

PGI[®] Server 2010 PGI[®] Workstation 2010 Installation Guide

Release 2010

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PGI® Server 2010 PGI® Workstation 2010 Installation Guide

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Contents

1. Release 2010 Introduction	1
Product Overview	1
Terms and Definitions	2
Supported Processors	2
Supported Operating Systems	3
Product Support	6
2. PGI Release 2010 Installation Overview	7
Before You Begin	7
Network Installations	8
3. PGI Release 2010 Licensing	9
Permanent and Trial License Keys	9
Trial Licensing Key Constraints	10
License Keys and System Configurations	10
PGI Workstation Licensing	10
PGI Server Licensing	10
The FLEXnet License Manager	10
License Support	10
4. Installations on Linux	11
Prepare to Install on Linux	11
Installation Steps for Linux	13
Typical Directory Structure for Linux	21
End-user Environment Settings on Linux	22
Common Linux Installation Issues	23
Java Runtime Environment (JRE)	24
5. Installations on Windows	25
Preparing to Install on Windows	25
Installation Steps for Windows	25
Customizing the Command Window	30

PGI Workstation Directory Structure	30
Default Installation Directories	30
PGI Workstation Directories on a Win64 System	30
PGI Workstation Directories on a Win32 System	31
LM_LICENSE_FILE and FLEXLM_BATCH	31
LM_LICENSE_FILE	32
FLEXLM_BATCH	32
Windows Firewall and PGI Debugging	32
Common Windows Installation Problems	34
6. Installations on Apple Mac OS X	35
Preparing to Install on Apple Mac OS X	35
Installation Steps for Mac OS	36
Typical Directory Structure for Mac OS X	41
End-user Environment Settings on Mac OS X	42
7. Accelerator Installation and Licensing	45
Licensing	45
Required Files	45
Command Line Flag	46
8. Use OpenMPI with PGI Profiling	47
Instructions for Linux	47
Compiler Wrapper Data Files	47
Configure OpenMPI for PGI Profiling	48
Modified Compiler Wrapper Data File Sample	49
9. Contact Information	51

Figures

4.1. Linux Installation Overview	12
6.1. PGI Installation on Mac OS X Overview	37

Tables

1.1. Processors Supported by PGI 2010	3
1.2. Operating Systems and Features Supported in PGI 2010	4
4.1. Linux Directory Structure Sample	21
4.2. Linux Directory Structure Sample	22
5.1. Default Installation Directories by Platform	30
5.2. Win64 Sample Directory Structure	30
5.3. Win32 Sample Directory Structure	31
6.1. Sample Mac OS Directory Structure	42

Chapter 1. Release 2010

Introduction

Welcome to Release 2010 of *PGI Workstation* and *PGI Server*, a set of Fortran, C, and C++ compilers and development tools for 32-bit and 64-bit x86-compatible processor-based workstations and servers running versions of the Linux, Windows, and Mac OS operating systems.

All workstation-class compilers and tools products from The Portland Group (*PGI Fortran Workstation*, for example) are subsets of the *PGI Workstation Complete* product. These workstation-class products provide a node-locked single-user license, meaning one user at a time can compile on the one system on which the *PGI Workstation* compilers and tools are installed.

PGI Server products are offered in configurations identical to the workstation-class products, but provide network-floating multi-user licenses. This means that two or more users can use the PGI compilers and tools concurrently on any compatible system networked to the system on which the PGI Server compilers are installed.

This installation information applies to all workstation-class and server-class compiler products from The Portland Group.

Product Overview

Release 2010 of *PGI Workstation* and *PGI Server* the PGI CDK includes the following components:

- PGFortran OpenMP* and auto-parallelizing Fortran 90/95 compiler.
- PGF77 OpenMP and auto-parallelizing FORTRAN 77 compiler.
- PGHPF data parallel High Performance Fortran compiler.

Note

PGHPF is supported only on Linux platforms.

- PGCC OpenMP and auto-parallelizing ANSI C99 and K&R C compiler.
- PGC++ OpenMP and auto-parallelizing ANSI C++ compiler.

- PGPROF graphical MPI/OpenMP/multi-thread performance profiler.
- PGDBG graphical MPI/OpenMP/multi-thread symbolic debugger.
- MPICH MPI libraries, version 1.2.7, for both 32-bit and 64-bit development environments (Linux only).
- A UNIX-like shell environment for Win32 and Win64 platforms.

Depending on the product configuration you purchased, you may not have licensed all of the above components.

The MPI profiler and debugger included with PGI Workstation are limited to processes on a single node. PGI Workstation can be installed on a single computer, and that computer can be used to develop, debug, and profile MPI applications. The PGI CDK Cluster Development Kit supports general development on clusters.

Terms and Definitions

This Installation Guide contains a number of terms and definitions with which you may or may not be familiar. If you encounter a term in these notes with which you are not familiar, please refer to the online glossary at www.pgroup.com/support/definitions.htm

These two terms are used throughout the documentation to reflect groups of processors:

- **AMD64** – a 64-bit processor from AMD designed to be binary compatible with 32-bit x86 processors, and incorporating new features such as additional registers and 64-bit addressing support for improved performance and greatly increased memory range. This term includes the AMD™ Athlon64™, AMD Opteron™, AMD Turion™, AMD Barcelona, AMD Shanghai, and AMD Istanbul processors.
- **Intel 64** – a 64-bit IA32 processor with Extended Memory 64-bit Technology extensions designed to be binary compatible with AMD64 processors. This includes Intel Pentium 4, Intel Xeon, Intel Core 2, Intel Penryn, and Intel Core i7 (Nehalem) processors.

Supported Processors

[Table 1.1](#) lists the processors on which Release 2010 of the PGI compilers and tools is supported. The table also includes the CPUs available and supported in multi-core versions.

The `-tp <target>` command-line option generates executables that utilize features and optimizations specific to a given CPU and operating system environment. Compilers included in a 64-bit/32-bit PGI installation can produce executables targeted to any 64-bit or 32-bit target, including cross-targeting for AMD and Intel 64-bit AMD64 compatible CPUs.

In addition to the capability to generate binaries optimized for specific AMD or Intel processors, the PGI 2010 compilers can produce PGI Unified Binary object or executable files containing code streams fully optimized and supported for both AMD and Intel x64 CPUs. To produce unified binary files, you use one of the following `-tp` command-line options: `-tp x64` or `-tp <target1>, <target2>, <target3>...`, where `<target>` is any of the valid values in [Table 1.1](#).

Table 1.1. Processors Supported by PGI 2010

Brand	CPU	Target Processor -tp <target> [,target...]	
		32-bit	64-bit
AMD			
	Opteron Six-core Istanbul	istanbul-32	istanbul-64
	Opteron Quad-core Shanghai	shanghai-32	shanghai-64
	Opteron Quad-core Barcelona	barcelona-32	barcelona-64
	Opteron Quad-core	k8-32	k8-64
	Opteron Rev E?F	k8-32	k8-64e
	Turion / Turion 64	k8-32	k8-64e
	Athlon64	NA	k8-64e
	Athlon	athlon	NA
	Athlon XP/MP	athlonxp	NA
Intel			
	Core i7 - Nehalem	nehalem-32	nehalem-64
	Penryn	penryn-32	penryn-64
	Core 2	core2-32	core2-64
	P4/Xeon EM64T	p7-32	p7-64
	Xeon Pentium4	p7-32	NA
	Pentium III	piii	NA
	Pentium II	p6	NA
Generic			
	Generic x86	p5 or px-32	NA

Supported Operating Systems

[Table 1.2](#) lists the operating systems, and their equivalents, on which Release 2010 of the PGI compilers and tools is supported.

To determine if Release 2010 will install and run under a Linux equivalent version, such as Mandrake*, Debian*, Gentoo*, and so on, check the table for a supported system with the same `glibc` and `gcc` versions. Version differences in other operating system components can cause difficulties, but often these can be overcome with minor adjustments to the PGI software installation or operating system environment.

- Newer distributions of the Linux operating system include support for x64 compatible processors and are designated 64-bit in the table. These are the only distributions on which the 64-bit versions of the PGI compilers and tools will fully install.

- If you attempt to install the 64-bit/32-bit Linux version on a system running a 32-bit Linux distribution, only the 32-bit PGI compilers and tools are installed.
- If you attempt to install the 64-bit Windows version on a system running 32-bit Windows, the installation fails.

Most newer Linux distributions support the *Native Posix Threads Library (NPTL)*, a new threads library that can be utilized in place of the `libpthread` library available in earlier versions of Linux. Distributions that include NPTL are designated in the table. Parallel executables generated using the *OpenMP* and auto-parallelization features of the PGI compilers will automatically make use of NPTL on distributions when it is available. In addition, the PGDBG debugger is capable of debugging executables built using either NPTL or earlier thread library implementations.

Multi-socket AMD Opteron processor-based servers use a *NUMA (Non-Uniform Memory Access)* architecture in which the memory latency from a given processor to a given portion of memory can vary. Newer Linux distributions, including SuSE 9/10 and SLES 9/10, include NUMA libraries that can be leveraged by a compiler and associated runtime libraries to optimize placement of data in memory.

In the table headings:

HT = hyper-threading

NPTL = Native POSIX Threads Library

NUMA = Non-Uniform Memory Access

Table 1.2. Operating Systems and Features Supported in PGI 2010

Distribution	Type	64-bit	HT	pgC ⁺⁺	pgdbg	NPTL	NUMA	glibc	GCC
RHEL 5.3	Linux	Yes	Yes	Yes	Yes	Yes	No	2.5	4.1.2
RHEL 5.0	Linux	Yes	Yes	Yes	Yes	Yes	No	2.5	4.1.2
RHEL 4.0	Linux	Yes	Yes	Yes	Yes	Yes	No	2.3.4	3.4.3
RHEL 3.0	Linux	Yes	Yes	Yes	Yes	Yes	No	2.3.2	3.2.3
Fedora 11	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.9	4.3.3
Fedora 10	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.9	4.3.2
Fedora 9	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.8	4.3.0
Fedora 8	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.7	4.1.2
Fedora 7	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.6	4.1.2
Fedora 6	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.5	4.1.1
Fedora 5	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.4	4.1.0
Fedora 4	Linux	Yes	Yes	Yes	Yes	Yes	No	2.3.5	4.0.0
Fedora 3	Linux	Yes	Yes	Yes	Yes	Yes	No	2.3.3	3.4.2
Fedora 2	Linux	Yes	Yes	Yes	Yes	Yes	No	2.3.3	3.3.3
SuSE 11.1	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.9	4.3.3
SuSE 11.0	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.8	4.3.1

Distribution	Type	64-bit	HT	pgC ⁺⁺	pgdbg	NPTL	NUMA	glibc	GCC
SuSE 10.3	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.6.1	4.2.1
SuSE 10.2	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.5	4.1.0
SuSE 10.1	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.4	4.1.0
SuSE 10.0	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.3.5	4.0.2
SuSE 9.3	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.3.4	3.3.5
SuSE 9.2	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.3.3	3.3.4
SuSE 9.1	Linux	Yes	Yes	Yes	Yes	Yes	No	2.3.3	3.3.3
SuSE 9.0	Linux	Yes	Yes	Yes	Yes	No	No	2.3.2	3.3.1
SLES 11	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.9	4.3.3
SLES 10	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.4	4.1.0
SLES 9	Linux	Yes	Yes	Yes	Yes	No	Yes	2.3.3	3.3.3
RedHat 9.0	Linux	No	No	Yes	Yes	Yes	No	2.3.2	3.2.2
Ubuntu 9.10	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.10.1	4.4.1
Ubuntu 9.04	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.9	4.3.3
Ubuntu 8.10	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.8	4.3.2
Ubuntu 8.04	Linux	Yes	Yes	Yes	Yes	Yes	Yes	2.7	4.2.1
Microsoft Windows	XP	No	Yes	Yes	Yes	NA	Yes	NA	NA
	XP x64	Yes	Yes	Yes	Yes	NA	Yes	NA	NA
	2003	No	No	Yes	Yes	NA	Yes	NA	NA
	2003 x64	Yes	Yes	Yes	Yes	NA	Yes	NA	NA
	2008	No	Yes	Yes	Yes	NA	Yes	NA	NA
	2008 x64	Yes	Yes	Yes	Yes	NA	Yes	NA	NA
	Vista	No	Yes	Yes	Yes	NA	Yes	NA	NA
	Vista x64	Yes	Yes	Yes	Yes	NA	Yes	NA	NA
	Windows 7	Yes	Yes	Yes	Yes	NA	Yes	NA	NA
HPC Server 2008	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	
Apple	Leopard	Yes	No	Yes	Yes	NA	NA	NA	4.0.1
	Snow Leopard	Yes	No	Yes	Yes	NA	NA	NA	4.0.1

Note

www.pgroup.com/support/install.htm lists any new operating system distributions that may be explicitly supported by the PGI compilers. If your operating system is newer than any of those listed in [Table 1.2](#), the installation may still be successful.

