Pilot HOWTO

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This HOWTO document explains how to use your Pilot with a linux system. Although HOWTO documents are targeted towards use with the linux operating system, this one is not dependent on the version of unix used.

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1 Introduction

The Pilot comes with software to synchronize its memory with data on a Microsoft Windows system. There is optional software you can buy to synchronize with an Apple Macintosh. The linux/unix community has been ignored by the manufacturers of the Pilot. Fortunately, a suite of free software has been developed to fill this need. This document describes this software, where to get it, and how to install and use it.

1.1 This Document

The latest version of this document can be read at `http://www.orbits.com/Pilot/Pilot-HOWTO.html`, and is part of the Linux Documentation Project (LDP). See `http://sunsite.unc.edu/LDP/` for further information about the LDP and other HOWTO documents.

Future versions will cover more unix tools for writing application programs to run on the Pilot and conduits to transfer data between the unix system and the Pilot.

If you find anything in this document which needs to be corrected or better explained, please send me e-mail at the address above and specify which version of this document you are referring to.

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1.2 Mailing List

The pilot-unix mailing list is maintained by *Matthew Cravit* `<mailto:pilot-unix-owner@lists.best.com>`. Its mandate is:

> `The pilot-unix mailing list is for discussion and idea-sharing for those interested in using the US Robotics Pilot PDAs with UNIX systems. This includes people who are interested in helping to develop tools to allow the Pilot to operate with UNIX, and possibly to develop an SDK for the Pilot for Unix.`

For more information, including how to subscribe to the list, send mail containing the word "`INFO`" to `pilot-unix-request@lists.best.com`. The subject line does not matter.

1.3 Mailing List Archives

An archive of the pilot-unix mailing list can be found at `http:///www.acm.rpi.edu/~albert/pilot/`. It is maintained by *Chris Stevens* `<mailto:albert@acm.rpi.edu>`.

1.4 FTP Site

An FTP site containing an archive of Pilot tools for use on unix systems is located at `ftp://ryeham.ee.ryerson.ca/pub/PalmOS/`. It is maintained by *Jeff Dionne*

<mailto:jeff@ryeham.ee.ryerson.ca>.

2 General Information

2.1 What is a Pilot?

The Pilot is a small pen-based Personal Digital Assistant (PDA). It is made by U. S. Robotics, now part of 3Com.

For those of you unfamiliar with the term, a *Personal Digital Assistant* is one of those small electronic devices which typically contain various types of personal information, such as addresses and telephone numbers, a calendar, checkbook registry, lists of reminders and/or memos and is designed to be conveniently carried so as to be handy when the information is needed.

The more adaptable PDAs, such as the Pilot, allow for the data stored on the PDA to be backed up to another computer and for data and new programs to be loaded onto the PDA from another computer.

2.2 Different types of Pilots

There are four versions of the Pilot. The earlier two, the *1000* and the *5000* have 128k and 512k of RAM, respectively.

The more recent two, the *PalmPilot Personal* and the *PalmPilot Professional* have 512k and 1 Meg of RAM, respectively. They also have a backlighting feature for the LCD panel and version 2.0 of the operating system. The *Professional* also comes with a TCP/IP stack and a few extra programs built-in.

It is possible to upgrade any Pilot by swapping out the memory card, which includes both RAM & ROM. Of course, this doesn't get you backlighting for the older pilots.

2.3 Hardware Installation

Pilots come with a "cradle" for exchanging data with the desktop computer. This device is actually a serial cable with a custom holder for the Pilot end and a 'HotSync' button. Plug your cradle into a spare serial port on your computer. When you run each of the stand-alone programs, you will need to place your Pilot in the cradle and push the 'HotSync' button so the Pilot knows that it has to communicate. If the Pilot happens to be off when the button is pushed, it will turn itself on.

For convenience, create a device, `/dev/pilot` which will be an alternate name for the serial port to which your Pilot cradle is connected. As the root user, enter the following at the shell prompt:

```
ln /dev/cua0 /dev/pilot
```

Replace `cua0` with the name of the port to which you connected your Pilot's cradle.

