

Причины требующие сборки нового ядра

- изменение функциональности ядра
- наложение заплаток безопасности на ядро
- уменьшение размера ядра
- повышение производительности

Резервное копирование старого ядра

```
[hostX:~] # cd /boot
```

```
[hostX:/boot] # cp r
```

```
kernel/ kernel.generic/
```

Сбор сведений об оборудовании

```
[hostX:~] # dmesg
```

```
[hostX:~] # pciconf lv
```

Установка исходных текстов ядра

```
[hostX:~] # mkdir /usr/src
```

```
[hostX:~] # mount /cdrom
```

```
[hostX:~] # cd /cdrom/XRELEASE/  
src/
```

```
[hostX:/cdrom/XRELEASE/  
src] # ./install.sh base sys
```

```
Extracting sources into /usr/src...
```

```
Extracting source component: base
```

```
Extracting source component: sys
```

```
Done extracting sources.
```

```
[hostX:/cdrom/XRELEASE/  
src] # cd
```

```
[hostX:~] # umount /cdrom/
```

```
Обновление исходных текстов ядра
```

```
[hostX:~] # freebsdupdate
```

```
fetch
```

```
[hostX:~] # freebsdupdate
```

```
install
```

```
Создание файла конфигурации ядра
```

```
Задача - уменьшить размер ядра
```

```
[hostX:~] # cd /usr/src/sys/i386/conf/
```

```
[hostX:sys/i386/conf] # cp GENERIC KERN
```

```
[hostX:sys/i386/conf] # ee KERN
```

```
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```

```
[hostX:sys/i386/conf] # sed E
```

```
'/#.*device/d' KERN
```

```
# cpu i486_CPU
```

```
# cpu i586_CPU
```

```
cpu i686_CPU
```

```
ident KERN
```

```
makeoptions DEBUG=g
```

```
# Build kernel with gdb(1)
debug symbols
options SCHED_ULE # ULE scheduler
options PREEMPTION # Enable kernel thread
preemption
options INET # InterNETworking
# options INET6 # IPv6 communications
protocols
options SCTP # Stream Control
Transmission Protocol
options FFS # Berkeley Fast Filesystem
options SOFTUPDATES # Enable FFS soft updates
support
options UFS_ACL # Support for access
control lists
options UFS_DIRHASH # Improve performance on
big directories
options UFS_GJOURNAL # Enable gjournalbased
UFS journaling
options NFSCLIENT # Network Filesystem
Client
options NFSSERVER # Network Filesystem
Server
options NFSLOCKD # Network Lock Manager
options NFS_ROOT # NFS usable as /,
requires NFSCLIENT
options MSDOSFS # MSDOS Filesystem
options CD9660 # ISO 9660 Filesystem
options PROCFS # Process filesystem
(requires PSEUDofs)
options PSEUDofs # Pseudofilesystem
framework
options GEOM_PART_GPT # GUID Partition Tables.
options GEOM_LABEL # Provides labelization
options COMPAT_43TTY # BSD 4.3 TTY compat [KEEP
THIS!]
options COMPAT_FREEBSD4 # Compatible with FreeBSD4
options COMPAT_FREEBSD5 # Compatible with FreeBSD5
options COMPAT_FREEBSD6 # Compatible with FreeBSD6
options SCSI_DELAY=5000 # Delay (in ms) before
probing SCSI
70
options KTRACE # ktrace(1) support
options STACK # stack(9) support
options SYSVSHM # SYSVstyle
shared memory
```

```
options SYSVMSG # SYSVstyle
message
queues
options SYSVSEM # SYSVstyle
semaphores
options _KPOSIX_PRIORITY_SCHEDULING # POSIX P1003_1B realtime
extensions
options KBD_INSTALL_CDEV # install a CDEV entry
in /dev
options ADAPTIVE_GIANT # Giant mutex is adaptive.
options STOP_NMI # Stop CPUS using NMI
instead of IPI
options AUDIT # Security event auditing
#options KDTRACE_HOOKS # Kernel DTrace hooks
# To make an SMP kernel, the next two lines are needed
options SMP # Symmetric MultiProcessor
Kernel
device apic # I/O APIC
# CPU frequency control
device cpufreq
# Bus support.
device pci
# Floppy drives
device fdc
device ata
device atadisk # ATA disk drives
device atapicd # ATAPI CDROM drives
device atapist # ATAPI tape drives
# SCSI Controllers
# options AHC_REG_PRETTY_PRINT # Print register bitfields
in debug
# output. Adds ~128k to
driver.
# options AHD_REG_PRETTY_PRINT # Print register bitfields
in debug
# output. Adds ~215k to
driver.
# SCSI peripherals
device scbus # SCSI bus (required for SCSI)
device da # Direct Access (disks)
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# RAID controllers interfaced to the SCSI subsystem
# RAID controllers
# atkbd0 controls both the keyboard and the PS/2 mouse
device atkbd # AT keyboard controller
device atkbd # AT keyboard
```

```
device psm # PS/2 mouse
device kbdmux # keyboard multiplexer
device vga # VGA video card driver
device splash # Splash screen and screen saver
support
# syscons is the default console driver, resembling an SCO console
device sc
device agp # support several AGP chipsets
# Power management support (see NOTES for more options)
# Add suspend/resume support for the i8254.
device pmtimer
# PCCARD (PCMCIA) support
# PCMCIA and cardbus bridge support
# Serial (COM) ports
device sio # 8250, 16[45]50 based serial
ports
device uart # Generic UART driver
# Parallel port
device ppc
device ppbus # Parallel port bus (required)
device lpt # Printer
# If you've got a "dumb" serial or parallel PCI card that is
# supported by the puc(4) glue driver, uncomment the following
# line to enable it (connects to sio, uart and/or ppc drivers):
# PCI Ethernet NICs.
# PCI Ethernet NICs that use the common MII bus controller code.
device miibus # MII bus support
device fxp # Intel EtherExpress PRO/100B
(82557, 82558)
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# ISA Ethernet NICs. pccard NICs included.
# Wireless NIC cards
device loop # Network loopback
device ether # Ethernet support
device ppp # Kernel PPP
device tun # Packet tunnel.
device pty # Pseudotys
(telnet etc)
device md # Memory "disks"
device gif # IPv6 and IPv4 tunneling
device firmware # firmware assist module
# Be aware of the administrative consequences of enabling this!
# Note that 'bpf' is required for DHCP.
device bpf # Berkeley packet filter
# USB support
device uhci # UHCI PCI>
```

USB interface
device ohci # OHCI PCI>
USB interface
device ehci # EHCI PCI>
USB interface (USB
2.0)
device usb # USB Bus (required)
device ugen # Generic
device ukbd # Keyboard
device umass # Disks/Mass storage Requires
scbus and da
device ums # Mouse
USB Ethernet, requires miibus
FireWire support
Компиляция и инсталяция ядра
[hostX:sys/i386/conf] # cd /usr/src
[hostX:/usr/src] # make buildkernel KERNCONF=KERN
[hostX:/usr/src] # make installkernel KERNCONF=KERN
[hostX:/usr/src] # shutdown -r now
[hostX:~] # uname -a
Загрузка старого ядра
В меню Loader выбираем пункт 6
OK unload kernel
OK load /boot/kernel.old/kernel
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или
OK load /boot/kernel.generic/kernel
OK boot