



Linux vs. OpenSolaris

Basic Comparison

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Goal of this presentation

You know more about OpenSolaris than you ever thought and wanted to admit.

Agenda

- Development Model
- Things that matter to the Developers
- How do I?
 - Get Root?
 - Find my Tools?
 - Understand the Filesystem?
 - Manage the Drivers?
 - Manage the Processes?
 - Configure Networking?
- Questions & Answers

Development Model of OpenSolaris

Linux feels like it was written.

Solaris feels like it was designed.

While I think that Sun's development processes can sometimes be a little heavyweight, and I think that Sun is trying to retain too much control over OpenSolaris, there is a lot to be said for having processes in place to guide development.

(from directorymanager.wordpress.com)

Development Model of OpenSolaris

- Every checkin to the repository is connected to a bug # and has undergone a peer review
- Significant changes to the system need to have an ARC = Architecture Review Committee case approved first
- Binary build scheduled every two weeks, feature planning bound according to the schedule (currently at 101, 102, 103, ...)

Typical Checkin Message

Author: raf

Repository: /hg/onnv/onnv-gate

Latest revision: d69f27bc8e0d74beb7813b04be9debb92b2c8a76

Total changesets: 1

Log message:

6568230 mutex_unlock() can modify freed memory

Files:

update: usr/src/cmd/mdb/common/modules/libc/libc.c

update: usr/src/lib/libc/inc/thr_uberdata.h

update: usr/src/lib/libc/port/threads/synch.c

update: usr/src/lib/libc/port/threads/thr.c

update: usr/src/uts/intel/sys/synch32.h

update: usr/src/uts/sparc/sys/synch32.h

(taken from onnv-notify)

ARC Listing for 2007

Case	Type	Name	Status
PSARC 2007/001	FastTrack	lofi(7d) crypto support	closed approved fast-track 01/09/2008
PSARC 2007/003	OnePager	Solaris Support for the Rock Processor	closed approved automatic 9/5/2008
WSARC 2007/004	OnePager	Project Kenai: JBI delivery in AS 9.1/GI	submitted
LSARC 2007/005	FastTrack	Explorer: Capture permissions of files l	closed approved fast-track 01/11/2007
LSARC 2007/006	FastTrack	Explorer: Collect directory listing of g	closed approved fast-track 01/11/2007
LSARC 2007/007	FastTrack	Explorer: st_diag should support LTO REA	closed approved fast-track 01/11/2007
LSARC 2007/008	FastTrack	Explorer: Should collect rgmd and ucmmid	closed approved fast-track 01/11/2007
LSARC 2007/009	FastTrack	Explorer: Explorer should gather host iS	closed approved fast-track

(taken from ARC OpenSolaris Community)

Development Model of Linux

- The “not so benevolent dictatorship” model.
 - Real “benevolent dictatorship” implemented in Python community
- “I will check it in, when I like it, and if I don't like you, I will never do it”
- No big-picture planning and coordination
- Released ~ every three months
 - Every stable release (2.6.20, 2.6.21, ...) brings in new features and internal API changes

Things that matter to Developers

- Stable API
 - See attributes(5)
 - Every command, syscall, ..., will have a documented interface stability in its manpage
 - You can bet your future on this
- Binary compatibility
 - Going back to Solaris (... , 2.5.1, 8, 9, 10)
 - Drivers mostly “just work”
- Backwards compatibility obsession
 - “It has worked before, why not now?”

Things that matter to Developers

SunOS 5.11

Last change: 13 Sep 2007

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System Calls

read(2)

ATTRIBUTE TYPE	ATTRIBUTE VALUE
Interface Stability	Committed
MT-Level	read() is Async-Signal-Safe
Standard	See standards(5).

SEE ALSO

Intro(2), chmod(2), creat(2), dup(2), fcntl(2), getmsg(2), ioctl(2), lseek(2), open(2), pipe(2), recv(3SOCKET), attributes(5), lf64(5), standards(5), streamio(7I), termio(7I)

SunOS 5.11

Last change: 13 Sep 2007

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Things that matter to Developers

You can rely on OpenSolaris / Solaris.

To achieve the same level of Linux stability you need to choose the right distro and stick to it. (Am I hearing “Debian” here?)

How do I: Get Root?

In all modern UNIX systems (Linux, OpenSolaris, MacOS/X) the daily work is carried under non-privileged user.

Different ways are used to “become root”...

How do I: Get Root?

```
$ sudo bash
```

```
Password:
```

```
#
```

```
$ pfexec bash
```

```
# pkg install SUNWsudo
```

```
...
```

How do I: Find my Tools?

```
# apt-cache search rsync  
# dpkg -S rsync  
# apt-get install rsync netcat  
...
```

```
# pkg search -r rsync  
# pkg search rsync  
# pkg install SUNWrsync SUNWnetcat  
...
```

How do I: Find my Tools?

- /usr/bin
 - Solaris SVR4 tools
- /usr/gnu/bin
 - GNU userspace
 - first entry in PATH by default to ease the transition for Linux users
- /usr/xpg4/bin
 - X/Open standardized binaries

How do I: Find my Tools?

○ Compilers

- SUNWgcc, SUNWbinutils
- sunstudioexpress, SUNWtoo

○ Languages

- SUNWruby18, SUNWjruby
- SUNWPython

How do I: Understand the filesystem?

○ Linux

- /home
- /var/log
- /tmp
- /sys, /dev

○ OpenSolaris

- /export/home
- /usr/adm, /var/adm, /var/log
- /var/tmp
- /devices, /dev

How do I: Manage the Drivers?

○ Linux

- lsmod, insmod, rmmod, modprobe
- /etc/modules, /etc/modprobe.d/*
- /lib/modules/`uname -r`/*

○ OpenSolaris

- modinfo, modload, modunload
- add_drv, update_drv, rem_drv
- /etc/driver_aliases, /kernel/drv/*.conf
- /kernel/drv/*

How do I: Manage the Processes?

○ Linux

- top, ps, strace, kill
- /proc/\$pid/

○ OpenSolaris

- prstat, ps, truss, kill
- pgrep, pargs, pfiles, pstack
- dtrace

How do I: Manage the Processes?

○ Linux

- via `/etc/init.d` and `/etc/rc.d`
- distro specific mechanism

○ OpenSolaris

- SMF – Service Management Facility
- `svccfg`, `svcadm`, `svcs`
- starts, stops the service
- monitors the health, restarts when service fails, uses `contract(4)` to manage processes

How do I: Manage the Processes?

```
# ps aux | grep vim
```

```
...
```

```
# cat /proc/<pid_of_vim>/cmdline
```

```
...
```

```
# pargs `pidof vim`
```

```
...
```

```
# pstack `pidof java`
```

```
...
```

How do I: Configure the Network?

○ Linux

- ifconfig, route, netstat, ip
- iptables
- NetworkManager + distro specific

○ OpenSolaris

- ifconfig, route, netstat, dladm
- ipf
- Network Auto Magic

Thank You

Questions & Answers



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