

# Troubleshooting Methodologies: Hardware, Software and Network Problems

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# pre-presos tl;dr

- Feel good? Sorry, bitter truths within
- Listen & observe, but don't expect truth handed to you
- Exude confidence, even if you're not sure yet
- 75% is you NOT being technical, 25% is actual technical brawn
- Stay **HUNGRY**
- OK, feel free to take a nap until **LUNCH!**

# Know the boundaries

- Respect the client's patience
- Not all clients want to pay hours just to hunt down one problem (if you have that client: yay!)
- Balance between thoroughness and Alexander at the Gordian Knot
- Subs - SLA differences?

# How to diagnose

- Usually they want you to ‘take over’ and figure out what’s going on. Not so fast!
- Tell them to sit in the driver’s seat and ‘show me’ what’s been going on
- Sometimes you have to hear the words that aren’t being spoken
- Your vast experience is your trusty co-pilot.

# Troubleshooting Mindset

- Most problems all lead to same core set of problems:
  - Something's broken
  - Something's unplugged
  - Something's glitching
  - Someone did something wrong
- Remember the Gordian Knot

# Put them at ease

- I'm here to help
- Commiserate
- **Be** confident – but not cocky
- Pretend to listen even if you've already got a bead on the problem
- Trust me – you're a therapist

# Basics

- Before arriving, prep ahead
- Can the error be reproduced?
- Start small/easy, work your way up to big/hard — split half tests
- When testing a hypothesis/solution, always give yourself an escape hatch
- **BACKUP BACKUP BACKUP**

# Things to assess

- Isolated to one machine?
- Isolated to one user account?
- Wear and tear? How old is the computer?
- How recent did the problem start?  
Anything change since then?
- Clean power?

# Things to assess

- Does your pristine laptop, as a 'control,' not have the same problem?
- Updates recently applied?
- What sez the intertoobs?
- Physical location a clue?
- Anything weird going on?

# Simple easy tricks

- Ahem, restart the machine
- Safe boot – flush the caches
- Create a temp user
- Reseat memory, cables, etc.
- Temp swap the library folder
- Swap parts e.g. Cables, RAM, etc.
- Reapply last combo updater

# You fixed it!

- Confirm with the user
- Test and double-test
- Document the issue and solution
- If origins are suspicious, keep an eye out
- Are you sub-ing? Paper trail even more important



# Tools

# Troubleshooting Non-Physical Tools

- **GOOGLE!**
- **Sites/Forums/Lists - Apple Consultants Network**
- **GOOGLE!**
- **join.me / logmein / iChat / Skype / VPN**
- **GOOGLE!**

# Web Resources

<http://www.macenterprise.org>

<http://www.omnigroup.com/mailman/listinfo>

<https://lists.apple.com/mailman/listinfo>

<https://discussions.apple.com/>

<http://consultants.apple.com/>

<http://macintouch.com/>

<http://www.afp548.com/>

<http://xlr8yourmac.com/>

<http://apple.stackexchange.com/>

<http://macfixit.com/>

<http://hints.macworld.com/>

<http://www.commandlinefu.com/>

<http://www.macsurfer.com/>

[http://www.macobserver.com/tmo/features/tmo\\_quick\\_tip/](http://www.macobserver.com/tmo/features/tmo_quick_tip/)

# Troubleshooting Physical Tools

- Ext. drives with various systems/  
installers/updaters
- Network / tone / ground tester. Cables!
- Don't be stingy with good drivers
- Real champ? Carry spare RAM!
- Real champ with strong back? Spare UPS!





- 5. Power receptacle
- 6. USB 3.0/2.0/1.1 port
- 7. eSATA port
- 8. Two FireWire 800 (1394b) ports
- 9. FireWire 400 (1394a) port



**Works with  
Macs AND PCs!**

# Built-in Tools

- **Disk Utility**
- **Activity Monitor**
- **System Info / Profiler**
- **Console**
- **Terminal**

## TextWrangler

TextWrangler is the "little brother" to [BBEdit](#), our leading professional HTML and text editor for the Macintosh.

