Antelope on Mac OS X Trials and Tribulations

What's the big deal?

Mac OS X is just Unix, right?

Goals

- Initially, we want to make it possible to work with Antelope on Macintosh laptops
- Not aimed at running networks (Sun workstations)
- or as a field processor (New marmot)
- -[not trying for Cocoa interface, just compatibility among platforms
- same source tree for Solaris, Linux/X86, Linux/Arm, Darwin

Problems:

Mac OS X is based on mixture of BSD Unix, Mach and NeXt OS.
Apple is aiming toward least sophisticated users
sometimes good, sometimes not so good
Case *insensitive* file system
filesystem mounts are different; paths are different

Link problems

- standard libraries are different: everything is thrown together into libc
- linking is much more complicated: two kinds of dynamic libraries, lots of options
 - Idd missing
- dlopen() missing

Implementation problems:

- Ino /proc filesystem: much more difficult to get system performance statistics
 - hard to get exec line for error routines
 - hard to keep track of children pids (eg, w/rtexec)
 - other info about pid %cpu, etcetera extremely hard to get

More differences:

-[tell missing
-[poll() missing
-[statvfs() different
-[cuserid vs getlogin
-[ifconfig is different

Even time is different

-[time() different
-[timers are different
-[timezone methods different

development problems:

[X11 available separately
[Development environment available separately
[Some Unix tools not available: eg, TclX
[Fortran available separately
[rm -f returns error code

Unresolved Issues

Individual process statistics (eg, rtm)
 matlab: linking issues, namespaces and other complications
 waveform file names: finder doesn't like colons



Getting Started

Download X11 from Apple and install
edit /etc/ssh*config
X11Forwarding yes
ForwardX11 yes

Possibly useful hints

- edit /etc/sysctl
 - kern.maxproc=2048
 - kern.maxprocperuid=1024
 - sudo sysctl -w kern.maxproc=2048
 - sudo sysctl -w kern.maxprocperuid=1024

Iook at hdiutil to create a ufs volume (which understands the difference between upper and lower case)

Compiling your own?

Download and install developer toolkit Xcode from Apple — Remember to install X11SDK, using Customize button

Fortran? (oh horrors)

- Install g77 from hpc.sourceforge.net
- hide dynamic libraries libg2c*.dylib
 - so linker uses static libs, and programs are portable to machines w/o g77

Non-Antelope items

Use Netinfo Manager to change shell to tcsh put terminal and x11 in dock block pop up windows in Safari A **Download**, install and configure MenuMeters http://www.ragingmenace.com/software/menumeters - Set up your backups

Install Antelope

- Insert Antelope cd, and run X11
- cd /Volumes/Antelope_4.7
 - [./Install_antelope
 - without X11, Install_antelope -ut

```
shasta% cd /Volumes/Antelope_4.7
shasta% ls
Changes Linux/
Darwin/ README
Install antelope* SunOS/
```

_4.7.2005_Apr_14_12:23 common/ license.txt

Installing Antelope



Get licensed

🔘 🔘 🖂 🛛 🕅 Register Antelope Re	elease 4.7 Darwin 7.8.0	2005-04-01
Name * (* means entry is required)	e-mail address *	
Daniel Quinlan	danq@brtt.com	
Institution/Business *		
BRTT, Inc		
Department		telephone number *
		303/449-3229
address line 1 *		FAX number
2045 Broadway		720/274-0096
address line 2		
Suite 400		
Gity *		State/Rovince *
Boulder		CO
Country *	Zip/Mail Code *	– Architecture T
USA	80302	🖬 Sun OS Spend
ho stname *	IP address *	💷 Sun OS Intel
shasta.brtt.com	207.174.76.134	🖬 Linux Intel
license-type	Cluster	🖬 Linux Arm
unspecified 🛁	CIUSCO	MacOSX RowerRC
ho stid	hostinfo *	
		291b08fd8162_d0e0047
	2nd e-mail address	3rd e-mail address
	zing erman address	ord e-mail address
any comments or special requests	1	1
any comments of special requests		
	(
Register		Quit //

