

ANTELOPE HARDWARE CHALLENGES

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IS SUN SETTING?

- Sun no longer sells a sparc workstation (for last year)
- lowest priced server ~ \$15k
- In last decade:
 - founders departed
 - company is shrinking, unprofitable
 - mission unclear
 - sparc performance not so good

CONTINUED SUPPORT

- Sun is still our primary development platform, but

We need an alternative.

Linux, Apple, or SunOS x86?

SUN SOLARIS -- 1999 (4.1)

Easy Choice

- solid software
- solid hardware
- scales from workstation to supercomputer
- support
- stability
- large user community



LINUX -- 2003(4.5)

- originally for laptops for marketing
- problems with drivers
- problems with mmap, threads
- popular with some users



APPLE MAC -- 2006 (4.8)

- better integrated laptop
- solid hardware
- integrated unix
- support
- large user community
- COTS



MARMOT -- 2007 (4.8.3)

- low power embedded field processor
- proprietary, limited version of linux
- proprietary hardware
- no plans for future expansion or development



LINUX?

- runs on wide range of hardware
- lots of software versions
- cheap
- many enthusiasts

VERY ATTRACTIVE IN SOME PRODUCTS

- Tivo
- Kindle
- printers
- phone?
- marmot
- These companies make closed systems, integrate hardware and software themselves.
- User configuration quite limited

BRTT DOESN'T INTEGRATE HW + SW

- The plethora of hardware and software versions available for linux make it quite difficult for BRTT to support Linux.
- Can't reproduce problems

Linux is very difficult for BRTT to support

- No clear choice for software: SUSE, RedHat, Ubuntu, ...
- No realistic choice for hardware (unless maybe Sun or Apple?)
- system administration varies
- patch administration differs
- 32 / 64 bit handled poorly
 - no obvious way to compile 32 bit perl on 64 bit system

32 VS 64 BIT

- We're sticking with 32 bit this year after all.
- On Linux, this is an issue, because (unlike Sun and Apple) Linux tends to install either 32 or 64 bit, and not support the other resolution.
- We get puzzled requests about why Antelope isn't working on some 64 bit installation. 32 bit libraries not installed.

SOLARIS X86?

+ fast

+ Sun

? is Sun committed to intel workstations?

? is Sun viable?

- New platform adds to BRTT support problems

APPLE MACINTOSH

- range of hardware laptop to server (\$1k-\$10k)
- global distribution
- mail-in and phone support
- engineered design (contrast linux hardware)
- wide acceptance in US universities

EASE OF USE

- doesn't require so much unix sophistication
- easy system patch administration
- better tools than Sun
 - Microsoft office
 - suite of Apple tools for presentations, spreadsheets, document preparation.
 - tools for graphics, photos, movies (traditional Apple strengths)
 - Mail, Safari browser
 - Firefox is an alternative

Patch administration



The image shows a screenshot of the 'Software Update' window in an older version of macOS. The window title is 'Software Update'. At the top left, there is a blue circular icon with a globe and arrows. To its right, the text reads: 'New software is available for your computer. Installing this software may take some time. If you're not ready to install now, you can choose Software Update from the Apple menu later.'

	Install	Name	Version	Size
	<input checked="" type="checkbox"/>	AirPort Utility Software Update...	5.4.1	19.5 MB
◀	<input checked="" type="checkbox"/>	Digital Camera Raw Compatib...	2.5	4.4 MB
◀	<input checked="" type="checkbox"/>	iLife Support	9.0.1	3.7 MB
◀	<input checked="" type="checkbox"/>	AirPort Client Update 2009-001	1.0	1.8 MB

