

NetBSD libdevmapper library

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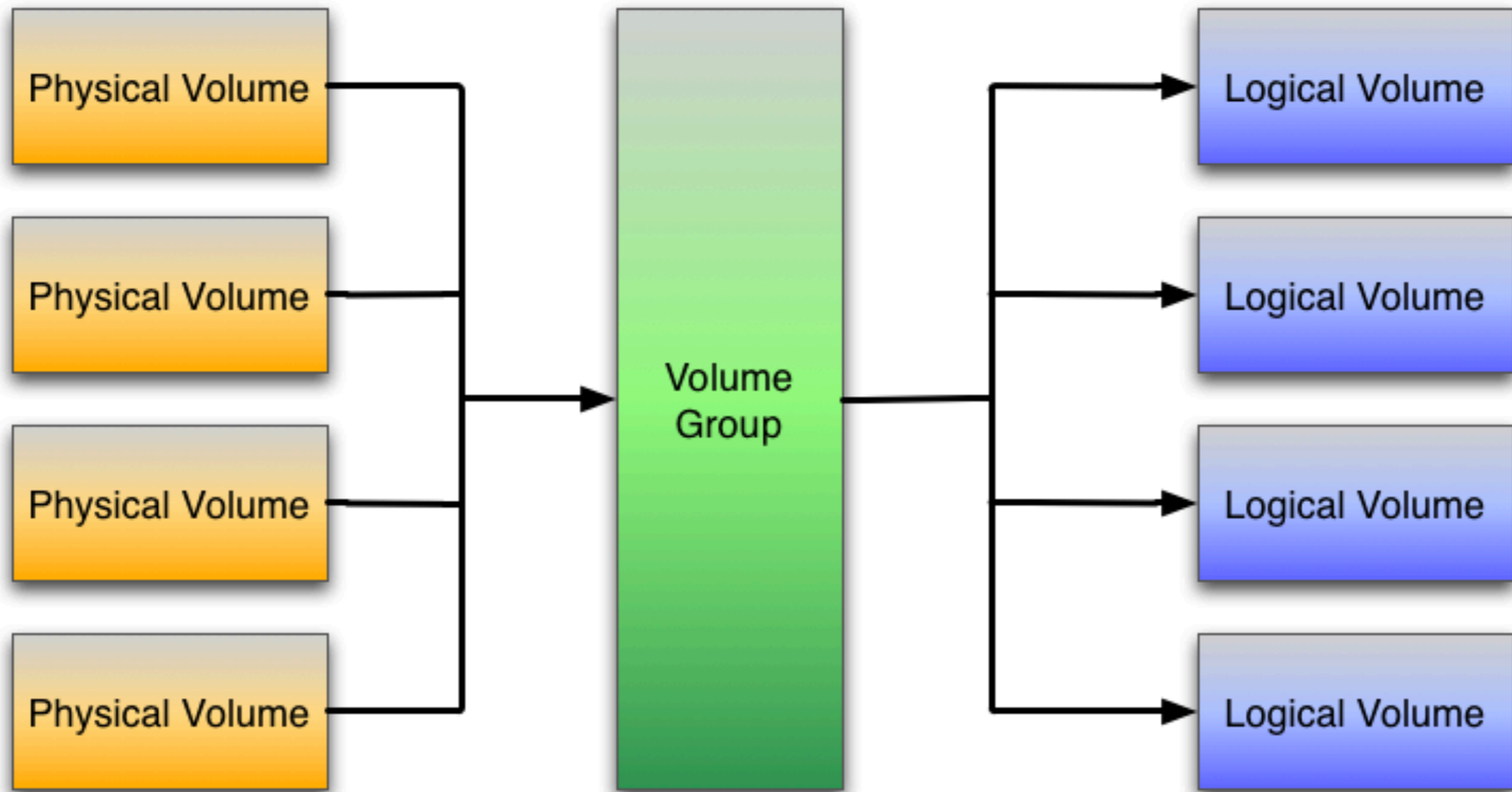
Talk outline

- Introduce NetBSD LVM implementation
- Introduce NetBSD libdm as library used for communication with device-mapper driver
- Some interesting info from development
- Give usage examples
- Q&A

Introduction

- Missing major feature of a server OS
 - Linux, AIX, HP-UX, Solaris, FreeBSD has it
- Available disk space is growing
 - 3-4 terabytes in a common server
- Number of disks in a server is much higher than it used to be

Logical Volume Manager design



Details

- Physical Volume is placed on a disk partition or whole disk and it's used as backing device.
- Volume Group is a pool of available disk space from which virtual partitions can be created
- Logical volumes are virtual partitions, which are allocated from Volume Group and physically placed on a Physical Volume.