Product Support

All new PGI licenses include 60 days of PGI Subscription Service.

The PGI Subscription Service provides support and other benefits, including:

- Ongoing technical support.

Support requests may be sent in a number of ways:

- By electronic mail to trs@pgroup.com
 - Faxed to +1-503-682-2637
 - By using the online support request form available at www.pgroup.com/support/support_request.php
 - Phone support is not currently available.
- Notification by email when maintenance releases occur and are available for electronic download and installation.
 - Release upgrades for licensed Product(s) at no additional cost, except for any administrative fee that may apply.
 - Full license fee credits on Product upgrades, except for any administrative fee that may apply. "Product upgrades" refer to exchanging one Product license for a more expensive Product license, and is not the same as a version or Release upgrade previously referenced.
 - Full license fee credits on user-count upgrades, except for any administrative fee that may apply.

Important

To continue receiving these benefits after 60 days, you can purchase an extension to your PGI Subscription Service. Extensions are available in yearly increments.

Contact sales@pgroup.com if you would like information regarding the subscription service for the PGI products you have purchased.

Chapter 2. PGI Release 2010

Installation Overview

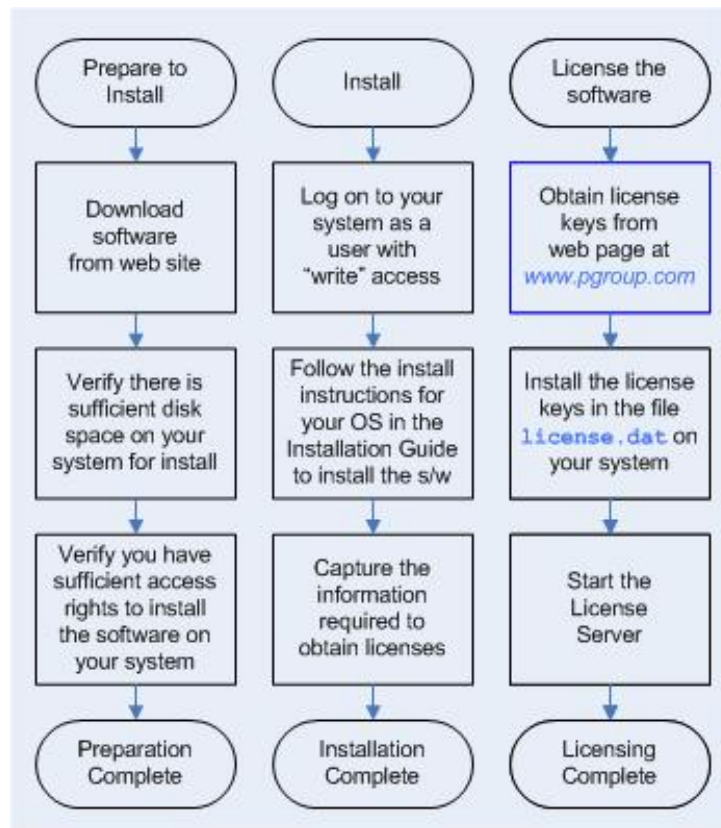
This section provides an overview of the steps required to successfully install PGI Workstation or PGI Server. The following chapters provide the details of each of the steps. Specifically, Chapter 3 describes licensing generally. Chapter 4 describes how to install PGI Workstation or PGI Server in a generic manner on Linux, including how to install and run a FLEXnet license daemon on Linux. Chapter 5 describes how to install on a Windows system, and Chapter 6 describes how to install on an Apple Mac OS system.

Before You Begin

Before you begin the installation, it is essential that you understand the flow of the installation process. There are three stages of the process:

- Prepare to install – verifying that you have all the required information and software.
- Install the software – installing the software appropriate for your operating system
- Generation of license keys using the PGI website, installation of the license keys, and starting the license server.

The following illustration provides a high-level overview of the installation process.



For more complete information on these steps and the specific actions to take for your operating system, refer to the following chapters.

Network Installations

Linux

On Linux, PGI Server may be installed locally on each machine on a network or may be installed once on a shared file system available to each machine. If you select the second method, a network install, adding another machine to the group running the compilers is a much simpler process in this release; you adjust to the unique characteristics of the newly added system with a customization script that must be executed on each machine in the group.

Windows and Mac OS X

On Windows and Mac OS X, PGI Server must be installed locally on each machine. A network install utilizing a shared file system is not supported.

Chapter 3. PGI Release 2010

Licensing

The PGI compilers and tools are license-managed.

Before discussing licensing, it is useful to have common terminology. These two terms are often confused, so they are clarified here:

- **License** - a legal agreement between ST and PGI end-users, to which users assent upon installation of any PGI product. The terms of the License are kept up-to-date in documents on pgroup.com and in the *\$PGI/<platform>/<rel_number>* directory of every PGI SW installation.
- **License keys** - ASCII text strings that enable use of the PGI software and are intended to enforce the terms of the License. License keys are generated by each PGI end-user on pgroup.com using a unique hostid and are typically stored in a file called `license.dat` that is accessible to the systems for which the PGI software is licensed at a given site.

There are two types of license keys: permanent and trial.

Permanent and Trial License Keys

PGI Server and Workstation includes a licensing tool to help automate your license retrieval and installation process. You use this tool to obtain either a trial or a permanent license key.

- When you purchase a **permanent** PGI license, the email order confirmation you receive includes complete instructions for logging on to the pgroup.com web page and generating permanent license keys.
- When you register for a **trial** license, you generate trial keys using the web page: www.pgroup.com/login.

For more detailed information on how to do obtain a license key, refer to Step 5 in [“Installation Steps for Linux,” on page 13.](#)

Note

You must install the PGI software before you obtain your license keys because the license key generation process requires information that is generated during the software installation.

Trial Licensing Key Constraints

Note

At the conclusion of the trial period, the PGI compilers and tools and any executable files generated prior to the installation of permanent license keys will cease to function.

Any executables, object files, or libraries created using the PGI compilers with a trial key must be recompiled with permanent license keys in place.

License Keys and System Configurations

Executable files generated with permanent license keys in place are unconstrained, and will run on any compatible system regardless of whether the PGI compilers are installed.

Important

If you change the configuration of your system by adding or removing hardware, your license key may become invalid. Please contact The Portland Group if you expect to reconfigure your system to ensure that you do not temporarily lose the use of the PGI compilers and tools.

PGI Workstation Licensing

PGI Workstation is node-locked to a single system in a way that allows any user of the system to use the PGI compilers and tools. However, only a single user is allowed to run any of the PGI compilers or tools at a given time.

PGI Server Licensing

PGI Server supports multi-user, network floating licenses. Multiple users can use the PGI compilers and tools simultaneously from multiple systems on a network when those systems have a properly configured version of PGI Server installed. The number of seats purchased for the license determines the limitation on the number of concurrent users.

The license server for PGI Server can run on any of these supported systems: Linux, Windows, and Mac OS X.

The FLEXnet License Manager

PGI Workstation and PGI Server software licensing is managed using the FLEXnet license management system from Flexera Software. As part of the process of installing the PGI compilers and tools, you install and configure the FLEXnet license management software. The instructions in the following chapters of this guide describe how to configure license daemons for Linux, Windows or Mac OS, including installation and start-up of the license services, and proper initialization of the LM_LICENSE_FILE and, for Windows, FLEXLM_BATCH environment variables.

License Support

All new PGI licenses include 60 days of PGI Subscription Service. For more information about this service and how to extend it, refer to [“Product Support,” on page 6](#).

Chapter 4. Installations on Linux

This chapter describes how to install PGI Workstation or PGI Server on a Linux system. It covers local and network installs and is applicable to permanent or trial installations.

- For installations on 32-bit x86 systems, the PGI installation script installs only the linux86 versions of the PGI compilers and tools.
- For installations on 64-bit x64 systems running a linux86-64 execution and development environment, the PGI installation script installs the linux86-64 version of the PGI compilers and tools.
- If the 32-bit gcc development package is already installed on the system, the 32-bit linux86 tools are also installed on a 64-bit x64 system.

Prepare to Install on Linux

In preparation for installing PGI Workstation or PGI Server on Linux, first review the overview of the Linux installation process illustrated in [Figure 4.1](#).

Note

For Linux installations, each user must set their environment variables properly to access the software, as described in section 4.4, End-user Environment Settings on Linux.

The 32-bit and 64-bit compilers, tools, and supporting components have the same command names. Further, the environment you target by default, linux86-64 or linux86, depends on the version of the compiler that comes first in your path settings.

In a traditional local installation, the default installation base directory is `/opt/pgi`.

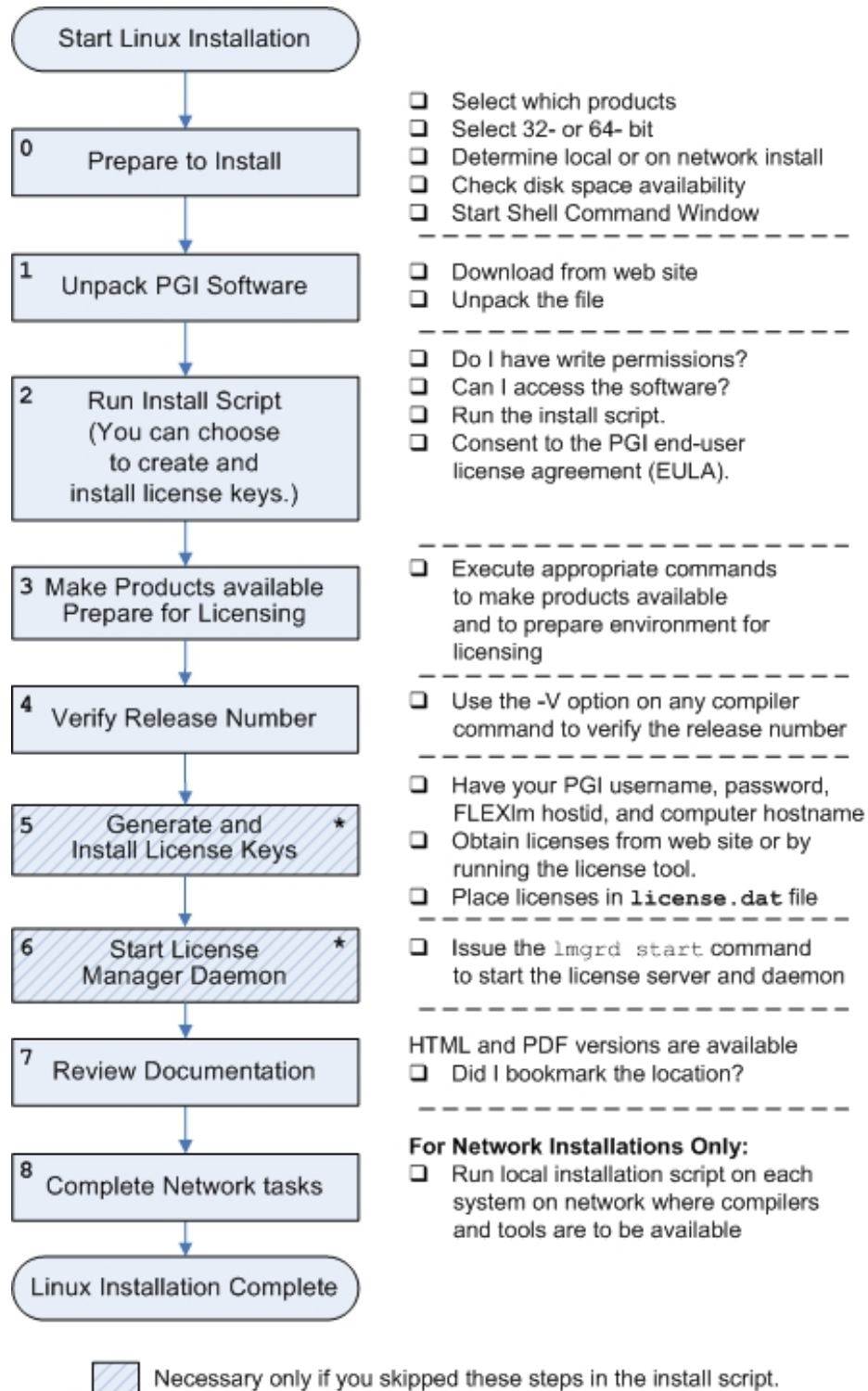
Network Installations:

If you choose to perform a network install, you should specify:

- A shared file system for the installation base directory.
- A second directory name that is local to each of the systems where the PGI compilers and tools are used. This local directory will contain the libraries to use when compiling and running on that machine.