Watch the install

		_
000	📉 Antelope installer	
File		Help
Standard perl, installed extensions needed by A	in /opt/antelope/perl5.8, with CPAN intelope.	
– Current Component Progress		
	35%	
– Overall Progress –		
	18%	
	Continue	

Customize

000	🔀 Antelope in	istaller	
File			Help
ile. Paramet of Antelope p	ers from this file a programs, to fill in	ze the site.pf parar are used by a variet network codes, to less SEED volumes.	y.
	Continue	2	
			///

○ ○ ○ X Setup_site
Please set up these default values for your network.
Site.pf
SEED Network Institution
Originating_institution
Mail do main (eg, "u csd.edu")
Mailho st
Save & Quit Quit w/o Saving

Apply patches

000 X Antelope installer File Help Starting antelope_update to install patches for Antelope Release 4.7 SunOS 5.8 2005-04-14. This will make sure you don't encounter problems that have already been solved. It's important to keep up with Antelope patches. If you are a contact for the Antelope license, you should receive notification when a new patch is available. Please install patches as soon as they're available. You may run antelope_update at any time to check for recent patches. Continue

antelope_update

🔀 Antelope 4.7 Patch Updater

antelope_update Antelope Release 4.7 SunOS 5.8 2005-04-13

Please install 1 new patches in order!!! All patches should be installed!!!

Stop Antelope Systems before applying patches

Install qt2orb_1.0

000

This fixes an intermittent problem where qt2orb exits unexpectedly without any apparent errors.

Re-Start Antelope Systems

Update log

Not Installed: qt2orb_1.0

Quit

Still need to install license



What about Tiger?

Sometimes observed: wc -l </dev/null
 segmentation violation
 g95 compiler is pickier about fortran
 sigignore() function added

My guess is that this an instance of the new behavior ("not a bug", according to Apple) of dyld on Tiger that makes binaries crash that were built and linked correctly: The new dyld has the idea of trying to resolve all undefined symbols in all dependent libraries, whether the symbols are needed for the executable or not.

Until MacOSX 10.3, you could be reasonably sure that if an executable did not produce an "undefined symbols" error at link time, it would not produce one at run time, either - Id and dyld had almost identical strategies for resolving symbols. On Tiger, this is no longer the case - you can very easily produce executables that link OK but crash at runtime.

Problem:

X Error of failed request: BadAtom (invalid Atom parameter) Major opcode of failed request: 20 (X_GetProperty) Atom id in failed request: 0xb9 Serial number of failed request: 12 Current serial number in output stream: 12

Solution:

alias ssh ssh -Y

Probably a new version of ssh problem.

Huge changes in Antelope

references in parameter files



- data/&sta/&chan dir
- sta AKA
- chan BHE

Huge changes in Antelope

- schema table extensions
 - additional tables are described in css3.0.ext directory
 - rt1.0 is no longer needed
 - dbverify, dbe parameter files simplified

Huge changes to come

dbbuild

-[new menu organization for dataloggers and sensors
 -[individual sensitivities by sensor output
 -[individual gains by data logger input leads
 -[serial number lookup of sensitivities and gains

New menu for dataloggers

Master Database Construction						
Database Configuration						
Configuration time Comment						
1/1/1992						
-Network net network name KN Kyrgyz Seismic Telemetry Network						
Station						
sta latitude longitude elevation station name						
KBK 🛓 42.6564 74.9478 1.7600 Karagaibulak, Kyrgyzstan						
Datalogger Please select datalogger ANF Canada Geological Survey Guralp Kinemetrics Nanometrics PEPPV Passcal Quanterra Reftek SAIC						
Add	Quit					

New menu for sensors

Master Database Construction						
Database Configuration H						
Configuration time Comment						
1/1/1992						
Network						
net network name KN Kyrgyz Seismic Telemetry Network						
KW KGrggz Seismic Teremetry Wetwork						
Station						
sta latitude longitude elevation station name						
	ılak, Kyrgyzstan					
Datalogger						
Please select datalogger	pf					
serial number dista						
Sensor						
	pf Clear					
edepth band rsp	ype loc code					
⇒ 2 Geotech						
Guralp						
Killene ci ics						
A Mark Products						
Nanometrics >						
sprenghethet						
Streckeisen ► STS-1 East						
Tekelec STS-1 North						
Terratech STS-1 Vertical Add	Quit					
unknown STS-2						

