Palm OS Desktop HOWTO

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This HOWTO describes the use of Palm OS devices with Linux. Most of the advice is applicable to any version of the Palm PDA, and also to other devices that use the Palm OS, such as the Handspring Visor and Sony Clie. Many of the tools described here will also work with other types of Unix, such as FreeBSD.

NOTE: this is a work in progress. There's a lot more I want to write, and I've noted areas that need work (look for TODO in the text). This version is very much an early draft to get the ball rolling. I would especially appreciate feedback from users of other combinations of PDA and Linux distribution (I currently use an m505 with Mandrake 8.1).

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1. Introduction

This document describes how to connect your PalmOS PDA to a computer running Linux, and synchronise the PDA data with local applications.

1.1. DISCLAIMER

As always with information you read on the net, proceed with caution. Most of the information in this HOWTO has been tested with the devices to which I have access; an original Palm Pilot Pro and a new Palm m505. I have tried to indicate instances where I have not been able to test the information.

If you have access to Windows or a Mac, I would recommend backing up your PDA with the provided software before testing it under Linux. Otherwise, take a backup with the Linux software before attempting to synchronise.

1.2. New versions of this document

The latest "work in progress" version of this document can be found at http://www.redbug.uklinux.net/palm/index.html.

1.3. Major Changes

This document was originally called the Palm Howto. Major changes are detailed below.

Revision History

Revision 2.0.1	2002−03−03
Added info about various software that I hadn't even heard of before I got feedback from 2.0.0.	
Revision 2.0.0	2002−01−06
Major rewrite to include USB connections and recent PalmOS devices	
Revision 1.1.1	1999−02−28
Last version maintained by David Silber.	

1.4. Copyright and Licensing

2. Connecting to the PC

The first step to getting your PDA running under Linux is to connect it to your PC. Until recently, all PalmOS devices connected via a serial cable. The latest devices use USB, and some can also connect via infrared.

Another development allows the PDA to physically connect to one machine on the network and synchronise remotely with another machine.

2.1. Serial Connection

The serial connection is currently the easiest way to connect your PDA to your PC. Simply connect the cradle to a serial port, then refer to that port when using coldsync or the pilot−link suite. The serial connection is slow, but has the advantage of being tried and tested. It should work with any Palm OS device for which a serial cable is available. Serial cradles and cables are available as accessories for the Palm PDAs, including those which come with USB cradles as standard.

For convenience, you may wish to create a device called `/dev/pilot` as a link to the serial port. The pilot−link suite uses this device by default, so if the link exists it will save you having to specify it each time you call one of the programs.

To create the link, log on as root and enter the following command:

```
ln −s /dev/ttyS0 /dev/pilot
```

Replace `/dev/ttyS0` with the serial port to which you have connected the your PDA. The device name `/dev/ttyS0` corresponds to COM1 in DOS/Windows terminology, `/dev/ttyS1` is COM2, and so on.

You also need to ensure that you have permission to write to the serial port. On a standalone workstation you can change the permissions to allow global access to the port. As root, enter the following command:

```
chmod a+rw /dev/ttyS0
```

Greater security can be achieved using the group permissions. Set the permissions to read/write for the group and add the required users to the user list for the group (see `man group`). (TODO: More detail).

2.2. Devfs device naming

Recent Linux distributions may use devfs for device naming. In this case `/dev/ttyS0` may not exist, or may be a symbolic link to `/dev/tts/0`. This is a new naming scheme brought in with the 2.4 kernel. Simply replace all references to `/dev/ttyS0` with `/dev/tts/0`.

If you use symbolic links with devfs, you may find that the links do not persist correctly after you reboot. The `/etc/devfsd.conf` file controls the creation of symbolic links to dynamically created devices.

As always, the operation seems to be set up differently under different distributions.

* Manrake 8.1 creates a link from /dev/usb/tts/1 to /dev/pilot when the hotsync button is pressed on the cradle.
* RedHat 7.2 requires the link to be created manually. The link is then persistent across boots (thanks to Jim Mueller for this information).