This directory selection approach allows a network installation to support a network of machines that run different versions of Linux.

Figure 4.1. Linux Installation Overview



To prepare for the installation:

- Locate your PGI Order Confirmation email.

This email contains instructions on how to download the PGI software from the PGI web page as well as other information you may need for generating your permanent license. It also contains your PGI Product Identification Number (PIN) that you need should you need to contact PGI.

- Bring up a shell command window on your system.

The installation instructions assume you are using csh, sh, ksh, bash, or some compatible shell. If you are using a shell that is not compatible with one of these shells, appropriate modifications are necessary when setting environment variables.

- Verify you have enough free disk space.
 - linux86 platform: PGI installation requires 250 MB of free disk space.
 - linux86-64 platform: PGI installation requires 1.4 GB of free disk space.
- Know how your computer accesses the Internet - directly or through some sort of proxy connection.

Note

If this computer is behind a firewall at your site, please make sure it can access the Internet.

If a proxy is used, you need this additional information:

- The address (URL) of the proxy server.
- Whether the proxy requires authentication - and if so, what is the required username and password.
- To login to the PGI website to generate license keys, you need either a PGI web account (username and password) or a PIN code from the PGI order confirmation email message from PGI Sales.

Installation Steps for Linux

Follow these instructions to install the software:

1. Unpack the PGI Software.

Once you download the software from www.pgroup.com or another electronic distribution site, then in the instructions that follow, replace <tarfile> with the name of the file that was downloaded.

Note

The PGI products cannot be installed into the same directory where the tar file is unpacked.

Use the following command sequence to unpack the tar file in a temporary directory before installation:

```
% mkdir /tmp/pgi
% mv <tarfile>.tar.gz /tmp/pgi
% cd /tmp/pgi
% tar xpfz <tarfile>.tar.gz
```

2. Run the Install Script.

The *install* script *must* be run to properly install the software.

Execute the following script in the directory where you unpacked the tar file:

```
% ./install
```

When you run this script, you must:

- Consent to the PGI end-user license agreement (EULA).
- Determine whether to perform a traditional local installation or a network installation.
- Determine whether to install the optional NVidia CUDA.
- Determine whether to install the various optional components such as *MPICH* and the ACML math library from AMD.
- Define where to place the installation directory.
- Determine whether to generate license keys.

After the software is installed, the *install* script performs system-specific customization and then initializes the licensing.

Note

For a network installation, you are asked for a common local directory. This local directory will be created once on each system utilizing the network installation; further, it must be created on each system before adding that system to the network using the compilers.

If you choose not to generate keys at install time, you need the FLEXnet hostid and hostname in Step 3.

Tip

In case you need to retrieve FLEXnet information at a later time, the information is saved to the file `/opt/pgi/license.info`, where `/opt/pgi` is the installation directory.

3. Make PGI products accessible.

When the *install* script has completed, execute the following commands to make the PGI products accessible and to initialize your environment for use of FLEXnet.

For linux86-64:

To use the linux86-64 version of the compilers and tools, execute the following commands, assuming you have installed in the default `/opt/pgi` directory.

In csh, use these commands:

```
% setenv PGI /opt/pgi
% set path=(/opt/pgi/linux86-64/10.3/bin $path)
% setenv MANPATH "$MANPATH":/opt/pgi/linux86-64/10.3/man
% setenv LM_LICENSE_FILE "$LM_LICENSE_FILE":/opt/pgi/license.dat
```

In bash, sh, or ksh, use these commands:

```
$ PGI=/opt/pgi; export PGI
$ PATH=/opt/pgi/linux86-64/10.3/bin:$PATH; export PATH
$ MANPATH=$MANPATH:/opt/pgi/linux86-64/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$LM_LICENSE_FILE:/opt/pgi/license.dat; export LM_LICENSE_FILE
```

For linux86:

To use only the linux86 version of the compilers and tools, or to target linux86 as the default, use a setup similar to the previous one, changing the path settings as illustrated in the following commands.

In csh, use these commands:

```
% setenv PGI /opt/pgi
% set path=(/opt/pgi/linux86/10.3/bin $path)
% setenv MANPATH "$MANPATH":/opt/pgi/linux86/10.3/man
% setenv LM_LICENSE_FILE "$LM_LICENSE_FILE":/opt/pgi/license.dat
```

In bash, sh, or ksh, use these commands:

```
$ PATH=/opt/pgi/linux86/10.3/bin:$PATH; export PATH
$ MANPATH=$MANPATH:/opt/pgi/linux86/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$LM_LICENSE_FILE:/opt/pgi/license.dat; export LM_LICENSE_FILE
```

Note

You should add these commands to your shell startup files to ensure that you have access in future login sessions to the PGI products.

4. Verify the Release Number of the Installed Software.

To verify the release number of the products you have installed, use the `-v` option on any of the compiler commands, as illustrated in the following examples. If you use `-v` instead, you also see the sequence of steps the compiler uses to compile and link programs for execution on your system.

For Fortran 77, use: **pgf77 -V x.f**

For Fortran 95, use: **pgfortran -V x.f**

For HPF, use: **pghpf -V x.f**

For C++, use: **pgCC -V x.c** or **pgc++ -V x.c**

For ANSI C, use: **pgcc -V x.c**

Note

These commands can be successfully executed even if the files `x.f` or `x.c` do not exist and you have not completed the licensing phase of the installation. The PGI compiler drivers support this as a quick check that you have installed the proper version of the compilers and have initialized your environment to enable access to that version.

5. Generate and Install License Keys.

Note

This step is necessary only if you chose not to allow the install script to perform these tasks for you. If you prefer, you can run the licensing tool now, as described when you exited the install script.

To obtain license keys, you need the following information:

- An account on the PGI website. You probably created this account when you downloaded the PGI software.
 - If you purchased a license without creating an account, one was created for you when your order was processed. Please check for an activation email from accounts-noreply@pgroup.com.
 - If you don't have an account, you can create one at: www.pgroup.com/register. Without an account you have no access to the CDK software.
- The FLEXnet hostid and hostname of the computer on which the software is installed, which is echoed to your screen by the installer.

Note

You can also obtain your FLEXnet hostid by using the following command after you have installed the products and initialized the environment variables:

```
% lmutil lmhostid
```

You see a message similar to the following one, in which 12345678abcd is unique to your machine.

```
The FLEXnet host ID of this machine is "12345678abcd".
```

Generate License Keys

Once you have logged on at www.pgroup.com/login using your PGI web account, you see a screen similar to the following:

Welcome

Use the links below to manage your PGI account.

[Download software](#) - For updating or evaluation.

[Manage PGI products](#) - Purchase, subscription, and ownership information

[Create permanent keys](#) - Create permanent software license keys

[Create trial keys](#) - For a two-week evaluation of the PGI product of your choice.

[Display a PIN code](#) - Use your old (pre-2008) PIN-based username and password to display the new PIN code.

[Tie a PIN to this account](#) - Use a PIN code to tie a PIN to your account and create permanent license keys.

[Update account](#) - Update contact information, change password, or modify email preferences.

[FAQ](#) - Answers to common questions.

To generate permanent license keys:

1. Click Create permanent keys.
2. Click the PIN associated with the product for which you wish to generate license keys. If you don't see any PINs listed, you first need to tie one to your account.
 - a. Obtain your PIN code from your original PGI order confirmation email.
 - b. Click the link: Tie a PIN to this account.
 - c. Follow the instructions provided.
3. Click License keys to generate the keys.

To generate trial license keys:

1. Click Create trial keys.
2. Accept the terms of the agreement.
3. Enter the hostid exactly as it appears in the message that is displayed during installation or when you issue the command:

```
% lmutil lmhostid
```

4. Click the *Generate license key* button.

Install License Keys

Once you have generated your trial or permanent license keys, copy, and then paste them into the file:

`/opt/pgi/license.dat`, substituting the appropriate installation directory path if you have not installed in the default `/opt/pgi` directory.

For example, if you have purchased PGI Fortran Workstation for Linux, the `license.dat` file should look similar to the following:

```
SERVER <hostname> <hostid> 27000
DAEMON pgroupd
PACKAGE PGI2010-workstation-complete pgroupd 2010.1231 8FE2A7F11183 \
COMPONENTS="pgi-hpf-lin64 pgi-f95-lin64 pgi-f77-lin64 \
pgi-cc-lin64 pgi-cpp-lin64 pgi-hpf-lin32 pgi-f95-lin32 \
pgi-f77-lin32 pgi-cc-lin32 pgi-cpp-lin32 pgi-hpf-lin32 \
pgi-f95-lin32 pgi-f77-lin32 pgi-cc-lin32 pgi-cpp-lin32 \
pgi-prof pgi-dbg pgi-dbg-gui " \
OPTIONS=SUITE SIGN="08AF B25A 295F BB3A CA7D \
F564 0973 BB69 2B66 187A 1BE6 6E65 BC95 2152 9E75 03BC A41D \
3422 52DF 15C4 37BB 0D7A 7F65 47E7 8B70 0F5B 987D 9A69 1FFC 2270"
FEATURE PGI2010-workstation-complete pgroupd 2010.1231 permanent 1 \
EA26405D17C1 VENDOR_STRING=123456:4:ws:accel \
HOSTID=001ec960ef1c DUP_GROUP=U SUITE_DUP_GROUP=U SIGN="0667 \
D67C 3E9E A935 287A AE93 035B 8316 CC01 F035 80CD 57E1 9F6A \
1E01 BD51 09DE 3BB6 6467 432E ADAF A9D7 E9B8 1E08 BF8F D7C5 \
E3F2 F458 8779 2420 2F97"
```

```

PACKAGE PGI71-workstation-complete pgroupd 7.1 4663E4ABD89E \
COMPONENTS="pghpf-linux86-64:7.1 pgf90-linux86-64:7.1 \
pgf77-linux86-64:7.1 pgcc-linux86-64:7.1 pgcpp-linux86-64:7.1 \
pghpf-linux86:7.1 pgf90-linux86:7.1 pgf77-linux86:7.1 \
pgcc-linux86:7.1 pgcpp-linux86:7.1 pghpf-linux86:7.1 \
pgf90-linux86:7.1 pgf77-linux86:7.1 pgcc-linux86:7.1 \
pgcpp-linux86:7.1 pgprof:7.1 pgdbg:7.1 pgdbg-gui:7.1 \
pgdbg-linux86-64:7.1" OPTIONS=SUITE SIGN="07C2 DA82 2505 0A20 \
B51E B86F D47E 2765 BB92 5EF7 0756 A652 8B80 1E2B A299 18D5 \
F82F 243B 0368 D580 9E0B 99DF A989 D202 3AAD BCC6 1A3C F517 24C6 013B"
FEATURE PGI71-workstation-complete pgroupd 7.1 permanent 1 \
35CB2A57B14C VENDOR_STRING=123456:4:ws HOSTID=001ec960ef1c \
DUP_GROUP=U SUITE_DUP_GROUP=U SIGN="023C A239 D028 AC2C 7CDF \
74C2 B32A 0E9D C68C FFAB FF8D 25CE BA74 E8C6 CCA1 076B 3560 \
4720 9A82 53F0 C1A6 1811 35D4 F8C2 A8D2 4427 4478 EB44 76E5 FCE1"

```

In your license file:

- `<hostid>` should match the `hostid` you submitted above when you generated your license keys.
- If necessary, you can enter or edit the `<hostname>` entry manually, but you cannot edit the `<hostid>` entry or you will invalidate the license keys.
- The date in the file, in this example 2010.1231, represents the expiration date for your subscription service.

