OpenSolaris Introduction

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Solaris RPE
Sun Microsystems

Agenda

- Who we are
- OpenSolaris Project
- Options for cooperation with universities
- Czech OpenSolaris Users Group

opensolaris™

Who We Are / Solaris in Czech

- Sun's Prague Engineering Center
- New Solaris organization in Czech
  - 32 people
  - Part of global engineering teams
  - Solaris Development (New Product Engineering)
    - Solaris install, Naming, Security, File systems (CIFS)
  - Solaris Sustaining (Revenue Product Engineering)
    - Device drivers, kernel, UFS, NFS, security
    - Naming, databases (JavaDB, PostgreSQL), Sun Grid Engine
    - Open Source products – Samba, Apache, gzip, ...
    - Telco specific products

What is OpenSolaris Project

"A place for collaboration and conversation around OpenSolaris technology."

OpenSolaris project web
http://www.opensolaris.org/

Why to Use OpenSolaris

- An alternative to other Open Source projects like Linux, FreeBSD
- Unique combination
  - Commercial OS, which is now open sourced
  - Benefit from proven code
  - Backward binary compatibility and stability
- Direct access to cutting edge technologies
  - DTrace, ZFS, Zones, BrandZ
- Option to participate
  - OpenSolaris projects and communities (OSUG)
  - Create your own project

OpenSolaris Organization

- Still being defined
  - Principles are evolving
  - Community feedback is important and always considered
- Community Advisory Board (CAB)
  - Governance proposal, link between Sun and the community
- Architecture Boards
  - Review boards for design issues and to enforce compliance with standardized interfaces
- Communities and OpenSolaris Users Groups
  - Groups of people sharing the same interest concerning an OpenSolaris area

Design Principles / 1

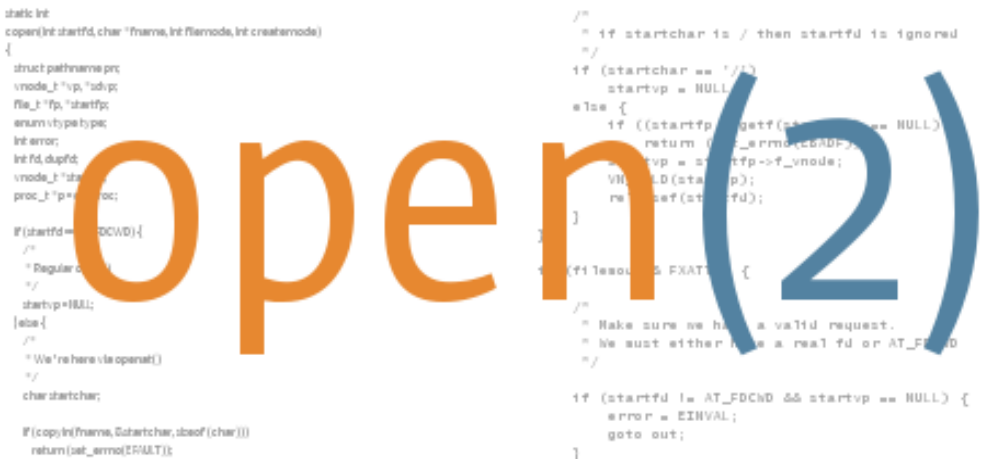
- Reliability
  - To perform correctly on all supported platforms
- Availability
  - To be robust in dealing with SW/HW failures
- Serviceability
  - To diagnose problems in production environment
- Performance
  - Primary goal, scale well, allow deterministic latency
- Manageability
  - To provide powerful abstraction, which simplifies management of the system

Design Principles / 2

- Security
  - Part of the operation system
- Platform Neutrality
  - To be built from single source; capabilities and features are equivalent on all platforms
- Compatibility
  - Compatibility over time, interfaces must be designed with a documented commitment level, versions must be used
- Openness
  - Developed using open and transparent processes to allow participation on all levels

Using OpenSolaris

- Search the opensolaris.org
- Install
- Play with
- Browse the source code
- Build
- Contribute



OpenSolaris Distributions

- Solaris Express (Nevada)
  - Solaris release after Solaris 10
  - Built from the same source base as OpenSolaris
- Schillix – OpenSolaris Live Distribution
  - www.schillix.org
- BeleniX – OpenSolaris Live Distribution
  - www.genunix.org/distributions/belenix_site/
- Nexenta OS - Debian based GNU/Solaris distribution
  - www.gnusolaris.org
- MarTux – OpenSolaris for Sparc
  - www.martux.org

Development Process

- A complex development process evolved in Sun during the years
  - Hundreds of engineers can contribute
  - Resulting code has high quality and stability
- OpenSolaris team started to work on a new development process in order to:
  - Improve the process and simplify where possible
  - Open the process for non-Sun developers

Current Process for Contribution

- Typical task to begin with
  - File a new bug
  - Fix a bug – good 'starters' were identified by Sun's developers
  - Search bug database for a bug (oss-bite-size) keyword
  - Fix the bug and get it integrated
- Sponsor is needed
  - E-mail the request-sponsor@opensolaris.org to get a sponsor
  - The sponsor will act as a proxy and use current Sun's process to get the bug fix integrated

