COBOL compiler, tools, and product information.

Software requirements: Required programs

COBOL for AIX, V5.1 and its generated object programs run on the following operating systems: AIX V6.1.2.0 or later, or AIX V7.1.

To view and print PDF and license agreement files, you need the Adobe Acrobat Reader.

Software requirements: Optional programs

To use COBOL for AIX with optional programs such as online help, DB2[®], CICS[®], and Java, additional products are required:

- Online help: An HTML browser to access HTML documentation in the knowledge center.
- DB2: COBOL applications that embed EXEC SQL statements require DB2 V9.5 for Linux, UNIX, and Windows with fix pack 3, or DB2 V9.7 for Linux, UNIX, and Windows.
- CICS: COBOL applications that embed EXEC CICS statements require TXSeries[®] for Multiplatforms, Version 7.1, TXSeries for Multiplatforms, Version 8.1, or TXSeries for Multiplatforms, Version 8.2.
- Java:
 - Applications that use object-oriented COBOL syntax for Java interoperability require Java 2 Platform, Standard Edition, V7.
 - 64-bit applications require the 64-bit version of the Java SDK.
 - 32-bit applications require the 32-bit version of the Java SDK.

Verifying the amount of hard disk space available

You can use the following command to determine the amount of space available in the installation location (/usr/lpp/cobol/):

```
df -m /usr
```

Verifying that the required filesets are installed

You must have installed the following filesets on your system to install IBM COBOL for AIX, V5.1:

Fileset name	Fileset description
AIX 6.1: bos.rte.6.1.2.0 or later AIX 7.1: bos.rte.7.1.0.0	Base operating system run time

Fileset name	Fileset description
AIX 6.1: bos.rte.libc.6.1.2.0 or later AIX 7.1: bos.rte.libc.7.1.0.0	Base application runtime library
AIX 6.1: bos.rte.aio.6.1.2.0 or later AIX 7.1: bos.rte.aio.7.1.0.0	Base operating system run time posix asynchronous I/O

Note: You need to enable posix asynchronous I/O (AIO) in order for it to work. For instructions about how to enable posix I/O, see the AIX documentation about AIO.

At least one of the following locale-specific filesets must be installed on your system:

Fileset name	Fileset description
bos.loc.LANG	Base locale support
bos.loc.pc.LANG	Base system locale PC code set
bos.loc.utf.LANG	Base system locale UTF code set
bos.loc.iso.LANG	Base system locale ISO code set

You can view information about the installed filesets by using the **ls1pp** command.

Use the following command to determine whether these filesets have been installed:

```
ls1pp -L bos.loc.* bos.rte bos.rte.libc
```

Previewing the installation and license agreements

Before installing IBM COBOL for AIX, V5.1, you can verify the installation process, check file sizes and disk space, and preview the license agreements using either SMIT or `installp`.

The terms and conditions for using COBOL for AIX are specified in the following PDF files, which are located in the root directory of the distribution package:

- LicAgree.pdf
- LicInfo.pdf

After installation, the license PDF files can be found in the `/usr/lpp/cobol/` directory.

- If you install the licensed product package, the file names are:
 - LicenseAgreement.GM.pdf
 - LicenseInformation.GM.pdf
- If you install the evaluation package, the file names are:
 - LicenseAgreement.EVAL.pdf
 - LicenseInformation.EVAL.pdf

You can view both sets of files if you install the licensed product package on top of the evaluation package.

Using SMIT

You can use the System Management Interface Tool (SMIT) to preview the COBOL for AIX installation.

Follow the steps to install the compiler to the location given in “Using SMIT” on page 9. When prompted with the SMIT dialog to customize the installation in step 3, set the Preview only? field to **yes**. With this setting enabled, SMIT displays progress messages at each stage of the installation but does not actually install the compiler on your system.

Using installp

You can also preview the command-line installation process and write the output to a log file, using the **installp** command. Follow the steps to install the compiler to the location given in “Using installp” on page 10 and specify the **-p** flag to preview the process without installing the compiler.

The following example previews the installation of all available compiler filesets in the /cdrom/usr/sys/inst.images source directory to the location /usr/lpp/cobol/, and writes an installation log file to /tmp/install.log.

Example:

```
installp -paXgd /cdrom/usr/sys/inst.images -e /tmp/install.log all
```

The following example previews the license text in the /cdrom/usr/sys/inst.images source directory, and writes a log file to /tmp/install.license.log.

Example:

```
installp -EpaXgd /cdrom/usr/sys/inst.images -e /tmp/install.license.log all
```

Chapter 2. Installing COBOL for AIX

The installation methods below install COBOL for AIX into the `/usr/lpp/cobol/` directory. If you have root access or a profile with superuser privileges, you can use either the System Management Interface Tool (SMIT) or the `installp` command to install the compiler.

You can use the installation methods to perform any of the following tasks:

- Install COBOL for AIX, V5.1 on a clean system.
- Install COBOL for AIX, V5.1 on a system where IBM PL/I for AIX, V2.0 or later is already installed. In this case, both compilers use the SMARTdata Utilities provided with COBOL for AIX, V5.1.
- Install an update on a system where IBM COBOL for AIX, V5.1 has already been installed. In this case, use the procedure in Chapter 3, “Updating the installation of COBOL for AIX,” on page 13.

Tasks for installation

Before you perform an installation, you must make sure that you have a user account with administrator privileges and that your system meets all system requirements. After you have finished installing the compiler, you must confirm that the installation was successful and enable the man pages of the compiler.

The complete procedure for installation is outlined in the following table.

Table 8. Steps for installation: new or upgrade COBOL for AIX installation

Task	For more information, see . . .
Become either the root user or a user with administrator privileges.	Documentation supplied with the operating system.
Ensure that all system prerequisites are met.	“System prerequisites” on page 6
Use SMIT or the <code>installp</code> command to install and configure the compiler.	“Using SMIT” or “Using <code>installp</code> ” on page 10
Confirm that the compiler packages were successfully installed, and test the installation.	“Checking compiler and fileset information” on page 17, “Testing the installation of COBOL for AIX” on page 21
Enable the compiler man pages.	“Enabling the man pages” on page 19
If your system locale or encoding, or both are <i>not</i> <code>en_US</code> , enable the compiler and runtime error messages. Otherwise, you can skip this step.	“Enabling the COBOL for AIX error messages” on page 19

Using SMIT

The SMIT interface guides you step-by-step through the installation process.

