PC-SysInstall

A new system installer backend for PC-BSD & FreeBSD

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Why another Installer?!?!?

Available BSD install options

- SysInstall
  - Great for its original purpose
  - Not designed to fit our more complex needs
- Bsdinstaller
  - Lua based backend
  - Used in pfSense
- Finstall
  - Python based backend
  - SoC project

Legacy PC-BSD Installer

- No backend for scripted installations
- Twisted logic between GUI & CLI backend
- Difficult to add new features
- No error logging
- Monolithic Design

Features Needed in New Installer

- Modular Design
- Scripted Installation support
- Able to support multiple front-ends
- Error logging
- Improved file-system support
- Able to install FreeBSD or PC-BSD
- Full localization options - xorg & console

Design Choices for PC-SysInstall

Most installers fall into one of two types:

Back-seat drivers

- or -

Sleeping Dogs

Design Choices for PC-SysInstall

- Hybrid Program Flow
  - Allows front-end developers to make flow choices
  - Allows using backend manually
- Written in Shell
  - Using standard /bin/sh
  - No non-standard base system tools (minus rsync)
  - Fast, easy to debug “on the fly”
  - Can interface with variety of front-ends

New Features of PC-SysInstall

- Can install PC-BSD or Traditional FreeBSD
- Support for enabling gmirror across two drives
- Able to use variety of FS's
  - UFS, UFS w/softupdate, UFS w/gjournal, ZFS
- Geli-based partition encryption
- Automatic file-system labeling with glabel
- Installation logging
- Install via disk / network & custom images

Using PC-SysInstall

- Located in /PCBSD/pc-sysinstall on install disk
- Single command “./pc-sysinstall” provides all functionality, from queries to actual installation
- pc-sysinstall called using various commands / flags to perform specific functions

Query Commands

- disk-list – Listing of installable drives
- disk-part – Listing of partitions on specific drive, including free space, block listing, label
- list-tzones – Timezone listing
- xkeyboard-layouts – Available xorg keyboard layout options for i18n

Action Commands

- create-part – Add new MBR partition/slice
- delete-part – Remove a partition / slice
- -c <cfg> - Start installation with specified config
- start-autoinstall <autocfg> - Use with automated installations, remote http/ftp config file fetching

Install file configuration

- Install config file syntax, similar to sysinstall
- Using <key>=<value> syntax
- Examples in examples/
- examples/README with details on all variables / code blocks

Examination of configuration

installMode=fresh

hostname=pcbsd-8

installType=FreeBSD

installMedium=dvd

packageType=tar

installComponents=ports,src

Examination of configuration

```
disk0=ad0
partition=all   # (all, free, s1, s2, s3, s4)
mirror=ad1
mirrorbal=split  # (prefer, round-robin, balance)
bootManager=bsd  # (bsd/none)
CommitDiskPart


disk0-part=UFS+S 500 /    # (UFS, UFS+S, UFS+J, ZFS, SWAP & ".eli")
disk0-part=SWAP 2000 none
disk0-part=UFS 0 /usr
commitDiskLabel
```

Examination of configuration

```
disk0=ad0
partition=all   # (all, free, s1, s2, s3, s4)
bootManager=bsd  # (bsd/none)
CommitDiskPart


disk0-part=ZFS 800000 /,/usr,/data,/stuff (mirror: ad1)
disk0-part=SWAP 2000 none
commitDiskLabel
```

Examination of configuration

```
disk0=ad0
partition=all   # (all, free, s1, s2, s3, s4)
bootManager=bsd  # (bsd/none)
CommitDiskPart


disk0-part=UFS 500 /boot
disk0-part=SWAP 2000 none
disk0-part=UFS.eli 500 /
disk0-part=UFS.eli 500 /usr
encpass=mypassphrase
commitDiskLabel
```

Examination of configuration

netDev=AUTO-DHCP

OR

netDev=nfe0

netIP=192.168.0.49

netMask=255.255.255.0

netNameServer=208.67.222.222

netDefaultRouter=192.168.0.1

netSaveDev=AUTO-DHCP

Examination of configuration

```
# Setup our users
userName=kris
userComment=Kris Moore
userPass=kris
userShell=/bin/csh
userHome=/home/kris
userGroups=wheel,operator
commitUser
```

Examination of configuration

```
# Options for localizing an install
localizeLang="jp"
localizeKeyLayout="jp"
localizeKeyModel="pc104"
localizeKeyVariant="intl"
```