2.3. USB Connection

USB access to Palm devices is relatively new. The Handspring Visor seems to be well supported, and works with the pilot−link suite. Currently, the Palm m500 series only works with coldsync, although pilot−link support is in active development. *Update:* the current development version of pilot−link, 0.10.x, has support for USB devices. See the pilot−link section for more about this release.

To use any USB device under Linux, you need to have USB support in your kernel. You will also need the relevant modules available. Most (TODO: Check which distros work out of the box) recent Linux distributions have USB support enabled by default. To check your system, try the following command as root:

```
modprobe visor
```

If you get no output from this command, then the module is available and you do not need to recompile your kernel. If this does not work, try the alternative usbserial module:

```
modprobe usbserial
```

This is used by some distributions, such as Redhat 7.0.

If you need to set up USB support in your kernel, the Handspring Visor with Linux mini−HOWTO provides instructions. (TODO: Incorporate into this HOWTO?)

Once USB support is set up, you should use device `/dev/ttyUSB1` to communicate with your PDA. Note that this device name only exists *after* you have pressed the hotsync button on the cradle. You must press the button before running the connection software.

If you have problems synchronising via USB, try an updated kernel. There may be some timing issues with the USB driver. For example, I found that stock Mandrake 8.1 did not work on one PC, but worked first time on a faster PC. Upgrading to a stock 2.4.17 kernel solved the problem and worked fine on both PCs.

2.4. IR Connection

The latest Palm devices have infrared (IrDA) ports. If you have one of these, and a PC with an infrared port, you can synchronise over IrDA and do away with the cables altogether.

David A. Desrosiers has written a comprehensive HOWTO on the subject. (TODO: Include this inline?)

2.5. Network Connection

It is possible to physically connect your PDA to one PC, and synchronise it with another PC elsewhere on the network. This might be a useful feature if you need to synchronise with a PC to which you cannot physically connect your PDA.

Once again David A. Desrosiers has written a (less comprehensive) HOWTO on the subject. (TODO: Include this inline? Not convinced of the value of this method – anyone care to comment?)

3. The pilot−link suite

The pilot−link suite provides the tools for communicating with your PDA. The pilot−link programs provide the background functionality for many higher level programs, but can also be used on their own as command line tools.

Most distributions come with the pilot−link suite available as an optional package. The package will be available on the installation media or from the ftp site of the distribution. Install the package in the usual way for your distribution. You may also need development versions of the packages if you wish to compile any software that uses pilot−link.

Note: Unless otherwise specified, the details below refer to the 0.9.x release of pilot−link. The version in development is 0.10.x. This version contains support for USB devices, and has been updated to ensure greater consistency between the various utilities. Once 0.10.x is officially released, this document will be updated for the new version.

If you upgrade to 0.10.x, you will also need to update applications which use pilot−link. In particular, J−Pilot and gnome−pilot need modifications to work with 0.10.x. J−Pilot 0.99.2 should work with the latest version of pilot−link.

3.1. Installing the pilot−link software

The pilot−link suite comes with most major Linux distributions, including RedHat, Mandrake, SUSE and Debian. If you intend to compile applications which rely on pilot−link, you may need to install development packages as well.

If you use a distribution that does not come with pilot−link, or you need a more recent version, you can find the latest release at www.pilot−link.org. As well as the current version, you will find a link to the latest CVS snapshot.

Once you have the downloaded the source, unpack and compile it as follows:

```
tar −zxvf pilot−link.0.9.5.tar.gz cd pilot−link.0.9.5
./configure
make
make install
```

The programs can be run directly from the directory in which they were compiled. You may wish to test them before running `make install`. For more information, see the README file that comes with pilot−link.

3.2. 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 Palm OS device.

Each time you use of one of the programs, press the HotSync button on your PDA's cradle. This will initiate the PDA 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, view the corresponding manual page. There is an overview manual page under the name `pilot-link`.

