CapBUG Nov/Dec 2012

Troubleshooting alpha boot
Michael Erdely
<mike@erdelynet.com>

Installing new snapshot

- Alpha cluster has 3 systems (alpha-{,1,2})
- alpha-1.p is NFS server
- Upgrade/install alpha-1.p first via serial
- Copy new bsd.rd to /bsd on alpha-1.p.
- Copy install sets to /usr/obj/dist on alpha.p
- Enable nginx on alpha.p with:

```
location /pub/OpenBSD/snapshots/alpha {
    alias /usr/obj/dist;
    autoindex on;
}
```

- On alpha.p: `/etc/rc.d/nginx -f start`

Rebooting new snapshot

- While booting the new snapshot:

```
block 0 of dka0.0.0.3.0 is a valid boot block
reading 15 blocks from dka0.0.0.3.0
bootstrap code read in
base = 200000, image_start = 0, image_bytes = 1e00
initializing HWRPB at 2000
initializing page table at 3ff4c000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

halted CPU 0

halt code = 2
kernel stack not valid halt
PC = 2000914
boot failure
```

Netbooting issues

- alpha-1.p has four NICs (fxp{0,1}, em{0,1})
- em0 is the main NIC. Others are unplugged.
- SRM only sees fxp{0,1}:
  - eia0.0.0.3.1
  - eib0.0.0.4.0
- Needed Theo to plug in fxp0 or fxp1

Set up alpha.p as Netboot Server

- Added to /etc/dhcpd.conf:

```
subnet 192.168.231.0 netmask 255.255.255.0 {
    host alpha-1 {
        always-reply-rfc1048 "true";
        filename "netboot";
        option root-path "/alpha";
        hardware ethernet 00:02:56:00:1C:60;
        fixed-address 192.168.231.177;
    }
}
```

- Added to /etc/ethers:

```
00:02:56:00:1C:60 alpha-1
```

- Added to /etc/bootparams:

```
alpha-1 root=192.168.231.77:/alpha
```

Set up alpha.p as Netboot Server

- Added to /etc/exports:

  `/alpha 192.168.231.177`

- Processes started:

  `/etc/rc.d/dhcpd start`

  `/etc/rc.d/portmap start`

  `/etc/rc.d/mountd start`

  `/etc/rc.d/nfsd start`

  `/etc/rc.d/rarpd start`

  `/etc/rc.d/tftpd start`

  `/etc/rc.d/bootparamd start`

- Copied netboot file to /tftpboot

- Ran: `gzip -dc bsd.rd > /alpha/bsd`

Booted alpha-1.p

```
P00>>>boot eib0
(boot eib0.0.0.4.0 -flags a)

Trying BOOTP boot.

Broadcasting BOOTP Request...
Received BOOTP Packet File Name is: netboot
local inet address: 192.168.231.177
remote inet address: 192.168.231.77
TFTP Read File Name: netboot
netmask = 255.255.255.0
Server is on same subnet as client.
block number= 0 port_number= 27838

.
```

Continues...

Netboot output continued

```
.
bootstrap code read in
base = 200000, image_start = 0, image_bytes = dd48
initializing HWRPB at 2000
initializing page table at 3ff4c000
initializing machine state
setting affinity to the primary CPU
jumping to bootstrap code

halted CPU 0

halt code = 2
kernel stack not valid halt
PC = 2001b64
boot failure
```

Fix Netboot problem

- On a whim, I replaced /tftpboot/netboot with netboot file from 5.1.
- Now I could boot bsd.rd.
- I tried new install again.
- Same problem.

Fix primary boot problem

- Based on previous experience with netboot, I decided to compare the /boot and /usr/mdec/bootxx files.
- bootxx had changed from Oct 28 snapshot to Dec 4 snapshot.
- I netbooted again, ran dhclient fxp0, mounted sd0a and sd0f (/usr) and ran:
  ```
  /mnt/usr/sbin/chroot /mnt
  ```
- I copied the old bootxx file to /usr/obj/dist

Fix primary boot problem, con't

- I downloaded bootxx from alpha.p:
  ```
  ftp http://192.168.231.77/.../bootxx
  ```
  And copied the file to /usr/mdec.
- Then I ran:
  ```
  /usr/mdec/installboot -v /boot \
        /usr/mdec/bootxx /dev/rsd0c
  ```
- Then I rebooted and the system came up.

Questions?

Who's ready for poutine?