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Yellow Dog Linux
by Terra Soft Solutions, Inc.
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Y e l l o w
D o g
L i n u x™

C h a m p i o n S e r v e r™

A Guide to Installation

by Terra Soft Solutions, Inc.

Yellow Dog Linux
is dedicated to the loyal companionship of Potter ...
(the Yellow Dog himself)

... for every tree he has tried to climb,
for every stick he has retrieved from a frozen river,
and for every snow-capped, wind-blown peak he has
crossed--all in order to please his pack.

Yellow Dog Linux Champion Server

by Terra Soft Solutions, Inc.

Revision 1.2.4, September 2000

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Yellow Dog Linux
Champion Server

by Terra Soft Solutions, Inc.

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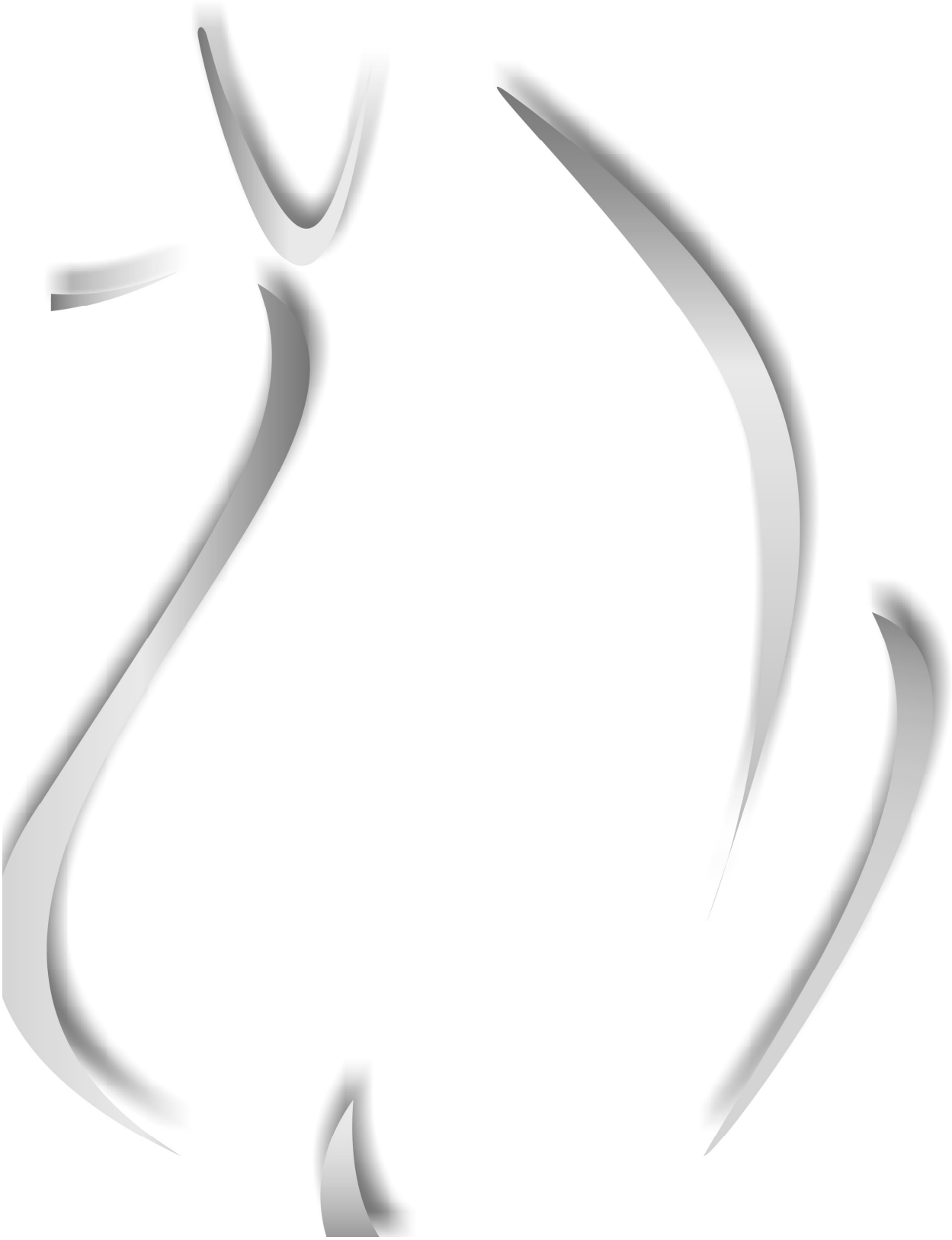

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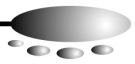
1 How to Use this Manual



The Design of this Manual

Getting Around

Movement throughout this manual should be relatively simple. We have provided a Table of Reference and large, bold chapter headings that quickly move you to your desired location.

The 3-Ring Binder

The Yellow Dog Linux Installation Manual was specifically designed to be easily assembled, read, and updated. If you purchased this manual, it came bundled with a unique YDL 3-ring binder. As we update this manual, changes and additional pages will be provided for free via the YDL website (see below). A PDF reader is necessary to view and print this file and is available for free,

Adobe Acrobat Reader for Mac OS
ftp://ftp.adobe.com/pub/adobe/acrobatreader/

gv (based upon Ghostview) and xpdf for Linux
(included on the Yellow Dog Linux CDs)

Updating the Manual

1. Point your web browser to:
   www.yellowdoglinux.com/products/guide.shtml
2. Read the available update information.
3. Select the appropriate PDF document.
4. View the document with a PDF reader (see above).
5. Print the page(s) that you require.
6. Use a hole punch to prepare your printed pages.
7. Insert replacement or additional pages in the appropriate location in the YDL 3-ring binder.

What are Those Odd Symbols in the Margins?

Throughout this manual you will find the right and left columns often contain icons which precede Factual Information, Points of Caution, and Frequently Asked Questions (FAQs). We have placed these icons in the margins in order that you may quickly locate and reference important information.

This icon precedes Factual Information.

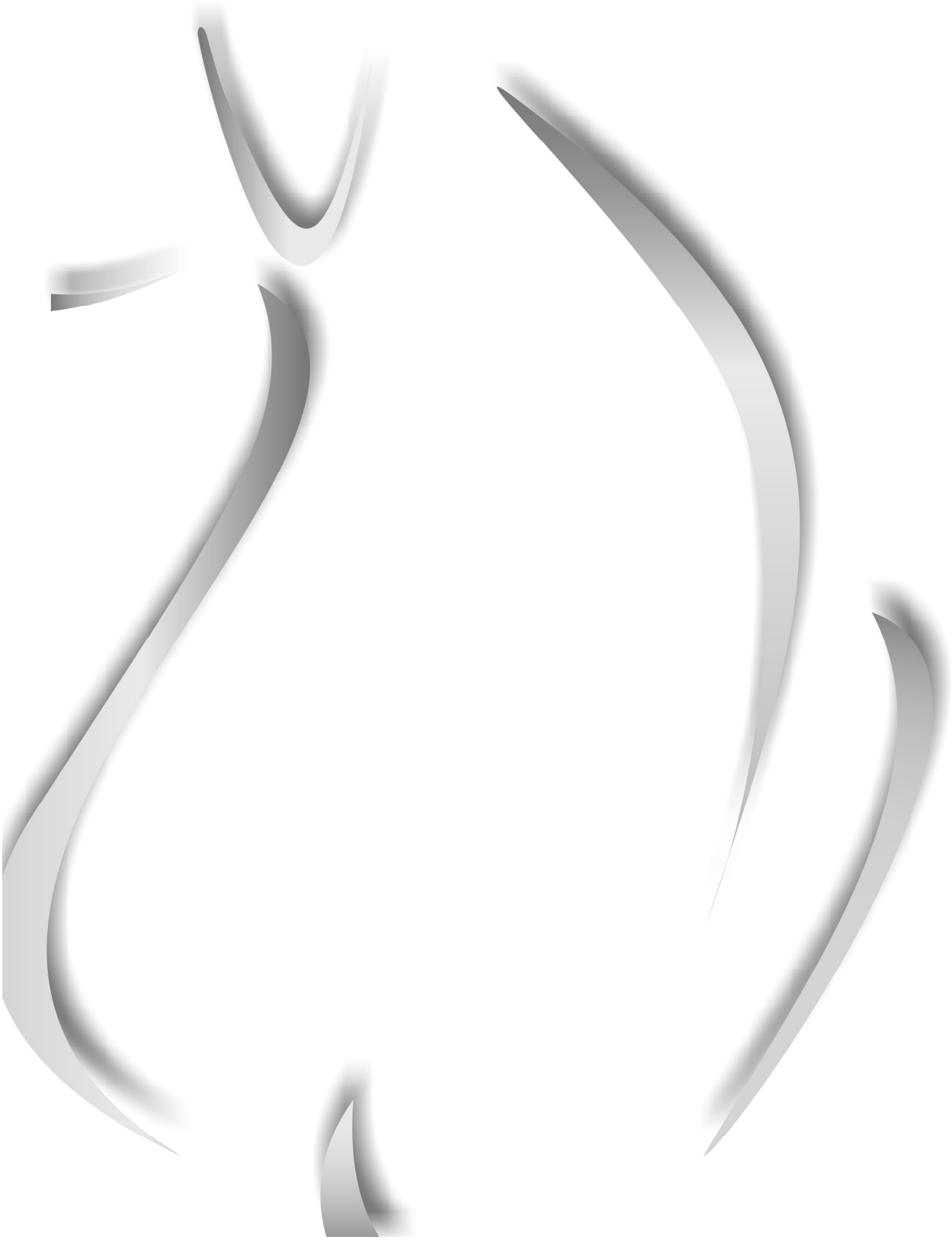
This icon precedes Points of Caution.

This icon precedes Frequently Asked Questions.

Don't Talk About It--Show Me What to Do!

We have done our best to not ramble on about this and that, but instead, have provided a great quantity of screen shots to guide you through the process of installing YDL.

Please note that we have provided as many screenshots as we felt were appropriate, that is, there are some screens that you may view while installing that are not included in this Install Manual. It's ok, don't worry. Those additional screens are straight forward, obvious screens that provide for you either information or basic options.



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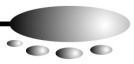
Linux and GNU



A History of Linux

Starting in the 1960's, two programmers for AT&T Bell Labs, Ken Thompson and Dennis Ritchie, developed a multi-user, multi-tasking operating system, called UNIX.

In 1991, Linus Torvalds, a student of the University of Helsinki in Finland, began a project to explore the 386 chip on his computer. Through a university class he became interested in UNIX, bought a PC, and worked in Minix, a small UNIX operating system. Unsatisfied with Minix, Linus began to develop the kernel (the heart of the operating system) that eventually became the Linux operating system.

The history of Linux is closely connected with the history of the Internet. From the beginning, Linus posted his ideas and the progress of his project to newsgroups on the Internet. Other students and software engineers quickly became interested in what he was doing and became excited by the chance to work on the source code of an operating system themselves. Linux grew with the contributions of fellow programmers around the world into a full multi-user, multitasking operating system. Linus and thousands of other programmers around the world continue to work on the Linux kernel today.

Linux, GNU, and Free Software

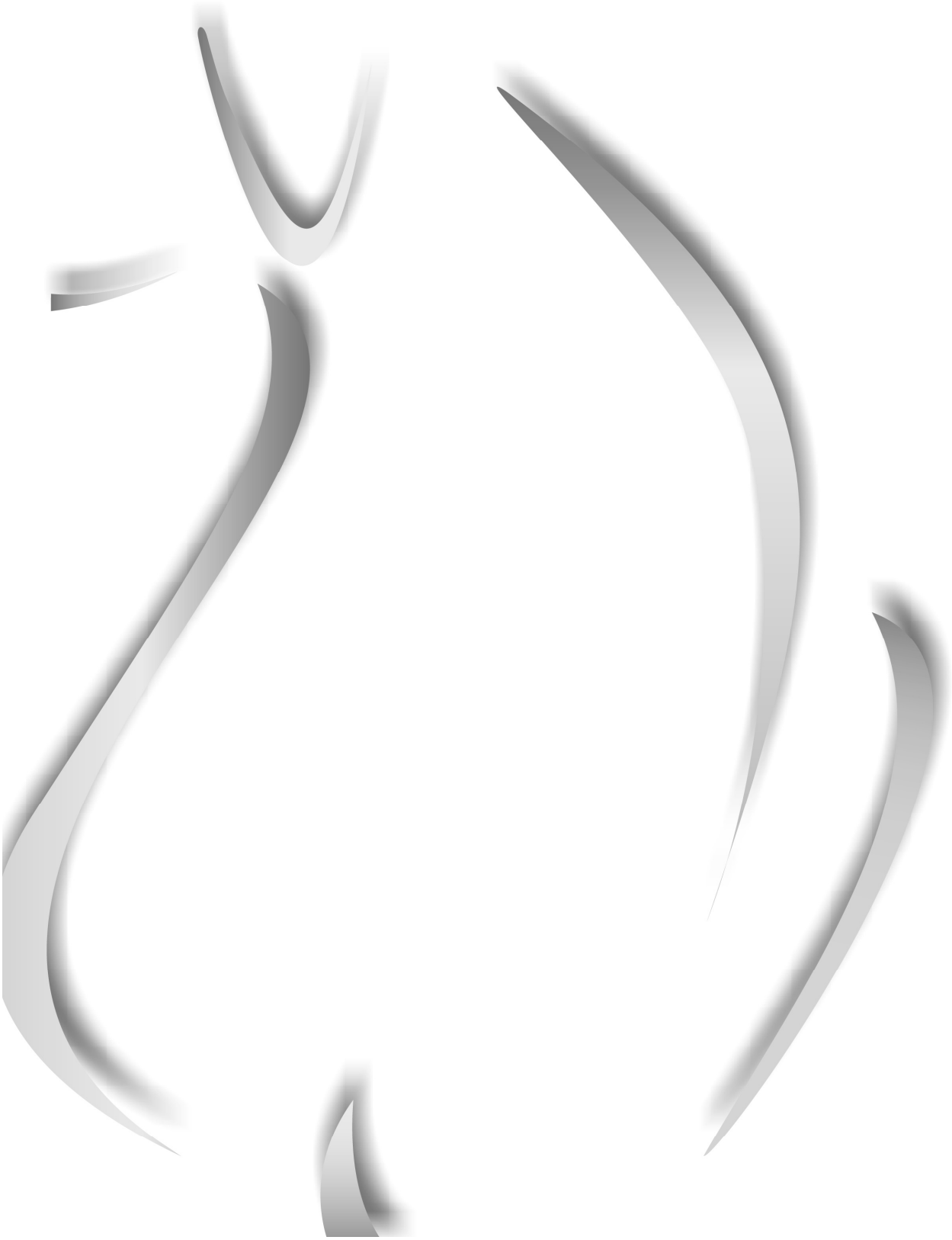
The GNU (literally “GNU is Not UNIX”) Project began in 1984 with the intent of developing a free UNIX-like operating system.