Remember:

- Any language specific filesets that are not supported by your system produces an error message and fails to install. For example, if local support is not present

for Ja_JP, installation might fail when attempting to install a Ja_JP specific language fileset for the compiler. These error messages are normal and can be ignored.

- The runtime libraries and compiler filesets are always required.
- You do not need all of the compile-time and runtime message catalogs, only those for the national languages that you need for compile-time and runtime messages.
- Messages are displayed as each part is successfully installed.
- The installation log is stored in the `/home/smit.log` file.

To install the compiler using the SMIT interface, follow these steps:

1. Enter the command `smit install_latest`. This command invokes SMIT, which presents a menu-driven user interface for the installation process. You must specify the device and directory in the INPUT device/directory of the software field.
2. Press **F4** to select from a list of suggested devices and directories, or type in the name of the CD-ROM device or the path to the location of the packages. If you want to install over a network you must have a network server installed, and then specify the directory on the client that corresponds to the installation source on the network server.
3. Press **Enter**. At this stage you are prompted with a list of questions that will help you customize the compiler installation on your system. Verify the default values, or modify them where necessary to accommodate your preferences.

Important: You must select **yes** next to Accept new LICENSE agreements? field to continue with the installation.

Tip: To preview the installation process without actually installing the compiler, select **yes** next to the Preview only? field.

4. Press **Enter** and then **Enter** again.

Using installp

You can install COBOL for AIX directly from the command line using the AIX command `installp`.

Remember: Any language specific filesets that are not supported by your system produces an error message and fails to install. For example, if local support is not present for Ja_JP, install fails when it attempts to install a Ja_JP specific language fileset for the compiler. These error messages are normal and can be ignored.

To install the compiler and write the installation output to a log file, run this `installp` command:

```
installp -aYgd install_images_location -e logfile all
```

►-----installp-----aYg-----[p]-----[X]-----[E]-----[d--install_images_location]-----[e--logfile]-----all-----►

-aYg

Specifies that all the latest and prerequisite installable filesets available in the `install_images_location` directory are applied and committed, and that the required software license agreement is accepted.

- p** Performs a preview of the installation process by running the preinstallation checks. See “Using installp” on page 8.
- X** Attempts to expand the file system at the installation location if there is insufficient space to complete the install.
- E** Displays software license agreements. This flag is only valid with the **-a** or **-l** flags. If the **-E** flag is specified with the **-a** flag, a new section is displayed showing the pending license agreements associated with the selected filesets. If the **-E** flag is specified with the **-l** flag, output is displayed showing the license agreements associated with all filesets on the media.
- d** *install_images_location*
Specifies the directory where the filesets are located. This path might also be a mounted CD-ROM drive.
- e** *logfile*
Specifies the name and location of the installation log file.
- all**
Indicates that all the filesets in *install_images_location* should be attempted during installation.

Important: Although you can choose to install the filesets that you need, it is recommended that you install all the filesets. Otherwise you might encounter errors.

The following example installs all available compiler filesets in the /cdrom/usr/sys/inst.images source directory to the locations specified in “Filesets” on page 1, and writes an installation log file to /tmp/install.log.

Example:

```
installp -aXYgd /cdrom/usr/sys/inst.images -e /tmp/install.log all
```

Chapter 3. Updating the installation of COBOL for AIX

A program temporary fix (PTF) is an update to COBOL for AIX that provides a fix or multiple fixes to the product.

You can download the latest compiler updates from the support website: http://www.ibm.com/support/entry/portal/overview/software/rational/cobol_for_aix. You can also find the instructions at Fix Central.

You can install updates by using either System Management Interface Tool (SMIT) or the `installp` command.

Tasks for updating installation

The complete procedure for updating the compiler installation is outlined in the following table.

Table 9. Steps for installation: update COBOL for AIX installation

Task	For more information, see . . .
Become either the root user or a user with administrator privileges.	Documentation supplied with the operating system.
Ensure that all system prerequisites are met.	"System prerequisites" on page 6
Download, uncompress, and unpack the PTF package.	"Preparing a PTF package for installation"
Generate a .toc file.	"Preparing a PTF package for installation"
Use SMIT or the <code>installp</code> command to install PTFs, using the default paths.	"Using SMIT" on page 14 or "Using <code>installp</code> " on page 14
Confirm that the compiler packages were successfully installed, and test the installation.	"Checking compiler and fileset information" on page 17, "Testing the installation of COBOL for AIX" on page 21

Preparing a PTF package for installation

Updates to the compiler are supplied as PTF packages. Before these PTF packages can be used to update the compiler, they must be downloaded and uncompressed, and a .toc file must be generated.

To prepare the update package for installation, follow these steps:

Remember: You must be logged in as root or have superuser authority.

1. Download the required PTF package (for example `cobol.51.YYMMDD.tar.Z`) into an empty directory.
2. Restore the compressed file and extract the PTF filesets from the downloaded package. To uncompress and unpack the tar file, use the command:

```
zcat package_name.tar.Z | tar -xvf -
```
3. Use the command `inutoc directory_name` to generate a .toc file in the same directory as the unpacked filesets.

The following example shows the steps to prepare the package, `cobol.51.YYMMDD.tar.Z`, located in the new directory, `/compiler/update/` for installation:

```
cd /compiler/update
zcat cobol.51.YYMMDD.tar.Z | tar -xvf -
inutoc .
```

Using SMIT

To install a PTF using the SMIT interface, follow these steps:

1. Run the command: `smit update_all`.
This command invokes SMIT, which presents a menu-driven user interface for the installation process.
2. When asked to, specify the path of the directory where the PTF filesets and `.toc` are located in the INPUT device/directory of the software field.
3. Press **Enter**.
At this stage, you are prompted with a list of questions to help you customize the compiler installation on your system. Verify the default values, or modify them where necessary, to accommodate your preferences.
4. Press **Enter** and then **Enter** again.
Messages display as each part is successfully installed, and the installation log is stored to `/home/smit.log`.

Tip: PTF packages often include base level filesets as prerequisites. If the command `smit update_all` is used, then those packages will not be installed, which might cause requisite failures. For this reason, use `smit install_all` to install the prerequisites and commit the updates.

