Persistent LISP Objects
PLOB! Installation Guide

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This document describes how to get PLOB! version 2.11 as of 28. May 2005 up and running. [User's Guide 1997] contains a user's guide telling how to use PLOB!.

1 Distribution

See section **WWW and email addresses** [User's Guide 1997, p. 93] on how PLOB! is distributed. This software is distributed as free software, see section **License Terms** [User's Guide 1997, p. 96] for details. The author's email address is `mailto:Heiko.Kirschke@acm.org`

2 Installation

> Congratulations! You have purchased an extremely fine device that would give you thousands of years of trouble-free service, except that you undoubtably will destroy it via some typical bonehead consumer maneuver. Which is why we ask you to PLEASE FOR GOD'S SAKE READ THIS OWNER'S MANUAL CAREFULLY BEFORE YOU UNPACK THE DEVICE. YOU ALREADY UNPACKED IT, DIDN'T YOU? YOU UNPACKED IT AND PLUGGED IT IN AND TURNED IT ON AND FIDDLED WITH THE KNOBS, AND NOW YOUR CHILD, THE SAME CHILD WHO ONCE SHOVED A POLISH SAUSAGE INTO YOUR VIDEOCASSETTE RECORDER AND SET IT ON "FAST FORWARD", THIS CHILD ALSO IS FIDDLING WITH HE KNOBS, RIGHT? AND YOU'RE JUST NOW STARTING TO READ THE INSTRUCTIONS, RIGHT??? WE MIGHT AS WELL JUST BREAK THESE DEVICES RIGHT AT THE FACTORY BEFORE WE SHIP THEM OUT, YOU KNOW THAT?
>
> — Dave Barry: "Read This First!"

Since the archive may contain not yet fixed bugs, please consult the bug tracking utility at `http://www.sourceforge.net/projects/plob` before starting an installation. This document describes the requirements and all steps in detail which are necessary to install PLOB!. Also, when there are errors with getting PLOB! running, look into the user's guide into section **Common error messages** [User's Guide 1997, p. 73].

2.1 Hardware requirements

This is the hardware which was used for implementing PLOB!:

- SPARCstation 4, 5, 10, 20 or UltraSPARC with at least 32 MB RAM and Solaris 2.x or a Linux workstation running at least kernel 2.x or a Windows/NT 4.0/2000/XP PC or an equivalent Silicon Graphics workstation running at least IRIX 6.2 (IRIX support on request).
- Approximately 80 MB disk space for the PLOB! source files and object codes. Additional disk space is used for the POSTORE file which contains the persistent objects; this file grows the more objects it holds.

- Access to Internet `ftp` service[1].

2.2 Software requirements

This is the software which was used for implementing PLOB! and which is at least necessary to install it:

- Solaris 2.5 or above
- or Silicon Graphics running IRIX 6.2 or above
- or Linux kernel version 2.0.0 or above
- or Windows/NT 4.0/2000/XP.
- Standard UNIX software development tools, like `make`, `sed` (not needed for the NT installation).
- LISPWORKS Common LISP up to and including version 4.2
- or ALLEGRO Common LISP up to and including version 6.2
- *If the sources should be recompiled:* GNU C version 2.7.2, GNU C version 2.8 for Solaris 2.6. PLOB! exercises the C preprocessor really heavy w.r.t. ANSI compatibility, so using another C compiler may fail to compile PLOB!. It will always fail with a non-ANSI C compiler. SGI's `cc` will be able to compile PLOB.

2.2.1 Software needed for generating the documentation

This additional software was used for generating the documentation; it is only necessary if the documentation should be changed and the POSTSCRIPT files should be recreated from the changed documentation:

- TEX version 3.141, LATEX version 2.09ϵ
- TEX macro package `epsfig` version 1.6 or higher
- TEX macro package `xypic` version 3.1
- `.dvi` to POSTSCRIPT converter `dvips` version 5.58
- POSTSCRIPT interpreter Ghostscript version 3.5.3 (UNIX shell command `gs`)

2.3 Installing POSTORE

PLOB!'s server uses POSTORE (*P*ersistent *O*bject *Store*) as a low-level persistent memory; it is provided in binary form in this distribution with the permission of the University of St. Andrews, so an extra installation is not necessary. POSTORE is the low-level persistent memory used by the persistent programming language Napier88.