For example, if your subscription date for your PIN is August 1, 2010, then the date in your file is 2010.0801. For information on how to renew your license, refer to [“Product Support,” on page 6](#)

- The six digits immediately following the = in the feature line component, 123456 of `VENDOR_STRING=123456:4` in this example, represent the PIN for this installation.

You have a similar unique Product ID Number (PIN) for your installation.

Note

Please include your PIN when contacting PGI for technical support for the products you have purchased. This PIN is also in your order confirmation email.

6. Start the License Manager daemon.

Important

If you used the install script to do this or if you are evaluating PGI software with trial keys, you do not need to perform this step and can proceed to Step 7.

Installations in a directory other than the default `/opt/pgi`

Note

The following refers to the shell script template for linux86-64. If you have installed only linux86, please substitute linux86 for linux86-64.

If you installed the compilers in a directory other than `/opt/pgi`, do this:

1. Edit the shell script template `$PGI/linux86-64/10.3/bin/lmgrd.rc`.
2. Substitute the correct installation directory for `/opt/pgi` in the section of the script entitled *Where to find the PGI Software*.
3. Save the file and exit the editor.

Issue the following command to start the license server and pgroup license daemon running on your system:

```
% cd $PGI/linux86-64/10.3/bin/
% ./lmgrd.rc start
```

If you wish to stop the license server and pgroup license daemon at a later time, you can do so with the command:

```
% cd $PGI/linux86-64/10.3/bin/
% ./lmgrd.rc stop
```

Start license server upon reboot:

To start the license server and pgroup license daemon each time your system is booted:

1. Log in as root.

Note

You **must** be logged in as root to successfully execute these commands.

2. Verify you have set the PGI environment variable as described in Step 3 of this installation process.
3. Execute the following two commands:

```
% cp $PGI/linux86/10.3/bin/lmgrd.rc /etc/init.d/lmgrd
% ln -s /etc/init.d/lmgrd /etc/rc.d/rc3.d/S90lmgrd
```

There are two values in this example that may be different on your system:

- Your rc files may be in a directory other than the one in the example: `/etc/init.d`. If the rc files are in a directory such as `/etc/rc.d/init.d`, then substitute that location in the example.
- Your system's default `runlevel` may be something other than '3', the level used in this example. You can run `/sbin/runlevel` to check the system's runlevel. If the runlevel on your systems is different, then you must set the correct subdirectory; use your system's runlevel in place of the "3" in the preceding example.

chkconfig(8) Utility

Most Linux distributions include the `chkconfig(8)` utility that manages the `runlevel` scripts. If your system has this tool and you wish to use it, then run the following commands:

```
% cp $PGI/linux86/10.3/bin/lmgrd.rc /etc/init.d/
% /sbin/chkconfig --add lmgrd
```

These commands create the appropriate links in the `/etc/init.d` directory hierarchy. For more information on *chkconfig*, please refer to the manual page.

Important

Release 7.2 and higher included a newer version of the FLEXnet software. The updated `lmgrd` and `pgroupd` daemons must be used in preference to versions shipped with previous releases of the PGI products.

You can co-install Release 2010 with Release 9.x, 8.x, 7.x, 6.x and/or 5.2; and you can use any of these versions of the compilers and tools with the new versions of `lmgrd` and `pgroupd` and a single Release 2010 license file.

If you use this file to start `lmgrd` automatically after a reboot of your system, you must modify your `lmgrd` script in the `/etc/rc.d` or `/etc/init.d` directory to use the new `lmgrd` daemon.

For example, your `lmgrd` script may look like this one, where `<target>` is replaced appropriately with `linux86` or `linux86-64`.

```
## Path to master daemon lmgrd
# Commented out previous path to 5.2:
#LMGRD=$PGI/<target>/5.2/bin/lmgrd
LMGRD=$PGI/<target>/10.3/bin/lmgrd

## Command to stop lmgrd
#Commented out previous path to 5.2:
#LMUTIL=$PGI/<target>/5.2/bin/lmutil
LMUTIL=$PGI/<target>/10.3/bin/lmutil
```

7. Review Documentation.

You can view the online HTML and PDF documentation using any web browser by opening the file:

```
$PGI/linux86-64/10.3/doc/index.htm
```

or

```
$PGI/linux86/10.3/doc/index.htm
```

You may want to bookmark this location for easy future reference to the online manuals.

8. Complete Network Installation Tasks.

Note

Skip this step if you are not using a network installation.

For a network installation, you must run the local installation script on each system on the network where the compilers and tools will be available for use.

If your installation base directory is `/opt/pgi` and `/usr/pgi/shared/10.3` is the common local directory, then run the following commands on each system on the network.

```

/opt/pgi/linux86/10.3/bin/makelocalrc -x /opt/pgi/linux86/10.3 \
-net /usr/pgi/shared/10.3
/opt/pgi/linux86-64/10.3/bin/makelocalrc -x /opt/pgi/linux86-64/10.3 \
-net /usr/pgi/shared/10.3

```

These commands create a system-dependent file `localrc.machinename` in both these directories: `/opt/pgi/linux86/10.3/bin` and `/opt/pgi/linux86-64/10.3/bin`. The commands also create the following three directories containing libraries and shared objects specific to the operating system and system libraries on that machine:

```

/usr/pgi/shared/10.3/lib
/usr/pgi/shared/10.3/liblf
/usr/pgi/shared/10.3/lib64.

```

Note

The **makelocalrc** command does allow the flexibility to have local directories that have different names on different machines. However, using the same directory on different machines allows users to easily move executables that use PGI-supplied shared libraries between systems.

Installation of the PGI products for Linux is now complete. For assistance with difficulties related to the installation, send email to trs@pgroup.com.

The following two sections contain information detailing the directory structure of the PGI installation, and instructions for how PGI end-users initialize environment and path settings to use the PGI compilers and tools.

Typical Directory Structure for Linux

If you specify `/opt/pgi` as the base directory for installation, the following directory structure is created by the PGI installation script:

Table 4.1. Linux Directory Structure Sample

This directory...	Contains...
<code>/opt/pgi/linux86/10.3/bin</code>	linux86 32-bit compilers & tools
<code>/opt/pgi/linux86/10.3/lib</code>	linux86 32-bit runtime libraries
<code>/opt/pgi/linux86/10.3/liblf</code>	linux86 32-bit large-file support libs (used by <code>-Mlfs</code>)
<code>/opt/pgi/linux86/10.3/include</code>	linux86 32-bit header files
<code>/opt/pgi/linux86-64/10.3/bin</code>	linux86-64 compilers & tools
<code>/opt/pgi/linux86-64/10.3/lib</code>	linux86-64 <code>-mmodel=small</code> libs
<code>/opt/pgi/linux86-64/10.3/libso</code>	linux86-64 <code>-fpic</code> shared libraries for <code>-mmodel=medium</code> development
<code>/opt/pgi/linux86-64/10.3/include</code>	linux86-64 header files

This directory...	Contains...
/opt/pgi/linux86/10.3/REDIST /opt/pgi/linux86-64/10.3/REDIST /opt/pgi/linux86/10.3/REDIST-RLR /opt/pgi/linux86-64/10.3/REDIST-RLR	Re-distributable runtime libraries
/opt/pgi/linux86/10.3/EXAMPLES /opt/pgi/linux86-64/10.3/EXAMPLES	Compiler examples
/opt/pgi/linux86/10.3/doc /opt/pgi/linux86-64/10.3/doc	Documentation
/opt/pgi/linux86/10.3/man /opt/pgi/linux86-64/10.3/man	UNIX-style man pages
/opt/pgi/linux86/10.3/jre /opt/pgi/linux86-64/10.3/jre	JAVA environment for PGDBG and PGPROF graphical user interfaces
/opt/pgi/linux86/10.3/src /opt/pgi/linux86-64/10.3/src	Fortran 90 source files for included modules
/opt/pgi/linux86/10.3/mpi/mpich /opt/pgi/linux86-64/10.3/mpi/mpich	MPICH1 scripts and libraries.

Additionally, a network install creates the following directories:

Table 4.2. Linux Directory Structure Sample

This directory...	Contains...
/opt/pgi/linux86/10.3/lib-linux86-g	linux86 32-bit libpgc library dependent on the version of glibc installed on each machine
/opt/pgi/linux86/10.3/include-g	linux86 32-bit header files dependent on the version of glibc or gcc installed on each machine
/opt/pgi/linux86-64/10.3/include-g	linux86-64 64-bit header files dependent on the version of glibc or gcc installed on each machine

End-user Environment Settings on Linux

Now that you have installed the compilers in, for example, /opt/pgi, an end-user of the PGI compilers and tools must initialize their shell environment to use the compilers successfully. Assume the license file is in /opt/pgi/license.dat, and the lmgrd license manager is running.

Note

Each user must issue the following sequence of commands to initialize the shell environment before using the PGI compilers and tools.

To make the 64-bit PGI compilers and tools the default:

In `csh`, use these commands:

```
% setenv PGI /opt/pgi
% setenv MANPATH "$MANPATH":$PGI/linux86-64/10.3/man
% setenv LM_LICENSE_FILE $PGI/license.dat
% set path = ($PGI/linux86-64/10.3/bin $path)
```

Once the 64-bit compilers are the defaults, you can make the MPICH commands and MPICH man pages accessible using these `csh` commands:

```
% set path = ($PGI/linux86-64/10.3/mpi/mpich/bin $path)
% setenv MANPATH "$MANPATH":$PGI/linux86-64/10.3/mpi/mpich/man
```

In `bash`, `sh`, or `ksh`, use these commands:

```
$ PGI=/opt/pgi; export PGI
$ MANPATH=$MANPATH:$PGI/linux86-64/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$PGI/license.dat; export LM_LICENSE_FILE
$ PATH=$PGI/linux86-64/10.3/bin:$PATH; export PATH
```

Once the 64-bit compilers are the defaults, you can make the MPICH commands and MPICH man pages accessible using these commands.

```
$ PATH=$PGI/linux86-64/10.3/mpi/mpich/bin:$PATH
$ export PATH
$ MANPATH=$MANPATH:$PGI/linux86-64/10.3/mpi/mpich/man
$ export MANPATH
```

To make the 32-bit PGI compilers and tools the default:

In `csh`, use these commands:

```
% setenv PGI /opt/pgi
% setenv MANPATH "$MANPATH":$PGI/linux86/10.3/man
% setenv LM_LICENSE_FILE $PGI/license.dat
% set path = ($PGI/linux86/10.3/bin $path)
```

Once the 32-bit compilers are the defaults, you can make MPICH commands and MPICH man pages accessible using these `csh` commands.

```
% set path = ($PGI/linux86/10.3/mpi/mpich/bin $path)
% setenv MANPATH "$MANPATH":$PGI/linux86/10.3/mpi/mpich/man
```

In `bash`, `sh`, or `ksh`, use these commands:

```
$ PGI=/opt/pgi; export PGI
$ MANPATH=$MANPATH:$PGI/linux86/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$PGI/license.dat; export LM_LICENSE_FILE
$ PATH=$PGI/linux86/10.3/bin:$PATH; export PATH
```

Once the 32-bit compilers are the defaults, you can make MPICH commands and MPICH man pages accessible using these commands.

```
$ PATH=$PGI/linux86/10.3/mpi/mpich/bin:$PATH; export PATH
$ MANPATH=$MANPATH:$PGI/linux86/10.3/mpi/mpich/man; export MANPATH
```

Common Linux Installation Issues

If you are having problems with the installation, you might want to check out the Java Runtime Environment.

