# mfsBSD - memory filesystem based FreeBSD

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# About mfsBSD

This presentation is about to give answers to the following questions:

- What is mfsBSD?
- Where does it come from?
- Who is it made for?
- How do I use it?
- What is new in mfsBSD?

# What is mfsBSD?

mfsBSD is a BSD-licensed set of scripts that creates a FreeBSD distribution which is

- small-sized (less than 30MB with xz compression)
- rich-featured (world without man, docs and named)
- mfsroot based (runs completely in memory)
- customizable (user packages, many settings)
- bundles zfsinstall (ZFS-on-root install script)

# Ancestors of mfsBSD

Idea originates from **depenguinator** by Colin Percival.
But depenguinator has some drawbacks:

- original version runs only on FreeBSD 5.x
- since January 2009 new version 2.0, 7.x compatible
- focuses on remote reinstall from Linux systems only
- creates only disk images

# History of mfsBSD

- 2008-01: first ChangeLog entry
- 2009-10: FreeBSD 6 support dropped, zfsinstall
- 2010-03: Version 1.0, ISO's for testing
- Current: bzip2/xz, /rescue

# Use cases

Who is the target group of mfsBSD?

- system administrators and power users
- developers
- dedicated server providers (example: hetzner.de)
- me :-)

# Use cases

How do I use mfsBSD?

- ZFS-on-root install of FreeBSD
- remote install of FreeBSD
- rescue system (network boot or ISO)
- kernel testing in virtualized environment

# Build-time requirements

To build mfsBSD, the following is required:

- extracted mfsBSD distribution (release or SVN)
- FreeBSD sources or installation files
- sysutils/cdrtools to build ISO files
- cross-building is possible (TARGET_ARCH)
- Makefile has many customization options

# Runtime requirements

Systems that mfsBSD should run on need to:

- be able to run FreeBSD (supported architecture)
- be able to boot FreeBSD (HDD, CD-ROM, network boot)
- have enough RAM (512MB+ recommended)

# Tools and features used

mfsBSD is a Makefile based script set and uses the following tools/features:

- mfsroot - root on mfs
- /usr compression: bzip2, xz, gzip, geom_uzip
- makefs - NetBSD's filesystem creator
- mkisofs - create ISO files (sysutils/cdrtools)

# Custom RC scripts

There are 4 custom scripts, booting in the following order:

- mdinit - initializes /usr filesystem
- mfsbsd - sets root password, auto-DHCP, ... (via kenv)
- interfaces - sets IP adress by MAC (optional)
- packages - installs additional packages (optional)

# mfsBSD Input

mfsBSD suports two input types:

- FreeBSD insallation files (e.g. release CD-ROM)
- custom kernel and world (customizable)

# mfsBSD Output

mfsBSD can create three output types:

- ISO - bootable cdrom image
- tar - extractable in any FS - usable with network boot
- raw image - directly deployable by dd

# Downloadable ISO Editions

Available ISOs on the web:

- mfsbsd-[version]-[arch].iso
- mfsbsd-se–[version]-[arch].iso
- se = special edition: includes FreeBSD install image

# Configuration Files

Configuration files to be included (all optional):

- loader.conf - with mfsbsd.* kenv variables
- rc.conf - initializes varmfs, tmpmfs, sshd
- interfaces.conf - IP address by MAC
- resolv.conf - nameservers
- authorized_keys - keys for remote SSH auth

# Kenv Configuration Variables

mfsBSD has several custom kenv configuration variables, e.g:

- mfsbsd.autodhcp - auto DHCP on all interfaces
- mfsbsd.rootpw - root password
- mfsbsd.nameservers - override resolv.conf
- mfsbsd.hostname - set hostname
- mfsbsd.interfaces - interfaces to configure
- mfsbsd.ifconfig_interface - configure interface
- mfsbsd.defaultrouter - set default gateway

# zfsinstall

zfsinstall: command line ZFS-on-root install script

- installs full FreeBSD with ZFS-on-root
- supports mirror, raidz
- supports standard swap partitions
- supports compression and fletcher4 checksum

# destroygeom

destroygeom: recursively destroy a GPT partioned drive

- support script for zfsinstall to clear disks
- destroys ZFS pools first if requested

# Live ISO Demonstration

Thank you for your attention!


http://mfsbsd.vx.sk
http://www.vx.sk