Examination of configuration

```
# Run any commands post-install
runCommand=touch /etc/wall_cmos_clock # Runs inside mount
runScript=/root/post-setup.sh  # Copies external script into mount
```

pc-autoinstall.conf

Starts installation with remote configuration:

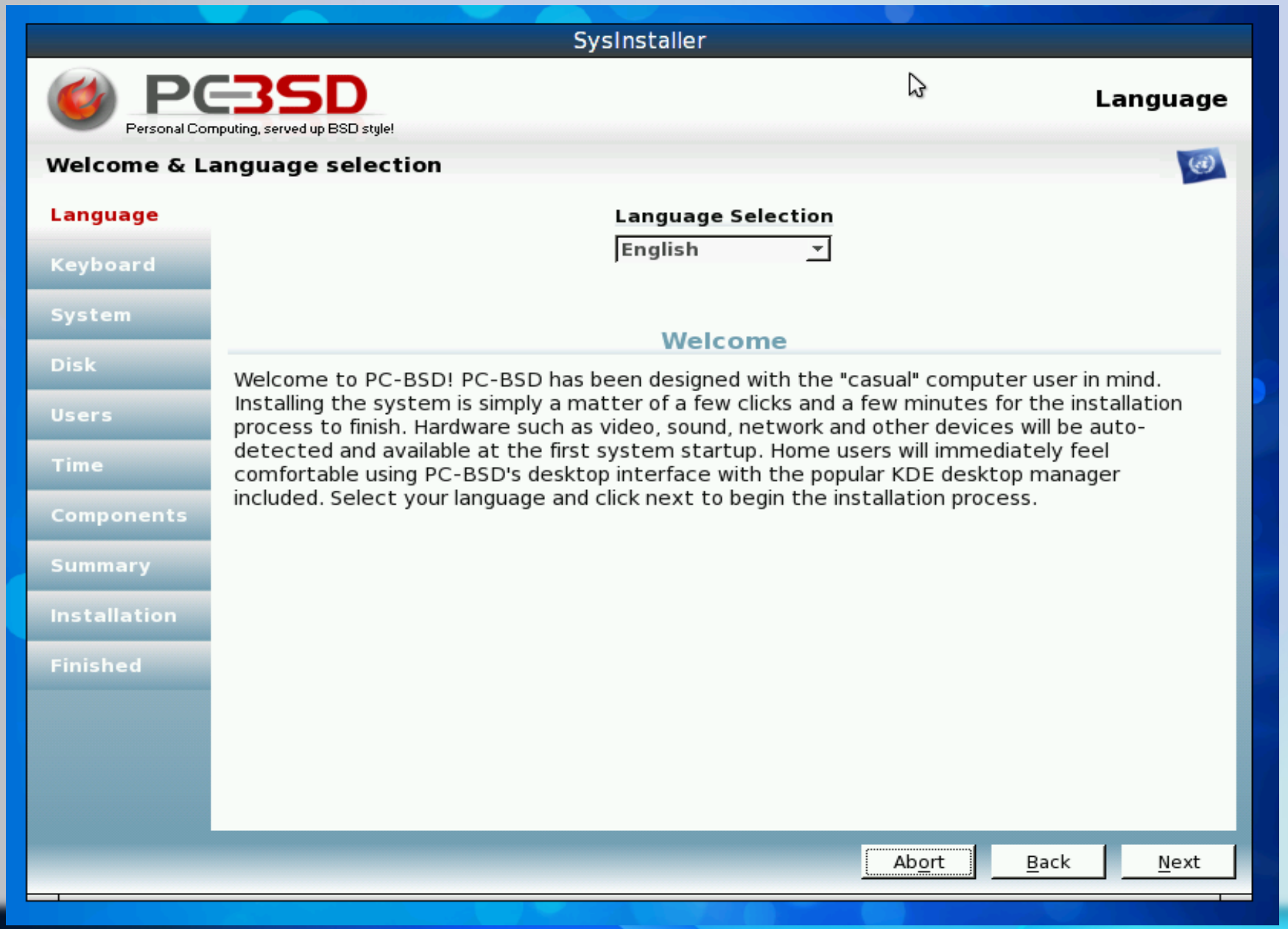
pc_config: http://192.168.0.2/cust-install.cfg