Java Runtime Environment (JRE)

Although the PGI installation on Linux includes a 32-bit version of the Java Runtime Environment (JRE), sufficient 32-bit X Window System support must be available on the system for the JRE and the PGI software that depends on it to function properly. On some systems, notably recent releases of Fedora Core, these libraries are not part of the standard installation. The required X Windows support generally includes these libraries:

libXau

libXdmcp

libxcb

libX11

liXext

Chapter 5. Installations on Windows

This section describes how to install PGI Workstation on a Windows system. These instructions are valid for Win64 and Win32 platforms, though supported platforms vary by product. Further, this installation information is applicable to both permanent and trial installations.

For installations on 64-bit x64 systems running a 64-bit operating system, the PGI installer installs the 64-bit and 32-bit versions of the PGI compilers and tools. For installations on 32-bit x86 systems, the PGI installer installs only the 32-bit versions of the PGI compilers and tools.

Preparing to Install on Windows

PGI Workstation for Windows includes the Microsoft Open Tools, essential tools and libraries required to compile, link, and execute programs on Windows. No additional Microsoft tools or libraries are needed. The Microsoft Open Tools includes a subset of the full Microsoft Platform SDK. PGI Workstation 2010 can also compile and link against the Microsoft Platform SDK. For information about how to download the Platform SDK, visit <http://msdn.microsoft.com/platformsdk>.

Note

Verify you have enough free disk space. PGI installation requires 750 MB of free disk space during the installation.

Note

For more information on Windows interoperability with Unix and Linux Systems, go to www.interopsystems.com.

Installation Steps for Windows

Once you have prepared for the installation, follow these instructions to install the software:

1. Have the software available and log on as Administrator.

Note

Administrator privileges are required to install PGI Workstation.

Download the software from www.pgroup.com or another electronic distribution site.

2. Start the installation.

If you obtained PGI Workstation from PGI electronically, run the installation executable file on the target machine. The installation executables are:

pgiws-100.exe	32-bit Windows
pgiwsx64-100.exe	64-bit/32-bit Windows

Setup Tool For Win32 or Win64:

The Win32/Win64 installer runs the PGI Licensing Setup tool at the conclusion of the install process. This tool automates steps three (3) through six (6) in this process. To use the PGI Licensing Setup tool, your computer must meet these requirements:

- o Be connected to the Internet.
- o Have Microsoft .NET Framework 2.0 (or higher) installed.
- o Have Internet Explorer Version 6.0 or higher installed and configured.

If your computer does not meet these prerequisites, then you can either make any necessary changes to your system and run the PGI Licensing Setup tool later, or follow steps three through six in this process. If you choose to run the PGI Licensing Setup tool later, you can find it in the PGI Workstation folder under the Start menu.

When you run the program, the PGI Licensing Setup tool walks you through the license installation process. It prompts you for your PGI web account and password, as well as the type of license you wish to install, such as a 2-week trial license or a permanent license. The tool also informs you of any problems it experiences with installation and provides instructions on how to proceed.

Note

If the PGI Licensing Setup tool reports a successful license installation, then skip to step 7.

3. Make PGI products accessible and Prepare for Licensing.

When installation executable has completed, execute the following commands to make the PGI products accessible and to initialize your environment for use of FLEXnet.

Whenever you bring up a PGI command window by double-left-clicking on the PGI Workstation desktop icon, PGI compilers and tools are accessible and your environment is pre-initialized.

4. Verify Release Number.

Verify the release number of the products you have installed. Open PGI Workstation from your desktop by double-left-clicking the PGI icon and read the first line displayed in the BASH shell window.

For Fortran 77, use: **pgf77 -V x.f**

For Fortran 95, use: **pgfortran -V x.f**

For HPE, use: **pghpf -V x.f**
 For C++, use: **pgCC -V x.c**
 For ANSI C, use: **pgcc -V x.c**

Note

These commands can be successfully executed even if the files `x.f` or `x.c` do not exist and you have not completed the licensing phase of the installation. The PGI compiler drivers support this as a quick check that you have installed the proper version of the compilers and have initialized your environment to enable access to that version.

5. Generate and Install license keys.

All of the PGI compilers and tools are license-managed and require installation of license keys to make the PGI software operational.

To obtain license keys, you need the following information:

- An account on the PGI website.

You probably created this account when you downloaded the PGI software.

- If you purchased a license without creating an account, one was created for you when your order was processed. Please check for an activation email from `accounts-noreply@pgroup.com`
- If you don't have an account, you can create one at: `www.pgroup.com/register`
- The FLEXnet hostid and hostname of the computer on which the software is installed, which is echoed to your screen by the installer.

Note

After you have installed the PGI software, you can obtain your FLEXnet hostid by double-left clicking on the PGI Workstation desktop icon to open a PGI Workstation command window, and typing these commands:

```
PGI$ cd $PGI
PGI$ cat license.info
```

You should see information similar to the following:

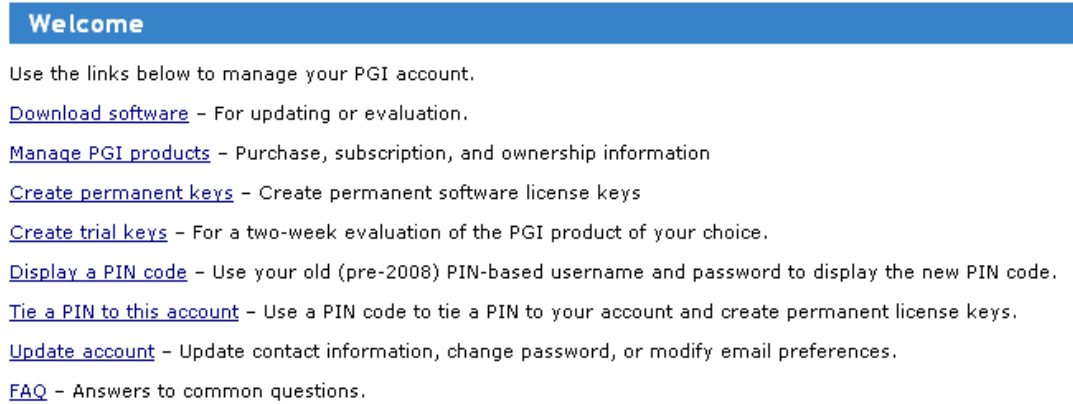
For a permanent license, please read the order acknowledgment that you received. Connect to `www.pgroup.com/login` with the registered email and password in your order acknowledgment.

```
FLEXnet Host ID: 001234A98765
Installation: C:\Program Files\PGI\
PGI Release: 2010
```

You can also obtain evaluation license keys for the PGI products by connecting to the URL `www.pgroup.com/login` with a web browser and logging in using an existing PGI user account or creating a new account if you have not previously registered with PGI.

Generate License Keys

Once you have logged on at www.pgroup.com/login using your PGI user account and password, you see a screen similar to the following:



Welcome

Use the links below to manage your PGI account.

- [Download software](#) – For updating or evaluation.
- [Manage PGI products](#) – Purchase, subscription, and ownership information
- [Create permanent keys](#) – Create permanent software license keys
- [Create trial keys](#) – For a two-week evaluation of the PGI product of your choice.
- [Display a PIN code](#) – Use your old (pre-2008) PIN-based username and password to display the new PIN code.
- [Tie a PIN to this account](#) – Use a PIN code to tie a PIN to your account and create permanent license keys.
- [Update account](#) – Update contact information, change password, or modify email preferences.
- [FAQ](#) – Answers to common questions.

To generate permanent license keys:

1. Click Create permanent keys.
2. Click the PIN associated with the product for which you wish to generate license keys. If you don't see any PINs listed, you first need to tie one to your account.
 - a. Obtain your PIN code from your original PGI order confirmation email.
 - b. Click the link: Tie a PIN to this account.
 - c. Follow the instructions provided.
3. Click License keys to generate the keys.

To generate trial license keys:

1. Click Create trial keys.
2. Accept the terms of the agreement.
3. Enter the hostid exactly as it appears in the message that is displayed during installation or when you issue the command:

```
PGI$ cd $PGI
PGI$ cat license.info
```

4. Click the *Generate license key* button.

Install License Keys

Once you have generated your trial or permanent license, cut and paste them into your `license.dat` file. In a typical configuration, where `C:\` is the system drive and you installed the software using the default location, this file would be found in `C:\Program Files\PGI\license.dat`.

- If you have not previously received license keys from PGI, replace the contents of the `license.dat` file created during installation with the PGI Workstation keys you generated using the preceding steps.
 - If your `license.dat` file already contains keys that you previously received from PGI, overwrite the keys if they are for a previous release of *PGI Workstation* or *PGI Server*; append the new keys to the keys already in this file if they are for a different PGI product, such as PGI Visual Fortran.
 - If you are evaluating *PGI Workstation* with trial keys, skip to Step 7. You do not need to start the license server.
6. Start the PGI License Server.

The FLEXnet license system requires that a license server be running. The installation process creates a Windows Service named PGI License Server. As soon as a valid `license.dat` file is in place, as described in Step 5, this service can be started.

Important

You do not need to start the license server with trial keys.

The PGI License Server is a Windows Service. Therefore, to start it, do this:

1. Open the Services dialog from the Start menu:
Start | Control Panel | Administrative Tools | Services
2. Select *PGI License Server*.
3. Select *Start*.

Note

The PGI License Server service starts automatically on system reboot, provided that the `license.dat` file contains valid keys.

7. Review Documentation.

You can view the online HTML and PDF documentation using any web browser by opening the file: www.pgroup.com/resources/docs.htm

Tip

You may want to bookmark this location for easy future reference to the online manuals.

8. Customize PGI Workstation

Optionally, customize the setup, as described in the next section, “[Customizing the Command Window](#)” and in “[PGI Workstation Directory Structure](#),” on page 30.

Customizing the Command Window

By default, when you double-left-click on the PGI Workstation desktop icon, a standard black-background command window appears on your screen. This window is pre-initialized with environment and path settings for use of the PGI Workstation compilers and tools. If you prefer different background or text colors, font style, window size, or scrolling capability, you can customize the “shortcut” that creates the PGI Workstation command window.

To customize your window, right-click the PGI Workstation desktop icon, and select “Properties” from the pop-up menu. In the PGI Workstation Properties dialog box, select the tabs for the features you want to customize, and make the desired modifications.

PGI Workstation Directory Structure

This section contains information about the directory structure that the installation process builds.

Default Installation Directories

The PGI Workstation default installation directory depends on your platform. The following table lists the default installation directory by platform.

Table 5.1. Default Installation Directories by Platform

Platform	Default Installation Directory
Win32	%SYSTEMDRIVE%\Program Files\PGI\win32\10.3\
Win64	%SYSTEMDRIVE%\Program Files\PGI\win64\10.3\ %SYSTEMDRIVE%\Program Files (x86)\PGI\win32\10.3\

In addition to the product directories, the Microsoft Open Tools and, optionally, cygwin, are installed here.

```
%SYSTEMDRIVE%\Program Files\PGI\Microsoft Open Tools 9
%SYSTEMDRIVE%\cygwin
```

PGI Workstation Directories on a Win64 System

The following directory structure is created during installation on a Win64 system; c is your system drive.

