



# Linux vs. OpenSolaris

## Basic Comparison

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# Goal of this presentation

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

# Agenda

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- 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

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**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](http://directorymanager.wordpress.com))*

# Development Model of OpenSolaris

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- 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

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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 <a href="#">2007/001</a>	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

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- 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
- Releases happening mostly at random
  - Stable “even” branch (2.4.x, 2.6.x, ...)
  - Development “odd” branch (2.5.x, 2.7.x, ...)

# Things that matter to Developers

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- 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

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You can rely on OpenSolaris or for that matter on Solaris.

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

# How do I: Get Root?

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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?

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```
$ sudo bash
```

```
Password:
```

```
#
```

```
$ pfexec bash
```

```
# pkg install SUNWsudo
```

```
...
```

# How do I: Find my Tools?

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```
# 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?

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- /usr/bin
  - Solaris SVR5 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?

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## ○ Compilers

- SUNWgcc, SUNWbinutils
- sunstudioexpress, SUNWtoo

## ○ Languages

- SUNWruby18, SUNWjruby
- SUNWPython

# How do I: Understand the filesystem?

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## ○ 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?

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## ○ 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?

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## ○ Linux

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

## ○ OpenSolaris

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

# How do I: Manage the Processes?

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## ○ 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?

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

```
...
```

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

```
...
```

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

```
...
```

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

```
...
```

# How do I: Configure the Network?

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## ○ Linux

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

## ○ OpenSolaris

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

# Thank You

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Questions & Answers



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