# Goggle Summer of Code Project Proposal

NetBSD ZFS Port Project

Adam Hamšík

**Abstract**

This is project proposal for Google Summer of Code project.

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# 1. General

ZFS is general purpose file system designed and written by Sun for Solaris operating system. It was designed with support for high storage devices in mind. It is a 128bit file systems and therefore it support Zetabyte partition size. This filesystem was released under the CDDL license and his code is freely available.

### Parts of ZFS

- zpool

  Is part of ZFS suite which manages virtual storage pools aka. Volume management.

- raid-z

  Is type of raid algorithm designed specially for ZFS file system.

- Snapshots

  Multiple snapshots types are supported administrator can create Read-only and Read-write snapshots.

- Copy-on-write transaction model

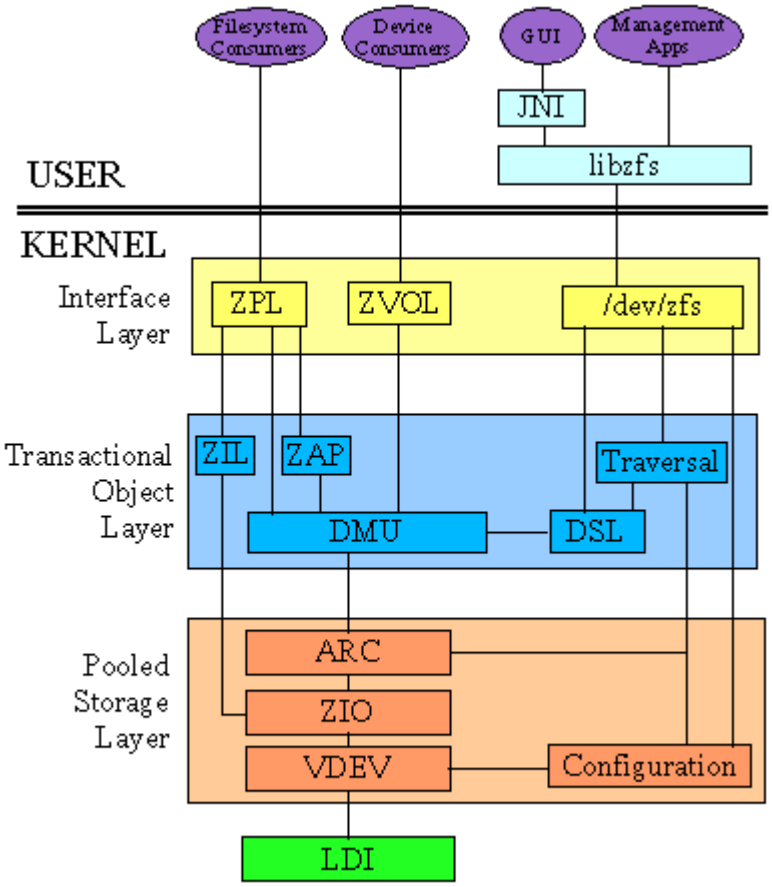
  All pointers in file system contains 256bit checksum used to guarantee correctness.

# 1.1. ZFS internal structure

ZFS consists from several parts which are both located in userspace and in a kernel. In userspace there is libzfs which is used for communication with `/dev/zfs` device which is entry for managing whole ZFS suite.

Zpool and zpl are parts of ZFS used to manage virtual storage pool and for managing filesystemm bits of ZFS.

### Figure 1. Parts of ZFS




# 2. Project Proposal

During my project I would like to continue in a effort of Andrew Doran and Oliver Gould. During last year Andrew Doran has ported several parts of ZFS kernel infrastructure to NetBSD. Hi work was imported to othersrc CVS repository.

The NetBSD ZFS port consists from 2 kernel modules. The first one is called solaris and it is used to provide Solaris like interface to ZFS module. The zfs module can't be compiled for now mostly because ZPL layer haven't been ported to NetBSD yet.

# 3. Project Tasks

### Procedure 1. Kernel, Userland and documentation tasks

1. **Solaris Module**

   Fix all remaining bugs in solaris module so it can be properly loaded.

   *ETA:* Before Coding period start

2. **libzpool and ztest**

   Test userland port of zpool and with zdb and ztest, try to run it in a loop for one day and fix all remaining bugs which I will be able to find with it. This task is required with zfs module task.

   *ETA:* Before Midterm

3. **ZFS Module**

   Add stub zpl functions to zfs module, compile/link it and fix all found bugs.

   *ETA:* Before Midterm

4. **ZFS Module ZPL layer**

   This is the major task, I will port FreeBSD/Opensolaris vnode/vfs interfaces to properly work on NetBSD. This is needed to get ZFS as a filesystem working on NetBSD.

   *ETA:* Before Endterm

5. **Documentation**

   Write user, developer documentation and properly comment my code.

# Bibliography

“ ZFS Last word in File systems. [http://www.opensolaris.org/os/community/zfs/docs/zfs_last.pdf] ”

“ ZFS Source Tour. [http://opensolaris.org/os/community/zfs/source/] ”

“ ZFS porting guide. [http://opensolaris.org/os/community/zfs/porting/] ”