The POSTORE library found with PLOB! has been slightly adapted to Solaris, IRIX, Linux and Windows/NT for PLOB!'s needs. The Stable Heap administered by the POSTORE library can hold persistent objects which sum up to a maximum of 384 MB.

[1] This should be fulfilled when you read these lines ;-)

2.4 Installing PLOB! on UNIX

This section describes how to install PLOB! on a UNIX system.

1. *For Linux:* Check if the portmap daemon is installed on the machine. In a standard Linux installation, the portmap daemon is not installed; it should be found on one of the Linux installation CD ROMs.

2. Unzip and untar the archive file.

   ```
   ~>gunzip plob-2.11.tar.gz
   ~>tar fx plob-2.11.tar
   ```

3. Change to the `plob-2.11/` subdirectory (this is found in the directory where the `plob-2.11.tar` archive has been unpacked).

   ```
   ~>cd plob-2.11
   ~/plob-2.11>
   ```

4. Call `make config`.

   ```
   ~/plob-2.11>make config
   ```

   This will ask some questions about your local configuration. For many of the questions, default answers are provided. If this script fails to execute properly, see section 'Installing PLOB manually' on page 5 on what you can do to proceed.

5. *This step is only necessary when client and server will run on different machines.* If `make` succeeded with installing, the PLOB! server should have been built and should now be installed on the database server host. If the directory containing the PLOB! distribution is accessible on the database server host (e.g. mounted by NFS), this is quite simple: Login to the database server host, `cd` to the `plob-2.11/` subdirectory and call `make server` from the shell. If the directory containing the PLOB! distribution is *not* directly accessible on the server host, do the following:

   - Login to the database server host specified by you in step 4
   - Create the PLOB! database root directory specified by you in step 4
   - Copy files `plob-2.11/bin/`<*operating system name*>`/plobd[.exe]`, `plob-2.11/bin/`<*operating system name*>`/plobdadmin[.exe]` and `plob-2.11/bin/plobdmon` into the database root directory.
   - Call program `plobdadmin` now located in the database root directory without any arguments; this will start the program in interactive mode. At the `tcp://localhost/database` prompt, enter:

     `tcp://localhost/database>create` <*the default database specified in step 4*>

     (Entering `help` at the prompt will show the help text of `plobdadmin`.)

6. For using the `plobdadmin` program properly, the PATH and LD_LIBRARY_PATH should be extended to include the database root directory. Put the following startup code into file `${HOME}/.plobdrc`

   ```
   root <database root directory>
   start
   ```

7. For installation under ALLEGRO Common LISP: Change to the `plob/src/allegro/` subdirectory and start ALLEGRO.

   ```
   ~/plob>cd src/allegro
   ~/plob/src/allegro>cl
   ```

8. For installation under LISPWORKS Common LISP: Change to the `plob/src/lispworks/` subdirectory and start LISPWORKS.

   ```
   ~/plob>cd src/lispworks
   ~/plob/src/lispworks>lispworks
   ```

9. Compile and load file `defsystem-plob.lisp` (this file should be in the current directory because of the `cd` done in the previous step). Eventually it is necessary to compile and load `define-system.lisp` from the same directory before this step.

10. Start a listener and evaluate `(compile-plob)`; this will compile all source modules. After compiling, evaluate `(load-plob)`; this will [re]load the out-of-date module[s].

11. Evaluate `(open-my-session)`; this will open a connection to the server and format its LISP root. Now PLOB! is ready for using. Try compiling and loading `plob-example.lisp`

12. *This step is only necessary if you've changed any documentation strings and want to update the documentation.* If you want to extract the TEX documentation from the LISP source files anew, find-file `plob/src/lisp-doc/lisp-doc.lisp` into a editor window; compile & load it and evaluate `(scan-plob-files)`.