### TextWrangler vs. BBEdit

TextWrangler is a very capable text editor. What sets BBEdit apart is its extensive professional feature set including [Web authoring](#) capabilities and [software development](#) tools.

[Compare BBEdit and TextWrangler.](#)

### How do I get TextWrangler?

Download TextWrangler [here](#). (TextWrangler is only available as an electronic download. Its license agreement is available [here](#).)

If you already have TextWrangler and would like to update to the latest version, please go to our [updates page](#).

To upgrade to BBEdit, which offers professionals even more power, from advanced HTML and CSS tools to seamless integration with version control systems and much more [visit our web store](#).

### TextWrangler is a...

- [General Purpose Text Editor](#)
- [Programmer's Text Editor](#)
- [Unix And Server Administrator's Tool](#)
- [Powerful Text Transformer And Manipulator](#)
- [Good Mac OS Citizen](#)
- [Powerfully Useful Tool](#)

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## AppleJack Project Page

» Introduction » Download » Install » Support » Feature Requests » Submit a Bug »

AppleJack man page

### Introduction

CURRENT PROJECT VERSION: 1.6

AppleJack is a user friendly troubleshooting assistant for Mac OS X. With AppleJack you can troubleshoot a computer even if you can't load the GUI, or don't have a startup CD handy. AppleJack runs in Single User Mode and is menu-based for ease of use.

Rating (4.9115) Downloads 312922  
add a comment  
Data provided by VersionTracker

```
Enter the associated number or letter to choose your maintenance task.
It is strongly recommended you do them in the order listed!

[a] auto pilot. Script will do all tasks sequentially.

[1] repair disks
[2] repair permissions
[3] cleanup cache files
[4] validate preference files
[5] remove swap files

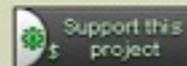
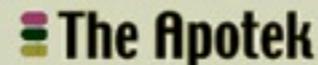
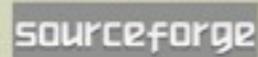
[q] : Just quit, thank you very much.

Your choice: █
```

Using AppleJack, you can repair your disk, repair permissions, validate the system's preference files, and get rid of possibly corrupted cache files. In most cases, these operations can help get your machine back on track. The important thing is that you don't need another startup disk with you. All you need to do is restart in Single User Mode (SUM), by holding down the command and s keys at startup, and then typing applejack, or applejack auto (which will run through all the tasks automatically), or applejack auto restart (which will also restart the computer automatically at the end of the process).

xlr8yourmac.com has compiled a [list of user experiences with AppleJack](#) which might help you evaluate its usefulness to you. Thanks guys!

Dan Frakes has written a [nice summary](#) of the benefits and drawbacks to AppleJack for macfixit.com. It's thorough and much better written than anything I could have done.



atPeek

atMonitor

Store



# atMonitor

system activity in real-time. It is designed to allow quick utility in anyone's system troubleshooting toolkit.

combines the best of the features of many other existing tools. In addition to the standard CPU, GPU, VRAM, FPS, Disk and network activity, logging, purging RAM and much more. atMonitor can be used in a variety of ways.



# iTerm 2

iTerm 2 is a terminal emulator for Mac OS X that does amazing things.

[Home](#) [Features](#) [FAQ](#) [Documentation](#)

[Donate](#)

## What is iTerm2?

iTerm2 is a replacement for Terminal and the successor to iTerm. It works on Macs with Leopard, Snow Leopard, or Lion. Its focus is on performance, internationalization, and supporting innovative features that make your life better.

## Why Do I Want It?

Check out the [impressive features and screenshots](#). If you spend a lot of time in a terminal, then you'll appreciate all the little things that add up to a lot.

## How Do I Use It?

Try the [FAQ](#) or the [documentation](#). Got problems or ideas? Report them in the [bug tracker](#), or take it to the [forum](#). Or tweet to [@gnachman](#) and I'll do my best to respond.

[Download](#)

App Store > Utilities > Panic, Inc.



\$7.99 Buy App

This app is designed for both iPhone and iPad

Category: Utilities  
Updated: Apr 12, 2012  
Version: 1.3.1  
Size: 6.6 MB  
Languages: English, French, German, Japanese  
Seller: Panic, Inc.  
© 2012 Panic Inc

Rated 4+

Requirements: Compatible with iPhone, iPod touch, and iPad. Requires iOS 4.3 or later.