The Linux operating system is protected under the terms of the GNU General Public License, a special software license created by the Free Software Foundation. The Free Software Foundation is a tax-exempt charity that promotes the philosophy of free software. Free software is not necessarily free in terms of price, but it does allow the user of it certain liberties and freedoms not allowed by proprietary software. These liberties include complete access to the source code of the software for anyone who wants to change and improve it, and the right to copy the software and give it away or distribute it for a fee. The working concept of free software is this: when someone buys or acquires a piece of software he or she becomes the owner of it and should have the right to change and alter it as seen fit. The Free Software Foundation was formed in order to promote and protect these rights.

Open source software is software that allows access to the source code or is distributed with the source code in addition to the executable. Open source typically falls within the definition of free software.

Linux is actually a part of the GNU project. At the time of Linux’ inception the GNU project included many Free Software applications but needed a kernel. Linus Torvalds copyrighted Linux under this software license in order to ensure that his software would remain free and to promote the philosophy of free software.

A complete copy of all software licenses, including the BSD Copyright, X Copyright, and GNU Public License are available online at the Yellow Dog Linux website.



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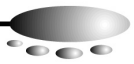
What's on the CD ROMs



What's New with Champion Server 1.2.1?

Champion Server 1.2.1 offers improved hardware support for the latest PowerPC hardware as well as security and bug fixes present in the original 1.2 release.

Champion Server 1.2.1 highlights:

- 3 CD-ROMs: Installation, Source, and a new "Tasty Morsels" CD which contains hundreds of applications and doubles as a bootable "Rescue Disc".
- Red Hat 6.2-based core components
- Kernel 2.2.17 with improved hardware support
- Latest bootloader technology via BootX and yaboot
- Rock-solid Red Hat installer with improved hardware support
- Updated C libraries and compiler: glibc 2.1.3 and gcc 2.95.2
- KDE 1.1.2 and October GNOME desktop environments
- Run the Mac OS in Linux with Mac-On-Linux (MOL)
- Easy updates with "yup", the Yellow Dog Update Program
- Revised Guide to Installation
- and much more ...

Key Software Included on the YDL CDs

This list presents only the primary software applications and utilities included with your YDL distribution.

Base
- Kernel 2.2.17
- BootX 1.2.2
- yaboot 0.8

Libraries
- binutils 2.9.5.0.22
- glibc 2.1.3

Applications
- AbiWord word processor
- CD & MP3 players
- Gimp
- Mac-On-Linux
- Netscape Communicator
- gnumeric spreadsheet
- iCal calendar
- multiple text editors
- simple, graphing, and scientific calculators

Desktop Environments
- GNOME
- KDE

Window Managers
- Afterstep
- Enlightenment
- IceWM
- Sawmill
- Window Maker

Networking
- Apache
- BIND Nameserver
- Netatalk
- Samba
- Sendmail

Internet
- elm
- lynx
- mutt
- ncftp
- pine
- wget

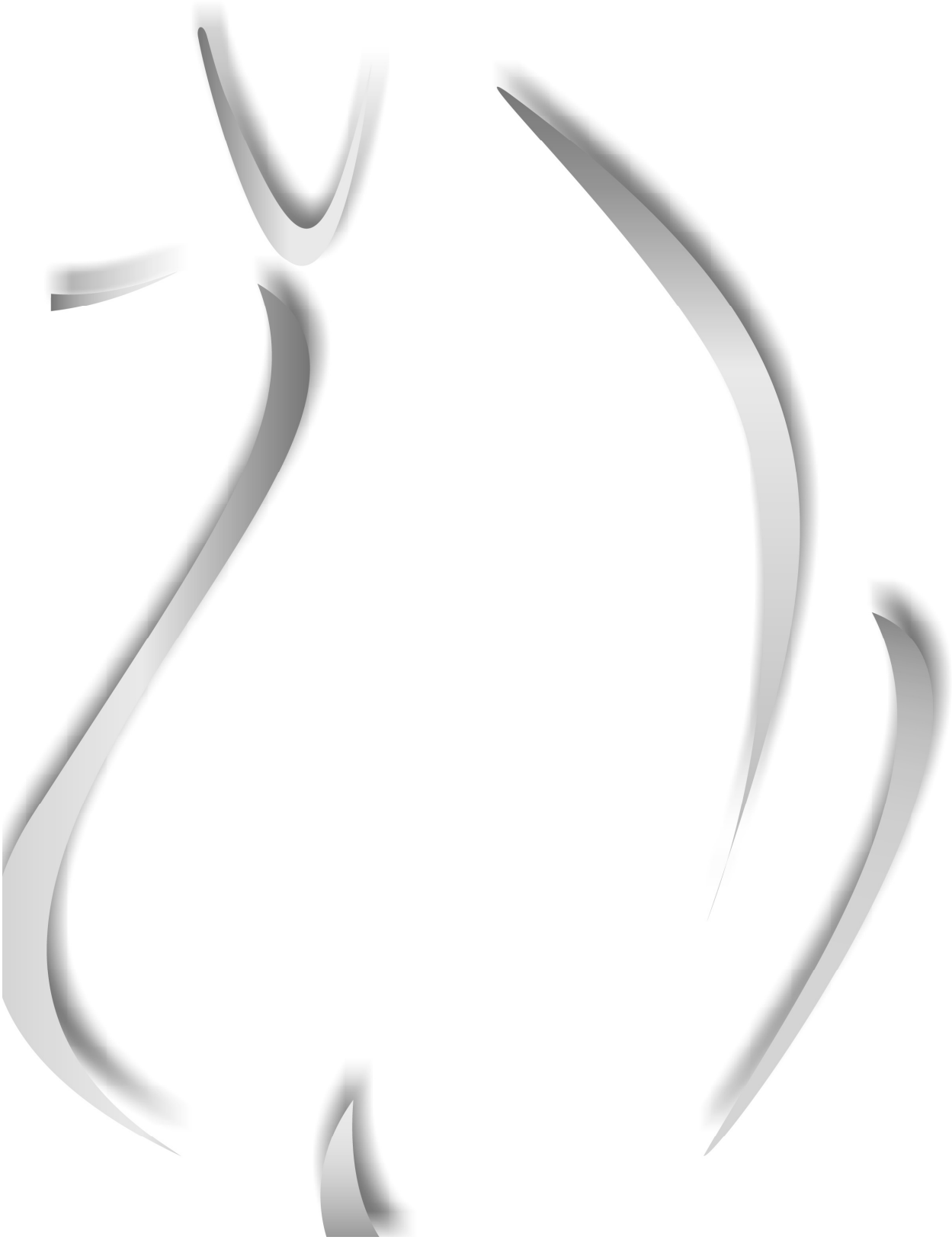
Development
- DDD
- PHP
- gcc
- gdb
- lesstif (Motif-clone)
- perl
- python
- tk/tcl

Databases
- PostgreSQL
- mySQL (on Tasty Morsels)
- FrontBase (on Tasty Morsels)

Utilities
- bzip2
- cvs
- linuxconf
- rpm
- yup (Yellow Dog Update Program)

Please visit our website for a complete list of all software included in this distribution.

www.yellowdoglinux.com/resources/software.shtml



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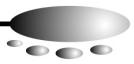
4 Prepare Your Macintosh



Requirements

System Requirements

- Minimum of 1 SCSI or ATA drive; 2 drives are preferred.
- Minimum 16 MB RAM, suggested 64 MB RAM or more. Linux takes full advantage of RAM, therefore, the more RAM you provide, the faster and more capable your Linux OS will operate.
- A fully functional installation of YDL requires a minimum of 1GB drive space. However, it is possible to install a greatly reduced (yet capable) Linux OS in substantially less space.

Hardware Requirements

What hardware is Officially Supported* by Yellow Dog Linux?

- 2000 PowerBook G3
- iMacs, iMac DVs, iBooks
- G3 Blue & White and all G4s
- G3 Desktops, Towers, and All-in-Ones
- 1998 “Wallstreet” and 1999 “101” G3 PowerBooks
- Power Macintosh 9600, 9500, 8600, 8500
- Power Macintosh 7600, 7500, 7400, 7300
- Power Macintosh 6500, 6400, 5500, 5400, 4400
- IBM RS6000 B50, F50

The following machines should work with Yellow Dog Linux but are not officially supported *:

- Apple dual-processor G4s and the Cube
- Twentieth Anniversary Macintosh
- PowerBook 3500, 3400, and 2400
- Apple Network Server (ANS) 500 and 700 (see website)
- Synergy Micro Compact PCI/VME boards
- Motorola StarMax and clones APS, MacTell, and PowerTools
- Motorola PowerSTACK, FirePower, Series E, PowerStack II
- PowerComputing PowerBase, PowerWave, and PowerCenter
- PowerCenter Pro, PowerTower, and PowerTower Pro
- UMAX C500, C600, J700, S900
- Apus 2000 and 3000
- other IBM RS6000 models: 830, 850, 40P, Nobis, INDI
- Be BeBox

See Chapter 7 for machine specific notes.

*If your computer is not listed under the Officially Supported category above, we cannot offer a product return nor Installation Support. Highly valuable “unofficial support” is offered online at lists.yellowdoglinux.com

Supported Devices

- MESH, 53C94, most Adaptec and some ATTO SCSI controllers
- MACE, BMAC, BMAC+, GMAC and DEC 21041 ethernet
- ADB, keyboard and mouse, including some multi-button mice
- USB, keyboard and mouse, including some multi-button mice
- “Control” display controller (used on 7300, 7500, 7600, 8500)
- “Platinum” display controller (used on 7200, 8200s, PowerCenter 150)
- “Valkyrie” display controller (used on 6400, 5400)
- Almost all ATI display controllers
- Chips & Technologies 65550 (used on PowerBook 3400 and 2400)
- IMS Twin Turbo cards with 2MB or 4MB of VRAM
- Matrox Millennium I, II, and G200 video cards
- Serial port at speeds up to 230.4k baud (but not using DMA)
- Floppy disk, for 1.44MB floppies (formatting not yet supported)
- ATA (EIDE) hard disk
- ATAPI CD-ROM and Zip drive
- AWACS sound chip (including play-through from audio CDs)

Drive configurations

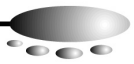
We recommend that you use a separate drive for Mac OS than for the Linux OS. The recommendation is two-fold: you will reduce the risk of accidental damage to the HFS (Apple’s Hierarchical File System) partition while in Linux and allow for more flexible growth of your Linux operating system.

You may use either IDE (ATA, DMA) or SCSI, depending upon your requirements. If you are using the BootX method of booting Linux, both IDE and SCSI are easily used. However, at the time of writing this manual, the use of yaboot is far simpler on IDE drives than on SCSI. Also, yaboot requires the yaboot.conf file to reside on the first drive in the chain.

If the drive is already partitioned, the Mac OS partition is already HFS formatted, and YDL is being installed on a second drive, you do not need to reformat and reinstall MacOS.

If you choose to maintain both the Mac and YDL partitions on the same drive, you must first backup all data, reformat your drive, partition it, reinstall your Mac OS, and then copy your data back to the Mac OS partition.

If you attempt to partition your existing Mac OS drive without reformatting, you WILL lose data or render your drive completely useless.



BootX or yaboot?

Champion Server 1.2.1 comes with two bootloaders (the program that boots your computer into the Linux operating system) that can be used depending on your hardware and requirements.

Old World or New World?

If you have a system that is an iMac or newer, then it uses the ROM-in-RAM technology commonly referred to as New World ROM. Systems older then iMac have what is called Old World ROM.

At this time, Old World systems should continue to use BootX for booting as the available non-Mac OS methods of booting are incomplete and not user friendly.

New World systems should use either BootX or yaboot. Apple Power Macintosh G4, iMac DV and PowerBook 2000 (Pismo) computers must use yaboot to be fully functional.

BootX

BootX is the Mac OS Control Panel and Extension that can provide you with a dual-boot solution (switch between Mac OS and Linux easily). BootX requires Mac OS in order to function. **The newest Apple computers can NOT use BootX.**

yaboot

“yaboot” (Yet Another Bootloader) is a bootloader for New World ROM systems that allows you to boot Linux without requiring Mac OS to be present on your computer. yaboot has the ability to dual-boot between Linux and MacOS, but does not yet have a graphical frontend for the dual-boot function.

Synopsis:

Older then Rev A. iMac: BootX only

Original iMac, Blue & White G3, '99 PowerBook: BootX or yaboot

G4, iMac DV and 2000 PowerBook (Pismo): yaboot only

Determine if you are going to be using BootX or yaboot as a means of booting Linux BEFORE you reformat and partition your drives or install Mac OS as each method may require a different partition and install scheme, as described in the following.

Older versions of Drive Setup (previous to 8.1) may not recognize nor allow you to reformat non-Apple drives.

Linux is not capable of mounting an HFS+ partition, forcing you to update kernels through the Mac OS.

Using Drive Setup to Format and Partition your Drive(s)

1. Insert the Mac OS Install CD.
2. Restart your computer.
3. Hold the “C” key until you have booted from the CD.
4. Open the Install CD. Open the Utilities folder. Launch Drive Setup.
5. Prepare your drive(s) for BootX or yaboot (see below).

Prepare Your Drive(s) for BootX

Select the Custom Setup button (Figure 4.1) and create 2 partitions, one as “HFS” (not HFS+) and the other as “unallocated”. While a “Core System” install can fit into 100 MB, a “System Software” install on 1 GB is recommended (Figure 4.1). And as stated above, if you are using yaboot with no Mac OS, you need only create a 32 MB partition for the yaboot components.

(or) Prepare Your Drive(s) for yaboot

If you wish to use Linux exclusively on your computer, create a small HFS partition (< 32 MB, see Figure 4.1) on which yaboot and its components will reside and do not install the Mac OS.

If you are going to keep Mac OS on your system, you will use Mac OS's HFS partition to store yaboot's components.

We do recommend that even if you are not planning on using the Mac OS that you keep a minimal (Core) installation of Mac OS on a small partition.