3 Sharing Pilot Data with your Linux System

3.1 The pilot-link software

The pilot-link suite of software tools allows you to download programs onto your Pilot, and transfer data for the Pilot's various built-in programs between the linux system and the Pilot. While these programs are not quite as seamless as the desktop software that comes with the Pilot, they do allow you to copy your data in both directions. In general, each separate program in the `pilot-link` suite manages one type of data. The PilotManager software is built on top of `pilot-link` and provides a more integrated solution, which typically includes full synchronization of the various types of data.

3.1.1 Installing the pilot-link software

The prepackaged versions will inevitably lag slightly behind the master distribution, but will be easier to install and not require configuration. The master distribution might be a better choice in those rare occasions when you have been waiting for a particular feature or bug fix.

You can get the *Debian Linux* port of *pilot-link* version 0.7.2 from `ftp://ftp.debian.org/pub/debian/hamm/hamm/binary-i386/otherosfs/pilot-link_0.7.2-1.deb`. Install this file in the normal manner and skip to *Using the pilot-link software*.

You can get the *RedHat Linux* port of *pilot-link* version 0.7.6 from `ftp://ftp.redhat.com/pub/contrib/i386/pilot-link-0.7.6-2.i386.rpm`. Install this file in the normal manner and skip to *Using the pilot-link software*.

For other versions of linux or unix, download the version 0.8.2 of pilot-link from `ftp://ryeham.ee.ryerson.ca/pub/PalmOS/pilot-link.0.8.2.tar.gz`. The version number is likely to change, but new versions should end up in the same location with a similar name.

Once you have the software distribution, unpack it with:

```
tar -xvzf pilot-link.0.8.2.tar.gz
```

This will create a directory (`pilot-link.0.8.2`) containing the source.

Run `./configure`. This will search through your system for information needed to compile the software. `configure` will set things up to be installed in `/usr/local` by default. If you want to change it, run `./configure --prefix=DIR`, where `DIR` is replaced with the name of the directory to which the software will be installed.

Run `make`. This will compile the software. The software will not be installed until later, so that you have a chance to try it out first. (If you are replacing an older version with a newer release, you may wish to check and make sure that no functionality that you need has been broken. Generally, this is not a problem.)

As the root user, run `make install`. This will copy the software into directories under `/usr/local` (or wherever you specified with the `--prefix` option). If you can not log in as root, you can install the software to some directory where you have write access.

Don't forget to add any new directories of executables to your search path.

3.1.2 Using the pilot-link software

Most of the programs in the `pilot-link` suite are *conduits*, that is they transfer data into or out of your Pilot.

Each time you use of one of these programs, press the HotSync button on your Pilot's cradle. This will initiate the Pilot side of the data transfer. Note that not all of these programs prompt you to press the 'HotSync' button, so you may have to remember to do it yourself.

For more details, and other options to these programs, view the corresponding manual page. For the `pilot-xfer` program, for example, type `man pilot-xfer` at your unix shell prompt.

If you are going to use `PilotManager`, you may not need to bother learning to use these (more primitive) tools.

pilot-xfer Possibly the most useful program in the pilot-link suite, `pilot-xfer` allows you to install programs on your Pilot, make a backup, and restore that backup.

To install a program:

```
pilot-xfer /dev/pilot -i program.prc
```

To backup your Pilot:

```
pilot-xfer /dev/pilot -b backup-directory
```

This will copy all of the databases on your Pilot, (including programs?) to a directory called "backup-directory", creating it if it does not already exist.

To restore data to Pilot:

```
pilot-xfer /dev/pilot -r backup-directory
```

Generally, you will only need to do this if your Pilot loses power or if you have to do a hard reset.

To list the programs on your Pilot:

```
pilot-xfer /dev/pilot -l
```

install-memo Install a linux file onto the Pilot as a memo.

To install a memo into your (already existing) *project* category:

```
install-memo /dev/pilot -c project project.memo
```

The name of the file will be inserted into the memo as its first line and will appear in the directory of memos on your Pilot.

memos This program grabs each memo from the Pilot and prints it out in standard mailbox format.

To view your memos:

```
memos /dev/pilot
```

pilot-addresses `pilot-addresses` Transfer the address database to or from the Pilot.

To write your address data to a linux file from your Pilot:

```
pilot-addresses /dev/pilot -w storage.file
```

To read your address data from a linux file onto your Pilot:

```
pilot-addresses /dev/pilot -r storage.file
```

3.2 MakeDoc

One short-coming of the Pilot's built-in memo program is that it does not deal well with large documents. To compensate for this, *Rick Bram* <mailto:rbram@concentric.net> wrote *Doc*, a document reader for the Pilot. (See `http://www.concentric.net/~rbram/doc.shtml`). Documents can be converted to the Doc format with `MakeDoc`, by *Pat Beirne* <mailto:pat.beirne@sympatico.ca>.