nic_config: dhcp-all

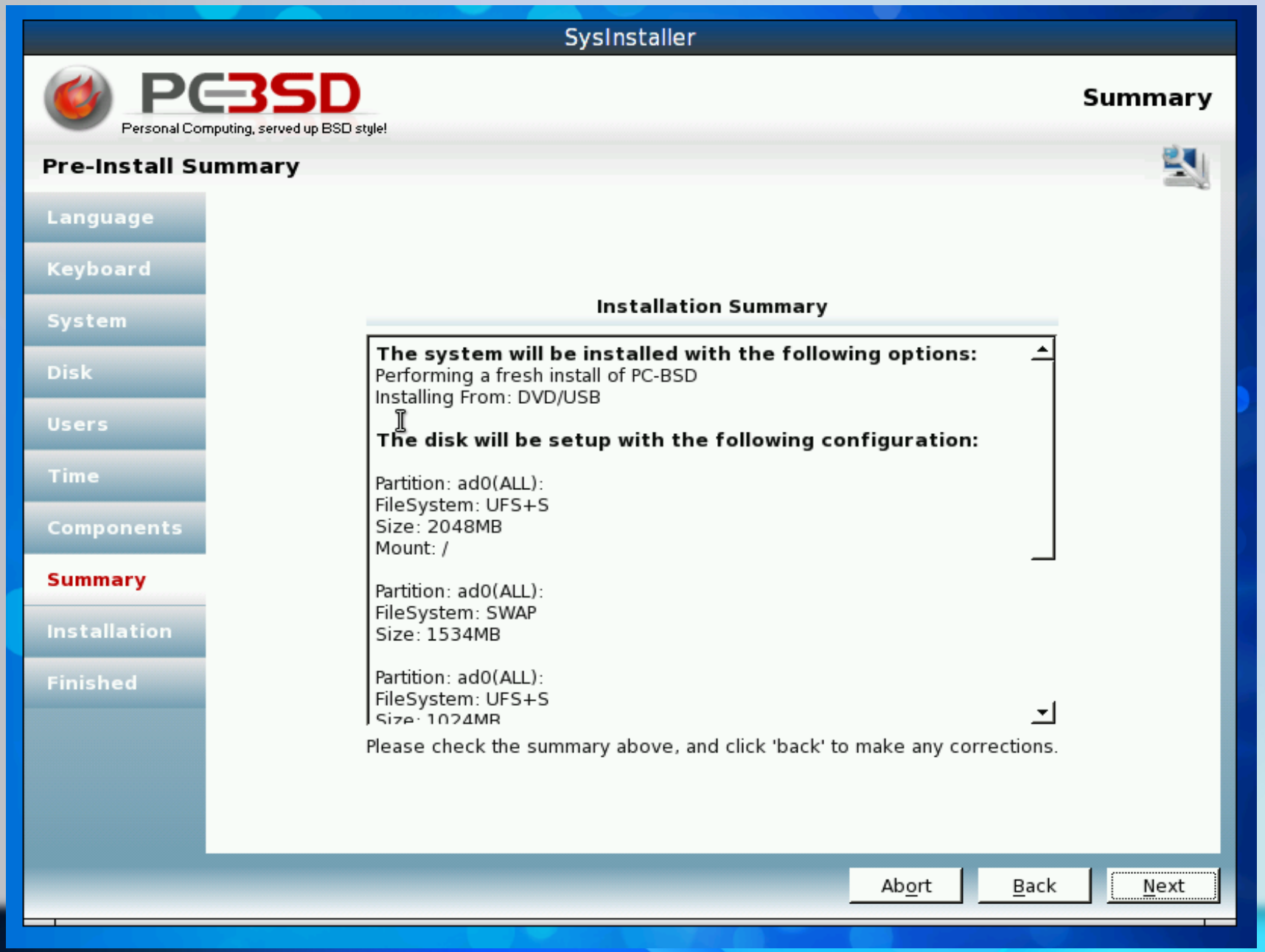
shutdown_cmd: shutdown -p now

More in examples/pc-autoinstall.conf

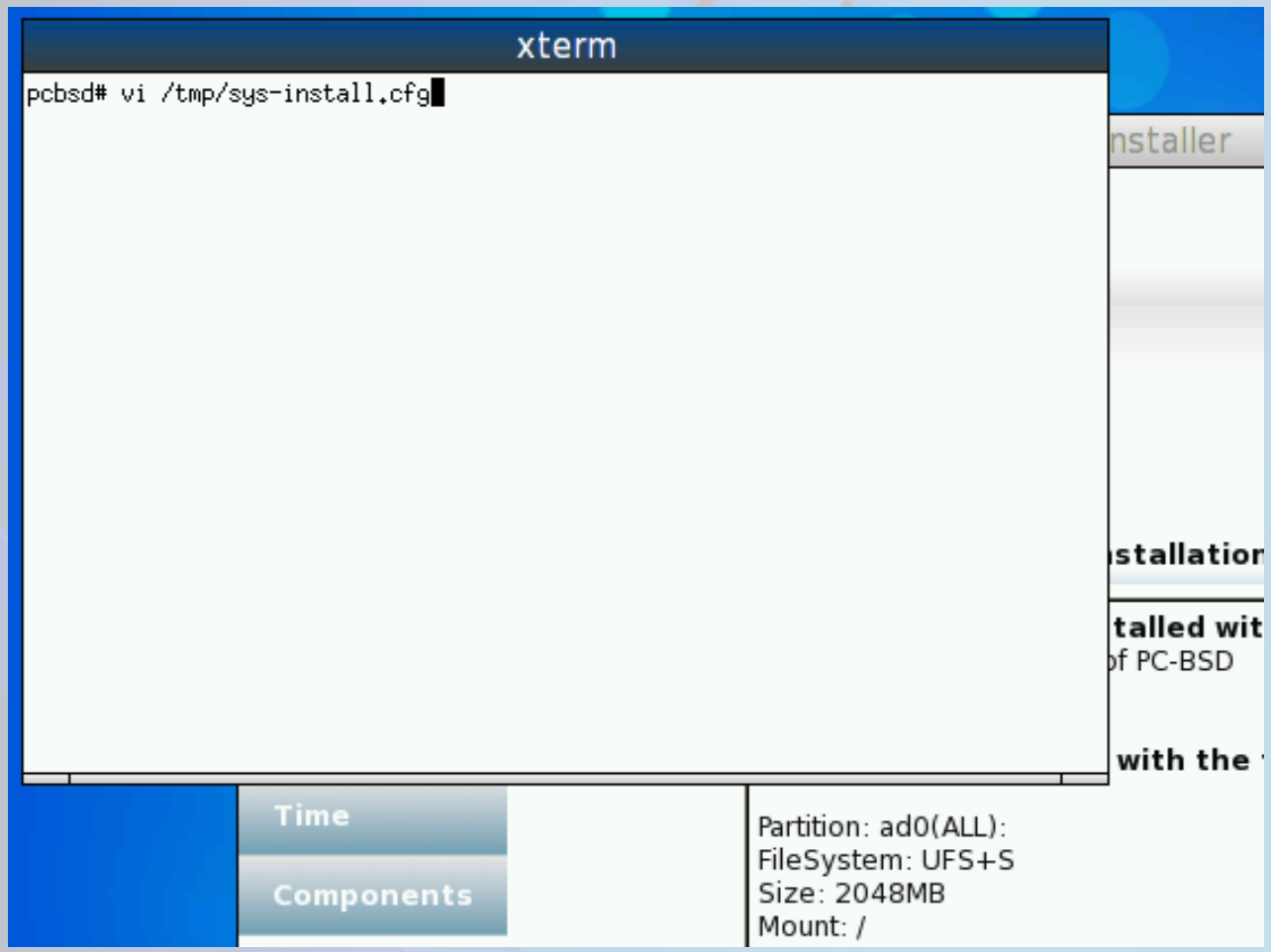
Putting it all together



Putting it all together



Putting it all together

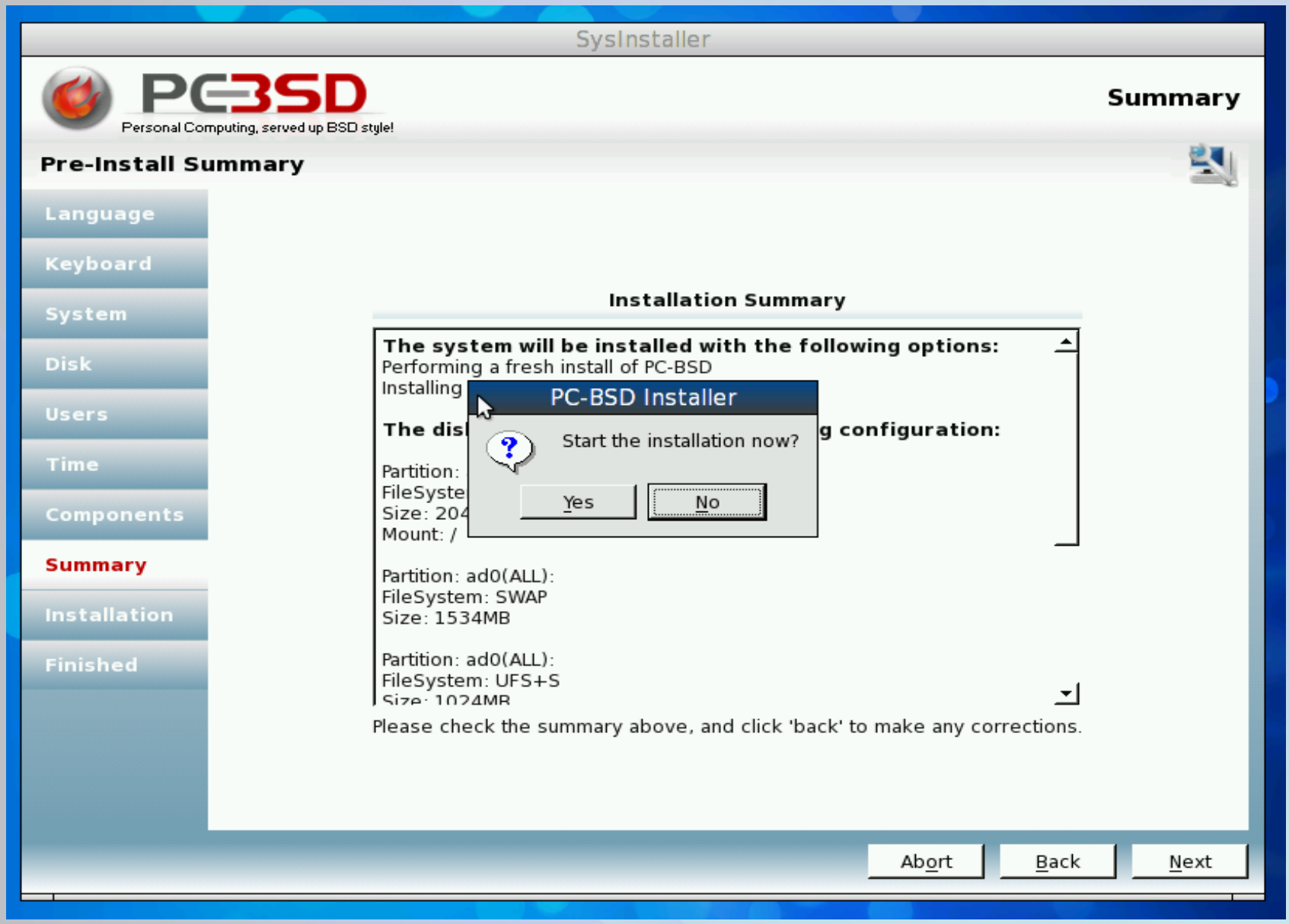


Putting it all together

xterm

```
# Auto-Generated pc-sysinstall configuration
installInteractive=no
installMode=fresh
installType=PCBSD
packageType=uzip