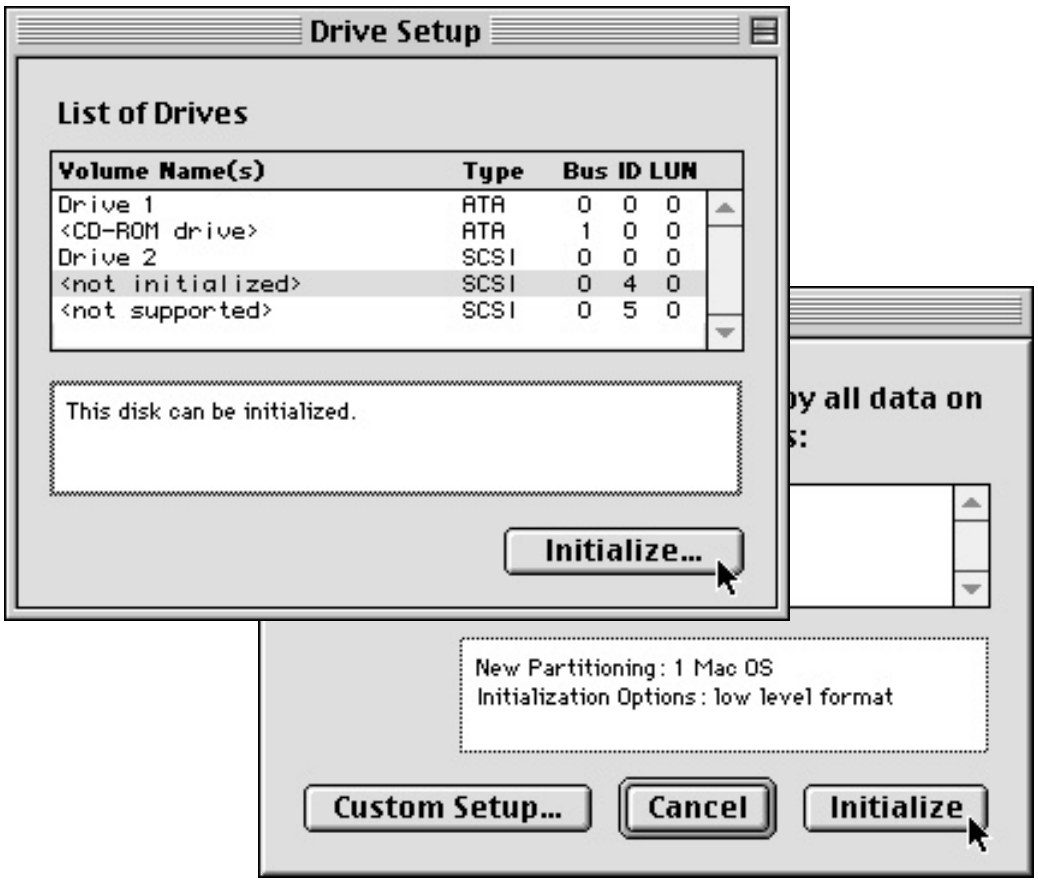


Figure 4.1

Install Mac OS

1. Double-click on the Mac OS install icon.
2. Following the legal text, choose the partition onto which you will install Mac OS.
3. Either select “Recommended” (skip #4 and #5 below and proceed to the next page) or select “Customize”.
4. Deselect all but the “Mac OS x.x” option (Figure 4.2).
5. Select System Software for a basic OS (or Core System Software for small OS with no Control Panels, Extensions, or Internet support).

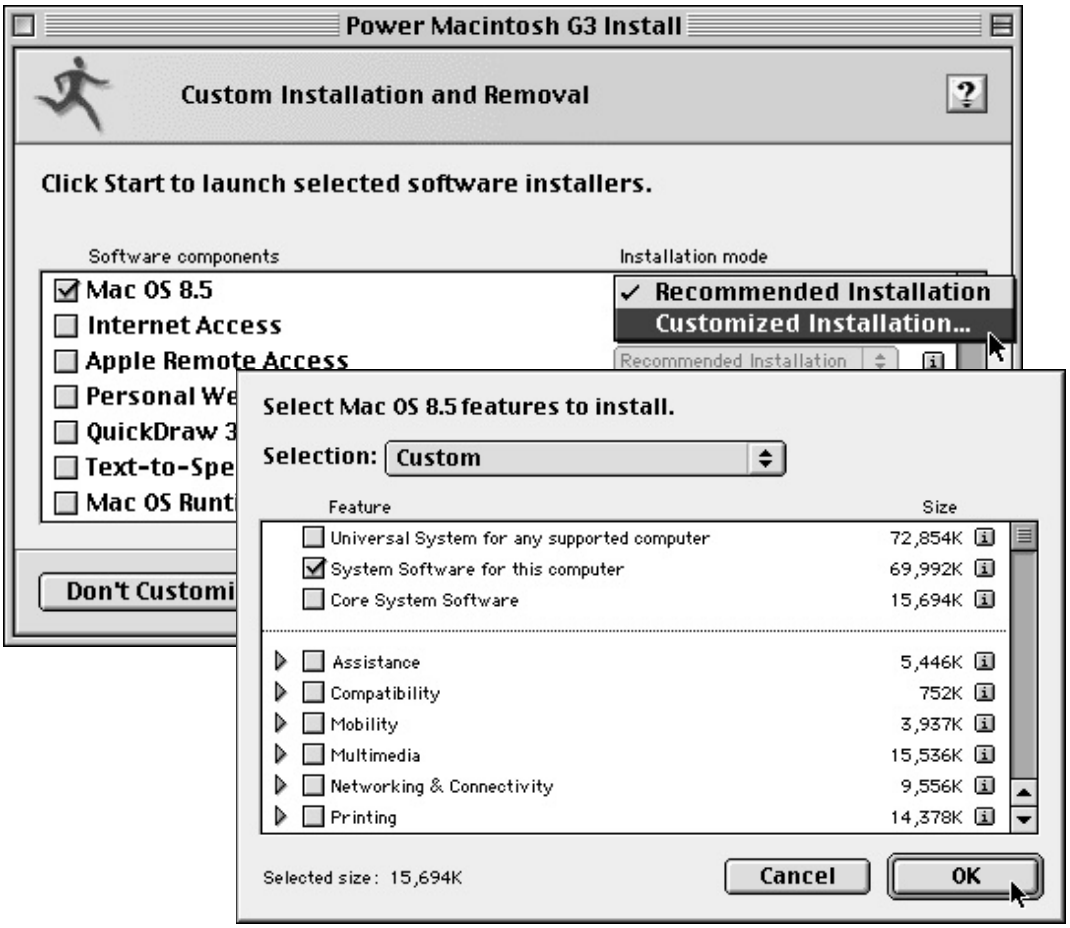


Figure 4.2

Boot Linux from CD-ROM: the yaboot method

The Champion Server Install CD is bootable only on New World ROM systems ONLY (see page 1.1 to determine if your hardware is compatible). Place the CD into the CD-ROM drive and hold down the 'c' key after the system chime. The yaboot prompt should appear. Pressing the enter key will launch you into the Yellow Dog Linux installer. If you wait long enough, yaboot will time-out and boot automatically.

See page 6.9 for yaboot configuration.

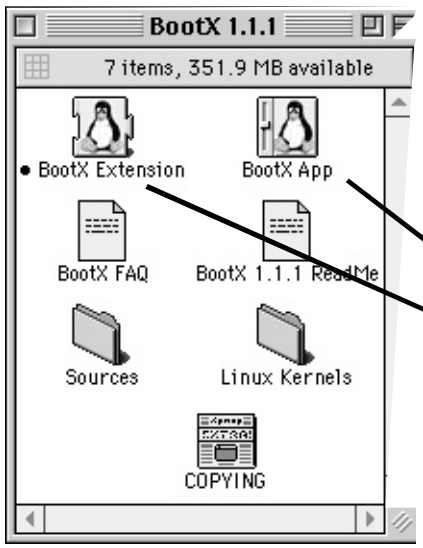


Figure 4.3

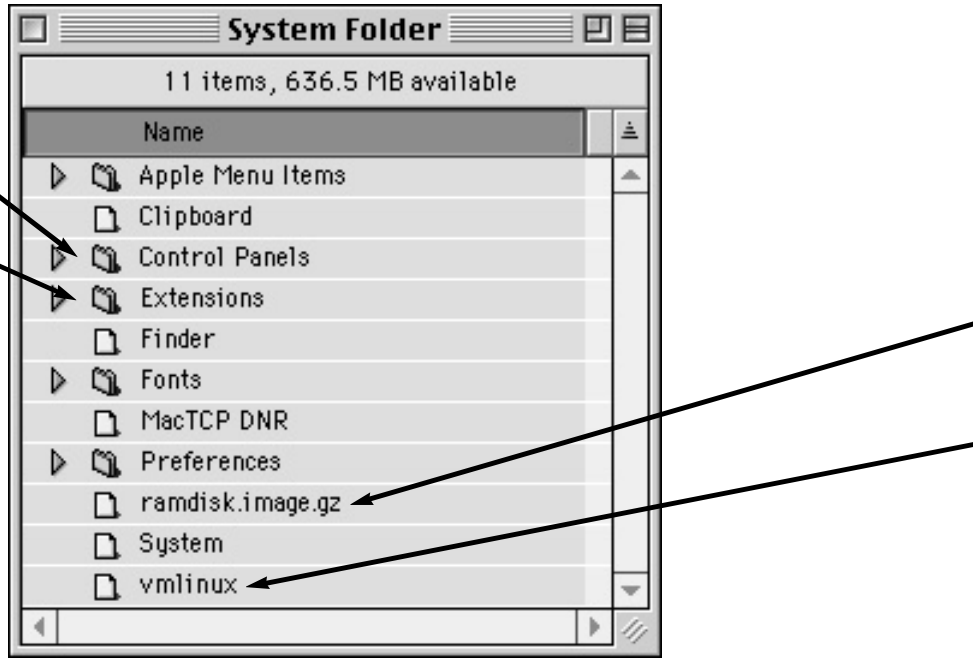


Figure 4.4

Boot Linux from Mac OS: the BootX method

The BootX Control Panel is used to boot into the Yellow Dog Linux installer from Mac OS.

fter Yellow Dog is stalled, BootX can be sed to switch between ooting into the Mac OS into Linux, as a dual-oot system.

1. Reboot your Mac. Do NOT hold down the C key.
2. Insert the Yellow Dog Linux CD into your CD-ROM drive.
3. Double Click on the CD icon and then the folder "install".
4. Double click the file called “BootX_1.2.2.sea. A new folder, will be created called “BootX_1.2.2”
5. Copy the file called “* BootX Extension" to the Extensions folder (located inside of the System Folder of your Startup drive) (Figure 4.3-4).
6. Copy the file called "BootX App" to the Control Panels folder.

7. From the Apple Menu Items, choose Control Panels and then the Extensions Manager to make certain that the new Extension and Control Panel have been adopted into the current list.

Prepare the YDL Installer

1. From the Yellow Dog CD, open the folder called "install".
2. Copy the file called "ramdisk.image.gz" to the System Folder (Figure 4.4). This file contains the installation program in a compressed format which BootX recognizes and understands. Do not try to ungzip (uncompress) ramdisk.image.gz.
3. Copy the file called "vmlinux" to the System Folder (Figure 4.4). This file is the Linux kernel, the core of the Linux operating system.
4. From the Apple Menu Items, choose Controls Panels and then "BootX App".

Boot the YDL Installer

1. Select the "Use RAM Disk" option (this option may be pre-selected). This option will cause BootX to boot (startup) the Yellow Dog Installer instead of attempting to boot an existing Yellow Dog Linux OS.
2. Some systems may require the “No Video Driver” option to be selected, please see Chapter 7 for machine specific requirements and the kernel video arguments.
3. Next, select the "Linux" button to boot into Linux and start the installation process (Figure 4.5).

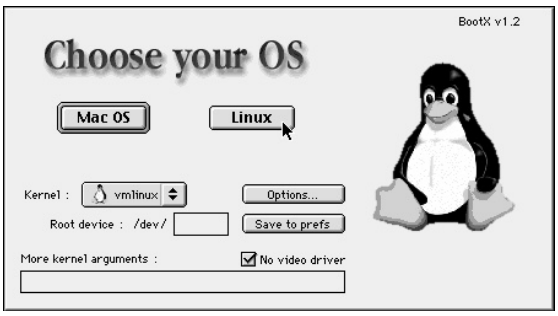
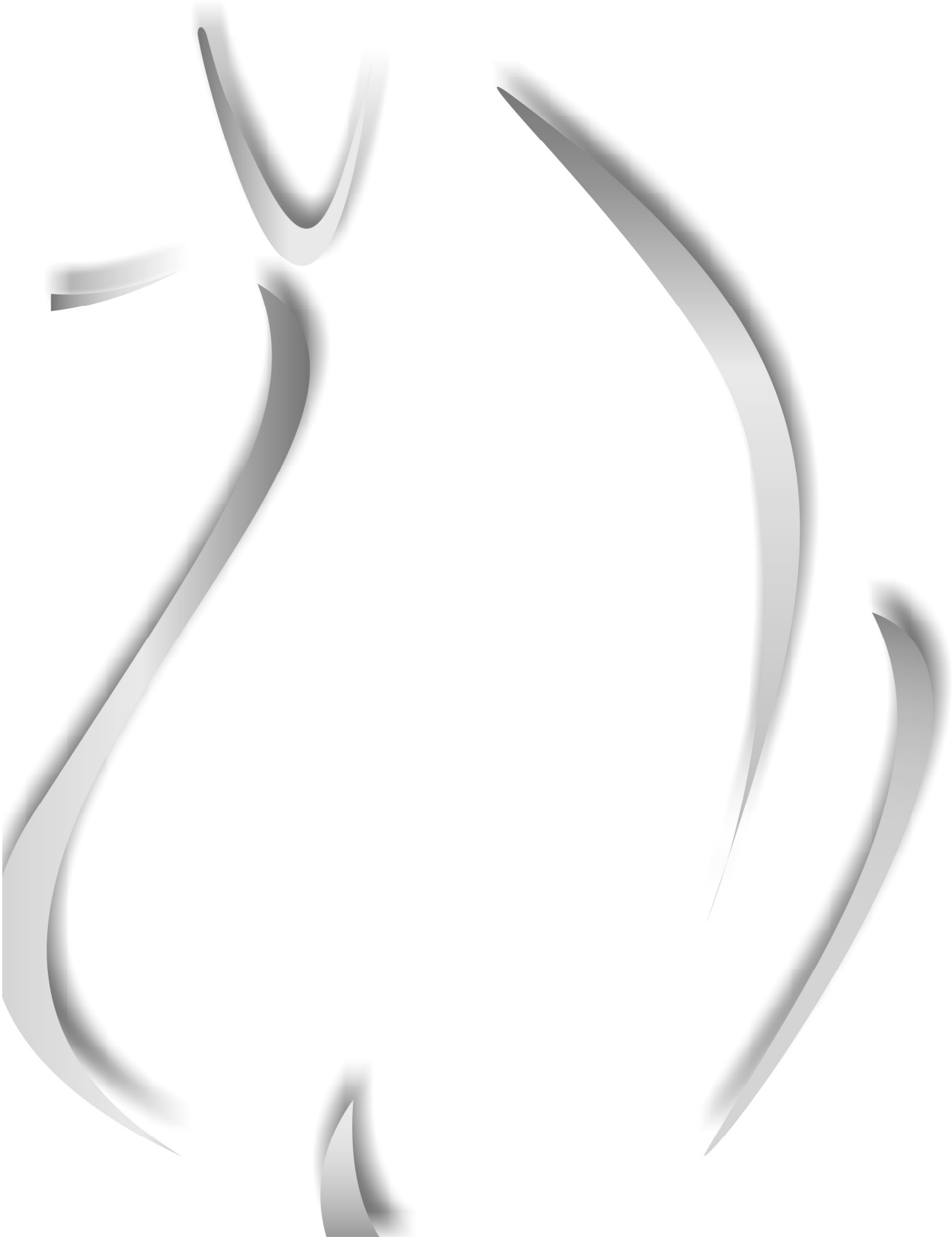


Figure 4.5



chapter

Install Yellow Dog Linux

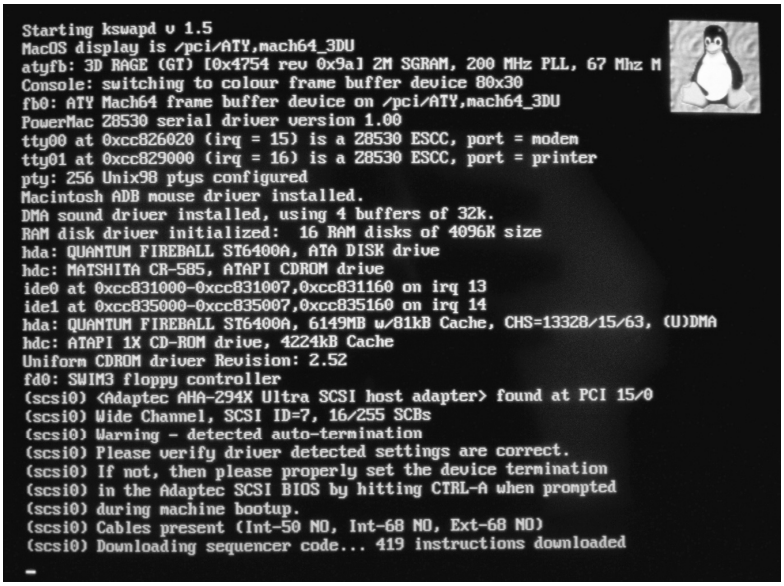


Figure 5.1

"Tux the Penguin" is the official, internationally recognized mascot of Linux.