Table 5.2. Win64 Sample Directory Structure

Name of directory	Contents
C:\Program Files\PGI\win64\10.3\bin	PGI Workstation 2010 compilers and tools binaries
C:\Program Files (x86)\PGI\win32\10.3\bin	

Name of directory	Contents
C:\Program Files\PGI\win64\10.3\lib C:\Program Files (x86)\PGI\win32\10.3\lib	PGI Workstation 2010 runtime and support libraries
C:\Program Files\PGI\win64\10.3\include C:\Program Files (x86)\PGI\win32\10.3\include	PGI Workstation 2010 header files
C:\Program Files\PGI\win64\10.3\REDIST C:\Program Files\PGI\win64\10.3\REDIST-RLR C:\Program Files (x86)\PGI\win32\10.3\REDIST C:\Program Files (x86)\PGI\win32\10.3\REDIST-RLR	Re-distributable runtime libraries
C:\Program Files\PGI\win64\10.3\doc C:\Program Files (x86)\PGI\win32\10.3\doc	Documentation
C:\Program Files\PGI\win64\10.3\man C:\Program Files (x86)\PGI\win32\10.3\man	Man pages for commands
C:\Program Files\PGI\Microsoft Open Tools 9	Microsoft tools
C:\cygwin	Cygwin tools

PGI Workstation Directories on a Win32 System

The following directory structure is created during installation on a Win32 system. C is your system drive.

Table 5.3. Win32 Sample Directory Structure

Name of directory	Contents
C:\Program Files\PGI\win32\10.3\bin	PGI Workstation 2010 compilers and tools binaries
C:\Program Files\PGI\win32\10.3\lib	PGI Workstation 2010 runtime and support libraries
C:\Program Files\PGI\win32\10.3\include	PGI Workstation 2010 header files
C:\Program Files (x86)\PGI\win32\10.3\REDIST C:\Program Files (x86)\PGI\win32\10.3\REDIST-RLR	Re-distributable runtime libraries
C:\Program Files\PGI\win32\10.3\doc	Documentation
C:\Program Files\PGI\win32\10.3\man	Man pages for commands
C:\Program Files\PGI\Microsoft Open Tools 9	Microsoft tools
C:\cygwin	Cygwin tools

LM_LICENSE_FILE and FLEXLM_BATCH

This section describes two environment variables that you can use with FLEXnet:

LM_LICENSE_FILE

FLEXLM_BATCH

LM_LICENSE_FILE

The system environment variable `LM_LICENSE_FILE` is not required by PGI Workstation on Windows but you can use it to override the default location that is searched for the license.dat file.

To use the system environment variable `LM_LICENSE_FILE`, set it to the full path of the license key file. To do this, follow these steps:

1. Open the System Properties dialog (Start | Control Panel | System).
2. Select the 'Advanced' tab.
3. Click the 'Environment Variables' button.
 - If `LM_LICENSE_FILE` is not already an environment variable, create a new system variable for it. Set its value to the full path, including the name of the file, for the license key file.
 - If `LM_LICENSE_FILE` already exists as an environment variable, append the path to the license file to the variable's current value using a semi-colon to separate entries.

FLEXLM_BATCH

By default, on Windows, the license server creates interactive pop-up messages to issue warning and errors. This behavior is controlled by the environment variable `FLEXLM_BATCH`. Although it is not recommended, you can prevent interactive pop-ups from appearing. To do this, set the environment variable `FLEXLM_BATCH` to 1.

Windows Firewall and PGI Debugging

Microsoft Windows Firewall runs by default on some types of systems, such as Windows XP and Windows Vista. If this firewall is running on your system, it may try to block the PGI debug engine when you debug a program. If this happens, Windows Firewall displays a dialog that allows you to unblock the application named **pgdebug**. If you choose the Unblock option, Windows Firewall adds **pgdebug** to its list of Exceptions and you do not see the pop-up dialog again unless you reinstall.

On rare occasions, this pop-up may prevent your very first debug session from starting correctly. If this occurs, use the Task Manager to end the debug session.

To prevent any Firewall issues, you can manually add **pgdebug** to the Windows Firewall list of Exceptions. To do this, follow these instructions:

1. From the Control Panel, open your system's Security Center. If your system does not have a Security Center, then you do not have Windows Firewall.
2. In the Windows Security Center, examine the Windows Firewall settings.

If the Firewall is OFF, no further action is required.

If you do not see the setting, proceed to the next step.

3. In the Manage Security Settings for: section, click Windows Firewall.
4. Select the Exceptions tab in the Windows Firewall dialog box.

The next steps depend on your Windows edition.

- For 32-bit, the final step is to add the 32-bit **pgdebug** to the Exceptions list.
- For 64-bit, the final step is to add both the 32-bit **pgdebug** and the 64-bit **pgdebug** to the Exceptions list.

Note

The remaining instructions assume the system drive is c.

32-bit OS

Add the 32-bit **pgdebug** to the Exceptions list.

1. Click Add Program...
2. Use the Browse button to navigate to


```
C:\Program Files\PGI\win32\10.3\bin\pgdebug.exe.
```
3. Select `pgdebug.exe`.
4. Click Open.
5. Click OK.

64-bit OS

Add both the 32-bit **pgdebug** and the 64-bit **pgdebug** to the Exceptions list.

1. Add the 32-bit `pgdebug` to the Exceptions list:
 - a. Click Add Program...
 - b. Use the Browse button to navigate to


```
C:\Program Files (x86)\PGI\win32\10.3\bin.
```
 - c. Select `pgdebug.exe`.
 - d. Click Open.
 - e. Click OK.
2. Add the 64-bit `pgdebug` to the Exceptions list.
 - a. Click Add Program...
 - b. Use the Browse button to navigate to


```
C:\Program Files\PGI\win64\10.3\bin.
```
 - c. Select `pgdebug.exe`.
 - d. Click Open.

- e. Click OK.

Note

Once you have completed the preceding process for your OS, the Firewall no longer blocks PGI debugging.

Common Windows Installation Problems

The most common installation problems on Windows are related to licensing.

To troubleshoot your installation, first check that the `license.dat` file you are using contains valid license keys. Second, check that the PGI License Server, a Windows Service, has been started.

Typical FLEXnet errors encountered may include the following:

- When using a PGI compiler or tool, a FLEXible License Manager dialog appears that states `\LICENSE MANAGER PROBLEM: No such feature exists.'`

This message may appear because the `license.dat` file accessed by the FLEXnet License Manager does not contain valid license keys.

- When using a PGI compiler or tool, a FLEXible License Manager dialog appears that states `\LICENSE MANAGER PROBLEM: Cannot connect to license server system.'`

This message may appear because the PGI License Server has not been started.

- When starting the PGI License Server, a system message appears that states 'The PGI License Server service on Local Computer started and then stopped. Some services stop automatically if they have no work to do, for example, the Performance Logs and Alerts service.'

This message may appear because the `license.dat` file accessed by the FLEXnet License Manager does not contain valid license keys.

- You may see the following message: `\LICENSE MANAGER PROBLEM: Failed to checkout license'`

This message may appear because the PGI License Server has not been started.

- By default, on Windows, the license server creates interactive pop-up messages to issue warning and errors. You can use the environment variable `FLEXLM_BATCH` to prevent interactive pop-up windows.

To do this, set the environment variable `FLEXLM_BATCH` to 1.

For assistance with difficulties related to the installation, send email to trs@pgroup.com.

Chapter 6. Installations on Apple Mac OS X

This section describes how to install PGI Workstation on an Apple running Mac OS X. It covers local installs, and is applicable to permanent or trial installations.

Note

PGI Workstation and PGI Server for Mac OS are only supported on Intel Core and Core 2 Duo processors running Mac OS X version 10.4.11 or greater. Previous versions of Mac OS may be unstable for 64-bit programs. Using this release requires that Apple Xcode 2.5 or greater be installed. Xcode is available from <http://developer.apple.com>.

- For installations on 32-bit x86 systems, the PGI installation process installs only the osx86 versions of the PGI compilers and tools.
- For installations on 64-bit x64 systems running an osx86-64 execution and development environment, the PGI installation process installs the osx86-64 version of the PGI compilers and tools.
- If the 32-bit gcc development package is already installed on the system, the 32-bit osx86 tools are installed on a 64-bit x64 system.

The 32-bit and 64-bit compilers, tools, and supporting components have the same command names, and the environment you target by default, either osx86-64 or osx86, depends on the version of the compiler that comes first in your path settings.

The default installation base directory is `/opt/pgi`.

Preparing to Install on Apple Mac OS X

To prepare for the installation:

- Verify you have enough free disk space.
 - On the osx86 platform, PGI installation requires 250 MB of free diskspace.
 - On the osx86-64 platform, PGI installation requires 500 MB of freedisk space.

- Verify that Xcode 2.5 or greater is installed.
 - If you know how to run Xcode, start Xcode and click About Xcode to verify the version is 2.5 or greater.
 - If you do not know how to run Xcode or are uncertain if it is installed on your system, do the following:
 1. From the Apple Menu, select About This Mac.
 2. Click More Info.
 3. Select System profiler | Software | Applications.
 4. Scroll through the alphabetical list and verify Xcode is in it.
 5. Verify the version is 2.5 or greater.

Note

PGI Workstation for Mac OS requires the Xcode application, which provides several components of the tool chain, including the system assembler, linker, and runtime libraries. However, PGI Workstation runs in a Terminal, not in the Xcode IDE, and the PGDBG debugger and PGPROF profiler open Java windows.

In preparation for installing PGI Workstation on Mac OS, first review [Figure 6.1](#), an overview of the installation process.

Installation Steps for Mac OS

Once you have prepared for the installation, follow these instructions to install the software:

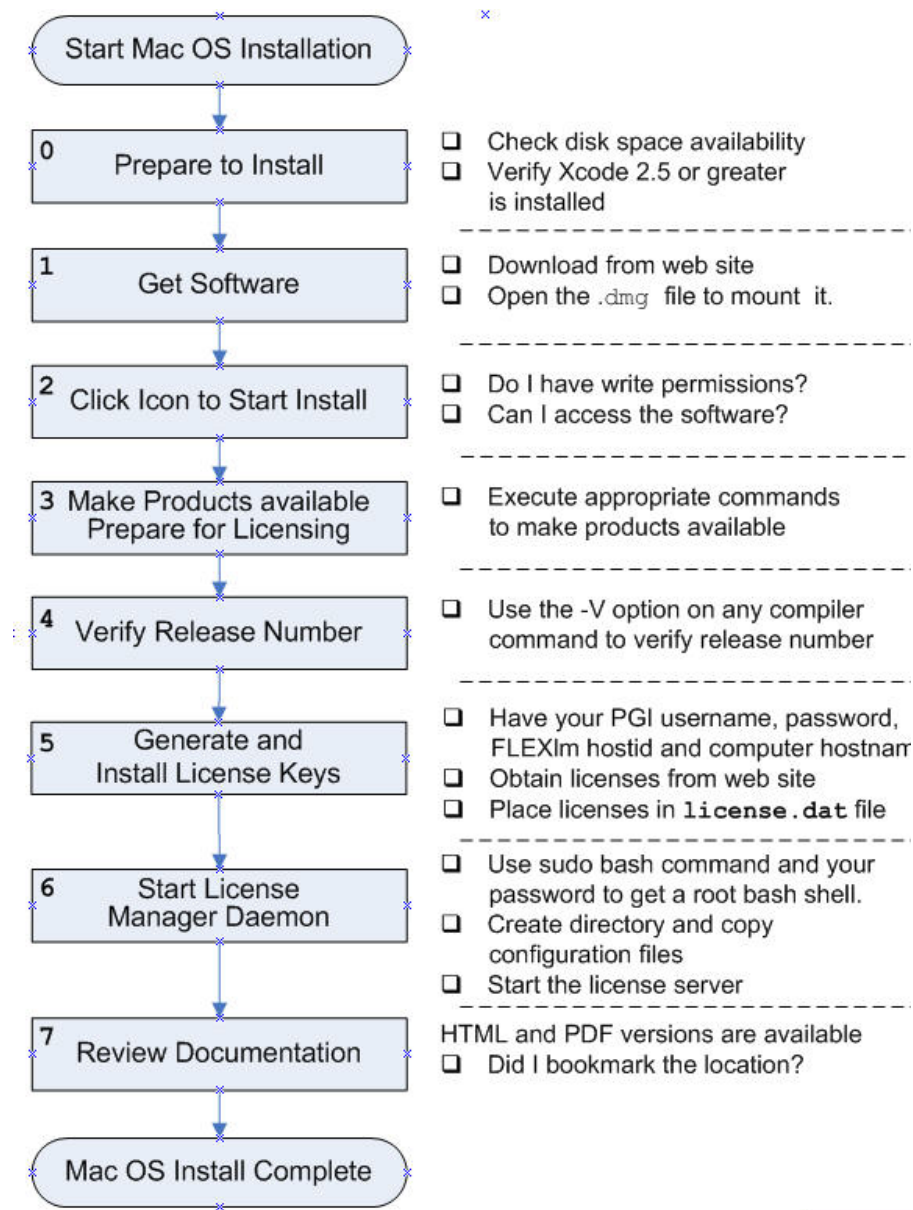
1. Access the installation package. Download the software from www.pgroup.com or another electronic distribution site. The file you download is PGI-Workstation-100.dmg. If it didn't mount automatically, open this file to mount it.
2. Install the software.

