Installing cAos with Cinch on Floppy Disk

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Abstract

cinch is the cAos Linux (`http://www.caosity.org/`) installer.

Prerequisites

What you need:

- two floppy disks (at least)
- a computer (with a floppy disk drive) to write the floppy disks (using dd with Linux, or "rawrite" with Windows)
- a computer to install cAos on (500 MB disk space, i386 class computer, and 64 MB RAM are approximate minimum hardware requirements)
- high speed internet access (or lots and lots of time)
- IP address information if you do not use DHCP

(the floppy writing and install computer could be one and the same).
NOTE: If you have more than one network adapter, and you have problems completing the installation, disable or remove all but one of the network adapters and try installing again. The adapters can be enabled or reinstalled once Cinch is done installing cAos Linux.
NOTE: Though theoritically a i386 or i486 should work, we have not tested the installation on those platforms because boxes with those processors that fulfill the RAM requirement are hard to find. It has been tested on i586 class machines.
If you have a problem with the cAos installer, please report it to:

`https://bugzilla.caosity.org/`

after, of course, searching there to see that the problem was not previously reported.
If you have a problem with the cAos installer instructions, please report it to me at troj@caosity.org, or use the bugzilla mentioned above.

Preparing for Installation

Get the installation floppy images from a mirror (`http://www.caosity.org/index.php?option=com_mirror2&Itemi`
`84`) or from here:

```
$ wget http://mirror.caosity.org/cAos-1/cinch/current/floppy.img
$ wget http://mirror.caosity.org/cAos-1/cinch/current/drivers.img
$ wget http://mirror.caosity.org/cAos-1/cinch/current/MD5SUMS
$ grep floppy MD5SUMS | md5sum -c
$ grep drivers MD5SUMS | md5sum -c
```

and the last two lines should output:

```
floppy.img: OK
```

and:

```
drivers.img: OK
```

NOTE: some file downloading programs will not overwrite files by default (wget will put a numeric extension on the file). Make sure you do not already have copies of 'floppy.img', 'drivers.img' or 'MD5SUMS' in the download directory.
Put a floppy disk in the floppy disk writing computer's drive and write the "floppy" bootable image:

```
$ dd if=floppy.img of=/dev/fd0 bs=1k
```

When the prompt returns from the 'dd' command and the floppy drive light turns off, eject the floppy from the drive. Label this disk "cAos boot". Put the other disk in the floppy drive and write the "drivers" image:

```
$ dd if=drivers.img of=/dev/fd0 bs=1k
```

When the prompt returns from the 'dd' command and the floppy drive light turns off, eject the floppy from the drive. Label the second disk "cAos drivers".

Starting the Install

Insert the newly created "cAos boot" disk into the floppy drive of the cAos install computer. Turn the cAos install computer on and watch the normal BIOS messages flash across the screen. If you are not certain the BIOS is set to boot from the floppy disk, please enter the BIOS configuration to check and correct that (if necessary).

Booting From Floppy

The floppy should boot with the following message lines:

```
SYSLINUX 2.06 2003-08-22 Copyright (C) 1994-2003 H. Peter Anvin
Loading bzimage....
Loading initrd.img....
```

The 'normal' linux kernel boot and hardware detection messages should then scroll across the screen.

Stage1 Successfully Loaded

The first installer screen should appear. Near the top you should see:

```
You have now entered stage1 of:

  cinch :: The cAos installer! (version 2.0.3)

Installing cAos is a cinch! This installer wiill take you through the
...
```

indicating that everything is going alright so far. Read through the information presented on this screen and then follow the instructions at the bottom:

```
Press [ENTER] to continue...
```

Network Configuration

On the ”Network Configuration” screen you are presented with a menu:

```
Method to obtain network configuration? [dhcp]
1. dhcp
2. static

>
```

At the ”>” prompt choose one of the three, the third option assumes you know what you need to do at the shell prompt to get your network configured.
Depending on which option is chosen, the next screen that appears will either be the ”DHCP Configuration” screen, or the ”Static IP Configuration” screens.

DHCP Configuration

This screen appears if the ’dhcp’ option was chosen on the ”Network Configuration” screen. This prompt is displayed:

```
What network device should be used? [eth0]
>
```

At the ”>” prompt enter the name of the network device you have connected to the internet (or internet connected network) or accept the default (eth0).
If a DHCP server is active on your network, and it provides you with an address, you will see happy dhcp related messages from ’udhcpc’ with IP and lease information.
If something isn’t right you may receive another message:

```
Doh: DHCP failed!
```

or possible:

```
Doh: Could not bring eth0 up!
```

If you cannot get a dhcp address, or you don’t have a DHCP server (or device) on your network, you can choose the ’static’ option.