## Prompt

### Description

Introducing Prompt: the best SSH client for your iPad or iPhone.

...

Prompt Support >

### What's New in Version 1.3.1

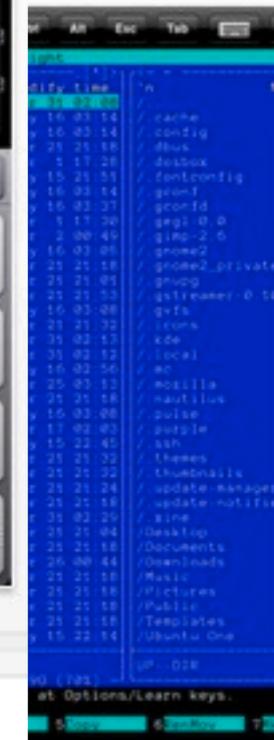
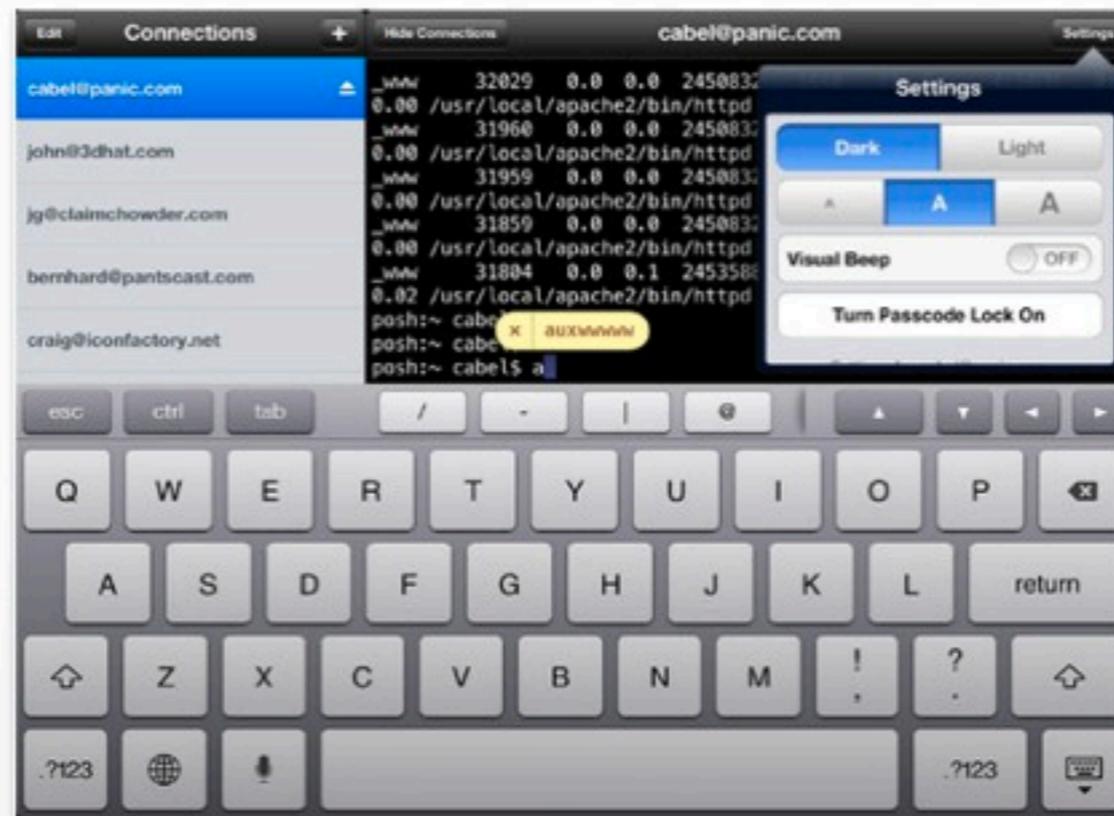
- Retina power-up! Enjoy beautiful SSH on your new iPad.

with a tunneled VNC

...More

### Screenshots

iPhone iPad



### Customer Ratings

Average rating for the current version: 9 Ratings

Rate this app





## FireFTP 2.0.4

by Mime Čuvalo

FireFTP is a free, secure, cross-platform FTP/SFTP client for Mozilla Firefox which provides easy and intuitive access to FTP/SFTP servers.