Using installp

To install a PTF by using the `installp` command and write the output to a log file, run this command:

```
►--installp--ag--[-p] [-X] [-E] [-d-PTF_filesets_location] [-e-logfile] fileset_names--►
```

```
installp -aXgd PTF_filesets_location -e logfile fileset_names
```

-ag

Specifies that all the latest installable and requisite filesets available in the `PTF_filesets_location` directory are applied and committed.

-p

Performs a preview of the installation process by running the preinstallation checks. See “Using installp” on page 8.

-X

Attempts to expand the file system at the default location if there is insufficient space to complete the install.

-E Displays software license agreements. This flag is only valid with the **-a** or **-l** flags. If the **-E** flag is specified with the **-a** flag, a new section is displayed showing the pending license agreements associated with the selected filesets. If the **-E** flag is specified with the **-l** flag, output is displayed showing the license agreements associated with all filesets on the media.

-d *PTF_filesets_location*

Specifies the directory where the filesets are located. This path might also be a mounted CD-ROM drive.

-e *logfile*

Specifies the name and location of the installation log file.

filesset_names

Specifies a list of names of the filesets in *PTF_filesets_location* that you want to install.

Tip: The keyword *all* can be used to indicate that all filesets must be attempted during installation.

The following example installs all available PTF filesets in the `/compiler/update/` source directory to the default locations, as specified in “Filesets” on page 1, and writes an installation log file to `/tmp/install.log`.

Example:

```
installp -aXgd /compiler/update/ -e /tmp/install.log all
```

Product version migration

If you have a previous version of the compiler, you can replace it with the current version.

If you are upgrading to COBOL for AIX, V5.1 using Chapter 2, “Installing COBOL for AIX,” on page 9, any previous versions of the filesets already installed on your system are automatically detected and migrated to the current version.

After COBOL for AIX, V5.1 is installed, you can only install older compiler versions after uninstalling V5.1 first.

Chapter 4. After installing COBOL for AIX

There are some optional setup and verification procedures that you can use after you have installed the compiler. You might also want to use the product information.

These are documented in the following sections:

- “Checking compiler and fileset information”
- “Enabling IBM License Metric Tool (ILMT) and Tivoli Asset Discovery for Distributed (TADd)”
- “Setting environment variables” on page 18
- “Enabling the COBOL for AIX error messages” on page 19
- “Enabling the man pages” on page 19
- “Accessing the information” on page 19
- “Testing the installation of COBOL for AIX” on page 21
- “COBOL for AIX library components” on page 21
- “Accessing additional information” on page 22

Checking compiler and fileset information

You can check the versions of the compiler and individual filesets installed by using the `lslpp` command:

`lslpp option_string`

where *option_string* can be:

`-L fileset`

Displays the version and state of the fileset specified

`-f fileset`

Displays the files and symbolic links associated with the fileset specified

`-w filename`

Indicates which fileset belongs to the specified file (*filename*)

Restriction: The command `lslpp` detects only filesets that have been installed using the SMIT or `installp` methods.

For example, to check the version of the compiler installed, enter the following command:

`lslpp -L cobol.cmp`

Enabling IBM License Metric Tool (ILMT) and Tivoli Asset Discovery for Distributed (TADd)

IBM® License Metric Tool (ILMT) and Tivoli® Asset Discovery for Distributed (TADd) can help you manage software usage metering and license allocation services on supported systems. In general, ILMT and TADd recognize and monitor the products that are installed and in use on your system.

ILMT and TADd are enabled for IBM COBOL for AIX, V5.1 for inventory support only, which means that ILMT and TADd can detect product installation of COBOL for AIX but not its usage.

Note: ILMT and TADd are not part of the COBOL for AIX compiler offering, and must be purchased and installed separately.

Once installed and activated, ILMT and TADd scan your system for product inventory signatures that indicate whether a given product is installed on your system. ILMT and TADd also identify the version, release, and modification levels of the product. Inventory signature files are not updated after PTF installation.

When IBM COBOL for AIX, V5.1 is installed, the inventory signature file is 1986-03.com.ibm_IBM_COBOL_for_AIX-5.1.0.swidtag, which is located in the /usr/lpp/cobol/iso-swid/ directory.

For more information, see IBM License Metric Tool and Tivoli® Asset Discovery for Distributed.

Setting environment variables

Before using the compiler, verify that the environment variables LANG, MANPATH, NLSPATH, and PATH are set.

To determine the current setting of these variables, use this command:

```
echo "\n $LANG \n\n $NLSPATH \n\n $MANPATH \n\n $PATH"
```

LANG	Specifies the national language for message files. See “National language support” on page 4. The LANG environment variable can be set to any of the locales provided on the system. See the description of locales in <i>AIX General Programming Concepts</i> for more information. The national language code for United States English is en_US. If the appropriate message catalogs have been installed on your system, any other valid national language code can be substituted for en_US.
MANPATH	Optionally specifies the directory search path for finding man pages. MANPATH must contain /usr/lpp/cobol/man before or after the default man path. For example, to read the man pages of the COBOL for AIX utilities (scu and gdgmgr), add the following directory to the MANPATH environment variable by entering this command: <pre>export MANPATH=\$MANPATH:/usr/lpp/cobol/man</pre>
NLSPATH	Specifies the path name of the message files.
PATH	Specifies the directory search path for the executable files of the compiler. For example, to run the COBOL for AIX utilities (scu and gdgmgr), add the following directory to the PATH environment variable by entering this command: <pre>export PATH=\$PATH:/usr/lpp/cobol/bin</pre>

Remember: The LANG and NLSPATH environment variables are initialized when the operating system is installed, and might differ from the ones you want to use.

Enabling the COBOL for AIX error messages

If your system uses the en_US locale and encoding, the compiler and runtime message catalogs are automatically configured to display correctly. However, if your system uses any other supported locale, you must set the NLSPATH environment variable so that the compiler and runtime functions can find the appropriate message catalogs following installation.

For example, to specify the Japanese locale with the IBM_eucJP code page, use the following commands:

```
LANG=ja_JP
NLSPATH=/usr/lib/nls/msg/%L/%N:/usr/lib/nls/msg/prime/%N
export LANG NLSPATH
```

Substitute any valid national language code for ja_JP, provided the associated message catalogs are installed.

See “National language support” on page 4 for a list of supported language locales.

Enabling the man pages

man pages are provided for the compiler invocation commands and other compiler utilities (scu and gdgmgr).