The pilot−link programs all use the same method of determining the location of your PDA:

- If a device is specified on the command line, that device will be used regardless of the other settings.
- If the environment variable `$PILOTPORT` is set, that will be used unless a port is specified on the command line.
- If no port is specified on the command line, and the `$PILOTPORT` variable is not set, `/dev/pilot` will be used.

3.2.1. pilot−xfer

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

To install a program:

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

To backup your Palm OS device:

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

This will copy all of the databases on your Palm OS device, (including programs?) to a directory called ``backup−directory'', creating it if it does not already exist.

To restore data to Palm OS device:

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

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

To list the programs on your Palm OS device:

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

3.2.2. install−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 Palm OS device.

3.2.3. memos

This program grabs each memo from the Palm OS device and prints it out in standard mailbox format.

To view your memos:

```
memos /dev/pilot
```

3.2.4. pilot−addresses

Transfer the address database to or from your PDA.

To write your address data to a Linux file from your PDA:

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

To read your address data from a Linux file onto your PDA:

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

4. Coldsync

Coldsync is an alternative to the pilot−link suite for transferring data to and from your PalmOS device. Like pilot−link, it can synchronise, backup and restore Palm databases.

There are fewer applications available which use coldsync as their backend. That may change, but it seems to reflect a difference in philosophy between coldsync and pilot−link. Applications that sync using pilot−link tend to build in the functionality for synchronisation. It is therefore the author of the application that decides to include pilot−link support.

Coldsync takes a different approach. Conduits can be written to use coldsync with almost any application. The synchronisation process can be entirely transparent to the application. If the application author is not interested in adding PDA support, it does not matter. As long as the data format of the application is available, someone else can write the conduit.

4.1. Installing coldsync

Some Linux distributions are carrying coldsync, but it is not yet as widely available as pilot−link. It is also a younger application, so you are more likely to need to compile from source.

You can find the latest release of coldsync at www.ooblick.com/software/coldsync. As well as the current version, you will find a link to the latest CVS snapshot.

Once you have the downloaded the source, compile it as follows:

```
tar −xvzf
colsync−2.2.5.tar.gz
cd coldsync−2.2.5
./configure
make
make install
```

You can run coldsync directly from the `src` directory. For more information, see the README file that comes with coldsync.

4.2. Using coldsync

4.2.1. The .coldsyncrc file

By default, coldsync reads configuration parameters from a file called `.coldsyncrc` in your home directory. The `−f` flag overrides the default if you need to use an alternative configuration file. In addition, some of the parameters in the configuration file can be set or overridden on the command line.

The following is an example of a `.coldsyncrc` file:

```
listen serial {
        device: "/dev/palm";
        protocol: default;
```

```
        transient;
}

pda "My Palm" {
        snum: "L0PK17C13832-M";
        username: "Sean";
        userid: 1234;
        directory:
        "/home/sean/m505";
        default;
}
```

This example tells coldsync to look for a serial port connection on `/dev/palm`. The transient keyword tells coldsync that the device may not exist until the user presses the Hotsync button. The pda section tells coldsync the serial number of the device, the username and id of the user and the directory to which the device will be backed up.

The coldsync configuration file is well documented in the man page (`man coldsync`), but it is worth repeating some points:

- Do not use a userid of 0 in your PDA section. This can lead to a loss of data if you need to perform a hard reset of your Palm.
- If you have a Palm m505 with a USB cradle under Linux, you should not use `listen usb`. Instead use `listen serial` with `protocol: simple;`

4.2.2. The p5−Palm Perl modules

P5−Palm is a set of Perl modules for communicating with a Palm device via coldsync, and can be downloaded from the coldsync site. The purpose of the p5−Palm modules is to simplify and speed up the creation of conduits.

You should install p5−Palm if you want to use any of the coldsync conduits. You do not need p5−Palm if you will only be using coldsync for simple backups.

To install the modules:

```
tar −zxvf p5−Palm−1.2.4.tar.gz
cd p5−Palm−1.2.4
perl Makefile.PL
make
make install
```

4.2.3. Coldsync conduits

A number of conduits are available for coldsync. These conduits use coldsync to synchronise other applications with your PDA. The conduits generally require the p5−Palm Perl modules described above.