Check out my new project, [FireSSH!](#)

[Download Now](#)

Works with Firefox 4.0b1 - 13.\* · [View other versions](#)



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user reviews  
487 users

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# What you have to learn

- Files & Permissions
- OS X standard directories
- Single user mode
- Terminal commands
- What OS X can do for you

# What you should learn

- `CUPS localhost:631`
- `dscacheutil -flushcache`
- `dd` and GNU `ddrescue`
- `fs_usage tcpdump -vv -i eno`
- redirect output to text file for uber-manipulation

```

dir_test2.txt
Last Saved: 4/18/12 12:15:38 AM
File Path: ~/Desktop/mig_preso/dir_test2.txt

total 36624
drwxr-xr-x@ 5 root admin 170 Dec 22 2007 -OLD DESKTOPS -02-05
drwxr-xr-x 42 root admin 1428 Mar 24 2009 .
drwxrwxr-x 13 root admin 510 Apr 16 14:04 ..
-rw-r--r-- 1 root admin 7452 Oct 18 2006 .583-182879591-1.rtf
-rw-r--r-- 1 root admin 8685 Oct 19 2006 .583-182981759-3.rtf
-rw-rw-r--@ 1 root admin 21508 Apr 15 16:37 .DS_Store
drwx-----@ 5 root admin 170 Feb 27 16:12 .Spotlight-V100
-rw-rw-rw@ 1 root admin 11797888 Sep 26 2007 .SynAVQSFil
drwxrwxrwt@ 3 root admin 102 Oct 12 2007 .TemporaryItems
d-wx-wx-wt@ 3 root admin 102 Mar 28 15:32 .Trashes
-rw-r--r-- 1 root admin 0 Mar 24 2009 .com.apple.timemachine.supported
drwx----- 9 root admin 306 Feb 27 16:12 .fsevents
-r--r--r--@ 1 root admin 156 Dec 8 2003 .hidden
-rw-----@ 1 root admin 131072 May 12 2006 .hotfiles.btree
-rw-r--r-- 1 root admin 0 Apr 21 2007 .synSchedScanLockxz
dr-xr-xr-x 2 root admin 68 Oct 12 2007 .vol
drwxrwxr-x@ 91 root admin 3094 Oct 12 2007 Applications
-rw-rw-rw@ 1 root admin 512 Nov 16 2004 Auth-DigitalPerformer 4.5
drwx----- 3 root admin 102 Jan 22 2008 Desktop
-rw-r--r--@ 1 root admin 192512 Sep 3 2007 Desktop DB
-rw-r--r--@ 1 root admin 1609058 Aug 28 2007 Desktop DF
drwxrwxr-x@ 2 root admin 68 Sep 26 2003 Desktop Folder
drwxrwxr-t@ 50 root admin 1700 Oct 12 2007 Library
drwxr-xr-x@ 2 root admin 68 Oct 12 2007 Network
drwxr-xr-x 4 root admin 136 Oct 12 2007 System
drwxr-xr-x@ 51 root admin 1734 Oct 12 2007 System Folder
drwxr-xr-x@ 17 root admin 578 Oct 12 2007 THE80's
drwxrwxr-t 10 root admin 340 Oct 24 2007 Users
drwxr-xr-x@ 4 root admin 136 Oct 12 2007 automount
drwxr-xr-x@ 40 root admin 1360 Oct 12 2007 bin
drwxrwxr-t@ 2 root admin 68 Dec 8 2003 cores
dr-xr-xr-x@ 2 root admin 68 Oct 12 2007 dev
lrwxr-xr-x@ 1 root admin 11 Mar 28 16:08 etc -> private/etc
drwxr-xr-x@ 170 root admin 5780 Nov 18 2007 iPodDump
lrwxr-xr-x@ 1 root admin 9 Mar 28 16:28 mach -> /mach.sym
-r--r--r--@ 1 root admin 603980 Oct 12 2007 mach.sym
-rw-r--r--@ 1 root admin 4347724 Feb 22 2007 mach_kernel
drwxr-xr-x@ 12 root admin 408 Oct 12 2007 other
drwxr-xr-x@ 6 root admin 204 Oct 12 2007 private
drwxr-xr-x@ 64 root admin 2176 Oct 12 2007 sbin
drwxr-xr-x@ 59 root admin 2006 Jan 20 2008 theripperc
drwxr-xr-x@ 14 root admin 476 Jan 22 2008 tv-video

/Volumes/465c/-OLD DESKTOPS -02-05:
total 16

