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USE

IMPROVE

EVANGELIZE

Building And Deploying OpenSolaris

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based on slides by Fintan.Ryan@Sun.COM

What Is OpenSolaris

- Open development effort based on the source code for the Solaris Operating System
- Goals: innovation, collaboration and the extension of OpenSolaris technology.
- **Not an installable binary image or product**
- Collection of source bases (*consolidations*) and projects
- ON – kernel and userland – Nevada Project
- Developer communities, coordinated via the `opensolaris.org` infrastructure

What You Need To Get Started

- Downloads
  - See http://opensolaris.org/os/downloads/on/
  - Solaris Express
  - Build Tools – onbld
  - Compilers: Sun Studio 11 + Patches is recommended
    - Warning: Latest SXDE installs Sun Studio 12!
    - Gcc compilation possible – version 3.4.3
    - /usr/sfw/bin/gcc
  - Encumbered Binaries

Getting The Source

- Browse the Source at
  - http://src.opensolaris.org
- Get The Source With Mercurial
  - /usr/bin/hg – available in Solaris Express
- Create a local copy of the code/workspace
  - hg clone ssh://anon@hg.opensolaris.org/hg/onnv/onnv-gate
- Keeping In Sync
  - hg update
- Tip : use ssh to speed up access
  - http://blogs.sun.com/sch/entry/tip:_mercurial_atop_ssh

Build Environment & Tools

- Setup your onbld tools path
  - Be careful, a clean environment makes life easier
- Tools – nightly(1) and bldenv(1) need an environment file
- Example OpenSolaris env file
  - $MYGATE/usr/src/tools/env/opensolaris.sh
- Important variables
  - $GATE, $STAFFER, $CODEMGR_WS
- Important and/or handy nightly options
  - -a, -D, -z

Building Everything

- Use nightly to do your build
  - Go to your source dir (cd $MYGATE)
  - nohup nightly ./opensolaris.sh &
  - This builds everything
    - Think make clean; make
    - Use -i for an incremental build
- Follow your build
  - tail -f $MYGATE/log/nightly.log

.... and just building something

- Do a full build first, unless you're just doing a kernel build
- Setup your environment with bldenv(1)
- Go to the directory with your changes
- Use dmake(1)
- Kernel example
  - bldenv -d ./opensolaris.sh
  - cd $SRC/uts or $SRC/cmd/vi
  - dmake all

Enough, let's do something....

- Simple Example
  - Add a boot message
  - $MYGATE/usr/src/uts/common/os/main.c
- .... and build .....
  - nohup nightly ./opensolaris.sh &
- But a quicker example for now ...
  - bldenv -d ./opensolaris.sh
  - cd $SRC/cmd/vi
  - dmake all

Before testing: use Live Upgrade: lu(1M)

- Create multiple slices during install
- Use lumake(1M) to copy contents
- Use luactivate(1M) to switch to other slice
- See also lustatus(1M), luupgrade(1M)

Installing and testing your changes

- BFUs
  - Be careful, BFU is a developer tool, not something for use on production systems
  - Tip : zfs-mountroot
    - http://blogs.sun.com/timf/entry/zfs_mountrootadm
  - Requires some environment set-up:
    - FASTFS=/opt/onbld/bin/i386/fastfs; export FASTFS
    - GZIPBIN=/usr/bin/gzip; export GZIPBIN
    - BFULD=/opt/onbld/bin/i386/bfuld; export BFULD
    - ACR=/opt/onbld/bin/acr; export ACR
- BFU can create conflicts
  - acr is used to resolve conflicts
  - acr is very, very important

Or: Cap-Eye Install

- Kernel and drivers only
- cd $SRC/uts
- Install -i i86pc -G kernel.rscott
- su -
- cd /
- tar xf /tmp/Install.rscott/Install.i86pc.tar
  - Unpacks kernel under /platform/i86pc/kernel.rscott/
- reboot -- kernel.rscott/amd64/unix

Generating Reviews

- Mercurial changes are ongoing
  - (http://opensolaris.org/os/project/scm-migration/)
- Webrev is used for code reviews
  - Generates html, pdf and patch output
  - Hosting for webrevs available at http://cr.opensolaris.com/
- Contributing changes
  - See http://opensolaris.org/os/communities/participation/

Get Involved

- More than just the kernel....
  - Don't be scared, it's not all kernel land
    - GNOME on Solaris, USB, SMF are just some examples
- Take a look at the bite-sized bugs
  - http://bugs.opensolaris.org
- Sign up to the discussion lists
- Download an OpenSolaris distro
- Play with the code... at worst you might need to reinstall
  - But not if you used liveupgrade :)

Credits, Thanks and a Demo

- Fintan Ryan
  - http://blogs.sun.com/fintanr/entry/building_and_deploying_opensolaris
- Stephen Lau
  - Building OpenSolaris Presentation from the OpenSolaris Roadshow
- ... and now let's go bfu....

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Thank you!

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"open" artwork and icons by chandan:
http://blogs.sun.com/chandan