Static IP Configuration

If the ’static’ option is chosen, be prepared to enter the IP address, subnet mask, default gateway address, and DNS server address for this computer at the ”>” prompts:

```
Commencing with static address configuration...

What network device should be used? (eth0)
>

Enter your IP address:
>

Enter subnet mask:
>
```

```
Enter Router Address:
>

Enter DNS Server:
>
```

If the network card refuses to be recognized, it is possible that network drivers for that card could not fit on the cinch boot floppy disk. Try the cinch bootable CD ISO instead:

`http://mirror.caosity.org/cAos-1/cinch/cinch.iso`

After all network configuration options are set, follow the instructions at the bottom of the screen:

```
Press [ENTER] to continue...
```

Stage2 Download

If network configuration is successful, the next prompt will be:

```
Select a repository to download from: [default]

1. default
2. list known mirrors
3. other

>
```

Select ”1” unless you wish to use an alternate repository. If you enter your own URL you may have to enter an IP address instead of an URL. You may try entering this one:

```
http://69.56.240.122/cAos-1/
```

at the subsequent ”>” prompt (which will do the same thing as choosing option ”1” right now). You can also try other cAos mirrors (`http://www.caosity.org/index.php?option=com_mirror2&Itemid=84`).
Option ”2” above will be functional in later versions of the cinch installer.
If the repository can be contacted, a new message will appear:

```
Atempting to pull STAGE2 image from [the repository entered]
```

along with a ”stage2” text progress meter. The file is 11MB, and expands to around 37MB, so please be patient with slower links or computers.

cinch Stage2 Main Menu

If the ’stage2’ image is download successfully, the next screen will be the ”cinch Stage2 Main Menu” and this menu will be displayed:

```
Welcome to the cinch main menu. Please select an action to take: [1]

1. install cAos
2. rescue shell
3. reboot

>
```

at which you choose option ”1”.
You may see a ”Starting installer...” message appear at the bottom of the screen.

Kernel Modules Load

A ”Starting Installer” message will briefly appear, followed by a menu:

```
Options are as follows: [1]

1. probe    Try to probe and load all available scsi modules
2. insmod   Load a particular scsi module
3. list     View a list of all scsi modules
4. lsmod    View a list of currently installed scsi modules
0. next     Continue with the install.

>
```

for choosing SCSI kernel modules. Choose ”1” to attempt to load the available SCSI modules (using ’modprobe’). Type ”3” or ”list” and enter to get a list of available modules, type ”2” or ”insmod” (and then the module name when prompted) to load it. Once you have loaded all of the kernel modules you need, or if you have no SCSI devices that need modules to be loaded, choose ”0” or ”next” go on with the installation.
If you don’t know if you need to load any of these modules go with the defaults (”probe” and then ”next”).
If you really know what you are doing, type ”sh” at the prompt and drop to the shell prompt.

Disk Configuration

This screen provides two methods of disk partition configuration:

```
Select on of the following partition methods: [1]

1. Assisted configuration (creates: /boot, /, swap, and /home)
2. Manual (uses fdisk manually)

>
```

Choose the one that best suits you and your partitioning needs. If you don’t know what to do here, go with the default (1).
Your choice will send you to either the ”Disk Partitioning” screen, or the ”Assisted Disk Configuration” screen.

Disk Partitioning

This screen appears if ”manual” partitioning was chosen on the ”Disk Configuration” screen.
On this screen is a list of partitions currently on disk and this menu (a very simple Linux install used as an example):

```
Here is a list of the current disk partitions:

* hda
   \-> hda1
   \-> hda2
   \-> hda3

Do you wish to modify the above list using ’fdisk’?

1. yes
2. no

>
```

If you select ”1” or ”y” you will ask to specify which disk you wish to partition. You can designate a disk by its /dev/ directory filename (hda, sda, or what have you). Once you have entered a disk the installer sends you into ‘fdisk’ as if you had typed:

```
fdisk /dev/[what-you-entered]
```

at a shell prompt. If you need help with fdisk please look at the man page for fdisk or places on the web like:
`http://www.doc.ic.ac.uk/lab/labman/lookup-man.cgi?fdisk(8)`
After you have modified the disk partitions to your satisfaction write them to disk and select ”0” or ”n” when asked to repartition to go on with the installation.