The list of conduits is available at http://www.ooblick.com/software/coldsync/conduits/.

The conduits require an entry in your .coldsyncrc configuration file. To find out what should be entered, run `/path/conduit −config`, where `path` is the location of the conduit.

5. Desktop Applications.

This section describes applications which can synchronise their data with your PDA. The applications generally use pilot−link to provide communication with the PDA. Coldsync provides conduit capabilities to application that are not specifically written with PDAs in mind.

5.1. JPilot

JPilot is a Personal Information Manager (PIM) that provides a replacement for the Palm Desktop software provided for Windows and the Mac. JPilot provides desktop versions of the Palm address book, todo list, calendar and memopad. JPilot can also be used to install applications onto the PDA.

JPilot is available with most Linux distributions. You can also download JPilot from http://www.jpilot.org. To use JPilot you must have pilot−link installed. As JPilot is a gtk+ application, you will also need gtk+.

5.2. Gnome−pilot

Gnome−pilot aims to provide PDA connectivity for the Gnome desktop. Gnome−pilot provides conduits for the Gnome PIM applications, a control centre applet for configuring the link, and a panel applet for dislaying the hotsync status.

Gnome−pilot uses a daemon process to communicate with the PDA via pilot−link. Client applications use the daemon, rather than call pilot−link directly. The daemon must be running in order to use the client applications such as the conduits.

Gnome−pilot should be available as part of Gnome. The home page for the project is at http://www.gnome.org/projects/gnome−pilot/.

Gnome−pilot configuration is done through the Gnome control centre. If you have gnome−pilot installed, you should have a "Pilot Link" section under the peripherals section of the control centre.

5.2.1. The Pilot Link Applet

The Gnome control panel Pilot Link applet allows you to configure your PDA for use with Gnome. You must set up your PDA before you can use any of the Gnome conduits.

The first step is to add a device. Start the Gnome control centre, and click on "Pilot Link" in the left hand pane. The right hand pane should show the pilot link applet.

- Click on the devices tab, then click "Add". You should see the "Device Settings" dialog box.
- The "Name" field can contain anything to help you identify the port that you create.
- The "Port" field should contain the port to which you attach your PDA. The port should be the same as you use for pilot−link.
- The speed and timeout values will depend on your device. Try the defaults, and change them if you have problems synchronising.

- The "Type" should be set to your device type.

Once you have configured the device, you can configure the actual PDA:

- Click on the "Pilots" tab, then click on "Add...". You should then see the "Pilot Settings" dialog box.
- If you already have a user name set up on the PDA, click "Get from pilot" to download the username and ID. Otherwise, click "Send to pilot" to set up your username on the PDA.
- The "Pilot Attributes" allow you to name your PDA and set a local directory to use for the conduits.
- The "Sync action" determines what happens when you press the hotsync button on your PDA. The default is "Use conduit settings". This allows you to customise set different sync actions for each conduit.

Once you have configured your PDA, you need to configure the conduits.

5.2.2. The Pilot Conduits Applet

Start the Gnome control centre, then click on "Pilot Conduits" in the left hand pane. If you have a PDA configured in the pilot link applet, you will see a list of available conduits. If you have more than one PDA, you can use the drop down list to select the one that you wish to configure.

Each available conduit starts out disabled. To enable a conduit, select it in the list and click on "Enable". You will then be given a choice of methods for synchronisation.

5.3. Evolution

Evolution is a Microsoft Outlook clone for Gnome from Ximian. Evolution comes with a conduit for gnome−pilot. The conduit can be configured through the gnome−pilot conduits control centre applet described above.

Warning: Mandrake 8.1 comes with a beta version of Evolution. This version seems to have a bug whereby it does not correctly identify records when synching. This can lead to records being duplicated on the PDA.

The latest version of Evolution can be downloaded from http://www.ximian.com. Evolution is designed mainly for use with Ximian Gnome, and installing it independently involves resolving a number of dependencies.