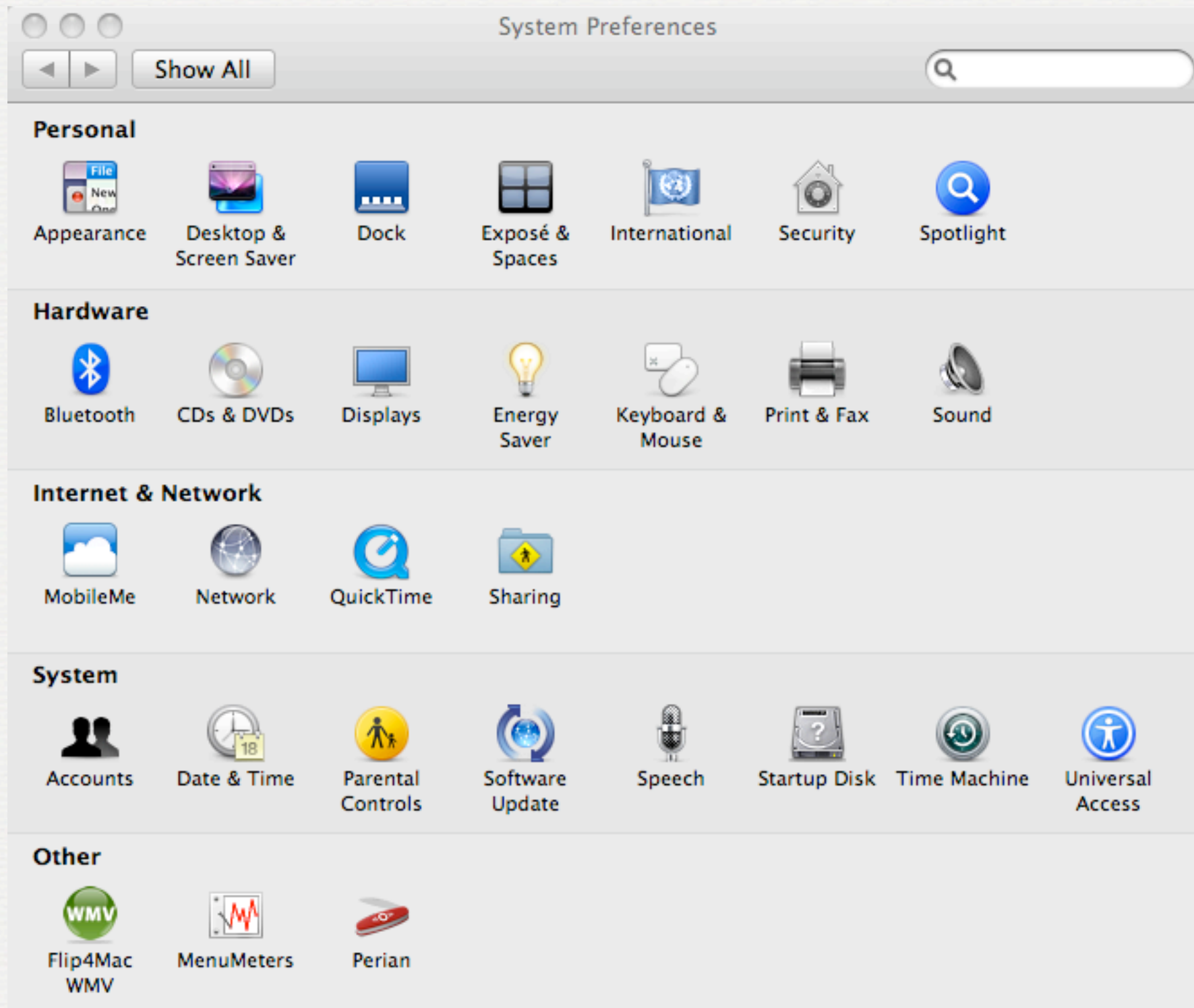
This update includes general fixes and compatibility updates for the following applications: AirPort Utility and AirPort Base Station Agent, including AirPort Disk Utility for Tiger.

Note: Use of this software is subject to the original Software License Agreement(s) that accompanied the software being updated. A list of Apple SLAs may be found here: <http://www.apple.com/legal/sla/>.