```

```

dir_test1.txt
Last Saved: 4/18/12 12:15:36 AM
File Path: ~/Desktop/mig_preso/dir_test1.txt

total 36640
drwxr-xr-x@ 5 admin admin 170 Dec 22 2007 -OLD DESKTO
drwxr-xr-x 49 _unknown _unknown 1734 Mar 24 2009 .
drwxrwxrwt@ 6 root admin 204 Apr 17 00:29 ..
-rw-r--r-- 1 macports admin 7452 Oct 18 2006 .583-182879
-rw-r--r-- 1 macports admin 8685 Oct 19 2006 .583-182981
-rw-rw-r--@ 1 admin admin 21508 Apr 15 16:35 .DS_Store
drwx-----@ 5 root admin 170 Feb 27 16:12 .Spotlight-
-rw-rw-rw@ 1 root admin 11797888 Sep 26 2007 .SynAVQSFil
drwxrwxrwt@ 3 admin admin 102 Oct 12 2007 .TemporaryI
d-wx-wx-wt@ 3 root admin 102 Apr 17 00:29 .Trashes
-rw-r--r-- 1 _unknown _unknown 0 Mar 24 2009 .com.apple
drwx----- 11 _unknown _unknown 374 Apr 15 16:36 .fsevents
-r--r--r--@ 1 root wheel 156 Dec 8 2003 .hidden
-rw-----@ 1 root admin 131072 May 12 2006 .hotfiles.b
-rw-r--r-- 1 admin admin 0 Apr 21 2007 .synSchedSc
dr-xr-xr-x 2 root wheel 68 Oct 12 2007 .vol
drwxrwxr-x@ 91 root admin 3094 Oct 12 2007 Application
-rw-rw-rw@ 1 admin admin 512 Nov 16 2004 Auth-Digita
drwx----- 3 _unknown _unknown 102 Jan 22 2008 Deskto
-rw-r--r--@ 1 root admin 192512 Sep 3 2007 Desktop DB
-rw-r--r--@ 1 root admin 1609058 Aug 28 2007 Desktop DF
drwxrwxr-x@ 2 root admin 68 Sep 26 2003 Desktop Fol
drwxrwxr-t@ 50 root admin 1700 Oct 12 2007 Library
drwxr-xr-x@ 2 root wheel 68 Oct 12 2007 Network
drwxr-xr-x 4 root wheel 136 Oct 12 2007 System
drwxr-xr-x@ 51 admin admin 1734 Oct 12 2007 System Fola
drwxr-xr-x@ 17 admin admin 578 Oct 12 2007 THE80's
drwxrwxr-t 10 root admin 340 Oct 24 2007 Users
drwxr-xr-x@ 4 root admin 136 Oct 12 2007 automount
drwxr-xr-x@ 40 root wheel 1360 Oct 12 2007 bin
drwxrwxr-t@ 2 root admin 68 Dec 8 2003 cores
dr-xr-xr-x@ 2 root wheel 68 Oct 12 2007 dev
lrwxr-xr-x@ 1 root admin 11 Oct 12 2007 etc -> priv
drwxr-xr-x@ 170 _unknown _unknown 5780 Nov 18 2007 iPodDum
lrwxr-xr-x@ 1 root admin 9 Oct 12 2007 mach -> /ma
-r--r--r--@ 1 root admin 603980 Oct 12 2007 mach.sym
-rw-r--r--@ 1 root wheel 4347724 Feb 22 2007 mach_kerne
drwxr-xr-x@ 12 admin macports 408 Oct 12 2007 other
drwxr-xr-x@ 6 root wheel 204 Oct 12 2007 private
drwxr-xr-x@ 64 root wheel 2176 Oct 12 2007 sbin
drwxr-xr-x@ 59 _unknown _unknown 2006 Jan 20 2008 theripperc
drwxr-xr-x@ 14 _unknown _unknown 476 Jan 22 2008 tv-video

/Volumes/465c/-OLD DESKTOPS -02-05:
total 16