Click PGI Workstation 2010.pkg, which is part of the mounted disk. Follow the installation instructions.

1. When you see the initial system check dialog, click continue to allow the install script to check that your system has the required components for installing the software, such as Xcode 2.5 or greater and gcc.
2. Select the hard drive and, if you want, you can also select an installation directory other than the default directory: `/opt/pgi`.

After the software is installed, the install script performs some system-specific customization and then initializes for licensing.

Figure 6.1. PGI Installation on Mac OS X Overview



3. Make PGI products accessible and prepare for licensing.

When the license file is in place, execute the following commands to make the products you purchased accessible, and to initialize your environment for use of FLEXnet. These commands assume that you use the default installation directory: `/opt/pgi`

Note

Substitute `osx86` for `osx86-64` if you are installing on a 32-bit Mac OS system or wish to target `osx86` as the default.

In bash, sh, or ksh, use these commands:

```
$ PGI=/opt/pgi; export PGI
$ PATH=/opt/pgi/osx86-64/10.3/bin:$PATH; export PATH
$ MANPATH=$MANPATH:/opt/pgi/osx86-64/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$LM_LICENSE_FILE:/opt/pgi/license.dat
$ export LM_LICENSE_FILE
```

In csh, use these commands:

```
% setenv PGI /opt/pgi
% set path=(/opt/pgi/osx86-64/10.3/bin $path)
% setenv MANPATH "$MANPATH" /opt/pgi/osx86-64/10.3/man
% setenv LM_LICENSE_FILE "$LM_LICENSE_FILE" /opt/pgi/license.dat
```

You should add these commands to your Terminal startup files, such as `.bash_profile`, to ensure that you have access to the PGI products upon future logins.

4. Verify the release number.

To verify the release number of the products you have installed, use the `-v` option on any of the compiler commands, as illustrated in the following examples. If you use `-v` instead, you also see the sequence of steps the compiler uses to compile and link programs for execution on your system.

For Fortran 77, use:	pgf77 -V x.f
For Fortran 95, use:	pgfortran -V x.f
For C++, use:	pgCC -V x.c
For ANSI C, use:	pgcc -V x.c

Note

These commands can be successfully executed even if the files `x.f` or `x.c` do not exist and you have not completed the licensing phase of the installation. The PGI compiler drivers support this as a quick check that you have installed the proper version of the compilers and have initialized your environment to enable access to that version.

5. Generate and Install License Keys.

All of the PGI compilers and tools are license-managed and require installation of license keys to make the PGI software operational. To obtain license keys, you need the following information:

- An account on the PGI website. You probably created this account when you downloaded the PGI software.
 - If you purchased a license without creating an account, one was created for you when your order was processed. Please check for an activation email from `accounts-noreply@pgroup.com`.
 - If you don't have an account, you can create one at: `www.pgroup.com/register`
- The FLEXnet hostid and hostname of the computer on which the software is installed, which is echoed to your screen by the installer.

Note

You can also obtain your FLEXnet hostid by using the following command after you have installed the products and initialized the environment variables:

```
% lmutil lmhostid
```

You see a message similar to the following one, in which 12345678abcd is unique to your machine.

The FLEXnet host ID of this machine is "12345678abcd".

To locate your hostname, use this command:

```
% lmutil lmhostid -hostname
```

Generate License Keys

Once you have logged on at www.pgroup.com/login using your PGI user account and password, you see a screen similar to the following:

Welcome

Use the links below to manage your PGI account.

[Download software](#) - For updating or evaluation.

[Manage PGI products](#) - Purchase, subscription, and ownership information

[Create permanent keys](#) - Create permanent software license keys

[Create trial keys](#) - For a two-week evaluation of the PGI product of your choice.

[Display a PIN code](#) - Use your old (pre-2008) PIN-based username and password to display the new PIN code.

[Tie a PIN to this account](#) - Use a PIN code to tie a PIN to your account and create permanent license keys.

[Update account](#) - Update contact information, change password, or modify email preferences.

[FAQ](#) - Answers to common questions.

To generate permanent license keys:

1. Click `Create permanent keys`.
2. Click the PIN associated with the product for which you wish to generate license keys. If you don't see any PINs listed, you first need to tie one to your account.
 - a. Obtain your PIN code from your original PGI order confirmation email.
 - b. Click the link: `Tie a PIN to this account`.
 - c. Follow the instructions provided.
3. Click `License keys` to generate the keys.

To generate trial license keys:

1. Click `Create trial keys`.
2. Accept the terms of the agreement.

3. Enter the `hostid` exactly as it appears in the message that is displayed during installation or when you issue the command:

```
% lmutil lmhostid
```

4. Click the *Generate license key* button.

Install License Keys

Once you have generated your trial or permanent license keys, copy and paste them into the file `/opt/pgi/license.dat`, or substitute the appropriate installation directory path if you have not installed in the default `/opt/pgi` directory.

For example, if you have purchased PGI Workstation for MacOS, the `license.dat` file should look similar to the following:

```
SERVER <hostname> <hostid> 27000
DAEMON pgroupd
PACKAGE PGI2010-workstation-complete pgroupd 2010.1231 8FE2A7F11183 \
  COMPONENTS="pgi-hpf-lin64 pgi-f95-lin64 \
  pgi-f77-lin64 pgi-cc-lin64 pgi-cpp-lin64 \
  pgi-hpf-lin32 pgi-f95-lin32 pgi-f77-lin32 \
  pgi-cc-lin32 pgi-cpp-lin32 pgi-hpf-lin32 \
  pgi-f95-lin32 pgi-f77-lin32 pgi-cc-lin3 \
  pgi-cpp-lin32 pgi-prof pgi-dbg \
  pgi-dbg-gui" OPTIONS=SUITE SIGN="08AF B25A 295F BB3A CA7D \
  F564 0973 BB69 2B66 187A 1BE6 6E65 BC95 2152 9E75 03BC A41D \
  3422 52DF 15C4 37BB 0D7A 7F65 47E7 8B70 0F5B 987D 9A69 1FFC 2270"
FEATURE PGI2010-workstation-complete pgroupd 2010.1231 permanent 1 \
  EA26405D17C1 VENDOR_STRING=123456:4:ws:accel \
  HOSTID=001ec960ef1c DUP_GROUP=U SUITE_DUP_GROUP=U SIGN="0667 \
  D67C 3E9E A935 287A AE93 035B 8316 CC01 F035 80CD 57E1 9F6A \
  1E01 BD51 09DE 3BB6 6467 432E ADAF A9D7 E9B8 1E08 BF8F D7C5 \
  E3F2 F458 8779 2420 2F97"
PACKAGE PGI71-workstation-complete pgroupd 7.1 4663E4ABD89E \
  COMPONENTS="pghpf-linux86-64:7.1 pgf90-linux86-64:7.1 \
  pgf77-linux86-64:7.1 pgcc-linux86-64:7.1 pgcpp-linux86-64:7.1 \
  pghpf-linux86:7.1 pgf90-linux86:7.1 pgf77-linux86:7.1 \
  pgcc-linux86:7.1 pgcpp-linux86:7.1 pghpf-linux86:7.1 \
  pgf90-linux86:7.1 pgf77-linux86:7.1 pgcc-linux86:7.1 \
  pgcpp-linux86:7.1 pgprof:7.1 pgdbg:7.1 pgdbg-gui:7.1 \
  pgdbg-linux86-64:7.1" OPTIONS=SUITE SIGN="07C2 DA82 2505 0A20 \
  B51E B86F D47E 2765 BB92 5EF7 0756 A652 8B80 1E2B A299 18D5 \
  F82F 243B 0368 D580 9E0B 99DF A989 D202 3AAD BCC6 1A3C F517 24C6 013B"
FEATURE PGI71-workstation-complete pgroupd 7.1 permanent 1 \
  35CB2A57B14C VENDOR_STRING=123456:4:ws HOSTID=001ec960ef1c \
  DUP_GROUP=U SUITE_DUP_GROUP=U SIGN="023C A239 D028 AC2C 7CDF \
  74C2 B32A 0E9D C68C FFAB FF8D 25CE BA74 E8C6 CCA1 076B 3560 \
  4720 9A82 53F0 C1A6 1811 35D4 F8C2 A8D2 4427 4478 EB44 76E5 FCE1"
```

In your license file:

- `<hostid>` should match the *hostid* you submitted above when you generated your license keys.
- If necessary, you *can* enter or edit the `<hostname>` entry manually, but you *cannot* edit the `<hostid>` entry or you will invalidate the license keys.

- The date in the file, in this example 2010.1231, represents the expiration date for your subscription service.

For example, if your subscription date for your PIN is August 1, 2010, then the date in your file is 2010.0801. For information on how to renew your license, refer to “[Product Support](#),” on page 6

- The six digits immediately following the = in the feature line component, `VENDOR_STRING=123456:4` represent the Product ID Number (PIN) for this installation, in this example 123456. You have a similar unique PIN for your installation.

6. Start the license manager daemon.

Important

If you are evaluating PGI Workstation with trial keys, you do not need to perform this step and can proceed to Step 7.

Follow these steps to start the license server and pgroup license daemon running on your system:

1. Use the **sudo** command to get a root bash shell; enter your password:

```
% sudo bash
<password>
```

2. Create the directory `/Library/StartupItems/PGI`:

```
% mkdir /Library/StartupItems/PGI
```

3. Copy the PGI license configuration files:

```
% cp /opt/pgi/PGI /Library/StartupItems/PGI/PGI
% cp /opt/pgi/StartupParameters.plist \
/Library/StartupItems/PGI/StartupParameters.plist
```

4. Start the license server:

```
% cd /Library/StartupItems/PGI
% ./PGI start
```

The license server should now be running. It should restart automatically whenever you reboot.

Installation of your FLEXnet-style licensing of our products is now complete. For assistance with difficulties related to the installation, send email to trs@pgroup.com.

7. Review Documentation.

You can view the online HTML and PDF documentation using any web browser by opening the file:

```
/opt/pgi/osx86/10.3/doc/index.htm
```

or

```
/opt/pgi/osx86-64/10.3/doc/index.htm
```

You may want to bookmark this location for easy future reference to the online manuals.