NetBSD LVM

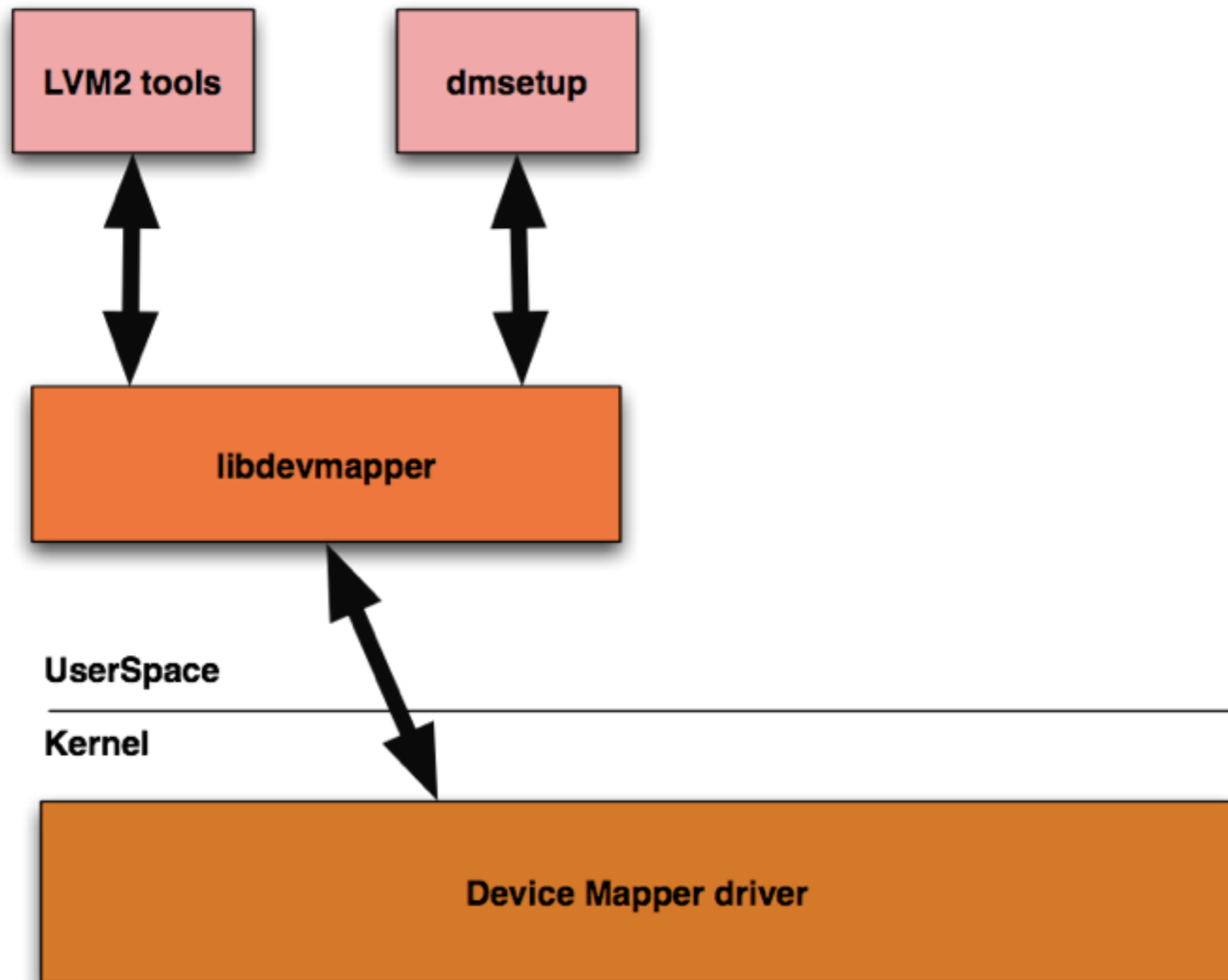
- Done during Google Summer of Code 2008
- Enabled by default from 2009, will be part of 6.0 release.

LVM contains

- Simple BSD licensed kernel driver which maps real disk blocks to virtual ones
 - driver is called device-mapper
- Linux lvm tools which manage LVM metadata.