OpenSolaris Roadmap

- Deals with
  - Source code availability
  - Development tools availability and evolution
  - Strategic Community Collaboration (CAB, governance)
  - Community Collaboration
- Quarterly milestones till March 2007
- Latest roadmap
  - http://www.opensolaris.org/os/about/roadmap/

Status of Project

- 152 discussion forums
- 48 open projects
- Other 19 in preparation
- 42 OSUGs (OpenSolaris User Groups)
- The most of Solaris source code open sourced
  - Public source code repositories in progress
- 132 contributions outside of Sun integrated

Virtualization

- Several technologies available
  - Zones
    - Several OpenSolaris instances
    - More than chroot and jail
  - BrandZ
    - Special zone for Linux
    - Even Wine?
  - Xen
    - Port of Xen to OpenSolaris
    - Makes possible to host different operating systems on the same box
  - VMware – third party technology

DTrace (Dynamic Tracing)

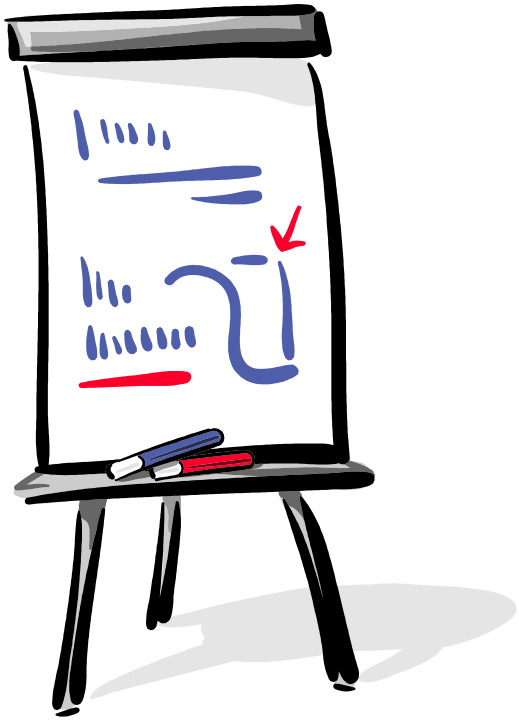
- Designed for use on production systems
- Massive performance opportunities
  - Gnome used DTrace to find out performance bottlenecks
- Easy to use predicate language D
- No code changes are required
  - Minimum performance impact
  - Runtime code instrumentation
  - Thousands of probes available in Solaris kernel
    - dtrace -n 'proc:::exec-success { trace(curpsinfo->pr_psargs); }'
- Support for other applications / languages
  - Ruby, PHP, Perl, Python, Apache, ...

ZFS (Zettabyte Filesystem)

- 128-bit filesystem
- Different view on a filesystem
  - No volumes
  - Common pool of storage media
  - Filesystems can grow and shrink dynamically
  - All operations are transactional (Copy on Write)
  - Endian adaptive
  - Snaphot – a read only point-in-time copy of FS)
  - Clone – writable copy of snapshot
  - Simple administration – zpool(1M) and zfs(1M)
- Ports in progress
  - FreeBSD and Linux (using FUSE)

Opportunities for Education

- Computer Science curricula
  - Operating System lectures
  - Master and bachelor thesis
- Center of Excellence
  - Focus on specific technology
- Sun Academic Initiative
  - Access to free training materials
  - Special cost for certifications
- Participate in the community
  - Community Projects
  - OpenSolaris Users Groups



Current Opportunities in Czech

- University Day at Sun Tech Days
  - http://cz.sun.com/techdays/prague/index.html
- Informal cooperation
  - CVUT (FEL)
  - Karlova univerzita (MFF)
  - Západočeská univerzita ?
  - ...
- Czech OpenSolaris Users Group
  - Run at university premises
- Topics for master and bachelor thesis
  - OpenSolaris, databases (PostgreSQL)

Czech OpenSolaris Users Group

- Almost regular monthly meetings
  - 11 meetings so far
  - 2 all day events (CZOSUG BootCamps)
  - Xen BootCamp – presented also Michal Švamberg about Xen at the University of West Bohemia
- Meetings are run at university premises
  - CVUT (FEL), Karlova universita (MFF)
- Technical presentations and demonstrations
  - www.opensolaris.cz
  - Several presentations recorded by AVC Sillicon Hill (http://avc.sh.cvut.cz/)

Contacts

- Community sites
  - www.opensolaris.org, blastwave.org, www.sunfreeware.com, www.genunix.org, ...
- Discussions:
  - www.opensolaris.org/os/discussions/
- Developer support
  - Sun Developer Network (SDN), developers.sun.com
  - BigAdmin, www.sun.com/bigadmin/home/
- blogs.sun.com
  - Jim Grisanzio (jimgris), Adam Leventhal (ahl), Bryan Cantrill (bmc), look at the blogrolls ...

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