Typical Directory Structure for Mac OS X

If you specify `/opt/pgi` as the base directory for installation, the following directory structure is created during the PGI installation process:

Table 6.1. Sample Mac OS Directory Structure

Name of directory	Contents
<code>/opt/pgi/osx86/10.3/bin</code>	osx86 32-bit compilers & tools
<code>/opt/pgi/osx86/10.3/lib</code>	osx86 32-bit runtime libraries
<code>/opt/pgi/osx86/10.3/include</code>	osx86 32-bit header files
<code>/opt/pgi/osx86/10.3/doc</code>	Documentation
<code>/opt/pgi/osx86/10.3/man</code>	UNIX-style man pages
<code>/opt/pgi/osx86/10.3/src</code>	Fortran 90 source files for included modules.
<code>/opt/pgi/osx86/10.3/mpi</code>	osx86 32-bit OpenMPI for local development
<code>/opt/pgi/osx86-64/10.3/bin</code>	osx86-64 compilers & tools
<code>/opt/pgi/osx86-64/10.3/lib</code>	osx86-64 <code>-mmodel=small</code> libs
<code>/opt/pgi/osx86-64/10.3/include</code>	osx86-64 header files
<code>/opt/pgi/osx86-64/10.3/doc</code>	Re-distributable runtime libraries
<code>/opt/pgi/osx86-64/10.3/doc</code>	Documentation
<code>/opt/pgi/osx86-64/10.3/man</code>	UNIX-style man pages
<code>/opt/pgi/osx86-64/10.3/src</code>	Fortran 90 source files for included modules.
<code>/opt/pgi/osx86-64/10.3/mpi</code>	osx86-64 OpenMPI for local development

End-user Environment Settings on Mac OS X

Now that you have installed the compilers in, for example, `/opt/pgi`, you must initialize your environment to use the compilers successfully. Each user must issue the following sequence of commands to initialize the shell environment before using the PGI compilers and tools.

Issue these commands that assume this:

- The license file is in `/opt/pgi/license.dat`.
- The `lmgrd` license manager is running.

The following commands make the 32-bit compilers the default.

In `bash`, `sh`, or `ksh`, use these commands:

```
$ PGI=/opt/pgi; export PGI
$ MANPATH=$MANPATH:$PGI/osx86/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$PGI/license.dat; export LM_LICENSE_FILE
$ PATH=$PGI/osx86/10.3/bin:$PATH; export PATH
```


In `csh`, use these commands:

```
% setenv PGI /opt/pgi
% setenv MANPATH "$MANPATH":$PGI/osx86/10.3/man
% setenv LM_LICENSE_FILE $PGI/license.dat
% set path = ($PGI/osx86/10.3/bin $path)
```

The following commands make the 64-bit PGI compilers and tools the default.

In `bash`, `sh`, or `ksh`, use these commands:

```
$ PGI=/opt/pgi; export PGI
$ MANPATH=$MANPATH:$PGI/osx86-64/10.3/man; export MANPATH
$ LM_LICENSE_FILE=$PGI/license.dat; export LM_LICENSE_FILE
$ PATH=$PGI/osx86-64/10.3/bin:$PATH; export PATH
```

In `csh`, use these commands:

```
% setenv PGI /opt/pgi
% setenv MANPATH "$MANPATH":$PGI/osx86-64/10.3/man
% setenv LM_LICENSE_FILE $PGI/license.dat
% set path = ($PGI/osx86-64/10.3/bin $path)
```

To use the local MPI that comes with PGI Workstation, use these commands:

In `bash`, `sh`, or `ksh`, use this commands:

```
$ PATH=$PGI/osx86-64/10.3/mpi/openmpi/bin:$PATH
$ export PATH
```

In `csh`, use this commands:

```
% set path = ($PGI/osx86-64/10.3/mpi/openmpi/bin $path)
```


Chapter 7. Accelerator Installation and Licensing

Once PGI Release 9.0-2 or higher is installed, there are a few additional steps to use the PGI Accelerator compilers.

Licensing

If you purchased PGI Accelerator compilers, then your license key includes support for this feature. No separate license key is required.

If you did not purchase this feature and would like to use it, please contact sales@pgroup.com

Required Files

After installing the PGI Release 9.0-2 or higher compilers and tools, you must create a `sitenvrc` file to tell the compilers the location of the installation directory that contains your NVIDIA CUDA software.

The `sitenvrc` file should contain three lines similar to the following sample. In this example the CUDA software was installed in the `/opt/cuda` directory.

```
set NVOOPEN64DIR=/opt/cuda/open64/lib;  
set CUDADIR=/opt/cuda/bin;  
set CUDALIB=/opt/cuda/lib;
```

The default NVIDIA Compute Capability for generated code is 1.3. You can change the default to 1.0 by adding the following line to the `sitenvrc` file. Adding this line disables generation of NVIDIA GPU code for double precision operations.

```
set COMPUTECAP=1.0;
```

You must place the `sitenvrc` file in the following directory, where `$PGI` is the PGI installation directory, which is typically `/opt/pgi` or `/usr/pgi`.

```
$PGI/linux86-64/10.3/bin/
```

Command Line Flag

After creating the `sitenvrc` file and acquiring the license key for the PGI Accelerator compilers, you can use the option `-ta=nvidia` with the `pgfortran` or `pgcc` commands. For more information on the `-ta` flag and the suboptions that relate to the target accelerators, refer to the PGI User's Guide.

The compiler automatically invokes the necessary CUDA software tools to create the kernel code and embeds the kernels in the Linux object file.

Note

To access the accelerator libraries, you must link an accelerator program with the `-ta` flag as well.

Chapter 8. Use OpenMPI with PGI Profiling

PGI provides performance profiling of MPI message passing support for OpenMPI applications on Linux and Mac OS X. On Apple systems, no special configuration is necessary. On Linux systems you must configure the OpenMPI installation to work with the PGI profiling system.

Instructions for Linux

This section contains instructions on how to install and configure your system for OpenMPI profiling on Linux. The basic steps include:

1. **Build OpenMPI with PGI compilers and install.** Build the OpenMPI software distribution with PGI compilers and install it.
2. **Configure OpenMPI for PGI profiling.** For more information, refer to [“Configure OpenMPI for PGI Profiling,”](#) on page 48.
3. **Build your program.** Build using the OpenMPI compiler wrappers (`mpicc`, `mpic++`, `mpif77`, and/or `mpif90`) with one of the PGI profiling options.

Note

When you build with `-Mprof=time|lines|func|hwcts`, MPI profiling is automatically included.

4. **Run your program.** Run as you normally would. One or more files named `pgprof.out` is created in your working directory.
5. **Run the profiler.** Invoke the profiler to see the results of your profiling run.

```
pgprof -exe your_program
```

Compiler Wrapper Data Files

To configure your OpenMPI installation for PGI profiling, you must make a few simple modifications to some configuration files, which we refer to as compiler wrapper data files.

The compiler wrapper data files are located in the `/share/openmpi` directory of your OpenMPI installation. Example compiler wrapper data files located in your PGI `/etc` directory are available for you to direct modifications of the wrapper data files generated when you built OpenMPI.

The wrapper file names are:

```
mpicc-wrapper-data.txt
mpic++-wrapper-data.txt
mpif77-wrapper-data.txt
mpif90-wrapper-data.txt
```

A sample wrapper file includes a block of data similar to the following.

Note

The lines in bold are ones you modify when you configure your OpenMPI installation for PGI profiling.

```
compiler_args=
project=Open MPI
project_short=OMPI
version=1.2.8
language=C
compiler_env=CC
compiler_flags_env=CFLAGS
compiler=pgcc
extra_includes=
preprocessor_flags=-D_REENTRANT
compiler_flags=
linker_flags=
libs=-lmpi -lopen-rte -lopen-pal
-lrt -ldl
-Wl,--export-dynamic -lnsl -lutil -lpthread -ldl
required_file=
includedir=${includedir}
libdir=${libdir}
```

Configure OpenMPI for PGI Profiling

To configure OpenMPI for PGI profiling, you edit the compiler wrapper data files. The lines that you modify are in bold in the sample wrapper data file in the previous section.

Important

Before you begin, make backup copies of your original wrapper data files.

Make these modifications:

1. Add the line `compiler_args=` before any other configuration lines.
2. Copy the entire data block in the sample file *twice*.

You need a data block for each of these compiler options:

```
-Mprof=func | lines
-Mprof=time | hwcts ( hwcts is linux86-64 only.)
```

3. In the second data block, modify the `compiler_args=` and the `compiler_flags=` lines. The PGI profiling options are shown just to the right of the equal sign. The compiler flags you select immediately follow the equal sign, with a space between each flag.

Your lines should look similar to these:

```
compiler_args=-Mprof=func;-Mprof=lines
...
compiler_flags=
...
```

4. In the third data block, modify the `'compiler_args='` line and the `'compiler_flags='` lines. The PGI profiling options are shown just to the right of the equal sign. The compiler flags in this data block should include: `-W0`, `-profile`, `lines` at the beginning of the list of flags you select.

Your lines should look similar to these:

```
compiler_args=-Mprof=time;-Mprof=hwcts
...
compiler_flags=-W0,-profile,lines
...
```

5. In both the second and third data blocks, modify the `libs=` line so that `-lpgnod_prof_openmpi` comes just before `-lmpi`.

Note

Do not modify any other `lib` values.

The new `libs=` line looks similar to this:

```
libs=-lpgnod_prof_openmpi -lmpi -lopen-rte -lopen-pal -lrt -ldl
-Wl,--export-dynamic -lnsl -lutil -lpthread -ldl
```

Modified Compiler Wrapper Data File Sample

When you complete your modifications, your new wrapper data file has three data blocks that look similar to these. The lines you modified are in bold.

```
compiler_args=
project=Open MPI
project_short=OMPI
version=1.2.8
language=C
compiler_env=CC
compiler_flags_env=CFLAGS
compiler=pgcc
extra_includes=
preprocessor_flags=-D_REENTRANT
compiler_flags=
linker_flags=
libs=-lmpi -lopen-rte -lopen-pal -lrt -ldl -Wl, --export-dynamic -lnsl
-lutil -lpthread -ldl
required_file=
includedir=${includedir}
libdir=${libdir}
```

```

compiler_args=-Mprof=func;-Mprof=lines
project=Open MPI
project_short=OMPI
version=1.2.8
language=C
compiler_env=CC
compiler_flags_env=CFLAGS
compiler=pgcc
extra_includes=
preprocessor_flags=-D_REENTRANT
compiler_flags=
linker_flags=
libs=-lpgnod_prof_openmpi
-lmpi -lopen-rte -lopen-pal -lrt -ldl
-Wl,--export-dynamic -lnsl -lutil -lpthread -ldl
required_file=
includedir=${includedir}
libdir=${libdir}

```

```

compiler_args=-Mprof=time;-Mprof=hwcts
project=Open MPI
project_short=OMPI
version=1.2.8
language=C
compiler_env=CC
compiler_flags_env=CFLAGS
compiler=pgcc
extra_includes=
preprocessor_flags=-D_REENTRANT
compiler_flags=-W0,-profile,lines
linker_flags=
libs=-lpgnod_prof_openmpi
-lmpi -lopen-rte -lopen-pal -lrt -ldl
-Wl,--export-dynamic -lnsl -lutil -lpthread -ldl
required_file=
includedir=${includedir}
libdir=${libdir}

```


Chapter 9. Contact Information

You can contact The Portland Group at:

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Or electronically using any of the following means:

Fax	+1-503-682-2637
Sales	sales@pgroup.com
Support	trs@pgroup.com
WWW	www.pgroup.com

The PGI User Forum is monitored by members of the PGI engineering and support teams as well as other PGI customers. The forum newsgroups may contain answers to commonly asked questions. Log in to the PGI website to access the forum:

www.pgroup.com/userforum/index.php

Many questions and problems can be resolved by following instructions and the information available at our frequently asked questions (FAQ) site:

www.pgroup.com/support/faq.htm

All technical support is by email or submissions using an online form at www.pgroup.com/support. Phone support is not currently available.

PGI documentation is available at www.pgroup.com/resources/docs.htm or in your local copy of the documentation in the release directory doc/index.htm.