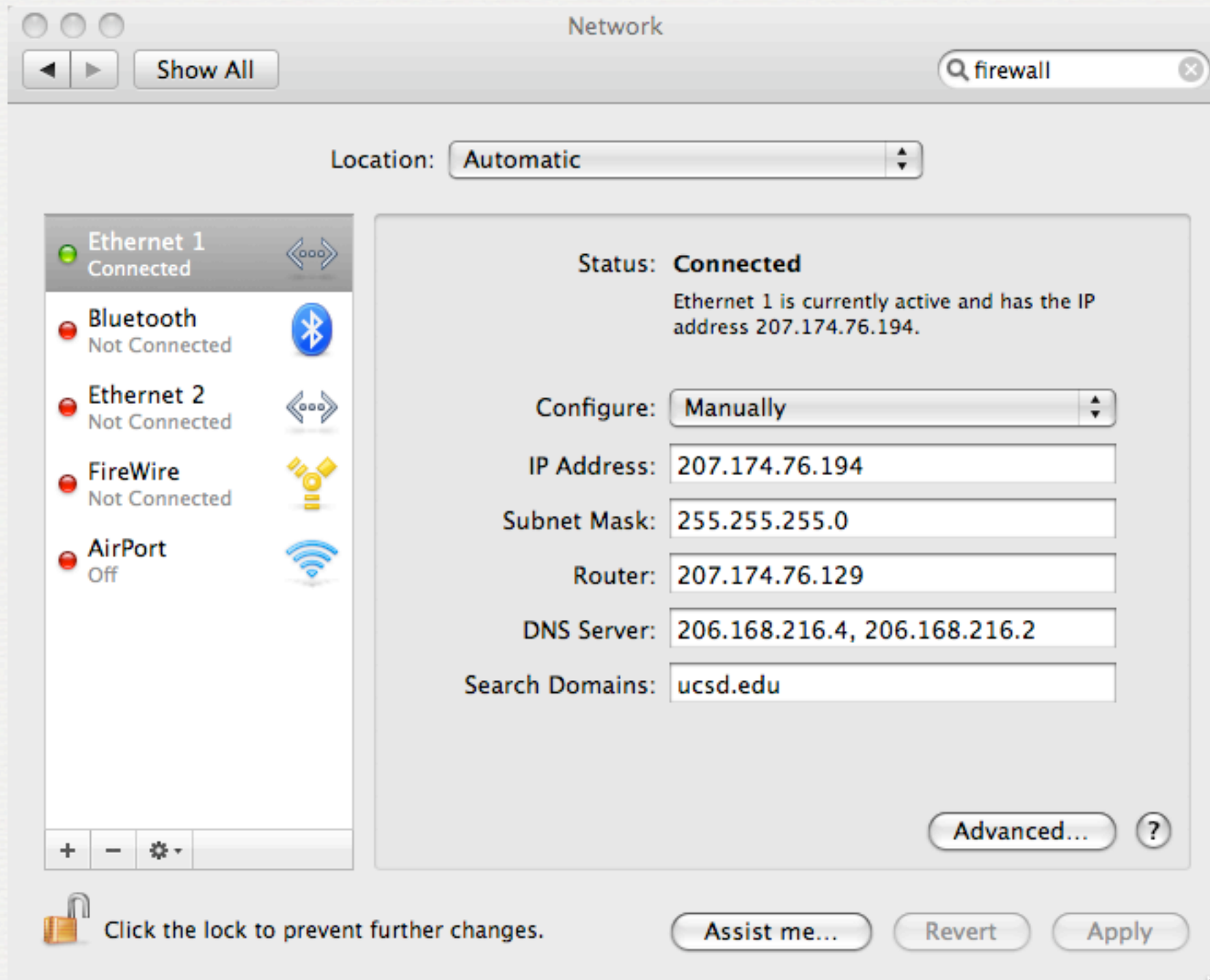
◀ Restart will be required.

Install 4 Items

System Configuration



Ethernet configuration



DEVELOPMENT ADVANTAGES

- better development tools in general
- organized community
- support from Apple
- dtrace
- zfs (maybe)

DTRACE

- integrated tool for inspecting processes and system
- need root (or sudo)
- answer questions like what system calls are taking the most (elapsed) time
- or very specific questions about internal calls, like a debugger

ZFS

- pooled storage model
- allowing dynamic additions to storage
- implements raid
- protect against “silent data corruption”

TESTING

- Mac's in use for some time in various locations, on desktops, laptops, and occasional data collection
- less experience in operational settings
- Starting to try out Mac's for production work at ANF
- Some other users moving toward Mac's

SUGGESTIONS?

- Solaris Servers?
- Solaris x86?
- Macintosh
- SUSE vs UBUNTU(KUBUNTU)?
- Linux Hardware?
- Other options?

Can you tell me why sometimes
the output files from orb2db
get network-code "XX" instead
of the correct network code??

Please more detail!

especially rtsnapshot.

**We generally have to be able to reproduce
the problem to help.**

ORB2DB INTERNALLY

- unstuffPkt
- packet net/sta -> css3.0 station code
 - map_seed_netsta(3) --> .snetsta table
- css3.0 sta code -> net, seed sta to write miniseed
 - seed_net(3) <-- .snetsta table, or trdefaults.pf

It would be interesting to know arguments and result for map_seed_netsta

```
lazuli% sudo dtrace -s orb2db.d -p 69553
```

```
Password:
```

```
bootstrap_register(dt_dyld_port): unknown error code
```

```
dtrace: script 'dtrace/orb2db' matched 3 probes
```

```
CPU      ID          FUNCTION:NAME
  0    18951          map_seed_netsta:entry net=d4 fsta=aak
```

```
  0    18950          dbaddable:return return=1
```

```
libtr.dylib`add2snetsta+0x5d
```

```
libtr.dylib`mk_seed_sta+0xc1
```

```
libtr.dylib`map_seed_netsta+0x353
```

```
orb2db`get_match+0x1e4
```

```
orb2db`pkt2db+0x110
```

```
orb2db`main+0x1c0f
```

```
orb2db`start+0x36
```

```
0x7
```

```
  0    21733          map_seed_netsta:return local sta=aak_d4
```



```
lazuli% cat dtrace/orb2db
pid$target::dbaddable:return
{
printf ("return=%d\n", arg1) ;
ustack();
}
```

```
pid$target::map_seed_netsta:entry
{
addr = arg2 ;
printf("net=%s fsta=%s\n", copyinstr(arg0), copyinstr(arg1)) ;
}
```

```
pid$target::map_seed_netsta:return
{
printf("local sta=%s\n", copyinstr(addr) ) ;
}
```

- No new binaries
 - new binary harder to do, may be different anyway
- apply directly to running system
- no major effect on performance