5.4. KPilot

KPilot is the KDE equivalent of Gnome−pilot. KPilot provides basic PIM functionality, as well as conduits to KDE applications such as KOrganizer.

As with gnome−pilot, kpilot uses a pilot−link via a daemon process.

KPilot is available from http://www.slac.com/pilone/kpilot_home

TODO: Again, I don't really use KDE, but will give it a spin.

5.5. XNotesPlus

`XNotesPlus` provides a means to post small notes on your X−Windows desktop. These notes can be shared as memos with your PalmOS device.

In addition to the notes, XNotesPlus provides PIM features, and integrates the notes feature with the todo list and addressbook. Note that XNotesPlus does not perform a true synchronisation, but simply replaces changed databases.

The XNotesPlus web page at http://www.graphics−muse.org/xnotes/xnotes.html contains full installation and use instructions.

XNotes is shareware, and not freely distributable.

5.6. WMSync

If you use WindowMaker, this might be useful. From the website:

Wmsync is a WindowMaker dockapp that starts your favourite sync program for your Palm(TM) PDA. It displays a small animation when syncing. It is controlled by a small perl script via SIGUSR1 and SIGUSR2 so it is highly customizable. That´s all.

Wmsync is available from http://home.t−online.de/home/db7ne/wmsync.html

6. Other Software

6.1. The Pyrite Project

Pyrite Publisher is a tool to convert documents to and from the Doc format used by electronic books for the Palm PDA. Compressed zTXT files are also supported. Pyrite Publisher is written in Python, with an optional module in C for enhanced data compression performance.

The library used to communicate with the Palm is available separately, as python−libpisock. The library is a python binding for the pilot−unix libpisock library.

Pyrite is available from http://www.pyrite.org

6.2. MalSync

Malsync is a command line tool for synchronising Palm PDAs with the AvantGo server. AvantGo is a − well, you'll know what it is if you use it. Unfortunately the website is a masterpiece of marketspeak.

Malsync is available from http://www.tomw.org/malsync

6.3. PalmPix Decoder

The PalmPix decoder extracts pictures from a PalmPix database. The PalmPix is a digital camera attachment for Palm PDAs.

The PalmPix decoder is available from http://www.geocities.com/aa_soft/PalmPix.html

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A. Appendix

A.1. Resources

Information resources for Linux/Palm applications

A.1.1. Pilot−link

- ***Website*** http://www.pilot−link.org
- ***General mailing list*** http://www.pilot−link.org/mailman/listinfo/pilot−link−general/ .General discussions about pilot−link, conduit ideas, wish list items and anything else.
- ***General mailing list archive*** http://www.pilot−link.org/pipermail/pilot−link−general/
- ***Announcement mailing list*** http://www.pilot−link.org/mailman/listinfo/pilot−link−announce/ . Announcements for pilot−link releases, conduits, third−party tools and applications.
- ***Announcement mailing list archive*** http://www.pilot−link.org/pipermail/pilot−link−announce/
- ***Development mailing list*** http://www.pilot−link.org/mailman/listinfo/pilot−link−devel/ . Development list for pilot−link code, releases, patches, conduits, bugs, testing.
- ***Development mailing list archive*** http://www.pilot−link.org/pipermail/pilot−link−devel/
- ***"Next Generation" pilot−unix mailing list*** http://www.pilot−link.org/mailman/listinfo/pilot−unix−ng/ . Development list for pilot−link code, releases, patches, conduits, bugs, testing.
- ***"Next Generation" pilot−unix mailing list archive*** http://www.pilot−link.org/pipermail/pilot−unix−ng/ . Replaces the old pilot−unix list that is now offline.