Sensitivities and gains

- Master Database Construction					
Database Configuration He					Help
Configu	ration time		Comment		
1/1/9	92				
Netw	lork-				
	twork name				
KN K	yrgyz Seismi	c Telemetry	y Network		
-Stat sta	latitude	longitude	elevation	station name	
KBK	₹ 42.6564	74,9478	1.7600	Karagaibulak, Kyrgyzstan	
-Data	logger —				
	rt72a-0	7	Reftek 72A	-07	
serial n	umber		dista		
Sens					
?-		sts2		Streckeisen STS-2 pf C	lear
* 1	serial number		edepth	band rsptype loc code	
2			0.0	b V	
∲З	axis hang	vang si	ensitivity	datalogger gain preamp gain preamp stage lead	
	ZO		.5e-7	524383.8 <u>L</u>	
	NO	<u></u>	.5e-7	524383.8	
♦ 5	E 90	90 1	.5e-7	524383.8	
♦ 6	samprate		loc dichan	on chan loc dichan on chan loc dichan	
	40sps	🛨 📕 BHZ	2	BHN BHE	
		± □			
Add Quit					

new lag statistic

lag	thread	%pkt	pktid	who@where	command
0.00	99921	0.489	2363162	rt@	orblatency -m AZ.* -p 300 :anza db/anza
0.00	99618	0.489	2363162	rt@	orb2db -v -m match -r reject -S state/orb2dbAZ :anza
0.00	15	0.489	2363161	rt@mw	orbmonrtd
0.00	20	0.489	2363161	rt@mw	orbmonrtd
0.00	67	0.489	2363161	rt@	orbdetect -out :anza :anza db/anza
0.00	23	0.489	2363161	rt@mw	orbmonrtd
0.00	21	0.489	2363161	rt@bbarray	orb2orb 132.239.4.29:anza : -m AZ.* -r reject
0.00	84	0.489	2363161	rt@	par2db -i 60 :anza param/anza_par
0.00	154507	0.489	2363161	rt@igpprt	orbmonrtd
0.00	18	0.489	2363133	rt@csulb.edu	<u>a</u> orb2orb -S state/orb2orb_AZdb -m match -r .*/MGENC/.* .*/log
0.00	158041	0.489	2363118	danq@agate	orbstat -i igpprt: lag
0.00	19	0.489	2363116	rt@mercali	orb2orb igpprt:anza :status -m match
0.00	99624	0.489	2363110	rt@	orb2db -m match -S state/orb2dbCI :anza db/anza
0.00	14	0.489	2363106	rt@bbarray	orb2orb igpprt:anza :demo -m AZ_BV.*
0.00	157911	0.489	2362085	rt@	orbassoc -start OLDEST -v -select /db/detection :anza :anza ttgrid-
local_r	regional	ttgrid-	tele		
0.00	157914	0.489	2362085	rt@	orb2dbt -state state/orb2dbt -overwrite :anza db/anza
0.00	157969	0.488	2360244	rt@mercali	<pre>/opt/antelope/4.7/bin/orbpf2db igpprt:anza db/anza_orbregistry</pre>
0.01	17	0.486	2346353	rt@csulb.edu	<u>ı</u> orbxfer -v -d db 132.239.4.29:anza
0.07	154504	0.459	2216489	rt@	/opt/antelope/4.7/bin/awish /opt/antelope/4.7/bin/rtm
0.44	157917	0.298	1442123	rt@lindquist	c orb2dbt -reject /db/(detection trigger) -state state/orb2dbt
-overwrite igpprt db/anza :					
0.54	158039	0.257	1240299	rt@	orbmag -state state/orbmag :anza :anza db/anza
1.00	24	-0.000	-1	rt@	qt2orb -dataorb :anza -cmdorb :anza -calib_db db/anza
1.00	25		-1	rt@	qt2orb -dataorb :anza -cmdorb :anza -calib_db db/anza
nax lag	g = 1.00				