```

Differences

New File:~/Desktop/mig\_preso/dir\_test2.txt Old File: ~/Desktop/mig\_preso/dir\_test1.txt

Nonmatching Lines (File dir\_test2.txt; Line 1:43; File dir\_test1.txt; Line 1:43)

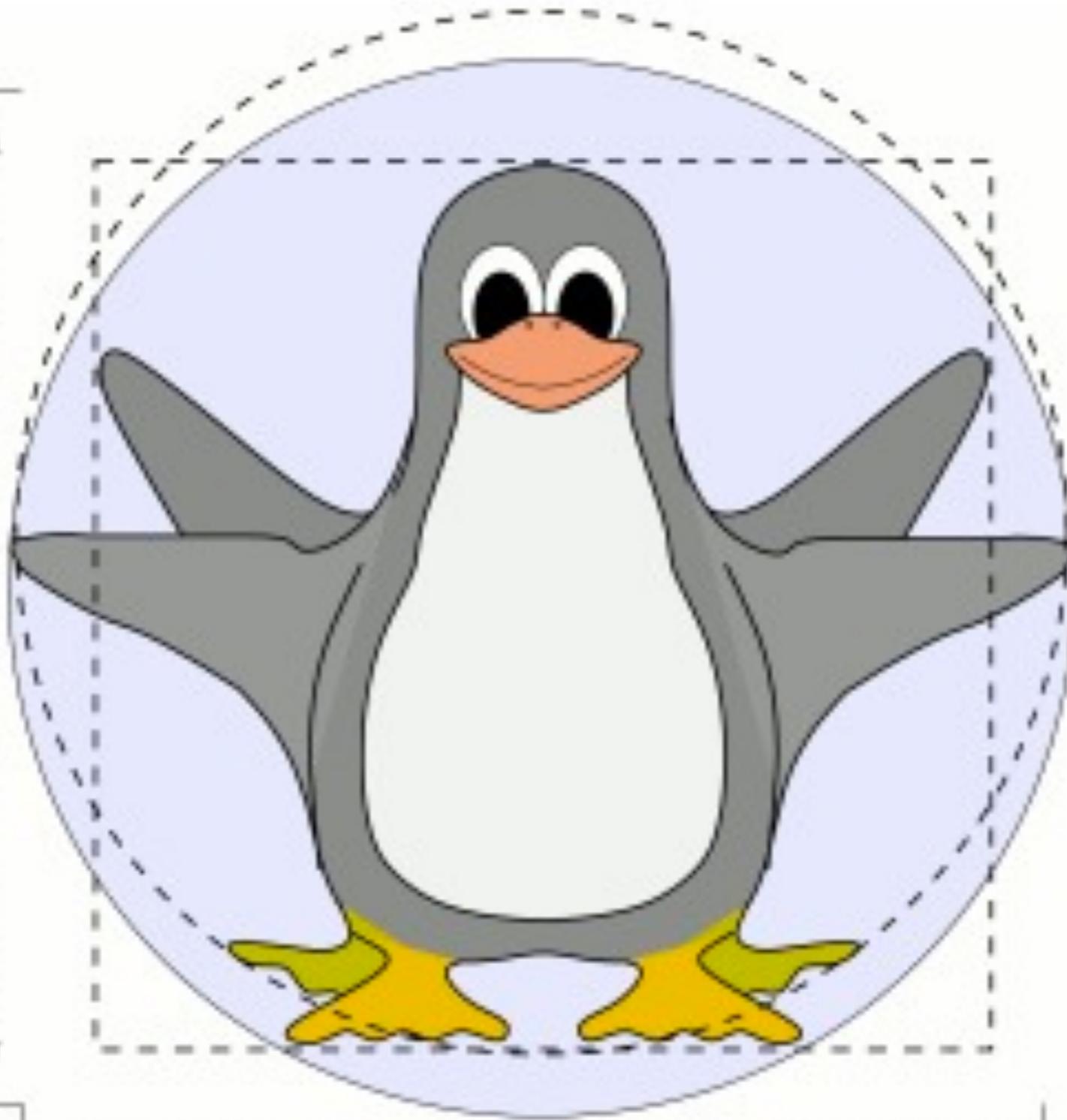
Nonmatching Lines (File dir\_test2.txt; Line 47:51; File dir\_test1.txt; Line 47:51)

Nonmatching Lines (File dir\_test2.txt; Line 55:89; File dir\_test1.txt; Line 55:89)



**Advanced**

Live GNU/Linux System

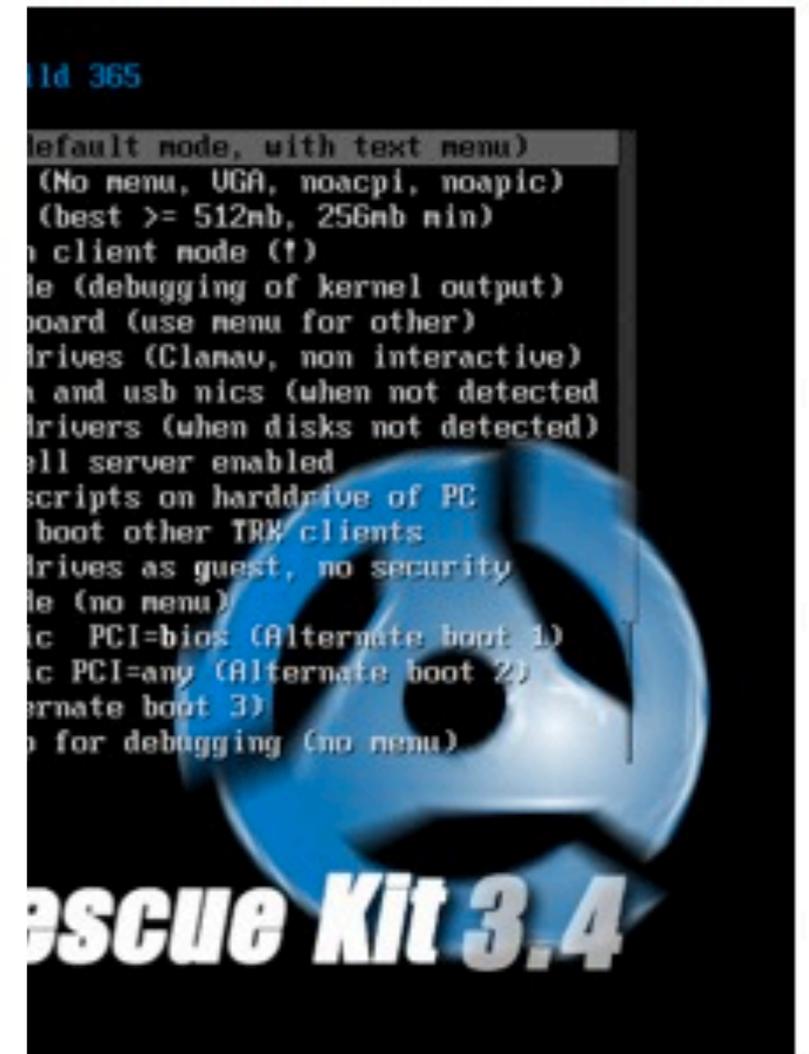


KNOPPIX

```
while [ -z $winpass ] ; do  
  echo "AddThis Settings  
debugged and more foolproof  
'winpass'"  
done
```

c

ry and repair operations on Windows  
easy to use scrollable text menu that  
d repair on a computer, ranging from



es  
e of

# Thank You

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## **Miguel Chavez**

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