Using the Yellow Dog Linux Installer

During the Yellow Dog Linux installation process, the mouse is not used. All operations are performed using keyboard input.

What is the Command key on my Mac?

Same as the Apple Key.

The Yellow Dog Linux install program also makes several diagnostic messages available to you. This information is displayed on 5 "virtual consoles". If you run into a problem during the installation process, make note of the information which these consoles display:

Console 1: Command-F1	Installation dialog
Console 2: Command-F2	Shell prompt
Console 3: Command-F3	Install log
Console 4: Command-F4	System log
Console 5: Command-F5	Other messages

In general, don't leave virtual console #1 (the installation dialog) unless you are attempting to diagnose any installation problems that you may come across.

Overview of the Install Program Interface

Throughout the installation process you can use the arrow keys or the tab key to switch between options. Use the SPACE BAR to select options, and press the RETURN (ENTER) key to "press" buttons (enter your selection and move onto the next screen).

The following section details the installation process. The Options you select, such as the language you wish the installer to use or what type of keyboard you use, will be saved by the installer after the installation of Yellow Dog Linux is complete. These options will be used for the default configuration of your newly installed Yellow Dog Linux Operating System.

Do NOT use a USB hub. Make certain your keyboard is plugged directly into your computer and the mouse into the keyboard.

If you are installing onto a PowerBook, use the trackpad and configure an external mouse when installation is complete.

Install Yellow Dog Linux.

The first install screen that will appear on your screen will welcome you to the Yellow Dog Linux installer. It will also tell you that Yellow Dog Linux is built from Red Hat Linux 6.2 (Figure 5.2).

When you have read the text, just press the RETURN key.

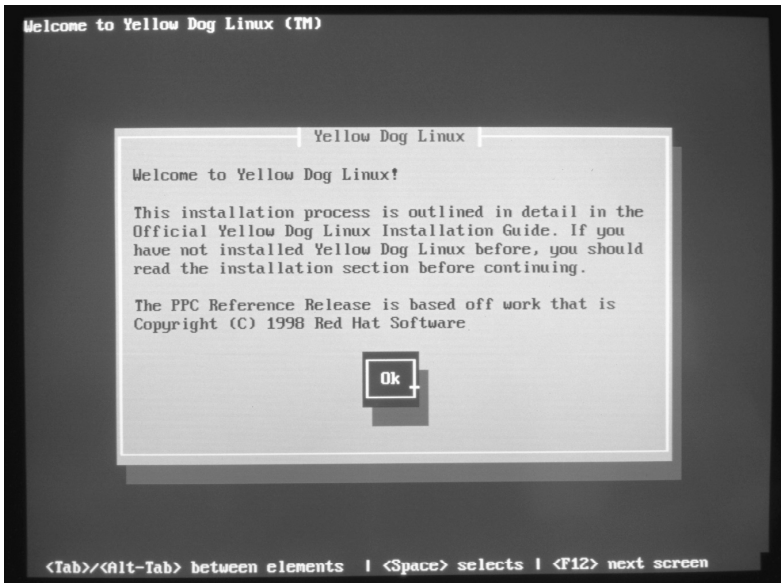


Figure 5.2

Select a Language

Use the arrow keys to move between the different languages. Once the language you wish to use is hi-lighted, press the RETURN key (Figure 5.3).

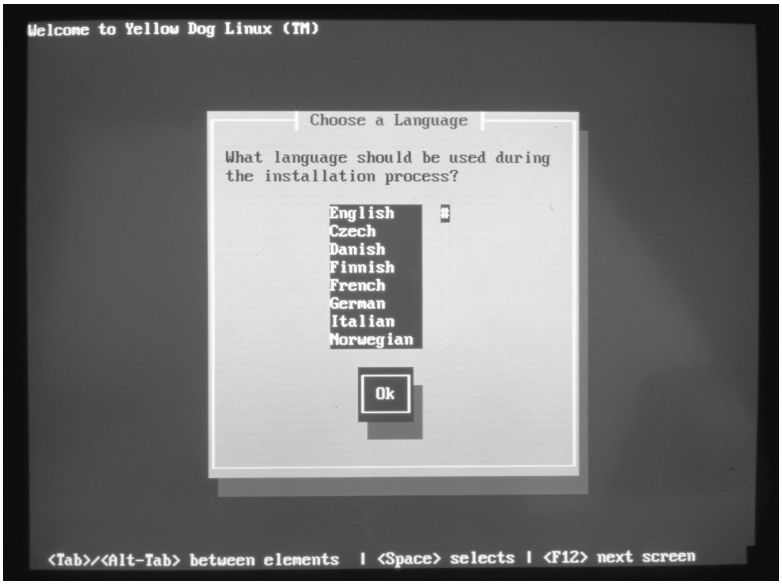


Figure 5.3

Select your Keyboard Map

Both ADB and USB keyboards are supported with the same keyboard map. This means you no longer have to tell the system if you are using a USB or ADB keyboard.

Most users with a US keyboard layout should select mac-us-std (standard, with no numeric keypad) or mac-us-ext (extended, has the numeric keypad). If you are using a keyboard with a French keyboard layout, for instance, select mac-fr2-ext for the extended French keyboard layout. There are keymaps for a variety of international keyboards.

iMacs, for instance, ship with standard keyboards. Use the ARROW keys or the TAB key to move between the two buttons then press RETURN (Figure 5.4).

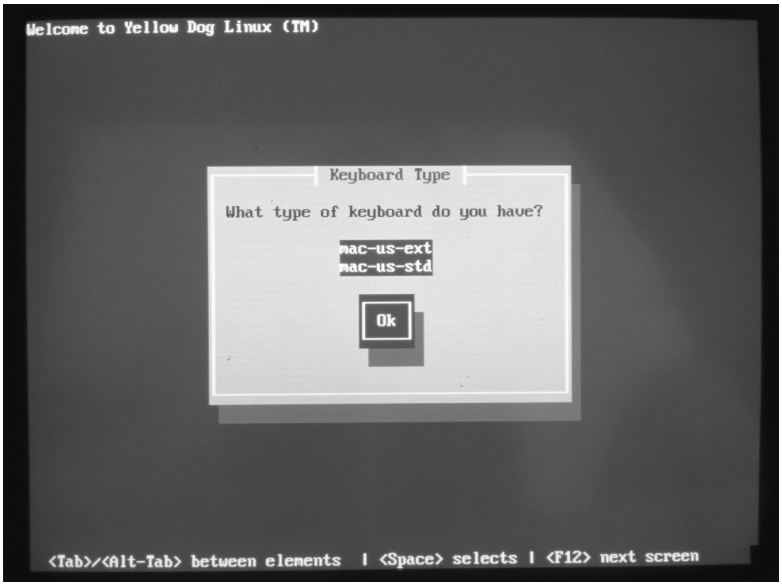


Figure 5.4

Install Options

If you are installing from the YDL CD, you will select "Local CD-ROM" option (Figure 5.5). This installation manual will cover only installation via the Yellow Dog Linux CD-ROM (see sidebar for additional methods of installation).

1) Insert your Yellow Dog Install CD-ROM (if it is not already in your CD-ROM drive). Select Ok.

2) The Yellow Dog Linux installer will now initialize your CD-ROM drive.

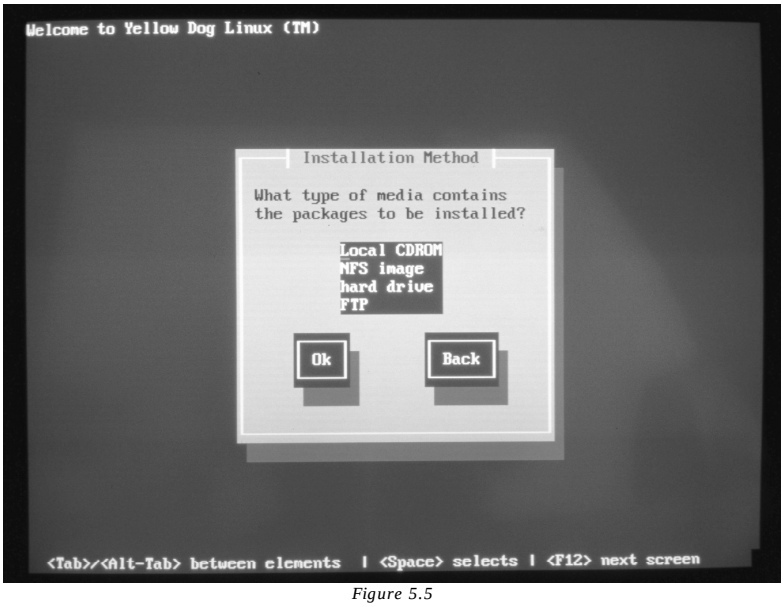


Figure 5.5

lease note that this uide assumes you will e installing from the CD OM.

ther installation meth- ds include FTP, HTTP, nd NFS.

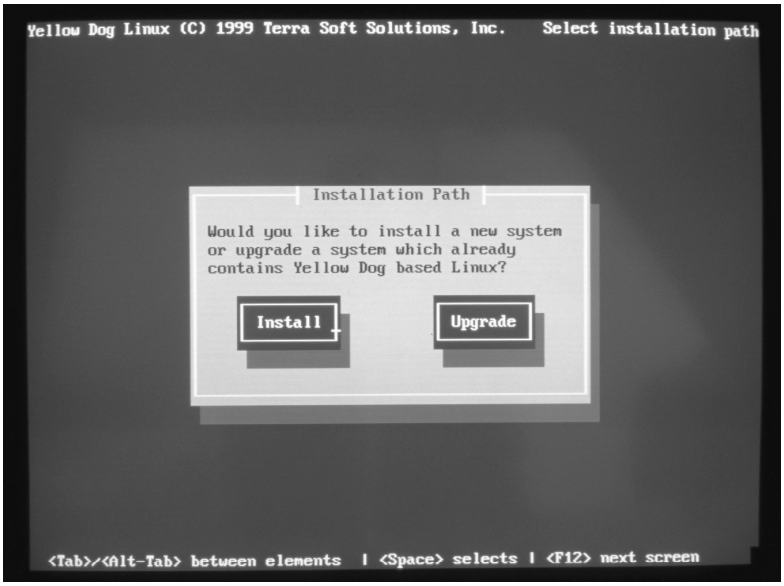


Figure 5.6

3) The next screen (Figure 5.6) asks you to install a new YDL operating system or upgrade an existing, older YDL version. We highly recommend that you do NOT use the upgrade option, even if you already have an older version installed.

We do not recommend using the Upgrade mode in the installer.

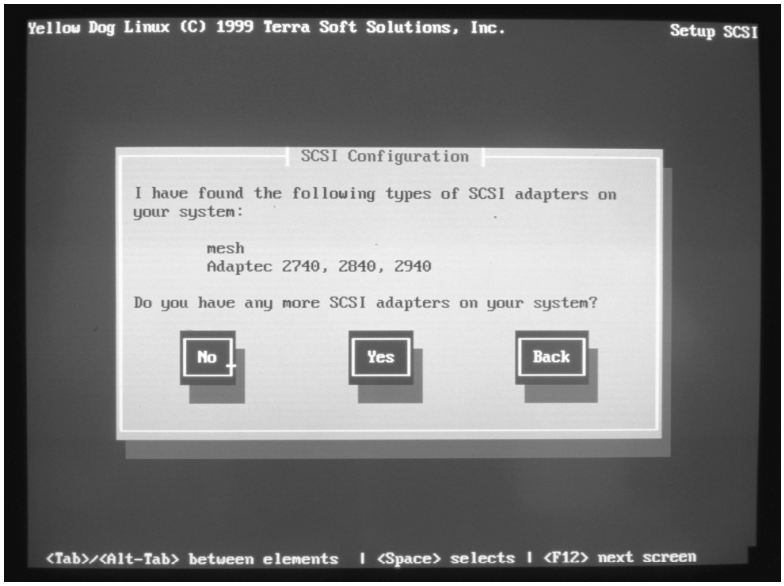


Figure 5.7

SCSI Drive Configuration

If your system does not have any additional SCSI buses, you will not be presented with the SCSI Drive Configuration windows and will move directly to “Introduction to Partitioning”.

If the SCSI adapter(s) on your system is not found by the installer software, it is likely not supported. You may wish to subscribe to the General Mailing list in order to determine if others have found support for your SCSI card: lists.yellowdoglinux.com

'ease note that we will 'fer to the "fdisk" utility s "pdisk" as pdisk is e version of fdisk hich can be used on e PowerPC

Introduction to Partitioning

This installation guide is going to detail the use of the “fdisk” (referred to as “pdisk” in the next section of this manual) partitioning method as Disk Druid will not be used by most users. You can only use Disk Druid if you have a non-Mac OS hard drive dedicated to Linux. This is because Disk Druid is not able to work with a drive that contains an HFS (Macintosh OS) partition.

If you do choose to use Disk Druid, it should be fairly self-explanatory. If you get stuck (Figure 7.1), select "Ok" and then go Back to the partition tool dialog box. From there, select the "fdisk" function instead.

Select the "fdisk" button (Figure 5.8).

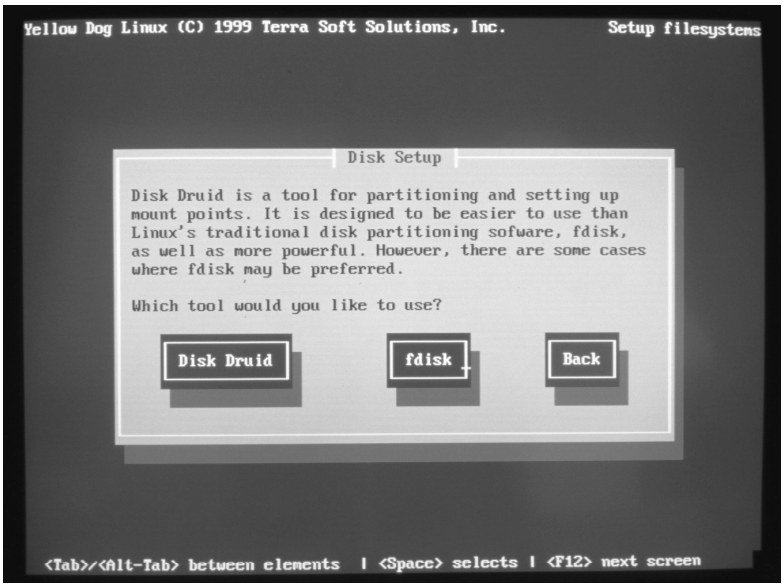


Figure 5.8

Select the Drive You Wish to Partition

Select the drive and then choose "edit". Be certain that you are editing the drive on which you wish to install Linux (Figure 5.9).