A.1.2. Coldsync

- ***Website:*** http://www.ooblick.com/software/coldsync
- ***Mailing list:*** send an email to coldsync−hackers−request@lusars.net with the word subscribe in the body.
- ***Mailing list archive:*** http://www.thedotin.net/maillists/coldsync−hackers

A.1.3. JPilot

- ***Website:*** http://www.jpilot.org
- ***Mailing list:*** send an email to listar@moongroup.com with the word subscribe in the subject.
- ***Mailing list archive:*** http://www.moongroup.com/archives/jpilot

A.1.4. Gnome−pilot

- ***Website:*** http://www.gnome.org/projects/gnome−pilot
- ***Mailing list:*** http://mail.gnome.org/mailman/listinfo/gnome−pilot−list
- ***Mailing list archive:*** http://mail.gnome.org/archives/gnome−pilot−list/

A.1.5. KPilot

- ***Website:*** http://www.slac.com/pilone/kpilot_home
- ***Mailing list:*** There is no specific KPilot list, but you can use the kde−pim list. To subscribe, send an email to kde−pim−request@kde.org with subscribe followed by your email address in the subject.
- ***Mailing list archive:*** http://lists.kde.org/?l=kde−pim&r=1&w=2

A.1.6. Other resources

- ***XNotesPlus website:*** http://www.graphics−muse.org/xnotes/xnotes.html
- ***WMSync website:*** http://home.t−online.de/home/db7ne/wmsync.html
- ***The Pyrite Project website:*** http://www.pyrite.org/
- ***Malsync website:*** http://www.tomw.org/malsync/
- ***PalmPix decoder website:*** http://www.geocities.com/aa_soft/PalmPix.html

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A.2. Devices that use the Palm OS

This is an overview of the range of devices that work with the software detailed in this HOWTO.

A.2.1. Palm

- ***Pilot 1000, 5000, PalmPilot Personal, PalmPilot Pro.*** The original Palm PDAs, no longer in production. These should work over a serial port connection.
- ***Palm IIIe, IIIx, IIIxe, IIIc.*** The III series, again no longer in production. These should work over a serial port connection. The first colour Palm, the IIIc, had an optional USB connection, but the serial interface is required for Linux.
- ***Palm V, Vx.*** The V series, again no longer in production. These introduced the IR interface, and it should be possible to synch them via an IR port on a suitably equipped PC. They also work over the serial port connection.
- ***Palm VII, VIIx.*** The VII series, again no longer in production. These introduced the built in wireless connection. They feature an optional USB connection, but the serial interface is required for Linux.
- ***Palm VII, VIIx.*** The VII series, again no longer in production. These introduced the built in wireless connection. They feature an optional USB connection, but the serial interface is required for Linux.
- ***Palm m100, m105.*** The current entry level Palm PDAs. These should work over a serial port connection.
- ***Palm m500, m505.*** The latest version of the IR connection enabled Palm. They come with USB cradles as standard, and should synch over USB. An optional serial cable is available if USB synchronisation is not possible,
- ***Palm i705.*** The latest Palm with wireless network connection capability. It synchronises via USB. No reports yet on whether it works with Linux over USB.

A.2.2. Handspring

- ***Visor.*** The Handspring Visor series of PDAs come with USB cradles. Serial cables are also available. USB is better supported under Linux for the Visor than for Palm PDAs, so USB should work with few problems.

A.2.3. Sony

- ***Clie.*** Sony's higher resolution version of the Palm PDA.

A.3. A History of Palm OS devices.

This section is included unchanged from the original document. It's clearly out of date, and I'm not sure if it's worth keeping in. It's a bit offtopic for a Linux howto, and the effort of keeping it current seems a bit pointless. Instead I've added a section detailing devices that use the Palm operating system, and which therefore should work with the instructions in this HOWTO.

There are two versions of the Pilot. They are the *1000* and the *5000* and have 128k and 512k of RAM, respectively. They come with Palm OS 1.0 in ROM.

Then came two devices with the name *PalmPilot*. They are the *PalmPilot Personal* and the *PalmPilot Professional* and 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.

IBM has released a rebadged version of the PalmPilot Professional, which they call a *WorkPad*.

Now we have the Palm III, which has a redesigned case and an infrared port, not to mention the 2 Meg of RAM and Palm OS 3.0.

There is an announced product from Qualcomm, called the *pdQ smartphone*, which is a cell phone that incorporates a Palm OS PDA. Don't get all excited about it yet, it will not be released until sometime in 1999.

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 original Pilot series.