Mount Points

The ”Mount Points” screen appears only after the ”Disk Partitioning” screen and is not a part of ”assisted” configuration.
This screen asks you to map your disk partitions to their corresponding mount point in the files system. Each partition will need a mount point and a file system. For example, a simple configuration (root and swap partitions) would enter this at the prompts:

```
For each of the found partitions, specify the mount point in the system:

  notes:
    - 'none' will skip the current partition
    - /boot should exist on ext2 or ext3 due to a bug in grub

/dev/hda1           128 MB
   \_ mount point> /boot
   \_ file system> ext3
   \_ format>      y

/dev/hda2           256 MB
   \_ Configuring as Swap

/dev/hda3           9216 MB
   \_ mount point> /
   \_ file system> xfs
   \_ format>      y
```

Confirming Partition Configuration

From the mapping that has just done, a new /etc/fstab file will be constructed and you are asked to confirm that the information contained in it is correct:

```
These are the /etc/fstab entries that will be created:

/dev/hda1 /boot ext3
/dev/hda2 none swap
/dev/hda3 / xfs

Are you satisfied with the above configuration?

1. yes
2. no

>
```

Inspect the partition entries and type ”1” or ”y” if it is correct, and ”2” or ”n” if you need to go back and change something.

Assisted Disk Configuration

This screen appears if ”assisted” partitioning was chosen on the ”Disk Configuration” screen.
You will be prompted to select a disk to partition:

```
Select a disk to wipe out and partition: [hda]

hda     1000 MB

>
```

Choose one that suits you, or go with the default.
If the disk designation you entered is valid, you will see the next screen in the ’assisted’ partition configuration series ”Configuring: ¡the disk you choose¿”.

Configuring: hda

This screen will actually be titled ”Configuring: ¡the disk you choose¿”, but ”hda” is a common example.
Here is an example of a common configuration session, accepting default input:

```
The default partition layout is /boot, /, swap, /home in that order. /home
will be given what ever is left over after configuring the other 3 partitions

Select the size of each partition in megabytes (autoconfigured defaults
shown):
/boot     [128] >
/         [3244] >
swap      [250] >
/home     [6010] >
```

When the last entry (/home) is entered the installation will move on to the ”Build New File System” screen.

Building New File System

This screen will display short messages concerning the building and mounting of filesystems:

```
Creating ext3 on /dev/hda1
Creating swap on /dev/hda2
Creating xfs on /dev/hda3

Mounting File systems:
  /dev/hda3 at /newroot/
  /dev/hda1 at /newroot/boot
  /dev/hda2 as swap
```

NOTE: To see the output of mke2fs and mkswap for each partition, change to virtual terminal three (vt3, press the Alt+F3 key combination to get there). Change back to vt1 (Alt+F1) to see the installation menu again. Syslog information is available on vt4 (Alt+F4).
To continue installing, follow the instructions when they appear at the bottom of the screen:

```
Press [ENTER] to continue...
```

cAos Repository Selection

This screen allows you to choose which repository to install cAos from:

```
Which cAos repository do you wish to install from?

1. chilled - Packages with the lowest known 'safe' version
2. certified - Most recent packages which have gone through QA testing

>
```

Right now the best option to choose is "2" for "certified". The next prompt ask if you want to install the very newest packages:

```
Do you want access to packages in the crazy (untested) repository? [2]

1. yes
2. no

>
```

NOTE: "crazy" repository packages are untested and may not work. Go with the default here if you don't want the possibility of 'getting your hands dirty'. Also, if you choose to add the "crazy" repository to your '/etc/yum.conf' file at a later time, you need to keep the "certified" repository around. The "crazy" repository supplements the "certified" repository and does not replace it.

Select Package Groups For Installation

This is were you will select one or more groupings of software packages for installation along with the cAos core packages. In this example all available packages will be installed (which is not necessarily recommended, but you can if you wish):

```
Standard Base Utilities? [y]

Installing this group will supplement the core OS with many commonly used
utilities. This is not the specification for the core itself.

Base>
```

The default is "y", and it is recommended to install this unless you desire a very "stripped down" installation.

```
Basic Network Utilities? [y]

This should be installed on most systems. It will install packages like
openssh, wget, ncftp, etc...

Network>
```

The default is "y", and it is recommended to install this unless you desire a very "stripped down" installation.

```
Desktop packages (X and Gnome)? [y]

This will install a working X and Gnome desktop. Select this if you are
planning on using this system as a desktop or you require GUI application
support.

Desktop>
```

The default is ”y”, and it is recommended to install this unless you desire only a command line interface on this box.

```
Development Packages? [n]

Selecting this will install a core development environment on your system, This
should be installad if you plan on compiling any packages from source.

Development>
```

The default is ”n”, and it is recommended to not install this unless you plan on developing and/or compiling software on this machine.

```
General Server Packages? [y]

This will install packages like VSFTPD, Apache, Samba, etc... Select this if
you will be using this system as a server.

Server>
```

The default is ”n”, and it is recommended to not install this unless you desire a multifunctional server installation. If you only want one of the servers, it is easy to install packages (and their dependencies) after installation with ”yum”.
After select is complete you will be asked to confirm your choices:

```
You have selected the following package groups(s):

Core
Base System
Network
Desktop
Development
Server

Is this correct: [1]

1. yes
2. no

>
```

When you confirm the choices, the selected packages will be added to the list that ’yum’ will be installing a little later in the installation.