Figure 5.9

SCSI/IDE Disks and Partitions

IDE disks are named /dev/hd{letter}. The first IDE device would be /dev/hda. Linux can handle up to eight IDE devices. This means that the last IDE device would be /dev/hdh.

SCSI disks are referred to as /dev/sd{letter}. Again, {letter} is the letter of the disk. For example: /dev/sda is the first SCSI drive.

e certain that you are diting the drive on hich you wish to stall Linux.

On each disk, there can be many partitions. Partitions are labeled in the format /dev/hda{number}. Where {number} is the number of the partition. For example:

/dev/sda1 -- this would be the first SCSI device and the first partition on that device.

/dev/hdb5 -- this would be the second IDE device and the fifth partition on that device.

Possible Linux **mount points**:

ll that is absolutely quired is a root parti- on (mounted as "/") nd a swap partition.

/	-- the root of the file system
/usr	-- location of majority of system components
/home	-- user home directories go here
swap	-- swap partition (virtual memory)

How you partition your disk is up to you. Some people like to have one large "/" root partition and a swap partition only. Partition your drive so you have the most flexibility within your specific requirements.

Yellow Dog Linux can fit into about 1 GB of drive space with a full installation, If you choose the “Everything” option you will require at least 1.5 GB of drive space. Your swap partition should be 32-128 megabytes.

As a general rule (if you are not certain how much swap space to allocate), double the amount of physical RAM, but note that the swap partition should not exceed 256 MB (even with more than 128 MB). For example, if you have 64 megs of RAM, 128 MB of swap is recommended.

Working with pdisk.

When working with “pdisk”, you will find that it not necessarily a linear progression and that an understanding of the basic commands makes installation much simpler.

To view the list of commands, type “?” (Figure 5.10)

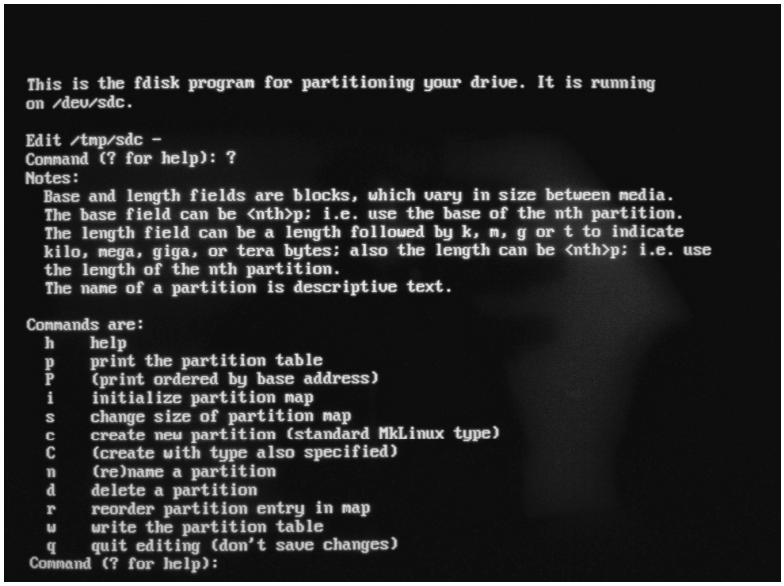


Figure 5.10

To view the current partition map, type "p". This will display something like Figure 5.11. Please note that Mac OS partition titles (as viewed on your Mac OS desktop) will be displayed in pdisk as “untitled”.

The partition map includes the partition ID (ie: “5:”), type (ie: “Apple_HFS”), name (ie: “untitled”), length (ie: “8888210”) and base (ie: “704”) which is the first block of each partition.

Each block is defined as 512 bytes. 2048 blocks is equal to 1 MB.

Where can I learn more about setting up Linux?

We have provided for you a number of online resources, including links to informative websites as well as recommended books.

www.yellowdoglinux.com

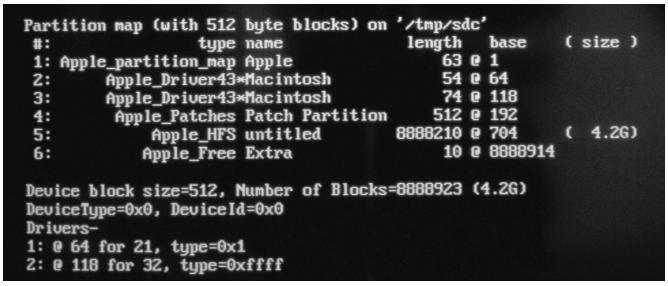


Figure 5.11

'e highly recommend iat you backup your 'ac OS BEFORE you stall Linux.

Prepare for Partitions

1) The first several items are used by your computer to map where the drive partitions are. These items have names such as Apple_partition_map, Apple_Driver43, and Apple_Patches. DO NOT DELETE these partitions if you desire to keep your Mac OS or use Mac-On-Linux.

2) In order to delete a partition, use the "d" command:
Command (? for help): d

3) If you are NOT maintaining the Mac OS on this drive (ie: you have 2 drives) delete the Apple HFS partition(s).

4) If you are using the yaboot bootloader, do NOT delete the HFS partition on which “yaboot.conf” resides. Record this partition number as you will need it later for yaboot.

5) Create at least 2 new partitions, one for “root” and the other for “swap” using the "c" command. You can either use every block on the drive by choosing a length for the final partition that is equal to the remaining space, or you may unformatted space to be designated at a later time.

Define the First Block of Each Partition

Next, pdisk will ask you for the first block of the first partition, typically your “root” partition. Use the "p" command to list the current partition map.

Use this information to determine the number that corresponds with the partition where you wish to assign root. You may either enter either the number of the partition, followed by the letter “p” (example: 5p) or the exact block (example: 704), see Figure 5.12.

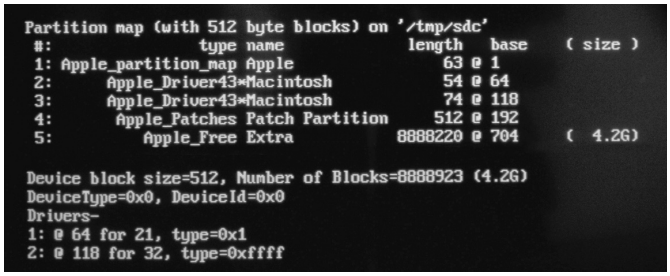


Figure 5.12

Be absolutely certain that you do NOT delete the first 4 partitions on your drive.

If this drive will maintain both a Mac OS and a Linux partition, do NOT delete the Apple_HFS partition.

Define the Length of Each Partition

Next, pdisk will request the length of your first partition (root). This can be defined one of two ways:

1) The first method is through the determination of the number of blocks that you wish to assign to a partition. This method will require some basic calculation.
2) The second method is through the determination of the general size of the partition. This can be in either kilobytes, megabytes, or gigabytes (ie: 200K, 700M, 1G).
3) You may assign all of the remaining space to the final partition by specifying the length of the Apple_Free partition.

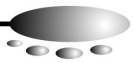
Note that pdisk does not understand decimals, which means that ".75G" will not work. If you want to make partition a length which is not an integer, you must specify the length in blocks.

Provide the Partition Name

Next, pdisk will ask for the name of the partition:

```
Name of partition: root
```

It is suggested that you name the partition according to the preferred name that is used in the linux file system (mount point). In our previous example, the partition is called "root" so we will know later that this is the partition to mount as "/" -- the root of our file system. Refer to the beginning of this section for more information on what partitions you should create.



y executing the "w" ommand any partitions at you deleted will be iped. Make sure you ave not deleted your ac OS partition and at you are partitioning e correct drive before ou write the partition ble.

You will need to follow the procedures for defining the first block and length for the “swap” partition and any other partitions that you desire.

Be certain to label your swap partition "swap".

Once you've made your partitions, check your work by viewing the partition map:

```
Command (? for help): p
```

Your new partitions should be of type "Apple_UNIX_SVR2". If everything looks okay, save the partition map. Do this by using the "w" command:

```
Command (? for help): w
```

Wrapping up Partitioning

The following text will appear, “Writing the map destroys what was there before. Is that okay [n/y] ?” Select “y” and press enter. If you do NOT want to write the partition table, use the "q" command to quit pdisk without saving changes.

you do not restart the stallation program fter making changes to e partition map, you ill experience unusual rors later in the stallation process.

1) Once you're finished partitioning and you have written to the partition map, quit pdisk using the "q" command
2) This will return you to the Partition Disks window (Figure 5.11).

FORCE RESTART YOUR COMPUTER NOW!

3) Progress through the Installer again, enter ‘pdisk’ momentarily and (p)rint the table to make certain your changes took effect, and then move into Assigning Partitions (page 5.14).

Assign Partitions

The next window (Figure 5.14) contains a list of all disk partitions with file systems readable by Yellow Dog Linux, including HFS (Mac OS) partitions.

This gives you the opportunity to assign these partitions to different parts of your Yellow Dog Linux file system. The partitions you assign will be automatically mounted when your Yellow Dog Linux system boots. Select the partition you wish to assign, choose Edit, and then press RETURN. Enter the mount point for that partition (Figure 5.15).

At the very least, you must mount a Linux native partition as "/" -- the root of your Yellow Dog Linux file system

Use the labels of the partitions you created to determine which partition should be mounted. If you labeled a partition “root”, mount it as "/". If you labeled a partition “usr”, mount it as "/usr".

When you are done, select "Ok" to move on.

If you get a pdisk error message (Figure 5.13) select the “Skip Drive” option.

Figure 5.13

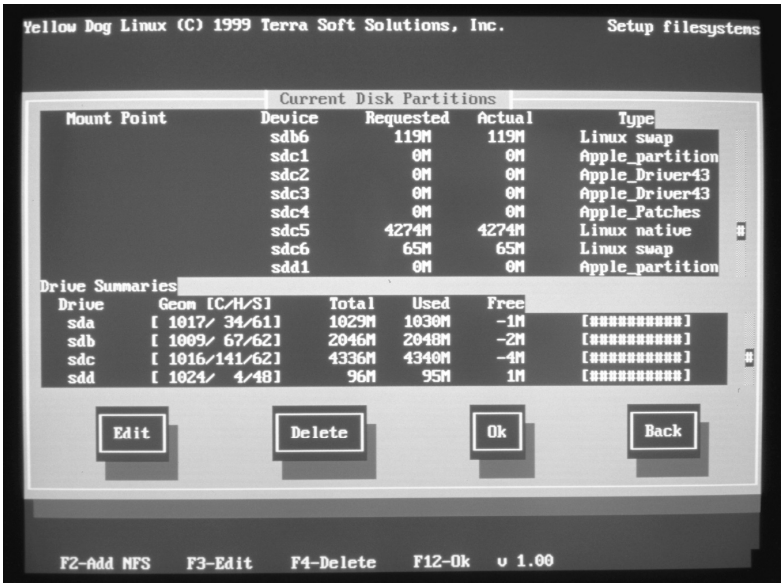


Figure 5.14

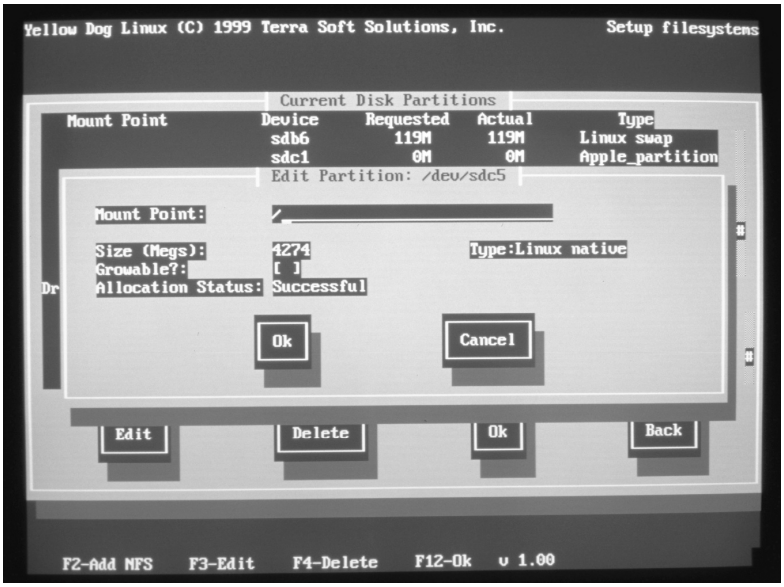


Figure 5.15

ellow Dog Linux can ot yet read HFS+ artitions.

ou should not mount our swap partition. he Yellow Dog Linux staller doesn't allow ou to do this so don't y.

Prepare to Format the Swap Partition

The next window (Figure 5.16) requests that you format your swap partition.

Only one partition is displayed in this window. That partition should be the one that you created under pdisk as your swap partition.

If no swap partition comes up, you need to go back to the partition creation and use pdisk to create a swap partition. If you did create a swap partition and it is still not coming up, verify that you labeled your swap partition "swap".

You should select your swap device.

You may choose to “Check for bad blocks during format", which is a good idea with older drives. However, this does take quite a while (depending on the size of the drive) and during the check, you will not be given on-screen feedback.

Select "Ok" to continue.

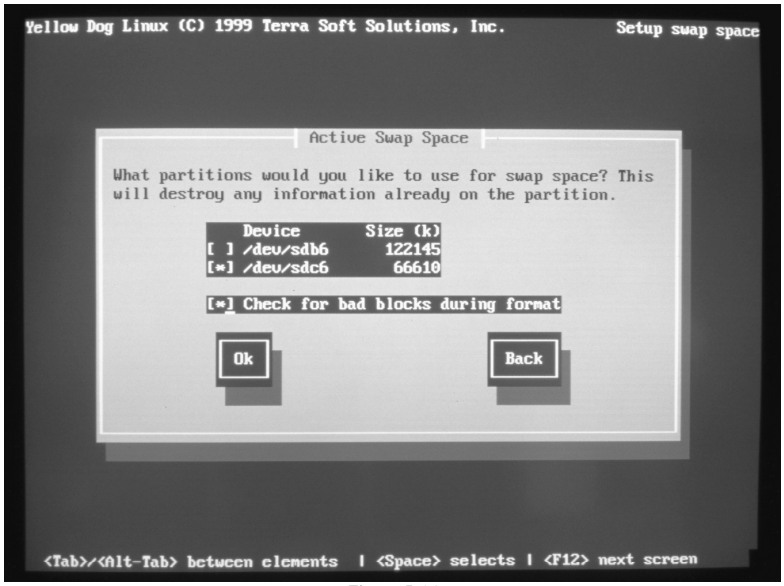


Figure 5.16

Format the Swap Partition

The next window (Figure 5.17) will ask you which partitions you wish to format. You should select all of the partitions displayed on this dialog box as they make up your linux file system.