3.2.1 Installing MakeDoc

`MakeDoc` can be downloaded from `http://www.concentric.net/~rbram/makedoc7.cpp`. Compile it with your C++ compiler and install the resulting executable as "`makedoc`" in a directory in your search path. There seems to be a small bug in `makedoc` (version 0.7a) in that it does not output a newline as the last character displayed to the user. This does not seem to affect the resulting document file, but it is annoying.

There is a new version out, but it requires Java. Take a look at Pat Beirne's MakeDoc web page at `http://cpu563.adsl.sympatico.ca/MakeDocJ.htm`.

3.2.2 Using MakeDoc

Use `MakeDoc` as follows:

```
makedoc data.txt data.prc "Data to display with Doc"
```

This will create a file `data.prc`, which can be installed on your Pilot with pilot-xfer. The text *"Data to display with Doc"* will be displayed in the directory of documents that *Doc* manages.

The syntax for `MakeDoc` is as follows:

```
makedoc [-n] [-b] <text-file> <prc-file> <story-name>
or
makedoc -d [-b] <prc-file> <text-file>
```

<text-file>

The file that you wish to convert.

<prc-file>

The name of the resulting file. (End the name with "`.prc`".)

<story-name>

The name you want displayed in the `Doc` or `Jdoc` directory of documents.

There are also options to decode the resulting `.prc` file and manage various compression options.

3.3 PilotManager

`PilotManager` is a generalized tool which allows multiple databases to be synchronized in a single HotSync session.

I have not been able to build and install `PilotManager` in time to write about it for this version of the Pilot-HOWTO.

A few links that might be helpful:

- The PilotManager package: *http://playground.sun.com/~bharat/pilotmgr.html* `<http://playground.sun.com/~bharat/pilotmgr.html>`
- A patch: *ftp://ftp.orbits.com/pub/Pilot/pilotmgr,v1.009-BETA-3.patch* `<ftp://ftp.orbits.com/pub/Pilot/pilotmgr,v1.009-BETA-3.patch>`

This patch for PilotManager is only intended for use with PilotManager version 1.009 Beta 3 when used with pilot-link version 0.8.0. Install the PilotManager source and apply the patch with the commands:

```
tar -xvzf pilotmgr,v1.009-BETA-3.dev.tar.gz
cd pilotmgr,v1.009-BETA-3
patch -p1 < ../pilotmgr,v1.009-BETA-3.patch
```

I hope to be able to install this software soon and report about it in a future version of this document.

4 Tools for Developing Pilot Software

4.1 prc-tools

The prc-tools package is a complete development environment built from the FSF GNU utilities, compiler and debugger with the addition of a few special tools.

There is not much in the way of documentation, but you might want to look at the *Pilot Software Development* web page at `http://www.massena.com/darrin/pilot/`.

4.1.1 Installing prc-tools

Download the most recent version of prc-tools from `ftp://ryeham.ee.ryerson.ca/pub/PalmOS`. The GNU tools can be retrieved from `ftp://prep.ai.mit.edu/pub/gnu`. Get `binutils-2.7.tar.gz`, `gcc-2.7.2.2.tar.gz` and `gdb-4.16.tar.gz`. The version numbers specified for the GNU tools are correct as of prc-tools release 0.5.0. Later releases of *prc-tools* may require newer versions of the GNU tools.

Put all of the distribution packages in one directory. Unpack only the prc-tools distribution. The prc-tools `Makefile` will take care of the other packages. By default, prc-tools will be installed in `/usr/local/gnu`. If you want them installed somewhere else, you need to change the value of `INSTALLDIR` in `Makefile`. The steps are:

```
tar -xvzf prc-tools.0.5.0.tar.gz
cd prc-tools-0.5.0
(Edit Makefile, if necessary.)
make doeverything
```

4.1.2 Using prc-tools

One good reference for general use of `prc-tools` is the `example` directory, particularly the `Makefile`. Documentation for PilRC is provided in the file `pilrc1.5/doc/pilrc.htm` included as part of prc-tool version 0.5.0.

A People

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