Before you can view the COBOL for AIX utility man pages, you must add the man page directory to the MANPATH environment variable by entering the following command:

```
export MANPATH=$MANPATH:/usr/lpp/cobol/man
```

The directory search path for finding the compiler invocation command man pages is already set in the default man path.

To test whether the man pages have been successfully installed, open one or more of the man pages, as described in “Viewing the man pages” on page 20.

Accessing the information

This section provides an overview of the information offered with the product. Information about the compiler, its debugger and utilities, and the COBOL programming language is provided through an HTML-based knowledge center on the IBM external web and through publications in Portable Document Format (PDF).

Accessing the Installation Guide, Quick Start Guide and License Agreement

The *Installation Guide* (install.pdf) is located in the doc/en_US/pdf/ directory of the distribution package. Alternatively, the *Installation Guide* (install.pdf) is available for download from the COBOL for AIX library page at <http://www.ibm.com/support/docview.wss?uid=swg27036736>.

The *Quick Start Guide* (quickstart.pdf) is located in the root directory of the distribution package.

The *License Agreement* (LicAgree.pdf) is also located in the root directory of the distribution package. After the installation, the license files can be found in the /usr/lpp/cobol/ directory.

Accessing the online information

HTML versions of the COBOL for AIX information including the IBM Debugger for AIX, V7.1 information are part of the COBOL for AIX Knowledge Center at http://www.ibm.com/support/knowledgecenter/SS6SGM_5.1.0/com.ibm.cobol51.aix.doc/welcome.html.

The IBM Debugger for AIX, V7.1 information consists of HTML online help and additional HTML information accessible from the debugger graphical user interface.

Context-sensitive help for the debugger is available by pressing F1 while you are using the debugger.

For the latest information regarding the IBM Debugger for AIX, V7.1, check the README file for the debugger. You can find the README file for the debugger in /usr/idebug/readme/.

Accessing PDF files

PDF versions of the COBOL for AIX information are available for download from the COBOL for AIX library page at <http://www.ibm.com/support/docview.wss?uid=swg27036736>. You can view and print this information by using the Adobe Acrobat Reader. If you do not already have the Adobe Acrobat Reader program installed, you can download it from the Adobe website at <http://www.adobe.com>.

The following PDF files are available from the COBOL for AIX library page:

- *COBOL for AIX Installation Guide* (this information), GC27-5402, provides information about prerequisite products and steps for installing COBOL for AIX and COBOL Runtime Environment for AIX.
- *COBOL for AIX Programming Guide*, SC27-5404, provides information about how to write, compile, link-edit, and run COBOL for AIX programs.
- *COBOL for AIX Language Reference*, SC27-5403, describes the COBOL language supported by IBM COBOL for AIX, V5.1.
- *VSAM File System Reply Messages*, SC27-5405, provides information about the causes of reply messages that you might receive while using the Virtual Storage Access Method (VSAM) file system.

Viewing the man pages

man pages are included for all compiler invocation commands and utilities (scu and gdgmgr).

For instructions about how to enable the man pages for viewing, see “Enabling the man pages” on page 19.

To invoke a man page, run this command:

man *command*

command is any COBOL for AIX invocation or utility command.

Examples:

```
man cob2
man scu
man gdgmgr
```

Testing the installation of COBOL for AIX

To test the product installation and the critical search paths, try building, compiling, and running a simple program.

For example:

1. Create the following COBOL program:

```
[hello.cb1]
000100 IDENTIFICATION DIVISION.
000200 PROGRAM-ID. HELLO.
000300 AUTHOR. JOE PROGRAMMER.
000400 ENVIRONMENT DIVISION.
000500 DATA DIVISION.
000600 PROCEDURE DIVISION.
000700 MAINLINE.
000800 DISPLAY 'Hello World!'.
000900 STOP RUN.
```

2. Compile the test program. For example:

```
cob2 hello.cb1 -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.

COBOL for AIX library components

The runtime library components in IBM COBOL for AIX, V5.1 cannot be redistributed with developed applications. The runtime in the COBOL for AIX product can only be used in a development environment, on the same machine as the COBOL for AIX compiler. Deployment of COBOL applications in an execution only environment will require the new COBOL Runtime Environment for AIX, V5.1 product.

About this task

COBOL Runtime Environment for AIX is the runtime component of the COBOL for AIX product, which is used for running COBOL applications. Deployment of IBM COBOL applications will require the COBOL Runtime Environment to execute the applications. With this orderable COBOL Runtime Environment, the redistribution of runtime libraries in the COBOL for AIX, V5.1 product is not required nor permitted.

For details, see Chapter 6, "COBOL Runtime Environment for AIX," on page 25.

Accessing additional information

For the latest information about COBOL for AIX, visit the IBM COBOL for AIX website at http://www.ibm.com/support/entry/portal/overview/software/rational/cobol_for_aix.

Chapter 5. Uninstalling COBOL for AIX

This section outlines the steps required to uninstall COBOL for AIX.

Remember:

1. You must be a root user or a user with administrator privileges to uninstall this product.
2. Some filesets might not be uninstalled if they are required by other installed products. See “Filesets” on page 1 for details about filesets included with IBM COBOL for AIX, V5.1.
3. Because uninstalling dependent packages automatically might introduce problems, it is recommended that you preview uninstallation to ensure that all dependent filesets are no longer required.

Uninstalling an installation

Remember: You must be a root user or a user with administrator privileges to uninstall the product.

To uninstall the compiler, you can use either **SMIT** or `installp` to remove the compiler filesets.

If you attempt to remove a fileset that is required by another installed fileset, the selected fileset will not be removed unless its dependents are also being removed.

Using SMIT

To uninstall IBM COBOL for AIX, V5.1 using the SMIT interface, enter the following command:

```
smit remove
```

In the SOFTWARE name field, enter the fileset names (wildcards accepted) separated by a space. If you have PL/I for AIX installed, you must not remove any filesets which are shared between the compilers. In this case, enter the following name in the field:

```
cobol.*
```

Otherwise, enter the following name in the field:

```
cobol.* SdU.*
```

To uninstall the IBM Debugger for AIX, V7.1 engine on AIX, also enter the following name in the field:

```
ibmdebugger*
```

In the REMOVE dependent software? field, select **yes**.

To preview the uninstallation, set the PREVIEW only? value to **yes**.

Using installp

To uninstall IBM COBOL for AIX, V5.1 using the `installp` command, enter the following command:

```
installp -u filesets
```

where *filesets* is the list of filesets (wildcards accepted) to uninstall.

If you have PL/I for AIX installed, you must not remove any filesets which are shared between the compilers. In this case, *filesets* are as follows:

```
'cobol.*'
```

Otherwise, *filesets* are as follows:

```
'cobol.*' 'SdU.*'
```

To uninstall the IBM Debugger for AIX, V7.1 engine on AIX, enter the following command:

```
installp -u ibmdebugger
```

To uninstall the Windows remote debug interface, see the instructions in `idebug.install_7.1.0\README.idebug.txt`.

For the latest information regarding the IBM Debugger for AIX, V7.1, check the README file for the debugger. You can find the README file for the debugger in `/usr/idebug/readme/`.

Cleaning up kernel and library memory

To remove any currently unused modules in kernel and library memory, enter the following command:

```
slibclean
```

Uninstalling the electronic license agreement

The license agreement text file remains on the system after the license fileset has been uninstalled, so that you do not have to accept the product license again if you reinstall COBOL for AIX.

To remove the license agreement text file, run the commands:

```
ODMDIR=/usr/lib/objrepos; odmdelete -o lag -q "fileset=cobol.license"  
rm -rf /usr/lpp/swlag/cobolGM/51/*/cobol.la
```

Chapter 6. COBOL Runtime Environment for AIX

COBOL Runtime Environment for AIX is the runtime component of the COBOL for AIX product, which is used for running COBOL applications. Deployment of IBM COBOL applications will require the COBOL Runtime Environment to execute the applications. With this orderable COBOL Runtime Environment, the redistribution of runtime libraries in the COBOL for AIX, V5.1 product is not required nor permitted.

COBOL Runtime Environment for AIX is a complete set of COBOL for AIX library components for production use, which includes runtime libraries, runtime messages, SMARTdata Utilities (SdU) and Encina Structured File Server (SFS) file systems.

Before installing COBOL Runtime Environment for AIX

Before you install IBM COBOL Runtime Environment for AIX, V5.1:

- Familiarize yourself with the installation image, which contains the installable runtime environment files.
- Ensure that system prerequisites such as disk space and operating system are met.
- Determine the tasks you need to perform, depending on your installation requirements.
- Become either the root user or a user with administrator privileges.

Installation image and filesets

The installation image for COBOL Runtime Environment for AIX is available physically on an installation DVD, and electronically in the `cobol.5.1.runtime.aix.GM.tar.Z` installation package in the `/usr/sys/inst.images` directory.

The image includes the following filesets:

- “COBOL Runtime Environment for AIX, V5.1 filesets”
- “XL C++ runtime environment filesets 11.1” on page 26
- “SMARTdata Utilities filesets” on page 26

Filesets

The following tables list the filesets included in the installation image and the directories to which the fileset contents are installed during an installation. All filesets are automatically installed.

COBOL Runtime Environment for AIX, V5.1 filesets

Table 10. COBOL Runtime Environment for AIX filesets and installation locations

Fileset name	Fileset description	Installation locations
cobol.rte	Runtime libraries in COBOL Runtime Environment for AIX	/usr/lpp/cobol/lib

Table 10. COBOL Runtime Environment for AIX filesets and installation locations (continued)

Fileset name	Fileset description	Installation locations
cobol.rte.msg.LANG	Runtime messages in COBOL Runtime Environment for AIX LANG = [en_US, ja_JP, ja_JP]	/usr/lib/nls/msg/LANG/
cobolrte.license	COBOL Runtime Environment for AIX electronic license LANG = [en_US, ja_JP, ja_JP]	/usr/lpp/swlag/cobol/51.runtime/LANG/cobol.la
cobol.rte.lic	COBOL Runtime Environment for AIX license files	/usr/lpp/cobol/lib/

XL C++ runtime environment filesets 11.1

Table 11. XL C++ runtime environment filesets and installation locations

Fileset name	Fileset description	Installation locations
xlC.rte	XL C++ runtime libraries	/usr/lpp/xlC/lib/ /usr/lpp/xlC/lib/profiled/ /usr/ccs/lib/libp/
xlC.aix61.rte	XL C++ runtime environment for AIX 6.1 and AIX 7.1 libraries	/usr/lpp/xlC/lib/aix61/ /usr/lpp/xlC/lib/profiled/aix61/
xlC.msg.LANG	XL C++ runtime messages LANG = [en_US, ja_JP, ja_JP]	/usr/lib/nls/msg/LANG/

SMARTdata Utilities filesets

Table 12. SdU filesets and installation locations

Fileset name	Fileset description	Installation locations
SdU.sfs	SMARTdata Utilities SFS	/usr/lpp/SdU/sfs
SdU.vsam	SMARTdata Utilities VSAM	/usr/lpp/SdU/vsam

System prerequisites

All system prerequisites must be present on your system before COBOL Runtime Environment for AIX can be successfully installed and run.

Hardware requirements:

- COBOL Runtime Environment for AIX, V5.1 and its generated object programs run on any processors that are supported by AIX V6.1.2.0 or later, or AIX V7.1. These processors must be configured with at least one supported display, keyboard, and mouse.
- An SVGA 800 x 600 display (1024 x 764 recommended).
- 50 MB of disk space.

Software requirements: Required programs

COBOL Runtime Environment for AIX, V5.1 supports the execution of COBOL programs on AIX V6.1.2.0 or later, or AIX V7.1.

To view and print PDF and license agreement files, you need the Adobe Acrobat Reader.

Software requirements: Optional programs

To use COBOL Runtime Environment for AIX with optional programs such as online help, DB2, CICS, and Java, additional products are required:

- Online help: An HTML browser to access HTML documentation in the knowledge center.
- DB2: COBOL applications that embed EXEC SQL statements require DB2 V9.5 for Linux, UNIX, and Windows with fix pack 3, or DB2 V9.7 for Linux, UNIX, and Windows.
- CICS: COBOL applications that embed EXEC CICS statements require TXSeries for Multiplatforms, Version 7.1, TXSeries for Multiplatforms, Version 8.1, or TXSeries for Multiplatforms, Version 8.2.
- Java:
 - Applications that use object-oriented COBOL syntax for Java interoperability require Java 2 Platform, Standard Edition, V7.
 - 64-bit applications require the 64-bit version of the Java SDK.
 - 32-bit applications require the 32-bit version of the Java SDK.

Verifying the amount of hard disk space available

You can use the following command to determine the amount of space available in the installation location (/usr/lpp/cobol/):