Select "Ok" to continue.

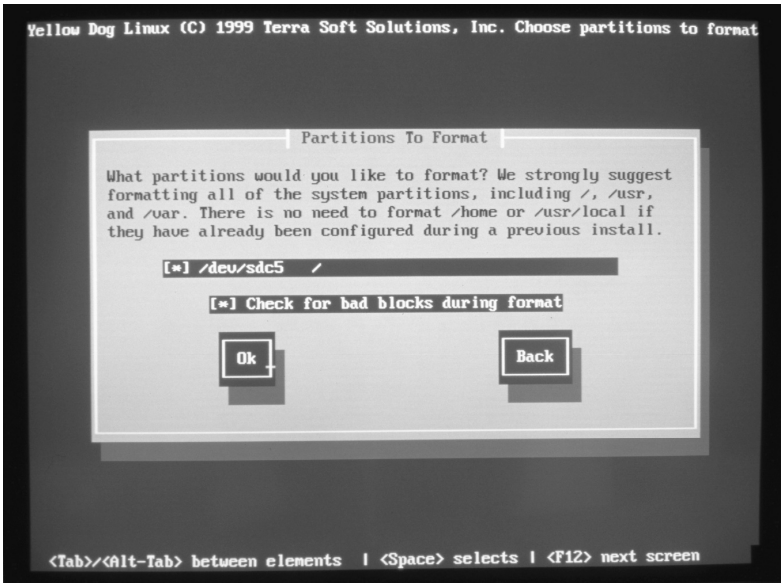


Figure 5.17

Select Components to Install

The next window (Figure 5.18) allows you to select the components you wish to install. Package groups are listed by their subject to make selection of components simpler.

Use the ARROW keys to move up or down the list and then the SPACE BAR to either select or deselect the components.

If you select the "Select individual packages" option, you will be able to select or deselect individual packages (the particular pieces of software that make up the components) that are installed. This option is for experienced users who know exactly what they require for their Linux system.

If you wish to install everything, select the “Everything” option. You can also select Everything and then de-select individual packages. Note that Everything installs additional, sometimes experimental, non-essential packages and requires at least 1.5 GB disk space.

Select "Ok" to continue.

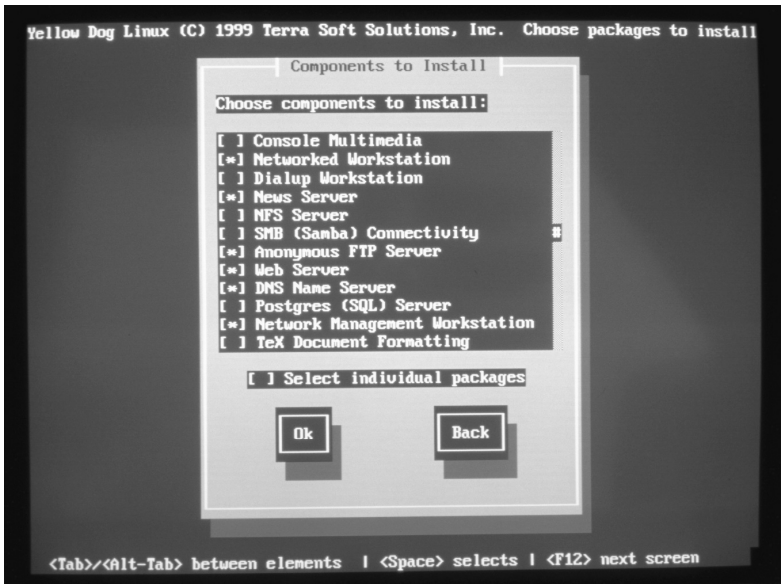


Figure 5.18

Select Individual Packages

Press the F1 key to view the size and description of each package in an expanded (drop-down) menu. Use the ARROW keys to move up or down the list and the SPACE BAR to open a sub-list of the individual components. In the sub-list, use the ARROW keys to move up or down and the SPACE BAR to select or deselect individual components. In order to collapse the sub-list, use the ARROW keys to move the cursor to the group title, and then press the SPACE BAR.

ome packages (such as ie kernel and certain braries) are required for very Yellow Dog Linux ystem and are not vailable to select or eselect.

You can use the ARROW keys to scroll though the description if there is more than can fit in the window. When you are done reading the description, select “Ok”.

When all components have been selected, select Done.

Package Dependencies

You may be presented with a screen titled "Unresolved Dependencies" (Figure 5.19) if you did not select a package which is required by another package that you did select. Press Ok, and the installer will automatically resolve the problem by adding all required packages to the list of selected ones.

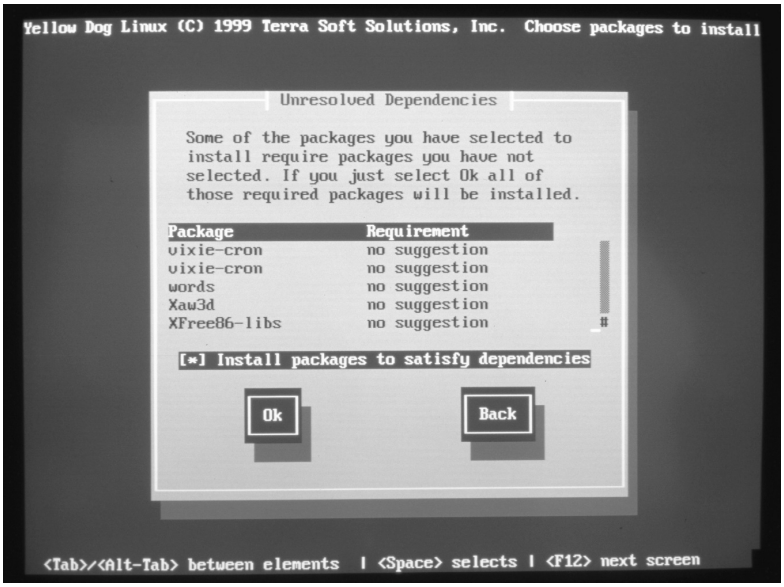


Figure 5.19

Location of the Install Log

Once your Yellow Dog Linux Operating System is installed, you can refer to /tmp/install.log to see what you installed during this installation process (Figure 5.20).

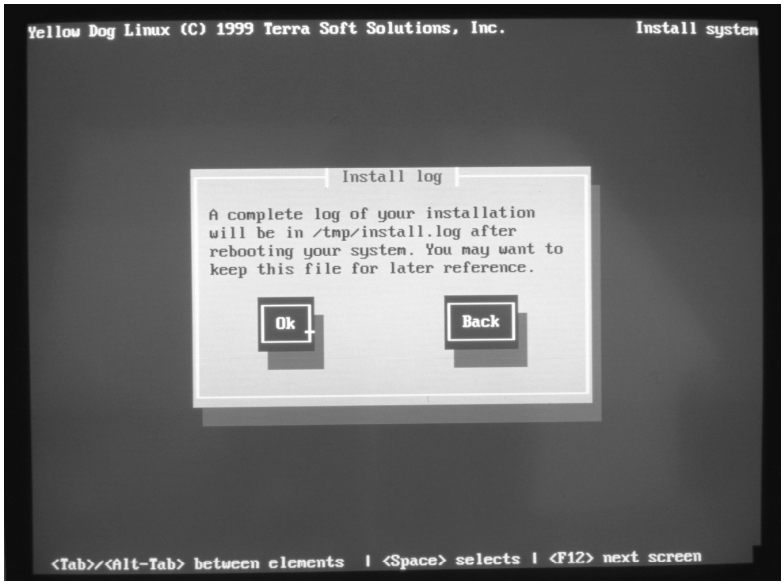
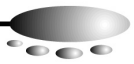


Figure 5.20

Did I do something wrong?

If this window is presented, don't worry, this is common.



The Linux File System Formatting Takes Place

The time that this process takes depends on the speed of your computer and the size of the partitions that you are formatting.

Installation Begins

The installation process is now underway. Grab a cup of your favorite beverage, sit back, and watch. On your screen, you will view 2 progress bars:

Top bar: displays the progress of the individual packages.

Bottom bar: displays the overall progress of installation.

Package Installation

The installer should install all of the packages that you selected to be installed. The "Install Status" dialog should be displayed with the following information:

Current Package Information

Package: the name of the package being installed

Size: the size of the package (in kilobytes)

Summary: a description of the package

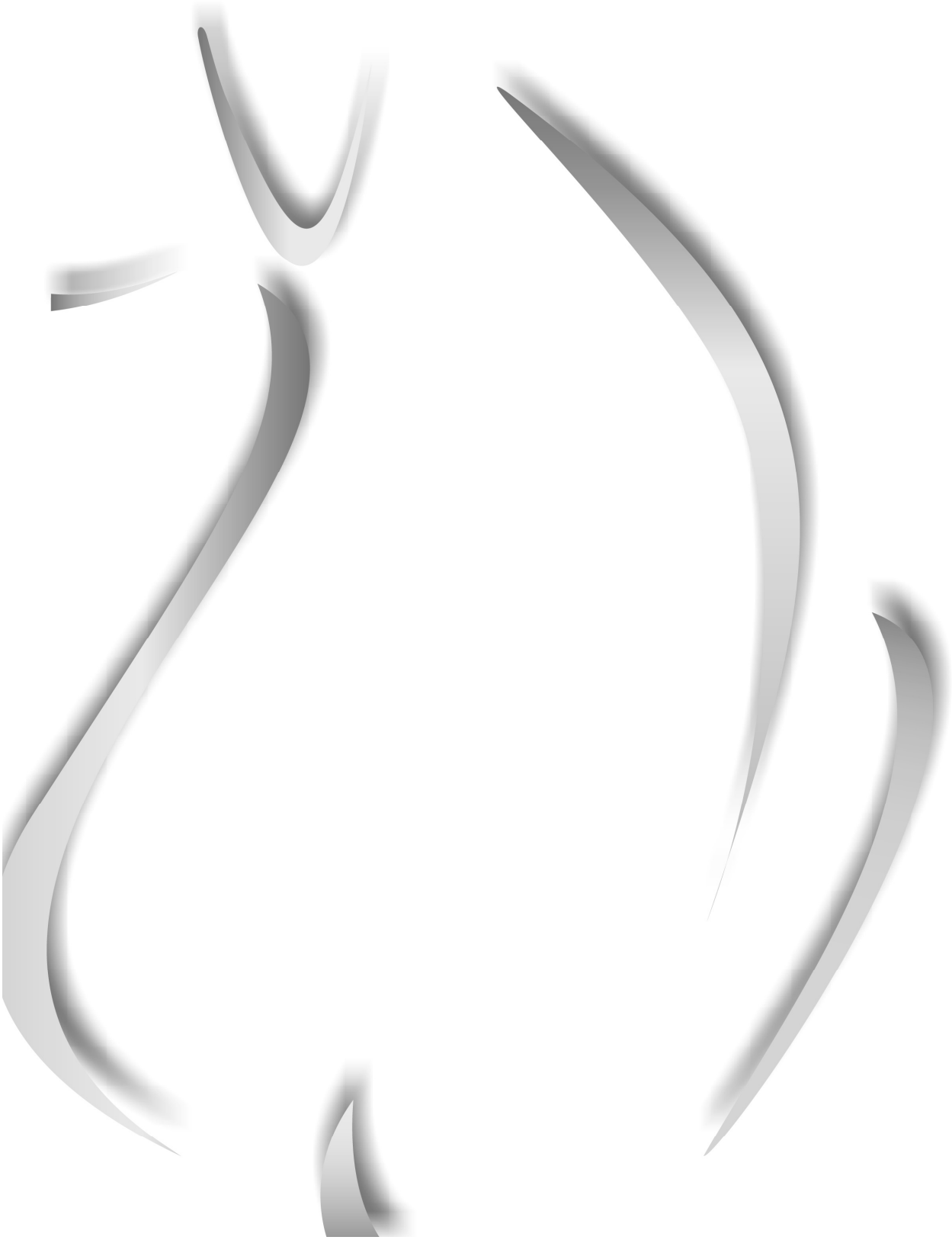
Package Installation Progress Bar: status of the installation

Entire Installation Information

Packages: total number of packages to be installed.

Bytes: total amount of data being installed.

Time: amount of time remaining in the entire installation process.



chapter

Configure Yellow Dog Linux

Mouse Config

The installer will attempt to detect your mouse. You will then be presented with the Mouse Configuration window (Figure 6.1). Select the mouse you have connected to your Macintosh. "Emulate 3 Buttons" is for 2-button mice. See Chapter 7 for information about emulating 3 buttons on a Mac system.

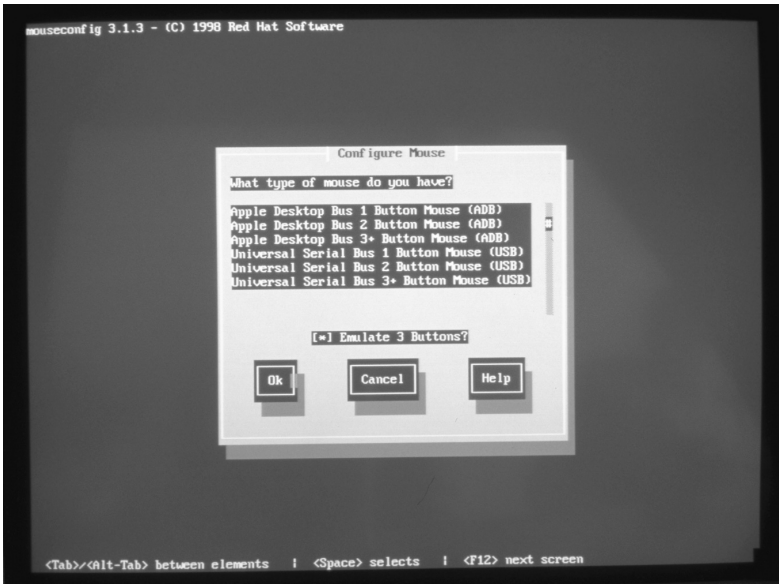


Figure 6.1

order to reconfigure our system once Linux operational, type setup" at the command ne prompt.

this step (see figure .1) fails, try and com- lete the installation to e best of your ability.

Configure Your System for Network Communications.

The next few windows offer you the opportunity to setup your system for network (LAN) communications. This does not setup YDL for a dial-up connection.

If you select Yes, the next window will ask how your system will obtain its IP address. The possible options are: Static IP, BOOTP, and DHCP, If you are not certain which setting to use, ask your network administrator.

Depending on the method you selected, you'll be prompted for various options such as your computers IP address, netmask, default gateway, nameserver information, domain name, and host name.