Building Default File System Configuration

This screen displays output from cinch as it creates the base file system, then displays:

```
Press [ENTER] to continue...
```

so press the enter key to move on.

Beginning YUM* Installation

At first, "yum" downloads all the RPM package header files from the designated cAos repository. After gathering these it examines them and determines whether it needs to add any other packages to the pile it must download to satisfy dependencies when installing the base system.
When "yum" is satisfied that it knows what packages to download it begins downloading the RPM software package files. This will take a while, depending on the speed of your internet connection.
After all RPMs have been downloaded they will be installed. This will take a while, but is dependent on the speed of the install computer's hardware (processor, bus, disks).
The last few lines displayed on this screen will be:

```
System has been installed...

Press [ENTER] to continue...
```

so press the enter key to move on.

Finalizing Installation

This screen prompts you with:

```
Installing the bootloader...
What device do you want to install the bootloader on? [/dev/hda]

>
```

with the square brackets around the suggested default. Enter the device you want the bootloader installed to, or press the "Enter" key to accept the default value.
You will see the next screen if everything went well, and "grub-install" output is displayed on vt3 (Alt+F3).

Password Configuration

Next you will prompted to change (and confirm) the root password:

```
Creating /etc/shadow

Setting Default root password
Changing password for user root.
New UNIX password:
Retype new UNIX password:
```

If all goes well you will see this output:

```
passwd: all authentication tokens updated successfully.
```

before the next installation screen appears.

Checking File Ownerships

This screen will flash by for about a second.

X Configuration

If you have installed X windows, you will see this installation screen. You will be asked:

```
Do you wish to configure X at this time?

1. yes
2. no

>
```

If you answer '1' or 'yes' you will be sent to the 'Xconfigurator' program to configure and test your X windows setup. If you answer '2' or 'no' you will see this:

```
You can do it later using the command 'Xconfigurator'.
```

Last Minute Customizations

This screen prompts you with:

```
Would you like a shell in your new filesystem before I reboot on it?

1) yes
2) no
>
```

If you have nothing to do in the shell before rebooting, select "2" or "n" now. If you select "1" or "y" it is assumed that you know what you are doing. You may wish to 'chroot /newroot' and see what can be done with it (though you may have to mount some filesystems first).

Rebooting the System

This screen displays system messages as the computer prepares for and does reboot.

First Boot

On reboot, grub loads and provides a:

```
cAos: Community Linux release 1 (2004.01.10) (2.4.23-2.caos)
```

and a nice graphical cAos symbol and URL background.
Press the "Enter" key to continue (or wait the 10 seconds for grub to timeout and continue automatically) and watch the kernel and system initialization messages scroll across the screen.
At the end you will see a caos login prompt:

```
cAos: Community Linux release 1.0 (Yoda)
localhost login:
```

Login and have fun.

Installing Additional Packages

After login, you can install additional packages with 'yum':

```
$ yum install gnome
$ yum install openssh-server
$ yum install warewulf
$ yum --installroot /vnfs/warewulf install warewulf-node
```

and use it to keep your cAos Linux system updated with the latest versions of software packages (and other fun things):

```
$ yum check-update
$ yum update
$ yum update 'openssh*'
$ yum search 'openssh*'
$ yum info 'openssh*'
```

NOTE: yum is capable of using wildcard characters when searching for packages, but the patterns should be protected from the shell: put single quotes (') around them. Also make note that the example about uses 'update', not 'upgrade' (because 'upgrade' is deprecated).
NOTE: To finish the gnome (and XFree86) installation in the yum example above you will have to execute some configuration commands for X (or if you did not do it during the installation):

```
$ xf86config
```

or:

```
$ Xconfigurator
```

or you can try this (but it may fail):

```
$ X -configure
$ mv /root/XF86Config.new /etc/X11/XF86Config
```

and then start up X windows:

```
$ startx
```

and hopefully you will have a functional gnome desktop environment.
For more information about 'yum', use the 'man yum' command and look at these articles:

```
http://www.phy.duke.edu/~rgb/General/yum_article/yum_article/
http://www.phy.duke.edu/~rgb/General/yum_HOWTO/yum_HOWTO/
```

Other Documents and Formats

There is at least one other document explaining the installation of cAos with cinch, and that is located here:

```
ftp://ftp.owlriver.com/pub/local/ORC/buildfarm/cinch-README.txt
```

There are also other formats available for this document:

```
install.pdf
install.ps
install.tex
install.dvi
```