2.5 Installing PLOB! on Windows/NT/2000/XP

The binaries for a Windows/NT/2000/XP server and the sources for a LISPWORKS Common LISP and a ALLEGRO Common LISP client installation are contained in this distribution. For using PLOB!'s Windows/NT/2000/XP server with a LISPWORKS Common LISP or ALLEGRO Common LISP client, do the following.

1. Unzip the archive file, for example with WinZip (`http://www.winzip.com` [the 'evaluation version' offered as free download will do the job], an ftp'able version is available at `ftp://ftp.winzip.com/winzip95.exe`).

2. Start a shell and change to the `plob-2.11/` subdirectory (this is found in the directory where the `plob-2.11.tar.gz` archive has been unpacked).

   ```
   ~>cd plob-2.11
   ~/plob-2.11>
   ```

3. Call `make config`.

   ```
   ~/plob-2.11>make config
   ```

   Follow the instructions given by the script's output. If this script fails to execute properly, see section 'Installing PLOB manually' on page 5 on what you can do to proceed.

4. For both LISPWORKS Common LISP and ALLEGRO Common LISP, change into the `~/plob-2.11/src/allegro` subdirectory containing the LISP source code and start the LISP system.

   ```
   ~/plob-2.11>cd src/allegro
   ~/plob-2.11/src/allegro>c:/opt/Harlequin/LispWorks/lispworks
   ```

   Edit file `defsystem-plob.lisp` and change the constant `+plob-dir+` to point to the absolute directory containing the local PLOB! installation, for the example code shown so far this would be:

   ```
   (defconstant +plob-dir+ "c:/home/kirschke/plob-2.11"
       #+:Lisp-Doc "PLOB! installation directory.")
   ```

   Compile and load file `defsystem-plob.lisp`.

5. Edit file `plob-defaults.lisp`. Make sure that `*default-database-url*` has a value of `"tcp://localhost/database"`

   ```
   (defparameter *default-database-url* "tcp://localhost/database"
       #+:Lisp-Doc "... documentation omitted here ...")
   ```

6. For using the `plobdadmin` program properly, the PATH should be extended to include the database root directory. Set the `HOME` environment vaiable to point to a home directory, and put the following startup code into file `${HOME}/.plobdrc`

   `root` *<database root directory>*
   `connect`

7. Continue as described in section 'Installing PLOB on Unix' on page 3, steps 9–12.

8. To use the Windows/NT server, evaluate for example

   `(open-my-session "//ntserver")`

   with `ntserver` being the name of the Windows/NT host running the server.

9. To stop the server, open a task manager and end the `plobd.exe` process. Another way would be to evaluate `(p-exit)` in a LISP listener connected to an open database.

2.6 Installing PLOB! manually

For each offered platform of PLOB! at least one check has been done if PLOB! can be installed and run succesfully. But, there might be unforeseeable problems, for example because of an unexpected local host's shell configuration or file system configuration. The installation script tries to cope with these unexpected settings, but can have problems in doing a successful installation. To get PLOB! installed in such a case without using the installation script, the following proceeding can be applied as a replacement for the installation script called in the UNIX installation, step 4 (p. 3) resp. in the NT installation, step 3 (p. 4). The instructions assume that the PLOB! archive has been unpacked already. In the following text, *<opsys>* should be one of `irix`, `linux`, `solaris` or `win32`, whatever matches the opearating system PLOB! should be installed at.

1. Make the directories `lib/`*<opsys>*, `bin/`*<opsys>*, `src/allegro/allegro4`, `src/allegro/allegro5`, `src/util/allegro4` and `src/util/allegro5`.