# Doing PC-BSD Install make sure to start xorg-gui at first boot
runCommand=cp /usr/PCBSD/xorg-gui/conf/ttys.xsetup /etc/ttys
runCommand=sh /usr/PCBSD/Scripts/reset-firewall
installMedium=dvd
netSaveDev=AUTO-DHCP

# Timezone
timeZone=America/New_York
enableNTP=yes

# Keyboard Layout Options
localizeKeyModel=pc104
localizeKeyLayout=us

# Disk Setup for ad0
disk0=ad0
partition=ALL
bootManager=none
commitDiskPart

# Partition Setup for ad0(ALL)
# All sizes are expressed in MB
# Avail FS Types, UFS, UFS+S, UFS+J, ZFS, SWAP
# UFS.eli, UFS+S.eli, UFS+J.eli, ZFS.eli, SWAP.eli
disk0-part=UFS+S 2048 /
disk0-part=SWAP 1534 none
disk0-part=UFS+S 1024 /var
disk0-part=UFS+S 15869 /usr
commitDiskLabel
```

Putting it all together



Future Additions

- Bugfixes & more Bugfixes
- Support for encryption pass-phrases - DONE
- Multiple zfs mounts per-pool / raidz - DONE
- Switch to using gpart / GPT - DONE
- More FreeBSD specific options, SSH, Network, distributions, etc.

Questions?