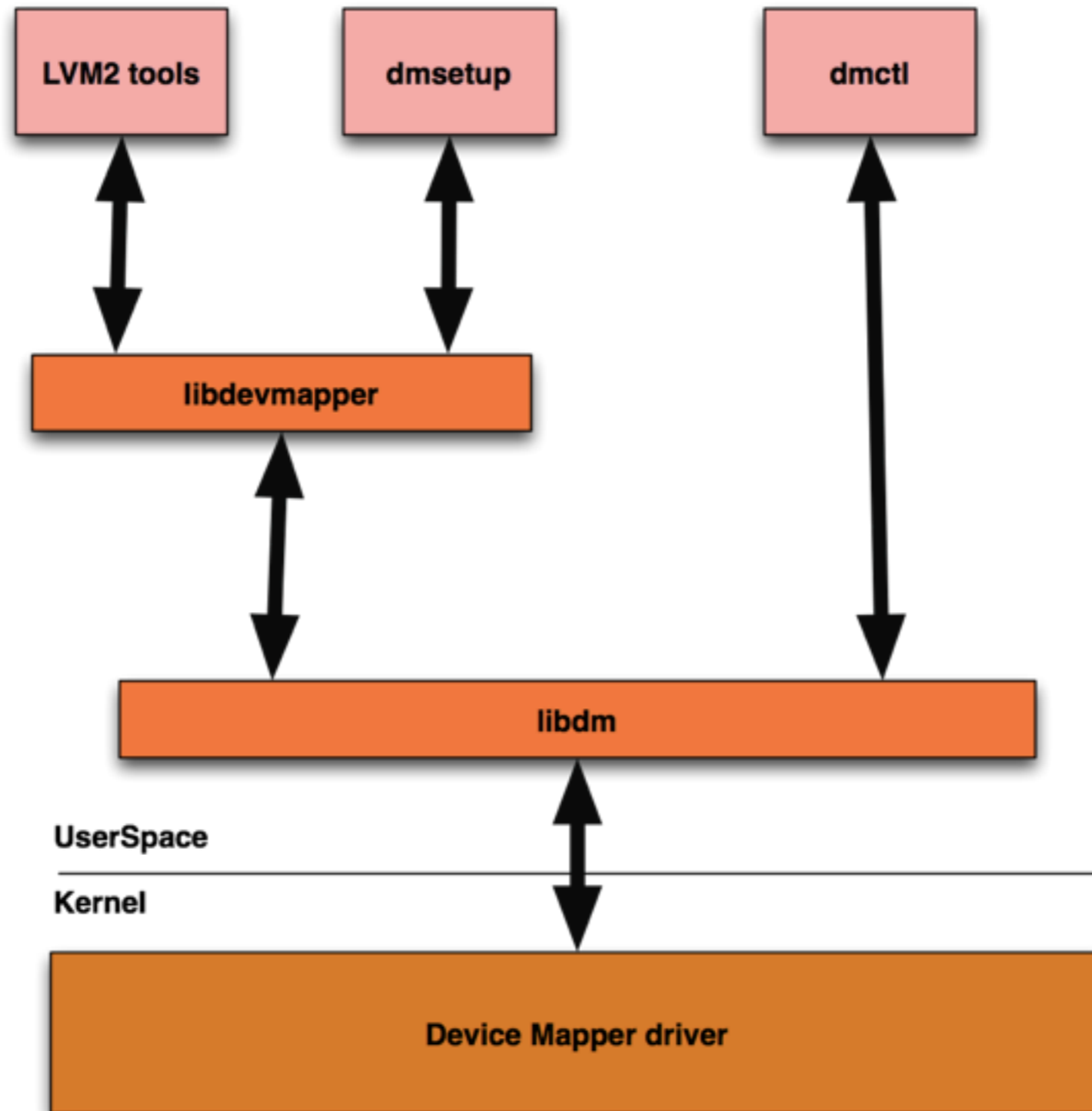
NetBSD LVM architecture

Initial



NetBSD LVM

architecture with libdm



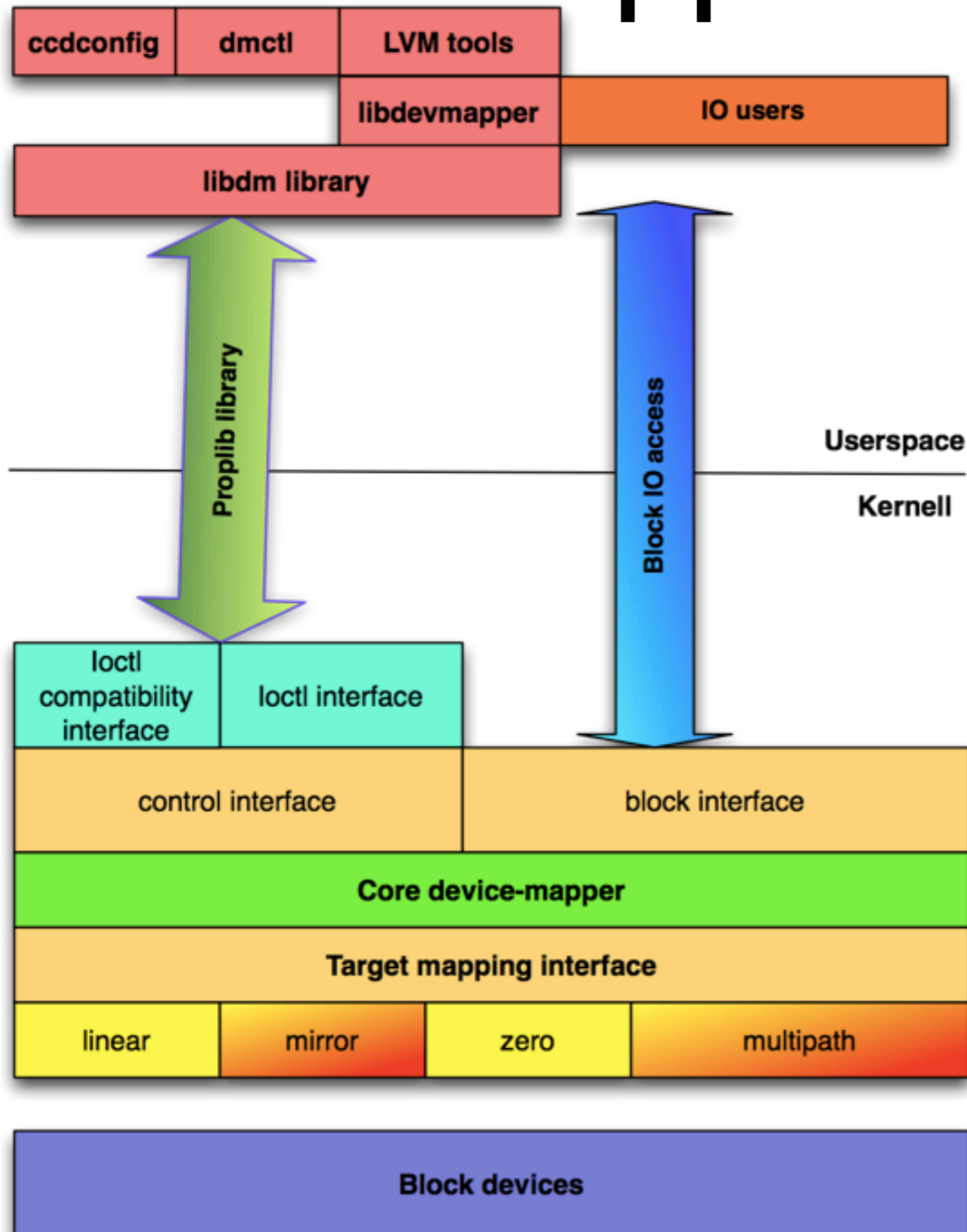
NetBSD libdm

- Libdm library creates another level of indirection for lvm tools which they use to access netbsd device-mapper
- Hides any differences between linux and netbsd device-mapper
- Can be used by other tools and because it's BSD licensed can be built to /rescue directory
- With libdm NetBSD can utilize device-mapper for different tasks

NetBSD libdm

- Possible use cases
 - Use device-mapper as replacement for ccd and cgd drivers which are old and unmaintained
 - Write new HAST like driver for device-mapper which can be used to mirror disk devices through network.

Device-mapper arch detail



Libdm + dm usage examples

- Replacement for ccd and cgd drivers
- dm driver needs way ho to support different ioctl calls then `NETBSD_DM_IOCTL` every driver uses different cmd.
- I have patch to implement support for this in dm driver.

Developing lessons

- During libdm development I have been doing test with RUMP. Which is way how to build most of NetBSD kernel as userspace library and load it to process.
- RUMP allows easy testing, because it just require to load rump build device mapper driver to test binary and run it.
- For RUMP info see
 - <http://www.netbsd.org/docs/rump/index.html>

Questions & Answers

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