   ~`/plob-2.11>mkdir lib/`*<opsys>*
   ~`/plob-2.11>mkdir bin/`*<opsys>*
   ~`/plob-2.11>mkdir src/allegro/allegro4`
   ~`/plob-2.11>mkdir src/allegro/allegro5`
   ~`/plob-2.11>mkdir src/util/allegro4`
   ~`/plob-2.11>mkdir src/util/allegro5`

2. From `conf/`*<opsys>*`/`, copy all library files to `lib/`*<opsys>*

   ~`/plob-2.11>cp conf/`*<opsys>*`/*.so lib/`*<opsys>* *(for UNIX)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/*.dll lib/`*<opsys>* *(for NT)*

3. Copy `conf/`*<opsys>*`/plobd[.exe]` and `conf/`*<opsys>*`/plobdadmin[.exe]` to `bin/`*<opsys>*

   ~`/plob-2.11>cp conf/`*<opsys>*`/plobd bin/`*<opsys>* *(for UNIX)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobdadmin bin/`*<opsys>* *(for UNIX)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobd.exe bin/`*<opsys>* *(for NT)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobdadmin.exe bin/`*<opsys>* *(for NT)*

4. Choose a database root directory. In principle, this directory can be placed anywhere, but it should not be placed into `/tmp` or – for performance reasons – into a NFS or Novell mounted directory or drive. This text assumes a database root directory at `/opt/data/plob/`. Make this directory, and copy the executable daemon and the administration tool into this directory.

   ~`/plob-2.11>mkdir /opt/data/plob`
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobd /opt/data/plob` *(for UNIX)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobdadmin /opt/data/plob` *(for UNIX)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobd.exe /opt/data/plob` *(for NT)*
   ~`/plob-2.11>cp conf/`*<opsys>*`/plobdadmin.exe /opt/data/plob` *(for NT)*

5. *For NT:* Install the ONC RPC library as described in file `plob-2.11/oncrpc-1.12/doc/usage.htm`.

6. Change to the database root directory and call `plobd` in that directory. It is important to do a real directory change, and not to call `plobd` with a prefixed path to the database root directory.

   ```
   ~/plob-2.11>cd /opt/data/plob
   /opt/data/plob>./plobd
   ```

   Calling `./plobd` with option `-h` will echo a help text about the daemon.

7. For both LISPWORKS Common LISP and ALLEGRO Common LISP, change into the `~/plob-2.11/src/allegro` subdirectory containing the LISP source code.

   ```
   /opt/data/plob>cd ~/plob-2.11/src/allegro
   ```

   Edit file `defsystem-plob.lisp` and change the constant `+plob-dir+` to point to the absolute directory containing the local PLOB! installation. For the example code shown so far this would be:

   ```
   (defconstant +plob-dir+ "/home/kirschke/plob-2.11"
       #+:lisp-doc "PLOB! installation directory.")
   ```

   Compile and load file `defsystem-plob.lisp`.

8. Edit file `plob-defaults.lisp`. Make sure that `*default-database-url*` has a value of `"tcp://localhost/database"`:

   ```
   (defparameter *default-database-url* "tcp://localhost/database"
       #+:lisp-doc "... documentation omitted here ...")
   ```

Now, the installation can be completed by continuing with step 9 (p. 4) for UNIX resp. step 4 (p. 4) for NT.

2.7 Installing a new version of PLOB!

To install a new version of PLOB!, stop the server process by calling `plobdadmin -exit` (see [User's Guide 1997] for details on program `plobdadmin`) and repeat all steps described in section 2.4. All configuration data which was given in the very first installation is stored within file `plob/conf/make.vars.in`; this data will be used for default values when installing a new version on top of an old version.

3 Starting PLOB!

For starting PLOB!, both server and client must be started. More details on administration can be found in [User's Guide 1997].

3.1 Starting PLOB!: Server side

Normally, the server needs only be started when the machine running the server was rebooted, since the server does not terminate itself when the last client disconnects. If a restart is necessary, login to the server host (if the server host is not `localhost`) and change to the database root directory. Call program `plobdadmin -connect`, this will start the server process.

3.2 Starting PLOB!: Client side

To restart PLOB!, load file `defsystem-plob` and evaluate `(load-plob)`.

```
~/plob/src/allegro>cl
USER(1):  (load "defsystem-plob")
```

```
; Fast loading ./defsystem-plob.fasl
T
USER(2):  (load-plob)
...
USER(3):  (open-my-session)
...
```

References

[User's Guide 1997] Heiko Kirschke. *Persistent LISP Objects User's Guide*, November 1997. Local copy.