```
df -m /usr
```

Verifying that the required filesets are installed

You must have installed the following filesets on your system to install COBOL Runtime Environment for AIX:

Fileset name	Fileset description
AIX 6.1: bos.rte.6.1.2.0 or later AIX 7.1: bos.rte.7.1.0.0	Base operating system run time
AIX 6.1: bos.rte.libc.6.1.2.0 or later AIX 7.1: bos.rte.libc.7.1.0.0	Base application runtime library
AIX 6.1: bos.rte.aio.6.1.2.0 or later AIX 7.1: bos.rte.aio.7.1.0.0	Base operating system run time posix asynchronous I/O

Note: You need to enable posix asynchronous I/O (AIO) in order for it to work. For instructions about how to enable posix I/O, see the AIX documentation about AIO.

At least one of the following locale-specific filesets must be installed on your system:

Fileset name	Fileset description
bos.loc.LANG	Base locale support
bos.loc.pc.LANG	Base system locale PC code set
bos.loc.utf.LANG	Base system locale UTF code set
bos.loc.iso.LANG	Base system locale ISO code set

You can view information about the installed filesets by using the **ls1pp** command.

Use the following command to determine whether these filesets have been installed:

```
lsipp -L bos.loc.* bos.rte bos.rte.libc
```

Previewing the installation and license agreements

Before installing IBM COBOL Runtime Environment for AIX, V5.1, you can verify the installation process, check file sizes and disk space, and preview the license agreements using `installp`.

The terms and conditions for using IBM COBOL Runtime Environment for AIX, V5.1 are specified in the following PDF files, which are located in the root directory of the distribution package:

- `LicAgree.pdf`
- `LicInfo.pdf`

After installation, the license PDF files can be found in the `/usr/lpp/cobol/rte` directory:

- `LicenseAgreement.GM.pdf`
- `LicenseInformation.GM.pdf`

Using `installp`

You can also preview the command-line installation process and write the output to a log file, using the `installp` command. Follow the steps to install the runtime environment to the location given in “Installing COBOL Runtime Environment for AIX” and specify the `-p` flag to preview the process without installing the runtime environment.

The following example previews the installation of all available runtime environment filesets in the `cdrom/runtime/usr/sys/inst.images` source directory, and writes an installation log file to `/tmp/install.log`.

```
installp -e /tmp/install.log -paXgd cdrom/runtime/usr/sys/inst.images all
```

The following example previews the license text in the `/cdrom/usr/sys/inst.images` source directory, and writes a log file to `/tmp/install.license.log`.

```
installp -e /tmp/install.license.log -EpaXgd cdrom/runtime/usr/sys/inst.images all
```

Installing COBOL Runtime Environment for AIX

Before you install COBOL Runtime Environment for AIX, you must make sure that you have a user account with administrator privileges and that your system meets all system requirements. After you have finished installing the COBOL Runtime Environment for AIX, you must confirm that the installation was successful.

If you have root access or a profile with superuser privileges, you can install COBOL Runtime Environment for AIX directly from the command line by using the AIX command `installp`. The following installation methods install COBOL Runtime Environment for AIX into the `/runtime/` directory.

1. Create an empty directory such as `/runtime/` and uncompress the package (tar file) into `/runtime/` by using the following commands:

```
mkdir /runtime/
cd runtime
uncompress < /path/to/cobol.5.1.runtime.aix.GM.tar.Z | tar -xf -
```

2. (Optional) Preview the installation process and write the output to a log file by using the `installp` command:

```
installp -e logfile -paXgd install_images_location all
```

For example, you might see "LICENSE AGREEMENT FAILURES" after entering the previous command. To preview the license text of COBOL Runtime Environment for AIX, add `-E` to the installation command:

```
installp -e logfile -EpaXgd install_images_location all
```

For details about previewing the installation and license agreements by using the `installp` command, see "Using `installp`" on page 28.

3. Install COBOL Runtime Environment for AIX and write the output to a log file by using the `installp` command:

```
installp -e logfile -YaXgd install_images_location all
```

The following example installs all runtime environment filesets into the `/runtime/usr/sys/inst.images` directory and writes an installation log file to `/tmp/install.log`.

```
installp -e /tmp/install.log -YaXgd /runtime/usr/sys/inst.images all
```

For details about the `installp` command usage, see "Using `installp`."

Using `installp`

You can install COBOL Runtime Environment for AIX directly from the command line using the AIX command `installp`.

Remember: Any language specific filesets that are not supported by your system produces an error message and fails to install. For example, if local support is not present for `Ja_JP`, install fails when it attempts to install a `Ja_JP` specific language fileset for the runtime environment. These error messages are normal and can be ignored.

To install the runtime environment and write the installation output to a log file, run this `installp` command:

```
installp -aXYgd install_images_location -e logfile all
```

```
►---installp---aYg---[ _p ] [ _X ] [ _E ] [ _d--install_images_location ] [ _e--logfile ]---all---►
```

-aYg

Specifies that all the latest and prerequisite installable filesets available in the `install_images_location` directory are applied and committed, and that the required software license agreement is accepted.

-p

Performs a preview of the installation process by running the preinstallation checks. See "Using `installp`" on page 28.

-X

Attempts to expand the file system at the installation location if there is insufficient space to complete the install.

-E

Displays software license agreements. This flag is only valid with the `-a` or `-l` flags. If the `-E` flag is specified with the `-a` flag, a new section is displayed showing the pending license agreements associated with the selected filesets. If

the **-E** flag is specified with the **-I** flag, output is displayed showing the license agreements associated with all filesets on the media.

-d *install_images_location*

Specifies the directory where the filesets are located. This path might also be a mounted CD-ROM drive.

-e *logfile*

Specifies the name and location of the installation log file.

all

Indicates that all the filesets in *install_images_location* should be attempted during installation.

Important: Although you can choose to install the filesets that you need, it is recommended that you install all the filesets. Otherwise you might encounter errors.

Updating the installation of COBOL Runtime Environment for AIX

A program temporary fix (PTF) is an update to COBOL Runtime Environment for AIX that provides a fix or multiple fixes to the product.

You can download the latest runtime environment updates from the support website: http://www.ibm.com/support/entry/portal/overview/software/rational/cobol_for_aix. You can also find the instructions at Fix Central.

You can install updates by using either System Management Interface Tool (SMIT) or the `installp` command.

Tasks for updating installation

The complete procedure for updating the COBOL Runtime Environment for AIX installation is outlined in the following table.

Table 13. Steps for installation: update COBOL Runtime Environment for AIX installation

Task	For more information, see . . .
Become either the root user or a user with administrator privileges.	Documentation supplied with the operating system.
Ensure that all system prerequisites are met.	"System prerequisites" on page 26
Download, uncompress, and unpack the PTF package.	"Preparing a PTF package for installation"
Generate a .toc file.	"Preparing a PTF package for installation"
Use SMIT or the <code>installp</code> command to install PTFs, using the default paths.	"Using SMIT" on page 31 or "Using <code>installp</code> " on page 31
Confirm that the compiler packages were successfully installed, and test the installation.	"Checking fileset information" on page 32

Preparing a PTF package for installation

Updates to COBOL Runtime Environment for AIX are supplied as PTF packages. Before these PTF packages can be used to update the product, they must be downloaded and uncompressed, and a .toc file must be generated.

To prepare the update package for installation, follow these steps:

Remember: You must be logged in as root or have superuser authority.

1. Download the required PTF package (for example `cobol.runtime.51.YYMMDD.tar.Z`) into an empty directory.
2. Restore the compressed file and extract the PTF filesets from the downloaded package. To uncompress and unpack the tar file, use the command:
`zcat package_name.tar.Z | tar -xvf -`
3. Use the command `inutoc directory_name` to generate a `.toc` file in the same directory as the unpacked filesets.

The following example shows the steps to prepare the package, `cobol.runtime.51.YYMMDD.tar.Z`, located in the new directory, `/runtime/update/` for installation:

```
cd /runtime/update
zcat cobol.runtime.51.YYMMDD.tar.Z | tar -xvf -
inutoc .
```

Using SMIT

To install a PTF using the SMIT interface, follow these steps:

1. Run the command: `smit update_all`.
This command invokes SMIT, which presents a menu-driven user interface for the installation process.
2. When asked to, specify the path of the directory where the PTF filesets and `.toc` are located in the INPUT device/directory of the software field.
3. Press **Enter**.
At this stage, you are prompted with a list of questions to help you customize the runtime environment installation on your system. Verify the default values, or modify them where necessary, to accommodate your preferences.
4. Press **Enter** and then **Enter** again.
Messages display as each part is successfully installed, and the installation log is stored to `/home/smit.log`.

Tip: PTF packages often include base level filesets as prerequisites. If the command `smit update_all` is used, then those packages will not be installed, which might cause requisite failures. For this reason, use `smit install_all` to install the prerequisites and commit the updates.

Using installp

To install a PTF by using the `installp` command and write the output to a log file, run this command:

```
►--installp--ag--[-p] [-x] [-E] [-d-PTF_filesets_location] [-e-logfile] fileset_names--◄
```

```
installp -aXgd PTF_filesets_location -e logfile fileset_names
```

-ag

Specifies that all the latest installable and requisite filesets available in the `PTF_filesets_location` directory are applied and committed.

-p

Performs a preview of the installation process by running the preinstallation checks. See “Using installp” on page 28.

- X**
Attempts to expand the file system at the default location if there is insufficient space to complete the install.
- E** Displays software license agreements. This flag is only valid with the **-a** or **-l** flags. If the **-E** flag is specified with the **-a** flag, a new section is displayed showing the pending license agreements associated with the selected filesets. If the **-E** flag is specified with the **-l** flag, output is displayed showing the license agreements associated with all filesets on the media.
- d** *PTF_filesets_location*
Specifies the directory where the filesets are located. This path might also be a mounted CD-ROM drive.
- e** *logfile*
Specifies the name and location of the installation log file.
- fileset_names*
Specifies a list of names of the filesets in *PTF_filesets_location* that you want to install.

Tip: The keyword *all* can be used to indicate that all filesets must be attempted during installation.

The following example installs all available PTF filesets in the `/runtime/update/` source directory to the default locations, as specified in “Filesets” on page 25, and writes an installation log file to `/tmp/install.log`.

Example:

```
installp -aXgd /runtime/update/ -e /tmp/install.log all
```

After installing COBOL Runtime Environment for AIX

There are some optional setup and verification procedures that you can use after you have installed COBOL Runtime Environment for AIX.

These are documented in the following sections:

- “Checking fileset information”
- “Enabling IBM License Metric Tool (ILMT) and Tivoli Asset Discovery for Distributed (TADd)”
- “Accessing the information” on page 33

Checking fileset information

You can check the versions of the installed COBOL Runtime Environment for AIX filesets by using the `lspp` command:

```
lspp -l cobol.rte
```

Enabling IBM License Metric Tool (ILMT) and Tivoli Asset Discovery for Distributed (TADd)

IBM® License Metric Tool (ILMT) and Tivoli® Asset Discovery for Distributed (TADd) can help you manage software usage metering and license allocation services on supported systems. In general, ILMT and TADd recognize and monitor the products that are installed and in use on your system.

ILMT and TADd are enabled for IBM COBOL Runtime Environment for AIX, V5.1 for inventory support only, which means that ILMT and TADd can detect product installation of COBOL Runtime Environment for AIX but not its usage.

Note: ILMT and TADd are not part of the COBOL Runtime Environment for AIX product offering, and must be purchased and installed separately.

Once installed and activated, ILMT and TADd scan your system for product inventory signatures that indicate whether a given product is installed on your system. ILMT and TADd also identify the version, release, and modification levels of the product. Inventory signature files are not updated after PTF installation.

When IBM COBOL Runtime Environment for AIX, V5.1 is installed, the inventory signature file is 1986-03.com.ibm_COBOL_Runtime_Environment_for_AIX-5.1.0.swidtag, which is located in the /usr/lpp/cobol/iso-swid/ directory.

For more information, see IBM License Metric Tool and Tivoli Asset Discovery for Distributed.

Accessing the information

This section provides an overview of the information offered with the COBOL Runtime Environment for AIX product. Information is provided through an HTML-based knowledge center on the IBM external web and through publications in Portable Document Format (PDF).

Accessing the Installation Guide, Quick Start Guide and License Agreement

The *Installation Guide* (install.pdf) is located in the doc/en_US/pdf/ directory of the distribution package. Alternatively, the *Installation Guide* (install.pdf) is available for download from the COBOL for AIX library page at <http://www.ibm.com/support/docview.wss?uid=swg27036736>. The *Installation Guide* provides information about prerequisite products and steps for installing COBOL Runtime Environment for AIX.

The *Quick Start Guide* (quickstart.pdf) is located in the root directory of the distribution package.

The *License Agreement* (LicAgree.pdf) is also located in the root directory of the distribution package. After the installation, the license files can be found in the /usr/lpp/cobol/ directory.

Accessing the online information

HTML versions of the COBOL Runtime Environment for AIX information are included in the *COBOL for AIX Installation Guide* in the COBOL for AIX Knowledge Center at http://www.ibm.com/support/knowledgecenter/SS6SGM_5.1.0/com.ibm.cobol51.aix.doc/welcome.html.

Accessing additional information

For the latest information about COBOL for AIX, visit the IBM COBOL for AIX website at http://www.ibm.com/support/entry/portal/overview/software/rational/cobol_for_aix.

Uninstalling COBOL Runtime Environment for AIX

This section outlines the steps required to uninstall COBOL Runtime Environment for AIX.

Remember:

1. You must be a root user or a user with administrator privileges to uninstall this product.
2. The SMARTdata Utilities filesets might not be uninstalled if they are required by other installed products. See “Filesets” on page 25 for details about filesets included with COBOL Runtime Environment for AIX.
3. Because uninstalling dependent packages automatically might introduce problems, it is recommended that you preview uninstallation to ensure that all dependent filesets are no longer required.

Uninstalling an installation

To uninstall IBM COBOL Runtime Environment for AIX, V5.1 by using the `installp` command, enter the following command:

```
installp -e /tmp/log -u 'cobol.rte' 'SdU.*'
```

Uninstalling the electronic license agreement

The license agreement text file remains on the system after the license fileset has been uninstalled, so that you do not have to accept the product license again if you reinstall COBOL Runtime Environment for AIX.

To remove the license agreement text file, run the commands:

```
ODMDIR=/usr/lib/objrepos; odmdelete -o lag -q "fileset=cobolrte.license"  
rm -rf /usr/lpp/swlag/cobol/51.runtime/*/cobol.la
```

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List of resources

COBOL for AIX

Installation Guide, GC27-5402

Language Reference, SC27-5403

Programming Guide, SC27-5404

VSAM File System Reply Messages, SC27-5405

Support

If you have a problem using COBOL for AIX, see the following site, which provides up-to-date support information: http://www.ibm.com/support/entry/portal/overview/software/rational/cobol_for_aix.

Related publications

AIX

You can find the following publications in the IBM Publications Center:

- *Commands Reference: Volume 1, a - c*
- *Commands Reference: Volume 2, d - h*
- *Commands Reference: Volume 3, i - m*
- *Commands Reference: Volume 4, n - r*
- *Commands Reference: Volume 5, s - u*
- *Commands Reference: Volume 6, v - z*
- *General Programming Concepts: Writing and Debugging Programs*

Index

Special characters

installp

- compiler installation 10
- compiler uninstallation 24
- preview compiler installation 8
- preview runtime installation 28
- runtime installation 28
- runtime uninstallation 34
- update compiler installation 14
- update runtime installation 31

ls1pp 6, 17, 27, 32

A

accessibility

- assistive technologies x
 - keyboard navigation x
 - of COBOL for AIX x
 - of this information x
- assistive technologies x

C

COBOL for AIX

- accessibility x

COBOL for AIX compiler

- filesets
 - included in installation image 1
- hard disk space available
 - required 6
- hardware
 - required 6
- information 19
- installation
 - instructions 9
 - uninstallation 23
- installation DVD 1
- installation image 1
- license agreement
 - previewing 7
- operating system
 - required 6
- pre-installation 1
- prerequisites 6
- previewing 7
 - installation 7
 - license agreements 7
- PTF 13
- SMIT
 - update installation 14
- software
 - optional 6
 - required 6
- uninstallation 23
 - basic 23
- update installation 13
 - overview 13
 - preparing 13

COBOL Runtime Environment for AIX

- filesets
 - included in installation image 25
- hard disk space available
 - required 26
- hardware
 - required 26
- information 33
 - HTML 33
- installation
 - instructions 28
 - uninstallation 34
- installation DVD 25
- installation image 25
- introduction 25
- license agreement
 - previewing 28
 - uninstallation 34
- operating system
 - required 26
- post-installation 32
- pre-installation 25
- prerequisites 26
- previewing 28
 - installation 28
 - license agreements 28
- PTF 30
- SMIT
 - update installation 31
- software
 - optional 26
 - required 26
- uninstallation
 - basic 34
 - electronic license agreement 34
- update installation 30
 - overview 30
 - preparing 30

D

debugger 3

E

- electronic distribution package 3
- environment variables, setting 18
- error messages, enabling 19

F

- filesets
 - checking 17, 32
 - required 6, 27
- format notation, rules for viii

H

- hard disk space available
 - determining 6, 27

I

- IBM License Metric Tool 18, 33
- ILMT 18, 33
- information
 - HTML 20
 - man pages 20
 - PDF 20
- installation
 - overview 9
 - testing 21

K

- keyboard navigation x

L

- languages
 - environment variables 18
 - locale-specific filesets 6, 27
 - man pages 19
 - supported 4
- license agreement
 - uninstallation 24
- locales, supported 4

M

- man pages 19
 - enabling 19
 - viewing 20
- memory, cleaning
 - kernel 24
 - library 24
- migration 15
 - product version 15

N

- national language support 4

O

- optional words, syntax notation ix

P

- post-installation 17
- preface vii
- product version
 - migration 15

publications
 COBOL for AIX 39
 related 39

R

railroad track format, how to read viii
repeated words, syntax notation ix
required words, syntax notation ix
rules for syntax notation viii

S

SMIT
 compiler installation 9
 compiler uninstallation 23
 preview installation 8
syntax notation, rules for viii

T

TADd 18, 33
testing the installation 21
Tivoli Asset Discovery for
 Distributed 18, 33

U

uninstallation
 debugger 24
 electronic license agreement 24



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