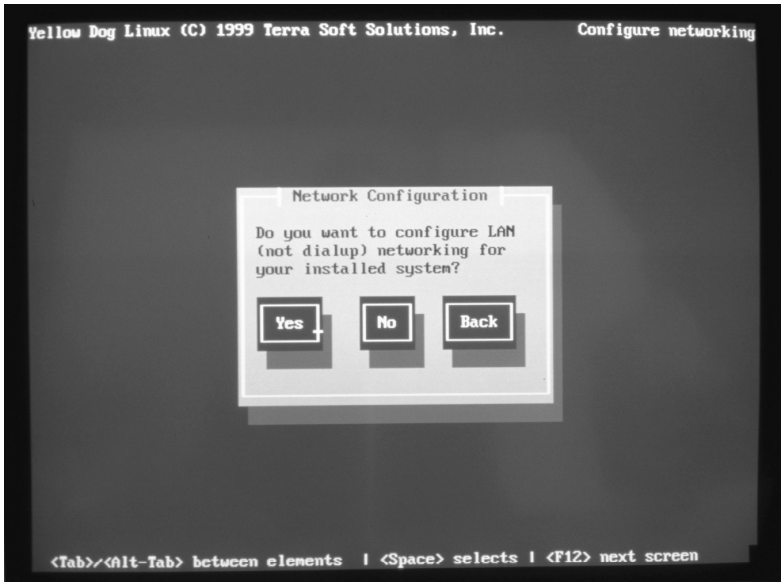


Figure 6.2

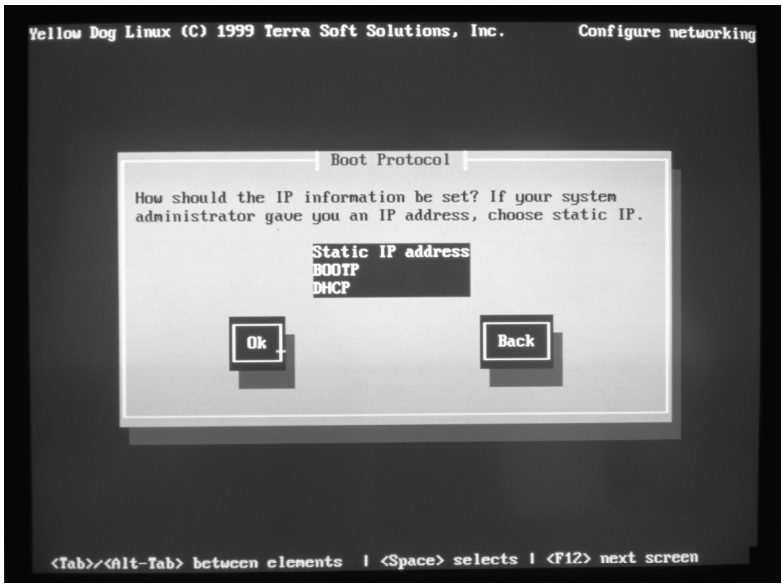


Figure 6.3

Figure 6.4

Figure 6.5

Time Zone/Region
Choose the time zone that you are in.

Services
This dialog allows you to select which services your system will activate on boot up. If you aren't sure what some of the services are, highlight the service and press F1. You'll then get a brief description of the service.

The selected services will be started automatically every time your Yellow Dog Linux system boots.

Printer
This dialog asks you if you'd like to configure your computer for a printer. If you choose yes you'll be asked how the printer is selected. The options are:

Local: the printer is connected directly to your computer

Remote lpd: the printer is connected to your local area network and can communicate via lpr/lpd.

LAN Manager: the printer is connected to another computer which shares the printer via LAN Manager (or SMB) networking.

Depending on which option you select, you'll be asked various questions about your printer.

When you are done, select "Done".

Configure Root Password

This window (Figure 6.6) allows you to set your root password. The password must be 6-8 characters long and should not be a dictionary word. The password will not be echoed to the screen as you enter it. You are required to enter the password twice to verify that you didn't make a mistake when you typed it in.

*hoose your root pass-
ord carefully. It should
ot be easily guessable
nd should have a mix-
re of numbers and let-
rs.*

*inux passwords are
se sensitive.*

*o not forget your root
assword!*

You can change the root password once you are in Yellow Dog Linux with the "passwd" command.

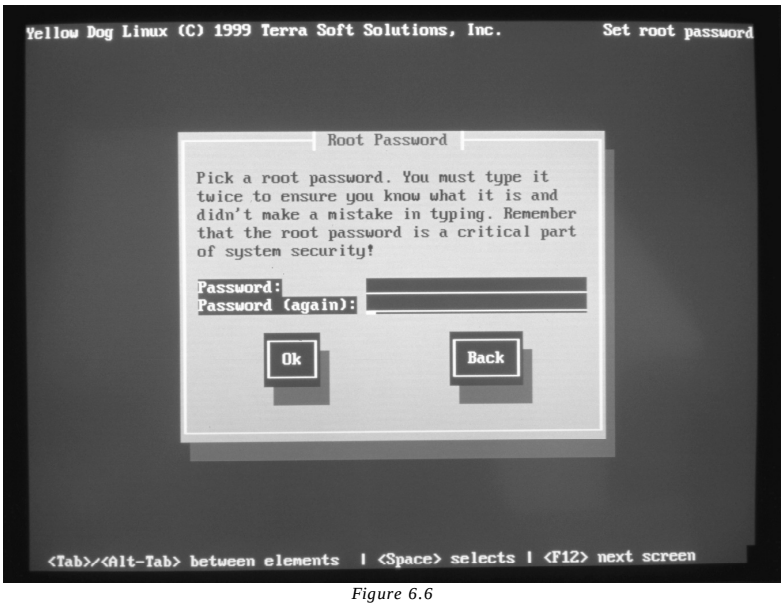


Figure 6.6

Configure Authentication

This function allows you to turn on “shadow & MD5” passwords for additional security. YP allows a networked computer to share a common password file. Unless you have experience with Authentication, leave these options as presented by default.

The BootX Exit Menu (for yaboot too)

This window (Figure 6.7) displays the root device on which your Yellow Dog Linux OS has been installed. *Be certain to record the root device as both BootX and yaboot require this to boot your new installation from Mac OS or from open firmware (yaboot).*

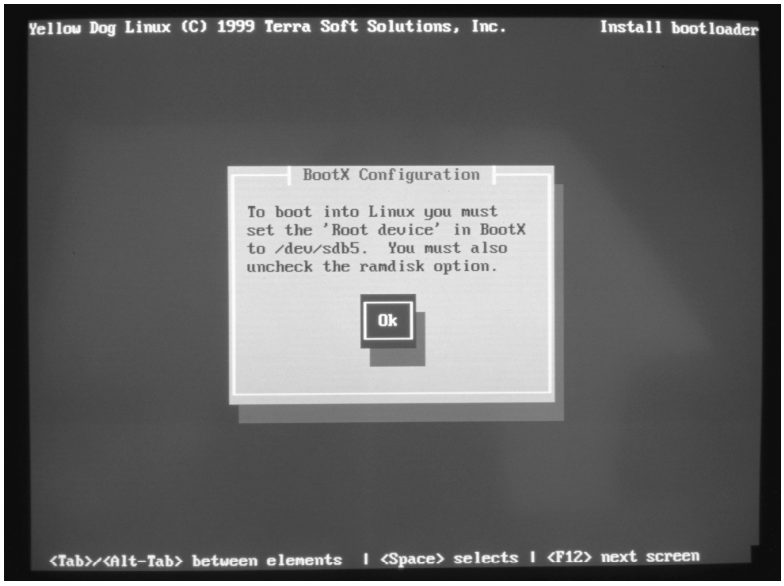


Figure 6.7

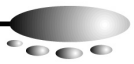
Configure X Windows

The Xconfigurator application is automatically run by the installer. It may also be run from the command line interface at a later time in order to modify the settings.

"No Video Driver" Selected in BootX

If you selected "No Video Driver" from the BootX Control Panel before entering the installer, you will be presented with a screen that states the name of your video device and whether or not the video device has acceleration support (however, this will always be displayed as "No" if "No Video Driver" was selected).

Xconfigurator will use your current Mac OS video settings, as established within the Monitors & Sound Control Panel. You will need to run Xconfigurator each time you modify your Mac OS video settings. Also note that '256 colors' does not work properly with the "No Video Driver" option selected.



“No Video Driver” Deselected (Not Selected)

If you did NOT select the “No Video Driver” option from the BootX Control Panel before entering the Installer, you will be presented with a screen that states the name of your video device, the amount of video memory, and whether or not the video device has acceleration support.

Next, select one of the monitors from the list presented, or choose “Custom” if your monitor is not listed. If you choose Custom, first select a generic monitor from the list presented and then specify your monitor’s vertical refresh range, typically found in the user’s manual or at the manufacturer’s website.

Finally, “Select Video Modes” that you wish to have available while in X. Keep in mind that there may be video modes presented that are not compatible with your monitor. Again, refer to your monitor’s manual or website for details.

Starting X at Boot

Once you are in your Linux system ad have verified that X works via “startx” you can set your system to boot into X by editing the following file using a text editor such as “pico”:

/etc/inittab

Alter the following text (found near the top of the file):

“id:3:initdefault” to “id:5:initdefault”

You must then save this file back to the drive and reboot into Linux in order to auto-start X.

Congratulations!
You have successfully installed your Yellow Dog Linux OS. Press "Ok" and your system will automatically reboot into Mac OS.

Login:
The “super-user” in Linux is “root”. Root has full access to the entire system. When prompted, enter “root” and then the password you assigned to root during installation (page 6.5).

Configure BootX to Auto-boot YDL
Once you're back in Mac OS do the following (see Chapter 4):

1) From the Apple Menu Items, choose Control Panels and then the "BootX App" (Figure 6.8).
2) From the BootX window, "Choose your OS", insert the the root device of your Yellow Dog installation (ie: /dev/hda8) in the Root Device option in BootX, as offered in Figure 6.7.
3) Uncheck the RAM Disk option.
4) The Tab key toggles between Linux and the Mac OS.
5) Press “Save to Prefs” to save your preferences.
6) Next, select the "Linux" button to boot into Yellow Dog Linux.

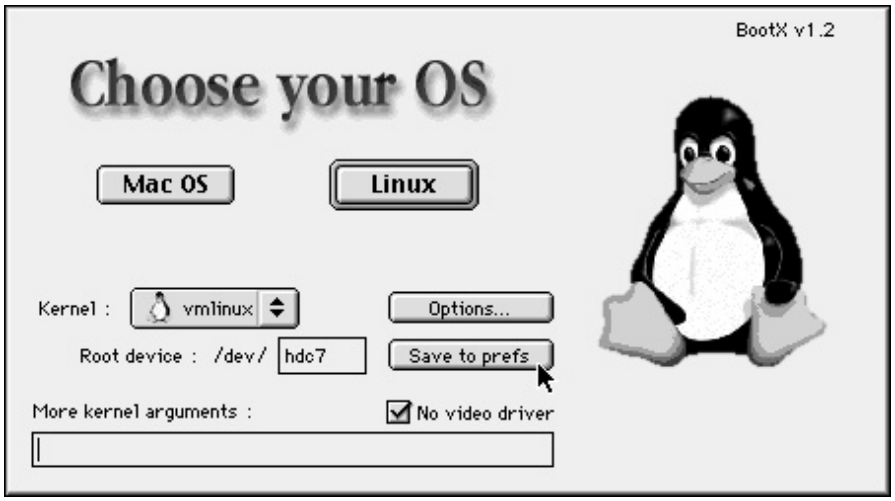
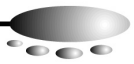


Figure 6.8

How do I get my system to boot YDL by default?

You need to tell the BootX preferences where to find the YDL OS.

See the Configure BootX to Auto-boot YDL section.



Configure yaboot to Auto-boot YDL

Open the install folder on the CD-ROM and copy the following files from the CD-ROM into the System Folder of your Mac OS hard drive: "yaboot", "yaboot.conf", and "vmlinux".

Open yaboot.conf in a text editor such as BBEdit or . "yaboot.conf" consists of one or more entries which specify the locations of kernels and boot options.

```
default = install
```

Should be modified to read:

```
default = linux
```

Followed by a carriage return and:

```
image = hd:,\\\\vmlinux
    label = linux
```

Do NOT erase the additional configurations as they are templates that assist in supporting Apple computers.

If you prefer to boot from a kernel on the root Linux partition, use:

```
hd:x,/boot/vmlinux
```

And if you experience strange video artifacts, you may add an additional line ‘novideo" ... this may be beneficial with iMac and iBook DVs.

```
novideo
```

Configuring a Linux-Only System

Boot into Open Firmware by restarting the computer and holding down the Command, Option, O, and F keys. Once in Open Firmware ("OF"), type:

```
setenv boot-device hd:,\\yaboot
```

This will run yaboot (in your System Folder) at every boot instead of the Mac OS. Type

```
boot
```

to boot into yaboot (and from there to Linux).

Configuring a Dual-Boot (Linux and Mac OS) System

"Dual-booting" means to have two operating systems installed at once (in this case, Mac OS and Linux) and be able to switch between them.

In order to dual-boot a yaboot system, you should copy the "bootscript" file from the "install" directory on the CD to your System Folder. (If you want more details on the contents of that file, please see the yaboot HOWTO at http://devel.yellowdoglinux.com.)

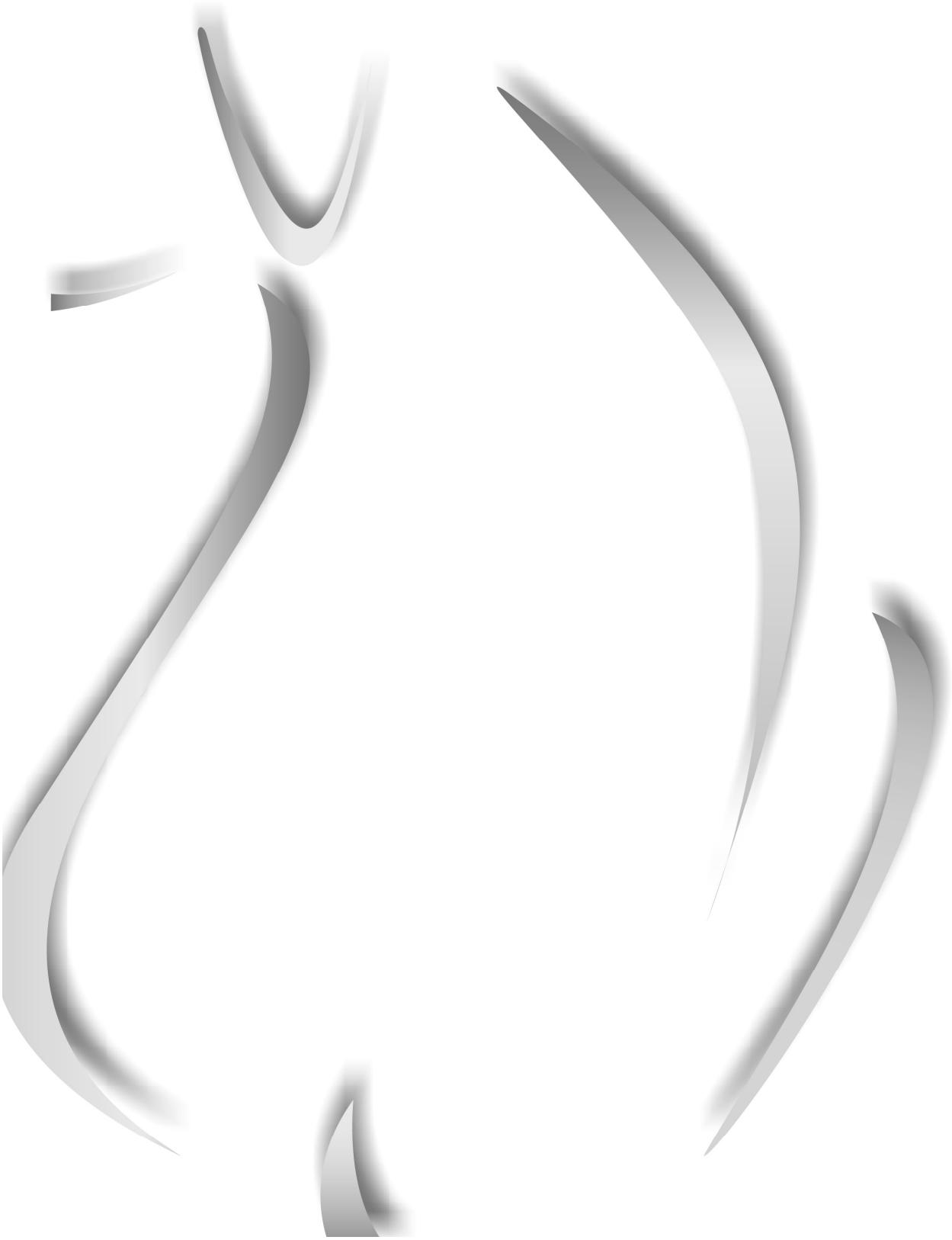
Boot into Open Firmware by restarting the computer and holding down the Command, Option, O, and F keys. Once in Open Firmware ("OF"), type:

```
setenv boot-device hd:,\\bootscript
```

This will run the "bootscript" script in your System Folder at every boot. The script simply detects whether or not the space bar key is being depressed. If it is, the computer boots into Linux; otherwise, the computer will boot into the Mac OS. Type

```
boot
```

to boot the machine.



chapter

Troubleshooting and Technical Support

Mouse Configuration Error

This error is usually presented due to insufficient disk space (don't ask why). Please make certain that you have sufficient space on the partition(s) which will contain Linux.

