

Automating FreeBSD Installations

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PXE Booting

- Preboot eXecution Environment
- PXE capable network cards allow a computer to be booted over the network instead of local media
- One of the only viable ways to manage a large installation of servers

Using FreeBSD with PXE

- Used for both diskless clients and installing FreeBSD
 - This talk only covers installing FreeBSD
- Documentation is poor or outdated, both for PXE and automated installs using sysinstall

PXE Server Configuration

- TFTP
- DHCP
- NFS
- Installation media

TFTP

- Enable in inetd.conf
 - tftp dgram udp wait root /usr/libexec/tftpd tftpd -l -s /tftpboot
- rc.conf: inetd_enable="YES"
- Verify inetd is running, restart if needed

DHCP

- Install a DHCP server (net/isc-dhcp3-server)
- /usr/local/etc/dhcpd.conf
 - use-decl-host-names on;
 - filename "pxeboot";
 - Host declarations
- Start DHCP server

DHCP Host Declaration

```
host pxe-client.local {  
    hardware ethernet 00:00:00:00:00:00;  
    option root-path "192.168.0.1:/usr/pxeroot";  
    fixed-address pxe-client.local;  
}
```

NFS

- Create /usr/pxeroot/
- /etc/exports
 - /usr /usr/pxeroot -ro pxe-client.local
- rc.conf:
 - nfs_server_enable="YES"
 - mountd_enable="YES"
 - rpcbind_enable="YES"
- Start services
- showmount -e

Installation Media

- Extract FreeBSD iso to /usr/pxeroot/
- Copy /usr/pxeroot/boot/pxeboot to /tftpboot/
 - Use older version if necessary
- Edit /usr/pxeroot/boot/loader.conf
 - vfs.root.mountfrom="ufs:/dev/md0c"
 - On current, use md0

Scripting with sysinstall

- `/usr/pxeroot/boot/mfsroot.gz`
 - `gunzip`
 - `mdconfig -a -t vnode -f mfsroot`
 - `mount`
 - Insert magic into `install.cfg`
 - `unmount mfsroot` before attempting to use

install.cfg

debug=YES

nonInteractive=YES

noWarn=YES

tryDHCP=YES

netDev=le0

nfs:192.168.0.1:/usr/pxeroot

mediaSetNFS

dists=base doc manpages info src sbase ssys kernels

GENERIC

distSetCustom

install.cfg

disk=ad0
partition=exclusive
diskPartitionEditor

ad0s1-1=ufs 2097152 /
ad0s1-2=swap 1048576 /
ad0s1-3=ufs 2097152 /var
ad0s1-4=ufs 2097152 /tmp
ad0s1-5=ufs 0 /usr 1
diskLabelEditor

install.cfg

installCommit

#command=sh /tmp/my_script.sh
#system

#package=bash-3.1.17
#packageAdd

shutdown

install.cfg

- <http://people.freebsd.org/~randi/pxe/>
- sysinstall(8)
- Beware
 - YES is case sensitive
 - No whitespace at end of line