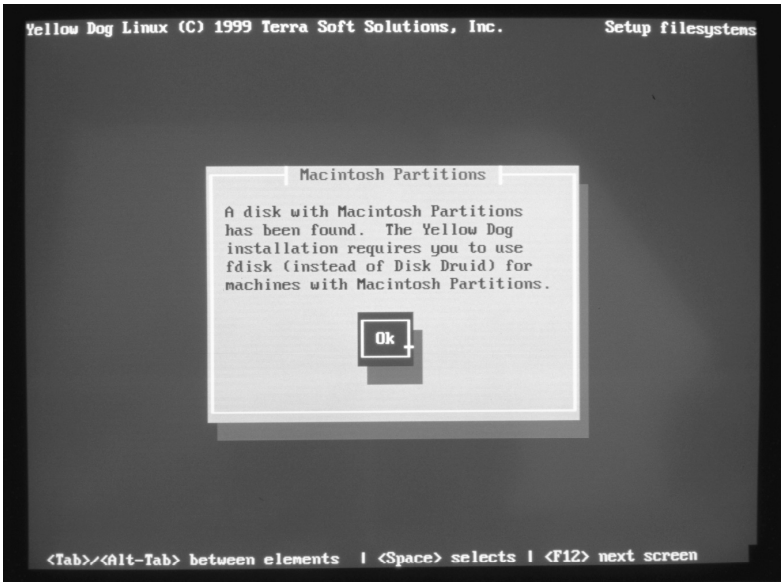


Figure 7.1

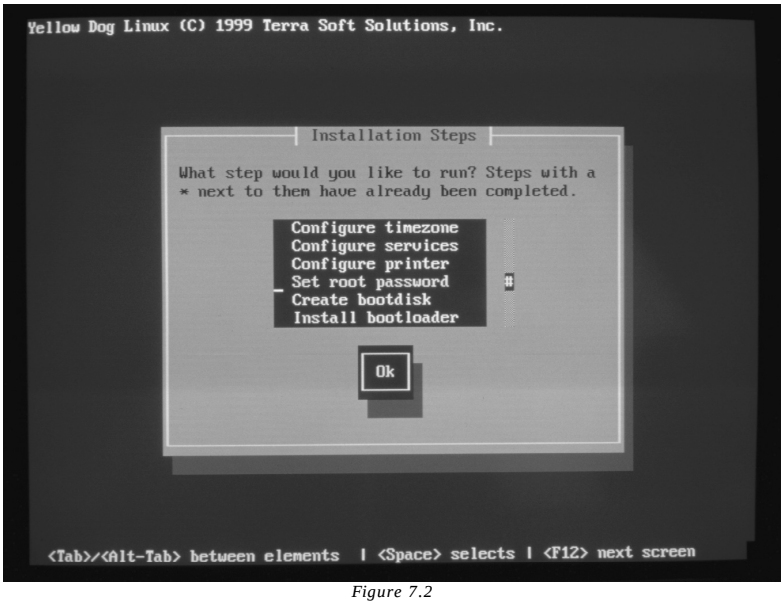


Figure 7.2

If Figure 7.2 is displayed, email bugs@yellowdoglinux.com. Join the General list at lists.yellowdoglinux.com for free, online support.

Support Resources

Yellow Dog Linux Installation Support

Terra Soft Solutions, Inc. is proud to offer a friendly, straight forward web-based Install Support system where you may present your Installation issue and receive personal responses generated by our Support Staff. This service may be purchased in conjunction with other YDL products from our online Order page located at www.yellowdoglinux.com/ydl_order.html or through YDL resellers.

Where can I receive assistance with the installation of YDL --for free?

The Yellow Dog Linux website offers a great deal of information:

www.yellowdoglinux.com/ydl_support.html

or visit our discussion groups online at:

lists.yellowdoglinux.com

To receive support for an installation issue, visit support.yellowdoglinux.com and have your First and Last name and unique Product ID number ready, or if you purchased from a reseller, please have your Password and Product ID number.

The knowledge that is gained from each and every Install Support session is archived in our database and represented on the Yellow Dog Linux website in order to more readily assist others with their YDL Installation issues and questions.

Terra Soft Solutions also offers ongoing technical support programs. Please visit www.yellowdoglinux.com/ydl_services.html for additional information.

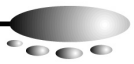
Free Installation and Ongoing Linux Support

The Yellow Dog Linux Support pages offer a growing knowledge-base of ongoing technical support issues and resolutions. We encourage you to visit our website often, contribute to the email-based discussion lists, and offer your experience to us in order that we may present it on the website and assist others.

In addition, visit the following URLs for excellent, free resources
  www.yellowdoglinux.com/ydl_support.html

Developer Central
  devel.yellowdoglinux.com

Mailing Lists (threaded discussion groups)
  lists.yellowdoglinux.com



TSS Software Engineers' Notes

New Hardware

New Apple and IBM PowerPC hardware will most likely require a kernel update. Visit ftp.yellowdoglinux.com in order to download these updates for free.

BootX

At the BootX Control Panel, clicking the "Linux" button and the Mac OS appears to hang.

- If you downloaded a new kernel, verify that it was transferred in binary, not text mode.
- Make certain you are using the uncompressed version of the kernel (NOT "vmlinux.gz").

FAQ: At the BootX Control Panel, clicking the "Linux" button and the screen clears to black, nothing else happens.

- See Chapter 7 for machine specific video settings and verify that the settings specified are appropriate for your machine.
- Try selecting the "No Video Driver" option.

Mouse Emulation

- In order to configure your system to emulate the 2nd and 3rd buttons on ADB systems, you will need to add the following to the BootX kernel arguments: adb_buttons=1,103,111
- The above kernel argument will enable your F11 and F12 to keys to become the 2nd and 3rd mouse buttons.
- USB keyboard users may simply use the NUM-LOCK and "=" key on the keypad for the 2nd and 3rd mouse buttons respectively.

RAM Limitation

At the time of this writing, only 512 MB of RAM is supported. This means that if you have more than 512 MB of RAM installed, only 512 will be available.

The information presented on this page is based upon our personal experience with those machines that we have in-house.

If you have additional experiences to share, email general@yellowdoglinux.com

DMA Time-out

DMA time-out followed by kernel panic ... this sometimes occurs on newer, Blue & White G3s and some G4s that use OEM drives which are not 100% Linux compatible.

Check our website for an updated kernel:
www.yellowdoglinux.com/ydl_support.html

If a kernel update is not available, the following text should be entered into the BootX Control Panel "More kernel arguments" text field: "hda=noautotune hdb=noautotune".

USB: Blue & White G3s, Rev 2

Rev 2 Blue and White G3s USB is now supported.

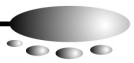
Video: Blue & White G3s

In the BootX Control Panel, always check "No Video Driver" until an updated video driver is available (check our website).

Video: '99 PowerBook G3s

In the BootX Control Panel, always check "No Video Driver" until an updated video driver is available (check our website).

After you've pressed "Boot Linux" and your screen has shut off, press the "increase brightness key" on your Powerbook several times. Reboot your system and try booting Linux again. Repeat this step, if necessary, until your backlight stays on while booting into Linux and you see the kernel loading. Don't ask ... it just works.



Video: iMac G3s

In the BootX Control Panel, “No Video Driver” should be deselected (not selected) with the following text entered into the BootX Control Panel “More kernel arguments” text field: “video=atyfb:vmode:17”

Video: Power Macintosh 8500s

In the BootX Control Panel, deselect “No Video Driver”.

Video: Performa 6400s and possible other Performa PPCs

You may achieve more favorable results if you select the “No Video Driver” option.

If you do not have built-in ethernet, do not attempt to configure networking. You can of course add an ethernet card and then compile the kernel with the necessary drivers. We highly recommend “DEC Tulip” chipsets.

Other systems may or may not work with “No Video Driver” deselected (not selected). We suggest that you attempt to boot with it deselected first.

Video: Kernel Video Arguments

Example: video=atyfb:vmode:17,cmode:8

1. 512x384 60Hz (Interlaced-NTSC)
2. 512x384 60Hz
3. 640x480 50Hz (Interlaced-PAL)
4. 640x480 60Hz (Interlaced-NTSC)
5. 640x480 60Hz
6. 640x480 67Hz
7. 640x870 75Hz (Portrait)
8. 768x576 50Hz (Interlaced-PAL)
9. 800x600 56Hz
10. 800x600 60Hz
11. 800x600 72Hz
12. 800x600 75Hz
13. 832x624 75Hz
14. 1024x768 60Hz
15. 1024x768 72Hz
16. 1024x768 75Hz

17. 1024x768 75Hz
18. 1152x870 75Hz
19. 1280x960 75Hz
20. 1280x1024 75Hz

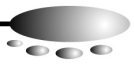
“cmode” Settings

These are the available options: 8, 15, 16, 24, 32

Example: cmode=16 (this enables 16 bit color)

Installing on New and “Classic” hardware

Please visit the Solutions Page online at:
www.yellowdoglinux.com/support/faq_solutions.shtml
for the latest updates and link to downloads.



IBM RS/6000 PowerPC F50 and B50

1) Download http://www.terraplex.com/~dburcaw/zImage

   (be certain to use binary mode)

2) Copy zImage onto a blank dos floppy

3) Get ramdisk.image.gz from your YDL CD (or the ftp site)

4) Put a second floppy into a *nix box and do:

   dd if=ramdisk.image.gz of=/dev/fd0

5) Use "F8" to get to your RS6k's Open Firmware prompt as soon as the LCD reads: E1F1

6) Type: boot floppy:,\ZIMAGE root=/dev/fd0 load_ramdisk=1

7) Insert the ramdisk floppy when prompted to do so.

8) Install YDL. Be sure to add a small (~3-5 meg) PReP Boot partition as the first partition on the first hard disk. Make this partition as bootable.

9) Remember the / (root) of your installation.

10) After the installer, reboot the system and again go into Open Firmware

11) Boot into Linux with the FLOPPY instructions below. If you'd like to boot from hard disk ... continue.

Boot from hard disk:

12) Insert the floppy and then type:

   mount /dev/fd0 /mnt/floppy

   (make sure that floppy #1 is in the drive)

13) ... and then type:

   dd if=/mnt/floppy/zimage of=/dev/sda1

   (sda1 is a common PReP Boot partition and should be yours too. If not, replace sda1 with your PReP Boot) ... note that we have not tried a PReP Boot other then sda1)

14) Reboot your system and then type:

setenv auto-boot truesetenv boot-device disksetenv boot-file root=/dev/XXXXsetenv boot-command boot

(where XXXX is the partition the Linux root was installed onto) ... and then type:

reset-all

Boot from a floppy:

at the OF prompt, type:

boot floppy:,\ZIMAGE root=/dev/XXXX

(where XXXX is the partition the Linux root was installed onto)

Your system should reboot and load Linux :)

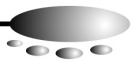
Supported devices:

The following adaptors have been tested and are known to work with a supported RS/6000 running Yellow Dog Linux:

2830 - POWER GXT130P Graphics Accelerator

2838 - POWER GXT120P Graphics Adapter - PCI

2968 - IBM 10/100 Mbps Ethernet PCI Adapter



Champion Server 1.2.1 Rescue Mode

Champion Server 1.2.1's Tasty Morsels CD-ROM contains a Rescue Mode that will allow you to repair your system in the event that it gets screwed up.

The Tasty Morsels CD is bootable on New World ROM systems, so you can boot into Rescue on your New World system simply by placing the CD in your CD-ROM and holding down the 'c' key.

On Old World ROM systems, simply copy the "rescue.image.gz" from install/ on the Tasty Morsels disc to your System Folder.

From BootX, you can select what ramdisk you wish to use. Point to "rescue.image.gz" and click "Linux" to access the Rescue Mode.

Champion Server's Rescue Mode is based on BusyBox, a technology which provides a lot of functionality with very little overhead.

The following programs are included in the rescue mode:

> ash, badblocks, bzip2, cat, chgrp, chmod, chown, chroot chvt, clear, cp, cpio, date, dd, deallovt, df, dmesg, du, e2fsck, echo, false, fbset, fdisk, find, free, fsck.minix, getty, grep, gunzip, gzip, head, hostname, ifconfig, init, kill, ln, logname, ls, lsmod, mkdir, mke2fs, mkfs.minix, mknod, mkswap, more, mount, mt, mv, nano, nslookup, open, pdisk, ping, poweroff, ps, pwd, reboot, restore, rm, rmdir, route, rpm, sed, sleep, sort, swapoff, swapon, sync, syslogd, tac, tail, tar, tee, telnet, touch, traceroute, true, umount, uname, uniq, update, vi, wc, whoami, yes, zcat.

Two text editors are included in the rescue mode: nano and vi. Nano is a pico-like text editor that should be comfortable for new users. vi is more difficult to learn, yet incredibly powerful for manipulating files.

'poweroff' or 'reboot' can be used to either shut down or reboot your computer once you are finished repairing your system. If you use the rescue mode to repair a filesystem, be sure to un-mount your partition(s) before exiting the rescue mode.

My Notes: